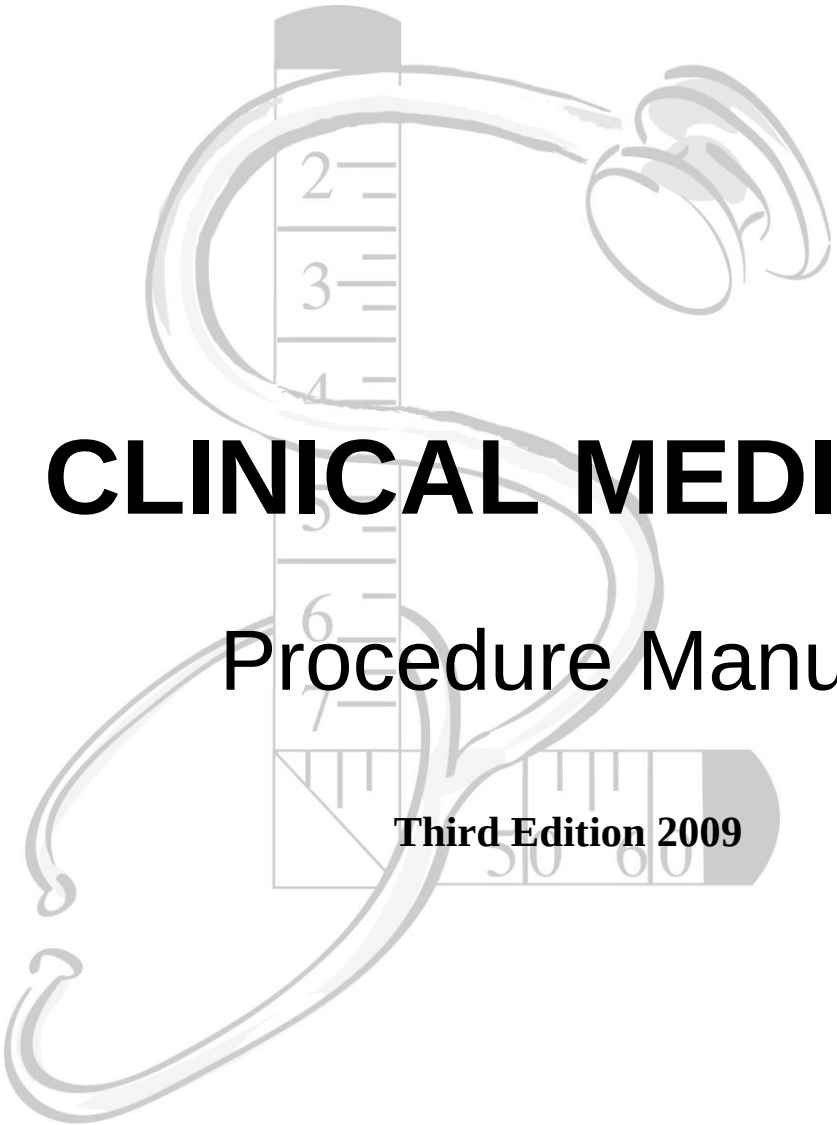

CLINICAL MEDICINE

Procedure Manual

Third Edition 2009

NAME	
COLLEGE	
STUDENT NUMBER	
YEAR OF ENTRY	

Clinical Medicine Procedure Manual
Kenya Medical Training College
Nairobi, Kenya

Third edition 2009

Printed and bound in Kenya by English Press, Nairobi.

TABLE OF CONTENT

PREFACE TO THE 3RD EDITION

This is the third edition of the clinical medicine procedure manual. The text in this manual and the organization are similar to the 2nd edition. The improvements in this manual lie in the illustrations - almost all pictures and photographs have been replaced by what we hope are clearer and better quality illustrations. In addition the lay-out has been adjusted to make the manual more user-friendly.

We hope you find it a helpful and easy to use document. If you have any suggestions, please forward your comments to our office to improve the next edition even more.

SkillsLab National Coordination Centre
P.O. Box 2384
00202 Nairobi

PREFACE TO THE 2ND EDITION

This manual has been developed to enable clinical officers in training and post-training to correctly perform procedures when practising in the SkillsLab or when attending to patients.

The main difference with the preceding edition is that 23 extra procedures have been included. These extra procedures include specific history taking, different procedures in basic life support, several procedures related to wound care and some individual procedures. The second change is that the order of the procedures has changed to be better aligned with the clinical medicine curriculum. This resulted in this manual being organized in 13 chapters. The procedures are organized in relation to the 13 units in which these procedures are supposed to be covered.

We hope the order chosen will guide the students and teachers to ensure that all necessary procedures are mastered at the end of the three years. Their ordering in certain units is not meant to be a rule but to be a guideline as sometimes procedures are not exclusively carried out in one department. This applies especially for several procedures in the second year Surgery and Internal Medicine as well as the advanced communication skills in chapter 10.

The overall ordering of the manual is as follows:

- 1st Year:
    - Chapter 1: Basic Communication Skills (6 procedures)
    - Chapter 2: Computer Skills (7 procedures)
    - Chapter 3: Basic Patient Care Skills (8 procedures)
    - Chapter 4: First Aid and Basic Life Support (7 procedures)
    - Chapter 5: History Taking & Basic Physical Examination Skills (112 procedures)
- 2nd Year:
    - Chapter 6: Internal Medicine Rotation Skills (10 procedures)
    - Chapter 7: Skills in Paediatrics (3 procedures)
    - Chapter 8: Surgery Rotation Skills (17 procedures)
    - Chapter 9: Basic Obstetric & Gynaecological Skills (13 procedures)

- 3rd Year:
    - Chapter 10: Advanced Communication Skills (3 procedures)
    - Chapter 11: Advanced Skills in Internal Medicine (1 procedure)
    - Chapter 12: Advanced Skills in Surgery (5 procedures)
    - Chapter 13: Advanced Skills in Obstetrics & Gynaecology (4 procedures)

The selection of the procedures follows directly from the Curriculum for Diploma in Clinical Medicine and Surgery and includes all those skills considered essential for a clinical officer to function well as a first line health care provider. Nevertheless, that does not mean that this manual is exhaustive. Trainers are free to assist students to acquire any other skill they consider essential. But believe that this manual will aid a long way in guiding the clinical officers in their practical training.

We anticipate that this manual will be used in a variety of settings; in the Skills Laboratory, in the practice area, in the classroom and in private study. We also expect that as you and we continue to use this manual, we will at the same time review it. Please, inform us about your experiences and comments as you are using the manual.

Developing this manual did not mean we had to start from scratch. There was work of many people on whose shoulders we could stand. Staff of the SkillsLab, Nursing and Clinical Medicine in Nairobi developed the first procedure manuals in SkillsLab in 2001-2004. In 2005 and 2006 a selection of them was reviewed and bound together in the first and second edition of the Nursing Procedure Manual KRCHN by staff from the SkillsLab Department Nairobi and Nursing Department Nairobi, Embu, Mombasa Nakuru and Kakamega MTC.

We would like to thank the following persons in particular for their contributions to the afore mentioned manuals: Agnes Mwaluko, Agnes Muendo, Charles Mwangi, Edwin Wambari, Elizabeth Mweha, Janet Wesonga, John Aswani, Karolien Haeck, Mary Mwalunda, Margaret Chege, Margaret Kinyanzwii, Margaret Njoroge, Mary Kioko, Millicent Kabiru, Mirjam Heinsbroek, Mwangi Kirubi, Mwololo Kumbu, Nicholas Ochieng', Norbert Boruett, Paul Ketele, Peter Gachau, Reuben Waswa, Rosemary Andedo, Ruth Mworia.

Furthermore, we wish to thank the following people for their contributions in reviewing existing procedure manuals and developing new ones which made the development of the first and second edition of this Clinical Medicine Procedure Manual possible: Alloys Musuya, Benedict Nzovo, Carey Francis Okinda, Carolyn Tanui, Daniel Kimwetich, Harun Chemjor, , Josephine Muia, Julius Maina, Kijungu Kishasha, Raphael Soli, David Wafula, Juma Okoth, Ben Simiyu, Kumbu Mwololo, Carolyne Meme, Florence Wachira, Zack Rwanda, Daniel Lai, Ruth Mwea Jackson Chemjor, Lucy Nziu Reuben Waswa, Marianne Darwinkel (final editing).

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YEAR 1

of the Diploma in Clinical Medicine & Surgery (DCMS) course

CHAPTER 1: BASIC COMMUNICATION SKILLS

Annex to CMS 111: Communication Skills and Critical & Creative Thinking

Communication Process & Observing

Active Listening & Non-Verbal Communication

Giving & Receiving Feedback

Expressing & Exploring Feelings

Asking Questions

Summarizing

BASIC COMMUNICATION SKILLS

Objective of basic communication skills

To relate theoretical knowledge and effective communication process to clinical communication behaviours.

Requirements

Felt pens, chalks
Flip chart with 4 markers (two different colours)
Board
Video-player and television
Simulated patients

THE COMMUNICATION PROCESS & OBSERVING

Objectives

The ability to:

- Explain the effective communication process model
- Explain the difference between observations and inferences
- To use the 5 senses in observation

The Communication Process

What is Communication

- The process of understanding and sharing meaning;
- The skills that we need in our contacts with other people

Figure 1.1: The communication process – message, sender & receiver

Exercise:
Explain your views on what you perceive from the picture in the above diagram

Communication is a process, an activity, an exchange or a set of behaviours.

Communication is a process that requires understanding – a process that does not have a beginning, an end and is not static. The ingredients within a process interact, each affecting all the others.

There are different components in the process

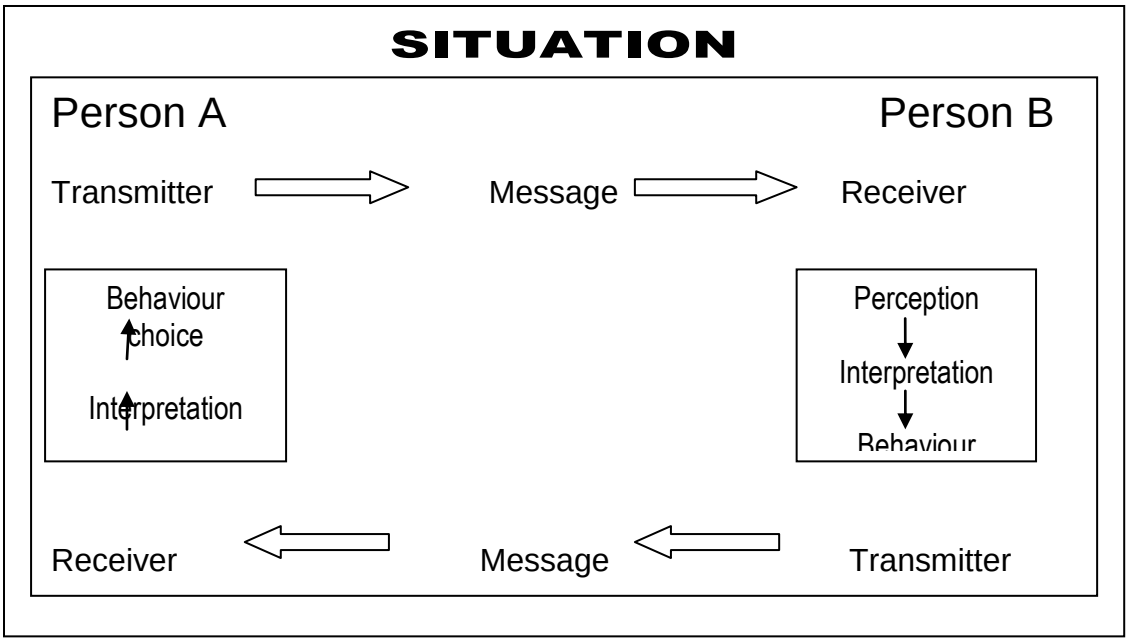


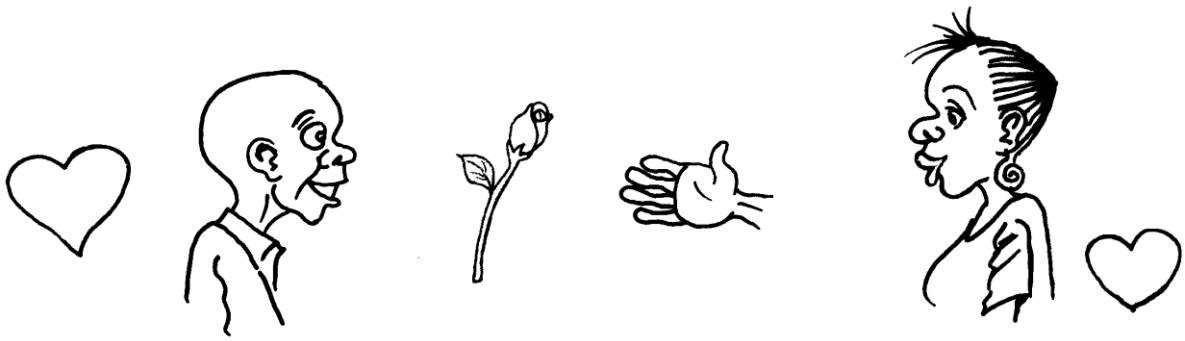
Figure 1.2: Course of the communication process

Factors within the situation disturbing the communication process ***(= Filters):***

1. The place where communication takes place (traffic noise, ringing mobile phone)
2. Presence of other people
3. Time pressure
4. Change or movement
5. Deviation from the normal
6. Repetition
7. Intensity

Factors that disturb the interpretation *during the communication process:*

1. Acceptance of incomplete information
2. Drawing conclusions and reacting too quickly
3. Generalization
4. Prejudice
5. Stereotyping
6. Halo effect
7. Identification
8. Projection
9. Personal norm



Referent	SOURCE - ENCODER	MESSAGE	CHANNELS	RECEIVER - DECODER	Feedback
	Communication skills	Code	Touch	Communication skills	
	Knowledge levels	Content	Hearing	Knowledge levels	
	Attitudes	Treatment	Sight	Attitudes	
	Socio-cultural		Smell	Socio-cultural influences	
	influences		Taste		

Figure 1.3: S-M-C-R model

The process of communication requires certain attributes so that perceiving, interpretation and comprehending the meaning of verbal and non-verbal behaviour can take place.

Some of the factors affecting effective the communication process to the** sende**r:

1. Sender wants to keep information back
2. Sender does not know exactly what to say
3. Sender is very much involved in his own affairs (exam, tired, ill)
4. Sender speaks another language than the receiver
5. Intensity, movements, repetition
6. Non-verbal communication is not according to the words

*Some of the factors affecting the communication process to the **receiver**:*

1. Knowledge and experience
2. Feelings
3. Attention
4. Views, norms, values, culture
5. Motivation
6. Mood
7. Physical condition
8. Defence mechanisms

Advantages of good communication

1. Patients are more satisfied with the service which they receive
2. Patients are more inclined to comply with medical regimes and procedures. Poor communication is a major cause of patient dissatisfaction.
3. Good communication increase comprehension and recall of info received
4. Outcomes appear to be not only psychological (e.g. feelings of satisfaction) and behavioural (e.g. compliance) but somatic, measured by improved health indices and recovery rates
5. Good communication amongst the health care team is vital for the effective care of patients.

Observing and Inferences

Observations: descriptions based on phenomena that can be sensed – tasted, seen, smelled or felt.
Interpretations: inferences or conclusions made from the information received through senses.

Exercise

Explain your understanding of interaction in this picture. What can you observe?

Figure 1.4: Observing and inferences

Inferences & Observations can be distinguished in a number of ways:

	Inference	**Observation**
Timing	Before, during or after an occurrence	At the moment of occurrence itself
Extent	Go beyond what is seen	Do not go beyond what is seen
Goal	Interpretation	Reporting
Variation	Might or might not be agreed upon between persons	Likely to be agreed upon by observers

Definition of observing:
Gathering information well selected and with a purpose, with the help of your 5 senses.

The 5 senses:
1. Hearing
2. Seeing
3. Smelling
4. Feeling
5. Tasting

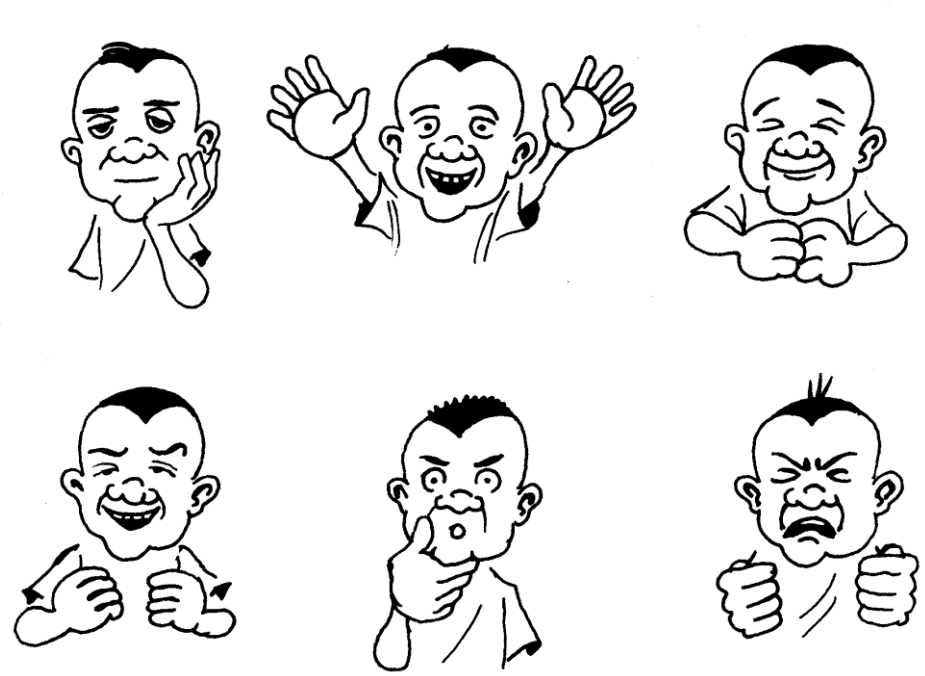


Figure 1.5: Expressions

Exercise:
Observation is subjective.
What is expressed in the pictures above?

Why observing is subjective:
1. You know what you are observing already (someone shy)
2. You have a self-image
3. You have a certain mood (also moment of the day, own health)
4. You have more or less experience with observing (essentials and details)
5. You have a certain ideal or vision (e.g. on abortion)

Conditions for good observation:
1. At regular times and in different manners observing
2. As objective as possible
3. As much as possible inconspicuous
4. As accurate as possible

Summary

Communication is a process where a source sends a message through certain channels to a receiver (SMCR-Model). It takes place in a situation where the message is observed, interpreted and followed by a behaviour choice. It is a process of action and reaction. There are a lot of factors that can disturb the communication process.

Training communication skills is learning and training essential techniques for interacting effectively. In your profession it is important to be able to surpass the level of instinctively, to dissociate yourself from your own frame of references and to be able to put yourself in another person's position. It is proven that good communication offers a lot of advantages.

Exercises

Exercise: observation

Introduction: When you **look** at someone you can see everything and you are open for all kind of information. When you **observe**, you especially look to some specific item of the total information. So, observing is looking to specific things. This exercise is also to learn to know each other.

Form pairs by taking a number out of the pot. Look for the person with the same number. This will be your partner to observe. Fill in the list after a first impression. After observing the other person during the session you fill in the second column.

Behaviour	**First view**	**Observation**
Way of sitting		
Position of the head		
Way of listening		
Eye contact		
Making contact		
Asking attention		

Discussion:
Per pair talk through the observations you wrote down. Try to find the reasons for eventual differences e.g. at first view, I had the impression that you make few contacts but after observation, I discovered you do make contacts but only for short times. Possible cause for the difference can be that I saw you standing alone very often and you did not talk with anybody. Maybe I only saw those moments and that was why I wrote you make few contact. After this discussion the whole group can discuss together a few differences and the causes, the way real observation is influencing your attitude towards the other person, advantages and disadvantages of observation, influence of your own frame of references...

Exercise: action and reaction

Group A are students who try to imagine how health workers would react in reality
Group B are students who try to imagine how patients would react in reality.

Each group tries to make an inventory of all possible behaviours that could have a negative influence on the other group, either by purpose or not.
Group A: Write on a paper: column 1 behaviour of the nurse, column 2 emotional effect on the patient and column 3 reaction of the patient
Group B: write on a paper: colon 1 behaviour of the patient, column 2 emotional effect on the nurse and column 3 reaction of the nurse

Discuss the results

Start the game again by giving column 3 to the other group

Exercise: Use of the 5 senses

Exercise: give an example of the use of 5 senses from your experience on the wards. e.g. Listening to the heart sounds; feeling the pulse in resuscitation, looking to the thorax to see respiration movements, smelling alcohol with an unconscious patient, in the past urine was tasted to measure the amount of sugar.

Exercise: factors influencing the communication process

Preparation:
Give a task to someone (something simple like put 5 chairs on a row or go three times in and out the room). Describe also the way to give the task (e.g. Hurry up otherwise you are disqualified, don't make noise...)
Let everyone pick a number on a small paper and let everyone choose. Two persons should get the same number.

Exercise:
- Let corresponding numbers give the task to each other the way they described it.
- Observe your own reaction and feeling when you heard your task.
- How was your reaction when you received your task?
- How did others react when they got their task?

Discussion:
For the receiver:
- What was your first reaction when you heard your task?
- What was your feeling about the way the task was given to you?
- Did you fulfil the task? If no, why; if you did, why?

For the sender:
- How did it feel to give the task the way you described?
- Was the reaction of the receiver the way you had given the task?

Exercise: sending versus receiving

Observation is subjective. You observe with different senses e.g. Hearing. Sometimes you don't hear what you have to hear. The result is that some things can be unclear; even more people might not be able to understand each other.

Exercise:
Two people A and B have each a pen and paper. Person A draws a picture that cannot be seen by person B. Then, person A tells person B what to draw. The purpose is that person B draws the same as person A. Person B draws what person A told him (e.g. A straight line from the middle, starting on top of the paper; a small circle on the bottom of the paper at the right side...) B is not allowed to see the drawing of person A during the exercise. A can see the activities of B, but cannot correct B. B is not allowed to ask questions to A.

Discussion:
Compare the two drawings and discuss differences and similarities. Discuss why there are differences. Is it because the instruction from person A was not clear? Was it because person B had a different size of dog in his mind when person A was thinking about a big dog …?

Exercise: everybody says the truth

Everybody says the truth. The truth is not what is said, but what you hear. Observing is subjective and the observations are different depending on the observer. It is good to discuss the differences and the reasons.

Exercise:

- Person A tells a story about something she encountered. It is taking on cassette or video.
- The others listen to the story and they talk to each other.
- After that each of the observers writes down briefly what they heard.
- Thereafter the different observations are compared. Discuss the differences and what made the observations different.
- Repeat the exercise with a different person telling the story

More exercises:

- Look through a telescope and describe what you see so that another person can draw and interpret it
- Discuss advertisements and the way the situation guides the interpretation
- Boggle-game: you find different words with the same letter blocks
- 2 persons with umbrella's who must pass each other on a small path

ACTIVE LISTENING & NON-VERBAL COMMUNICATION

Objectives

The ability to:

1. Explain and demonstrate principles of active listening
2. Interpret the non-verbal communication (body language) and respond appropriately
3. Determine the importance of active listening
4. Apply active listening and non-verbal communication in practice

Introduction to active listening

Active listening is a, strenuous activity, which involves:

1. Conscious reception of auditory stimuli
2. Self awareness of the sender and receiver of the message
3. Comprehension of the message
4. Interpretation and correlation of the message and other data

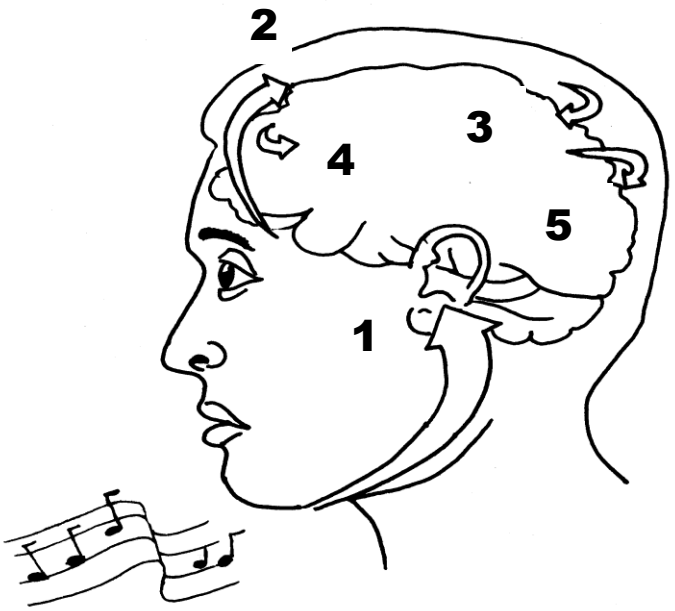


Figure 1.6: Hearing versus listening

Good listening encourages talking, coding, and decoding of the information

<u>Stimuli:</u>
The ears bear stimuli
Nerves transmit sensation to the brain
The brain attends to the stimuli
The stimuli are assigned meaning
The Stimuli are placed in short term or long term recall and affect how future sounds will be treated

You hear with your ears but you listen with your brain!

To understand the process of listening we need to distinguish between hearing and listening.

Hearing is the act of receiving sound. It is not the same as listening.

Important to note:

1. Both the sender and receiver should be aware of themselves (self-awareness) e.g. are you ready? Can we start?
2. The channel of communication should be appropriate e.g. appropriate language, tone of the voice
3. The distance between sender and receiver should be appropriated (close enough)
4. A conducive environment – interruption free (if it is room, lock the door or engage it)

Core elements of active listening:

1. Approach the client in a purposeful and unhurried manner e.g. introduction, of self the topic, the role, time available
2. Remember SOLER
   a. **S**it squarely
   b. **O**bserve non-verbal communication and maintain open posture
   c. **L**ean forward towards the client
   d. **E**ye contact much as possible
   e. **R**epeat/paraphrase/revise as often as possible
3. Put aside your own needs (e.g. smoking, taking tea, reading a magazine) and focus on the client's needs
4. Avoid interruption in the middle of the discussion e.g. telephone calls, talking to friends)
5. Demonstrate acceptance and understanding of the client
6. Encourage the client by using verbal and non-verbal indicator e.g. mmm, yes or nodding of the head …
7. Clarify or ask for clarification of unclear message e.g. when the client starts crying or in the middle of the discussion

Areas for attention to the health worker:

- Observe the client's non-verbal behaviour e.g. smiling, restlessness on the chair, yawning
- Indicate to the client that you are about to end the discussion, for example by summarizing and giving feedback to the client

Importance of active listening

1. Eliminates barriers to effective communication
2. The sender is encouraged to talk more
3. Both the sender and receiver feel respected and expected
4. Avoids a lot of repetition thus saves time
5. Avoids wrong conclusions
6. Enhances mutual relationship
7. Fosters an atmosphere of trust between the sender and receiver
8. Use to evaluate the communication process or instruments
9. Clarity of the message is ensured
10. Avoids being judgmental

Special considerations during the conversations

1. As a health worker you are not always emotionally the same
2. Clients are of different emotional status and personality e.g. shy, introvert or extrovert
3. Every client is an individual, thus similar problems are perceived differently
4. The client has come to you desperate for a solution
5. The environment should be sufficient state to accommodate all clients

Environment	Sender/Receiver	Channel	Message
Conducive environment e.g.: • Non threatening • Interruption free • Free from destructors • Appropriate facilities e.g. chairs and tables • Distance	Emotionally stable e.g.: • not anxious • Not in a hurry • Not biased A good communicator e.g.: • always relevant • aware of elements of communication process: o Paraphrasing o Asking questions o Giving feedback o Summarizing	Stimulating e.g.: • Sender comfortable with channel • Receiver comfortable with channel • Enhances communication • Enhances communication and retention of the facts	• Timely • Meaningful • Applicable to the situation • Short and clear

Table: Motivators of active listening

Sender / Receiver	Channel	Message
• Biasness • Hearing or talking deficits (lack of eloquence, partially deaf) • Time limitation • Opposite sex (can be a strong point at times) • Age • Poor listener / personality e.g. introvert • Health status	• Inappropriate e.g. loud or low • Unclear writing or words	• Untimely • Not meaningful • Not applicable to the situation • Too much at a short given time

Table: Barriers to Active listening

Introduction to Non-Verbal Communication

People learn more when seeing and listening simultaneously.

Psychologists say that:

- We learn:
  - 11% through hearing
  - 83% through sight
- We retain
  - 20% of what we hear
  - 50% of what we see and hear

Messages can be transmitted by means of body language more than what one says. One is usually more honest in non-verbal behaviour as it is not easy to watch the tongue than "watch" facial expression or body language.

Non-verbal signal can have strong effects: A comforting gesture, a hand on someone's arm, a hug, smile etc is much more meaningful than the words.

It is important to listen "between the lines, i.e. pay attention to the other person's behaviour

Functions of Non-Verbal Behaviour

1. Gives indications of qualities, attitudes and identity:
    a. People's emotions and moods. Can be observed through his facial expression, posture, sounds of his voice and gestures
    b. A person's status, age & gender can be observed from appearance, and clothing
    c. Qualities like dominance, self-assurance, submissiveness and uncertainty are expressed in body postures and gestures.
2. Supports and regulates verbal communication
3. Replaces verbal communication e.g. in case of loud noise, distance or language barrier sign language is used
4. Regulates interpersonal relations

The Relationship between Verbal and Non-Verbal Communication

1. The non-verbal behaviour is clear in itself:
    a. When actions are clearer than words in agreeing or disagreeing in a conversation: words are not always necessary to express approval or disapproval - shaking the head or using hands to regulate are strong non-verbal alternatives.
    b. One cannot smile to mean disapproval and shaking head to mean is agreeing with the point.
2. The non-verbal behaviour supports the verbal behaviour:
    a. When you like something you say it and accompany with a smile. A dislike of a person the face is dull and does not go near him.
3. The non-verbal behaviour is in contrast with the verbal –behaviour:
    a. A person says he is alright but looks gloomy. The verbal communication and non-verbal should not contradict each other if it happens then the person emitting this is not understood.

Aspects of Non-Verbal Behaviour

- The way the person speaks:
    - Volume, vocabulary, melody etc.
- Appearance (one forms first impression):
    - Physical characteristics e.g. slender, bald, short, tall
    - Physical hygiene/appearance e.g. clothing, jewellery, make up, clean
- Body posture and movement:
    - Can show whether one is confident or not, peaceful or angry, thinking hard or relaxed etc.
- Gestures:
    - Scratching head, rub skin, jerk corners of the mouth. Some gestures are obsessive and occur frequently – "tics" involuntary gestures
- Facial expression:
    - Expresses mood and change of moods or feelings. E.g. smile, frown, yawn, flaring of nostrils in anger can be noticed.

There are four zones of distance that people can keep to determine their relationship and the topic of conversation:
Closeness of both the sender and the receiver shows more intimacy and promotes effective communication. The longer the distance creates a barrier and shows rejection.

Exercises

Exercise active listening

Aim:
To become aware that active listening is built on *concentration* and *attention*.

Exercise:
Give someone a text to read. One reads 5 sentences slowly and clear. The next one tries to repeat what was read. The first one corrects where necessary. After that another person reads 5 sentences of the text.

Discussion:
Was it difficult to listen to the other? Why, why not? How could you listen more actively?

Exercise on active listening

Aim:
To become aware of your own way of listening.

Exercise:
While you have a conversation with some one else you record it on cassette or video. Afterwards you look back or listen to the conversation. Try to find out how you were listening. How could you eventually improve your way of listening?

Exercise active listening: "prohibited to listen"

Aim:
To become aware of your feelings when one is not listening to you or you don't listen.

Exercise:
Make pairs. Tell a story to each other. You can choose the subject. While the other is talking you are not allowed to listen, you cannot run away but show in your behaviour that you are not listening.

Discussion: how it feels when someone doesn't listen to you and how does it feel not to listen to the other:

Exercise non –verbal communication: Video example

Discuss the non-verbal communication on the video examples first without the sound; afterwards look another time with the sound on.

Exercise non-verbal behaviour: Eye contact

The group is walking slowly in the room. When the lecturer gives a sign, everybody stops and you look to the eyes of the one, which is most close to you. Don't speak. Repeat this several times.

Discussion: describe how it feels when someone was looking in your eyes.
How did you react? Were you aware of the reaction of the other?
Were there differences in the reactions? Why?

Exercise non-verbal behaviour: Interpretation of body language of emotions

Sitting in a circle, the lecturer says an emotion and everybody tries to express it with his body. Look for differences and similarities. Discuss this.

Exercise non-verbal behaviour: Interpretation of body language

Give a photograph of a person or persons. Describe what you can see and what the person tries to express. e.g. what profession the person can have; how old is the person; is he rich or poor; is the person happy;…

Discussion:

Are there different results, why, how does the different interpretations of the body-language influence the communication?

Exercise non-verbal communication: The use of silence

Start a conversation in small groups. Everybody can join the conversation but after 3 sentences you should stop talking and someone else should take over the conversation. The person who takes over the conversation can be any one in the group. Try between the different persons to have a silence as long as possible. Only start talking when you feel you should react.

Discussion:

How does it feel?
If you could videotape it: how are your non-verbal reactions during the silence.
How did you feel?

Exercise on non- verbal communication

Exercise:

One person out of the group takes a paper with a feeling on it. The person tries to express it with body language and the others have to guess. On the paper can be written a feeling or a profession.

Exercise:

Give a paper to two persons with 5 words on it that compose a small story. The others have to describe what those two persons act so that they use in their description the 5 words, which were on the paper, e.g.:

- Car, road, policeman, driving license, to pay.
- shop, computer, explanation, expensive, pay with a VISA card
- Pregnant women, contractions, matatu driver, drives to the hospital, go to emergency department.

GIVING AND RECEIVING FEEDBACK

Objective

To understand the importance of feedback and demonstrated the ability to apply the rules of giving and receiving feedback

Introduction to giving and receiving feedback

Definition: Feedback means communicating with the other person by providing information on how you interpret his/her message.

Importance of feedback

1. Supports and confirms positive (desirable) behaviour. The other person is encouraged to keep behaving that way
2. Can correct negative (undesirable) behaviour. The other person is invited to change behaviour.
3. Clarifies interpersonal relations; i.e. it increases understanding between people and is thus assisting in improving their co-operation.

Ways of giving feedback

1. Verbal or non-verbal
   a. "I like this of you" can have the same meaning as a raised thumb or a nod of approval.
2. Conscious or unconscious
   b. A remark like "this is boring" is consciously made, yawning is mostly done without being aware.
3. Spontaneous or on request
   c. Some people give their opinion on their own initiative while others have to be asked "what do you think about it?"
4. Formal or informal
   d. Applause in a theatre is a form of formal feedback because it is part of the show. A pat on the back is informal.

Figure 1.7: Giving feedback

All the forms of feedback mentioned above can exist in all possible variations.

Feedback is often not consciously given but it is hidden in all kinds of signals, e.g. facial expressions, signs, intonations (see also the guidelines on Active Listening and Non-Verbal Communication). They contribute to the way the other person observes, gives meaning to, and reacts to the feedback.

Many people find it difficult to give direct feedback. A number of rules have been identified to assist in giving feedback and to make the feedback most effective (see table).

12 Rules for giving feedback

1.	**Describe concrete behaviour**	Feedback should always relate to concrete behaviour. Describe the behaviour as specifically and objectively as possible so that the other person knows what you are talking about, e.g.: "You never call when you say you will call" is more concrete than "you never keep appointments".
2.	**Tell how you feel about it**	Apart from describing facts it is also important to tell what you think and feel about the facts about the facts, and the effects they have on you, e.g.: "I have the feeling that all contacts come from one side, and I don't like that" or "I don't feel like making a phone call to him".
3.	**Give useful feedback**	Do not give feedback about behaviour the other person will be unable to change.
4.	**Do not be exclusively negative**	If possible, mention both negative and positive elements in your feedback. In this way you prevent the other person from thinking that he / she only does things wrong and it makes it also easier for the other person to accept the feedback.
5.	**Make suggestions for improvement**	This applies especially to negative feedback. Tell how you think improvements could be achieved.
6.	**Be as concise as possible**	Put your feedback as briefly and concisely as possible. The longer your story the bigger the chance the other person will miss the essence.
7.	**Do not wait too long**	Feedback is most effective when it relates to recent behaviour or is connected with a concrete occurrence. If giving feedback is postponed too long, one or both parties might be unable to recall the situation or it might no longer be important to the recipient.
8.	**Be inviting**	Giving feedback is not the same as venting your aggression. Inviting means that you do not become too emotional; that you make it clear that this is your opinion and that it is very well possible that the other person has a different view. It also means that you ask the other person if he or she can understand your reaction and that you give him/her an opportunity to respond to it.
9.	**Ask for a reaction**	Ask for a reaction especially if the other person did not respond to your feedback. Ask him or her whether he/she understood what you meant.
10.	**Pay attention to the other person's non-verbal behaviour**	The other person's non-verbal communication might give you an indication of how your remarks are taken
11.	**Dose your feedback**	Give your feedback in suitable amounts, especially if you know that the other person will get annoyed.
12.	**Take the other person's resilience into account**	You should be able to balance between "giving honest opinion" and "not hurting". You have to adapt your words to the person you are dealing with.

Whether or not feedback will have any effect does not only depend on the way it is given. The effect is also determined by the extent to which the recipient is open to it and by the extent to which he/she is prepared to use it.

In most cases the recipient's interpretations are in accordance with the sender's intentions. It may nevertheless happen that your feedback is interpreted differently from the way you meant it or that you misinterpret other people's feedback. Especially in tense situations misunderstandings easily occur. In these situations you might sometimes decide not to give your feedback directly.

You do not only give feedback, you also receive it. As you expect from others that they take your remarks positively, try also to react this way to other people's remarks. Be open to them and be prepared to evaluate your own behaviour.

Below are some rules to assist you in developing a positive attitude towards feedback you receive.

8 Rules for receiving feedback

1.	**Listen**	Try to listen as open-mindedly as possible. Don't interrupt. Don't start arguing or defending yourself immediately. Make it clear to the other person that you take the remarks seriously and that you are prepared to accept feedback
2.	**Check whether you understand the other person correctly**	Summarize the essence of what you have been told to make sure that you have understood correctly.
3.	**Ask for details**	If the information given is too general or too vague ask for something more concrete. Ask for descriptions of behaviour or examples of situations in which the behaviour occurred.
4.	**Ask what your behaviour means to the other person**	Ask the other person what your behaviour means to him/her and what he/she thinks about it.
5.	**Ask from others**	Ask others whether they see your behaviour the same way.
6.	**Show honestly and how it affects you**	Show what the feedback means to you. It may frighten you, annoy you or you might like hearing it. It is important that the other person hears these remarks.
7.	**Accepting is not the same as agreeing**	You can accept the other's opinion and next reflect your own point of view.
8.	**Determine for yourself if you want to change your behaviour**	It is not a must that you change after feedback. It will depend on you. So be clear whether you consider changing or not.

Exercises on giving and receiving feedback

Exercise 1: Giving positive feedback

Make pairs and give positive feedback to each other. To start, one person gives feedback about a good thing in the behaviour of the other. Use the rules of feedback while giving the feedback.

Discuss afterwards how he/she used the rules to give feedback and what effect the feedback has on the receiver. Then change positions.

Exercise 2: Giving and receiving feedback

Use the training situations given on the next page.

Group work:
Make groups of three students.
Person A is given a certain situation and gives feedback to person B.
Person C observes how the feedback is given and what the reactions of the person receiving the feedback are. Person C can also interrupt the talk when the rules of feedback are no longer observed.
Rotate positions so that everybody takes every position.
Discuss how the rules of feedback were used and what difficulties emerged.

Plenary discussion:
Discuss afterwards how it feels to get feedback. What are the advantages and disadvantages of giving and receiving feedback?

Situations for feedback exercises

Situation 1:
You come on your duty in your ward. Your colleague from the night shift putted an infusion and did not clean the place afterwards. This is already the third time that this happens. You have a lot of work to do and before you can start, you must clean the rubbish she made. You want to talk with her about this.

Situation 2:
You are a health worker. A second year student of KMTC is under your supervision and he / she is prepared to give an injection of Benzyl penicillin to a patient. You observe that the student is too close to the Sciatic nerve in the lower medial quadrant of the buttock. You know the danger associated with injury to the sciatic nerve and you take respond appropriately.

Situation 3:
You have told your sister about a quarrel with your boyfriend. One week later, open as she is, she says in front of a group of her friends: “O don’t worry, last week my sister also had a quarrel with her boyfriend but now everything is okay”. You don’t like it that everybody knows about it now and you try to tell this to your sister.

Situation 4:
You have an appointment with a friend in town. After one hour waiting, he doesn’t come. Your first reaction is one of anger and disappointment. You know he is often distracted and maybe he just forgot it. You feel very upset about it and you want to end your relationship. Nevertheless, you decide to give him another chance. You want to speak with him about this.

Situation 5:
You are sharing a room with another student and you are happy with each other. The only thing is that she doesn’t clean the bathroom after washing herself. You always have to do it before you start using it for yourself. You get irritated about it and you want her to talk about this.

Situation 6:
You are a student and a friend borrowed your bicycle. He is not back and you need it to be in time for your exam. You are very nervous and decide to go to school by foot. When you leave the house, you see your bike. You are upset because he did not inform you he returned it. Give him feedback about this.

EXPRESSING FEELINGS AND EXPLORATION OF FEELINGS

Objective

Understanding aspects and importance of expressing feelings and the ability to explore other people's feelings in an appropriate way

Introduction of expressing feelings

Figure 1.8: Expressing emotions

Exercise:

Which feelings are expressed in the pictures above?

Feelings can be expressed both in a verbal and non-verbal manner. Expressing feelings verbally is something most of us find very difficult. But even when not expressed verbally, our feelings are often still visible to others in our non-verbal behaviour.

Examples of situations where we might non-verbally show what we feel:

- Getting annoyed with others during a group discussion but not saying anything about it.
- Disagreeing with decisions taken, without saying so.
- Meeting somebody you like, without showing it?

What it takes to express feelings

1. **Courage** It takes courage to put your feelings into words. People sometimes fear unkind / negative reactions from their surroundings, e.g.: In some cultures it is considered a sign of weakness when men express their feelings
2. **Honesty** Balance between being dishonest and being blunt.
   There are people who think honesty is essential and tell others right to their faces what they think about them. There are also people, who are so careful (afraid) not to hurt others, that they never make clear what the situation means to themselves.

Feelings are very relevant to your behaviour and if they are visible to others in most circumstances, it is important to find out why you are trying to disguise them and whether that reason is valid.

In most instances, you do not blame a person for his/her feelings of grief, joy, anger, affection or fear. Most likely, others will also accept such feelings from you.

Importance of expressing feelings

1. **Show more of yourself to others** If you keep your feelings hidden, others can see only half of you, your rational side. So it is only this half they can take into account. But is this your essential half? Conversations tend to gain in depth when important feelings are expressed.
2. **Reduce misunderstanding** You might control yourself verbally in not translating your feelings into words, but controlling your non-verbal behaviour is very difficult. Without verbalizing, others are forced to interpret your non-verbal behaviour, with all possible consequent misunderstandings.

Non-verbal expression of feelings can be very clear, but in some cases it can be necessary to explain in words what a certain situation means to you. For example, in a situation where the other person does not see your non-verbal behaviour or ignores it, you will then have to express your feelings verbally in order to intensify the non-verbal and to stand up for yourself.

Efficient and clear ways of expressing feelings

Presentation Use an I-message
Many people put their feelings into words in an indirect manner, as if they were not exclusively theirs e.g. “I feel very disappointed” is much clearer than “No one would like something like that”

Construction The message always contains 2 elements:

1. How you feel
2. On what this feeling is based

In relation to construction:
Accompany the feelings with information on the occurrence or fact to which they relate: “I am very disappointed; I really studied hard and now I still have only a grade C”.
When you do not accompany your verbal expression of feelings with telling anything about the cause or circumstances the other person lacks the information she / he needs to determine how to react. For example “I feel depressed”. He / she may ask for further information but more often than not this is not done. A statement like “too bad” then dismisses the matter.

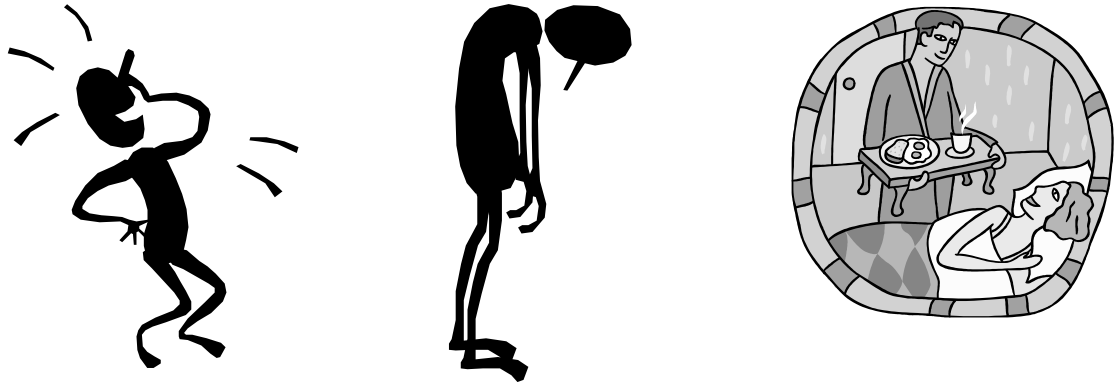


Figure 1.9: More expressing feelings

There are people who spontaneously without introduction put their feelings to the fore, others introduce first, apologizing for their feelings as it were.

What is your attitude on expressing feelings is and what considerations are decisive?

Introduction to exploration of feelings

Feelings largely determine our behaviour; therefore to understand someone's behaviour you have to be acquainted with his/her feelings.

We often find it difficult to react to someone's feelings and tend to quickly change the subject instead. By doing so we miss an opportunity to really gain any deeper contact with other people. For we ignore the very thing that makes them behave the way they behave.

Remember someone's "character may be manifested in great moments but it is made in many small ones"

In a caring profession it will be impossible not to include the aspect of exploration when faced with an emotionally loaded situation. The client's experience in these situations will often be information indispensable for making a problem diagnosis.

Exploratory questioning for feelings is a skill you cannot apply easily as a trick. It is a technique you need to acquire through practice in order to master it and for it to become a natural part of your everyday behaviour.

Guidelines on how to explore feelings

1.	**Observe the non-verbal behaviour**	Pay special attention to the congruency to what someone says. Say what you observe when you think the verbal and non-verbal are not in accordance with each other, e.g.: "You say that you are glad yet you look gloomy".
2.	**Give feedback to non-verbal behaviour observed**	Say what you observe if the other person does not speak about his/her feelings, e.g. if he looks sad, jerks the mouth "I can see you are moved".
3.	**Ask for details**	Preferably use open questions, for example "What does this mean to you"?
4.	**Avoid escaping into facts**	Have courage to ask for details about feelings
5.	**Know when to stop**	
6.	**Personalize**	You use the ***I –message*** and encourage the other person to do the same

Mistakes frequently made

Unjust reassurance
Reassuring a person is only correct if the reassurance is justified. When it is not justified it only discourages talking about feelings because you create the impression that you do not want to hear that the other person feels bad.

Too hasty identification / Attributing to another person
Some people feel such a pity for people who have a rough time that they start complaining with them even before they know why the other person feels that way. It also cuts of the route to real understanding of the other person's feelings.

Both mistakes arise from an insufficiently suppressed urge to take the lead in a conversation - a tendency which is very common in communication.

Exercises on expressing and exploring feelings

Exercise 1: Expressing negative feelings

A friend walks into your office when you are very busy and while you watch with growing irritation he/she turns the light switch on/off 10 times.
What determines whether you have the courage to express your feelings?
How would you express your feelings (practical situation)?

Exercise 2: Expressing negative feelings

Snoring sounds are more disturbing to sleeping partners than to the snorers themselves, who are usually unaware of the problem until someone complains.

Your partner is a snorer and you have complained severally but he/she denies this vehemently and you are not happy about it. Express you feelings to this situation

Exercise 3: Exploration of feelings

Form groups of four (4)
Let each member remember a recent occurrence that evoked strong positive or negative feelings.
Each in turn tells the facts around the occurrence.
One of the others next tries to obtain information, tries to explore, about the feelings connected to this occurrence.
Two other observe and give a feedback about the exploration.
Roles are then swapped.

ASKING QUESTIONS

Objective

The ability to use the art of asking questions efficiently while communicating with patients, relatives or colleagues

Specific objectives

While communicating with patients, relatives or colleagues, the health worker is able to:

1. Use specific types of questions – open or closed – as the situation requires
2. Ask clear and concrete questions
3. Ask questions relevant to the situation

Introduction to asking questions

As a health worker, asking the right questions at the right time is a core skill to get the correct information from the patient and central to your management of the patient.

The way questions are asked is an important factor determining the process and the outcome of any communication.

The way health workers ask for information, either from clients / patients, from relatives or from their colleagues will influence their assessment of a medical situation and their consequent actions.

Open- and closed-ended questions:

Two basic types of questions can be distinguished:

1. Open-ended questions:
    a. They do not exclude any answer-category
    b. They give minimal structure and direction to the answer so that the client has the freedom to answer in his / her own way
2. Closed-ended questions:
    c. They provide limited options for answers which are often short (frequently either “Yes” or “No”)
    d. They are easily suggestive / leading (“Was the discharge smelling?”)

Examples	
Open-ended	Can you say something more about the abdominal discomfort? Did you notice anything while urinating? When you are unable to fall asleep, what are you thinking about?
Closed-ended	Do you feel the abdominal discomfort left or right? Does your urine look dark? When you are unable to fall asleep, are you thinking about your job

Probing

Probing refers to a questioning technique whereby you try to encourage the receiver (patient) to give more specific information (“What happened next?” “How did you feel after you completed the course of antibiotics?”)

Conducting the interview

Open-ended questions are useful in exploring a problem. Probing is used to dig deeper into a certain problem. Closed-ended questions are useful to clarify the relation between the problems experienced and a certain disease. Furthermore, questions can be used to confirm whether the information you have obtained is correct. This can be done by delivering a summary of the information in a questioning way. Sometimes it can also be useful to repeat some questions in a slightly different way.

After the identity of the patient has been established or confirmed, an interview with a patient usually starts with an open-ended question like “What can I do for you?” or “Why have you come to see me?” Several more open-ended questions are normally asked (“What can you tell me about the cough?” “What other problems do you experience?”) to establish the scope of the problems and its effects on the patient. Closed-ended questioning technique can be used to clarify some information (“You said the sputum is green?”) or get specific details (“Does the sputum contain any red or brown spots”?) relevant to diagnosing and managing the patient. Repeating your question slightly differently might help the patient if you think she / he has not understood or if the answer was not clear to you.

Interviewing styles

During medical interviewing, different styles of interviewing are possible. Commonly distinguished are the “health worker-centred style” and the “patient-centred style”. In terms of communication skills being used, the latter is characterized by more open-ended questions and more probing where the health worker-centred style is characterized by a tendency to use closed ended questioning. Also, active listening and observing the patient are more prominent in a patient centred approach. All techniques tend to encourage the patient to talk freely.

Health worker centred	**Patient centred**
Questions focused on getting answers to questions arising from the medical technical references of the health worker	Questions focused on getting information on the references of the patient
Objective: collecting information about facts	Objective: collecting information about the facts in relation to the patient
Advantage: • Control over the discussion • Only covering areas which the health worker is comfortable with • Many questions can be asked in a short while	Advantage: • Clarifies the problem of the patient • Focus on solution of the problem of the patient
Disadvantage: • Easy to miss the real problem • Easy to give solutions which are not suitable for the patient	Disadvantage: • Health worker can feel uncomfortable with not leading the conversation • Issues the health worker does not feel competent to handle, might arise
Commonly used communication techniques: • Health worker talks a lot • Use of closed-ended questions • Use of suggestive questions • Little encouragement, reflection or silence	Commonly used communication techniques: • Health worker talks less and listens more • Use of open-ended questions • Use of probing techniques • Use of reflective questions • Summaries are given in a reflective manner • Encouragement and use of silence

Table: Interviewing styles

Exercises on Asking Questions

The exercises intend to encourage the learners to identify their weaknesses and personal inclinations during history taking through critical analysis and practice. The trainees in the small group have volunteers of two students (one role-playing the health worker, one role-playing the patient) conducting an interview while the others observe. All the students are given chance to practice until they are confident. The other students observe their colleagues

If possible, the interview by the students may be videotaped and replayed once or more for the students to observe. Videotaping can be a very helpful to in evaluating one's communication skills.

Exercise 1: Identifying questions

Aim:
To learn how asking good questions can help in comforting people, showing them that you listen & are interested and help to get more detailed information on how people feel and think so that any help given will be more appropriate.

Exercise:
Select 1 or 2 problematic situations encountered. Brainstorm on (open-ended) questions which could be asked to a person in such a situation.

Exercise 2: Different type of questions during interview

The two volunteers role-play while the others observe the questioning and answering taking place during the interview. Thereafter, the following is discussed:

- What kind of questions did the interviewer use?
- Were the questions always appropriate? Can you suggest alternatives for some of the questions asked?
- What are possible answers to some open questions commonly asked during general medical history taking?
- Can you mention some questions which were very clear and some which were vague?
- Did you notice some irrelevant questions?
- Do you think the questions asked by the health worker were logical and understandable to the patient?
- Did the patient also ask questions?

Exercise 3: Observing different communication skills during interview

The two volunteers play their roles while the remaining students are divided in pairs and every pair is asked to observe a single communication skill, e.g.:

- Type of questions asked and when / why
- Non-verbal communication of the health worker
- Non-verbal communication of the patient
- Type of answers given by the patient: Short or elaborate? Clear? Eliciting relevant information?

SUMMARIZING

Objective

The ability to use the different forms of summarizing effectively

Introduction of summarizing

Summarizing is pulling together the main ideas or suggestions from a more elaborate communication, for example from a conversation, a text or a small group discussion.

Summarizing can be used as a tool to give feedback to the other person and to receive feedback in return.

Functions of summarizing	Explanation
1. Brings order to a conversation	People often jump from one subject to the other. A summary should distinguish the major from the minor points of discussion.
2. Stimulates further exploration	Hearing again in brief can assist the other person to elaborate more on certain issues
3. Brings emotional statements back to the point	When somebody is emotionally affected, emotions tend to be more prominent than facts. A summary can assist to separate the emotions from the facts: "You think that your insufficient mark was not justified and you feel cheated" "I understand that you are very angry about it. You have told me so far that...".
4. Gives a rest	It gives the partner in the conversation some breathing space and time to reflect on what has been discussed and what to add
5. Shows interest	A correct summary gives evidence of active listening behaviour
6. Check the information obtained	Summarizing is a means of auditing whether you have really understood the other person. It gives the other person insight in how his information was understood. To enhance this effect, a summary should be ended with a question like "Is that right?"
7. Discourage talkative people	A short summary of content can assist to bring the conversation back to the relevant problems to be discussed and in case of a group conversation can create opportunities for less talkative people to contribute
8. Give a clear picture of similarities and differences	In a group discussion, a summary can assist in arranging similarities and differences of opinions given.

Table: Functions of summarizing

Forms of summarizing	Clarification
Repeating	Repeat part of what has been said, using the other persons words – used as an encouragement to continue talking
Paraphrasing	Restate what the other person has said – can be used as a clarification. Generally includes an emotional component which makes it more challenging and confronting than summary
Summarizing	Either at the end of a certain line of enquiry or after the whole conversation or discussion

Table: Forms of summarizing

A good summary…:

1. … is very clear

2. … is brief but complete
   A summary should contain the main points and relationship between them e.g. (content vs. feelings; similarities vs. differences; pros vs. cons).

3. … separates facts from feelings

4. … is timely, not too frequent, not too late

5. … is given in your own words
   This will prevent the parroting effect. Make sure the words used are understandable to other people.

6. ... is restricted to the topic of the conversation
   A summary always follows conversation. No new elements should be added in a summary - if you do that, it is no longer a summary.

7. … is without judgment, valuation of the person summarizing and without conclusion
   The person summarizing should leave his own opinion out of a summary, for example: “I think you take a negative view of it” is not summarizing.

8. … is sometimes done by the other person
   You can invite the other person to give a summary instead. For example, when you have given information so that you can confirm whether she / he has understood or as a clarification.

Box: A good summary

Mistakes frequently made when summarizing

1. Summarizing too much, too brief
2. Failing to distinguish between content and feelings
3. Parroting
4. Presuming your summary will be correct
5. Using your own presuppositions (instead of paraphrasing)
6. Adding your own conclusions or valuations
7. Summarizing too selectively and thus directing too much, for example:
   a. Limiting your summary to that which you agree with
   b. Only summarizing what you yourself contributed to the conversation

Box: Mistakes in summarizing

Exercises in summarizing

All of the following exercises should be followed by a discussion on the following:

- Which forms of summarizing were used? (when applicable)
- Did the summaries demonstrate the elements of a good summary?
- Which mistakes were made?
- How did the summaries contribute to the conversation (when applicable?)

Exercise 1: Summarizing a video or text

The group watches a video fragment and several group members are asked to summarize it.

OR

One group member reads a fragment from the newspaper and several group members are asked to summarize it.

Exercise 2: Summarizing a conversation with different views

The trainees divide in groups of 3 or 4. They discuss on a topic on which people have many different views (e.g. politics; abortion; wild life protection). They discuss the topic for several minutes. One of them is appointed the role of summarizing (parts of) the conversation.

Exercise 3: Summarizing a complaint

Two students role-play a patient and a health worker. The student role-playing the patients demonstrates a common complaint or problem. The health worker uses the art of summarizing while exploring the problem. Others observe.

After discussing the summarizing skills, trainees exchange roles.

CHAPTER 2 COMPUTER SKILLS

Annex to CMS 112: Introduction to Computing

Introduction to Basic Computer Use

Getting Started

Word Processing

Windows Explorer

Internet & Email

Software for Medical Professions

Annex: Useful Keys and Key Combinations

INTRODUCTION TO BASIC COMPUTER USE

Introduction

As you know or you will later learn the computer world is really dynamic. With this introduction in computer use we wish to equip you with the basic skills to use a computer as a learning devise throughout your training at KMTC.
Within this first part we will provide you with the objectives and requirements of the computer sessions and some basic concepts that you will encounter while interacting with the computer. In the following parts we will take you through different procedures and exercises. We will use the following format:

- A text that appears on your screen will be displayed as: ***text on screen***
- If want you to type something it looks like: **type this**
- Menu commands are shown like: Choose File
  Combinations of keys at the same time look like: Ctrl+S
  A procedure or exercise will appear in a box: procedure

Objectives

After completing the SkillsLab sessions on computer use you will be able to:

1. Start your computer and log on
2. Use Windows to start and quit programs
3. Use Windows explorer
4. Use Windows to store and organize documents
5. Use MS-word to create and edit a document
6. To send and receive e-mail
7. To use internet to search for medical information
8. Use medical programs as learning tools

Requirements

A personal computer (PC) with the following programs:

- Windows (1998 or above)
- MS Word (1998 or above)
- Outlook (1998 or above)
- Internet Explorer (1998 or above)
- Adam Interactive Anatomy

Basic concepts

PC (Personal Computer)

A Personal Computer is a tool that can help you with your work with words, numbers, graphics, and communication. Also laptops and notebooks are types of personal computers, they look different but they perform the same jobs.
The main components of a PC are Software and Hardware.

Software

Software is the brain of the computer. The software tells the hardware what to do, without software your computer has nothing to do, like a car without a driver. Two important types of software are:

System software (or operating system): The basic software that makes everything else run. Most computers run on system software called Microsoft Windows.

Application software: The software doing the work for you, like: word processing, games, send and receive your e-mail etc.

Hardware components of the computer

Hardware is the physical part of the computer, anything you can touch or see.

Console (or system unit): The box in which all files and software are stored. It is the main component of hardware and any other hardware component is connected tot this console. If you look at the outside of the console you will see various buttons, lights and holes into which you plug in the rest of the system. Some of these holes are:

- Slot for floppy disc drive– usually called A: drive
- CD ROM or DVD drive – usually called D: drive
- USB port – often called E: drive

These drives can read information from a floppy, CD, DVD or memory stick (also called flash disk).

Monitor: The TV-screen on which information stored in your computer can be displayed.

Mouse: It is one of the devices that allow you to communicate with the computer. When the mouse is moved, the computer responds by moving a mouse pointer or cursor on the display screen. When you click on one of the buttons on the mouse your computer will perform an action depending on the place of the mouse pointer on your screen.

Key board: Is the thing you type on like a typewriter but with Ctrl keys, Arrows (for taking you up, down, right or left), and special Function keys. It is another device to communicate with your computer.

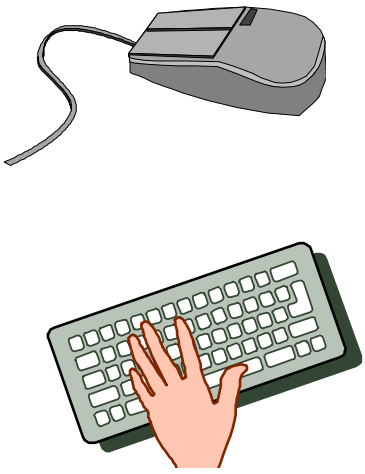


Figure 2.1 Mouse and keyboard

UPS (Uninterruptible Power Supply): It is a battery that keeps your computer running for a short while when the power goes out. It will allow you to safe your work and turn the computer off properly.

Network
A computer network is a collection of computers that are physically connected by network cables. Networks are used for sharing resources such as files, programs, and printers.

Server
The server is the unit that controls the network. This unit can be seen as a computer with an enormous memory (storage) capacity which enables each user of the network to share the network resources.

User account
A user account provides you entry to the computer resources. Each user account consists of a unique user name (to identify you as a user) and password (to prevent unauthorized persons to use your account).

Internet
Internet is composed of hundreds of thousands computers all over the world. The computers send and receive information, and most important, they store information. You can access the Internet by using a web browser.

Internet Service Provider (ISP)
An ISP is a company that sells access to the Internet. You pay such a provider to get access to Internet.

Web Browser
A Web Browser is software that helps you to get access to Internet. A common one is Internet Explorer.

Search engine
A search engine is software that helps you search information on the Internet. The most commonly used web browser is called Google.

GETTING STARTED

Starting the Computer and Logging on

Procedure: Starting the computer and logging on

Step 1	Turn on the UPS by pressing the switch on the UPS to the digit 1
Step 2	Turn on the computer by pressing the start button on both the console and the monitor. Both buttons have a similar image with a circle cut by a vertical line on the top.
	WAIT until he logon information dialog box appears
Step 3	Press Ctrl+Alt+Del to log on
	Figure 2.2 appears:
Step 4	Type in your User name and your Password and click OK

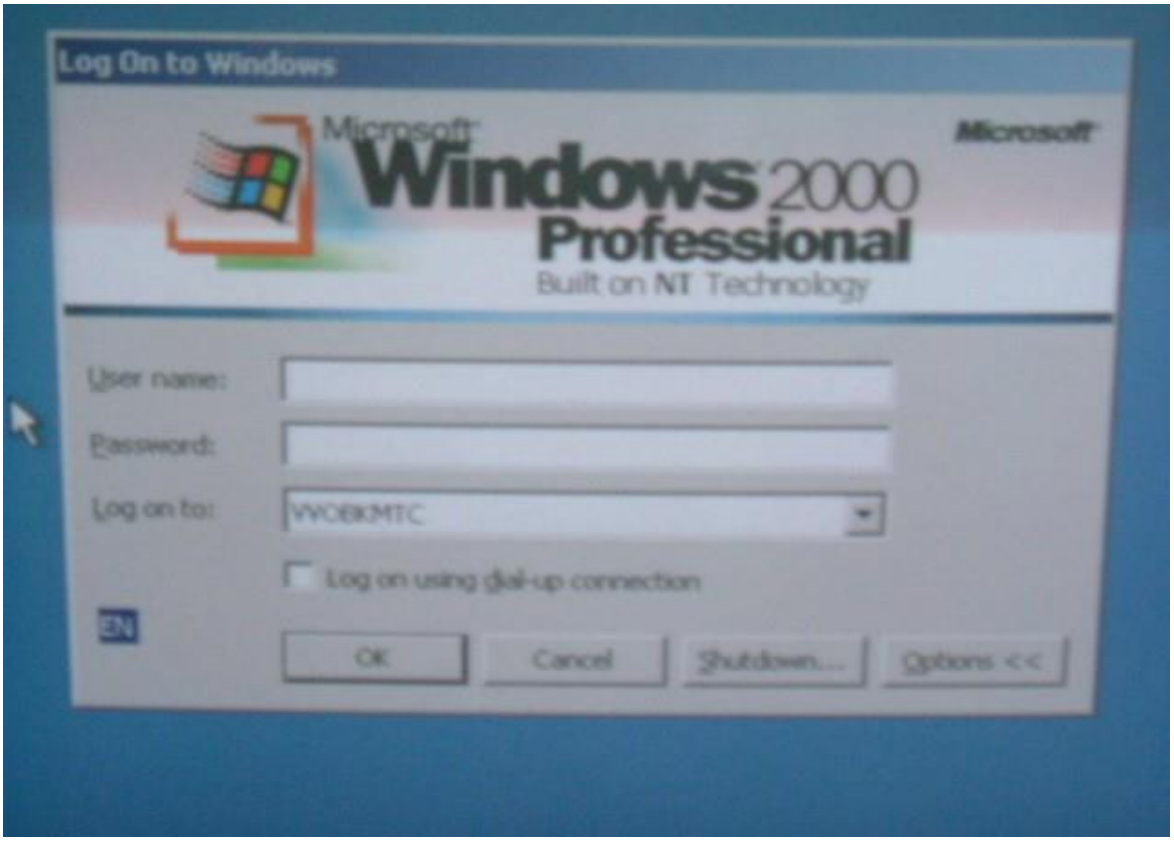


Figure 2.2: getting started – Log on screen

After starting your computer, the operating system named Windows will come to life. You will see the basic screen of Windows which is called the Desktop as shown on the following page.

The basic things you can see on your desktop are:

Background: It is possible to change this picture for your favourite picture but that is something you can try out later.

Icons: These little pictures are actually short cuts to programs, folders or files. So it is not the thing itself but when you activate it, it will bring you there.

Taskbar: At the bottom of your desktop, the taskbar is your tool to control the Windows operating system. One important thing on the taskbar is the Start button on the left side. It is your entry to the Start panel from where you visit various important places and start most of the programs you use in Windows.

Figure 2.3: Background, icons and taskbar on desktop

Exercise 1: Warming up with basic mouse operation

There are several operations you can perform with your mouse, let's start with the basic ones. Hold your mouse with a gentle grip while it is placed on the mouse pad. Make sure your index finger rests on the left mouse button. Now let's try some basic mouse operations:

Point the mouse

When you are told to "point the mouse" you move the mouse around by rolling it on your mouse pad. Simultaneously you will see a mouse pointer moving around your screen and you can actually point at something.

Try out what happens when you point at the small icons on the right side of the task bar at the bottom of your screen. What does it tell you?

Exercise 1 continued: Warming up with basic mouse operation

Click the mouse

Once you have pointed something you can click one of the buttons on your mouse. Most operations take place with your left mouse button. Unless we tell you explicitly to click the right mouse button, expect to click the left button when you are asked to click. Clicking the mouse will activate different type of operations, e.g.:

- Selecting something: click once at one of the icons on your desktop and describe how you can see that you have selected it
- Opening a menu: click once on the Start button and see what kind of menu pops up
- Closing a menu: just click next to the popup menu and it will close again

Double click the mouse

Opening a program or folder: click twice (rapid clicks in a row at the same spot). Try double clicking some of the icons on your desktop. Close whatever you have opened by clicking once on the white cross in the red box on the right top of the window or program you have opened.

Drag the mouse

Dragging with the mouse is used to:

1. Select a group of items on your screen
2. Pick up and move an item on your screen

To drag with the mouse, follow the steps below:

1. Point the mouse at the icon you want to drag (choose any from your desktop)
2. Press and hold the mouse button down
3. Move the mouse until your item is at the location of your choice
4. Release the mouse button.

If you want to drag to select a group of items follow these steps:

1. Point the mouse just left of the group of items you want to select
2. Press and hold the mouse button down
3. Move the mouse to the right and down and draw a rectangle around the items you want to select
4. Release the mouse button and you will see the colour of the selected items turn dark
5. Try to drag this group of selected items like explained before, just start pointing at one of the selected items

Shutting down

Procedure: Shutting down

When you have finished using your computer, you must shut it down before turning off the power to the computer. This enables the Windows program to perform some important housekeeping activities.

Step 1: Open Start and click the shut down icon.

Step 2: A dialogue box opens and asks you if you want to shut down. Click OK

Alternatively a dialogue box might open with several options. Select turn off

WORD PROCESSING

Introduction

Word processing is one of the most common uses of computers. The computer can help you type and edit texts in far more sophisticated ways than the traditional type writer does. The most important advantage is that you can keep changing your document until you are satisfied. Below are some exercises to introduce you in the basics of MS-Word, which is the most commonly used software package for word processing.

Loading MS-Word

Procedure: Loading MS-Word

There is always more than one way to load a program. This also applies to MS-Word, which is one of the MS Office applications. We will show you two ways:

Step 1	Open Start
Step 2a	Most probably you will see the icon of Microsoft Office Word in the list of favourites on the left side of your Start panel (see figure below).
	Click the Word icon to load.
Step 2b	Another route is to point at All Programs and then Microsoft Office from the list that appears.
	Another list will appear: choose Microsoft Office Word to load

Once you have loaded the program, MS-Word will automatically start with a new empty document (see figures 2.4 & 2.5 below)

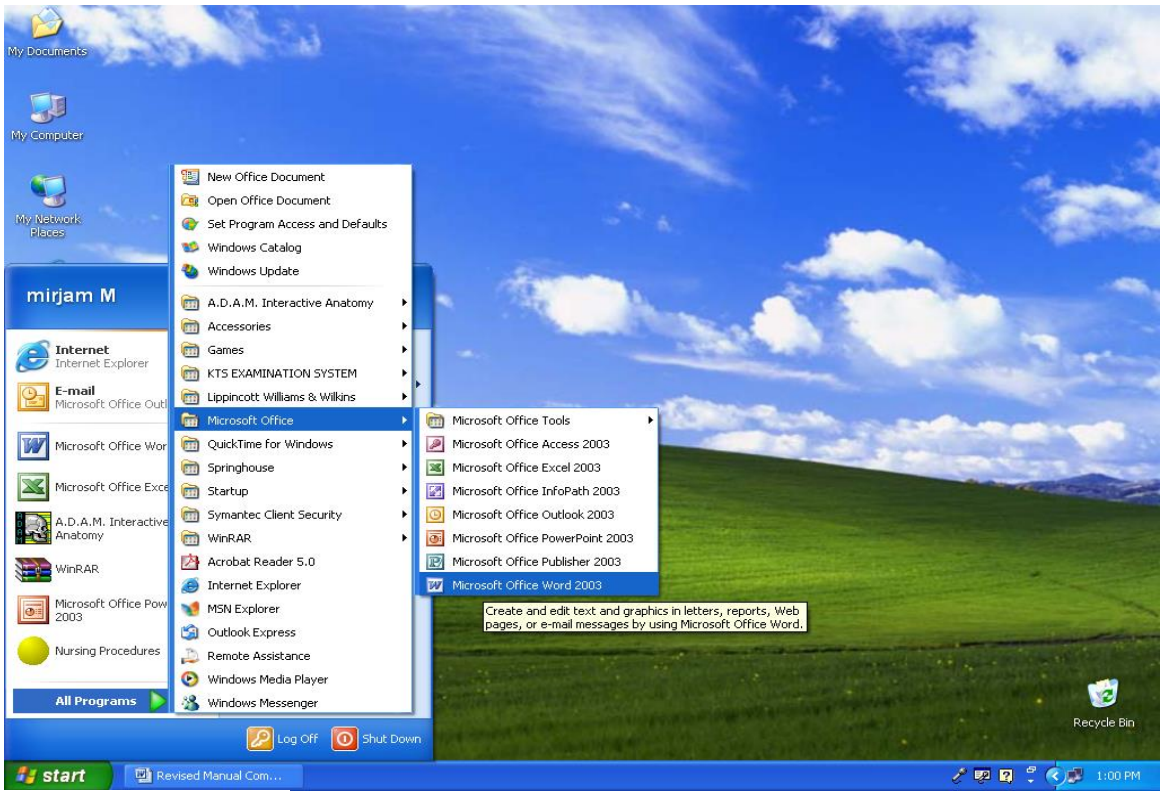


Figure 2.4: Loading MS Word

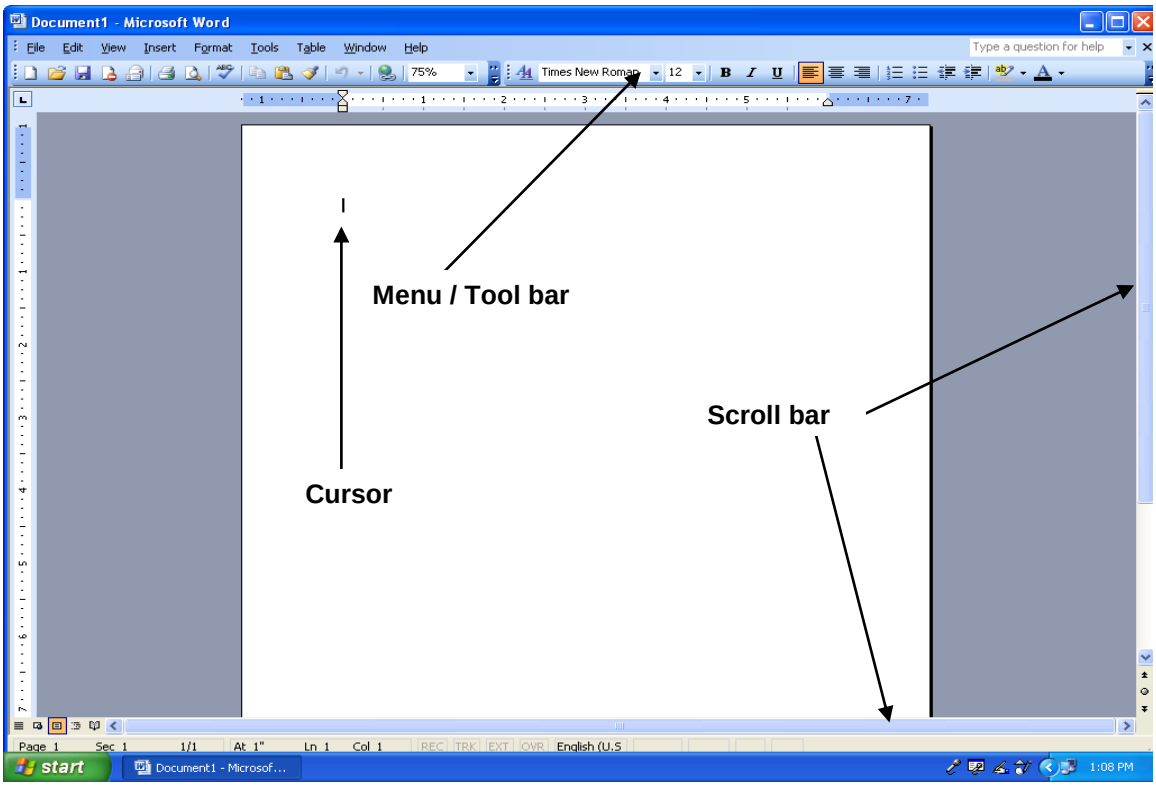


Figure 2.5: Empty MS Word document

Some important features of the screen

(See figure 2.5)

Tool or Menu bar:

The tool or menu bar is located under the title bar, and displays the names of all available menu lists with command options.

Scroll bar:

Two scroll bars on the right and the bottom of your screen can be used to view information that does not fit inside the window.

You can click the arrows or the scroll bar to move around from top to bottom or from left to right within your document.

Cursor:

The cursor is the small vertical line that shows you where you are. Any typing action you undertake will appear there.

Saving a Document

Procedure: Saving a Document

After loading MS Word automatically creates a document called ***document 1*** (see title bar on top of your screen). It is important to safe this document under a new name in a folder where you can retrace and reopen it later.

Step 1: Click File on the menu bar below the title bar

Step 2: Click Save As on the menu list that appears

Step 3: Choose the folder My Documents from the menu list on the left of the screen that appears

Step 4: Give your document a name (e.g. **my first document**) by typing the name in box right of the words ***File name***

Step 5: Click Save to actually save your file in the folder ***My Documents***
You will see the new name appearing in the title bar at the top of your screen

Exercise 2: Creating and editing a document

Let's try to make something of your first document:

1. Type a short health message on prevention of HIV and AIDS
2. Format the text by using different font sizes, bold text and other relevant formatting tools from the menu bar
3. Do not forget to save your document: The first time you save a document you have to use the procedure as described above. You can use the floppy disk icon on the menu bar or Ctrl+S to save the document more quickly once you have named it
4. Compare your document lay-out with that of your fellow students and exchange the different format tools you have used

WINDOWS EXPLORER

Introduction

In the previous paragraph you have created your first document or file. For sure you will create more files in the future. To handle all the files you must organize them so that you will be able to retrace them when the number of files increases. Windows explorer can help you organize and find your files. Let's find them first by using the tools to view and search for files.

Viewing and Searching to Locate Files and Folders

Procedure: viewing and searching files and folders

View when you know where to go

Step 1: To open Windows Explorer you can press the E + Win key (the key next to the Ctrl key on your keyboard).
Another way to open it is to open the Start panel and find the program under All Programs > Accessories > Windows Explorer
Windows Explorer will open as displayed in the figure below. What you see on the left side of the screen is the Folder tree. It shows you the organization of folders and drives.
Step 2: By clicking the folder of your choice the content of this folder will be displayed on the right sight of the screen.
Step 3: Clicking the + sign right of the folder or driver you can reveal the subfolders.
Step 4: Clicking the – sign right of the folder or driver you can hide the subfolders again.

Search when you don't know where to go

Step 1: Open Windows explorer as explained above
Step 2: Click the Search icon on the menu bar on top of your screen
Step 3: Click the item you are searching for from the screen that appears (usually a file or folder)
Step 4: Enter a relevant search key in one of the empty boxes that appear in your screen.
Step 5: Start the search by clicking the Search button at the bottom of this screen. All documents matching your search key will appear on the right side of your screen. You can open them by double clicking.

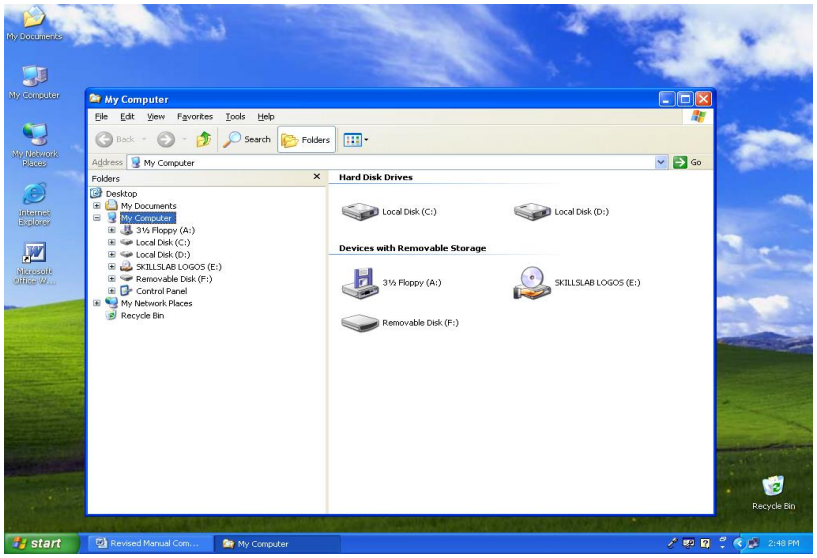


Figure 2.6: Viewing files and folders

Organizing Data: Creating Folders and Sub-Folders

As you have seen Windows has organized files in folders and subfolders. Maybe you have also noticed that there is some logic in the structure of folders e.g. documents and programs are stored in different folders.

You can create folders yourself to organize your data in a logical way. One golden rule is that you don't change anything in the structure others have made. The best place to create your own folders for your data is within the folder My Documents.

Procedure: Creating a folder and replacing documents

Step 1: To open Windows Explorer you can press the E + Win key (the key next to the Ctrl key on your keyboard).
Another way to open it is to open the Start panel and find the program under All Programs than Accessories.
Windows Explorer will open as displayed in the figure below.
What you see on the left side of the screen is the Folder tree.
It shows you the organization of folders and drives.

Step 2: By clicking the folder of your choice (e.g. My documents) the content of this folder will be displayed on the right sight of the screen.

Step 3: To create a new folder within this folder you click File than New than Folder.

Step 4: A folder with the name "new folder" will appear on your screen.
Just type the name of your choice to give the folder a new name.

Step 5: To move your document to the new folder you can use several options:

- Click and drag the document to the folder (it looks like disappearing but when you open the folder you will find your document in it).
- Another method is by selecting the document (click once), cut it (Ctrl+X), than open the folder (double click the folder) and paste your document (Ctrl+V)
- Similarly you can use the Cut and Paste options under the Edit menu

Exercise 3: Using Windows Explorer to find and organize files

1. Find your document created in paragraph 3 by using the search procedure
2. View the folder that contains the document you created in paragraph 3 by using the view procedure as described above
3. Create a new sub-folder in the folder My Documents and name it with your own name
4. Place the document you created in paragraph 3 in this new sub-folder

INTERNET AND E-MAIL

Internet

Internet is composed of hundreds of thousands of computers all over the world. Those computers send and receive information, but most important, they store information.
The whole idea behind using Internet is to get access to all that information and to take advantage of the Internet's communication abilities.
Within Windows you use a so-called web browser called Internet Explorer to access the Internet.

You just click the Internet Explorer icon in the Start panel of your computer and it will load with a screen like in the figure below. Some important features of this screen are:

Web page

The figure below shows a page of information displayed by the web browser from the data stored on the Internet here.
The page shown in the figure below is the home page of Yahoo but any other information you search for will be displayed here.

Button bar

The button bar is displayed just below the menu bar on top of your screen and contains a series of useful tools like:

- Arrow icons to move back and forward to and from previous actions you took
- The red-cross icon to stop an action
- The refresh button (two green arrows going round) to tell Internet to update the Web page you are viewing e.g. when a page is not found or when graphics are not appearing well on your screen
- The home icon takes you back to the first page you saw when connecting with Internet

Figure 2.7: Information on a website on the Internet

Address box
This box holds the address of the page you visit and it is also an input box where you can type Web addresses you want to go to.

Once you are on Internet, search engines can help you find the information you are looking for. There are different search engines available but one of the most commonly used is called Google.

Loading Internet Explorer and Performing Basic Search with Google

Procedure: Loading Internet Explorer and performing a basic search with Google

1. Load Internet Explorer by opening the Start panel and click the Internet Explorer icon.
2. Type www.google.co.ke in the address box and click Enter.
   The home page of Google will appear as in figure 2.8 below.
3. Type one or more keywords in the text box in the middle of this screen (e.g. drug information) and click Google Search.
   After a few moments Google will display a page (or more) full of links to web pages that match more or less with your keyword(s).
4. Click any link you would like to give a further look and it will direct you to the page concerned.

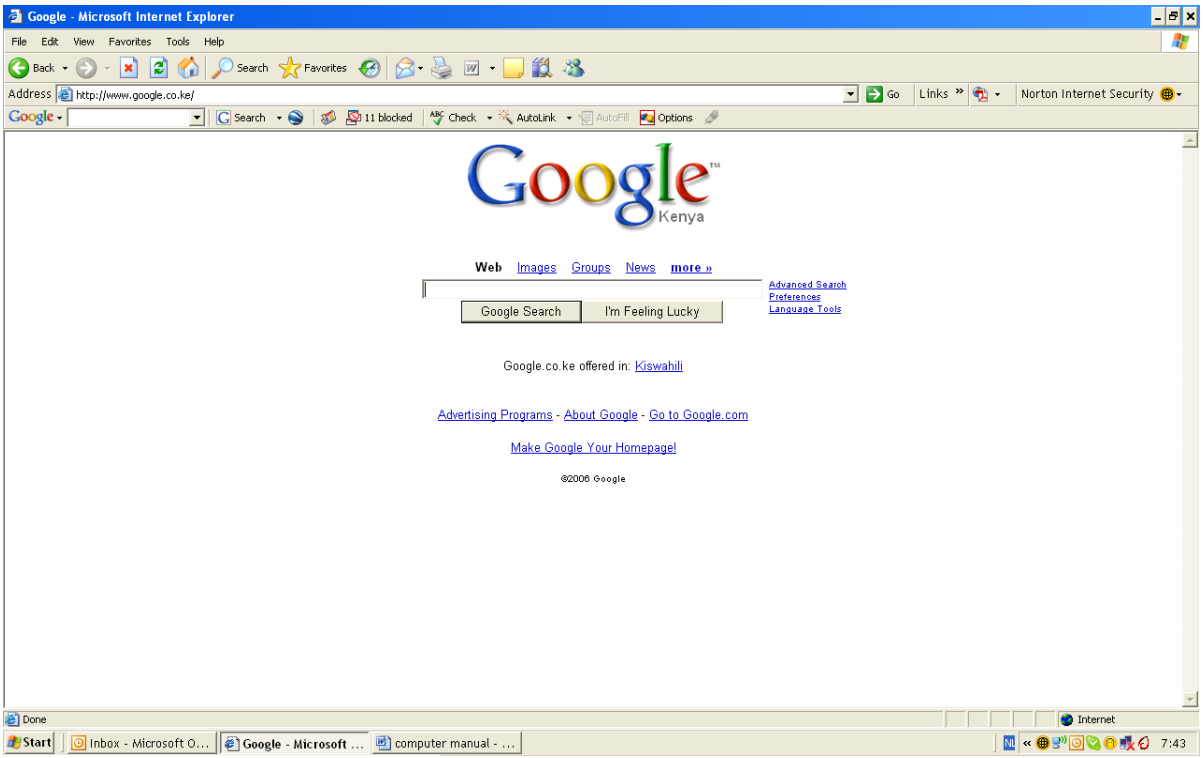


Figure 2.8: Search Engine – Google – start page

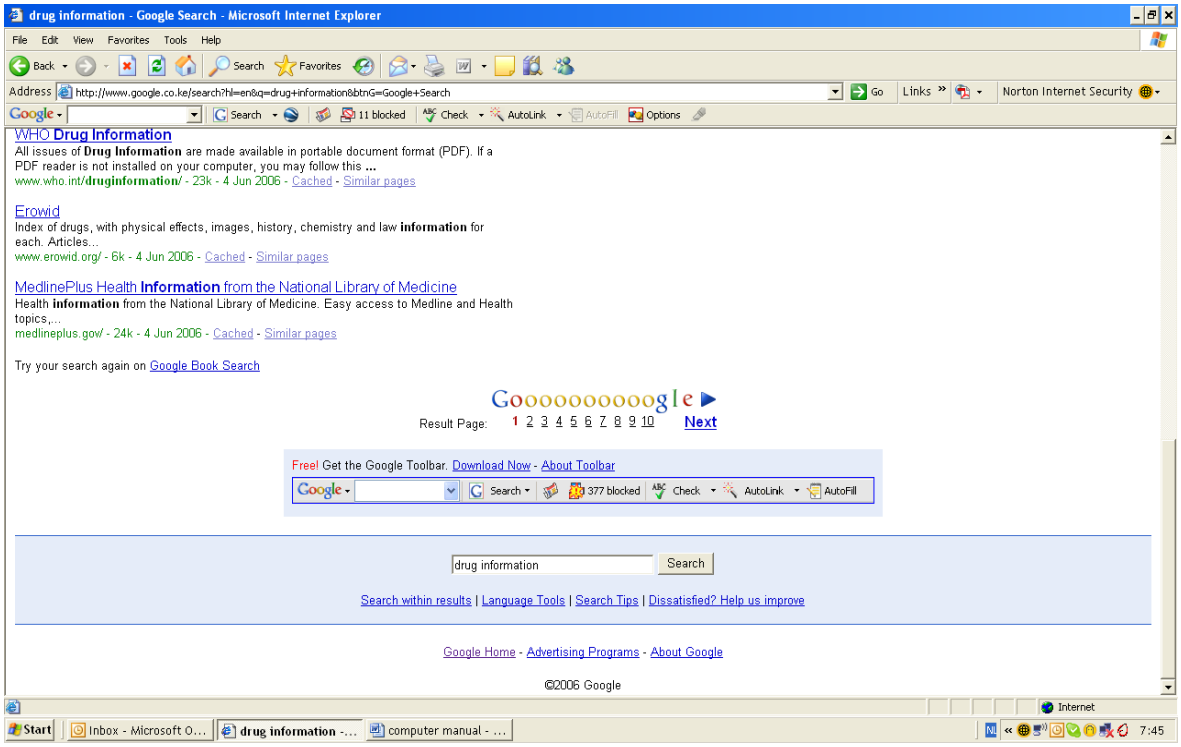


Figure 2.9: Search results Google

Tips on conducting searches

If you have too many results or results are not relevant then:

- Narrow down by using the tool search within results or advanced search
- Add or change keywords
- Use vocabulary that is specific
- Use Boolean logical operators: and, not to keep out records you don't want.

If you have too few results:

- Drop the least important keyword(s) to broaden your subject
- Add alternative terms or spelling for individual concepts and connect with the Boolean logical operator, or

Exercise: Use of search engine

As you have seen with the search for drug information, Google can overload you with an enormous amount of findings (hits or results). It is important to be selective and critical when you search the Internet.

Narrow down a search on ***drug information*** to a small number of relevant web sites.
Explain:

1. Which keys or steps you used to narrow down the list of results?
2. List the most relevant websites you have found and explain what is the relevance for you as a health professional?
3. Compare your findings with your neighbour students?

E-mail

E-mail is the digital way of sending and receiving mail. In fact it is quickly replacing the written mail we used to send and receive through the post office. You can use different programs to send and receive e-mail. Most commonly used office applications to send and receive e-mail are Outlook and Outlook express. If you don't have access to Outlook you can also use one of the (free) Internet services that supply e-mail, like Hotmail and Yahoo. We will explore the possibilities of Yahoo as this is most used by students in Kenya.

Procedure: Sending and receiving e-mail with Yahoo

1. Load Internet Explorer by opening the Start panel and clicking Internet Explorer icon
2. Type ***www.yahoo.com*** in the address box and click Enter.
   The home page of Yahoo will appear as shown earlier when loading Internet Explorer
3. Click the e-mail icon (envelope) next to the Yahoo title on your screen.
   The Yahoo e-mail log on screen will appear as on the next page.
4. Enter your e-mail ID and password as it has been given to you in the boxes and click sign in.
5. Yahoo will welcome you with the screen as displayed in figure 2.10 below.
   From this screen you have several options:
   - Click the button Inbox to view new mail that you have received.
     To open a message you double click the message
   - Click Reply to answer the message.
     To close it, click the cross in the upper right corner of your screen.
   - Click the button Sent to view any mail you have send before
   - Click Compose to compose a new message: start with typing the e-mail address of the receiver in the address box, than type your message in the message box
   - End by clicking Send

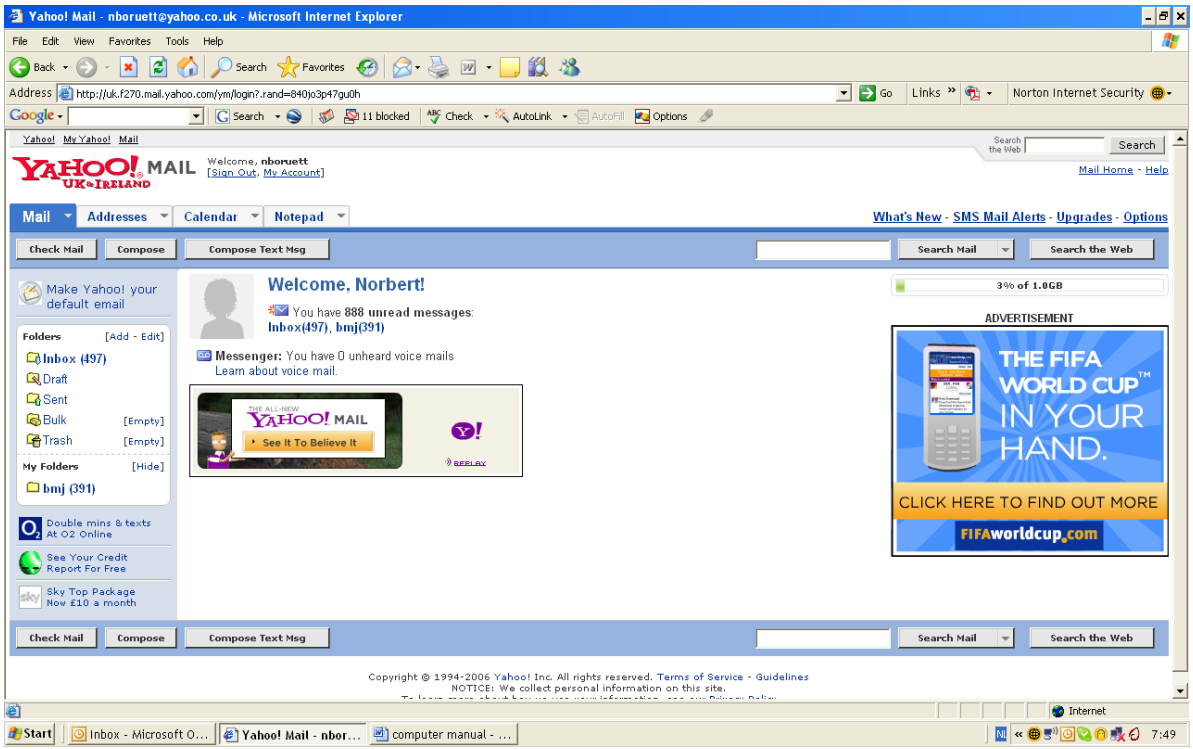


Figure 2.10: Email – log on screen for Yahoo

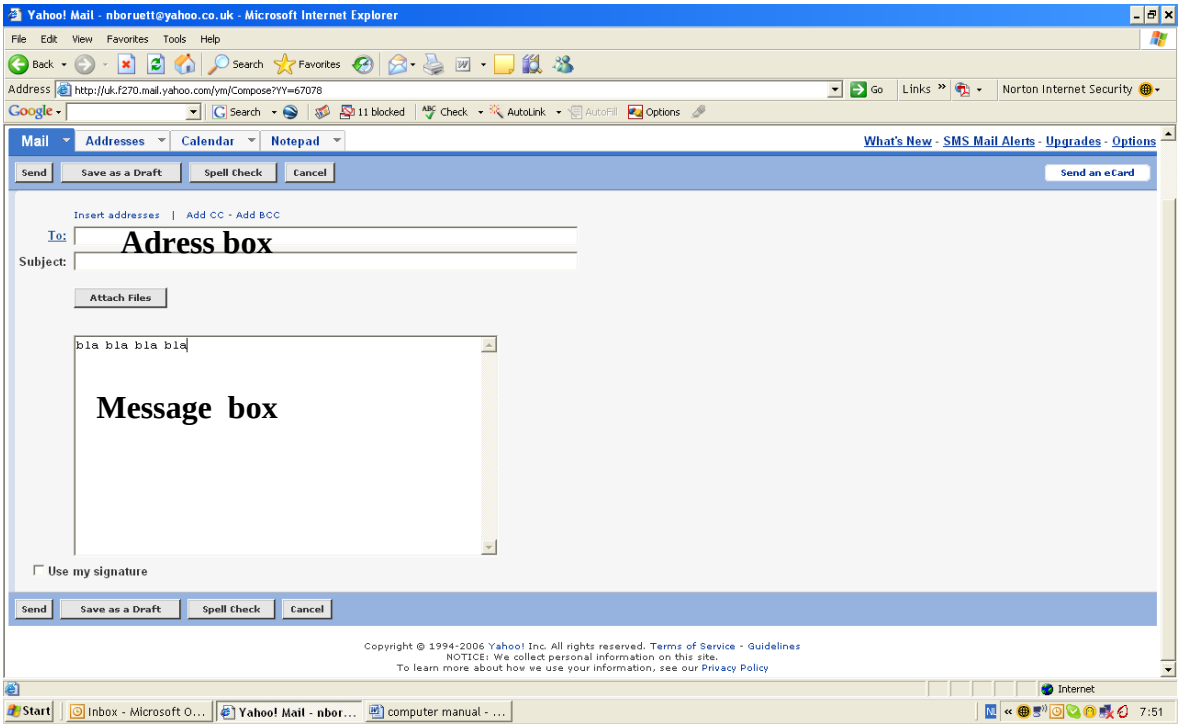


Figure 2.11: Email – writing a message

SOFTWARE FOR MEDICAL PROFESSIONS

Introduction

Different types of software are available for medical education. The content and quality of these applications varies a lot. Some applications are not much more than a digital copy of a traditional text book; others are more interactive and give you options to follow your own route through the content. Also the use of audiovisual aids differs from application to application.
Within this introduction course in computer use we would like to take you through an example of medical software. From there we hope you will have developed enough interest to go and search for more.

ADAM Interactive Anatomy

As the title says, ADAM Interactive Anatomy enhances the study of human anatomy in quite a different way than a normal text book does. The program is highly visual as it contains over 20000 pictures of anatomical structures from different view points.
Another difference with the traditional text book is that ADAM allows you as a student to decide on the route to follow and the possibilities are numerous. As much as this is an advantage it is also one of the difficulties within the program because you easily get lost.
To help you getting familiar with the possibilities of ADAM this section gives a general introduction, followed by some exercises.

Basically ADAM consists of the following four functions:

1. ***Dissectible Anatomy:*** Within this tool you can identify, highlight and extract structures in four views of a male or female body.
2. ***Atlas Anatomy:*** This tool allows you to identify pinned structures in illustrations, cadaver photographs and radiographs.
3. ***3D Anatomy:*** This tool provides several 3D models to identify structures from different views
4. ***Slide Shows:*** This tool allows you to create your own slide show with images from ADAM the way you create presentations in applications like Microsoft Power Point

Let us start the program and move around through the different functions of ADAM.

Procedure: Start ADAM

Step 1: Click the Start button
Step 2: Point All Programs
Step 3: Point ADAM interactive anatomy in the menu popping up
Step 4: Select ADAM Interactive anatomy in the pop up menu and click once
Step 5: Click Continue on the introduction screen that shows
Step 6: Open one of the four functions by clicking File in the menu bar
Step 7: Then point Open from the pop up menu and click Content. See figure 2.12

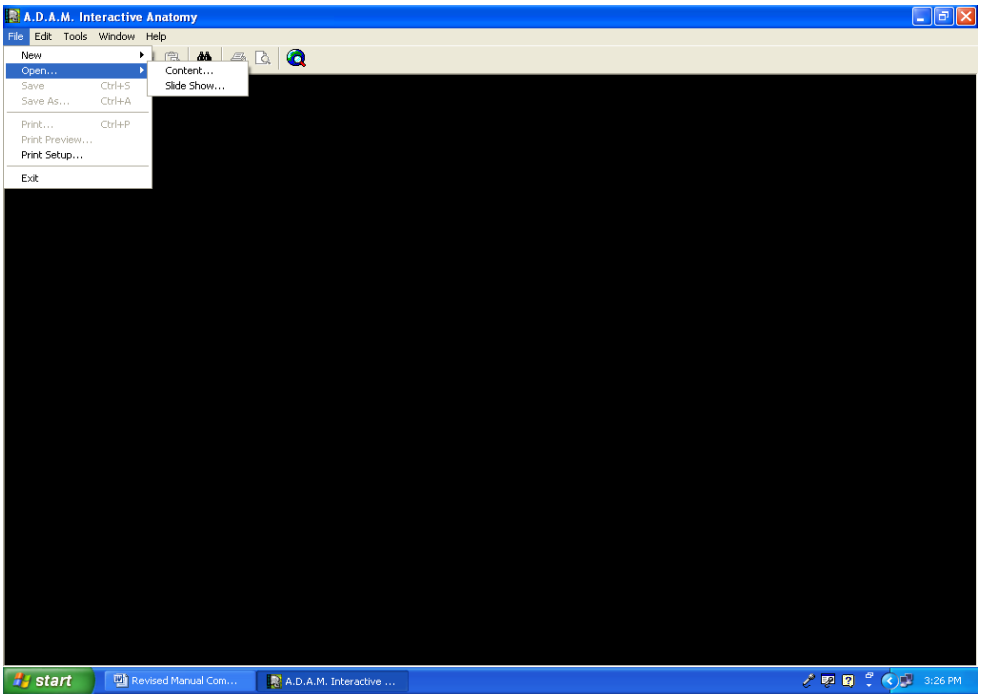


Figure 2.12: Starting Adam Anatomy

Procedure: Working with Atlas Anatomy

Once you have started ADAM as described in the procedure above:
Step 1: Click on Atlas Anatomy in the menu that appears (see figure below)
Step 2: Select the region, system, view or type of picture you are looking for
Step 3: Select specific picture you would like to see in the menu, the preview shows you the picture you have selected.
Step 4: Click Open to activate the picture you have selected

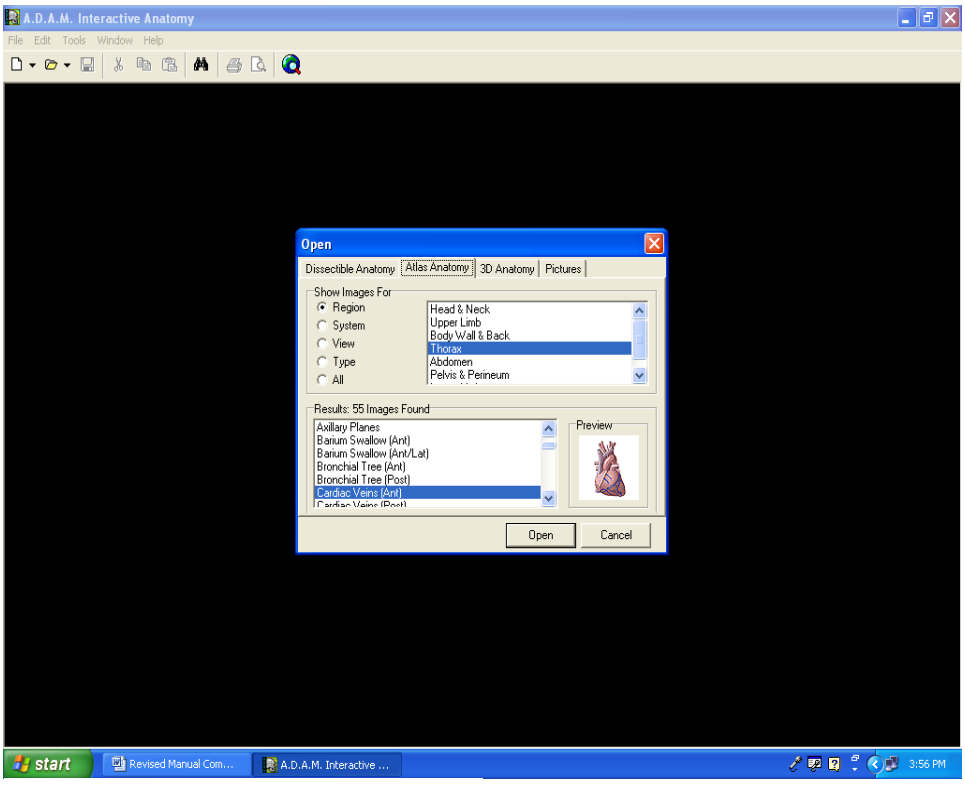


Figure 2.13: Going around in Adam Anatomy

Procedure: Working with 3D Anatomy

Once you have started ADAM as described in the procedure above:
Step 1: Choose Content
Step 2: Click on 3D Anatomy in the menu that appears
Step 3: Choose a model from the list by clicking on the model name
Step 4: The preview shows the model you have chosen, click Open to activate it
Step 5: Once the model shows on your screen you can use the arrow buttons and magnifying glass button from the toolbar left of the model, to rotate or enlarge the model

Exercise: Comparison of Atlas and 3D pictures

To understand the differences between the 3D models and the Atlas pictures it is useful to compare similar images:
1. Search for an image of the cardiac veins both in the Atlas Anatomy and the 3D Anatomy
2. Compare the two images and explain what you can learn from each of the images
3. Give one advantage and one disadvantage of both the Atlas and the 3D image

Procedure: Working with Dissectible Anatomy

Once you have started ADAM as described in the procedure above:
Step 1: Choose Content
Step 2: Click on Dissectible Anatomy in the menu that appears
Step 3: Choose a gender and view from the lists shown by clicking the appropriate button
Step 4: The preview shows you the options you have chosen, click Open to activate the model (see picture below)
Step 5: Once the model shows on your screen you can use a number of options to explore the anatomy of the body, like:
- **Structure list**: click the arrow to switch to another structure
- **Navigator**: point to orient in which part of the body you are
- **Zoom tool**: click the magnifying glass to zoom in or out
- **Identify tool**: click the arrow and then point at any structure you would like to identify
- **Transparency tool:** allows you to define an area for dissection while keeping the surrounding anatomy intact. Click the tool and then click and drag the area you want to dissect.
- **Depth bar**: to dissect or restore anatomy layers click and drag the button up and down through the bar.

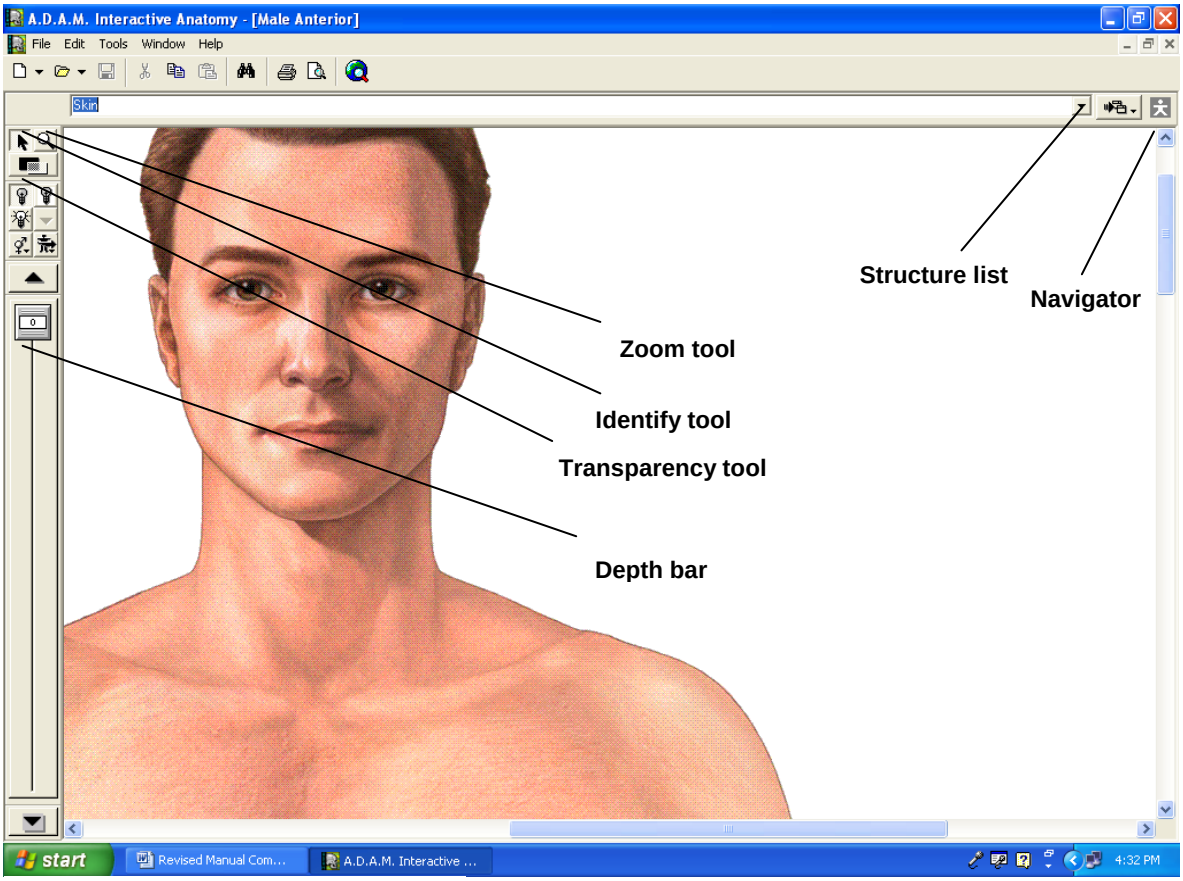


Figure 2.14: Example of images in Adam Anatomy

Exercise: Explore Adam Dissective Anatomy

We have explained to you just a few of the buttons available on your screen.

1. Find out and describe the functions of the 5 other buttons
2. Discuss in your group which functions are most useful for you

Other Medical Software

ADAM is just one example of software available for medical education. As the world of ICT is very dynamic, software changes constantly and it is important to keep up dated with new development. The way you have explored ADAM you can explore any program. Programs differ in content but also in quality. As a life long learner it is important to be aware of the possibilities of ICT but also of the weaknesses you may encounter.

Exercise: Exploring Medical Software

Ask your teacher which other medical software is installed on your system.
Explore at least two programs and answer the following questions:

1. How can the program be used to enhance your learning?
2. Describe at least two advantages and two disadvantages of the program

ANNEX: USEFUL KEYS AND KEY COMBINATIONS

Useful key combinations in Window Programs

Key Combo	Function
Ctrl + A	Select all
Ctrl + B	Make text bold
Ctrl + C	Copy selected items
Ctrl + F	Summon search / find command
Ctrl + I	Make text italic
Ctrl + N	Start a new document
Ctrl + O	Open a document or display Open dialog box
Ctrl + P	Print or display Print dialog box
Ctrl + S	Save document
Ctrl + U	Underline text
Ctrl + V	Paste copied or cut items
Ctrl + W	Close window
Ctrl + X	Cut selected items
Ctrl + Y	Repeat command
Ctrl + Z	Undo last action

Useful text editing keys

Key Combo	Function
←↑→↓ (cursor key)	Move the cursor: left, up, right or down
End	Move the cursor to the end of the line
Home	Move the cursor to the start of the line
Delete	Deletes a character right of the cursor
Back space	Delete a character left of the cursor
Insert	Switch between insert and overtype mode
Shift + cursor key	Selects text in the direction of the cursor key

Useful key combinations in Windows

Key Combo	Function
Alt + Tab	Switch to next window / program
Alt+ Shift+Tab	Switch back to preceding window / program
Alt + Esc	Cycle through running programs
Ctrl+ Esc	Display the Start Panel
Alt + F4	Close the current window
Alt + ↓	Display a drop down list
F10	Activate the menu bar
Alt+Enter	Display a Windows Control Menu

Using the Win key

On the bottom of your key board you will find a key with the Windows logo, this is the Win key.

Key Combo	Function
Win	Pops up the Start Panel
Win + D	Displays the desktop (minimizes all windows)
Win + E	Starts Windows explorer
Win + F	Display the Find Files /Search Results in the dialog box
Win + L	Lock windows or displays logon screen
Win + M	Minimize open windows
Win + R	Display the Run dialog box
Win + Break	Display the System properties dialog box

CHAPTER 3: BASIC PATIENT CARE SKILLS

Annex to CMS 153: Nursing Skills & Patient Care

Scrubbing, Gowning and Gloving

Aseptic Technique and Surgical Dressing

Administration of Oral Drugs

Injection techniques (IM & SC & Intra-dermal)

Vena Puncture for Collection of Blood Specimen

Insertion of Intra-Venous Cannula's and I.V. infusion

NG-Tube Insertion and Feeding

Gastric Lavage / Stomach Wash-Out

SCRUBBING, GOWNING AND GLOVING

Objectives

To remove as many micro-organisms as possible from the forearms and hands
To ensure hands and clothes do not contaminate sterile instruments / field

Indications

Performing and assisting in sterile operation / procedures.

Contra-indications

A health worker with the following should preferably not carry out aseptic procedures:

1. Cut wounds on fingers
2. Respiratory tract infections
3. Gastro-enteritis

Requirements

1. Wall clock
2. Sterile hand brush in a dispenser
3. Antiseptic soap in a soap dish or soap dispenser
4. Running water (hot and cold)
5. Mackintosh apron
6. Sterile gown
7. Sterile gloves in a pack
8. Sterile hand towel
9. Trolley draped with sterile towel
10. Kick about basin

Procedure

Preparation

Environment

1. Ensure the scrub area is spacious, clean and well organized
2. Get all the supplies required ready, and place them at convenient places

Equipment

1. Arrange the equipment appropriately before starting to scrub (i.e.) gloves, gowns, hand brushes etc
2. Using chittel forceps drape the trolley with a sterile towel
3. Place a pack of sterile gowns at the centre of the trolley
4. Place the set trolley at a place where it cannot be splashed with water while scrubbing
5. Place the kick about basin at a convenient place for use after scrubbing (i.e.) next to the trolley

Health Worker

1. Finger nails trimmed short and clean and without nail varnish
2. Remove all jewellery e.g. wide rings
3. Request another nurse to assist
4. Tuck in tidily the top / shirt
5. Roll the sleeves up to at least 5 inches above the elbow
6. Wear the cap and mask correctly
7. Cap should be covering all the hair
8. Mask – the short side should be above the nose and long side under the chin
9. The tapes of the mask should be tied at the back, then adjust to suit

Method: Complete Scrubbing

1. Wear the Mackintosh apron to protect your scrub suit
2. Run the cold and hot water taps until the temperature feels comfortable and the force does not splash all over
3. Use the clock to time yourself during the procedure
4. Wet the hands and arms to the elbows
5. Pick soap / swizz soap from the dispenser and lather well on the hands and arms
6. Wash hands and arms for one minute, lathering and rinsing under running water at least 3 times
7. Keeping the fingertips upper most all the time, rinse the hands to the elbow
8. Using elbow, press clutch of dispenser and pick one sterile brush
9. Wet and lather the brush, and keep the piece of soap at the back of the brush
10. Starting with one hand, put the fingers together and scrub the fingernails, then the fingers, wet the hand and the palm up to the wrist
11. Use a circular movement inside the palm, paying attention to the folds of the wrist. Rinse the soap from fingertips to wrist and repeat the process 3 times, spending about 1 ½ – 2 minutes on one hand
12. Rinse brush and soap
13. Change to the other hand and repeat the procedure
14. Drop brush in the correct receiver provided (basin) without contaminating the hands
15. Lather hands and wash up to elbow for another one minute, rinsing and lathering frequently, about 3 times
16. Rinse the soap and drop it back in the soap dish if a piece of soap was used without touching any surface
17. Rinse the hands and arms from fingers tips to elbows
18. Hold hands together and let water drain out
19. Use elbow to close the taps with hands still together
20. Keep hands together and arms away from the body, and let them drip until there is no more water dripping
21. Request assistant nurse to remove the mackintosh apron and dry it for the next use
22. Move to the gowning trolley without letting the hands go below level of trolley

Method: Drying of Hands

1. The assistant nurse opens the top flap of the sterile gowns and there you find a sterile towel
2. Pick the towel and step back
3. Blot dry fingers, webs of hands and palm well.
4. Repeat the same procedure on the other hand.
5. Dry the back of hand and forearm, using a rotating movements from wrist to elbow
6. Reverse the used part of towel, wet part inside, and using the dry part, repeat same procedure on the other arm.
7. Drop the towel in the receiver basin.
8. Keep arms above the waist-line and in front of the chest throughout the procedure.

Method: Gowning

1. Standing in front of the trolley with gowns, pick a gown and step back to prevent contamination as it rolls out
2. Hold firmly the neckband (collar) and let the bottom hem drop
3. Open the gown at the neckband and slide both hands in through the armholes taking care not to touch outside of gown with your clothes or hands
4. Ask the assistant to tie the tapes at the back starting the neck, chest then waist

Method: Gloving

1. Ask the assistant to open the outside packing of a sterile pack of gloves and drop the inside, sterile packing on a sterile field on the trolley
2. Open the glove pack, touching the lower part of the pack only
3. Arrange the gloves on the top, picking them on the folded cuff
4. Bring fingertips of the left hand together and slide in to the left glove, while holding the folded cuff with the right hand
5. Pull the glove to the wrist
6. Slip the fingers of the gloved hand in to the folded cuff of the right glove
7. Bring fingertips of the right hand together and slide into the right glove to the wrist
8. Pull the folded cuff well up over the thumb, and hold it with the thumb
9. Fold the sleeve of the gown firmly with thumb of the left gloved hand at the wrist and keep in the fold in place by the thumb
10. Fingers of the same hand pulls the cuff of the glove over the sleeve
11. Repeat the same procedure on the left hand
12. Smooth any wrinkles ensuring that the gloves are comfortable
13. Avoid touching any other un-sterile area
14. Keep hands above elbow and away from the gown to avoid contamination

Method: glove removal

1. Bring the fingertips of right hand and insert them into the proximal turn-up of the gloved left hand
2. Grasp the glove of the left hand from the outside and pull distally
3. To avoid contaminating your hand, dispose the glove in the receiver
4. Slip the fingers of your un-gloved left hand into the gloved right hand
5. Slip off the contaminated right glove slowly while removing it from the inside and by pulling the right hand until you drop it in the receiver

Figure 3.1: How to put on gloves

ASEPTIC TECHNIQUES AND SURGICAL WOUND DRESSING

Introduction

The purposes of surgical dressings are multiple. First of all they help to prevent wound infection through absorption of secretions from the wound and through preventing the wound from further damage through trauma or infection. Secondly, they provide comfort to the patient, physical as well as psychological by covering the disfigured areas.

Objective

The ability to perform surgical dressings with the use of aseptic technique
Specific objectives:

1. To have practical knowledge in order to prevent wound infection
2. To use aseptic technique
3. To cover a wound
4. To keep the wound clean

Indications

1. Open wounds.
2. Infected wounds
3. Removal of stitches/clips
4. Shortening or removing drains

Requirements

Clean trolley

<table>
<tr>
<td rowspan="2">Top Shelf
• Sterile dressing pack containing the following:
○ 2 pairs of dressing forceps.
○ 2 pairs of dissecting forceps
○ 2 gallipots
○ 10 cotton swabs
○ 5 gauze swabs
○ 1 kidney dish
○ 1 hand towel
• Additional if required.
○ Sterile stitch remover scissors
○ Sterile clip remover
○ Sterile pin for drain shortening
○ Sterile scissors</td>
<td>Bottom Shelf
• Non-sterile articles on a large tray like:
○ Pair of scissors
○ Adhesive tape/bandage
○ Antiseptic solutions as required
○ 1 kidney dish or jar with disinfectant (e.g. Jik)
○ Topical drugs if required
○ Extra sterile swabs and gauze
○ 1 pair of sterile gloves
• Receiver for used hand towel</td>
</tr>
<tr>
<td>Accessories:
• Pedal bin or plastic bags for soiled dressings
• Dressing Mackintosh</td>
</tr>
</table>

Procedure

1st Health Worker
1. Greet the patient and establish rapport
2. Explain the procedure to the patient

Assistant
1. Assist the patient to lie in the most comfortable position while exposing the side of the wound
2. Fold the bed clothes and expose the area to be dressed

1st Health Worker
1. Disinfect the top shelf of the clean trolley with methylated spirit
2. Place the sterile dressing pack on the top shelf
3. Set the bottom shelf with equipment required and wheel the trolley to the bedside
4. Scrub hands vigorously with soap and water for at least 5 minutes

Assistant
1. Remove tape from sterile pack and open it to expose sterile towel.

1st Health Worker
1. Pick the sterile hand towel and dry hands then discard
2. Using dissecting forceps, arrange instruments appropriately for easy use

Assistant
1. Pour antiseptic lotion in the gallipot carefully after reading the label together with the first health worker
2. Loosen and remove outer dressing and discard it in the pedal bin

1st Health Worker
1. Remove inner dressing using a dissecting forceps and drop it in the pedal bin.
2. Discard dissecting forceps into the jar containing disinfectant on the bottom shelf
3. Holding a pair of dressing forceps in one hand (right hand if right handed) and the second dissecting forceps in the other
4. Pick a cotton wool swab using the dressing forceps
5. Dip the cotton swab in the antiseptic lotion and use the dissecting forceps to squeeze off excess lotion from the swab
6. Swab the wound from inside outwards using a swab only once and discard
7. Repeat until the wound is clean
8. Remove any loose dead tissue
9. Dry the wound with a gauze swab
10. Discard the dressing forceps into the decontaminant / disinfectant
11. Pick the 2nd dressing forceps to apply sterile dressing
12. Discard the forceps into the jar on the bottom shelf

Assistant
1. Secure the dressing with adhesive tape / bandage

1st Health Worker
1. Thank the patient for cooperation and leave him/her comfortable
2. Clear the bedside
3. Wheel the trolley and pedal bin to the sluice room
4. Decontaminate the equipment in Jik 1.6 for ten minutes the clean
5. Discard the mackintosh and green towels into linen bag

ADMINISTRATION OF ORAL DRUGS

Objective
The ability to administer oral drugs safely

Indications
1. Treatment of conditions whereby a patient is able to take medicine orally
2. Prevention of disease / conditions
3. Promotion of health by boosting defence mechanism.

Requirements
A clean trolley containing the following:
1. Top Shelf
    a. A tray containing labelled containers with drugs in use
    b. Two (2) medicine measures
    c. Two (2) spoons (for picking capsules, tablets, pills): 5 ml (teaspoon), and 10 ml (table spoon)
    d. Two (2) special spoons for holding liquid drugs in drug container
    e. Two (2) small plates / saucers
    f. One (1) Medicine cloth
    g. Bottle / carafe / jug of water
    h. Plain clean paper for crushing tablets
    i. Hand towel
    j. Damp bottle cloth
    k. Paper for recording antibiotics and missing drugs as well as recording injections
    l. Milk in a jar or packet if required
2. Bottom Shelf Trolley
    a. A bowl of warm soapy water
    b. A bowl of clean water
    c. Receiver for contaminated items
    d. Receiver for waste materials

NOTE: In case of a patient with nasogastric tube on oral drugs, include:
    e. A small tray containing syringes
    f. Medicine measure with plain water
    g. Blue litmus paper

Procedure

Preparation
1. Ensure all patients are in their beds
2. Clean trolley with soapy water, rinse and dry
3. Assemble all items on the trolley appropriately
4. Ensure environment is conducive to safe drug administration
5. Get an assistant
6. Prepare paper for recording antibiotics, injections and missing drugs
7. Place the clean plain paper under the saucers / plates

Method

1. Begin from one end of the ward and move systematically from one patient to the next; in between patients wash hands and dry them
2. Greet and explain the procedure to the patient
3. With the help of the assistant, take the patient's treatment sheet
4. The two of you read the patient's name and confirm by asking the name to ensure he is the right patient in the right bed
5. Check for allergies in the patient
6. Read the whole treatment sheet, noting the drugs that are due to be given and confirming this with the assistant
7. Together with the other nurse, read the prescription against the drug container noting the dosage and expiry date for that particular drug (NB: Note any contra-indication of the drug)
8. If tablets, pick the correct dose from the drug container, using a spoon
9. Place the tablet on a saucer
10. If patient is to get more than one drug repeat No. 15, 16 and 17
11. Take the medicine to the patient
12. Re-check the right patient, right drug, dose time against the treatment sheet
13. Give drug to the patient and offer him a drink
14. Ensure patient swallows drug in your presence
15. Record time drug(s) was given and sign treatment sheet
16. If mixtures, shake the container lightly by turning up and down, until the drug is well mixed
17. Make sure the label on the container is held uppermost to avoid soiling label
18. Remove the cork
19. Pour drug into the medicine measure ensuring that the meniscus of the dose required in the medicine measure, is at the level of your eye
20. Replace the cork / cup
21. If patient is getting more than one mixture use a separate measure for each drug / mixture
22. Continue as per tablet
23. Wash rinse and dry medicine measure between patients
24. If the patient is on drug by injection write this on the sheet of paper you had prepared. If a drug is missing do the same
25. Record all the antibiotic drugs you gave in the antibiotic register and sign
26. Clear the equipment
27. Report

ADMINISTRATION OF DRUGS: INJECTION TECHNIQUES

Includes

Withdrawal of solution from containers
General procedure for injection
Specific steps: Subcutaneous administration
Specific steps: Intramuscular administration
Specific steps: Intra-dermal injection

Introduction

The safe preparation and administration of injections is a routine clinical responsibility that requires dexterity, sterile technique, knowledge of: actions, usual dosage, desired effect, and side–effects of the drug being given and knowledge of HOW and WHERE to give the drug.

Drugs given by these routes are not only absorbed more quickly than by mouth but are irretrievable once injected. Therefore, perfection of this art of giving injections is mandatory for clinicians.

Routes for injections: intra-dermal, subcutaneous, intra-muscular and intravenous.

Objective

To prepare and administer intramuscular, subcutaneous and intra-dermal medications safely to patients

Specific objectives:

1. Use aseptic technique to assemble equipment for giving injections
2. Select the appropriate needle and syringe for giving an injection
3. Prepare solutions and withdraw a specified amount from vials and ampoules without contamination
4. Identify various sites for giving injections
5. Correctly adapt steps for giving injections
6. Administer IV, subcutaneous, intra-dermal and intramuscular injections

Indications

1. Treatment of diseases / conditions whereby the appropriate route is by injection
2. Administration of immunization
3. Diagnostic allergic tests

Requirements

To give any injection, a syringe, a needle, a swab, and disinfectant to clean the skin, and of course the medication are needed.

Clean trolley

Top Shelf	**Bottom Shelf**
• Disposable plastic syringes-various sizes • Tray with vials and ampoules of relevant medication • Container with sterile water • File • Needles (gauges 18-25) • Insulin and tuberculin syringes • Cotton wool swabs in bowl • Container of antiseptic	• Receiver for used swabs • Disposable gloves • Clinician's order sheet or cardex • Medication sheet / card

Syringes

Syringes are available in various sizes, shapes, and materials:

1. Glass syringes
2. Disposable plastic syringes
3. Insulin syringes
4. Tuberculin syringes
5. Pre-filled syringes and cartridges

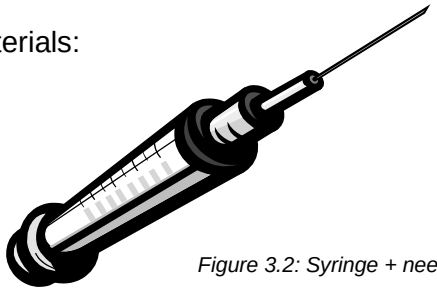


Figure 3.2: Syringe + needle

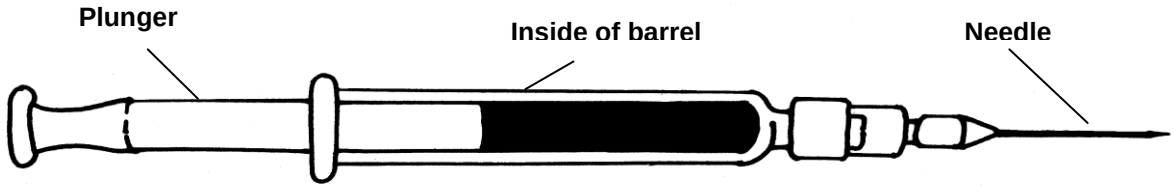


Figure 3.3: Parts of a syringe to be kept sterile

Needles

Needles for use with syringes come in standardized lengths (3/8 to 5 inches) and with standard diameters, measured in Gauges (13 to 27): the higher the Gauge of a needle, the smaller the lumen.

The needles most commonly used are ½ to 2 inches in length and 18 to 25 gauges.

Disposable needles have plastic hubs and metal shafts, and the length and gauge are indicated on the outside of the packaging.

A needle with a small lumen is less painful to the patient when it is inserted.

The choice of a needle is based on the relative viscosity or thickness of the medication. Larger needles are used primarily for blood donation and for injecting special intravenous fluids.

Medication containers	
VIAL	AMPOULE
Small bottle with sterile entry, can be multiple dose or single dose	Glass container you break to access, always single dose

Procedure: Withdrawing solution from containers

Vials

1. Wash your hands.
2. Using antiseptic swab, clean the rubber top of the vial in firm circular motion
3. Discard the swab
4. Allow the alcohol to dry to obtain maximum antibacterial action
5. Prepare the syringe and needle. Be careful to keep the needle, the syringe tip, the inside of the barrel, and the side of the plunger sterile
6. If drug is to be diluted (reconstitute) use the correct amount of sterile water for dilution and mix well
7. Draw as much air into syringe as the necessary volume of solution you've calculated
8. With the vial resting on the countertop remove needle guard and insert the needle through the rubber top of vial.
9. Inject air into the vial by pushing the plunger of the syringe into the barrel. This prevents a vacuum when you withdraw the medication.
10. Pick up the vial in your non-dominant hand and hold it upside down at eye level. Pull the plunger down to withdraw the necessary amount of medication
11. Make sure the tip of the needle is beneath the level of the fluid in the inverted vial and that you do not touch the sides of the plunger as you withdraw the medication.
12. Examine the medication for air bubbles and remove any that are present:
    a. Keep syringe vertical and flick your index finger against the side of the syringe over the air bubble
    b. Once bubbles reach the top, push on the plunger and expel the air into the vial
13. Once all air is removed from the syringe make sure you have the exact volume needed. (Modern needles and syringes are marked so that the volume in the needle and hub is considered dead space. This means that this space is full of medication when you begin injection and it is still full when the injection is completed. Therefore exact dosage in the syringe is given)
14. Remove the needle from the vial
15. Replace the needle guard. Be careful: do not hold the guard but direct the needle inside the guard holding the syringe-needle

Ampoules

1. Wash your hands
2. If medication is in the upper part of ampoule, move it down into the lower part by flicking the tip of ampoule using the index finger
3. Swab the narrowest part of the ampoule
4. Prepare syringe and needle
5. Wrap gauze around the neck to protect your hand from cuts and break the top of the ampoule away from yourself (or use file). Discard the top in a sharps container.
6. Hold the ampoule firmly in your non-dominant hand, insert needle being careful to touch the inside only
7. Pull the plunger of the syringe back
8. Withdraw the needle from the ampoule after drawing the amount of solution needed
9. With the needle pointing vertically, pull back slightly to aspirate the fluid from the needle into the syringe
10. Push the plunger gently into the barrel until the medication appears at the point of the needle. This prevents medication from being on the outside of the needle and thus irritating the tissues as the needle is inserted
11. Make sure you have the exact volume needed
12. Replace the needle guard

General procedure for giving injections

Preparation

1. Assess the type and amount of drug to be injected as well as the size and build of the patient to select the correct size of needle and syringe for the injection
2. Confirm the 5 rights: right patient, right drug, right dose, right time, right route
3. Assess whether you will need assistance to turn or restrain the patient during the injection
4. Include in the equipment the appropriate needle, syringe and alcohol swabs to be used
5. Check the medication label for a second time and calculate the volume of medication needed
6. Draw the correct dosage, using the technique described previously
7. Ensure privacy and adequate light in the injection room

Method

1. Recheck your calculation of dosage
2. Place the syringe and alcohol swab on a tray (in a child you might consider hiding the syringe in your hand to avoid frightening the patient when you enter the room)
3. Confirm patient's name (call by name; check identification band, check name on patient card)
4. Check the patient's identification band, check patient's name on the medication card
5. When explaining the procedure to the patient, check which site was used for any previous injection, and select a different site and avoid excessive use of one site
6. Select the appropriate injection site
7. Position the patient and expose the injection site
8. Clean site with a swab, using circular motion and moving from the middle of the site outwards
9. Allow the skin to air-dry
10. Place swab between the third and fourth fingers of your non-dominant hand.
11. Remove needle guard, be careful to pull it straight off and away from needle
12. Insert the needle on the syringe
13. As soon as the needle is inserted, transfer your non-dominant hand to the syringe's barrel to steady it and transfer your dominant hand to the plunger
14. Using your non-dominant hand, make the skin taut in an appropriate manner for route chosen (an injection is less painful if the skin is taut when pierced, also tautness allows the needle to enter skin more easily)
15. Hold the syringe like a dart (barrel between the thumb and index finger of your dominant hand) and insert needle with a quick dart like thrust
16. Pull plunger back gently (aspiration) to be sure the needle is not in a blood vessel
17. If blood appears in the syringe, the needle is in a blood vessel. Withdraw the needle, discard the needle and syringe, and start all over
18. If no blood appears in the syringe inject the medication by pushing the plunger into the barrel with slow, even pressure
19. Use the non-dominant hand to steady the tissue immediately adjacent to the puncture site and quickly remove the needle
20. Place an alcohol swab firmly on the injection side
21. Gently massage the injection site with the alcohol swab and discard it
22. Discard the syringe and needle in the appropriate sharps container
23. Specific sharps-only container in the room: Do not re-cap the needle guard before you discard and discard the needle only
24. General sharps container: Discard syringe and needle as a whole unit
25. Sharps container elsewhere: Re-covering the needle during transport unless you carry it in another tray, e.g. kidney dish

26. Leave the patient comfortable
27. Return the medication and equipment to the respective areas
28. Document time, date, site of injection, type & amount of drugs given
29. Sign the medication record

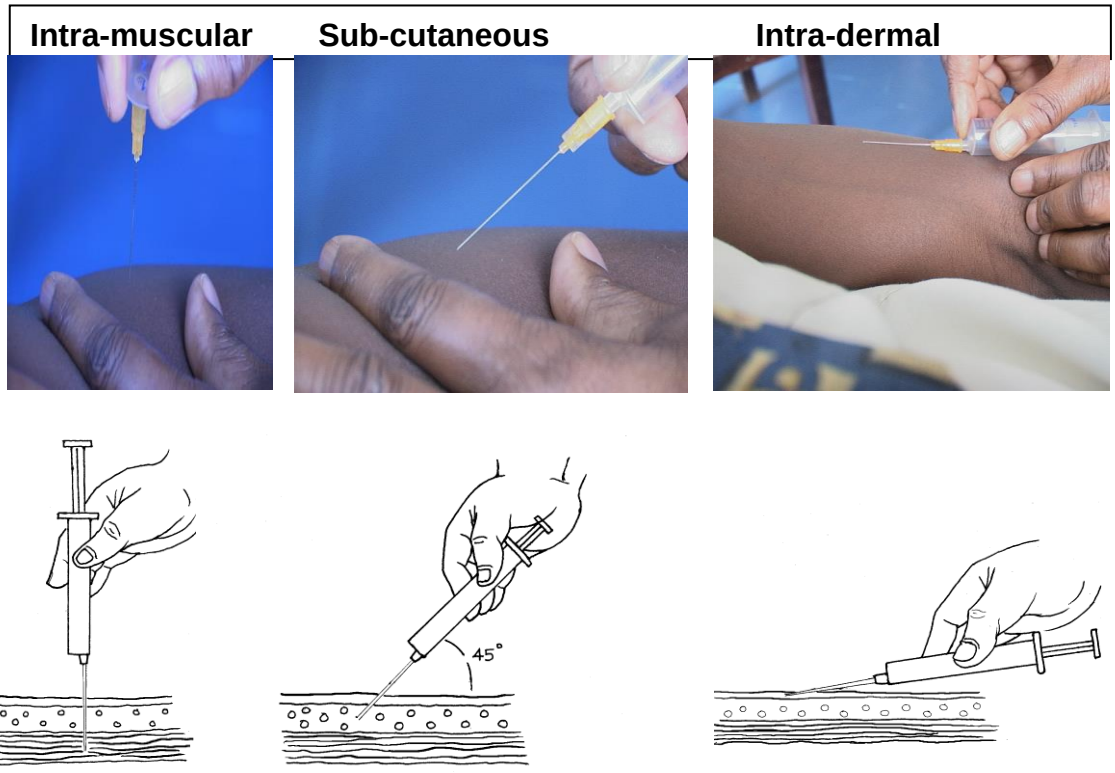


Figure 3.4: Intra-muscular, Sub-cutaneous and Intra-dermal injection

Specific steps: Subcutaneous administration

Follow the steps for general injection, with modification for the following:

Select the equipment

1. The needle: In most instances a 24-25 Gauge, ½ - 5/8 inch needle is used for subcutaneous injections. An extremely thin or especially obese patient may need individual consideration.
2. The syringe: The maximum amount of solution that can be comfortably given subcutaneously is 1.5 ml to 2 ml so a 2 ml syringe (calibrated in tenths of millilitres) is generally sufficient. Insulin and tuberculin syringes can be used for lesser amounts
3. Select the injection site:
    a. Varies with individual patients and circumstances
    b. Generally: upper arms, anterior aspects of thighs, and lower abdominal wall are acceptable sites. The upper back also can be used for patients who receive subcutaneous injections frequently
4. Select angel of injection
    a. In many cases there is sufficient subcutaneous tissue present to use a 90º angle. In very thin patients you may need to use a 45-60º angle. The angle of insertion depends on the individual and the length of the needle.

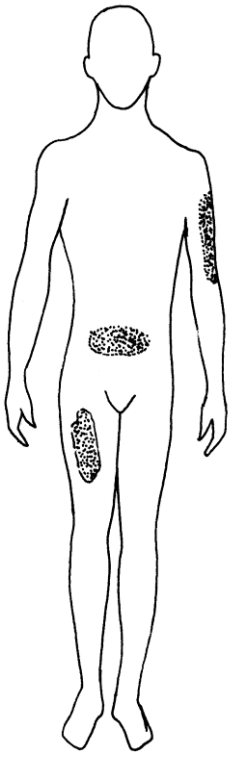


Figure 3.5: Common subcutaneous injection sites

SUBCUTANEOUS INJECTIONS	
Advantages	**Disadvantages**
1. Rapid almost complete absorption (in presence of adequate circulation) 2. Gastric disturbances do not affect the medication. 3. Patient does not need to be conscious	1. Penetrates the body's first line of defence, the skin 2. Patient teaching necessary for those continuing injections at home 3. Total amount of fluid that can be given is limited

Specific steps: Intramuscular administration

INTRAMUSCULAR INJECTIONS	
Advantages	**Disadvantages**
1. Medication is almost completely absorbed and even more rapidly than through subcutaneous administration (better vascularisation of muscle) 2. Gastric disturbances do not affect the medication 3. The patient does not need to be conscious 4. Irritating drugs are commonly given intramuscularly, because of few nerve endings in the deep muscle tissue	1. Penetration of skin 2. Possibility of nerve damage 3. Pain lingers long after injection 4. Abscess formation

Follow the steps for general injection with the following modifications

1. Select the equipment
    a. The needle: 20 to 22 Gauge (according to thickness of medication) and ½ - 2 inches length (depending on the size of patient and the site)
    b. The syringe: The maximum amount of solution that can be comfortably given intramuscular is about 3 ml so a 2-3 ml syringe (calibrated in tenths of millilitres) is generally sufficient.
2. Select the injection site:
    a. Varies with individual patients and circumstances
    b. Four sites are generally available (see below for specific considerations):
        i. Dorso-gluteal site: upper outer quadrant of the buttock
        ii. Rectus femoris and vastus lateralis site
        iii. Deltoideus muscle
        iv. Ventro-gluteal site
    b. Landmark the injection site
3. Select angle of injection: normally a 90° angle to the skin surface is used
    a) For intra muscular injection

"Z-track" technique

Sometimes used for intramuscular injection.

The main difference with the normal procedure is the aspiration and release of air together with the mediation. Follow the standard steps for injection, but adjust the following:

1. While preparing the medication, draw 0.5 ml of air into the syringe after aspirating the correct dose
2. Change needle, and attach a 2-inch (5 cm) needle to the syringe
3. Remove needle cover but do not express air bubbles
4. At injection site, pull the skin in a lateral direction, moving it at least 1 inch (2.5 cm)
5. Inject the medication slowly; then wait 10 seconds. Along with the air bubble, this delay aids in sealing solution in tissues before the needle is removed
6. Remove needle and release the skin
7. Do not massage the injection site

Dorso-gluteal site: upper outer quadrant of the buttock

The most commonly used site for intra-muscular injection. The injection is given in the gluteus medius muscle.

To identify the upper outer quadrant:

1. Divide the buttock into quadrants and select the upper outer one
2. Use the landmarks of the dorso-gluteal site (upper iliac crest, the inner crease of the buttock, the outer lateral edge of the patient's body, and the lower edge of the buttock or inferior gluteal fold). Identify them by palpation, not merely by sight.
3. Give the injection 2 to 3 inches below the crest of the ileum in the upper outer quadrant.

Observing these precautions lessens the risk of injecting into a large blood vessel or the sciatic nerve.

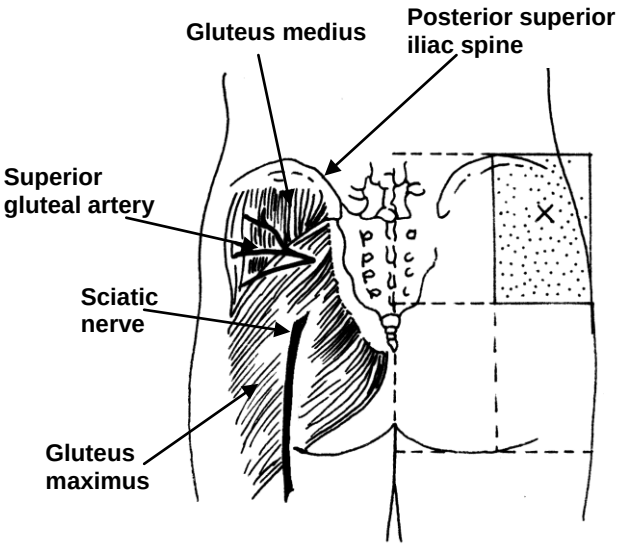


Figure 3.6: Dorsogluteal site for IM injection

Rectus femoris and vastus lateralis site

This is the site of choice for infants and small children who are not yet walking and whose gluteal muscles are not well developed. It can only be used for small injections. When using this side the needle should only be inserted to a depth of 1 inch.

The muscle that runs down the anterior surface of the mid-lateral thigh called the rectus femoris and is also available for intramuscular injection in the dorsal recumbent or sitting position. The lateral thigh is suitable because it is relatively free from major nerves and blood vessels.

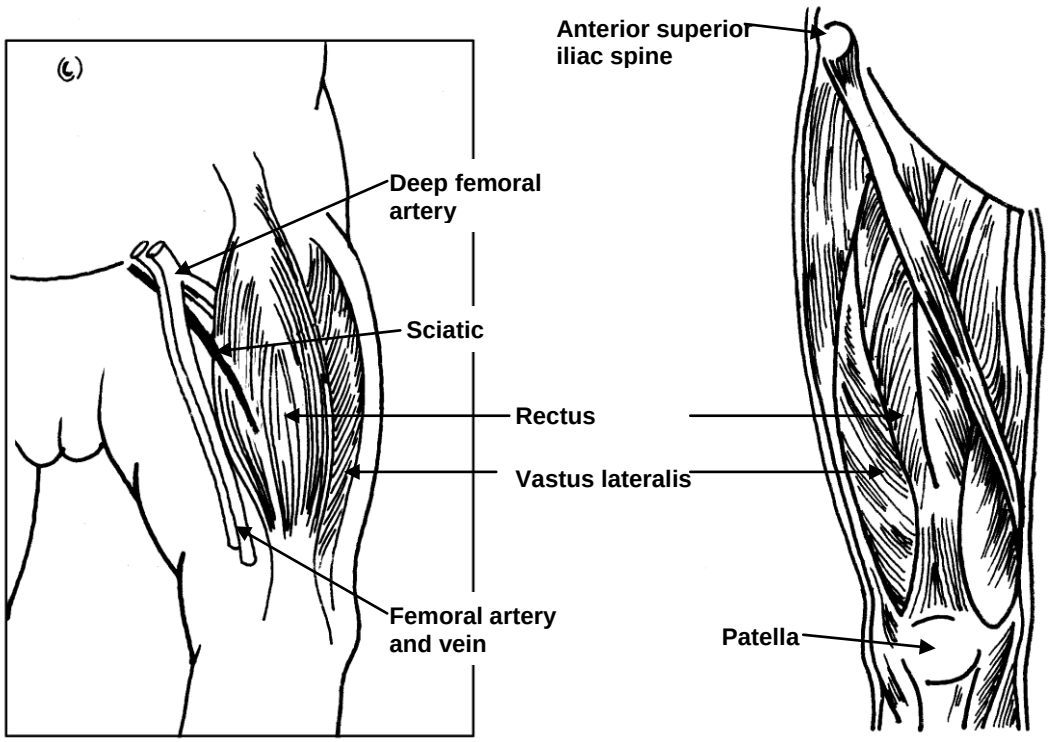


Figure 3.7: Rectus femoris site for IM injection in infant (left) and adult (right)

In adults the superior boundary of the injection area is a hand's breadth below the greater trochanter, the inferior boundary is a hand's breadth above the knee. On the front of the leg the mid-anterior thigh serves as a boundary. On the side of the leg the lateral thigh is the boundary. The result is a narrow band (approximately 3 inches wide).

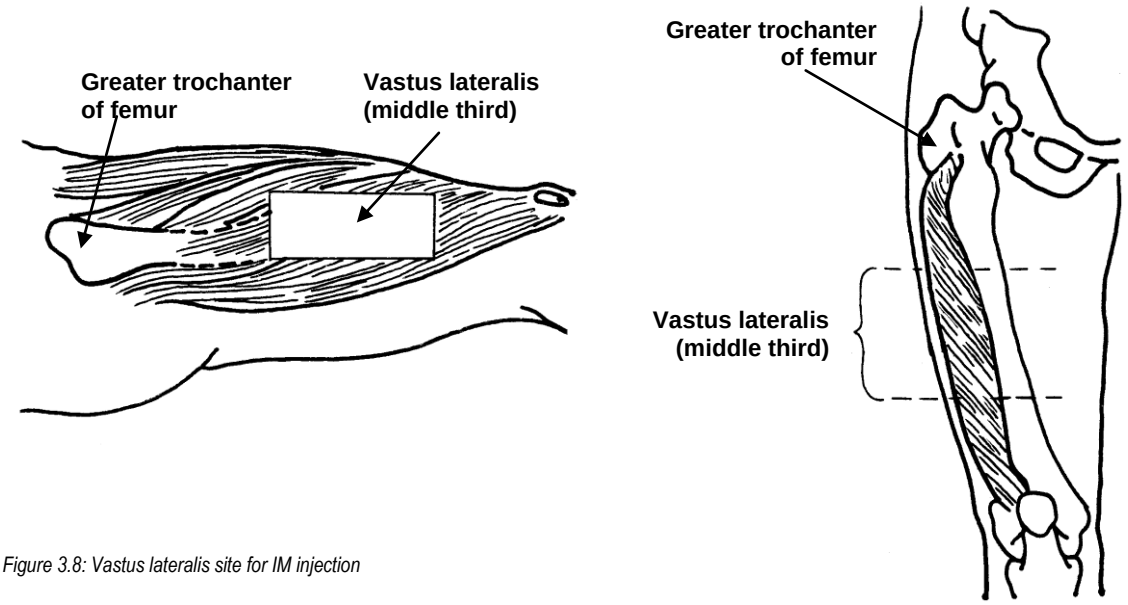


Figure 3.8: Vastus lateralis site for IM injection

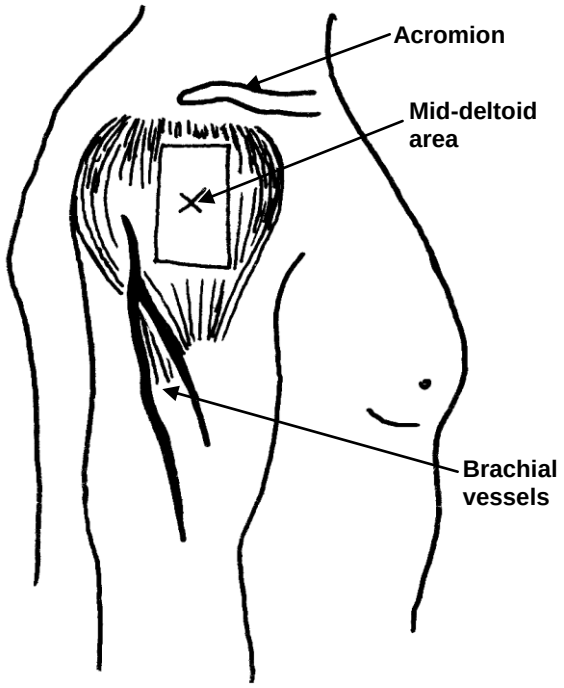


Figure 3.9: Deltoid site for IM injection

Deltoid site

The deltoid muscle of the arm is easily accessible but of limited use because the small muscle is not capable of absorbing large amounts of medication. Secondly, there is also danger of injury to the radial nerve.

The deltoid site is rectangular in shape, the upper border is 2 to 3 finger's breadth down from the acromion process on the outer aspect of the arm, the lower border is roughly opposite the axilla lines, parallel to the arm one third and two thirds of the way around the outer lateral aspect of the arm, form the side boundaries.

Although the size of the muscle varies with the size of the person, the amount of medication injected at this site should be limited to a maximum of 2mls, preferably non-irritating medication.

Ventrogluteal site

The landmarks of the site are the greater trochanter, the crest of the ileum, and the anterior superior iliac spine. To identify the site, first locate these landmarks on the patient. Then place the heel of your palm on the greater trochanter, point one finger towards the anterior superior iliac spine and adjacent finger towards the finger towards the iliac crest, forming a triangle with the iliac bone. Use your non-dominant hand to locate the site. The injection site is near the middle of this triangle. Point the needle slightly towards the iliac bone as you insert it.

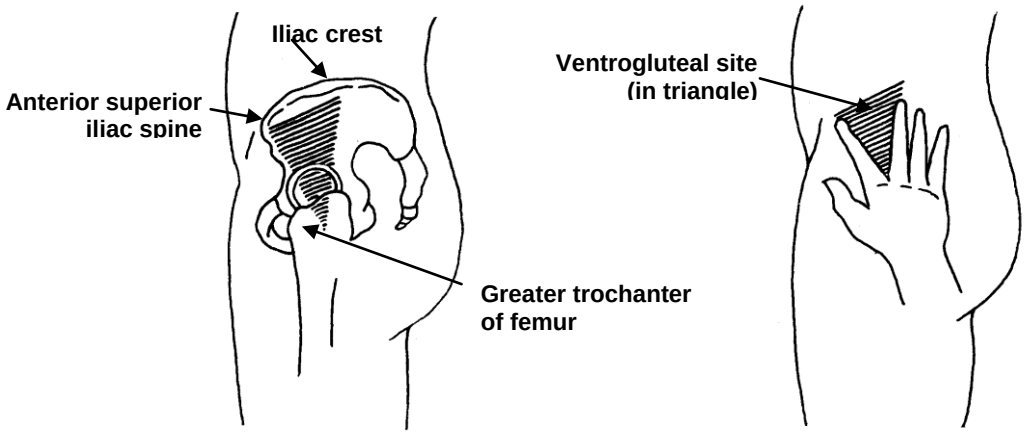


Figure 3.10: Ventrogluteal site for IM injection

Specific procedure: Intra-dermal administration

Commonly used for diagnostic procedures:

1. Diagnosing allergies and sensitivities
2. Administration of tuberculin test

It has the longest absorption time of all parenteral routes.

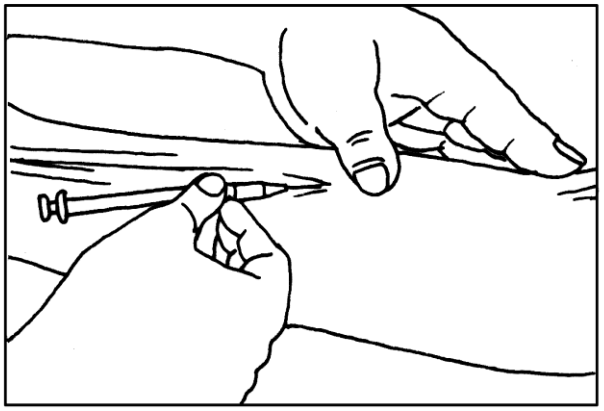


Figure 3.11: Intradermal injection technique

Follow the steps for general injections, with the following modifications:

1. Select the equipment
   a. The needle: 26-27 Gauge of ½ inch length
   b. The syringe: small, calibrated in tenths of millilitres
2. Select the injection site:
   a. Normally the fore-arm
   b. Landmark the injection site
3. Select angle of injection: 10° - 15° angle with the bevel (eye of the needle) directed upward, the needle should 1-2 mm inside, just below the outer skin
4. Stretch the skin before penetrating it (so, this is different compared to the other injections where you taut the skin
5. Inject the solution slowly until wheal appears
6. Gently wipe site with an antiseptic swab.
7. Do not massage site

VENE-PUNCTURE AND COLLECTION OF BLOOD SPECIMEN

Objective
To be able to collect venous blood specimen in a aseptic way

Indications
Any patient requiring investigation of venous blood

Requirements
A tray containing the following:
1. Dry sterile cotton wool swabs
2. Sterile needles, or brannula
3. Sterile specimen bottle depending on nature of investigation
4. Sterile syringes 5 ml and 10 ml
5. Container with antiseptic solution
6. Pair of gloves
7. Small mackintosh
8. Tourniquet or sphygmomanometer
9. Strapping
10. Scissors
11. Receiver for used swabs
12. Sharps receiver

Procedure
1. Clean tray and arrange items appropriately
2. Explain procedure to the patient
3. Position the patient appropriately
4. Only expose the area to be used.
5. Place mackintosh under the area to be used
6. Wash hands, dry them and wear gloves
7. Clean the area with antiseptic and dry it
8. Using the tourniquet, apply pressure above the site, and locate a vein
9. Insert the needle into the vein, directing the exit into the specimen bottle, and allowing the blood to flow into it or withdraw the blood using the 5 – 10 ml syringe
10. Once enough blood sample is obtained withdraw the needle, and quickly apply pressure on the puncture area, using dry sterile cotton wool swab
11. Discard the syringe and needle into sharps receiver
12. Maintain the pressure by firmly strapping the cotton wool swab over the punctured area
13. Ensure the patient is comfortable and reassure him
14. Clearly label the specimen bottle and make arrangement for delivery to the laboratory
15. Record and report in cardex
16. Clear equipment

INSERTION OF INTRAVENOUS CANULA'S AND IV-INFUSION

Objective

The ability to administer intravenous fluid in an appropriate way

Indications

Severely dehydrated patient
Oral / enteral intake contra-indicated
Severe hypovolaemia (haemorrhage, shock, sepsis)
Severe fluid and electrolyte imbalance
Need for repeated administration of IV medication

Requirements

A drip stand and a trolley containing the following:	
Top Shelf	Lower Shelf
• Sterile pack of cotton wool and gauze swabs • Giving set. • Sterile brannula / needles • 5 ml or 10 ml syringes • Container with antiseptic lotion • A pair of gloves • Infusion fluid • Receiver for waste fluid	• Strapping • Splint and bandage (as need be) • Small mackintosh • Tourniquet or sphygmomanometer • Razor • Scissors • Receiver for used swabs • Receiver for sharps

Procedure

Preparation

Equipment

1. Clean the trolley and arrange the items appropriately
2. Check the prescribed fluid for particles and expiry date
3. Remove the cap off the infusion bottle to expose the rubber seal/septum
4. Remove the sheath from the piercing needle of the giving set
5. Insert the piercing needle into the rubber seal/septum. If there is no air inlet on the giving set, insert a sterile needle into rubber seal, next to piercing needle
6. Hang the infusion bottle onto the drip stand above the level of the patient
7. Remove the sheath from the other end of the giving set
8. Allow fluid to run through the giving set tubing into receiver, until all the air has been expelled from the giving set
9. Let the fluid flow further until the giving set chamber is filled halfway
10. Using roll a clamp, clip the giving set tube midway, to obstruct further flow
11. Re-cap the free end of the giving set and let it rest in a kidney dish

Patient

1. Explain procedure to the patient
2. Screen bed and put patient in comfortable position
3. Identify the area and if necessary shave it
4. Position the drip stand next to the bed on the side of the selected limb
5. Assist client into supine or sitting position comfortably
6. Support the limb / head on a pillow
7. Spread the mackintosh under the limb / head to protect the pillow

Method

1. Tear 3 tape strips of 1 inch each. Cut one of these down centre
2. Prepare needle or brannula for insertion
3. In case of a brannula: examine the catheter for crack or flows
4. Tie the tourniquet round the extremity about 3 inches, above the selected area
5. Locate largest, most distal vein which is not located near a joint
6. Wear non-sterile gloves
7. With the cotton wool swab soaked with antiseptic clean vein area, beginning at the vein and circling outward in a 2 inch diameter
8. Discard the swab and allow skin to dry
9. Repeat step 7 & 8
10. Encourage patient to take slow, deep breaths as you begin.
11. Hold skin taut with one hand while holding brannula with the other
12. Maintain sterility, and insert needle / brannula:
    a. At a 30° angle
    b. Parallel into the straightest part of the vein
13. How to enter the skin and then the vein:
    a. After entering, lower needle / brannula it until it is almost parallel with the skin
    b. Insert the needle / brannula into the side of the vein wall following the direction of the vein (at small angle)
14. Watch for the first backflow of blood, then push needle about ¼ inch further:
    a. In case of a brannula: push the catheter gently further into the vein while fixing the needle not to move deeper any more
    b. In case of a needle: push the needle gently further as far as the vein is very straight until about ¼ inch remains outside

    Note: Brannula's are easier for giving IV-fluids. If they are not available needles can used but then the vein has to be even more carefully selected
15. Apply digital pressure distal to catheter tip, then pull the needle out of vein and skin
    Note: If unable to insert catheter fully do not force but wait until fluid flow is initiated
16. Holding catheter securely remove cup from free end of giving set and insert its hub into catheter opening
17. Remove tourniquet
18. Open roller clamp and allow fluid to flow freely for a few seconds
19. Monitor for swelling or pain
20. Use strapping to secure catheter into position
    Note: Do not strap over insertion site
21. Slow I.V. fluid to moderate drip
22. Remove gloves and secure tubing
23. Apply arm board (splint) if need be
24. Regulate I.V. fluid according to drops per minute formula as ordered
25. Enter information in intake output fluid chart
26. Clear equipment
27. Re-check flow rate after 5 minutes then after 15 minutes
28. Share health message with patient on what to check or report
29. Record and report

NASOGASTRIC TUBE: INSERTION AND FEEDING

Objective

To have competency in inserting a naso-gastric tube and feeding the patient artificially
Specifically:

- To be able to insert a nasogastric tube
- To be able to confirm that the tube is in the stomach
- To be able to feed a patient through a nasogastric tube

Indications

1. Patients unable to feed orally
2. Pre-operative management before gastric operation
3. Post operative management after gastric operation
4. Diagnostic purposes
5. Removal of poisonous substances from the stomach
6. Gastric distension management

Requirements

A tray containing the following:

1. Gloves
2. Face towel (wet)
3. Bowl or kidney dish with nasogastric tube
4. Lubricant in a galipot
5. 20 ml and 50 ml syringes
6. Spigot
7. Receiver with blue litmus paper
8. Strapping and scissors
9. 30 ml clean water in medicine measure

Additions for feeding

1. Required feed in a jar in a bowl of warm water.
2. Towel
3. Spoon

Procedure: Insertion of the NG-tube

1. Greet the patient and explain the procedure
2. Screen the bed
3. Bring the set tray at bedside and place on the locker.
4. Assist a conscious patient in upright up position. Place an unconscious patient in lateral position
5. Wipe the face with wet towel (flannel) and clean the nostrils if necessary
6. Drape the patient's neck and chest with a towel
7. Wash and dry hands and put on gloves
8. Remove the tube from its sterile package and place it on sterile kidney dish
9. Measure length of the tube to be inserted from tip of nose to ear lobe and down to xiphoid process (tip of sternum) identify the mark
10. Lubricate the end of the tube

11. Explain about the insertion and request patient to hyper-extent the head to allow visualization of the nasal passage to ease insertion
12. Pass tube through the nostril and down to the nasopharynx. Ask the conscious patient to swallow it when it touches the oral pharynx or give sips of water to help him swallow
13. Look inside the patient's mouth to see that the tube is passing down
14. Pass the length as indicated by previously identified mark on the tube
15. To confirm position in the stomach:
    a. Aspirate some stomach content and test for acidity on blue litmus paper which should turn red.
    b. Immerse the free end-tip in water, bubbling indicates tube in the lungs
    c. Push 5 ml of air with a syringe in the tube and listen over epigastric area with stethoscope: a whooshing sound indicates air in the stomach
16. Attach the spigot to the tube and secure with strapping.

Procedure: Feeding through the NG-tube

1. Test the temperature of the feed and measure the amount to be used
2. Pinch the tube and remove the spigot
3. Fix the syringe and pour 15 ml warm water into barrel and allow it to run into the tube slowly
4. Pinch the tube when water reaches the bottom of the syringe but it is still inside
5. Pour in feed and allow to run slowly by gravity until the total feed has been given
6. Clean the tube with the remaining water and pinch it before water finishes to avoid air going in

   NOTE: A funnel or feeding bag with infusion pump may be used for feeding instead of the syringe
7. Spigot the tube and leave it well secured
8. Remove towel from the neck and chest
9. Thank patient for cooperation and make him comfortable
10. Clear and clean the equipment and store them in the pantry room for the next use
11. Wash and dry hands
12. Enter the amount of feed and time of feeding in fluid chart
13. For subsequent feeds: aspirate stomach contents to determine any retained feed
14. If retained feed is more than 15 ml in an adult or more than 10 ml in an infant check with your superior before proceeding with feed

STOMACH WASH-OUT / GASTRIC LAVAGE

Objective

To be able to perform an adequate gastric lavage / stomach wash-out on the right indication

Indications

1. To empty stomach contents so as to reduce re-absorption of undesired substances (poisoning with non-corrosive substances)
2. Pre-operative management: to empty the stomach prior to surgery
3. Diagnostic purposes: To obtain a specimen for analysis

Requirements

Two health workers: one carrying out the procedure and one assistant
Good working suction at bedside.

A clean trolley with:

1. Top Shelf
   a. Funnel with rubber tubing attached
   b. Bowl, containing disposable gastric tubes
   c. Clip
   d. Lotion thermometer
   e. 3 litres irrigating fluid in a jug at 37°
   f. 1 litre measuring jug
   g. Galipot with lubricant e.g. KY-jelly or liquid paraffin
   h. Cotton wool (swabs in a galipot)
   i. Gloves
2. Bottom Shelf
   j. Jar for taking sample of stomach contents
   k. Small tray with spatula, if the patient is unconscious
   l. Mackintosh and towel
   m. Receiver for dirty swabs
   n. Vomiting bowl and tissue paper
   o. Bucket
   p. Blue litmus paper.
   q. Mouth wash solution in a cup
   r. Specimens container if required

Procedure

Preparation

1. Great the patient
2. Explain the procedure to the patient
3. Ensure that patient does not have any dentures.
4. Screen the bed and close the windows nearby.
5. Ensure adequate working space
6. Prepare the equipment

a. Clean, rinse and dry the trolley.
b. Ensure fluid is in the right temperature.
c. Arrange equipment neatly.

7. Wheel the trolley to the bedside of a patient.
8. Position patient
    d. If conscious sit the patient upright.
    e. If unconscious, put him in a lateral position.
    f. Place protective mackintosh and towel appropriately.

Method

1. Wash hands and dry them
2. Wear gloves
3. Fill the jug with a solution at 37° C
4. Connect tubing to funnel and connect glass tubing and clip
5. Lubricate the end of the stomach tube adequately
6. Keep vomit bowl at hand, place bucket on the floor
7. Expel air from tubings
8. Estimate necessary size of tube
9. Instruct patient to breath in superficially, swallow when asked to and not to bite the tube
10. Introduce the tube through the mouth and ask patient to swallow when it goes down and to breathe deeply
11. In an unconscious patient, use the spatula to keep mouth open
12. Ascertain tube is in the stomach for the unconscious patient:
    a. Aspirate some stomach content and test for acidity on blue litmus paper which should turn red.
    b. Immerse the free end-tip in water, bubbling when the patient breathes out indicates tube in the lungs
    c. Push 5 ml of air with a syringe in the tube and listen over epigastric area with stethoscope: a whooshing sound indicates air in the stomach
13. If the tube seems to be in the lungs, withdraw tube and re-introduce again
14. If well positioned, tighten the clip and put the fluid in the funnel ¾ full
15. Hold the funnel with left hand above patient's head level
16. Open clip slowly with right hand and allow solution to run slowly
17. Add fluid as it goes in, do not let funnel get empty
18. When 300 ml of fluid has gone in, lower funnel and invert it over the bucket and let fluid flow till none comes out
19. Obtain specimen if required and take to laboratory with request form
20. Repeat the process till only clear fluid comes out
21. Pinch the tube and gently pull it out
22. Give patient a mouthwash and wipe any spilled fluid with tissue paper.
23. Thank the patient for cooperation and make him/her comfortable.
24. Un-screen the bed
25. Clean the patient's surrounding and open the windows
26. Empty the bucket in sluice room, decontaminate for 10 minutes, clean and store
27. Decontaminate the other equipments for 10 minutes, clean with soap and water, rinse, dry and store or take for sterilization
28. Discard stomach tube
29. Wash and dry trolley
30. Wash and dry hands
31. Record, interpret and report findings

NOTE: Consider whether it is necessary to save aspirated fluid for your superior to see

CHAPTER 4: FIRST AID & BASIC LIFE SUPPORT

Annex to CMS 14: Basic Life Support & First Aid

Bandaging

Splinting

Introduction to Basic Life Support (BLS) and Resuscitation

Assessment of the Victim for Response

Positioning and Moving the Victim

Management of Foreign Body Airway Obstruction (FBAO)

Assessment of Breathing & Performing Artificial Ventilations

Assessment of Circulation and Circulatory Support

BANDAGING

Includes
Elbow and knee bandaging
Hand and foot bandaging
Tubular bandaging
Triangular bandaging (Scalp bandaging and arm sling)

Objective
To be able to apply bandages in various locations of the body as indicated.

Indications
1. To secure dressings
2. To control bleeding
3. Give support and immobilization
4. Reduce swellings in injured parts

Requirements
A clean tray containing the following:
1. Small hand towel
2. Pair of gloves
3. Protective Mackintosh and draw sheet
4. Bandaging materials:
    a. Crepe bandage, gauze bandage, gauze roll, firm bandages or other clean improvised materials
    b. Roller bandages, tubular bandages & triangular bandages
5. Applicator for tubular bandages
6. Pair of straight scissors
7. Securing materials: strapping (or alternatives if strapping not available: safety pins, bandage clips)

Types of bandages:

Roller bandages for securing dressings and support injured limbs
Tubular bandages for holding dressings on fingers or toes or support injured joints
Triangular bandages used as large dressings, as slings, to secure dressings, or immobilize limbs
If bandage not available use improvised materials e.g fabrics like headscarf

Procedure: General bandage application

1. Explain the procedure to the patient while reassuring
2. Make the patient comfortable, in a suitable sitting position or when lying down
3. Place the tray beside the patient appropriately
4. Wash hands and dry them with the clean towel
5. Ask the assistant to position patient appropriately and in case of a wound or bleeding, fix mackintosh under the injured/part to be bandaged
6. In case of a wound or bleeding, put on gloves
7. Ask patient or assistant to continue supporting the injured part while working on it
8. Work at the front of the patient and from the injured side where possible
9. If patient is lying down, pass the bandages under the body's natural hollows/contours at the ankles, knees, waist and neck, then slide the bandages into position by easing them back and forth under the body
10. Apply bandages firmly but not so tightly to avoid interference with circulation in the distal parts
11. Leave the fingers or toes on a bandaged limb exposed, if possible, so that you can check the circulation afterwards
12. Use strapping or other securing material to secure the bandage material in position
13. Where you need to tie, use reef knots to the bandages. Ensure that the knots do not cause discomfort nor pass over a bony prominence

Method: Elbow and knee bandaging

1. Let the patient sit or lie down in a comfortable position
2. Support the injured limb with the joint partially flexed if possible
3. Place the tail of the bandage on the inner side of the joint
4. Pass the bandage over and round to the outside of the joint
5. Make one and a half turns round the joint so that the end of the bandage is fixed and the joint is covered
6. Pass the bandage to the inner side of the limb just above the joint. Make a turn round the limb covering the upper half of the bandage from the first turn
7. Pass bandage from inner side of the limb to just below the joint. Make one diagonal turn below the joint to cover the lower half of the bandage from the first straight turn
8. Continue to bandage diagonally above and below the joint in a figure of eight ensuring that the bandaged area covers two thirds of the previous turn each time

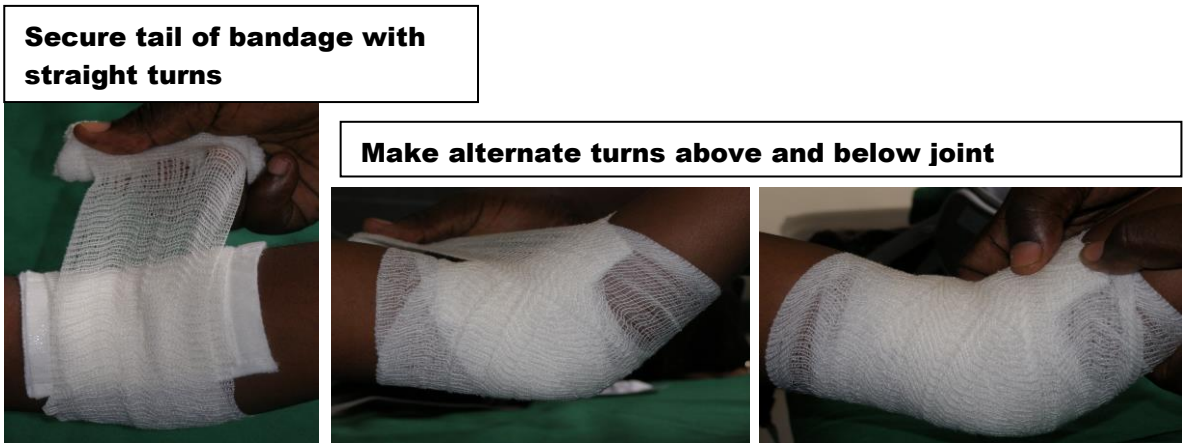


Figure 4.1: Elbow bandaging

9. Secure the end of the bandage with strapping or alternatives
10. Check the circulation distal of (beyond) the bandage as soon as you have finished. If the bandage is too tight, unroll it and re-apply it more loosely

Method: Hand and foot bandaging

1. Let the patient sit or lie down in a comfortable position
2. Support the injured limb in the functional position
3. Place the tail of the bandage on the inner side of the wrist at the base of the thumb / ankle
4. Make two straight turns around the wrist / ankle
5. Loop the bandage diagonally to the little finger / little toe and make one and a half complete turns around the fingers / toes
6. Continue figure of 8 or spiral pattern leaving the patient's thumb/ heel from bandage (See diagrams below)
7. Secure bandage at ankle/ wrist with strapping or other material
8. Check the circulation distal to the bandage

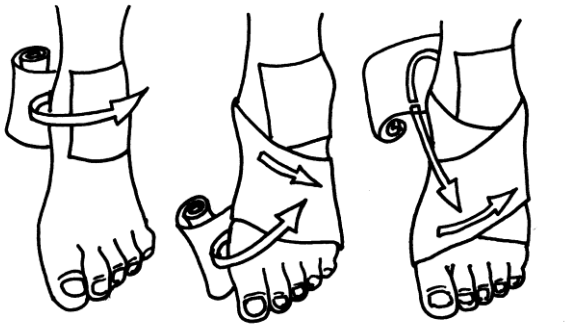


Figure 4.2: Steps in foot bandaging

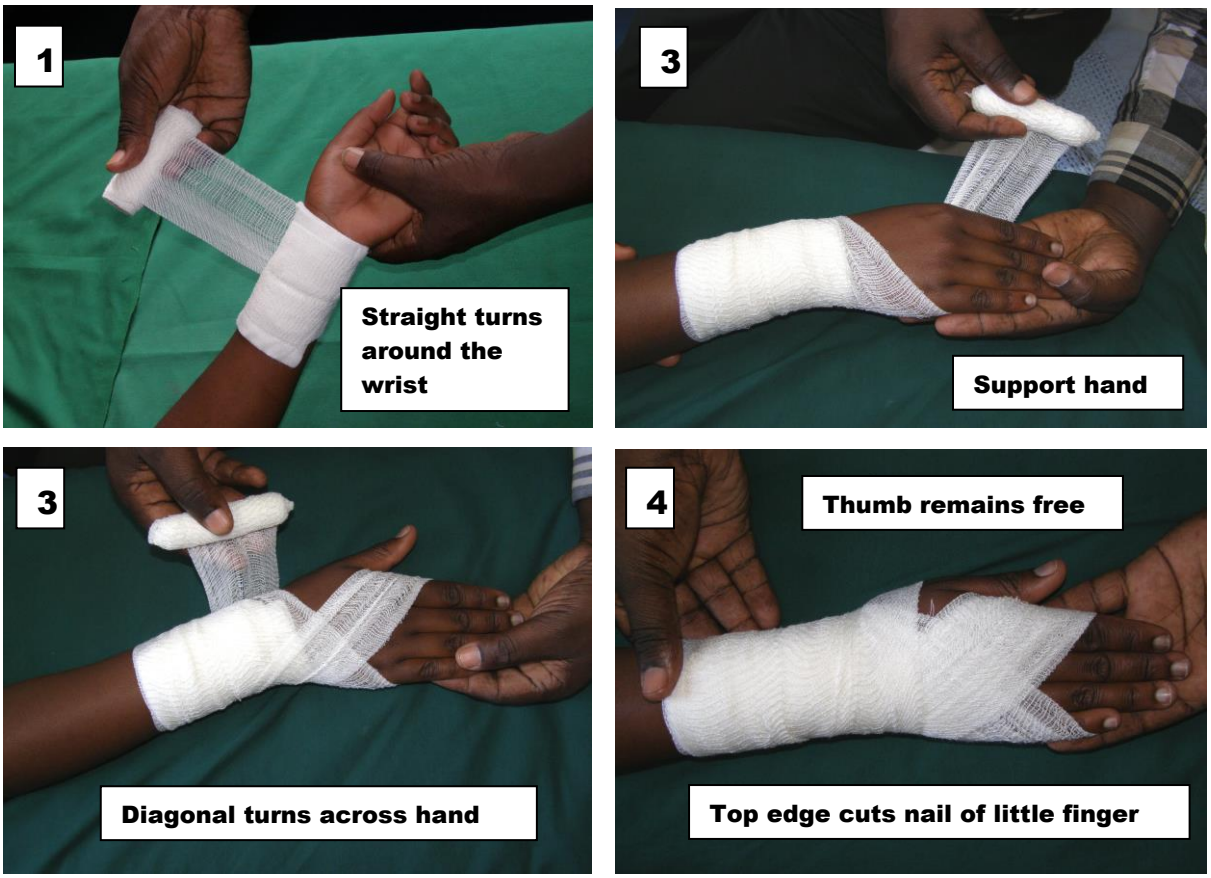


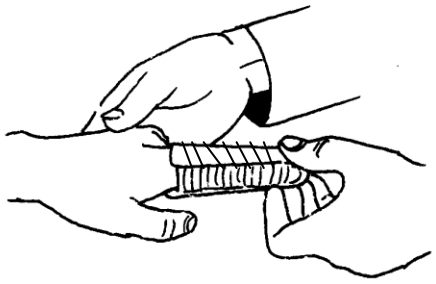
Figure 4.3: Hand bandaging

Method: Tubular bandaging

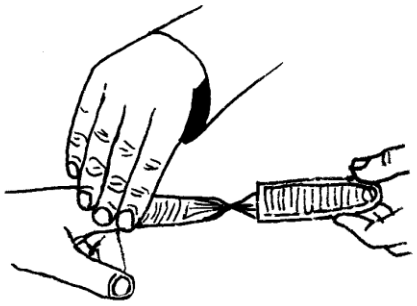
1. Let the patient sit or lie down in a comfortable position
2. Cut a piece of tubular gauze about two and a half times the length of the injured finger/ toe
3. Slide the whole length of tubular gauze onto the applicator, than gently slide the applicator over the patient's finger
4. Holding the end of the gauze on the finger, pull the applicator slightly beyond the finger top to leave a gauze layer on the finger. Twist the applicator twice to seal the bandage over the end of the finger
5. Gently push the applicator back over the finger to apply a second layer of gauze. Once all of it has been applied, remove the applicator from the finger
6. Secure the gauze at the base of the finger with adhesive tape/ strapping

7. NOTE: Where tubular bandages are not available, we can use rolled gauze to do finger / toe bandaging. On the last turn around the finger, the gauze is pulled over the top of the hand / foot (dorsum) to extend over the wrist / ankle joints split into two and tied to secure the bandage

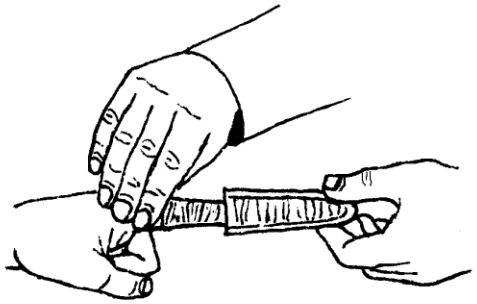
8. Check circulation distal to the bandaged area.



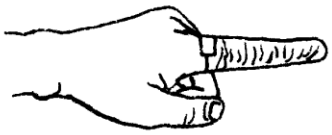
Slide applicator onto the finger



Hold end of gauze in place on finger, pull applicator just beyond the fingertip, and then twist



Push applicator back for second layer

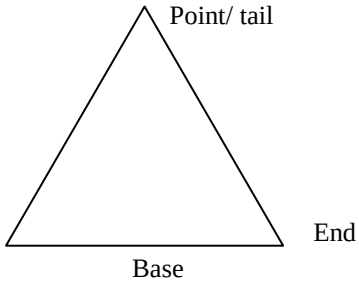


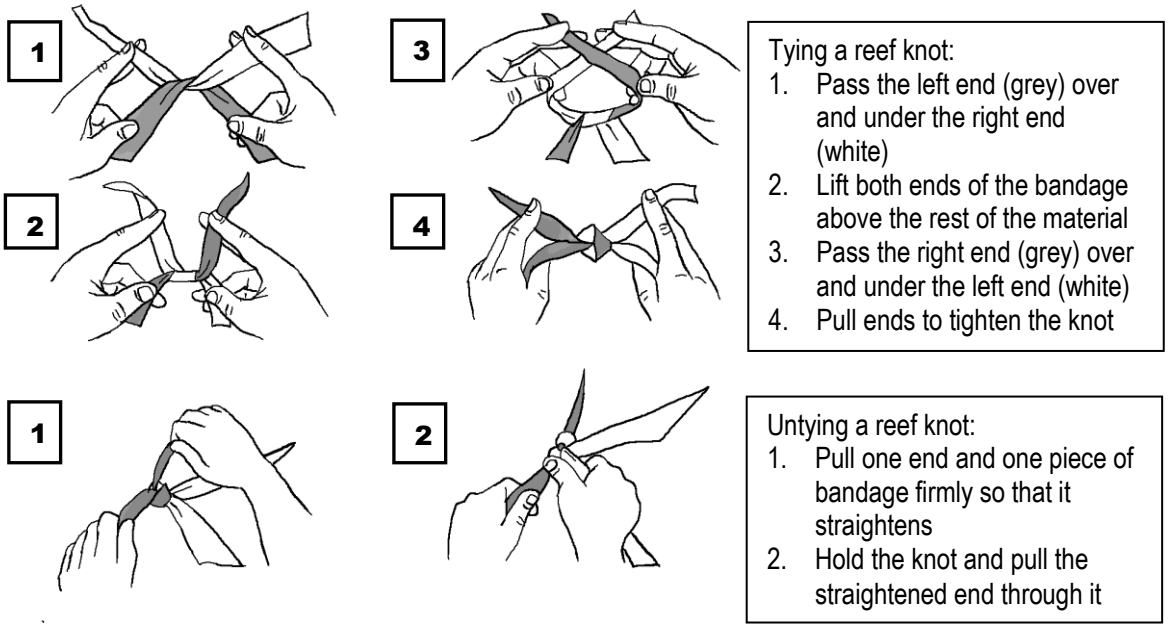
Secure bandage with strapping

Figure 4.4: Application of a tubular bandage

Method: Triangular bandaging

Triangular bandages are used in securing hand, foot or scalp dressing or to form slings to support an injured upper limb





Tying a reef knot:
1. Pass the left end (grey) over and under the right end (white)
2. Lift both ends of the bandage above the rest of the material
3. Pass the right end (grey) over and under the left end (white)
4. Pull ends to tighten the knot

Untying a reef knot:
1. Pull one end and one piece of bandage firmly so that it straightens
2. Hold the knot and pull the straightened end through it

Figure 4.5: Tying and untying a reef knot

Scalp Bandaging

1. Let the patient sit or lie down in a comfortable position
2. Fold a hem along the base of the bandage and place the bandage on the patient's head with the hem underneath and the centre of the base just above his / her eye brows. Allow the bandage to fall back over the top of the head
3. Wrap the ends of the bandage securely around the patient's head, tucking the hem just above his/her ears
4. Cross the above two free ends over the point (tail) and tie them in a single turn (half of a knot) at the nape of the patient's neck
5. Bring the free ends around to the forehead and tie a complete square knot (reef knot)
6. Truck the hanging tail over and into the half knot behind the head or secure it above the half knot with a safety pin

Arm-sling application

An arm sling provides support for an injured upper arm, wrist or fore arm or a single rib fracture.

1. Let the patient sit in the most comfortable position
2. Assist the injured arm across the chest with elbows flexed
3. Place the triangular bandage with the hemmed base parallel with the patient's body, in level with the little fingernail and the tail / point towards the elbow of the injured side
4. Pass the upper end under the injured arm and pull it around the neck to the opposite shoulder
5. Fold the lower end of the bandage up over the forearm and bring it to meet the upper end at the shoulder
6. Tie a reef knot on the injured side at the hollow just above clavicle. Tuck both free ends of the bandage under the knot to pad it
7. Fold the point and tuck it in behind the elbow and secure with a safety pin

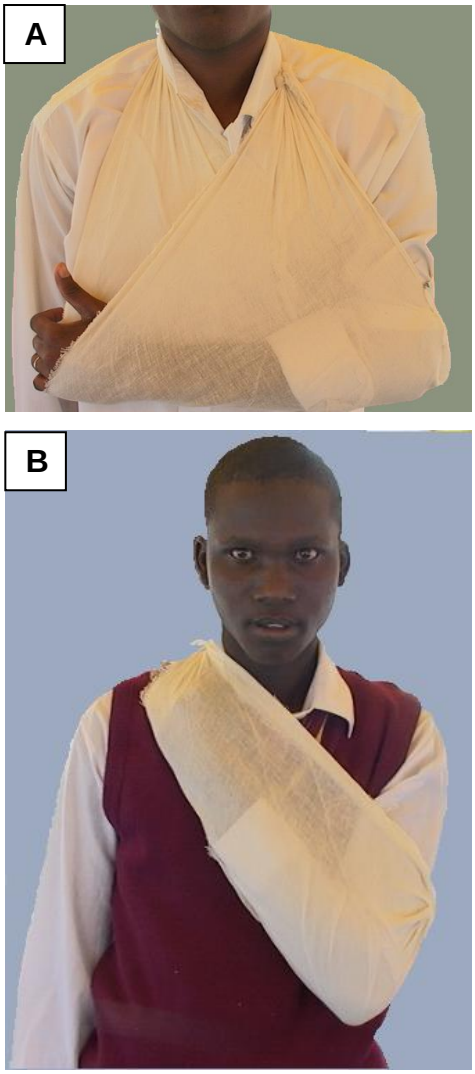


Figure 4.6: Normal (A) and elevated arm sling (B)

SPLINTING

Includes
General Procedure
Application & Removal of Plaster of Paris
Splinting with Malleable Aluminium Strips
Splinting with Wooden Splints
Garter Splint Application

Objective
To be able to immobilize bones and joints using special devices or improvised materials

Indications
1. To reduce pain and discomfort following injury
2. Fractures
3. Dislocations
4. Sprains
5. Tendon lacerations
6. Nerve injuries (chronic)
7. Transfer of casualty from scene of injury

Contraindications (except as in first aid / during transport)
1. Open fractures
2. Severe bruising
3. Severe soft tissue swelling
4. Signs of circulatory insufficiency distal to the injury
5. Nerve injuries (acute, due to the causing trauma)

Requirements
1. Splinting materials / Splinting devices
2. Gloves
3. Padding material
4. Strapping
5. Scissors
6. Roller bandage
7. Receiver container
8. Talcum powder

Examples of specific splinting devices:
- Halo-thoracic splint (fractures of the cervical spine)
- Cervical collar (fractures of the cervical spine)
- Thomas's splint (fractures of the femur shaft)
- Povey splint (fractures of the lower limb)
- Braun frame (fractures of the femur shaft)
- Cock up splint (hand burns – contraction prevention)
- Garter splint / Buddy splint (fractures of the phalanges)
- Orthopaedic splints (e.g. post-nerve injury like dropping hand, foot drop)

Figure 4.7: Braun frame

General Procedure

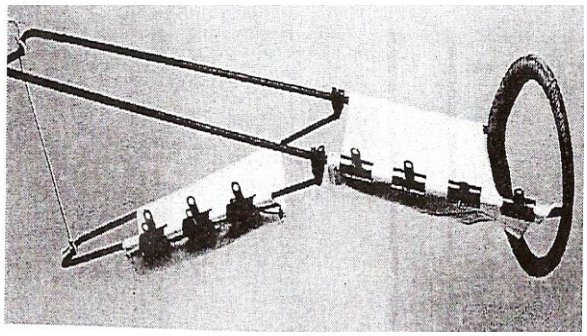


Figure 4.8: Thomas's splint with Pearson knee flexion attachment

1. Explain the procedure to the patient
2. Inspect the skin for wounds and soft tissue injuries and clean, repair and dress wounds prior to splint application
3. Check circulation, sensibility and motor function distal to the injury
4. Let the patient sit or lie in a comfortable position
5. Pad the pressure points
6. Apply specific splint application techniques as described below
7. Advice the patient and plan for check up

Splinting materials:

- Plaster of Paris
- Malleable strips of aluminium
- Wire
- Plastic materials e.g. polyethylene foam
- Fibre glass
- Wood

Procedure: Application & Removal of Plaster of Paris

Indications

1. To immobilize bony fragments in the right position
2. To maintain reduction while the bones unite
3. To protect the injured limb from the injury and pain

Requirements

1. An assistant
2. Plaster of Paris (POP) rolls (Plaster bandages): 10, 15 or 20 cm wide
3. Cellulose bandage / under cast padding (Sofban, Velle band) or stockinet
4. Water in a basin
5. Clean non-sterile gloves
6. Indelible pencil
7. Plaster knife or scalpel
8. Mackintosh
9. Dustbin

Procedure: Application of Plaster of Paris – full round cast

1. Explain the procedure to the patient
2. Let the patient sit or lie down in a comfortable position
3. Pad the injured limb with cellulose bandage
4. Unwind a few centimetres of the end of a POP bandage
5. Soak a POP bandage in water for about 5 seconds until the bubbling has stopped
6. Take out of the water and twist the POP bandage slightly to remove excess water
7. If there is need for reduction it should be done now and the assistant should maintain the reduction until the cast has set
8. Starting from the injured side, apply the POP roll/ bandage round the injured limb over the padding
9. While you are applying one roll of plaster, ask your assistant to wet the next one
10. Continue with the other rolls in an identical manner until you get good thickness of plaster
11. Smoothen the POP as you continue bandaging
12. Mould the plaster over the fracture site to maintain reduction and hold until the plaster sets.
13. Check for vascular compromise, discomfort or pressure points
14. Tidy the patient's limb
15. Record the date of fracture, date of application of plaster, and the date it is to be removed
16. Give instructions on care of plaster and how to identify complications
17. Inform the patient to come the following day for review
18. Provide a sling or clutches as needed
19. Send for a control X-ray if necessary to confirm the stage of reduction

Procedure: Application of Plaster of Paris – Back slab / splint

Preparation of plaster splint / back slab

1. Measure the length and width of plaster material depending on the body part to be immobilized
2. Estimate the length by laying the dry splint next to the area to be splinted. Be generous
3. The width should be slightly more than the diameter of the limb to be immobilized
4. Cut or tear the splint material to the desired length
5. The thickness depends on the body part to be immobilized, the patient's body habitus (contours), and desired strength of the splint
   a. Average of 8–12 layers
   b. Fewer layers, 8–10, for upper extremities
   c. More layers, 12–15, for tower extremities
6. More layers may be needed for larger patients
7. Fill a bucket with cool water deep enough to immerse the splint material (using cool water decreases chances of thermal burns but takes longer for the splint to dry)

Application of the splint

1. Explain the procedure to the patient
2. Let the patient sit or lie down in a comfortable position
3. Pad the injured limb with cellulose bandage
4. Submerge the dry splint material in the bucket of water until bubbling stops
5. Remove splint material and gently squeeze out the excess water until plaster is wet and sloppy
6. Smooth out the splint to remove any wrinkles and laminate all layers
7. Place the splint over the cellulose padding material and smooth it onto the limb
8. An assistant may be required to hold the splint in the place while you adjust it
9. Fold back the edges of the padding material over the ends of the splint
10. Secure the splint with an elastic/roller bandage
11. Place the extremity in the desired position and mould the splint to the contour of the extremity using the palms of your hand (avoid use of the fingers to decrease indentations in the plaster which can lead to pressure sores)
12. Hold the splint in the desired position until it hardens (sets)
13. Check for vascular compromise, discomfort or pressure points
14. Apply tape along the sides of the splint to prevent elastic bandages from rolling or slipping
15. Tidy the patient's limb
16. Record the date of fracture, date of application of plaster, and the expected removal date
17. Give instructions on care of plaster and how to identify complications
18. Inform the patient to come the following day for review
19. Send for a control X-ray if necessary

Procedure: Removal of plaster of Paris (POP)

Objective
To be able to remove a POP cast

Indications
1. When healing has occurred
2. When complications occur e.g.
   a. Too tight P.O.P impairing circulation to a limb
   b. Compartment syndrome
3. Unacceptable reduction of bone fragments

Requirements
1. Plaster shears (Lorenz's) or electric P.O.P saw
2. Plaster scissors (Guy's)
3. Plaster knife
4. Plaster spreader
5. Plaster benders
6. Floor Mackintosh
7. Plaster marking pencil

Procedure
1. Explain the procedure to the patient
2. Ensure the patient is positioned comfortably
3. Mark the area for cutting with the plaster marking pencil. The line of cut should be over soft tissues and should avoid the bony prominent
   a. Forearm: The cut should be made in the midline of the anterior surface of the forearm
   b. Leg: Two cuts can be made, one passing along the lateral surface and behind the lateral malleolus and the second cut along a corresponding line at the medial side of the plaster passing behind the medial malleolus
4. Carefully cut the POP using a plaster saw or plaster shears along the marked lines as above while taking care not to injure the patient
5. If the cast is not split use plaster knife or scalpel blade to cut threads.
6. Use the plaster spreader to open up the plaster cast once you have split it down one side
7. Remove the plaster from the limb
8. Wipe the skin that had been covered by plaster with wet gauze, let it dry and apply Vaseline

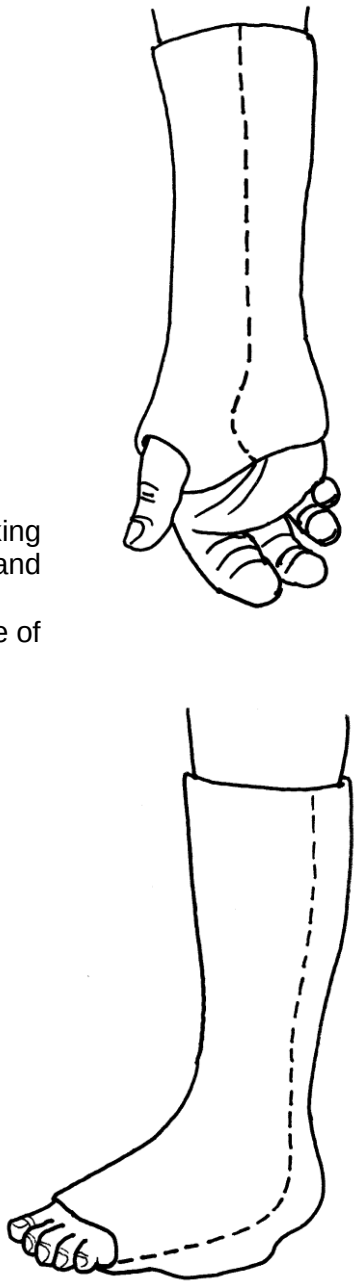


Figure 4.9: Correct lines for cutting to remove plaster

Procedure: Splinting with Malleable Aluminium Strips

Indication
Fracture of the phalanges

Requirements
1. Padded Aluminium splint
2. Strapping

Procedure
1. Bend the splint to 90° with the padded side convex
2. Strap it to the patient's palm with its angle just proximal to patient's proximal palmar crease for the index and middle finger, or the distal palmar crease for the ring and little fingers
3. Reduce the fracture and lay it on the splint so that the metacarpophalangeal joint is flexed to 90°, and the patient's interphalangeal joints are extended
4. Strap the finger and the hand palm to the splint
5. NOTE: The splint should not cross the wrist neither should it be folded back over the dorsum of the finger
6. Look at the finger end on to check for any rotation
7. NOTE: In case of rotation – refer for specialist assistance
8. Check for circulation distal to the splint

Procedure: Splinting with wooden splints
As first aid or when plaster is not available, strips of wood paddled with paper or cloth may be useful.
Fractures of the humerus, radius and ulna, and extension fractures of the wrist are regions where they could be used.

Indications
1. In first aid to relieve pain in fractures of the limbs
2. For longer periods suitable for some fractures of the upper limb

Requirements
1. Thick gauze or cloth bandages
2. Padding materials: cotton wool, paper etc
3. Two or more thin pliable strips of wood or bamboo or one plank
4. Strapping or elastic material

Procedure
1. Bandage the patient's affected limb over the fracture area and adjacent joints where possible
2. Place layers of padding material outside the bandage
3. Fix them with strip of adhesive tape
4. Place the wooden splints (1 plank or several thin strips) over the padding
5. Fix them in place with four strips of cloth
6. In case of upper limb and in a mobile patient: provide a sling
7. Monitor its circulation

Procedure: Garter splint application

Indications
Fractures of the phalanges

A Garter splint prevents angulation like this

Figure 4.10: Complication prevented by a Garter splint

Requirements
1. Strapping
2. Padding material (cellulose, cotton wool)

Advantage: Allows an injured finger to move, and so prevents stiffness

Procedure
1. Place a pad of cellulose or cotton wool in between the injured finger and the neighbouring finger
2. Bind the patient's injured finger to a neighbouring finger with adhesive strapping over the phalanges, leaving the interphalangeal joints free
   NOTE: The finger you choose should be the one that best corrects any deformity
3. Check for any rotation deformities – Get specialist advice if these are present
4. Check the distal circulation

NOTE: The advantage of a Garter splint is that it allows the finger to move and in that way prevents stiffness. Therefore, the strapping should not cross a joint as that will prevent the movement that it is designed to encourage.

A Garter splint lets the injured finger move and so prevents stiffness. Hence never put strapping across the joint

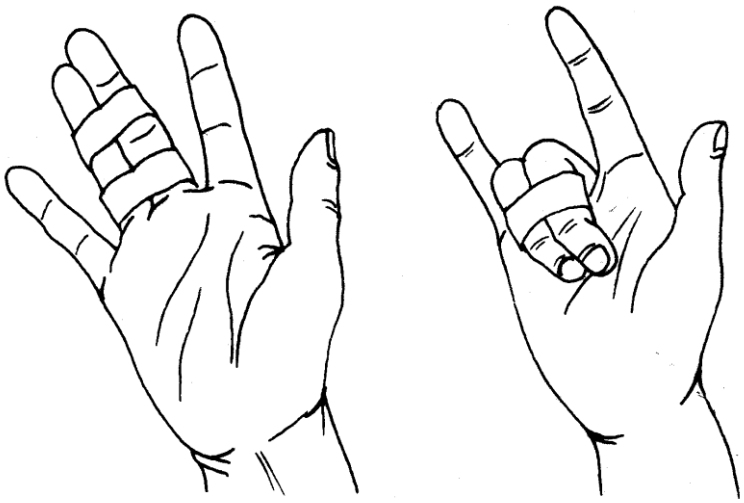


Figure 4.11: Garter or buddy splint application

INTRODUCTION TO BASIC LIFE SUPPORT AND RESUSCITATION

Introduction

Resuscitation is the act of ensuring continuous supply of blood and oxygen to the brain and the heart of a victim of cardio-pulmonary arrest. The victim's chances of survival are significantly increased if is initiated within 4 minutes of the arrest.

Content

1. Assessment of the victim for response
2. Positioning and moving the casualty
3. Management of foreign body airway obstruction
4. Assessing for breathing
5. Performing artificial ventilations
6. Assessing for circulation
7. Performing chest compressions
8. Restoring a heart rhythm (defibrillation)

Objective

To be able to assess the need for and give basic life support when indicated.

Indications

Casualties as listed below:

1. One who is breathing and has circulation.
2. One who is not breathing but has circulation.
3. One who is not breathing and has no circulation
4. One who is not breathing, has circulation, mouth-mouth procedure fails to inflate the chest

ASSESSMENT OF THE VICTIM FOR RESPONSE

Objective
To be able to assess general level of consciousness of a casualty in an acute situation

Indication
Any casualty who does not seem to be responding to his / her environment

Procedure
1. Ensure your own safety by checking for any signs of danger like moving vehicles, falling objects, possibility of suffocation etc
2. Kneel beside the victim
3. Ask a direct question e.g. “Are you ok? What’s your name?”
4. Give a command e.g. “Open your eyes”
5. Give a gentle tap/shake
6. Give a soft pinch
7. While asking the direct question, speak loud in both right and left ears as you shake/tap the victim’s shoulders. This is for the benefit of a deaf victim
8. If the victim is still unresponsive give a hard pinch on the arm or trapezius muscle

Figure 4.12: Assessment of a victim for response

POSITIONING AND MOVING THE VICTIM

Includes

Turning the victim from prone to supine position
Moving a collapsed casualty
Manoeuvres to open the airway
Recovery position

Objective

To be able to turn unconscious casualties and those with suspected spinal injury in positions that ensures an open airway or allow for artificial ventilation and cardiac massage
NOTE: If the casualty has any injuries or a suspected head or neck trauma do not move him / her unless absolutely necessary. See special manoeuvres below.

Procedure: Turning the victim from prone to supine position

Indication

1. Any casualty who is non-breathing or without circulation in any position other than supine or who has to be prepared to be lifted and carried

Method (no spinal injury)

If the casualty is lying in prone position and has no head or neck injuries, turn him / her to supine position as follows:

1. Kneel beside the casualty at a distance equal to the width of his / her body and at a level of the casualty's shoulders
2. Move the casualty's arm closer to you so that it is raised above his / her head
3. Straighten the casualty's legs or slightly bend them at the knee joint
4. Place one hand behind the casualty's head and neck for support
5. With the other hand, grasp the victim under the arm to brace the shoulder and torso
6. Roll the victim towards you. The head and neck should remain in the same plane and the body is moved as a unit
7. Keep the airway open with head tilt-chin lift manoeuvre as described below

Method: Log-roll technique (in case of suspected spinal injury)

The method of choice in any unconscious person suspected of spinal injury with whom breathing and / or circulation are endangered or have failed

1. Assemble 3-5 helpers
2. Support the victim's head and neck continuously
3. Ask your helpers to straighten her/his limbs gently
4. Ask your helpers to space themselves evenly along the casualty's body
5. Roll the casualty keeping the head, trunk and toes in a straight line at all times

Procedure: Moving a collapsed casualty

Indication
1. Danger of increased injury when the casualty remains in the same place
2. Transport to health facility

Method
1. Roll the sheet/blanket lengthways to half its usual width
2. Space your helpers evenly on each side of the casualty's body
3. Ask the helpers to roll side of the sheet/blanket against the casualty's back with the uppermost and unrolled part on the opposite side to her body
4. Lower the casualty's back over the roll and to her other side
5. Unroll enough of the blanket/sheet and lower casualty to it in the required position
6. Take hold of the sheet together and then move the casualty

Manoeuvres to open the airway

Objective
To be able to open the airway in a non-breathing casualty

Indication
A non-breathing casualty not suspected of spinal injury

Method: Head tilt – chin lift manoeuvre
1. Place one hand on the victim's forehead and apply firm backward pressure to tilt the head back
2. Place the index and middle fingers of the other hand under the bony part of the chin taking while taking care not to press deeply into the soft tissues under the chin
3. Lift the chin forward and support the jaw, helping to tilt the head back

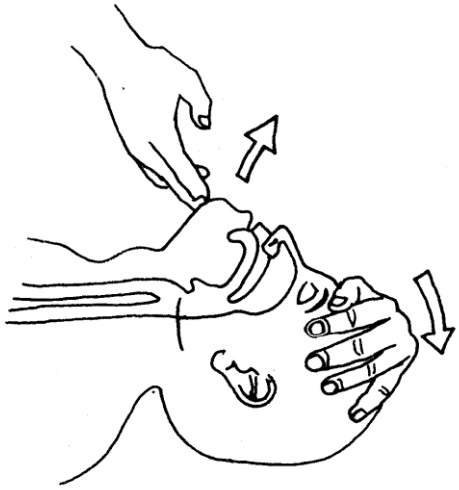


Figure 4.13: Head tilt –chin lift manoeuvre

Indication
A non-breathing casualty suspected of spinal injury

Method: Jaw thrust manoeuvre
1. Grasp the angles of the victim's lower jaw and lift with both hands, one on each side, displacing the mandible forward while tilting the head backward
2. If the lips close, retreat the lower lip with the thumb

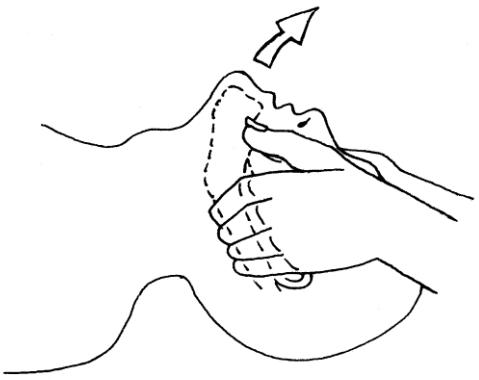


Figure 4.14: Jaw Trust manoeuvre

Recovery position

Objective
To open and maintain an open airway

Indication
1. An unconscious person in whom breathing and circulation are normal
2. An unconscious person with suspected neck injury whose airway is acutely endangered by vomitus, blood etc

Contra-indication
1. An unconscious person with suspected neck injury whose airway is not acutely endangered

Method (No spinal injury)
The procedure is described for a casualty in supine position
1. Kneel besides the casualty
2. Remove spectacles and bulky items
3. Place your hands on the casualty's ears to steady and support the head and neck in the neutral position so that head, neck and spine are aligned (preferably, an assistant can help)
4. Straighten the casualty's legs carefully; keep them supported while positioning them
5. Loosen clothing at the neck, chest and waist
6. Place the arm nearest to you at right angles to the casualty's body with the elbow bent and palm facing upwards
7. Bring the casualty's other arm across the victim's chest and hold the back of hand against the cheek nearest to you
8. Grasp with the hand closest to the casualty's leg, the farthest leg just above the knee and pull it up
9. Roll the casualty towards you on his / her side
    a. When you are alone: support the head / neck
    b. When your assistant supports the head / neck, grasp the shoulder
10. Flex the top leg of the casualty at the hip joint to almost right angle; the knee should also flex
11. Adjust the lower hand of the casualty to rest under the lower cheek
12. Tilt the victim's head back so that the airway remains open
13. Continue monitoring and recording vital signs

Method (Suspected neck trauma and an acutely endangered airway)
1. Ensure help of an assistant
2. Follow the steps 1-5 as above, the assistant to continue supporting the head and neck while you continue with step 6-9
3. While rolling the casualty, the assistant ensures that the neutral position of the casualty's head and neck is maintained carefully during the roll
4. Continue supporting the neck thereafter or apply a neck collar when available

Figure 4.15: Placing the casualty in recovery position (no spinal injury)

MANAGEMENT OF FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

Method: Assessment

1. Look for signs of partial or complete airway obstruction in infants, children and adults. They include:
    a. Sudden onset of respiratory distress in absence of fever or previous respiratory symptoms
    b. Universal choking sign; victim clutches his/her neck
    c. Inability to speak or cry
    d. Weak ineffective cough
    e. High pitched sound while inhaling (stridor)
    f. Difficulty in breathing
    g. Cyanosis
    h. Loss of consciousness

Method: Relief of FBAO in responsive infant (step 1)

NOTE: If a child/infant with partial obstruction is coughing forcefully do not interfere with spontaneous breathing and cough but encourage the child to continue coughing.

1. Hold the infant prone with the head slightly lower than the chest on your forearm
2. Support the infant's head by firmly supporting the jaw
3. Rest your forearm on your thigh to support the infant
4. Using the heel of the hand give 5 back blows forcefully in the middle of the back between the shoulder blades
5. Then place your free hand on the infant's back supporting the occiput of the infant's head
6. Turn the infant as a unit while carefully supporting the head and neck
7. Hold the infant in supine, keeping the head lower than the trunk
8. Give 5 quick-down chest thrusts at the lower third of the sternum
9. Repeat the sequence until the object is removed or the infant becomes unresponsive

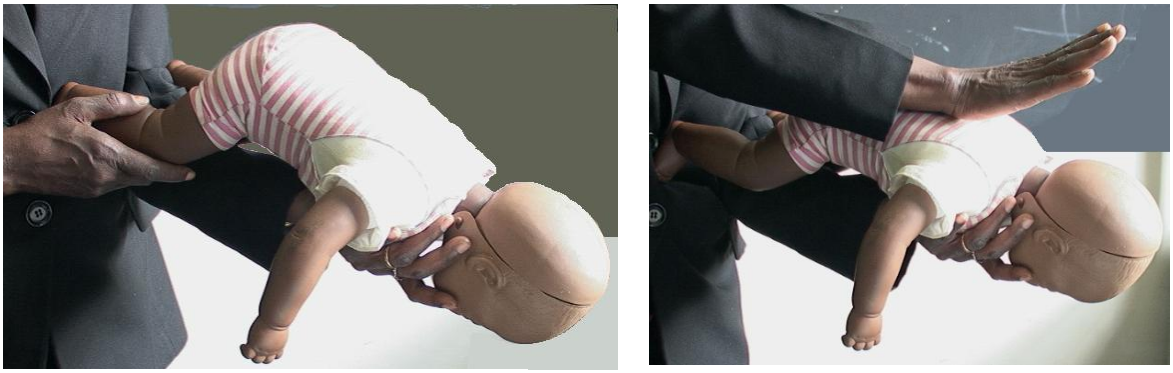


Figure 4.16: Removal of FBAO in responsive infant

Relief of FBAO a responsive child or adult - Heimlich manoeuvre (step 2)

1. Stand or kneel behind the casualty
2. Place your arms directly under the casualty's chest
3. Make a fist with one of your hands and place the flat thumb side against the victim's abdomen in the midline above the umbilicus and below the tip of the xiphoid process
4. Grasp the fist with the other hand
5. Do 5 quick inward and upward thrusts against the casualty's abdomen
   NOTE: Each thrust should be a separate distinct movement delivered with the intent to relieve the obstruction.
6. Continue the series until the foreign body is expelled or the casualty becomes unresponsive

Figure 4.17: Heimlich Manoeuvre

Relief of FBAO in unresponsive infant, child or adult

1. Shout for help
2. Open the casualty's airway by grasping both tongue and lower jaw between thumb and finger and lift (tongue-jaw lift)
3. Look for the object in the pharynx
4. If the object is visible carefully remove it
   NOTE: Do not perform a blind finger sweep
5. Open the airway with a head tilt - chin lift manoeuvre and give 2 rescue breaths
6. If rescue breaths are not effective (chest is not moving), retry opening the airway maximal by repositioning the head with the head tilt – chin lift manoeuvre again and reattempt ventilations
7. If ventilation remains ineffective, perform 30 chest compressions
8. Repeat steps 1-7 until the object is retrieved, normal breathing has resumed or rescue breaths are effective
9. Once effective ventilation is achieved (artificial or normal breathing), re-assess for circulation
10. Place the casualty in recovery position if he / she demonstrates adequate breathing and signs of circulation
11. Monitor closely

ASSESSMENT OF BREATHING AND PERFORMING ARTIFICIAL VENTILATION

Procedure: Assessing for breathing

Indication
1. Any person in whom breathing seems to be absent or impaired

Method
Place your ear over the victim's mouth and nose while maintaining an open airway. While observing the victim's breathing:
1. Look for the rise and fall of the chest
2. Listen for air escaping from nose/mouth during exhalation
3. Feel for the flow of air from nose/mouth during exhalation

Procedure: Performing artificial ventilations

Indication
Any person in whom breathing is absent

Mouth to mouth
1. Keep airway open by head tilt, chin lift manoeuvre
2. Gently pinch the nose with thumb and index finger
3. Take a deep breath and hold
4. Seal your lips around the victim creating an air tight seal
5. Give 2 slow regular breaths each lasting 1 second

Mouth to nose
1. Keep airway open by hand tilt, chin lift manoeuvre
2. Seal the mouth with one hand
3. Take a deep breath
4. Give 2 slow regular breaths through the nostrils
5. Open the mouth after to allow exhalation

Mouth to tracheo-stoma
1. Seal the mouth and nose tightly to prevent leakage of air
2. Take a deep breath
3. Give 2 slow regular breaths through the stoma
4. Open nose and mouth to allow exhalation

Figure 4.18: Artificial ventilation mouth to mouth

Mouth to mouth and nose (done in infants)

1. Keep airway open by head tilt, chin lift manoeuvre
2. Take a deep breath
3. Seal both the mouth and nose with your lips
4. Give 2 slow regular breaths

Mouth to barrier device (facemasks, shields)

1. Cover the mouth to prevent air leakage.
2. Take a deep breath.
3. Give 2 slow regular breaths lasting a second each.

Use of an Ambu bag

1. Keep the airway open
2. Place the mask on the victim's face
3. Seal the nose and mouth with the mask to prevent air leakage
4. Compress and release the self inflating bag rhythmically. The inspiration time is 1 second per compression. Give 2 regular breaths

ASSESSMENT OF CIRCULATION AND CIRCULATORY SUPPORT

Objective

To be able to determine presence or absence of pulse in unconscious persons and to be able to perform cardiac massage when indicated

Procedure: Assessing for circulation

Indication

1. Any unconscious person in an acute situation
2. Repeatedly during BLS

Method

The commonly used artery is the carotid and is carried out as follows:

1. Place your three middle fingers over the victims chin
2. Move the three fingers down the victim's neck to trace the crico-thyroid cartilage
3. Move the fingers to the groove between the cartilage and the sterno-cleido-mastoid muscle towards your side
4. Feel for the carotid artery pulse for 5 – 10 seconds

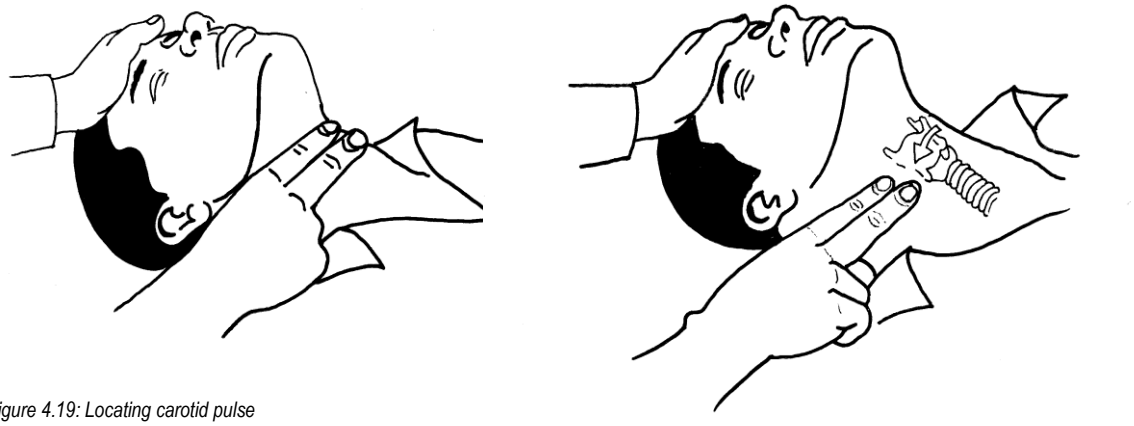


Figure 4.19: Locating carotid pulse

Procedure: Performing Chest Compressions

Indication

In casualties in who major pulses cannot be felt and who are therefore likely to have cardiac arrest

Relative contra-indication

Casualties with fractured ribs as this may worsen thoracic injuries

Method: Performing chest compressions for an adult

1. Place the victim in supine position on a firm / hard surface
2. Kneel beside the victim's chest (if victim on the floor) or stand by the bedside (if victim on the bed)
3. Place the heel of one hand on the lower half of the victim's sternum
4. Place the heel of the second hand on top of the first hand, so that they the hands overlap and lie parallel over each other
5. Inter-lock the fingers while lifting them off chest
6. Lock the elbows into position, arms straight and shoulders positioned directly over the hands
7. Compress the chest straight down at the sternum for approximately 1-2 inches
8. Allow the chest to return to its normal position
9. Repeat the sequence at the rate of 100 compressions / minute
10. Combine rescue compressions with rescue breaths at a ratio of 30:2
11. Once an advanced airway is in place, the compression rescuer continues at a rate of 100/min without pause and ventilation at 8-10 breaths / minute

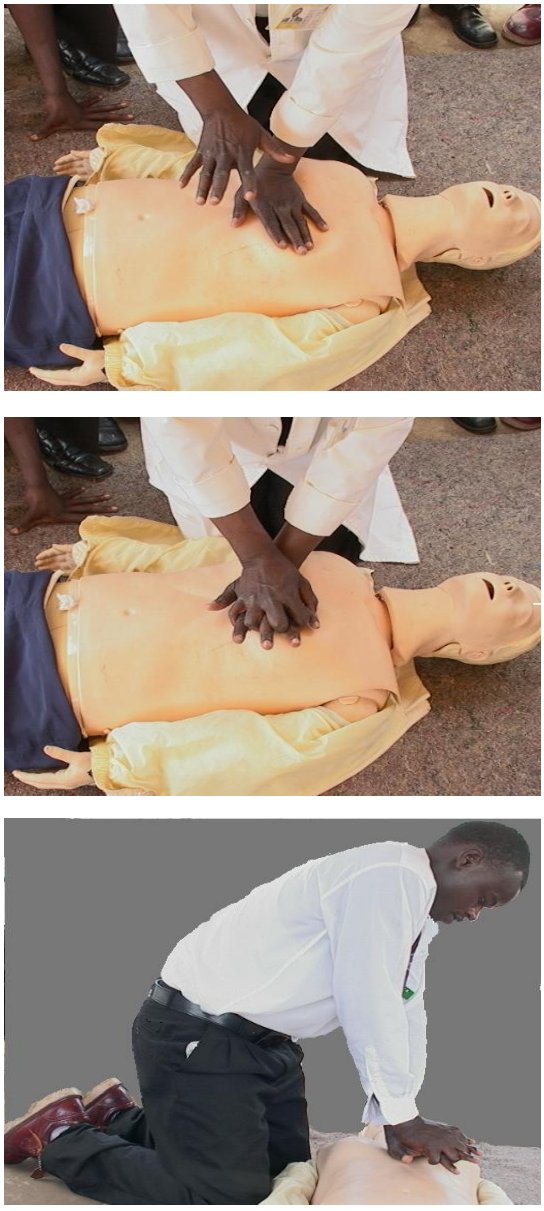


Figure 4.20: Chest compressions

Method: Performing chest compression for a child

1. Place the child in supine position on a flat surface
2. Place the heel of one's hand over the sternum at the level of the nipple line
3. Compress the chest at a depth of 1/3 – ½ at a rate of 100 / minute
4. Combine rescue compression with breathing at the ratio of 30:2 for one rescuer and 15:2 for 2 rescuers

Method: Performing chest compression for an infant (two finger technique)

1. Place the infant in supine position on a flat surface
2. Place 2 or 3 fingers on the sternum just below the nipple line
3. Compress approximately 1/3 – ½ of depth of the chest at a rate of 100 times per minute. Use thumb encircling hands technique for compression (see figure 34)
4. Combine rescue compressions and breathing at a ratio 30:2
5. If 2 rescuers are performing CPR the compression / ventilation ratio is 15:2

Figure 4.21: Chest compression infant

Restoring a heart rhythm – use of a defibrillator

Indication

A defibrillator is used in the treatment of extreme venti fibrillation and absence of pulse and should by applied on use a defibrillator

Method

1. Power on the AED (Automated External Defibrillat prompts
2. Stop chest compressions
3. Attach the electrode pads on the indicated correct loc
4. Analyze the rhythm
5. Select the energy of 360 KJ
6. Ensure all rescuers are clear of the victim by:
7. Stay clear of the victim while charging
8. Announce and verify that everybody is clear
9. Press the shock button if defibrillation is indicated
10. Assess for circulation for 5-10 seconds
11. If the shock has not resulted in change of rhythm cor cycles, then reassess or defibrillate again

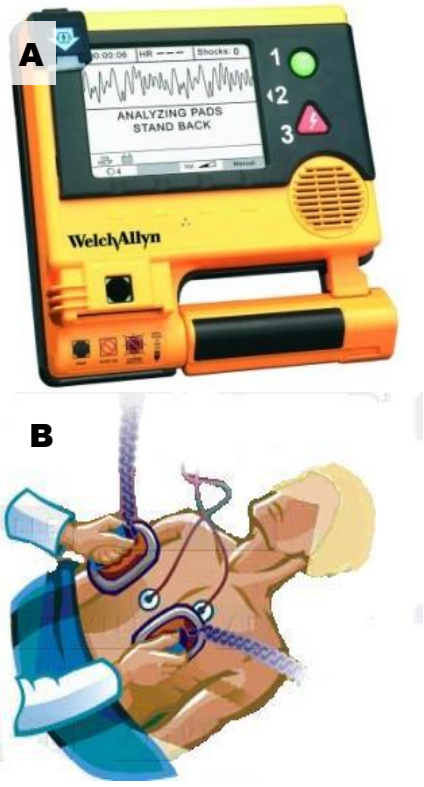


Figure 4.22: Defibrillator (A) Placing the pads (B)

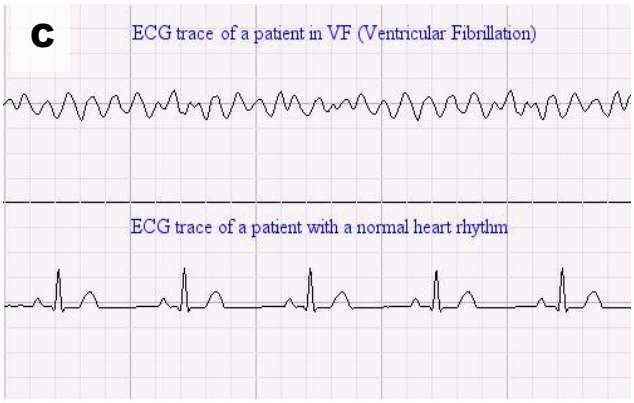


Figure 4.23: ECG traces – normal (bottom) and VF (top)

CHAPTER 5: HISTORY TAKING & BASIC PHYSICAL EXAMINATION SKILLS

Annex to CMS 160: Clinical Methods

PART I: COMMUNICATION SKILLS INTEGRATED IN MEDICAL PRACTISE

General History Taking

PART II: GENERAL PHYSICAL EXAMINATION

Basic Examination Skills & Instruments

Physical Examination: Approach and Overview

General physical examination

Vital signs

PART III: SPECIFIC PHYSICAL EXAMINATION

Chest Examination: Lungs

Cardiovascular System Examination

Chest Examination: Heart

Jugular Venous Pressure Measurement

Peripheral Vascular Examination

Per Abdomen Examination

GENERAL HISTORY TAKING

Introduction to history taking

History taking or patient interview is an important component of medical practice and health care because it is what provides the necessary information and the relevant details for making of a diagnosis and subsequently the decision on patient management.

Figure 5.1: Taking history from a patient

Objectives

The ability to:

1. Create a conducive environment and a good rapport with the patient
2. Demonstrate good communication skills while taking history:
    a. Active listening & observation skills
    b. Exploration skills
    c. Questioning technique
    d. Use of summarizing
3. Take history in a logical and suitable format
4. Use the information obtained to reach a relevant understanding of the patient's problem(s)
5. Use the information obtained to reach a relevant differential diagnosis

Requirements

1. Quiet examination room
2. Table, chair, examination couch
3. Writing materials
4. An interpreter / informant where applicable

Procedure of history taking

1. Welcome the patient (greet) and ensure his / her comfort (offer a seat / the couch)
2. Introduce yourself
3. Assure confidentiality when applicable
4. Establish the language of communication (where possible the one the patient understands best)
5. Conduct the interview using the relevant communication and history taking skills

The two tables below outline the relevant steps / parts in the two domains of communication skills and history taking skills.

The steps in communication: format

Main areas	Steps
Initiating the session	1. Greets patient 2. Introduces self and role 3. Demonstrates respect 4. Identifies reason(s) for encounter 5. Confirms reason(s) for encounter
Gathering information / exploration of problems	6. Encourages patient to tell story 7. Appropriately moves from open to closed questions 8. Listens attentively 9. Facilitates patient's responses verbally and non-verbally 10. Uses easily understood questions and comments 11. Clarifies patient's statements 12. Establishes dates
Understanding the patient's perspective	13. Determines and acknowledges patient's ideas or cause 14. Explores patient's concerns or problem 15. Encourages expression of emotions 16. Picks up verbal and non-verbal cues
Providing structure to the consultation	17. Summarizes at end of a specific line of inquiry 18. Progresses using transitional statements 19. Structures logical sequence 20. Attends to timing
Building a relationship	21. Demonstrates appropriate non-verbal behaviour 22. If reads, writes it does not interfere with the dialogue / rapport 23. Is not judgemental 24. Empathises with and supports patient 25. Appears confident
Closing the session	26. Encourages patient to discuss any additional points 27. Closes interview by summarizing briefly 28. Contracts with patient on the next steps

The steps of history taking: content

Steps	Details of each step
Personal identification	Ask the client about identification details e.g. name, age, sex, residence, religion, marital status and occupation
Chief complaints	Proceed to ask about what brought the patient to the health facility (main complaints) and their duration
History of presenting illness	Explore the main complaints (history of presenting illness). Analyze the patient's principle complaints and describe in terms of: location, quality, quantity or severity, timing, the setting which they occur, aggravating and relieving factors. Consider the course or shape of illness, i.e. the progress since it started to the present time; improved or worsened. Current medications including dose and frequency of use, allergies including specific reactions Thoroughly exhaust the affected system covering all the relevant findings – either positive or negative
Review the systems	This scheme is arranged under anatomical systems, the main purpose being to ensure no symptom or disorder is neglected and to assess the effect of the illness on the other systems. Exhaust the systems by screening for the following **General:** weight, sleep, energy **Cardiovascular system**: dyspnoea, pain or tightness, palpitations, cough, oedema, lassitude **Respiratory system**: cough, sputum, breathing, wheeze, chest pain **Gastrointestinal tract:** pain, appetite, vomiting, flatulence water brash, heartburn, dysphagia, diarrhoea, constipation Liver and gall bladder-jaundice and pain **Genital system:** puberty onset, erections, emission, testicular pain, libido, (in)fertility **Urinary system**: amount of urine, nocturia, colour of urine, continence, stream, blood in urine, dysuria, frequency, volume, undue thirst **Nervous system**: stroke, epilepsy, headache, mental state, dizziness, loss of balance, tremors, ataxia **Loco motor system**: arthritis, rheumatic fever, painful joints
Past medical and surgical history	Ask about Childhood illnesses and adult illnesses. Surgical illness: should include all important illnesses operations or injuries from infancy onwards. Beware of accepting ready made diagnoses Ask about any transfusions or drug allergy and investigations done.
Personal and social history	Capture the important and relevant information about the patient as a person, for example: home situation, housing, daily life, important experiences including upbringing & schooling; pleasure activities like hobbies, religious beliefs & affiliations. Check for lifestyles that create risk or promote health and health as well as maintenance measures, for example: alcohol, drugs, exercise and diet, occupation and educational status.
Family history	Which includes age and health, position of the patient in the family, cause of death of each immediate family member (parents, siblings, spouse, kids) Note the occurrence within the family of any chronic or family disorder, in particular the following conditions: DM, heart diseases, high blood pressure, TBC
Females: Gynaecological and obstetric history	Last monthly period, age of onset, regularity of periods, amount of bleeding, duration of flow, associated problems, last delivery, mode of delivery

EXAMINATION TECHNIQUES AND INSTRUMENTS

Examination techniques

Introduction

The objective of this manual is to assist you in developing your examination techniques necessary for carrying out the physical examination of patients. Furthermore, it will explain the instruments you can use to obtain more accurate data from your physical examination. In the manuals describing the physical examination of the particular systems you will find the detailed examination techniques for those systems.

Prerequisites when examining a patient

1. Use your senses well (sight, hearing, tactile and smell in particular)
2. Knowledge on the anatomical landmarks as these landmarks are used in relating the visible surface of the body to the signs transpiring from underlying structures. Also, the anatomical landmarks are used in documenting the location of your findings.
3. Ensure there is adequate lighting in the room to allow proper inspection
4. Secondary tangential lighting from a lamp that casts shadows is helpful in observing contours and variations in body surface
5. Ensure the place is quiet to allow proper percussion and auscultation
6. Ensure presence of the necessary instruments
7. Ensure privacy

Take time to practise and develop your examination techniques as they form the cornerstone of all your physical examination. Techniques can be trained very well on healthy persons, for example your colleagues.

Inspection

Definition: - Inspection is the process of observing. Within the context of physical examination it means observing signs indicating a healthy or a pathological state of certain systems within the patient.

Details of the technique:

1. Main systems for observation upon the patient's entrance:
    a. Neurological & musculoskeletal: posture, gait
    b. Neurological & psychological: eye contact, appropriate clothing
    c. Obvious signs of underlying disease: colour and moisture of skin; unusual odours
2. Continuously throughout history taking and physical examination:
3. Note patient's verbal statements & body language
4. Pay attention to detail and note your findings
5. During physical examination:
    a. Expose the areas you want to inspect
    b. Validate inspection findings with your patient ("I see a black spot here, have you noted it?")

Palpation

Definition: Palpation involves the use of your hands and fingers to gather information through the sense of touch.

Certain parts of the hands and fingers are better than others for specific types of palpation:

1. The palmar surface of the fingers and the finger pads are most suitable to assess position, texture, size, form, consistency, and presence of fluid or crepitus of a mass or structure
2. The ulnar surface of the hands and fingers is suitable to assess vibration
3. The dorsal surface of the hands is suitable to assess temperature

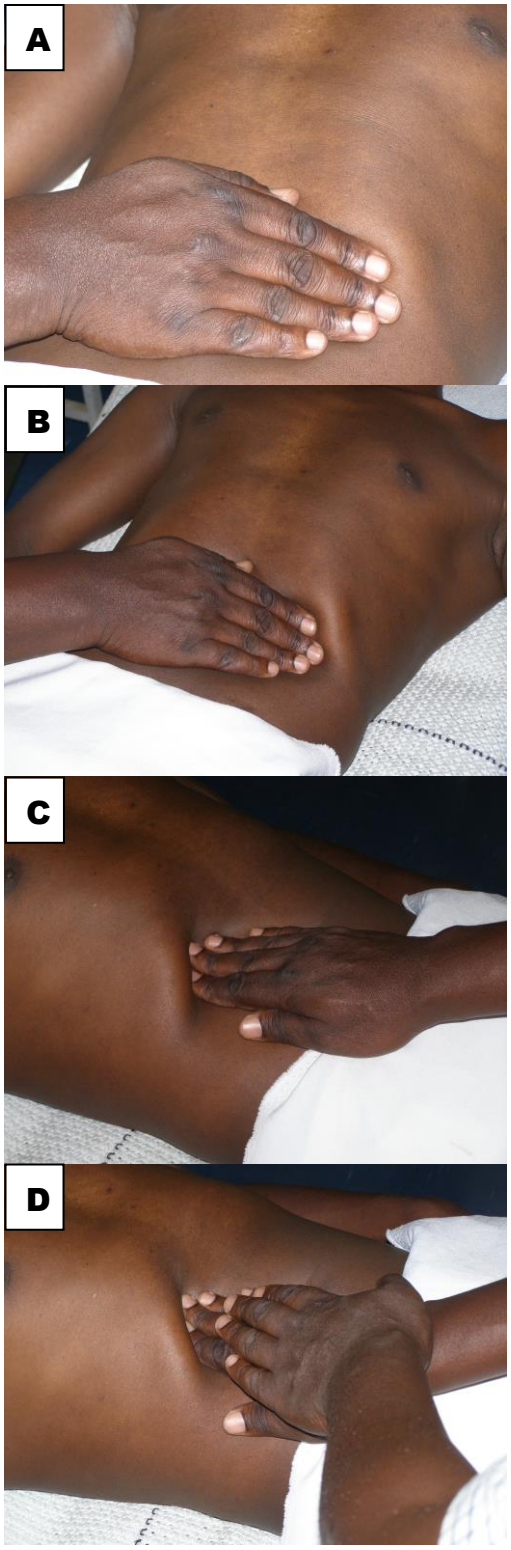


Figure 5.2: Light (A), moderate (B), deep (C) and reinforced (D) palpation

Palpation may be either light or deep as controlled by the amount of pressure applied with the fingers and hand

1. Light palpation always precedes deep palpation
    a. In the abdomen: Always begin the palpation process with light, systematic palpation of the four quadrants initially avoiding areas of tenderness or problem spots. Light palpation is important in eliciting areas off muscle resistance and tenderness.
2. Deep palpation is normally only done in the abdomen
3. Palpation can be done with one hand or by two hands on top of each other with the upper one exerting the pressure (reinforced palpation)
4. Bimanual palpation is a technique whereby an organ is palpated using both hands

<u>Preparation</u>

1. Ensure your fingernails are short to avoid discomfort or injury to the patient
2. Ask the patient lie on the examination couch in supine position and place his/her hands along side his body (this assists in relaxing abdominal wall muscles)
3. Stand on the right side of the patient (if the patient is in a low bed, sit on or kneel besides the bed on the patient's right)
4. Warm your hands to avoid producing muscle contractions
5. Ensure that the patient is comfortable
6. Ask the patient to relax
7. Ask the patient to show you any areas where he/she feels pain before you start palpation process

<u>Method</u>

1. Lay the palm of your hand on the area to be palpated with the fingers extended and approximated
2. Mould the palpating palm of the hand on the surface to be palpated

3. Depress the surface being palpated using the palmer surface of your fingers with an even pressing motion
4. Begin with gentle superficial examination starting away from the site of maximal pain
5. Move in a systematic manner to cover all the regions of the surface being examined
6. Keep your hand flat and intact on the surface (Avoid using the finger tips)
7. Watch the patient's face for any signs of discomfort as you palpate.
8. Palpate lightly in each region then repeat this palpation deeply (avoid short, quick jabs)

Percussion

Definition: - Percussion involve striking one object against another, thus providing vibration and subsequent sound waves. In physical examination your middle finger functions as a hammer, and the vibration is produced by the impact of the finger against underlying tissue

Sound waves are heard as percussion tones (notes) that arise from vibrations in body tissue. The degree of percussion tone is determined by the density of the medium through which the sound waves travel e.g. air, fluid or solid. The degree is classified as shown below:

Tone	Intensity	Pitch	Duration	Quality	Example
Tympanic	Loud	High	Moderate	Drum like	Gastric bubble
Hyper-resonant	Very loud	Low	Long	Boom like	Emphysematous lung
Resonant	Loud	Low	Long	Hollow	Health lung
Dull	Soft to moderate	Moderate to high	Moderate	Thud like	Over liver
Flat	Soft	High	Short	Very dull	Over muscle

Table 1: Percussion Notes

Techniques of percussion:

Techniques of percussion are the same regardless of the structure under percussion. Ensure your fingernails are short to avoid discomfort or injury to yourself or the patient.

Figure 5.3: Percussion technique

Most commonly used technique: Mediate or indirect percussion

1. Your middle finger of one hand acts as a hammer (plexor) and the finger of the other hand acts as the striking surface (pleximeter).
2. Place your non-dominant hand on the surface of the body with the fingers slightly spread.
3. Press its distal inter-phalangeal joint of your hyper-extended middle finger (pleximeter) firmly on the surface to be percussed (avoid surface contact by any other part of the hands as it will damp the vibrations).
4. Position your right forearm quite close to the surface with the hand cocked upwards
5. Right middle finger should be partially flexed, relaxed and posed to strike
6. The plexor should be almost at right angles to the pleximeter
7. Snap the wrist of the tapping hand downwards, and with the tip of the plexor sharply tap the inter-phalangeal joint or second phalanx of the pleximeter

Note: the downward snap of the striking finger originates from the wrist and not from movement in the forearm or shoulder. It should be a quick, sharp but relaxed wrist motion.

8. Once your finger has struck, snap the wrist back quickly lifting the finger to prevent dampening of the sound.
9. Use the tip and not the pad of the plexor finger.
10. To ease interpretation of the tone you can percuss one location several times
11. The degree of percussion is more easily distinguished by listening to the sound change as you move from one area to another .Proceed with percussion from areas of resonance to areas of dullness

Alternative technique: Immediate (direct) percussion

Strike your finger or hand (fist) directly against the body

Example – clavicles and the skull (e.g. in hydrocephalus)

Auscultation

Definition: Auscultation means listening for sounds produced by the body. Some sounds such as speech are audible to the unassisted ear. Most others require a stethoscope to augment the sound.

In general, auscultation should be carried out last, after the other techniques have provided information that will assist in interpreting what you hear. Only in abdominal examination you auscultate before palpation and percussion as the latter two techniques sometimes influence the bowel sounds.

Techniques of auscultation:

1. Ensure a quiet environment
2. Place the bell or diaphragm of the stethoscope on the naked skin as clothing obscures sound
3. Stabilize the stethoscope by holding the chest-piece between the second and third finger. When using the diaphragm: press it firmly against the skin.
4. Avoid touching the tubing with your hands or allowing the tubing to rub against any surfaces as this creates extraneous noise.
5. Listen to the sound – not only for its presence or absence but also for its characteristics: intensity, pitch, duration and quality
    a. Closing your eyes may help you focus on the sound
    b. Target and isolate each sound, concentrating on one sound at a time

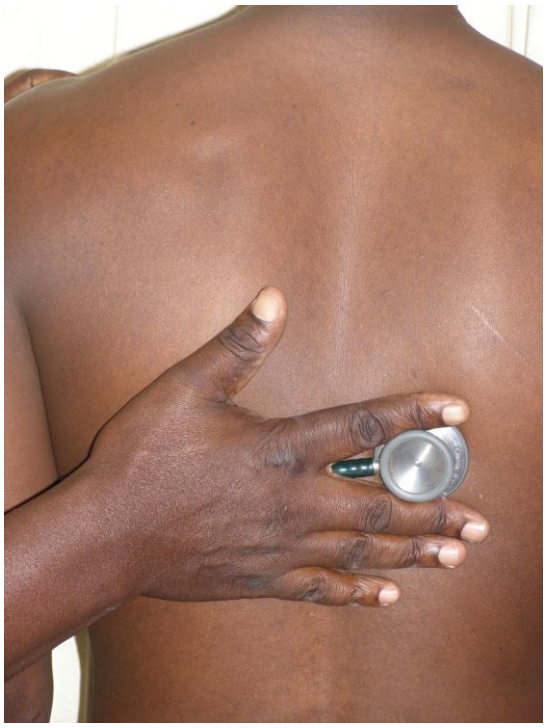


Figure 5.4: Holding the stethoscope between index and middle finger

Instruments

Stethoscope

Stethoscopes are used widely by health workers to ease and improve auscultation.

The most commonly used is the acoustic stethoscope, is a closed cylinder that transmits sound waves from the source along a column to the ear.
The side of the stethoscope coming into contact with the patient's body, the chest-piece, has a double end-piece: a diaphragm and a bell. It has a valve so that only one end-piece is operational at any one time.
The rigid diaphragm best transmits high-pitched sounds.
The transmission through the bell varies with the amount of pressure exerted. It transmits low-pitched sounds when very light pressure is used. With firm pressure it converts to a diaphragm end-piece.

Quality of stethoscopes varies widely in particular in their ability to transmit sounds properly. Taking into consideration the importance of the instrument, you are advised to look for a good quality stethoscope (for details of characteristics determining the quality.

Ophthalmoscope

The ophthalmoscope has a system of lenses and mirrors that enables visualization of the internal structure of the eye. When you focus on the inner eye, a light source in the instrument provides illumination through various apertures.

Otoscope

The otoscope provides illumination for examining the external auditory canal and the tympanic membrane. An attached speculum narrows and directs the beam of light.
The otoscope can be used for nasal examination if a nasal speculum is not available

Nasal speculum

The nasal speculum is used with a penlight to visualize the lower and middle turbinates of the nose.

Tuning fork

Tuning forks are used in screening tests for auditory function and to test vibratory sensation as part of neurological examination. When hit against a surface they produce a vibration or sound wave of a particular frequency as indicated on the fork. The one-leg end of the tuning fork is then placed on the patient's body to test whether he / she is able to notice and locate the sound or vibration. Tuning fork vibrations or sound wave of a particular frequency expressed as cycles per second (Hertz- Hz).Thus a fork of 512 Hz vibrates 512 cycles per second.

Percussion (reflex) hammer

The percussion hammer is used to test deep tendon reflexes.
Hold the hammer loosely between the thumb and index finger, so that as you tap the tendon, the hammer moves in a swift arc and in a controlled direction. Use a rapid downward snap of the wrist, tap quickly and firmly, and then snap your wrist back so that the hammer does not linger on the tendon.

Tape measure

A tape measure is used for determining circumference, length, and diameter.

Pen touch (Pen light)
A pen touch or light is used for illumination of areas to be examined e.g. the mouth and ear, nose and throat.

Sphygmomanometer
A sphygmomanometer is an instrument for measuring the blood pressure. The three types of BP machines are the mercury sphygmomanometer, the aneroid and digital sphygmomanometer.

Thermometer
This is an instrument for measuring body temperature in degrees Celsius or Fahrenheit. There are two main types of thermometers namely the mercury thermometer and digital thermometer.

PHYSICAL EXAMINATION: APPROACH AND OVERVIEW

Prerequisite knowledge

Communication skills
Anatomy and physiology of body organ systems

Introduction

Most patients view physical examination with at least some anxiety, often mixed with appreciation of detailed concern for their problems. They can feel vulnerable, physically exposed, and apprehensive about possible pain and the possible findings of the clinician.

Guidelines to become a competent clinician exhibiting correct skills & attitudes

1. Ask for permission and explain the procedure before starting physical examination.
2. Be thorough without wasting time, systematic without being rigid, gentle yet not afraid to cause discomfort
3. Listen, look, touch and smell when examining each region of the body and at the same time continue paying attention to the whole patient
4. Study and repetitively practice, to makes the flow of examination smooth. Sufficient training will enable you to gradually shift your attention from where to place your hands or instruments to what you see, hear and feel. Gain proficiency by repeatedly performing examinations, and doing them periodically to maintain your skills
5. Try to look calm organized, and competent, even if you do not exactly feel that way
6. Avoid expressions of disgust, alarm, distaste or other negative reactions
7. Assure as much privacy as possible by using drapes and by closing doors
8. Ensure the environment is quiet and the room well to enhance information gained from listening and observing
9. Keep patient informed as you proceed with your examination e.g.: “I would like to examine your heart now. Would you please lie down?”
10. Be forthright with the patient about your status as a student. Such openness will clarify your relationship and probably reduce anxieties on both sides
11. Realise that most people who seek health care have health-related worries or symptoms .The physical examination may help both to identify such concerns and to explain the symptoms.
12. Appreciate that physical examination provides an important opportunity for health promotion through education and counselling, and increases both credibility and the conviction of the clinician’s advice or reassurance.
13. Sequence the comprehensive examination in a manner designed to minimize the patient’s need to change positions and maximize your efficiency. Variations are possible and you may wish to develop a method of your own. In general it is helpful to move ‘from head to toe’.
14. Your position and handedness: Examine a supine patient from the patient’s right side, moving to the foot of the bed or either side as necessary. Working chiefly from one side helps you to master skills more quickly and promotes efficiency.

The right side has several advantages: the palpating hand rests more comfortably on the apical impulse; the right kidney is more frequently palpable and examining tables are sometimes placed against one wall to favour this right-handed approach.
Left handed students may find this position awkward at first but are encouraged to practice it for convenience of themselves and others.

Overview of a comprehensive examination

To get an overview of the physical examination use the following outline. Later guidelines deal with individual body regions and systems. After you have completed the manual and practiced the content of one or more chapters re-read this overview to see how each segment of the examination fits in.

General survey

1. Observe the patient's general state of health, height, built, and sexual development
2. Weigh patient if possible
3. Note posture, motor activity, gait, dress, grooming and personal hygiene: any odours of the body and breath
4. Watch patient's facial expressions and note manner and, affect and reactions to things in the environment
5. Listen to manner of speaking and note state of awareness

Continue the survey throughout the history and examination

Vital signs

1. Count the pulse and respiratory rate
2. Measure the blood pressure
3. Take the body temperature

The patient should be sitting on the edge of the bed or couch, unless this position is contraindicated. You should be standing in front of the patient, moving to either side as necessary.

Skin

1. Observe the skin of the face and its characteristics
2. Identify any lesions, noting their location, distribution, arrangement, type and colour
3. Inspect and palpate the hair and nails
4. Study patient's hands
5. Continue your assessment of the skin as you examine the other body regions

Head

Examine the hair, scalp, skull, and face

Eyes

1. Check visual acuity and screen visual fields
2. Note the position and alignment of the eyes
3. Observe the eyelids and inspect the sclera and conjunctiva of each eye
4. With oblique lighting, inspect each cornea, iris and lens
5. Compare the pupils and test their reactions to light
6. Assess extra-ocular movements
7. With the ophthalmoscope, inspect the ocular fundi

The room should be darkened for examination with the ophthalmoscope.

Ears

1. Inspect the auricles, canals, and drums
2. Check auditory acuity
3. If acuity diminished check lateralization (Weber test) and compare bone conduction (Rinne test)

Nose and Sinuses
1. Examine the external nose, and with the aid of a light and speculum inspect the nasal mucosa, septum, and turbinates
2. Palpate for tenderness of the frontal and maxillary sinuses

Mouth and Pharynx
Inspect the lips, oral mucosa, gums, teeth, tongue, palate, tonsils, and pharynx

Neck
1. Inspect and palpate the cervical lymph nodes
2. Note any masses or unusual pulsations in the neck
3. Feel for any deviation of the trachea
4. Observe the sound and effort of patient's breathing
5. Inspect and palpate the thyroid gland

Move behind the sitting patient to feel the thyroid gland and to examine the back, posterior thorax, and lungs

Back
1. Inspect and palpate the spine and muscles of the back
2. Check for costo-vertebral angle tenderness

Posterior Thorax and Lungs
1. Inspect, palpate, and percuss the chest
2. Identify the level of diaphragmatic dullness on each side
3. Listen to the breath sounds, identify any adventitious sounds, and if indicated listen to the transmitted sounds
4. Move to the front of patient

Breast, Axillae, and Epitrochlear nodes
1. In a woman, inspect the breasts with her arms relaxed, then elevated, and then with her hands pressed on her hips.
2. In either sex, inspect the armpits and feel for the axillary nodes.
3. Feel for epitrochlear nodes

Musculoskeletal system
1. Examine the hands, arms, shoulders, neck and temporo-mandibular joint while patient is sitting
2. Inspect and palpate joints and check their range of motion

Ask patient to lie down. You stand at the right side of the patient's bed

Breasts
Palpate the breasts, while at the same time continuing your inspection

Anterior thorax and lungs
1. Inspect, palpate, and percuss the chest
2. Listen to the breath sounds, any adventitious sounds, and if indicated transmitted voice sounds

Cardiovascular system

Elevate the head of the bed to about 30 degree for cardiovascular examination, adjusting it as necessary to see jugular venous pulsations. Ask patient to roll partly onto the left side while you listen at the apex. Then have patient lie back while you listen to the rest of the heart. The patient should sit, lean forward and exhale while you listen for murmurs of aortic regurgitation.

1. Inspect and palpate the carotid pulsations
2. Listen for carotid bruits
3. Observe the jugular venous pulsations, and measure the jugular venous pressure in relation to the sternal angle
4. Inspect and palpate the precordium
5. Note the location, diameter, amplitude, and duration of the apical impulse
6. Listen at the apex and lower sternal border with the bell of the stethoscope
7. Listen at each auscultatory area with the diaphragm
8. Listen for physiologic splitting of the second heart sound and for any abnormal heart sounds or murmurs

Abdomen

Lower the head of the bed and patient should be supine

1. Inspect, auscultate, and percuss the abdomen
2. Palpate lightly, then deeply
3. Assess the liver and spleen by percussion and then palpation
4. Try to feel the kidneys, and palpate the aorta and its pulsations

Rectal examination in men

1. The patient is preferably lying on his left side
2. Inspect the sacrococcygeal and perianal areas
3. Palpate the anal canal, rectum and prostate
4. If the patient cannot stand, examine the genitalia before doing the rectal examination

Genitalia and Rectal examination in women

1. The patient is supine in the lithotomy position. You should be seated at first, then standing at the foot of the examining table
2. Examine the external genitalia, vagina and cervix
3. Obtain Pap smears
4. Palpate the uterus and the adnexae
5. Do a recto-vaginal and rectal examination

Legs

The patient is supine

1. Examine the legs, assessing three systems while the patient is still supine. Each of the three systems will be examined further when the patient stands.
2. Peripheral vascular system
3. Note any swelling, discoloration or ulcers
4. Palpate for pitting oedema
5. Feel the a. dorsalis pedis posterior, tibial and femoral pulses and, if indicated, the popliteal pulses
6. Palpate inguinal lymph nodes

Musculoskeletal system

1. Note any deformities or enlarged joints
2. If indicated palpate the joints and check their range of motion

Neurological system
Observe the muscle bulk, the position of the limbs and any abnormal movements.

Final examinations with the patient standing
The patient is standing. You should sit on a chair or stool

1. Inspect for varicose veins
2. Examine the alignment of the spine and its range of motion
3. Alignment of the legs and feet
4. Examine the penis and scrotal contents and check for hernias
5. Observe the patient's gait and ability to walk heel-to-toe, walk on the toes, walk on the heels, hop in place and do shallow knee bends
6. Do a Romberg test and check pronator drift

Additional neurological examination
1. Mental status-if indicated and not done during interview
    a. Assess the patient's mood, thought process, content, abnormal perceptions insight and judgement, memory and attention, information and vocabulary, calculating abilities, abstract thinking and constructional ability
2. Cranial nerves
    a. Sense of smell, strength of temporal and masseters muscles, corneal reflexes
    b. Facial movements, gag reflex and strength of the trapezii and sternomastoid muscles
3. Motor
    a. Muscle tone, muscle strength, rapid alternating movements and point-to-point movements
4. Sensory
    a. Pain, temperature, light touch, position, vibration and discrimination
    b. Compare right with left sides and distal with proximal areas on the limbs
5. Reflexes

Note:
When you have completed your examination tell the patient what to do and what to expect next. Then wash your hands and clean your equipment or dispose it properly.

GENERAL EXAMINATION

Objective

The ability to:

1. Use the correct techniques while performing general physical examination
2. Carry out a full physical examination correctly and independently
3. Place the patient in the correct position according to the examination to be carried out
4. Use anatomical knowledge in carrying out and interpreting the general examination
5. Specifically examine for the following:
   a. Pallor
   b. Jaundice
   c. Hypoxemia: cyanosis and finger clubbing
   d. Dehydration
   e. Oedema
   f. Lymph node examination

Procedure: General examination

General survey

1. As the patient gets into the examination room, observe the patient's general state of health, height, build, posture, gait, grooming, and personal hygiene, hair changes, skin lesions any odours of body or breath.
2. Watch the patient's facial expressions and note the reactions to persons and things in the environment
3. Also listen to the patient's manner of speaking and note the state of awareness or level of consciousness

Then proceed to perform examination for the signs mentioned below

Pallor

The following sites of the body can be examined for pallor:

1. Conjunctiva
2. Tongue and lips
3. Palms
4. Nail bed: capillary refill
5. Sole of the foot
6. Anus / perineum

Figure 5.5: Inspection of the conjunctivae

1. ***Conjunctivae***
   a. Ask the patient to be seated or lie supine, facing you
   b. Place both thumbs on the margin of the lower eyelids and gently pull the skin downwards to evert lower lids (palpebral conjunctiva) and examine the colour
2. ***Tongue / Lips***
   c. Ask the patient to open the mouth and protrude the tongue
   d. Observe the colour of the tongue
   e. Pull and evert the upper and lower lip gently and observe the colour of the inner parts

3. ***Palms***
    f. Ask the patient to supinate the two palms
    g. Observe the colour while you comparing with your own palms.
4. ***Capillary refill test***
    a. Blanch the nail bed with the thumb and sustain the pressure for several seconds on fingernail or toenail
    b. Release the pressure
    c. Observe the time elapsed time before the nail regains its full colour. Normally, this should occur almost instantly – in less than 2 seconds
5. ***Soles***
    h. With patient lying supine or seated: look at the soles and observe colour
6. ***Anus / perineum***
    i. Patient in lithotomy position (supine, hips and knees flexed) or side lying then assess the perineum / anus for colour if applicable, using gloves.

Jaundice

Jaundiced means: having a yellowish discoloration. This discoloration can be observed at the following sites: sclera, mucous membranes and skin

Figure 5.6: Inspection of the sclera

1. With the patient seated or supine, gently elevate the upper eyelids using both thumbs. With the patient facing a light source, ask him / her to look downwards to expose the sclera and assess the colour
2. Ask the patient to open the mouth and then examine and assess the colour of the mucous membranes
3. Examine the skin and assess the colour. In light skinned individuals and infants the discoloration may be seen easily
4. Look at the colour of the palms and soles of the patient and compare with yours
5. A yellowish discoloration of the sites denotes the presence of jaundice

Hypoxemia

Hypoxemia: Cyanosis

There are 2 types of cyanosis, central and peripheral. Examination sites for cyanosis:

a) In central cyanosis: lips & fraenulum (under the tongue)
b) In peripheral cyanosis: the extremities i.e. the hands and feet

1. Examine the patient's lips and assess the colour
2. Ask the patient to open the mouth and roll the tongue upwards against the hard palate to expose the fraenulum; then assess the colour.
3. With the patient seated or lying in bed, assess the colour of the palms of the hands and soles of the feet.
4. A bluish/purplish discolouration of any of these sites indicates cyanosis.

Hypoxemia: Finger clubbing

Figure 5.6: Normal nails (left) and the nails in finger clubbing (middle and right)

Figure 5.7: Testing for adherence to the nail bed

1. With the patient seated or lying supine, pronate the hand and then look at the shape of the nails as you compare with yours.
2. The nail base angle should measure about 160 degrees.
3. Observe this by placing a ruler or a sheet of paper across the nail and dorsal surface of the finger and examine the angle formed by the proximal nail fold and nail plate. In clubbing the angle increases and approaches or exceeds 180 degrees.
4. Ask the patient to place together the nail (dorsal) surfaces of the fingertips from the right and left hands.
5. When the nails are clubbed, the diamond-shaped window at the base of the nails disappears, and the angle between the distal tips increases (Shamroth technique).
6. Gently squeeze the nail between your thumb and the pad of your finger to test for adherence of the nail to the nail bed. The nail bed should feel firm. A boggy nail base accompanies clubbing.

Dehydration

Sites for assessing the patient's hydration state are:

1. Fontanels
2. Eyes
3. Mucous membranes
4. Skin (abdomen or chest)

Figure 5.8: Testing skin turgor

1. Fontanels:
    a. In young children in whom the fontanels are still open (approximately under 18 months old): with the patient seated look and palpate the anterior and posterior fontanels to assess their level in relation to the bone. Sunken in dehydration
2. Eyes:
    b. Examine the eye in relation to the sockets. Sunken in dehydration.
    c. Look for tear in a crying child: Absent in dehydration
3. Mucous membranes:
    d. Ask the patient to open the mouth and look at the mucous membranes, tongue and lips to see if they are dry or not.
4. Skin turgor:
    e. With the patient in supine position, expose the chest and abdomen
    f. Pinch the skin over the chest or abdomen using the thumb and index finger
    g. Observe the duration the pinched skin takes to go back to normal position. The normally hydrated skin should feel resilient, move easily when pinched, and return to place immediately when released.

Oedema

Sites to elicit oedema:

i. Face
ii. Sacrum
iii. Abdomen
iv. The extremities

1. Face: Seat or assist the patient to lie supine and observe the face for any puffiness or peri-orbital oedema
2. Sacrum: Examine the sacral region in bed ridden patients and press the sacral area with the thumb for 30 seconds. Look for any signs of pitting.
3. Lower limbs: Use both thumbs to apply pressure on the lower limbs 1 centimetre above the medial malleolus for a duration of 30 seconds, as you look at the patient's face .Then assess if there is any depression(pitting) by running the your finger over the site.
4. When oedema is present: determine the severity of the oedema
5. When oedema is present: determine whether it is pitting or non-pitting
6. Report the findings in terms of site, bi- or unilateral, tender or non-tender and pitting or non-pitting

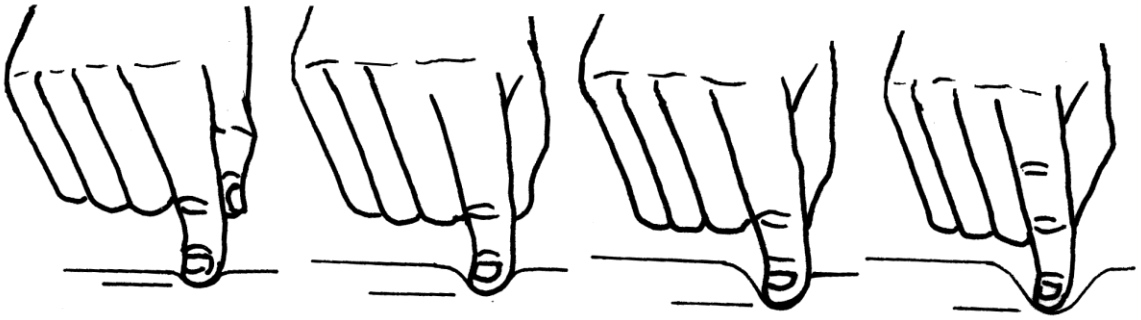


Figure 5.9: Assessing for pitting oedema

Lymph node examination

Equipment

1. Centimetre ruler
2. Marking (skin) pencil

The lymphatic system is examined by inspection and palpation, region by region as you examine the other body systems, and also by palpating the spleen.

Note:

Small, mobile and painless lymph nodes are often palpable in healthy individuals
A painful lymph node is suggestive for an inflammatory process
A firm or fixed non-mobile lymph node is very suggestive for a malignant process

The lymph nodes most accessible to inspection and palpation		
The 'Necklace' of nodes	**The arms**	**The legs**
○ Parotid ○ Retropharyngeal (tonsillar) ○ Sub-mandibular ○ Sub-mental ○ Sublingual (facial) ○ Superficial anterior cervical ○ Superficial posterior cervical ○ Pre-auricular and post-auricular ○ Sternocleidodmastoid ○ Occipital ○ Supra-clavicular ○ Infra-clavicular	○ Axillary ○ Epitrochlear (cubital)	○ Superficial superior inguinal ○ Superficial inferior inguinal ○ Deep inguinal ○ Occasionally, popliteal

Table: Lymph nodes assessable for palpation

Examination of lymph nodes – general technique

1. Inspect each area of the body for apparent lymph nodes, oedema, erythema, red streaks and skin lesions.
2. Using the pads of the second, third, and fourth fingers gently palpate for the superficial nodes.
3. Try to detect any invisible enlargement, and note the location consistency, mobility, tenderness, size, shape, discreteness and warmth of the nodes. Move the skin over the area of the nodes. Press lightly at first, increasing pressure gradually.
4. Mark the skin with a skin pencil to define the extent of the node

Examination for lymph nodes: head and neck

1. Seat the patient on a chair with the neck at a comfortable level.
2. Palpate the anterior lymph nodes from behind the patient and the posterior nodes from the front. The anterior border of the sternocleidomastoid muscle is the dividing line for the anterior and posterior triangles of the neck and is a useful landmark for describing location
3. Bend the patient's head slightly forward or to the side to ease taut tissues and allow better accessibility to palpation.
4. Lymph nodes of the head: palpate these nodes in the following six-step sequence:
   a. The occipital nodes at the base of the skull
   b. The post-auricular nodes located over the mastoid process.
   c. The pre-auricular nodes just in front of the ears ad compare the nodes bilaterally
   d. The parotid and retropharyngeal nodes at the angle of the mandible
   e. The sub-mandibular nodes halfway between the angle and the tip of the mandible
   f. The sub-mental nodes in the midline behind the tip of the mandible.
5. Then move down to the neck, palpating in the following four-step sequence:
   a. The superficial cervical nodes at the sternocleidomastoid muscle
   b. The posterior cervical nodes along the anterior border of the trapezius muscle
   c. The cervical nodes deep to the sternocleidomastoid
   d. The supra-clavicular areas, probing deeply in the angle formed by the clavicle and the sternocleidomastoid muscle, the area of the Virchow's nodes

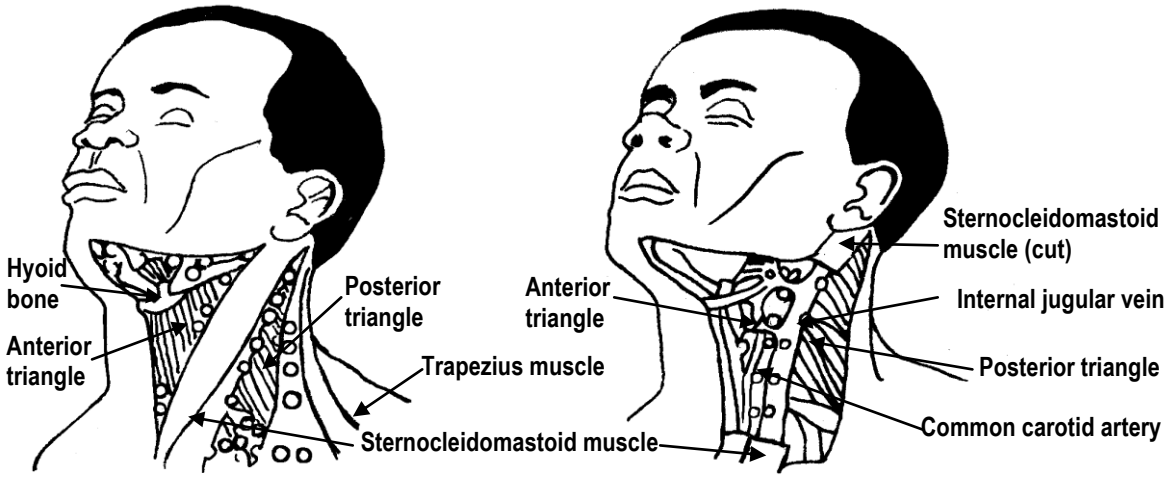


Figure 5.10: Lymph nodes of the neck (lateral view)

When examining the lymph nodes of the head and neck, make it a lasting practice habit to palpate the various lymph node stations always in the same following order from 1 up to 10:

1. **occipital group**: At the protuberantia occipitalis externa
2. **post-auricular group:** Behind the ear
3. **pre-auricular group**: In front of the ear
4. **tonsillar group**: under and behind mandibular angle
5. **sub-mandibular group**: under ramus mandibulae / halfway mandibular angle and chin
6. **sub-mental group:** +/- 2 cm before chin in the median line
7. **superficial cervical group**: proximal over the M. Sterno-Cleïdo-Mastoïdeus
8. **posterior cervical group**: before margin of the M. Trapezius
9. **deep cervical group:** deep before the M. Sterno-Cleïdo-Mastoïdeus, but very often not palpable due to the deep localisation
10. **supra-clavicular group**: just above and posterior of the clavicle ”posterior neck triangle’

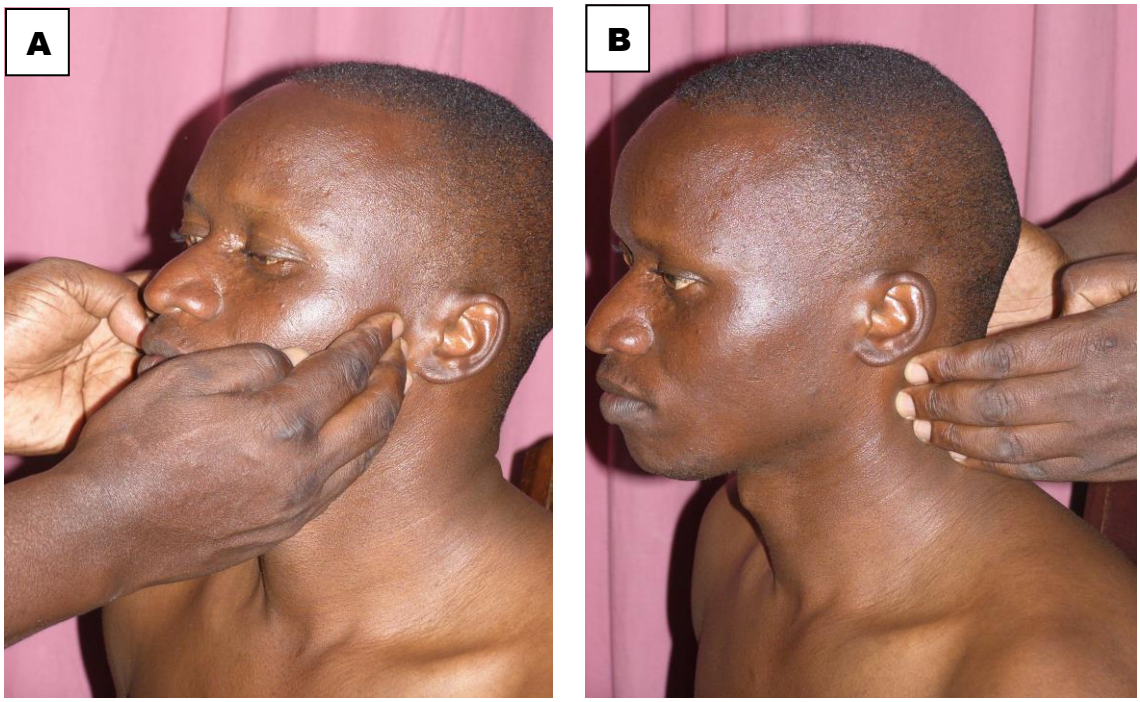


Figure 5.11: palpation of pre-auricular (A) and posterior cervical nodes

Examination for lymph nodes: axillae

The complete examination of breast, axilla and adjacent areas is described in the guideline “Examination of the Breast and the Axilla”.

Examination of other lymph nodes

1. Move the hand in a circular fashion, probing gently without pressing hard.
2. Relieve tension by flexion of the extremities.
3. Epitrochlear nodes: Palpate by supporting the elbow in one hand as you explore with the other. Palpate in the depression above and posterior to the medial condyle of the humerus.
4. Inguinal & popliteal nodes: Have the patient lie supine with the knee slightly flexed and palpate the respective areas. The superficial inguinal (femoral) nodes are close to the surface over the inguinal canals. The inferior superficial inguinal nodes lie deeper in the groin.

VITAL SIGNS

Includes

Measurement of arterial pulse
Blood pressure measurement
Temperature measurement
Measurement of respiration rate

Introduction

Vital signs include pulse, respiration, blood pressure and temperature
The word vital signs means essential to life.

Objective

The ability to take, describe and interpret pulse, respiration, blood pressure and temperature to assess and follow-up the condition of a patient

Specific objective

The ability to:

1. take, describe and interpret temperature readings appropriately
2. assess ,describe and interpret pulse accurately
3. assess, describe and interpret respiration
4. measure and interpret blood pressure readings accurately

Indications

1. On request
2. For medico-legal purposes
3. As routine examination
4. Monitoring hypertension progression (BP measurement)
5. For evaluation of shock (arterial pulse & BP)
6. Fever – diagnostic & follow up (temperature, pulse, BP)
7. For assessment of critically ill patients (temperature, pulse, BP)

Taking Arterial Pulses

There are several different areas for palpating pulse but the radial pulse is the most widely used to assess:

1. Heart rate
2. Cardiac cycles per minute
3. Collapsing pulse
4. Arrhythmias
5. Condition of the blood vessel
6. Assessing the blood pressure

Figure 5.12: Taking radial pulse

Equipment

7. Watch with a second hand
8. Recording chart and pen

Sites for taking pulse

1. Radial pulse: on the thumb side of the wrist
2. Temporal pulse: lateral to the eye brow on the temporal bone
3. Brachial pulse: medial aspect of the cubital fossa
4. Femoral pulse: upper inner aspect of the thigh
5. Popliteal pulse: behind the knee
6. Posterior tibial pulse: behind the lateral malleolus
7. Dorsalis pedis pulse: upper surface of the foot
8. Carotid pulse: side of the neck

Procedure

1. Explain the procedure to the patient
2. Position the patient appropriately
3. Radial pulse:
   a. Position the patient in sitting or lying supine position
   b. Slightly dorsiflex the right wrist joint of the patient preferably with a greeting (relaxes tendons at the wrist and brings the radial artery close to the bone)
   c. Using the left index and middle finger pads of your pronated hand
   d. Feel for the radial pulsation proximal to the wrist joint against the lower end of the radius
4. Count the number of pulsations for a whole minute
   a. Note the regularity or irregularity of the pulsations
   b. Note the character of the pulsations
5. Record the rate (beats per minute) and other characteristics as appropriate and interpret your finding accurately

Characteristics of the pulse	
Rhythm	Regular Irregular Regular irregular Irregular irregular
Character	Feeble (small volume – e.g. dehydration) Pounding (e.g. anxiety) Collapsing
Pulse volume	

Table: Characteristics of pulse

	Pulse	Procedure
1	**Carotid**	Extend the neck and palpate medial to and below the angle of the jaw. (***Never*** palpate both carotid arteries at the same time)
2	**Brachial**	Palpable at the brachial fossa medial to the biceps tendon
3	**Radial**	Medial and ventral side of the wrist (gentle pressure)
4	**Femoral**	Midway between anterior superior iliac spine and pubic bone along the inguinal ligament
5	**Popliteal**	Patient prone and knee flexed and feel between the two hamstring tendons
6	**Dorsalis pedis**	Foot slightly dorsi- flexed then palpate medial side of dorsum upper 1/3
7	**Posterior Tibial**	It is a difficult pulse to palpate but it can be felt behind and slightly inferior to medial malleolus
8	**Venous**	Especially jugular venous pressures. Usually it is not used to determine the heart rate, therefore not used as a vital sign

Table: Locations of palpable pulses

Blood pressure measurement

Requirements

1. Mercury sphygmomanometer
2. Aneroid sphygmomanometer
3. Electronic sphygmomanometer (does not require stethoscope)
4. Stethoscope

NOTE: There are different cuffs for different sizes of patient's limbs and sites
When reading a mercury sphygmomanometer keep the manometer vertical and make all readings at eye level, no more than 3 feet away.

For Aneroid sphygmomanometer:

- The dial should face you not more than three feet away
- Needs periodical calibration
- Avoid slow and repeated inflations of the cuff as this can cause serious congestions

Picture 5.13: aneroid sphygmomanometer

Procedure

1. Inform the patient about the procedure
2. Position the patient appropriately (either seated or supine). Pressures taken in supine position tend to be lower than those taken in sitting position.
3. Flex the patient's arm slightly at the elbow and comfortably support it on a table, pillow or by your other hand, make sure that the arm is exposed fully

4. Centre the deflated bladder over the brachial artery, just medial to the biceps tendon, with the lower edge 2 to 3 centimetres above the antecubital crease. Wrap the sphygmomanometer cuff around the patients arm
5. Using the fingers of your hand, locate the pulsation of brachial or radial artery.
6. Rapidly inflate the cuff with the hand bulb 20 to 30mm Hg above the point at which you no longer feel the brachial pulse.
7. Deflate the cuff slowly at a rate of 2 to 3 mm Hg per second until you again feel at least two beats of the brachial pulse. This point is the palpable systolic blood pressure. Immediately deflate the cuff completely.
8. Now place the bell of the stethoscope over the brachial artery, and pausing for 30 seconds again inflate the cuff until it is 20 to 30 mmHg above the palpable systolic blood pressure (the bell of the stethoscope is more effective than the diaphragm in transmitting the low-pitched sound produced by the turbulence of blood flow in the artery-Korotkoff sounds.)
9. Slowly release the air from the cuff allowing blood to flow through the artery. Sounds caused by the returning blood flow are heard with the stethoscope. The first sound heard as the cuff deflates and blood flow resumes is the systolic reading
    a. Two consecutive beats indicate the systolic pressure and also the beginning of phase 1 of Korotkoff sounds
    b. It is a faint beat that becomes louder and then becomes muffled and stops. The point at which the beat stops is the diastolic pressure (note the point at which the sounds become muffled.) This is the first diastolic sound. It signals immediate disappearance of the Korotkoff sounds
10. Listen to the beat and watch the gauge of the sphygmomanometer simultaneously. The column of mercury should be at the level of your eyes or the dial of the aneroid sphygmomanometer should be clearly visible to you
11. If a second reading is necessary, deflate the cuff completely and wait for 15 seconds
12. Repeat the process in the other arm
13. Record and interpret he blood pressure findings accurately

NOTE: One reading is too little to diagnose, to diagnose blood pressure disorders, repeated readings are necessary

False reading may occur due to:
1. Blood pressure machine defect
2. Dehydration
3. Anxiety
4. Exercise
5. Individuals with large or small biceps might give fake readings
6. Difference between supine and erect blood pressure, especially in elderly patients

Temperature

Note: A quick assessment of temperature can be done by use of back of the hand and fingers

Sites of measuring temperature

1. Armpit - This is the most used site – safest
2. Oral - Adults who can follow instructions and children above 5 years
3. Groin - In children
4. Rectal - Especially in children and unconscious patient
5. Most accurate, but least comfortable for the patient

Requirements

1. Thermometer
    a. Mercury
    b. Electronic
    c. Tympanic membrane (not common)
    d. Inflated auxiliary thermometers for neonates
    e. Low reading thermometer
2. A container tube containing cotton soaked in a disinfectant (mercury thermometer is immersed in the disinfectant
3. A bowl containing sterile cotton wool swabs, water with second hand

NOTE: The disinfectant should be changed after every twenty four hours

Procedure: Measurement of axillary temperature

1. Explain the procedure to the patient
2. Wipe the thermometer using the dry sterile cotton wool
3. Wipe the patients' armpit with a dry cotton swab
4. Shake the thermometer until the mercury is below 35 degree
5. Insert the bulb of the thermometer in the armpit and make sure the skin folds around the thermometer bulb
6. Leave the thermometer in position for 2 –3 minutes
7. Remove the thermometer and hold it at some distance from your eyes but at the level of your eye and read the temperature
8. Record the temperature
9. Decontaminate and clean the thermometer

NOTE: Measurement of oral temperature follows the same procedure except you put the thermometer under the tongue for 2 – 3 minutes
Oral temperatures can be increased by rubbing the bulb against the tongue
Axillary temperature can be affected by environmental temperature for poor skin folding

Respiration

Equipment

1. chair
2. watch with a second hand
3. recording chart and pen

Procedure

1. The respiratory rate is best taken when taking the pulse. The patient should not be aware that you are doing it
2. Observe either the chest or abdominal movements and count the respiratory rate for a whole minute
3. Note the character and rhythm of respiration
4. Record and interpret your findings

THE RESPIRATORY SYSTEM

Introduction

Respiratory disorders are common medical problems in our medical facilities. As with every aspect of diagnosis in medicine, the key to success is a clear and carefully recorded history and physical examination of which the respiratory system is vital.

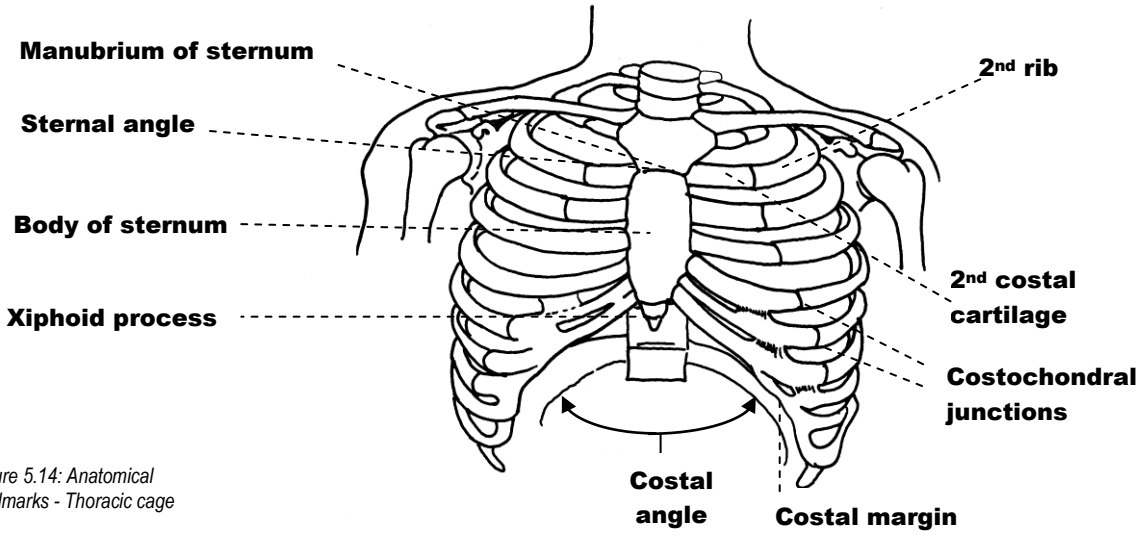


Figure 5.14: Anatomical landmarks - Thoracic cage

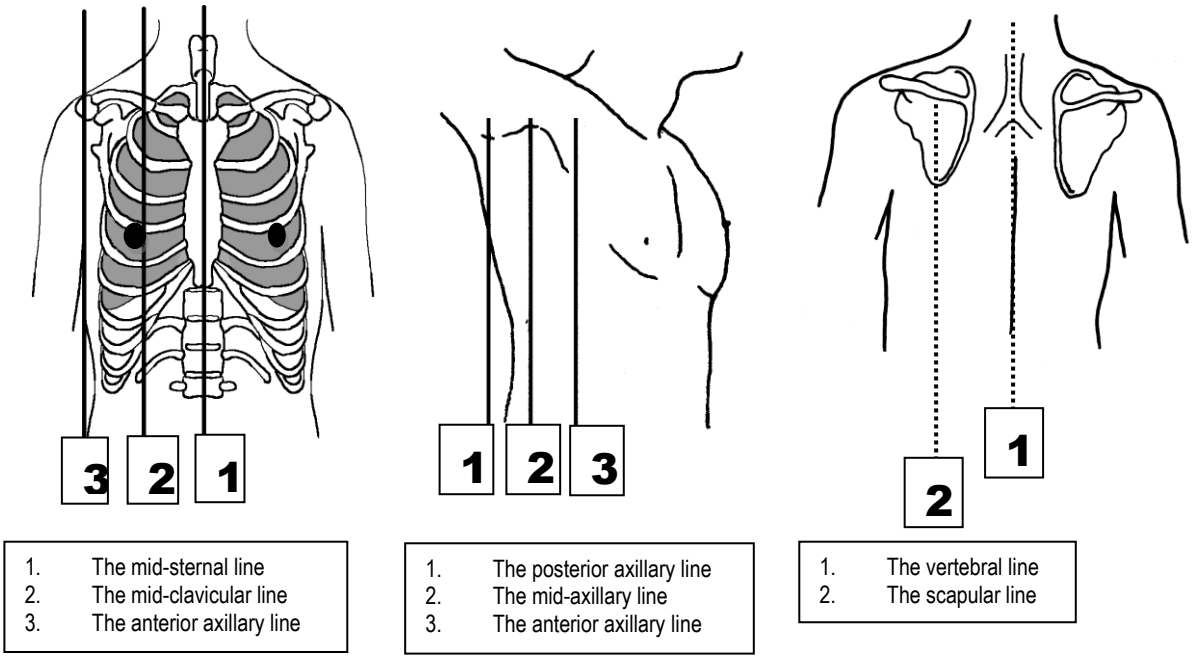


Figure 5.15: Anterior chest lines (left), lateral chest lines (middle) and posterior chest lines (right)

Anatomical landmarks when examining the chest

1. Bones, bony prominences and muscles:
   a. Sternum (suprasternal notch, sternal angle, xiphoid process)
   b. Ribs
   c. Scapula
   d. Vertebral column
   e. Trachea
   f. Muscles: M. Sternocleidomastodius & M. Trapezius

2. Lines:
   a. Mid-clavicular line
   b. Midline (anterior and posterior)
   c. Anterior, mid- and posterior axillary line
   d. Scapula line and imaginary lines on the chest

3. Anterior there are the mid-sternal line, the mid-clavicular line and the anterior axillary line. Lateral, there are the posterior axillary line, mid-axillary line and the anterior axillary line while posterior we have the vertebral line and the scapular line

4. Spaces
   a. Inter-costal spaces
   b. Inter-scapula spaces
   c. Supra and infra-clavicular regions
   d. Sub-costal spaces

5. Surface anatomy of the lungs and the bronchi

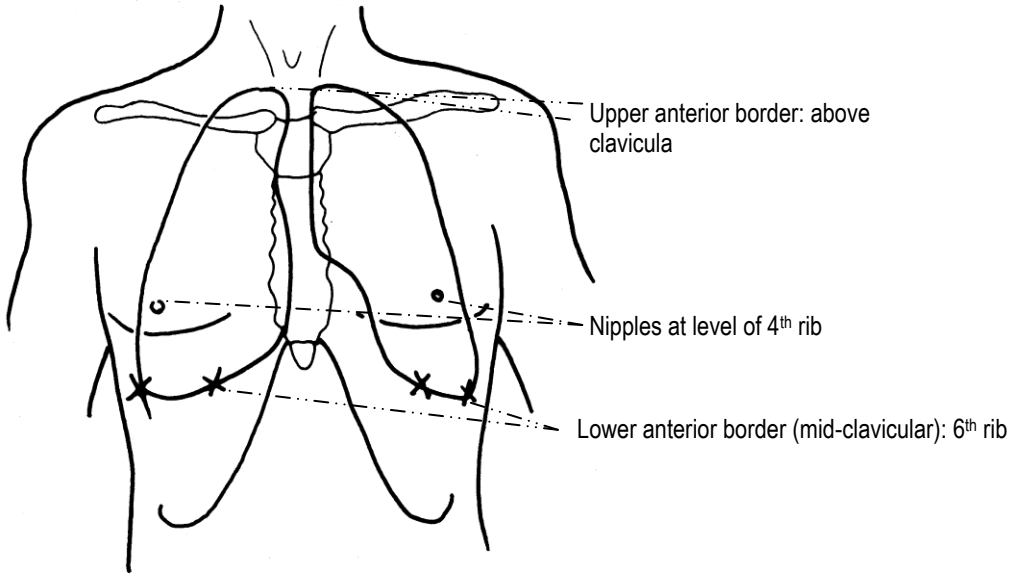
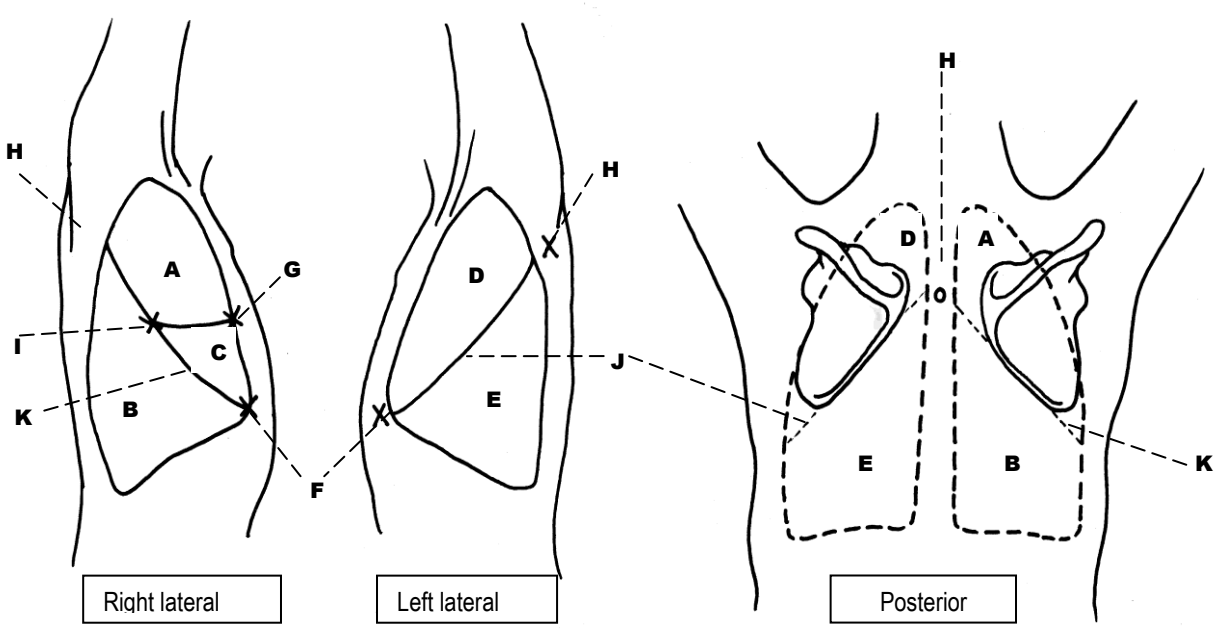


Figure 5.16: Relation between anterior surface, bony structures and the lungs



A: Right upper lobe	F: 6th rib at mid-clavicular line	J: Left oblique fissure
B: Right lower lobe	G: 4th rib	K: Right oblique fissure
C: Right middle lobe	H: Spinous process of T3	
D: Left upper lobe	I: 5th rib mid-axillary line	
E: Left lower lobe		

Figure 5.17: Relationship between the lungs and the thoracic cage: Lateral and posterior views

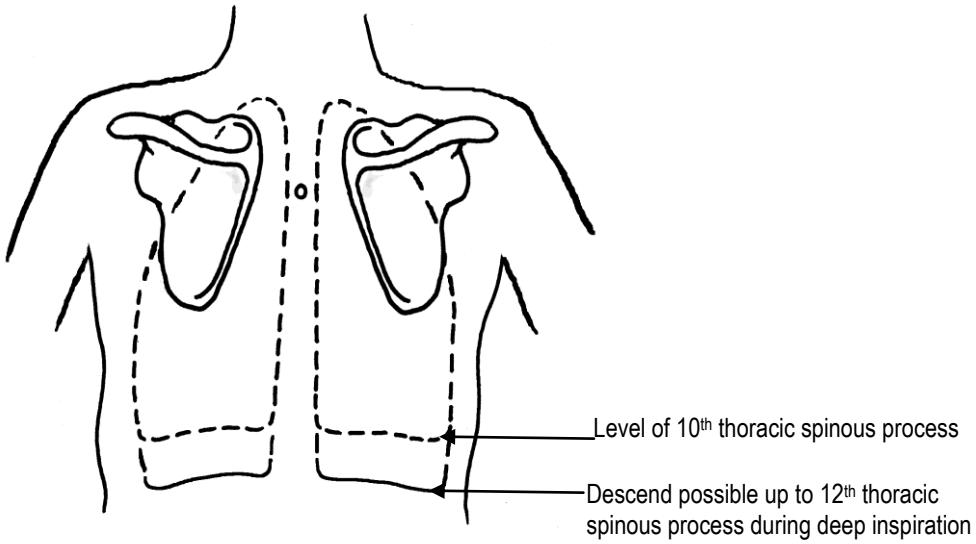


Figure 5.18: Posterior level of lower borders of the lungs

Objectives

To understand the general principles underlying the respiratory system examination and to be able to carry out a structured systematic and efficient physical examination of the respiratory system

Requirements

1. Examination couch and accessories (step)
2. Screen
3. Examination gown
4. Bed sheet
5. Watch
6. Tape measure
7. Stethoscope
8. Skin marker (pencil) and ruler

Procedure: Examination of the respiratory system

Preparation

1. Prepare the examination room
2. Ask patient to undress and expose the chest and abdomen up to the waist
3. If the patient is in bed with restricted mobility, make sure you can access both sides of the bed (change position of patient as required)
4. Position the patient to ensure that the light source comes from different angles.

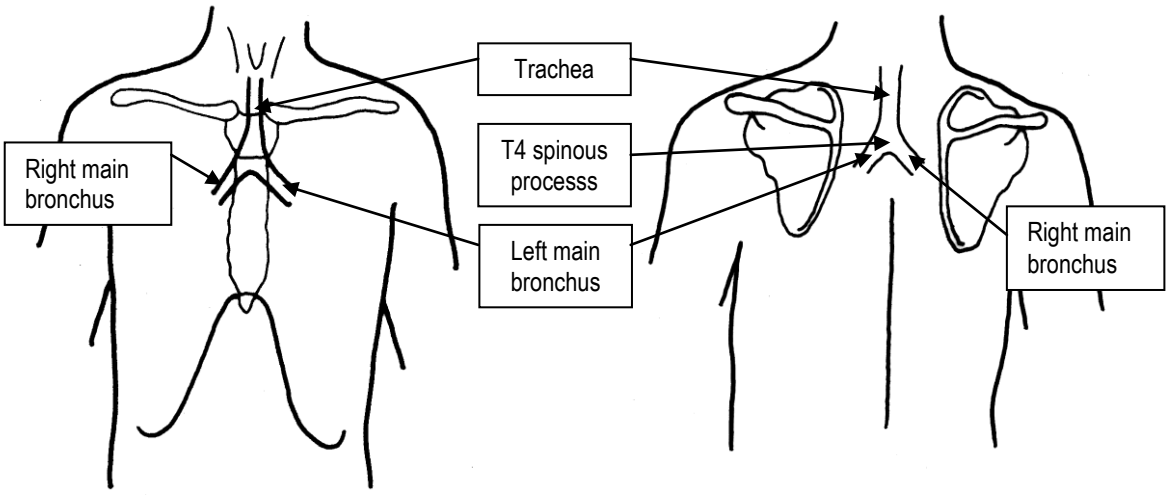
Method

<u>General examination of the respiratory system</u>

1. Check for cyanosis, pallor, finger clubbing and pedal oedema
2. Listen to the voice of the patient, note the tone and pitch
3. Listen carefully for wheezes and / or stridor
4. Examine the sputum if patient has a productive cough

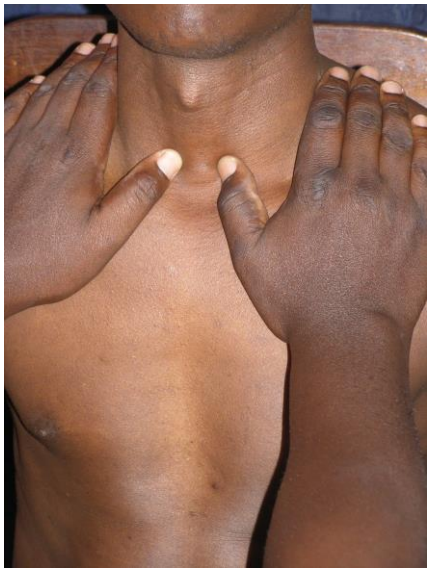
<u>Inspection</u>

1. Observe the rhythm, depth, and effort of respiratory movements
2. Count the respiratory rate (normal 14-20 cycles per minute)
3. Ask patient to be seated and from a midline position note the shape of the chest anterior and posterior.
4. Observe the symmetry of the chest and chest movements while standing at the foot of the bed in front of the patient, with your eyes at level with the chest
5. Observe the spaces for any abnormal retractions
6. Observe for the use of accessory muscles of respiration (trapezius, intercostal and sternocleidomastoid) and intercostal and subcostal muscle retraction / recession
7. Observe the nose any flaring of the alae nasi
8. Compare the chest movements on the right and left
9. Look for lesions, scars, pigmentation mark and swelling on the chest wall
10. Determine the position of the mediastinum by checking the prominence of the sternomastoid muscle (Trails sign or sternomastoid sign)



5.19: Position of the trachea in relation to the bony structures – anterior and posterior view

Palpation



Position of the Trachea

1. Position the patient to sit upright in bed
2. Identify the landmarks
3. Palpating for tracheal position:
   a. Flex the thumb and small finger of your right hand
   b. Place your index and ring fingers on the right and left sternoclavicular junctions of the patient respectively
   c. Place your middle finger over the supra-sternal notch and gently move it forward to touch the trachea which should normally be in the midline above the supra-sternal notch
   d. Palpate over the tracheal rings to confirm.
4. Checking for any tracheal deviation:
   a. Technique 1:
      i. Place your index finger in the supra-sternal notch
      ii. Move it gently side to side along the upper edges of each clavicle and in the spaces above to the inner borders of the sternocleidodmastoid muscle
      iii. The spaces between the sternocleidomastoid muscle and trachea should be equal on both sides.
   b. Technique 2:
      i. With your fingers resting on the trapezius muscle place your thumbs in the paces between the sternocleidodmastoid muscle and trachea
      ii. Palpate the spaces with both thumbs simultaneously

Figure 5.20: Palpation for position of the trachea

Tenderness

1. Palpate the thoracic muscles and skeleton for areas of tenderness
2. Palpate both anterior and posterior. Identify the tender areas and describe them using the anatomical landmarks

Swellings

1. Palpate for any swellings
2. Identify and describe any swellings

Chest expansion

Evaluate the chest expansion anterior and posterior at different levels.

Technique 1

1. Face the patient and place the finger tips of both hands on either side of the rib cage so that the tips of the thumbs meet in the midline in front (but not touching the chest)
2. Ask the patient to breath in deeply
3. Observe the distance between the thumbs as the patient breathes in
4. Indicate the degree of expansion
5. If one thumb remains closer to the midline, there is diminished expansion at that side

Note: Perform this technique at two levels anterior and posterior (upper and lower thorax)

Technique 2

1. Anterior:
    a. Face the patient and place your thumbs along each costal margin and xiphoid process
    b. Grasp the lateral rib cage with the palms of the hands and fingers
    c. Slide your hands medially a bit in order to raise loose skin between the thumbs
    d. Ask the patient to breath in deeply
    e. Observe the divergence of the thumbs during inspiration
    f. Feel the extent /range and symmetry of the expansion
2. Posterior:
    a. Stand behind the patient and place both thumbs about the level of and parallel to the 10^{th} ribs along the spinous processes
    b. Grasp the lateral rib cage with the palm of the hands and fingers
    c. Slide your hands medially a bit in order to raise loose skin between thumbs and spine
    d. Ask the patient to breath normally, then ask the patient to inhale deeply
    e. Watch your thumbs diverge during inspiration
    f. Observe the extent and symmetry of the expansion

Figure 5.21: Palpation for chest expansion from anterior

Thoracic excursion

1. Ask the patient to sit upright in bed
2. Put a measuring tape around the chest at the level of 4th thoracic vertebrae
3. Ask the patient to inhale deeply
4. Take the measurement and note the magnitude of expansion (Normal 5-8 cm)

Tactile fremitus

Fremitus is best felt parasternally at the second intercostals space at the level of bifurcation of the bronchi.

1. Place your palmar surface or ulnar aspect of the hand on the chest wall (you can use one hand and compare or use both hands at the same time to compare both sides of the chest)
2. Ask the patient to repeat words 'ninety-nine' or 'one-one-one'
3. Palpate and compare symmetrical areas of the lungs
4. Localise and describe areas of increased or decreased fremitus
5. Repeat the process posterior in the inter-scapular and infra-scapula regions.

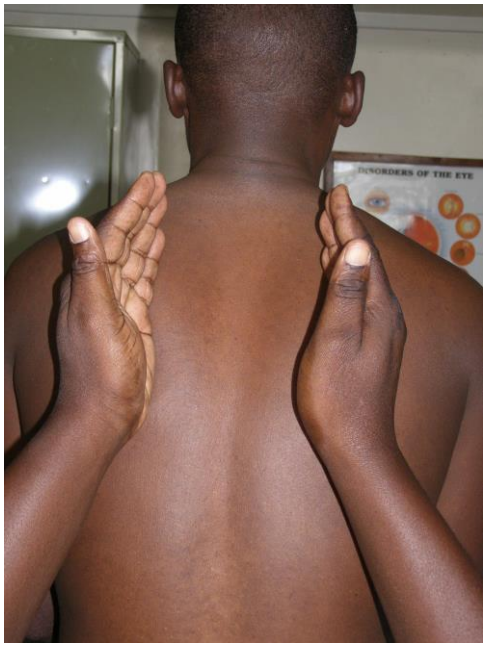


Figure 5.22: Palpation of tactile fremitus using ulnar side of the hand

<u>Percussion</u>

1. Place left hand over the chest wall with the palms downwards and finger slightly separated
2. The second phalanx of the middle finger(pleximeter) should be over the area to be percussed, usually at the intercostals spaces
3. Percuss in progressive steps downwards anterior and posterior and in the right and left axilla at 4-5 cm interval or the intercostals spaces
4. Compare the notes obtained from identical sites on the 2 sides
5. Localize and describe any abnormal percussion note
6. Anterior: order of percussion
   a. Percuss beginning on the clavicles
   b. Percuss progressively downwards in each inter-costal space
   c. Note areas of cardiac and hepatic dullness (see manuals on Examination of Heart & Abdomen)
7. Posterior:
   a. Perform the percussion while the patient keeps both arms crossed in front of the chest
   b. Percuss in symmetrical locations from the apex to lung base
   c. Omit the scapular area
   d. Compare left and right

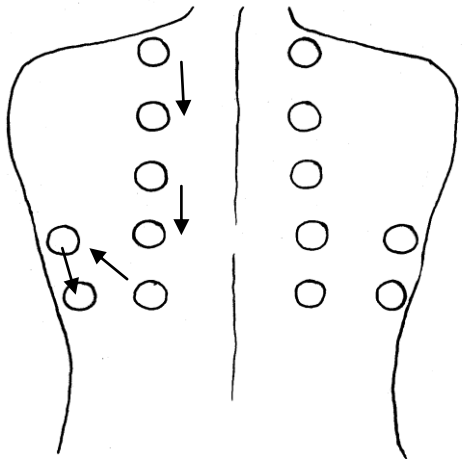


Figure 5.23: Areas for percussion (posterior)

8. Evaluate the diaphragmatic excursions (normally 3-5 cm)
    a. Ask patient to inhale deeply and hold
    b. Percuss along the scapula line until you locate the lower border of the lung
    c. Mark the point at which there is a change in percussion note from resonant to dull
    d. Allow the patient to breath
    e. Repeat the procedure on the other side of the lung
    f. Ask the patient to take several breaths and then exhale as much as possible and hold
    g. Percuss upwards from the marked point
    h. Mark the point of change of percussion note from dullness to resonance
    i. Allow patient to breath
    j. Repeat the procedure on the other side(lung)
    k. Measure and record the distance between the 2 marks on each side

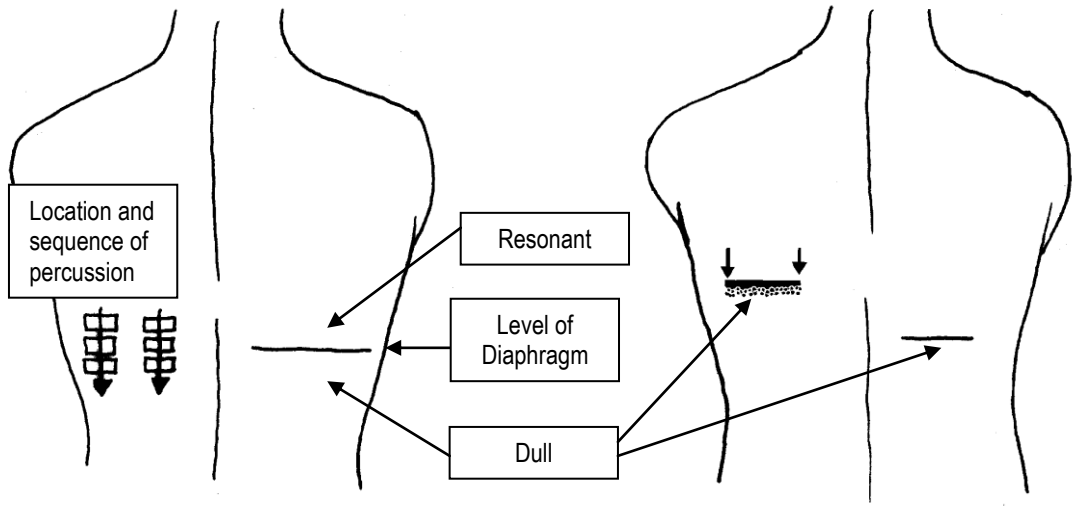


Figure 5.24: Mobility of diaphragm: normal / healthy (left) and paralyzed diaphragm (right)

Auscultation

Auscultation provides important clues to the conditions of the lungs and pleura

1. Identify the sites of auscultation
2. Ask patient to sit erect with shoulders back
3. Place the stethoscope firmly on the chest wall
4. Instruct patient to breathe in more deeply. There should be no movement of the patient or stethoscope except for respiratory excursion
5. Listen to the quality and intensity of breath sounds at various auscultatory points. Describe the breath sounds
6. Ask the patient to sit upright with the head bent forwards and arms folded in front over the shoulders to enlarge the listening area to auscultate the lateral chest. Ask patient to sit more erect with arms overhead.
7. Listen systematically at each position throughout inspiration and expiration
8. Compare side-to-side as you move downwards from the apex to the base at intervals of 4-5 cm.

Sound	Duration		Intensity of expiration sound	Pitch of expiratory sound	Locations where heard normally
Vesicular	Inspiration expiration	>	Soft	Low frequency	Over most of both lungs
Bronchial	Inspiration expiration	≤	Loud	Relatively high	Over the manubrium if heard at all
Broncho-vesicular	Inspiration Expiration	=	Intermediate	Intermediate	1st and 2nd inter-costal space anterior and between the scapulae
Tracheal	Inspiration Expiration	=	Very loud	Relatively high	Over the trachea in the neck

Table: Normal Breath Sounds

Sound	Duration		Pitch	Intensity of expiration	Timing
Wheeze	Inspiration expiration	<	High	Musical	Inspiration or expiration
Rhonchi	Inspiration expiration	<	Deeper	Musical	Inspiration or expiration
Crepitations – fine	Inspiration expiration	>	High pitched inspiration	Discrete, non-continuous	Inspiration
Crepitations – course	Inspiration expiration	=	Low	Louder	Inspiration
Vocal resonance	Expiration		Low	Loud	Expiration
Pleural rub	Inspiration expiration	=	Low	Soft	Inspiration and expiration
Stridor	Inspiration expiration	=	High pitched	Loud	Inspiration and expiration

Table: Added (Abnormal) Sounds

CARDIOVASCULAR (CVS) SYSTEM EXAMINATION

Introduction

The Circulatory system is a continuous circuit that comprises of the cardiovascular system (CVS) and the lymphatic system. The CVS consists of the heart and blood vessels (arteries, veins & capillaries). The lymphatic system consists of lymph vessels, lymph nodes and lymphoid-organs (spleen, thymus and tonsils)

Objective

To be able to carry out a structured, systematic and careful physical examination of the cardiovascular system using the right techniques and following general principles underlying physical examination.

Overview of physical examination of the CVS

When exploring the cardiovascular system (CVS) information of the following fields can contribute to our diagnosis: the medical history, the physical examination, a chest X-ray, an ECG and in specific cases some additional diagnostic procedures.

Examination of the CVS focuses on examination of five structures / areas:

1. The general appearance of the patient
2. Physical signs associated with arterial circulation
3. Physical signs associated with venous circulation
4. Physical signs of the heart
5. Physical signs of the lungs as part of the circulation

The examination of the cardiovascular system involves the following specific examinations:

1. Examination for pallor / anaemia
2. Examination for cyanosis / hypoxemia (finger clubbing)
3. Examination for signs of endocarditis (splinter haemorrhages)
4. Oedema
5. Taking pulse at different sites
6. Taking blood pressure
7. Examination of the lungs
8. Measurement of the Jugular Venous Pressure (JVP)
9. Examination of the heart / praecordium
10. Examination of the peripheral circulation – venous and arterial
11. First aid and basic life support

The details on procedures 1-4 can be found in the manual on general physical examination.
The details on procedure 5 and 6 can be found in the manual on vital signs.
The details on procedures 7-10 can be found in the respective manuals.
The details of the procedures under 11 can be found under First Aid and in the separate Basic Life Support manual.

EXAMINATION OF THE HEART

Introduction

Examination of the heart should follow the usual routine of inspection, palpation, percussion and auscultation. Inspection enables the examiner to see the position, extent and rhythm of the cardiac impulse. Palpation confirms the position of apex beat, gives more information on the force, duration and character of the cardiac impulse. It helps in detection of thrills and expansible pulsations. Percussion has some value when the patient is too ill to move by showing the increased area of dullness due to pericardial effusion and absence of dullness due to emphysema of the lungs. Auscultation is useful for detection of abnormalities of valves which produce both changes in heart sounds and added sounds and determining the rhythm of heart rate.

Objective

To be able to carry out a structured, systematic and careful physical examination of the heart using the right techniques and following general principles underlying physical examination.

Part	Surface marking and land marks
Inferior boarder of right ventricle	Junction between sternum and xiphoid process
Apex beat	Lies 7-5 – 10.5 cm from the midline 5th inter-costal space (ICS) on the mid-clavicular line
Aortic valve	2nd ICS, 1 cm right from the midline / sternum
Mitral valve	5th ICS, mid-clavicular line; 1st heart sound loudest, 3rd & 4th heart sounds, mitral murmurs & aortic regurgitation
Pulmonary valve	2nd ICS, 1 cm left from the midline / sternum
Tricuspid valve	4th ICS, 1 cm left from the midline / sternal edge
Aortic arch	Is at the angle of Louis

Table: Surface marking and anatomical landmarks

Indications

Part of the total physical examination of any patient to assess general health (for example: pre-operative assessment; in pregnant women, on admission)
Of specific importance of patients with symptoms suggestive of cardiovascular problems
Follow up of patients with known cardiovascular problems

Requirements

1. Examination couch or bed with a pillow
2. Screen
3. Watch
4. Tape measure
5. Stethoscope with bell and diaphragm

S1, the first heart sound
S1 is a physiological sound caused by the closure of the mitral and tricuspid valves. The sound from closure of the mitral valves is louder hence S1 is most loud at the apex region. They normally close at the same time.

S2, the second heart sound
S2 is a physiological sound cause by the closure of pulmonary and aortic valves. It is loudest at the upper sternum at the level of 2nd ICS. The aortic component is loudest, best heard from the 2nd ICS right and transmitted to the apex. The pulmonary component is best heard at the 2nd ICS left. Physiological splitting occurs, with the aortic valves closing slightly before the pulmonary valves - 'lub-d-dub'.

S3, the third heart sound
S3 is not heard in all persons. In physiological circumstances it is associated with large stroke volume, for example in children, healthy young adults, athletes, during pregnancy. In pathological circumstances it is associated with increased stroke volume (due to a leaking heart valve) or due to a large poorly contracting ventricle (e.g. dilated cardiomyopathy)
S3 follows S2. It is a low-pitched sound heard with the bell at the apex and left sternal boarder on a patient in recumbent position. S3 is associated with a fast heart beat and with S1 and S2 being soft giving a triple rhythm "lub-dub-dum, lub-dub-dum" - called a gallop rhythm (S3 gallop).

S4, the fourth heart sound
S4 is caused by increased atrial activity. It is a soft low-pitched sound just preceding S1 giving a rhythm like "da-lub-dup, da-lub-dup" also called S4 gallop, pre-systolic gallop or triple rhythm. S4 is always pathological.

Box: The physiological and pathological heart sounds

Murmurs
Murmurs are musical sounds made by the turbulent blood flow in the heart. They originate at the valves or great vessels and tend to be propagated in the same direction of flow of blood.
Murmurs can be innocent (insignificant) or organic (significant).
Murmurs are produced by normal volume of blood passing through an abnormal valve or by increased volume of blood passing through a normal valve (flow murmurs).

When identifying a murmur, observe for the following:
Site: indicates its likely origin
Timing: indicates its likely cause
Character / Pitch: indicate its likely origin
Intensity: changes in intensity are of prognostic significance (see table 2)
Radiation / transmission: Murmurs radiate in the direction of the turbulent blood flow. The absence or presence of radiation is a characteristic of some murmurs (see table 3)

Box: Murmurs

Additional sounds
Valve opening sounds: audible in thickened valves or prosthetic heart valves
Pericardial rub: a feature of acute pericarditis, best heard with the diaphragm and most audible in systole.
Other non-cardiac sounds which might sometimes be confused:

- Pleural rub
- Bruits: sounds occurring at sites of arterial stenosis, like murmurs from a peripheral artery.

Box: additional sounds

The procedure: examination of the heart

Inspection of the heart

Method

1. Incline the patient at 45 degrees with shoulders horizontal
2. Support the patient in this position using pillows or adjusting the couch
3. Check for the symmetry of the chest
4. Look for any abnormalities of the chest wall, e.g. scoliosis, kyphoscoliosis, pectus excavatum
5. Look for any pulsation
   a. Assess activity of praecordium (to assist in studying the position, character and rhythm of the cardiac impulse)
6. Abnormal pulsations
   b. Check any pulsation both in erect and recumbent position

Palpation of the heart

In relation to the heart, the praecordium can be palpated for the apex beat, thrills and heaves.

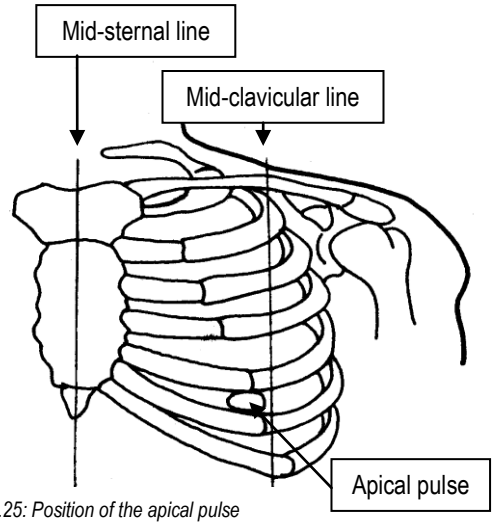


Figure 5.25: Position of the apical pulse

Apex Beat

Palpation is a more reliable method of estimating the size of the heart than inspection. The apex beat is the lowermost outermost point of maximum cardiac impulse. The cardiac impulse is usually circumscribed at the apex beat.

The apex beat is normally placed in the 5th inter-costal space on the mid clavicular line (9 cm from the midline) lying within 7.5 cm to 10 cm (3-4") in the 5th inter-costal space (left). It is circumscribed and almost invariably within the nipple except in children and adolescents. The cardiac impulse that is usually felt over the left side of the chest is the result of the heart rotating, moving forward and striking against the chest wall during systole. With changes of posture (lying on one side) the apex beat may move as much as 1.5 to 2 cm.

Box: Position of the apex beat

Method

1. Position the patient in supine position inclined at 45 degrees supported by pillows
2. Warm up your hands
3. Palpate the patient first in recumbent position and then in the erect posture.
4. Lay the whole hand flat on the chest wall to get a general impression of cardiac activity.

Figure 5.26: Palpation of the apex beat in supine position

5. Place the palm of your hand on all areas of the praecordium in order to detect any abnormal pulsations or vibrations. The palm is too large for accurate palpation so detailed information should be obtained by use of your fingers
6. Palpate methodically and by placing your fingers on the chest parallel to the rib spaces:
    a. Begin by placing your fingers systematically over the apex area
    b. Then move to the left sternal border and then to the base of the heart
    c. Then go down to the right sternal border and into the epigastrium or axilla as circumstances demand.
7. Identify the location of the apex beat – describe it by the inter-costal space and the distance from the mid-sternal line
8. Assess the features of the apex beat: site, intensity, character
9. If you cannot feel the apex beat, roll the patient onto the left side

Thrills

Thrills are palpable murmurs or vibrations palpable during the cardiac cycle which are communicated to the palpating hand from the heart or its great vessels. Conditions causing thrills are more exaggerated than in cases of murmurs. They indicate an organic disease and the localization of the disease in the heart.

Method

1. Position the patient in supine position inclined at 45 degrees supported by pillows
2. Place your palm flat at the mitral auscultatory area
3. Ask the patient to hold breath as thrills are best felt when the breath is held
4. Feel for the thrills – which are felt as purring or vibratory sensations(can be made more prominent sensations)
5. Note the timing of the thrill (systolic / diastolic) and the intensity
6. Palpate the tricuspid, aortic and pulmonary areas and repeat the same

Heaves

Heaves are forceful sustained lifting or tapping feelings over the praecordium due to ventricular enlargement (hypertrophy). There are two types of heaves:
Apical heaves: at the apex region and indicating left ventricular hypertrophy.
Para-sternal heaves: at the right para-sternal region indicating right ventricular hypertrophy.

Method

1. Position the patient in supine position, inclined at 45 degrees and supported with pillows
2. Place your palpating outstretched hand flat over the apex (for apical heave) or right para-sternal zone (for para-sternal heave)
3. Gently feel for the lifting force of the heart (do not apply undue pressure as this will decrease the lifting sensation)
4. Feel for the intensity of the lifting force

Percussion

Percussion is not routinely done because of the much greater accuracy of radiological examination. Percussion can have limited added value in patients who are too ill to move. In these patients it can enhance or reduce likelihood of the following conditions:

1. Increased area of dullness due to pericardial effusion
2. Basal dullness of right sternum in aortic aneurysm
3. Cardiomegaly
4. Cardiac tamponade

Auscultation

On auscultation of the heart, you examine for presence and characteristics of the following sounds:

1. Heart rate and rhythm
2. Heart sounds
3. Murmurs
4. Additional sounds, for example pericardial rub

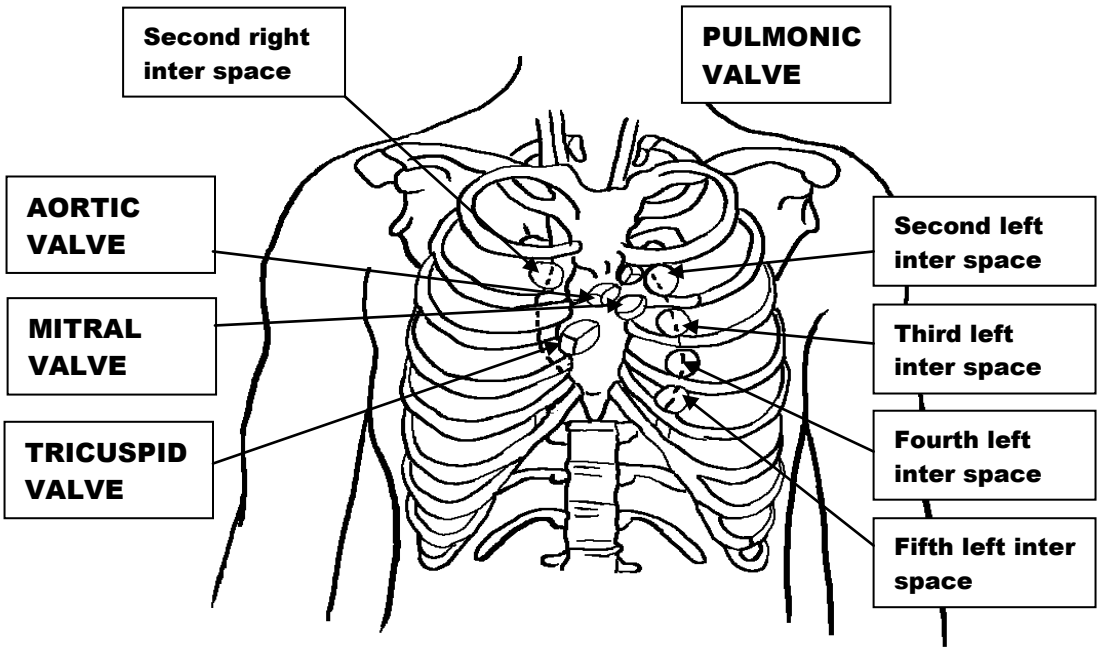


Figure 5.27: Auscultation sites of the heart

The essential instrument in auscultation of the heart is the stethoscope. The diaphragm is most suitable to identify high-pitched sounds (e.g. murmur of aortic regurgitation), the bell is useful to identify low pitched sounds (e.g. murmur of mitral stenosis).

Auscultation will elicit information on the state of the myo- and pericardium and the functioning of the heart valves.
The areas for auscultation of the heart are selected because of the variability in audibility of heart sounds in these areas. They are determined by the location of the heart valves in relation to the surface areas of the chest.

Method

1. Position the patient in supine position inclined at 45 degrees supported by pillows or by adjusting the couch
2. Auscultate over the whole praecordium starting from the apex, move upwards over the left edge of the sternum to the right upper edge of the sternum ending over the carotids and into the left axillary area
3. At each auscultation site using both the bell and diaphragm and describe the characteristics of the sound elicited
4. Identify the first heart sound (S1) and the second heart sound (S2)
5. Compare the rhythm with the peripheral pulse
6. Listen for any additional heart sounds (S3 or S4)
7. Listen for murmurs and other added sounds and note the characteristics
8. Roll the patient onto the left side and use the bell while exerting only slight pressure at the apex to look for the murmur of mitral stenosis. If a murmur is present, palpate again for presence or absence of a thrill
9. Assist the patient to sit, ask him to lean forward and use the diaphragm to look for the murmur of aortic regurgitation (at the 2nd ICS sternal boarder) and for pericardial friction. If a murmur is present, palpate again for presence or absence of a thrill.

Characteristics of Abnormal Sounds

a) Site
b) Timing
c) Intensity
d) Character/pitch
e) Radiation
f) Relation to respiration, posture and exercises

Box: Characteristics of abnormal sounds

MEASUREMENT OF JUGULAR VENOUS PRESSURE (JVP)

Introduction

Jugular venous pressure: The jugular vein is nearest to the "input" side of the heart and the pressure measured here gives an approximate of the pressure in the right atrium, which is the "filling pressure" of the right heart (the central venous pressure).
The jugular venous pulsation reflects the sequence of pressure changes within the right atrium.

Objective

To be able to measure jugular venous pressure (JVP) using the right techniques and instruments

Indications

Suspected cardiovascular disease, in particular diseases related to elevated right atrial pressure

Requirements

1. Examination couch / bed with pillow
2. Screen
3. Watch
4. Tape measure
5. Ruler
6. Marking pencil

Procedure: measurement of jugular venous pressure

Preparation

1. Obtain the necessary information through history taking
2. Explain the examination procedure to the patient, reassure and obtain consent
3. Ensure the environment is conducive for measurement: private (screen if necessary) and well lit
4. Ensure presence of necessary instruments: ruler

Method

1. Ask the patient to lie supine in bed (this results in engorgement of the jugular veins)
2. Raise the head of the patient gradually until the jugular pulsations become evident between the angle of the jaw and the clavicle
3. Support the patient in this position (patient reclining supine at 45 degrees and inspect from the side (between 30 - 60 degrees)
4. Ensure that the neck muscles are relaxed by resting the back of the head on a pillow
5. Look across the neck on the right side of the patient
6. Identify the internal jugular pulsation (use the hepato-jugular reflux)
7. Estimate the vertical height in cm between the top of the venous pulsation and the sternal angle
8. Note the timing and form of the pulsation and take note of any abnormality
9. Place a ruler with its origin at the mid-axillary line at the level of the nipple (the position of the heart within the chest) and extend it vertically
10. Extend the level of the meniscus of the JVP horizontally until it intersects the vertical ruler
11. Measure the vertical distance above the level of the heart (this is the JVP in cm of water)

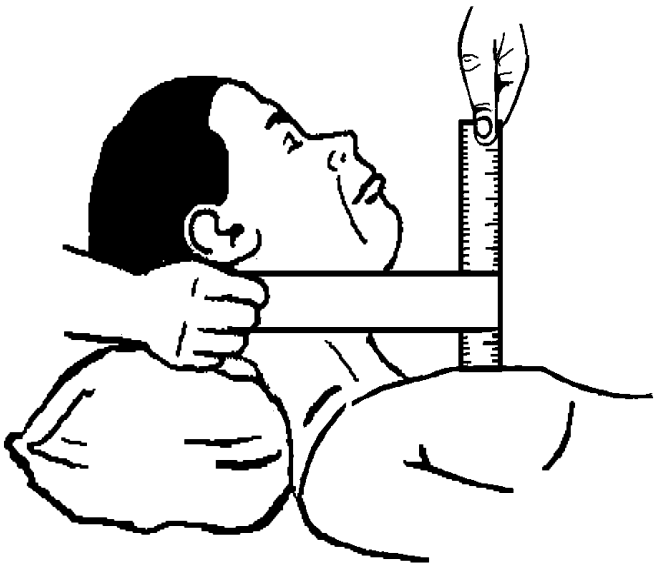


Figure 5.28: Measurement of JVP

EXAMINATION OF THE PERIPHERAL VASCULAR SYSTEM

Introduction
The peripheral vascular system consists of the arterial and venous pulses.

Objective for the student
To be able to carry out a structured, systematic and careful physical examination of the peripheral arteries and veins using the right techniques and following general principles

Indications
1. Diseases of arteries
2. Diseases of veins
3. Circulatory failure
4. Diabetes Mellitus
5. Injuries

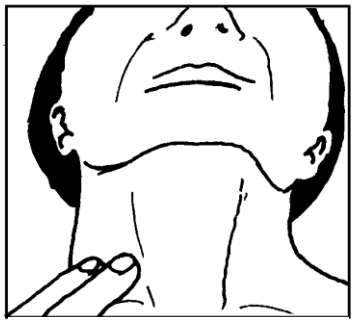
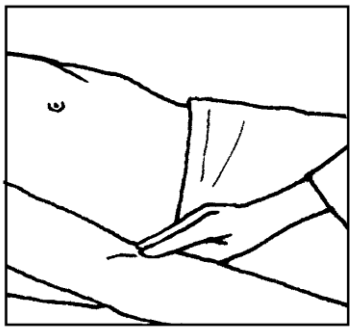
Requirements
1. Stethoscope
2. Tape measure
3. Gloves (when applicable)
4. Watch

Procedure: Examination of Peripheral Vascular System

Preparation
1. Expose the region to be examined
2. Ensure the region is well illuminated
3. Ensure privacy (where applicable)

Method
Inspection
1. Check for the colour of the skin
2. Check for skin dystrophy
3. Visible pulsations
4. Dilated superficial veins

Palpation
1. Check for skin temperature at the local area
2. Compare temperature with the corresponding area on the opposite side of the body
3. Feel for the arterial pulsations
4. Feel for the varicosities
5. Muscle tenderness

Pulse	Method of Examination	Picture
Carotid	1. Stand behind the patient 2. Place the tips of the palpating fingers on the sternocleidomastoid muscle 3. Slide off to the medial side of the muscle The carotid artery is palpable very easily by pressing against the cervical vertebrae. CAUTION: Never palpate both carotid arteries simultaneously…!	 *Figure 5.29: Carotid pulse*
Axillary	1. Stay on the side of the patient 2. Grasp with both hands the shoulder and the axilla 3. Place both thumbs on the shoulder 4. Compress axillary artery against humerus with all other fingers to feel the pulse	
Brachial	<u>Procedure for the right side</u> 1. Hold with you right hand the right hand of the patient 2. Hold the patients right elbow and distal upper arm in your left hand palm: a. your left thumb at the level of the distal deltoid muscle b. your left four fingers in de median sulcus of the biceps c. Compress and palpate	 *Figure 5.30: Brachial pulse*
Radial	<u>Procedure for the right side</u> 1. Hold the patient's right hand as if shaking his hand while exerting slight dorsiflexion 2. Lay the wrist in you left hand 3. Bend 4 adducted fingers of your left hand over the flexor side of the wrist in the radial canal while your left thumb supports the arm of the patient 4. Compress the radial artery slowly with your left ring finger (dig IV) until palpations disappear 5. Than slowly release the pressure until the pulse returns - that is the correct palpation pressure NOTE: palpate both radial arteries simultaneously to exclude possible left-right asymmetry	 *Figure 5.31: Radial pulse*
Ulna	Same procedure as the radial artery	

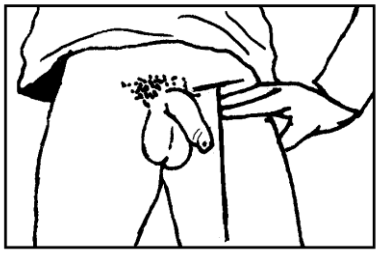
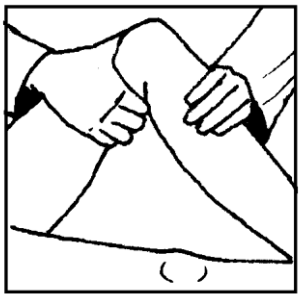
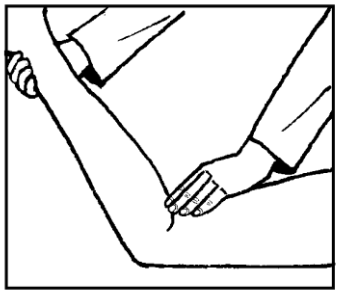
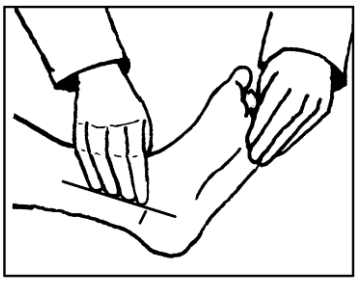
Femoral	1. Draw an imaginary line from symphysis to S.I.A.S. and from the middle of that line to the medial femur condyl. 2. Palpate with fingers under the inguinal ligament in the course of the T-leg. 3. Always compare Left with Right	 *Figure 5.32: Femoral pulse*
Popliteal	Patient in supine position: 1. Flex the knee, hold the tibia with one hand, hold the femur with other hand and palpate with curbed finger from the medial side in the popliteal fossa Patient in prone position: 1. Flex with one hand the knee in 45° and hold the ankle. 2. Palpate the popliteal fossa with the other hand. NOTE: Difficult and often not palpable	  *Figure 5.33: Popliteal pulse*
Posterior tibialis	1. Place the four palpating fingers (not thumb) halfway between the Achilles tendon and the medial tibia condyl: 2. Hold with the other hand the foot in dorsiflexion and in inversion	 *Figure 5.34: Posterior tibialis pulse*
Dorsalis pedis	1. Draw line between medial and lateral malleolus and from the middle of that line to the 1st inter-digital space: 2. Palpate with 4 fingers in the middle third of that line	 *Figure 5.35: Dorsalis pedis pulse*

Table: Palpation of Arterial Pulses

Auscultation

Listen for vascular murmurs over the following arteries:

1. Carotid artery
2. Abdominal aorta
3. Popliteal artery
4. Femoral artery

Examination for Deep Venous Thrombosis (DVT)

Preparation

Display the whole of both extremities.

Method (in mainly or completely bed-ridden patients)

Inspection of the limbs:

1. For inequality of girth of the thigh or calf on the left and right sides
2. Pay attention to the relative prominence of the veins of the dorsum of the foot and look for visible veins (NOT varicose) coursing over the upper third of the tibia on the affected side.

Palpation of the limbs:

1. The ankle: test for pitting oedema.
2. Check for presence or absence of Homan Sign:
   a) Dorsiflex the foot: this exerts traction on the posterior tibial vein.
   b) If the tibial vein is involved in DVT it causes pain = Homan sign positive!
3. The calves:
   a) Request the patient to draw up the knee and to lie quietly, keeping the leg in that position.
   b) Commencing near the Achilles tendon, grasp the calf, and while retracting it from the tibia squeeze it gently
   c) Proceed upwards until the main muscle belly of the calf is reached to ascertain if the muscle (M. Soleus) is tender
4. The popliteal space: palpate for tenderness
5. The thigh:
   a) Check for tenderness by placing the tip of the finger over the surface of the Saphenous opening and draw the finger downwards along the course of the femoral vein

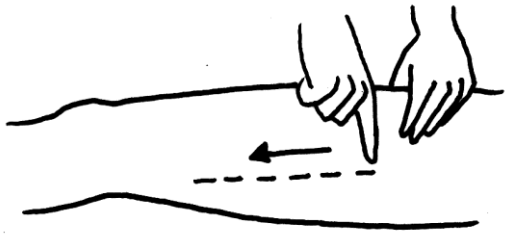


Figure 5.37: Tenderness of the thigh

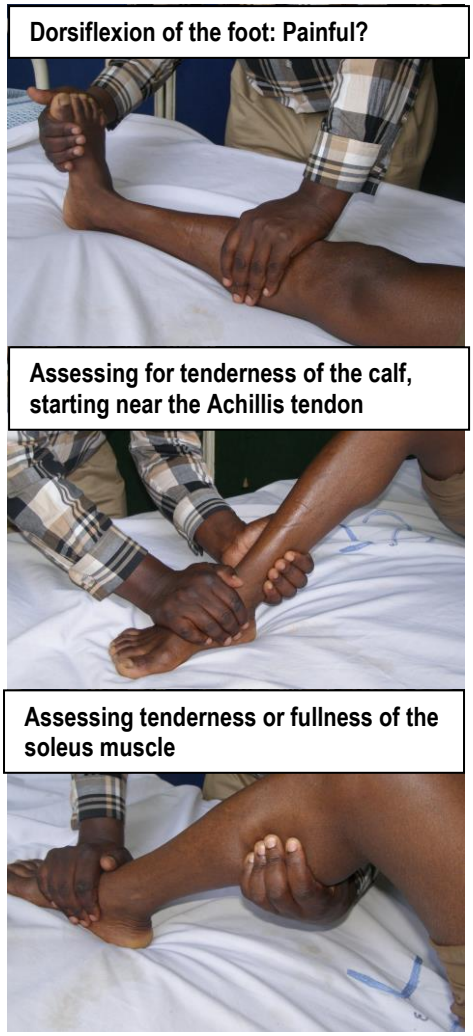


Figure 4.36: Testing for DVT – Tenderness of the calves

Testing for insufficiency of the veins: Trendelenburg tests 1 & 2

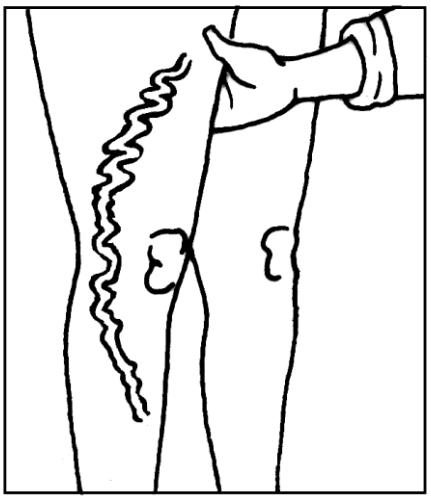


Figure 5.38: Varicosis

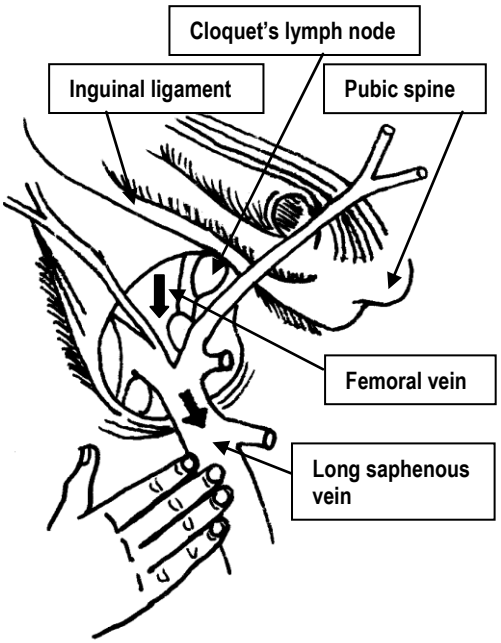


Figure 5.39: Relations of the saphenous opening and inversion of blood stream when the patient coughs

Trendelenburg I:

Indication:
To test the sufficiency or insufficiency of the Vena Saphena Magna

Method:
1. Patient lies down on the coach and the limb is raised to allow the blood to drain out of the veins (A)
2. The fingers are placed firmly over the Saphenous opening (or use a tourniquet).
3. Keeping a firm pressure over this point and lower the limb and instruct the patient to stand (B)
4. Suddenly remove the hand (or tourniquet): If the Saphenous vein is filling as a waterfall from up to down, you conclude that the Sapheno-femoral valve is incompetent (C) => **Trendelenburg I is positive**

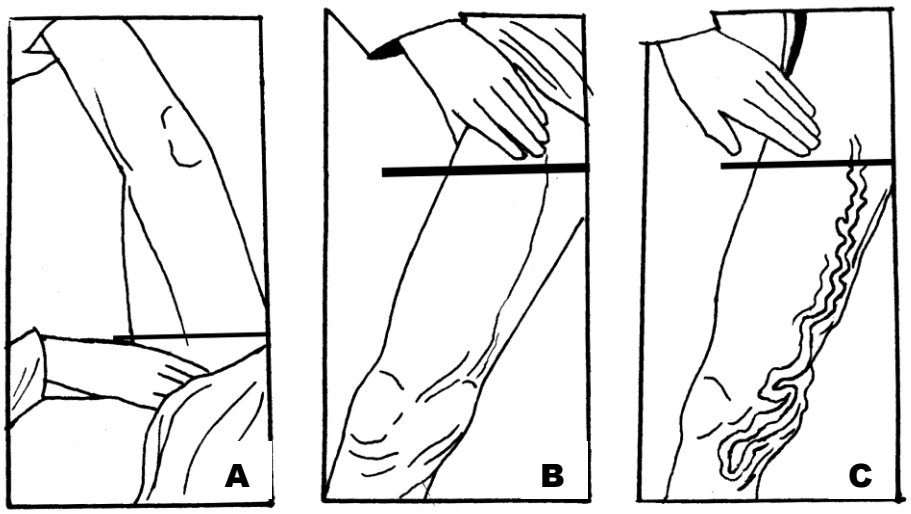


Figure 5.40: Trendelenburg test.

Trendelenburg II:

Indication:
To test the sufficiency or insufficiency of the perforator veins

Method:
1. Re-do the procedure for Trendelenburg I, But now apply a tourniquet on the emptied veins
2. Let the patient stand
3. When the Saphenous veins are refilling from down to up with the tourniquet on it demonstrates that also the perforator veins are incompetent
   => Trendelenburg II is positive

ABDOMINAL EXAMINATION

Introduction

Per abdomen examination involves examination of the gastrointestinal system and urinary/renal system.
The abdominal cavity contains several of the body's vital organs. The peritoneum, a serous membrane, lines the cavity and forms a protective cover for many of the abdominal structures. These organs include the alimentary tract, liver, gall bladder, pancreas, spleen, kidneys ureters and the bladder.
It also contains musculature, connective tissue and vasculature.

Objective

To acquire the general principles and a structured, systematic and careful routine of an efficient physical examination of the abdomen (gastrointestinal and urinary systems)

Requirements

1. Examination couch(and step)
2. Screen
3. Bed sheets(3)
4. Tape measure
5. Measuring ruler
6. Stethoscope
7. Marking pencil

Anatomical Landmarks and Surface Anatomy

Anatomical Landmarks

Bones, bone prominences, muscles

1. Xiphisternum
2. Costal margin
3. Ribs
4. Iliac crest
5. Symphysis pubis
6. Umbilicus

Lines

1. Midline
2. Mid-clavicular line
3. Line drawn through umbilicus
4. Line drawn across the lowest edge of the costal margin
5. Line drawn across the edge of the iliac crest

Surface anatomy

For the purpose of examination, the abdomen can be divided into either four quadrants or nine regions.

1. Quadrants:
    a. The abdomen is divided into four quadrants by drawing an imaginary line drawn from the sternum to the pubis through the umbilicus and a second one drawn perpendicular to the first line horizontally across the abdomen through the umbilicus. The quadrants are:
        i. Right upper quadrant
        ii. Left lower quadrant
        iii. Right lower quadrant
        iv. Left l lower quadrant

Indicated organs in figure 5.41			
1	Liver	10	Caecum & appendix
2	Gallbladder	11	Right ovary
3	Stomach	12	Left ovary
4	Duodenum	13	Uterus
5	Right colic flexure	14	Bladder
6	Left colic flexure	15	Sigmoid colon
7	Spleen	16	Descending colon
8	Tail of the pancreas	17	Ileum
9	Ascending colon		

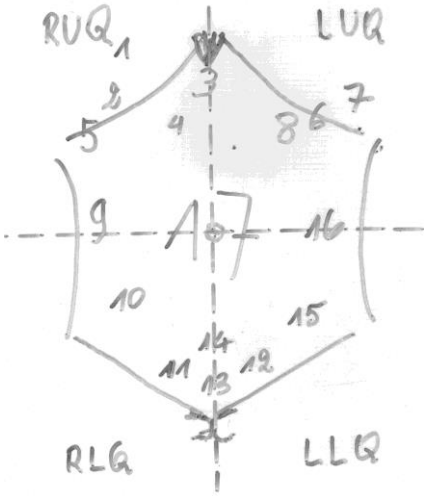


Figure 5.41: The four quadrants with indications of the location of the abdominal organs

2. Regions:
    b. The nine regions of the abdomen are created by drawing two imaginary horizontal lines (one across the lowest edge of the costal margin and the other one across the edge of the iliac crest) and two vertical lines bilaterally along the mid-clavicular lines. The quadrants and regions contain various abdominal organs. The regions are:

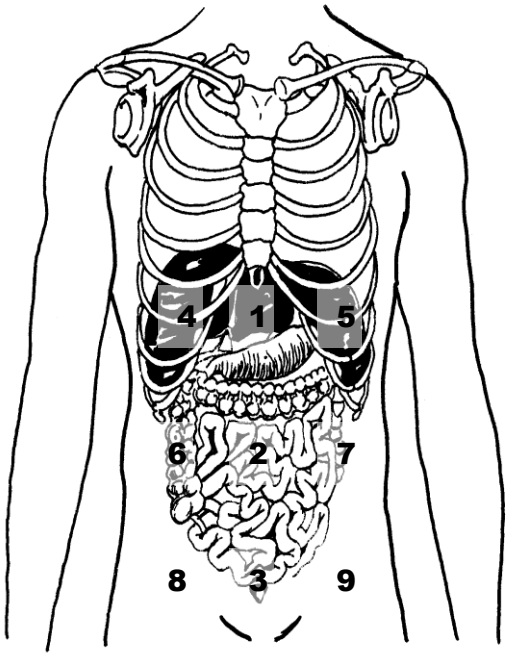


Figure 5.42: The nine regions

1. Epigastrium
2. Umbilical region
3. Hypogastrium or suprapubic region
4. Right hypochondrium
5. Left hypochondrium
6. Right flank or lumbar region
7. Left flank or lumbar region
8. Right iliac fossa
9. Left iliac fossa

Examination Procedure: General approach

Preparation

1. Ask the patient to lie supine, flat on the back
2. Support the head and neck of the patient with one pillow to make him/her comfortable
3. Undress the patient to adequately expose the abdomen
   a) Then cover the lower part with a bed sheet up to the level of symphysis pubis
   b) Cover the upper part up to the xiphoid (especially in the female patients)
4. Ask the patient to relax and breath slowly through the open mouth
5. Examine the patient in a well-lighted and illuminated room
6. Stand always on the right side of the patient

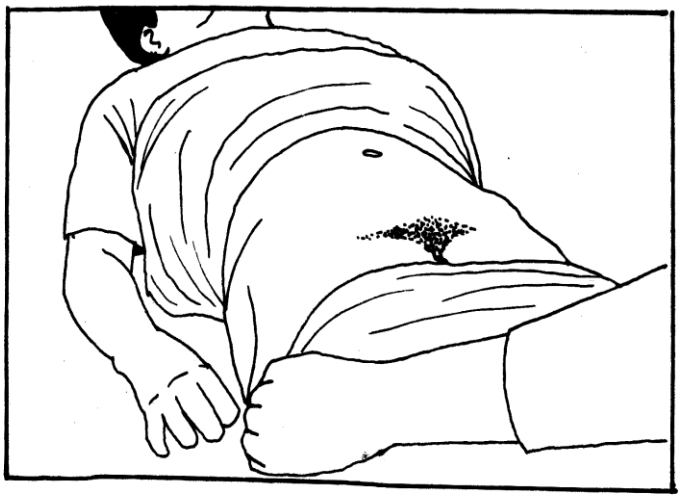


Figure 5.43: Adequate exposure of the abdomen: expose all 9 regions fully

Inspection

1. Start with inspecting the abdomen from a seated position at the right side of the patient
2. Then inspect from the foot of the bed and observe the following:
   a. Skin – colour and surface characteristics:
      i. Check for signs of contusion and trauma
      ii. Check for scars – traumatic and surgical
      iii. Check for skin rash
      iv. Check for striae of previous pregnancy
      v. Inspect for lesions such as nodules
   b. Symmetry (also observe from behind the patient's head):
      i. Compare the symmetry of contra-lateral areas of the abdomen
      ii. Look for any bulges
      iii. Ask the patient to take a deep breath and hold it: the abdominal contour should remain smooth and symmetric
      iv. Ask the patient to raise his/her head from the bed:
      v. Observe contractions of the rectus abdominis muscles
      vi. Abdominal wall masses may become visible
      vii. Observe for protrusion of hernias at surgical incisions, umbilicus and epigastrium
      viii. Ask the patient to cough and inspect for protrusion of masses in the inguinal or femoral regions
   c. Movement:
      i. Inspect the abdomen for movement with respiration
      ii. Note the movement of the abdomen (note the difference in males and females)
      iii. State whether the abdominal movement is normal, reduced or increased

   d. Contour:
      i. Observe the contour of the abdomen using tangential lighting

ii. Note whether the contour is flat(normal), rounded or scaphoid

e. Distension and Swelling
   i. Observe for any distension of the abdomen
   ii. State if the distension is generalized or caused by a localized mass

f. Hair
   i. Observe the presence of the hair
   ii. Observe the distribution of sexual hair (pubic hair)

g. Umbilicus
   i. Note the location (can be centrally located, or displaced upward, downward or laterally)
   ii. Note the contour of the umbilicus (may be inverted or everted / slightly protruding
   iii. Observe for any features of inflammation
   iv. Observe for any swelling or budging

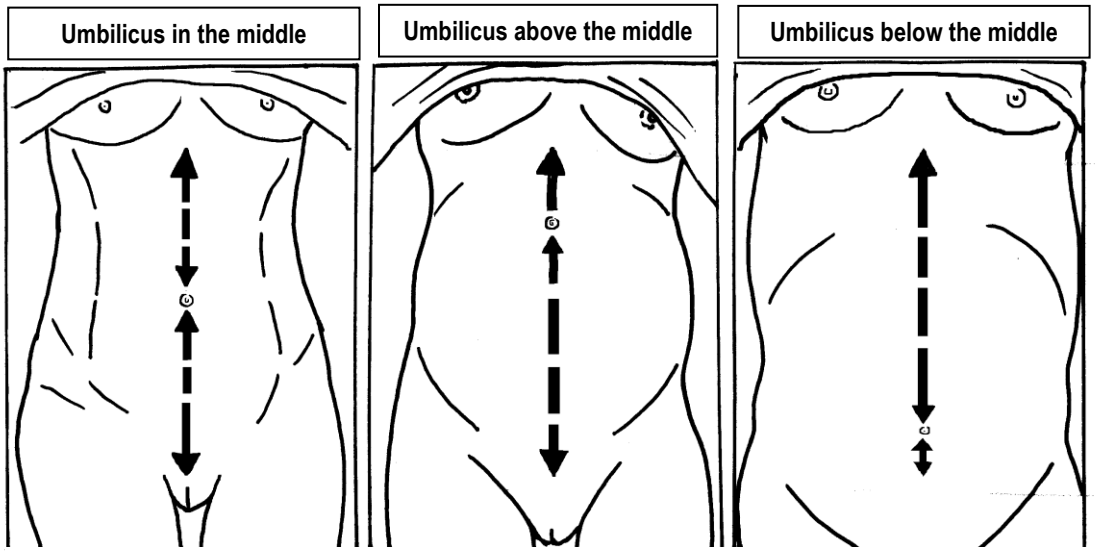


Figure 5.44: changing position of the umbilicus in different types of distension

h. Peristalsis
   i. Observe the abdomen for visible peristalsis

i. Visible veins
   i. Observe the abdomen for visible veins, if present, determine the direction of venous return:
      1. Place the index finger on each hand side by side over a vein
      2. Press bilaterally separating the fingers
      3. "Milk" empty a section of a vein
      4. Release one finger and time the refill
      5. Release the other finger and time the refill
      6. The flow of venous return is in the direction of faster filling

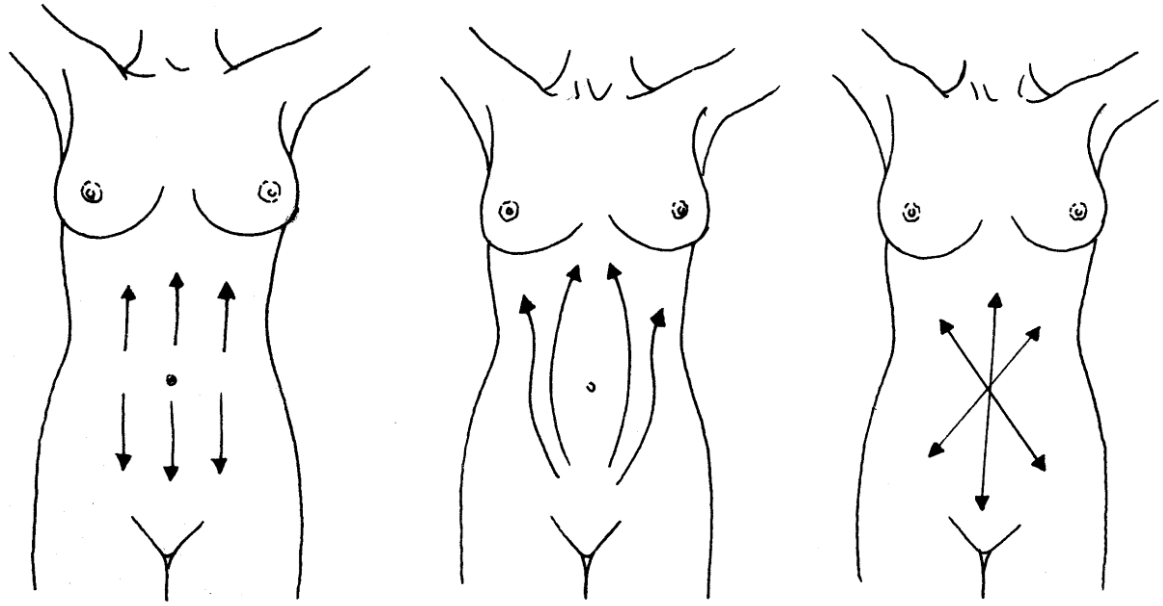


Figure 5.45: Venous patterns_ left: expected; middle: portal hypertension; right: inferior vena cava obstruction

Auscultation

Once the inspection is completed the next step is auscultation. In the abdomen auscultation is used to assess the bowel motility and to check for vascular sounds in the abdomen. Auscultation precedes percussion and palpation because these techniques may alter the frequency and intensity of bowel sounds.

Auscultate for:
1. Bowel sounds
2. Vascular sounds (bruits)

Auscultation of bowel sounds:
1. Ask the patient to lie supine in bed
2. Place the diaphragm of a warmed stethoscope on the abdomen to the right of the umbilicus. This will allow you to hear bowel sounds transmitted from all over the abdomen)
3. Hold it in place with light pressure without moving it
4. Listen to the bowel sounds (gurgling sounds caused by normal peristaltic activity) for up to 2 minutes
5. Note of the sounds are present and count the rate per minutes (normally occur every 5 – 10 seconds)
6. Note whether the rate is normal, increased or decreased
7. Describe the intensity of the bowel sounds whether normal, low or increased, low pitched or high pitched

Auscultation for vascular sounds and bruits
1. Ask patient to lie supine in bed
2. Place the bell of your stethoscope in the epigastric region of all the four quadrants
3. Listen for bruits in the aortic, renal, iliac and femoral arteries
4. Listen for a venous hum in the epigastric region
5. Place the diaphragm of the stethoscope over the liver and spleen
6. Listen for the friction rubs (are associated with respiration)

Percussion

Generally percussion (indirect) is used to assess the size and density of the organs in the abdomen and detect presence of fluid, air, fluid-filled masses and inflammation. It is used either independently or concurrently with palpation when evaluating specific organs. It is usually important invalidating palpatory findings.

1. Percuss all the quadrants or regions of the abdomen for a sense of overall tympani or to detect the presence of fluid (ascites), air (gastric distension) and fluid filled or solid masses. Check the following:
   a. Liver span
   b. Shifting dullness
   c. Fluid thrill
   d. Spleen size
2. Use a lighter touch when percussing the abdomen than when percussing the chest
3. Begin the percussion at the right sub-costal margin
4. Percuss the contra-lateral side of the abdomen
5. Percuss downwards comparing percussion notes at the contra-lateral areas of the abdomen

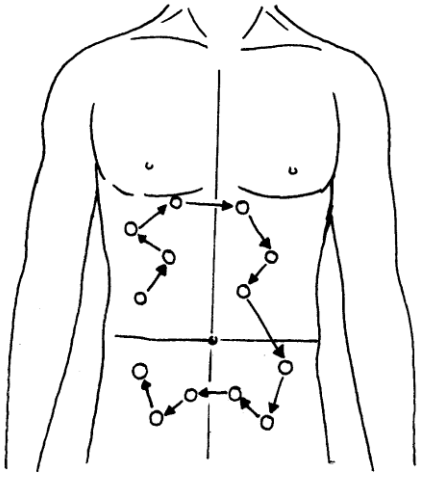


Figure 5.46: Percussion of the abdomen

Shifting Dullness

Shifting dullness is an examination technique used to demonstrate the presence of ascites (fluid in the peritoneum).

Method 1

1. Place your finger on the site of dullness on the midline
2. Percuss to determine the percussion note (resonant)
3. Percuss moving towards the flanks
4. Percuss until the percussion note changes from resonant to dull
5. With the pleximeter finger in place ask the patient to turn(roll) onto the opposite side
6. Pause for at least 10 seconds to allow any ascites to gravitate
7. Percuss to determine the note (note the change from dull to resonant)
8. Percuss backwards towards the midline (note the flanks now have a resonant note and the midline dull)

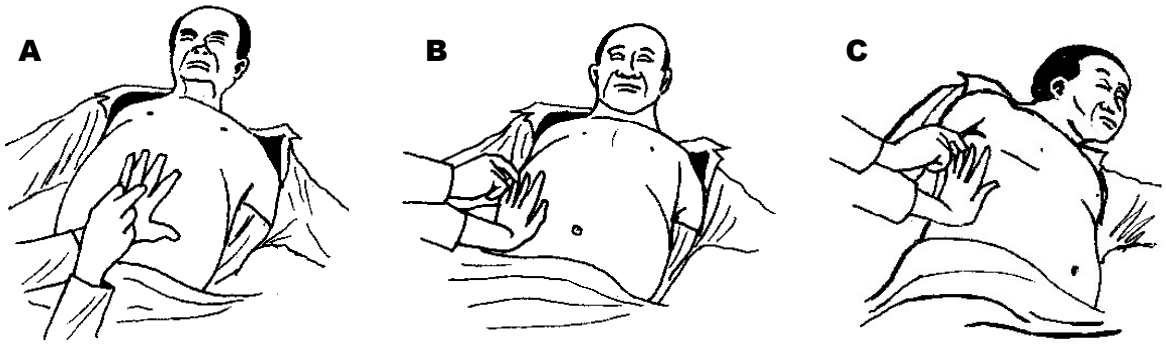


Figure 5.47: Shifting dullness – Percussing for ascites: Percuss from the midline with resonant percussion (A) towards the flank where percussion is dull (B). After patient has rolled to the other side and if ascites is present the note then becomes resonant (C)

Method 2

1. Place your finger on the midline
2. Percuss to determine the percussion note (resonant)
3. Percuss moving towards the flanks
4. Percuss until the percussion note changes from resonant to dull
5. Mark the point at which the percussion note changes from resonant to dull with a pen on a line parallel to the flank
6. Ask the patient to turn to the same side
7. Repeat the manoeuvre
8. Wait for at least 10 seconds
9. Observe if the line has moved "up" – then you have demonstrated shifting dullness)

Fluid Thrill

Fluid thrill is an examination technique used to demonstrate the presence of massive amounts of ascites (fluid in the peritoneum).

1. Place the palm of your left hand flat against the left side of the abdomen
2. Flick or tap a finger of your right hand against the right side of the abdomen
3. Feel for a ripple or vibration against your left hand
4. Ask the patient or an assistant to place the ulnar edge of his/her hand on the midline of the abdomen
5. Flick or tap a finger of your right hand against the right side of the abdomen
6. Feel for a ripple or vibration against your left hand (if you feel the vibrations you have demonstrated a fluid thrill)

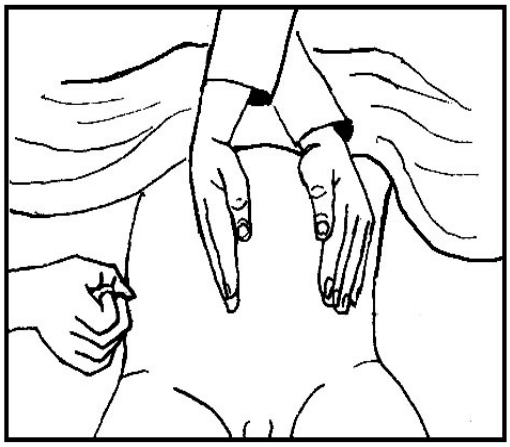


Figure 5.48: Fluid thrill

Liver span

The liver span measures the breadth of the liver to determine its size. It is important in determining whether the liver is normal, enlarged (hepatomegaly) or reduced as in liver cirrhosis.

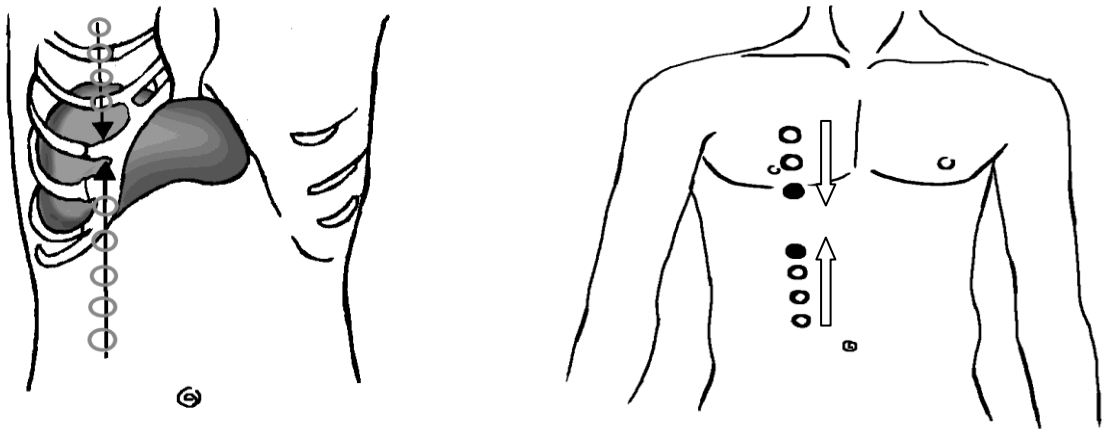


Figure 5.49: Liver percussion route

1. Identify an area of tympani in the abdomen along the right mid-clavicular line
2. Percuss upwards along the right mid-clavicular line until you elicit an area of dullness
3. Mark this point with a marking pen – this marks the lower border of the liver as the area of liver dullness is usually heard at the costal margin or slightly below it)
4. Now begin the percussion on the right mid-clavicular line at an area of lung resonance
5. Percuss downwards until the percussion note changes from resonant to dull
6. Mark this point with a marking pen – this marks the upper boarder of the liver
7. Measure the distance between the 2 marks (the normal liver span is 6 – 12 cm)

Spleen

The spleen is percussed just posterior to the mid axillary line on the left side.

1. Ask the patient to lie on the examination couch in supine position
2. Percuss within the axillary area starting up from an area of lung resonance
3. Percuss downwards and in all directions
4. Elicit areas of dullness (normal area of splenic dullness is sixth to the tenth rib)
5. Ask the take in a deep breath and hold the breath
6. Percuss the lowest inter-costal space in the left anterior axillary line
7. Ask the patient to breath out and repeat the percussion process
8. In cases of minimal splenic enlargement, repeat the percussion process with the patient lying on the right lateral position

Palpation

Palpation is important in assessing the organs of the abdominal cavity and detecting muscle spasms, masses, fluid and areas of tenderness. Evaluate the abdominal organs for size, shape, mobility, consistency and tension. The technique of palpation involves two processes - light palpation and deep palpation.

Light palpation: Always begin the palpation process with light, systematic palpation of the four quadrants initially avoiding areas of tenderness or problem spots. Light palpation is important in eliciting areas of muscle resistance and tenderness.
Palpation for tenderness: Lightly palpate suspected areas of tenders while looking at face of the patient to elicit the facial expressions of discomfort
Deep Palpation: Deep palpation is essential in thorough delineation of abdominal organs and detection of less obvious masses.

Muscle Guarding and Rigidity: Abdominal guarding occurs due to muscular contraction which occurs as reflex as part of a defence mechanism to pain as a result of palpation over an inflamed organ. It can be voluntary guarding or involuntary guarding (occurs due to inflammation).

Preparation for palpation of the abdomen

1. Ask the patient lie on the examination couch in supine position and place his/her hands alongside his body (this assists in relaxing abdominal wall muscles)
2. Stand on the right side of the patient (if the patient is in a low bed, sit on or kneel besides the bed on the patient's right)
3. Warm your hands to avoid producing muscle contractions
4. Ensure that the patient is comfortable
5. Ask the patient to relax the abdominal muscles (placing a pillow under the patient's knees or flexing the patient's knees may help to relax the muscles
6. Ask the patient to show you any areas where he/she feels pain before you start palpation process

Method for general palpation of the abdomen

1. Lay the palm of your hand on the abdomen with fingers extended and approximated
2. Mould the palpating palm of the hand on the abdomen
3. Depress the abdominal wall using the palmer surface of your fingers with an even pressing motion
4. Begin with gentle superficial examination of the whole abdomen
5. If the patient has abdominal pain, start the palpation away from the site of maximal pain
6. Move in a systematic manner (anticlockwise) through the nine regions of the abdomen
7. Use your right hand, keeping it flat and intact with abdominal wall (Avoid using the finger tips)
8. Watch the patient's face for any signs of discomfort as you palpate.
9. Palpate lightly in each region then repeat this palpation deeply. See chapter on examination techniques for details.

Note: Avoid short, quick jabs

Method to assess rebound tenderness

1. Place the patient in supine position
2. Hold your hand at 90 degrees angle to the abdomen with the fingers extended
3. Gently and deeply press your hand deeply into the abdomen (a region remote from the area of discomfort)
4. Then rapidly remove/release the hand and fingers
5. Patient shows more discomfort as you release the hand (Positive Blumberg's sign)

Note: Should be performed at the end of examination

Palpation of abdominal masses and organs

Palpation of Masses

1. Identify any masses
2. Palpate the masses for the characteristics – location, size, shape, consistency, tenderness, pulsation, mobility and movement with respiration

Palpation of the Liver

Palpation of the liver - method 1

1. Place your left hand under the patient at the eleventh and twelfth ribs
2. Press upwards to elevate the liver towards the abdominal wall
3. Technique 1: Place your right hand on the abdomen (in the right iliac fossa) with fingers pointing towards the head OR
   Technique 2: Place your right hand on the abdomen (in the right iliac fossa) with the radial border of the towards the costal margins
4. Extend the fingers so that the finger tips rest on the right mid-clavicular line below the level of liver dullness
5. Press your hand gently but deeply in
6. Palpate upwards towards the sub-costal margin until the finger tips touch the margins of the liver
7. Keep your hand stationary and ask the patient to take a deep breath in
8. Feel the edge of the liver(if enlarged) as it moves downwards on inspiration
9. Note the features of the margins of the liver
10. Note movement of the liver with respiration

11. Ask the patient to breath regularly a few times and then take a deep breath
12. Move your hand progressively further up the abdomen towards the sub-costal margin
13. Elicit any tenderness, nodules and irregularity of the surface
14. Try to get the upper border of the liver
15. Note the size of the liver (take measurements along the mid-clavicular line)
16. Press gently over the surface of the liver and observe any movement in the jugular vein (hepatojugular reflux)

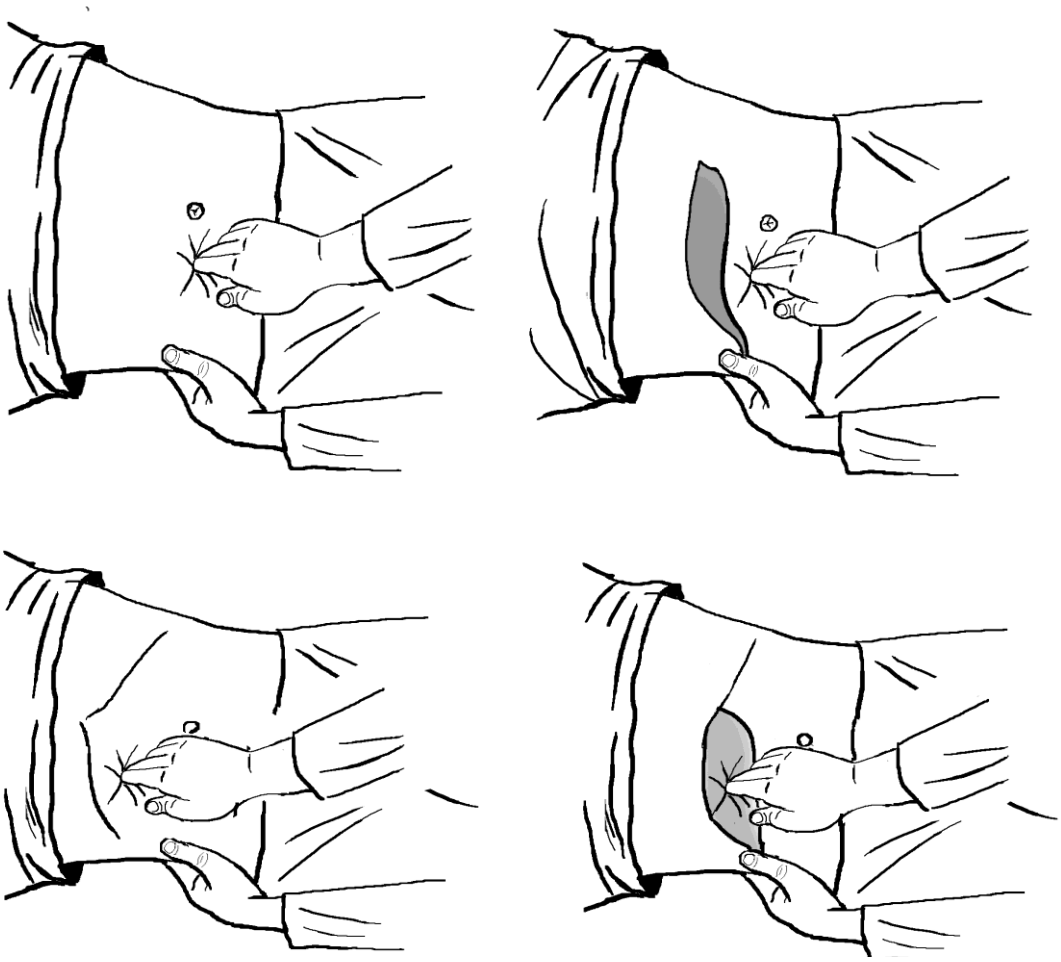


Figure 5.51: The edge of an enlarged liver is easily missed by starting too high in the abdomen as in this picture)

Palpation of the liver - method 2

1. Stand on the patient's side facing his/her feet
2. Hook your fingers over the right costal margin below the border of liver dullness
3. Press your fingers in and up towards the costal margin
4. Ask the patient to take a deep breath
5. Feel the liver edge as it descends to meet your fingers

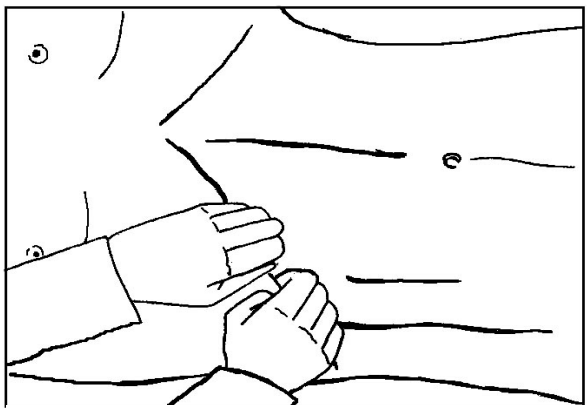
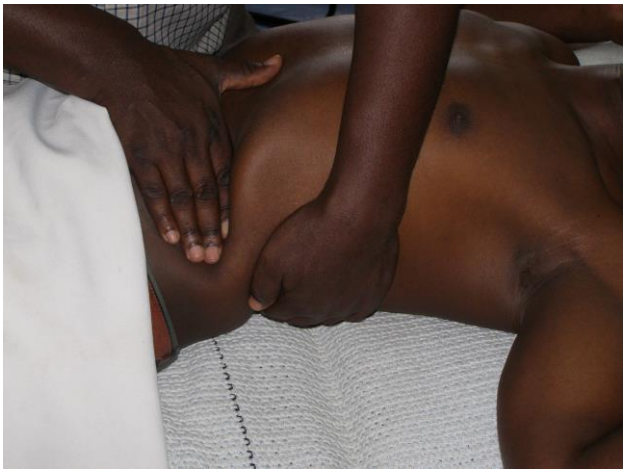


Figure 5.52: Second method of liver palpation

Palpation of the spleen

1. Ask patient to lie supine in bed
2. Stand on the right hand side of the patient
3. Place your left hand beneath the patient over the left costo-vertebral angle
4. Palpate the anterior abdominal wall with the right hand as you apply counter pressure from below with the left hand.
5. Ask the patient to breath in deeply each time you apply palpation pressure (as in step 4 above)
   NB: Try to detect the spleen as it moves down against our fingers.
6. Palpate diagonally across the abdomen starting from the right iliac fossa or umbilicus depending on the initial impression of the extend of enlargement



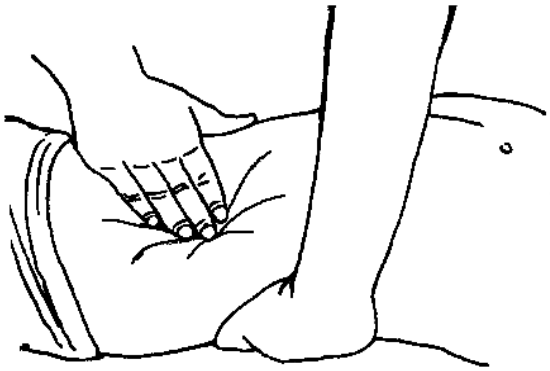


Figure 5.53: Palpation of the spleen

If the spleen is not easily palpable but you suspect it to be enlarged: Repeat the procedure with the patient lying on the right side with the legs somewhat flexed at hips and knees. In this position, gravity may bring the spleen forward and to the right into a palpable position.

Note 1: The direction of spleen enlargement is usually from the left sub-costal margin towards the right iliac fossa.
Note 2: Normally, the spleen is not palpable. It has to enlarge to twice or trice its normal size for it to be palpable beneath the left sub- costal margin.

If you find an enlarged spleen - determine the following typical features:

Feature	Expected description
Shape	Wedge shaped, with the apex inferiorly and the base hidden below the left sub-costal margin (i.e. upper border not palpable)
Consistency	Firm
Surface	Smooth
Edges	Sharp and rounded
Splenic notch	An invagination on the lower aspect of the medial border
Mobility	Moves downwards with inspiration. Can be moved slightly sideways on palpation.
Extend of enlargement	Measure the length of the spleen from its lowest point to the costal margin.
Tenderness	Determine whether tender or non tender

Palpation of the right kidney

1. Ask the patient to lie supine in bed
2. Stand on the patient's right side
3. Place your left hand under the patient's right flank (right loin)
4. Place your right hand horizontally in the right lumbar region anterior
5. Push forwards with the left hand
6. Ask the patient to take a deep breathe in
7. Press right hand inwards and upwards
8. Feel the lower pole of the kidney with your fingertips as the patient inhales

Figure 5.54: Palpation of the right kidney

Palpation of the left kidney

1. Ask the patient to lie supine in bed
2. Stand on the patient's right side
3. Reach across with your left hand
4. Place your left hand posterior under the patient's left flank (left loin)
5. Place your right hand horizontally in the left lumbar region anterior
6. Push forwards with the left hand
7. Ask the patient to take a deep breathe in
8. Press the right hand inwards and upwards
9. Feel the lower pole of the kidney with your fingertips as the patient inhales

Figure 5.55: Palpation of the left kidney

Palpation of the urinary bladder

The urinary bladder is only palpable when it is distended.

Palpation of the abdominal aorta

1. Ask to the patient to lie supine on the examination couch
2. Press the extended fingers of both hands, held side by side deeply into the abdominal wall at a slightly to the left and above the umbilicus
3. Feel for the pulsations of the aorta
4. Remove both hands and repeat the manoeuvres a few centimetres to the right of the umbilicus
5. Feel for the pulsations of the aorta

Abdominal Reflexes

(see also chapter on Neurological Examination)

1. Ask the patient to lie supine on the examination couch
2. Stroke each quadrant of the abdomen with the end of a reflex hammer or tongue blade edge
3. Stroke upwards and away from the umbilicus to elicit the upper abdominal reflex
4. Stroke downwards and away from the umbilicus to elicit the lower abdominal reflex
5. Observe contraction of the rectus abdominis muscle and pulling of the umbilicus towards the stroked side

YEAR 2

of the Diploma in Clinical Medicine & Surgery (DCMS) course

CHAPTER 6: INTERNAL MEDICINE ROTATION SKILLS

Annex to CMS 261: Medicine I

History Taking in Internal Medicine

PHYSICAL EXAMINATION SKILLS

Ano-rectal Examination

Examination of the Male Genitalia

Nervous System Examination

Mental Status Assessment

Cranial Nerves

Examination of the Motor & Sensory System

Specific Signs & Tests in Neurological Examination

NURSING & PATIENT CARE SKILLS

Blood Transfusion Management

Giving Enema

Passing Flatus Tube

Catheterization

Specimen Collection

Lumbar Puncture

HISTORY TAKING IN INTERNAL MEDICINE

Introduction

History taking in internal medicine is synonymous to what is referred to as **General Medical History** as outlined on page 46 of the 2nd edition (2006) of the Clinical Medicine Procedure manual. There fore the same format and steps apply when taking history in Internal Medicine.

However, the main difference at this more advanced level of history taking come in the form of logical arrangement of information obtained from the patient. The more relevant information (both positive and negative symptoms related to the chief compliant(s)) taking priority and then followed by those that are more likely to be there and lastly the least likely.

Using the knowledge of diseases and conditions of medical importance, the patient's symptoms can be explored concisely without going into unnecessary details of the general medical history that may not be relevant in making a diagnosis of the patient's problem. For example, symptoms of heart failure may manifest as palpitations or rhythm problems and then followed by lung symptoms like breathlessness and cough; and then abdominal pain due to swelling of the liver and then the spleen; and then lastly oedema of the feet and the whole body if no measures are taken. With this kind of knowledge, a good history should then aim at conjuring this picture by asking questions to the patient that help him / her confirm or deny the presence of such symptoms.

A word of caution here is that there should be a balance between letting the patient tell his/her story, asking probing questions without making quick conclusions and using the information given and the medical knowledge available to make a reasonable diagnosis of the patient's problem.

<table>
<tr><td>Objectives</td><td rowspan="3">As in General History
(Year 1, Chapter 5)</td></tr>
<tr><td>Requirements</td></tr>
<tr><td>Procedure</td></tr>
</table>

ANO-RECTAL EXAMINATION

Introduction

Ano-rectal examination is quite uncomfortable procedure to the patient. Reassurance and explanation are very vital steps:

- Be calm and gentle;
- Explain to the patient what will happen step by step and let the patient know what to expect.

Objectives

By the end of the session the learner should have the ability to perform ano-rectal examination correctly and safely.

Indications

1. Upon suspicion of prostate pathology
2. Upon suspicion of recto-anal pathology
3. After suturing episiotomy or perianal tears (after delivery)

Contra-indication

Low-level ano-rectal surgery

Requirements

1. Gloves
2. Water soluble lubricant
3. Penlight
4. Drapes
5. Faecal occult blood testing material

Procedure of ano-rectal examination

Preparation

Examine the patient in one of the following four positions:

1. The left lateral (Sims's) position
2. Knee-elbow position
3. Dorsal position
4. Lithotomy position

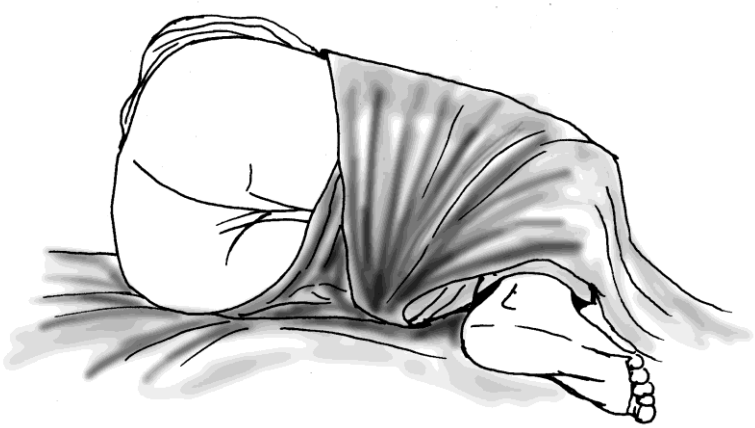


Figure 6.1: Left lateral position for rectal examination

Method

Inspection:

1. The left lateral position is best for routine examination of the rectum:
    a. Make sure that the buttocks project over the side of the couch with the knees well drawn up, and that good light is available.
2. Separate the buttocks carefully and inspect the perianal area and anus for presence of any abnormality of the perianal skin, check for:
    a. Anal fissure
    b. Perianal haematoma
    c. Prolapsed strangulated piles
    d. Perianal abscess
    e. Ischiorectal abscess.
3. Ask patient to 'strain down' and observe relaxation of the external sphincter

Palpation:

4. Digital examination (Palpation):
    a. Put a disposable glove on the right hand
    b. Stand slightly behind the patient's buttocks, facing the feet.
    c. Put generous amount of lubricant on the gloved right index finger
    d. Instruct the patient to breathe in and out through the mouth
    e. Place the pulp of the finger (not the tip) flat on the anus. Press firmly and slowly in a slightly backward direction. The anal sphincter will relax after some initial resistance. Pass the finger into the anal canal with a rotating movement.
    f. Rotate the finger 360° at 2, 5, and 8 cm inwards until you cannot reach any higher. Repeat the rotating movement when you withdraw your finger
    g. Palpate the following structures always for orientation and any abnormalities:
        i. Posterior: the hollow of the sacrum and coccyx
        ii. Left & right lateral wall
        iii. Superior – content of the rectum
        iv. Anterior
            1. Male:
                a. Posterior surface of the prostate gland through anterior rectal wall for size, contour, consistency and mobility
                b. Seminal vesicles
                c. Recto-vescical pouch
            2. Female:
                a. Cervix
                b. Recto-uterine pouch
5. After withdrawal, check your gloved finger for blood, mucus or pus. To assess the colour of the discharge, wipe your gloved finger on a gauze
6. At the end of the examination wipe the lubricant from the anus

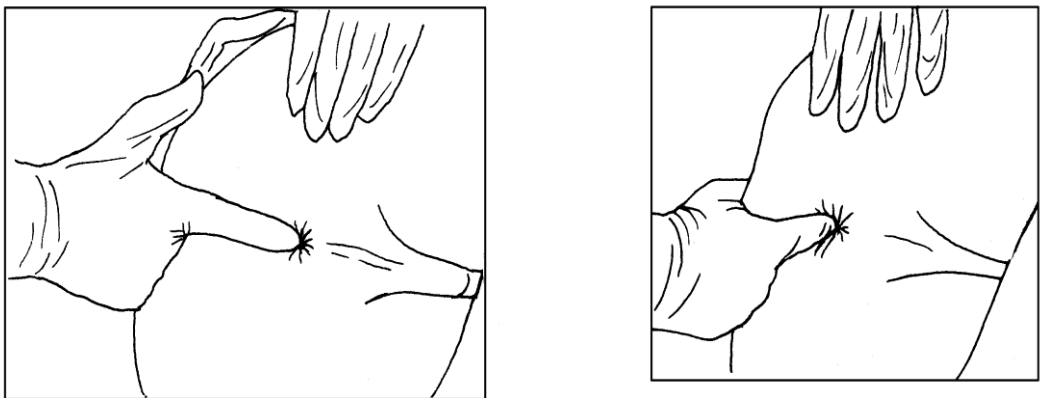


Figure 6.2: Correct (left) and incorrect method (right) of introducing the index finger in the anal canal

EXAMINATION OF THE MALE GENITALIA

Introduction

The penis, testicles, epididymidis, scrotum, prostate gland, and seminal vesicles constitute the male genitalia.
Examination of the genitalia involves inspection, palpation, and trans-illumination of any masses found. The patient may be anxious about examination of his genitalia, so it is important to examine the genitalia carefully and completely. The patient may be lying or standing for this part of the examination.

Objectives

By the end of the session the learner should be able to examine the male genitalia and identify any abnormality.

Requirements

1. Gloves
2. Penlight for trans-illumination

Procedure

Preparation

1. Ask the patient to expose the genitalia
2. Ask the patient to lie in supine position

Method

Inspection:

1. The pubic hair characteristics and distribution
2. The glans penis (retract the foreskin if the patient is uncircumcised):
    a. Colour
    b. Smegma
    c. External meatus of urethra
    d. Urethral discharge

Palpation:

3. The penis:
    a. Tenderness
    b. Induration
4. Strip the urethra for any discharge (you can ask the patient to perform this part of the procedure for you):
    a. Firmly compress the base of the penis with your thumb and forefinger and move them towards the glans
    b. Press the glans penis between the thumb and forefinger
    c. Collect the discharge

Inspection:

5. The scrotum and the ventral surface of the penis:
    a. Colour
    b. Texture
    c. Asymmetry
    d. Unusual thickening
    e. Presence of hernia
6. Trans-illuminate any masses in the scrotum.
    a. When any mass is felt other than the testicle or spermatic cord determine whether it is filled with gas, fluid or solid material using penlight trans-illumination.

Palpation:

7. The inguinal canal for direct or indirect hernia:
    a. With the patient standing, ask him to bear down as if having bowel movement.
    b. While he is straining inspect the areas of inguinal canal and the region of fossa ovalis
    c. Ask the patient to relax, insert the pulp of your examining finger into the lower part of the scrotum and carry it upward along the Vas deferens into the inguinal canal. (The finger used depends on the size of the external ring which is normally palpable)
    d. With your finger placed at the external ring ask the patient to cough and feel for a viscous mass against your finger (present if a hernia is present)

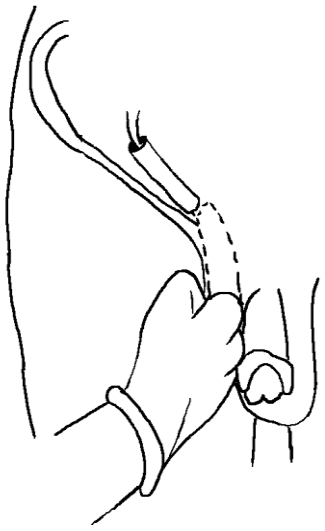


Figure 6.3: Palpation for indirect hernia

8. The testis, epididymidis, vasa deferentia:
    a. Use the thumb and first two fingers to assess:
        i. Consistency
        ii. Size
        iii. Tenderness
        iv. Fluid
        v. Lumps or nodules
9. The inguinal lymph nodes

Cremasteric reflex:

10. Elicit the cremasteric reflex bilaterally:
    a. Stroke the inner thigh with a blunt instrument such as the handle of the reflex hammer or with your finger.
    b. Normally, the testicle and scrotum rise on the stroked side

NEUROLOGICAL SYSTEM EXAMINATION

Includes

Mental status assessment
Cranial nerves assessment
Testing motor functions
Sensory system assessment
Examination of the peripheral nerves
Testing reflexes
Examination of signs of meningeal irritation

Introduction

The nervous system, with its central and peripheral divisions, maintains and controls all body functions by its voluntary and autonomic responses. Neurological assessment therefore involves testing a wide range of human body activities such as cognitive and behavioural elements, motor, sensory and autonomic functions; which are also tested in other systemic examination. Where such overlaps occur, this procedure manual makes references to areas where similar information can be found to avoid duplication of similar content.

Objective

The ability to assess a patient's higher centres and distinguish between the normal and abnormal functioning

Indications

1. Routine examination
2. For medico-legal purposes

Requirements

1. Penlight
2. Tongue blade
3. Sterile needles
4. Tuning forks: 200 to 400 Hz and 500 to 1000 Hz
5. Familiar objects: coins, keys, paper clip
6. Cotton wisp
7. Sharp objects that are sterile: pins, needles, monofilament thread
8. Reflex (Tendon) hammer
9. Vials of aromatic substances-coffee, orange, peppermint, cloves
10. Vials of solutions with applicators-glucose, salt, lemon and quinine
11. Test tubes of hot and cold water for temperature sensation testing
12. Snellen's chart
13. Ophthalmoscope
14. Hard paper and pin (for making a pin hole)

Procedure: Mental Status Assessment

Mental status assessment is a process that begins from the time a patient enters the examination room up to the time the patient leaves the consultation room.

Procedure

Observation in the following areas:

1. Appearance:
    a. Dressing
    b. Grooming
    c. Personal hygiene

NOTE:

- Personal hygiene and grooming may deteriorate in depression, schizophrenia and dementia.
- Excessive neatness and attention to personal looks and fastidiousness may be seen in obsessive compulsive disorders.
- One-sided neglect may result from a lesion in the opposite parietal cortex.

2. Level of consciousness:
    a. Level of consciousness means a person's alertness and state of awareness of the environment.
    b. Attention is the ability to concentrate or focus over a time or one task or activity.
    Inattentive or distractible person whose consciousness is impaired has difficulty in giving history or responding to questions.
    c. Memory can be either:
        i. Short term memory (recent) refers to memory over an interval of minutes, hours or days.
        ii. Long term memory (remote) refers to memory over intervals of years.
    d. Orientation refers to people's awareness of whom or what they are in relation to time, place and other people.

    NOTE: Orientation depends on both memory and attention.

3. Speech:
    a. What and how a patient speaks can reflect his / her mental status. Note the characteristics of the speech in terms of:
        i. Quantity – is the patient talkative or relatively silent? Are comments spontaneous or only responsive to direct questions?
        ii. Slow speech may be a sign of depression, while rapid and loud speech may signify manic syndrome.
        iii. A rushing stream of ideas with some connection or without logical connection may signify a mental disorder described as – Flight of ideas.
        iv. Articulation of words – are words spoken clearly and distinctively?
            1. Dysarthria refers to a defect in the muscular control of the speech apparatus (lips, tongue, palate or pharynx). Words may be nasal, slurred or indistinct but the language remains intact. This disorder can be seen in motor lesions of the central or peripheral nervous system like Parkinsonism and cerebellar disease.
        v. Aphasia refers to a disorder in speaking or understanding language
            1. Neologism refers to usage of strange words
            2. Word salad refers to real words strung together oddly
            3. Hesitancies and gaps in the flow and rhythm of words

4. Circumlocutions is where phrases or sentences are substituted with a word the person cannot think off. For example: 'What you write with' instead of 'Pen'.
5. Paraphrasias refers to a speech where words are malformed; for example "I write with a den" instead of "I write with a pen".

NOTE: All these suggest aphasia. Some patients may have so much difficulty in talking and understanding such that history taking is impossible.

4. Emotional status – make an assessment of the patients mood i.e.:
    a. Is there a general impression of happiness, distress or depression?
    b. Emotionally distressed or disturbed individuals often experience abnormal sleep patterns and therefore inquire about sleep habits.

5. Behaviour / Actions – Note the following:
    a. Patient's body posture and ability to relax
    b. Observe pace, range and character of movements. Do they seem to be under voluntary control?
    c. Are certain parts of the body immobile?
    d. Do posture and motor activity change with topics and discussions or with activities or people around the patient?
    e. Specific postures or behaviour patterns seen with different moods:
        i. Tense posture, restlessness and fidgetiness in anxiety
        ii. Crying, pacing, and hand wringing in agitated depression
        iii. Hopeless slumped posture and slowed movements in depression
        iv. Singing, dancing and expansive movements during manic episodes

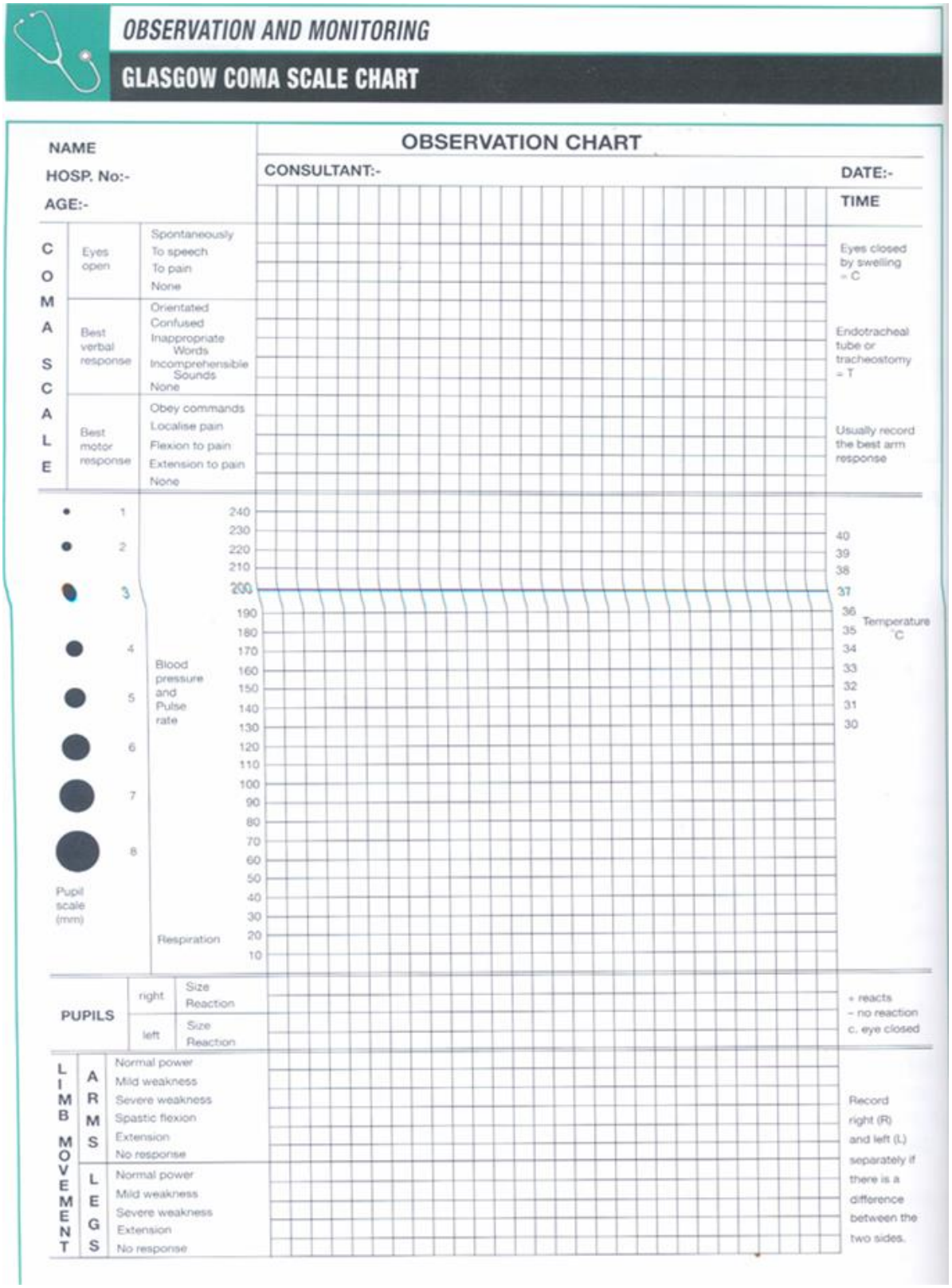


Figure 6.4: Glasgow Coma Scale

Procedure: Cranial Nerve Assessment

Cranial nerve function is expected to be intact in normal circumstances. Abnormal findings indicate trauma or a lesion in the cerebral hemisphere or local injury to the nerve.

Procedure

CRANIAL NERVE I: (OLFACTORY)

Test ability to identify familiar aromatic odours, one nostril at a time with eyes closed.

1. Have available 2 or 3 vials of familiar aromatic odours
2. Use the least irritating substance first so that the patient's perception of weaker odours is not impaired
3. Ask patient to close the eyes and occlude one nostril
4. Hold an open vial under the open nostril, ask the patient to take a deep inspiration for the odour to reach the upper nasal cavity; around the olfactory mucosa
5. Ask patient to identify the odour
6. Repeat the process with the other nostril occluded, using a different odour
7. Continue the process, comparing the patient's sensitivity and discriminatory ability from side to side, alternating the 2 to 3 odours
8. Allow periods of rest between offering of different odours

NOTE:

Anosmia is a state where the sense of smell is absent – may be due to neurological or local causes like inflammation or obstruction.

Parosmia is a state where pleasant odours seem offensive.

CRANIAL NERVE II: (OPTIC)

Test vision with Snellen's chart

Test peripheral vision

Perform ophthalmoscopic examination of fundi

(See Eye Examination in Chapter 12)

OCULOMOTOR, TROCHLEAR, and ABDUCENS (III, IV, AND VI)

The three nerves control the eye lids, pupillary reactions and extra-ocular muscles. The following methods are used in testing them:

1. Inspect:
    a. Eyelids for drooping – which is a sign of paralysis of 3rd cranial nerve.
    b. Pupils – compare the size and shape of both pupils.
2. Test pupillary reaction to light
    a. Dim the light in the room to facilitate the dilatation of the pupils
    b. Introduce a ray of light from a pen torch from the side of the eye ball into one of the eyes
    c. Note whether the pupil on that side constricts
    d. Note the consensual response of the opposite pupil constricting simultaneously with the tested pupil
    e. Repeat the test on the other eye

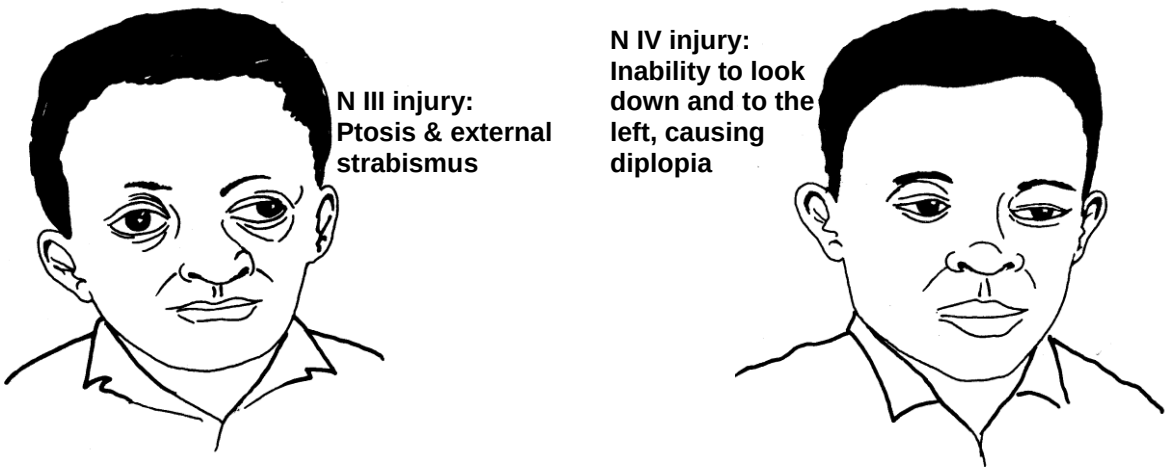


Figure 6.5: Injury of the left NIII (left) and the right NIV (right)

3. Testing for accommodation:
    a. Ask the patient to look at a distant object and then look at a near object like a pencil or finger held about 10 cm in front of the nasal bridge
    b. Note pupils constricting on at near object and dilate at a distant object
    c. Compare pupillary reactions on both sides

4. Testing of the extra-ocular muscles:

Full movement of the eye is achieved by the actions of the six extra-ocular muscles which are controlled by the 3rd, 4th and 6th cranial nerves as follows:

- The lateral rectus supplied by the 6th cranial nerve,
- The superior oblique by the 4th cranial nerve
- The superior rectus, inferior rectus, medial rectus and inferior oblique are supplied by the 3rd cranial nerve

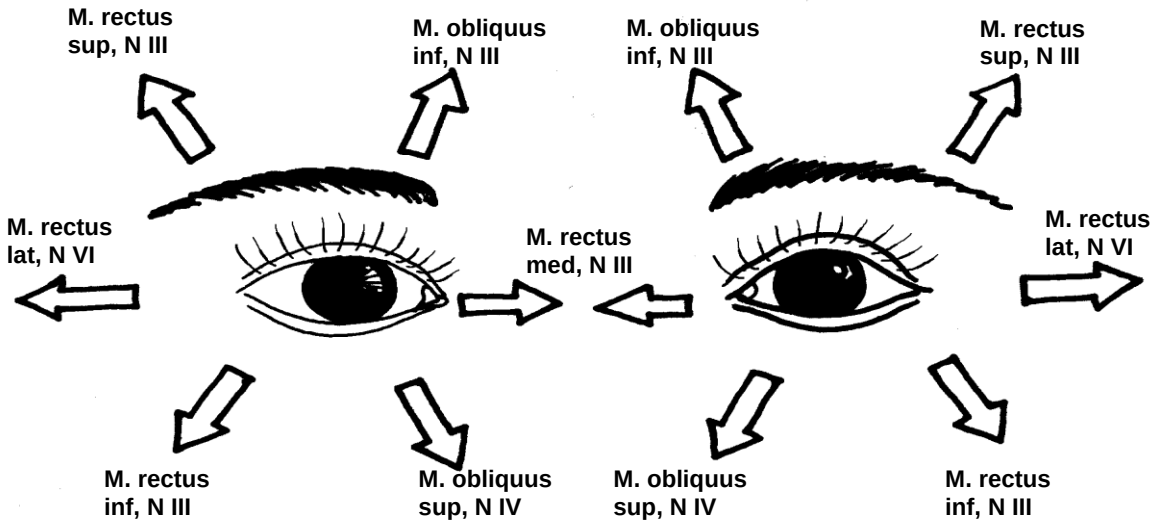


Figure 6.6: Direction of eye movements as facilitated by the different eye muscles

    a. Hold patient's chin to prevent movement of the head and ask him/her to watch the movement of the finger as it moves through the six cardinal fields of gaze
    b. Note any impaired movement of the eye could mean paralysis of any of the muscles which in turn could mean a problem in the nerve supplying the muscle.

CRANIAL NERVE V: (TRIGEMINAL)

It's both motor and sensory. It is divided into three portions: the ophthalmic, maxillary and mandibular portions.

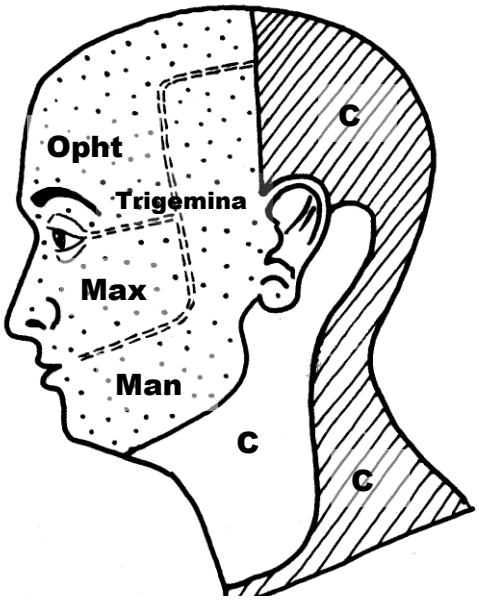


Figure 6.7: Innervation areas of N.V

1. Observe the face for muscle atrophy, deviation of the jaw or face to one side, and fasciculation.
2. Ask the patient to tightly clench the teeth and then palpate the jaw muscles for tone and strength.
3. Ask the patient to close the eyes
4. Then you touch each side of the face at the scalp, cheek and chin areas alternately using the a cotton wisp, smooth edge of a broken tongue blade, a pointed and rounded edge of a paper clip, making sure you do not use a predictable pattern.
5. Ask the patient to discriminate between the sensations.
6. Use a wooden applicator to test for sensation over the buccal mucosa.
7. Test for corneal reflexes on both eyes by touching each cornea with a wisp of cotton.

CRANIAL NERVE VII: FACIAL

It has both motor and sensory functions.

1. Testing the motor functions:
    a. Ask the patient to smile, frown, puff the cheeks raise the eyebrows, squeeze the eyes shut, whistle
    b. Observe for tics, unusual facial conformations and asymmetry.
    c. Listen to patient's speech and note any difficulties with enunciating labial sounds (b, m and p)
    d. Muscle weakness is evidenced by one side of the mouth drooping, a flattened naso-labial fold, and lower eyelid sagging.

2. Test ability to identify sweet and salty tastes on each side of the tongue
    a. To evaluate taste (sensory function of N VII and N IX), have available 4 solutions of different tastes, applicators and a card showing tastes areas
    b. Ask patient to keep the tongue protruded and to indicate the tastes perceived using a card
    c. Apply one solution at a time to the lateral side of the tongue in the appropriate taste bud region
    d. Alternate the solutions using a different applicator for each
    e. Offer a sip of water after each stimulus
    f. The patient should identify each taste bilaterally, if not, mark the areas on a card with a sketch of a tongue.

CRANIAL NERVE VIII (ACOUSTIC)

CRANIAL NERVE IX (GLOSSOPHARYNGEAL) and CRANIAL NERVE X (VAGUS)
N IX and N X are usually tested together as part of throat examination.
For N VIII, N IX and N X refer to the manual on ENT examination (Chapter 12)

CRANIAL NERVE XI (SPINAL ACCESSORY)
The N. XI is purely motor in its function. It innervates the larynx, pharynx, sternocleidomastoid and trapezius muscles.

1. Test the trapezius muscle strength
    a. Ask the patient shrug the shoulders as you apply resistance to them with your hands
2. Test sternocleidomastoid muscle
    a. Ask the patient to turn the head to each side against resistance.

Figure 6.8: Testing strength of m.trapezius

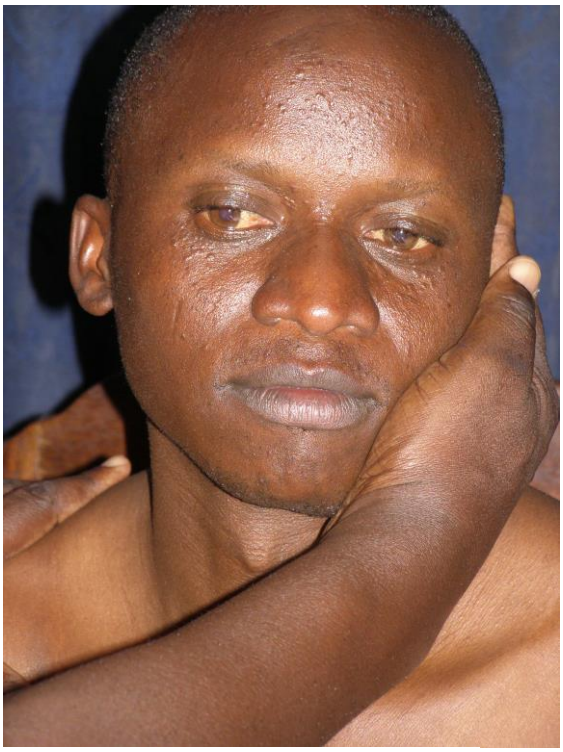


Figure 6.9: Testing strength of m.sternocleidomastoid

CRANIAL NERVE XII (HYPOGLOSSAL)
The N XII has a pure motor function. It supplies tongue and hyoid bone depressors.

1. Inspect the patient's tongue while at rest on the floor of the mouth and while protruded from the mouth
2. Note any fasciculation, asymmetry, atrophy or deviation from the midline
3. Ask patient to move the tongue in and out of the mouth, from side to side, curled upwards as if to touch the nose, and curled downwards as if to lick the chin
4. Note any difficulties or lack of movement.
5. Test tongue muscle strength by asking patient to push the tongue against the cheek as you apply resistance with an index finger and assess the strength.
6. Tell the patient to repeat these letters – L, T, D, N. Evaluate the quality of the lingual speech. A deficit in pronunciation means a weakness in the tongue and hence a disorder in the 11th cranial nerve.

Procedure: Testing motor functions

Proprioception and cerebellar functions

Rapid rhythmic movements

1. Ask the seated patient to pat his / her thighs with both hands with palms and back of the hands alternately, and increase the rate gradually
2. Alternatively have the patient touch the thumb to each finger on the same hand, sequentially from the index finger to the little finger and back
3. Test one hand at a time, increasing speed gradually
4. Observe for stiff, slowed, non-rhythmic, or jerky clonic movements.

Accuracy of movements

1. Finger–to-finger test.
    a. Ask the patient to use the index finger and alternately touch his/her nose and your index finger
    b. Position your index finger about 18 inches from the patient and change location of your finger several times during the test
    c. Repeat the procedure with the other hand
    d. The movements should be rapid, smooth, and accurate. Consistent past pointing may indicate cerebellar disease

Figure 6.10: Finger-to-finger test

2. Finger-to-nose test
    a. Ask the patient to close both eyes and touch his/her nose with the index finger of each hand
    b. Alternate the hands used and increase speed gradually
3. Heel-to-shin test
    a. Perform with the patient standing, sitting ,or supine
    b. Ask patient to run the heel of one foot up and down the shin(from knee to ankle) of the opposite leg
    c. Repeat the procedure with the other heel
    d. The patient should move the heel up and down the shin in a straight line without irregular deviations to the side

Figure 6.11: Heel-shin test

Balance
Equilibrium
See Romberg test – Examination of ENT (Chapter 12)

Gait
Observe the patient walk without shoes across the room along a line forwards and then backwards; first with eyes open and then closed. Observe the following:

1. The expected gait sequence, note simultaneous arm movements and upright posture
2. Is help needed?
3. Does the patient walk in a straight line or tend to deviate to one side or the other?
4. Does the patient tend to fall, if so in which direction?
5. Determine whether the gait conforms to any known gait disorders:
6. First begin with excluding local causes like pain or osteoarthritis of the hip or knee.
7. Some known gait disorders:
    a. Spastic gait – difficulty in bending knees and drags feet as if they are glued to the floor.
    b. Hemiplegic gait – spastic gait in which only one leg is affected.
    c. High stepping gait – adopted in order to avoid tripping from the toe catching the ground. Occurs when there is weakness of the extensor muscles of the feet; for example in common peroneal nerve palsy.
    d. Cerebellar ataxia – sign of cerebellar disease. Patient has a drunken gait.
    e. Sensory ataxia – seen in tabes dorsalis. The patient walks by stamping feet as he / she raises the feet very suddenly and abnormally high and then jerks them forward and bringing them to the ground with a stamp with heel first.
    f. Festinant gait – a sign of Parkinson's disease. The patient bends forwards and advances in rapid short shuffling steps.
    g. Waddling gait – walking like a duck -in myopathies and muscle dystrophies

Figure 6.12: gait disorders: A = spastic hemiparesis; B = spastic diplegia (scissoring); C = high stepping gait; D = cerebellar ataxia; E = sensory ataxia

Procedure: Sensory system assessment

Both primary and cortical discriminatory sensation is evaluated by having the patient identify various sensory stimuli.
Each sensory discriminatory procedure is tested with the patient's eyes closed

Primary Sensory Functions

1. Superficial touch
    a. Touch the skin with a cotton wisp or with your fingertip, with light strokes. Do not depress the skin, and avoid stroking areas with hair
    b. Ask the patient to point to the area touched or tell you when the sensation is felt
2. Superficial pain
    a. Alternate the sharp and smooth edge of a broken tongue blade or the point and hub of a sterile needle, touch the patient's skin in an unpredictable pattern
    b. Allow 2 seconds between each stimulus to avoid a summative effect
    c. Ask patient to identify the sensation as sharp or dull and where it is felt
3. Temperature and deep pressure
    a. Perform only when superficial pain sensation is not intact
    b. Roll test tubes of hot and cold water alternately against the skin in an unpredictable pattern
    c. Ask patient to indicate which temperature is perceived and where it is felt
    d. Deep pressure sensation is tested by squeezing the trapezius, calf, or biceps muscle
    e. The patient should experience discomfort
4. Vibration
    a. Place the stem of a vibration tuning fork against several bony prominences, beginning at the most distal joints. The toes, ankle, shin, finger joints. Elbow and sternum may all be tested
    b. A buzzing or tingling sensation should be felt
    c. Ask the patient to tell you when and where the vibration is felt
5. Position of joints
    a. Hold the joint to be tested (great toe or finger) by the lateral aspects to avoid giving a clue about direction moved
    b. Beginning with the joint in neutral position, raise or lower the digit and ask the patient to tell you which way it was moved
    c. Return the digit to the neutral position before moving it in another direction
    d. Repeat the procedure so that the great toe of each foot and a finger on each hand are tested

Loss of sensory modalities may indicate peripheral neuropathy. Symmetric sensory loss indicates a polyneuropathy

Cortical Sensory Functions

Cortical sensory functions test cognitive ability to interpret sensations associated with coordination abilities.
Inability to perform these tests should make you suspect a lesion in the sensory cortex or the posterior columns of the spinal cord.

The patient's eyes should be closed for these procedures.

1. Stereognosis
    a. Hand the patient a familiar object(key, coin) to identify by touch and manipulation
    b. Tactile agnosia, an inability to recognize objects by touch, suggests a parietal lobe lesion.

2. Two –point discrimination
    a. Use two sterile needles and alternate touching the patient's skin with both points simultaneously at various locations over the body
    b. Find the distance at which the patient can no longer distinguish two points.
3. Graphesthesia
    a. With a blunt pen or an applicator stick, draw a letter or number on the palm of the patient's hand
    b. Ask patient to identify the figure
    c. Repeat the procedure with a different figure on the other hand

Examination of the peripheral nerves

Muscle Tone
It is a state of tension or contraction found in healthy muscles. The maintenance of tone is dependent on the reflex arc.

1. Estimation of tone is done by handling the limbs and moving them passively at their various joints.
    a. An increase in muscle tone (Hypertonia) is seen in upper motor neurone lesions.
    b. A decrease in tone (Hypotonia) occurs in lower motor neurone lesions.
2. Grading Muscle Power
    a. Ask the patient to relax the affected limb and request him/her to move the limb as you observe (see table)

Grade	Characteristics on physical examination
Grade 0	No movement and therefore complete paralysis
Grade I	Trace or flicker of contraction only
Grade II	Movement detectable only when gravity is excluded by appropriate postural adjustment
Grade III	The limb can be held against force of gravity, but not against the examiner's resistance
Grade IV	Movement possible against gravity and minimal resistance
Grade V	Normal full range of motion against gravity and resistance

Table: Grading of muscle power

Sensation
Patient placed in a relaxed position and with eyes closed, he/she is asked to respond as follows:

1. Touch sensation
    a. Stroke the skin with cotton wool.
    b. Ask the patient to say yes when he/she feel the touch.
2. Pain sensation: using a sharp pin prick the skin.
    a. Tell patient to say it is sharp only when he/she feel the pain of the a pin prick only (.but not on pressure or touch of the pin)
3. Temperature sensation: Use two test tubes and bottles, one with cold and one with warm water
    a. Apply then in turn on the skin, and then get the remarks from the patient whether he/she feels hot or cold. The feeling of either cold or hot confirms sensation intact.

Testing Of Specific Nerves

This can be done for almost all peripheral nerves. The knowledge of innervations of every peripheral nerve is essential in this case.

The detailed description of every peripheral nerve function and its testing technique may be beyond the scope of the basic clinical officer's competencies; but as a general rule the following can guide one towards making a diagnosis of peripheral nerve palsy.

Ask the patient to exercise a muscle or groups of muscles under investigation. If the action is not there, or it is weak then the nerve palsy of the specific nerve that supplies that area could be a probable cause. For example:

1. Ask the patient to pick a pin with the thumb and index fingers. Failure to do so may mean the median nerve not working.
2. Ask the patient to flex the knee. Failure could mean a defect in the sciatic nerve.

Observe abnormal posturing of parts of the body, for example:

1. A wrist drop - ask the patient to voluntarily return the hand in its normal position and maintain it there. Failure to do so could mean the radial nerve not working.
2. Foot drop – ask the patient to dorsi-flex the foot. Failure to do that could mean tibial nerve defect.

Procedure: Testing of reflexes

General guidelines

1. Put patient at ease
2. Ensure a warm and comfortable environment
3. Use a standard tendon hammer
4. Standardize your technique
5. Reassure patient that hammer is soft
6. Repeat test several times if necessary

Deep Tendon Reflexes

<u>Biceps Jerk</u>

1. Place the patient in sitting or lying supine position
2. Flex the elbow to a right angle and place the forearm in a semi-pronated position.
3. Place your own thumb or index finger on the biceps tendon and strike with the patellar hammer
4. Observe the biceps for contractions

Figure 6.13: Biceps Reflex

Triceps Jerk

1. Place the patient in sitting or lying supine position
2. Flex the elbow and allow the forearm to rest across the patient's chest.
3. Tap the triceps tendon just above the olecranon process
4. Observe the triceps for contractions

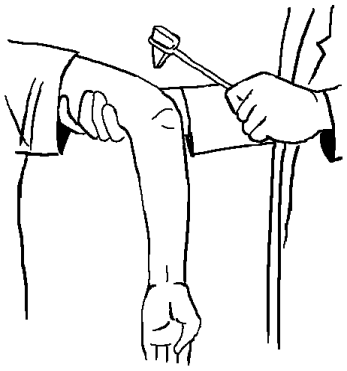


Figure 6.14: Triceps Jerk

Supinator Jerk

1. Place the elbow in a slightly flexed and slightly pronated position in order to avoid contraction of the brachioradialis.
2. Hit the styloid process of the radius with a tendon hammer; this stretches the supinator
3. Observe supination of the elbow.

Knee Jerk (Patellar Reflex)

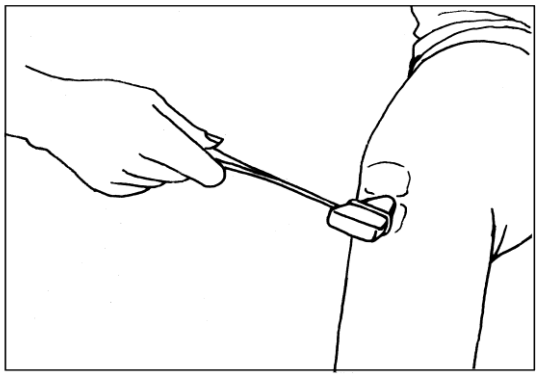
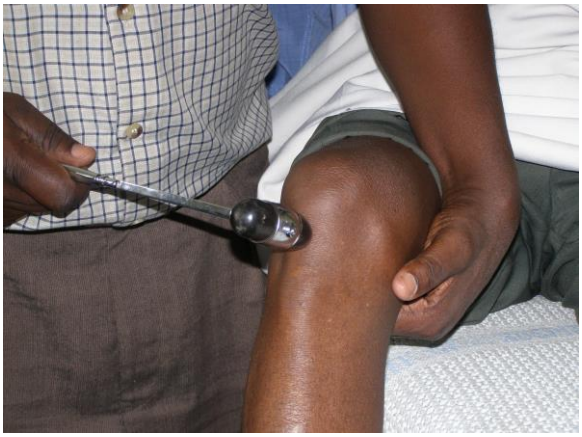


Figure 6.15: Patellar tendon reflex



1. Put the patient in supine position
2. Pass your hand under to knee to be tested; the knee rests in the observer's palm or on the dorsum of the observer's wrist
3. Strike the knee with patellar hammer directly on the patellar tendon midway between its origin and insertion
4. Normally, there will be a brief extension of the knee due to contraction of the m. quadriceps

Ankle joint / Achilles' tendon reflex

1. Ask the patient to lie supine or to sit upright with the feet hanging loose
2. In supine position: Place the lower limb of the patient on the bed, so that it lies everted and slightly flexed.
3. With one hand, slightly dorsiflex patient's foot so as to stretch the Achilles tendon
4. With the other hand, strike the tendon on its posterior surface
5. Normal result: a quick contraction of the calf muscle

Figure 6.16: Achilles' tendon reflex

Jaw Jerk

1. Ask the patient to open the mouth moderately.
2. Place one finger firmly on the chin
3. Tap it suddenly with the other hand as in percussion
4. A contraction of the muscles that close the jaw results. This reflex is sometime absent in healthy people and is increased in upper motor neurone lesions.

Clonus

1. Bend the patient's knee slightly and support it with one hand
2. Grasp the forepart of the foot with the other hand
3. Suddenly dorsiflex the foot.
4. Sudden stretch causes a reflex contraction of the calf muscles followed by relaxation.
5. Continued stretch causes a regular oscillation of contraction and relaxation, which is called clonus.
6. Sustained clonus is abnormal and is evidence of and upper neurone lesion.

Grading Tendon Reflexes

1. Absent
2. Present (as a normal ankle joint)
3. Brisk (as a normal knee joint)
4. Very brisk
5. Clonus

Superficial spinal reflexes

Reflex	How to elicit	Clinical Result	Level of Cord
Anal	Stroking or scratching	Contraction of anal sphincter Skin near anus sphincter	3rd and 4th sacral segments
Bulbocavernosus	Pinching dorsum of glans penis	Contraction of bulbocavernosus	3rd and 4th sacral segment
Plantar	Stroking sole of the foot	Flexion of toes, of foot and toes, or leg	Lower part of lumber enlargement (5th lumbar and 1st sacral segments)
Cremasteric	Stroking skin at upper inner part of thigh	Upward movement of testicle	1st and 2nd lumber segments
Abdominal	Stroking abdominal wall below costal margin at level of the umbilicus and iliac fossa	Contraction of abdominal muscles	7th and 12th thoracic segments
Scapula	Stroking skin in interscapular region	Contraction of scapular muscles	5th cervical to 1st thoracic segment

Procedure: Examination of signs of meningeal irritation

1. Examining for neck stiffness
    a. With the patient supine, slip your hand under the head and raise it flexing the neck
    b. Try to make the patient's chin touch the sternum, but do not force it
    c. Nuchal rigidity is associated with meningitis and intracranial haemorrhage
2. Brudzinki sign may also be present when neck stiffness is assessed
    a. Involuntary flexion of the hips and knees when flexing the neck is a positive Brudzinki sign
3. Kernig's sign:
    a. Flexing the leg at the knee and hip when patient is supine
    b. Attempt to straighten the leg
    c. Pain in the lower back and resistance to straightening the leg at the knee constitute a positive Kernig's sign

BLOOD TRANSFUSION MANAGEMENT

Objective
The ability to manage a patient on blood transfusion

Indications
Any patient requiring blood transfusion

Requirements
1. Small tray or kidney dish to hold unit of blood
2. Blood transfusion giving set.
3. Packed cells or whole blood as ordered.
4. Kidney dish.
5. Blood card (order).
6. Intake and output chart.
7. Pair of sterile gloves
8. Equipment for I.V line (see manual on Insertion of IV-cannula's and IV-infusion)

NOTE: The clinician must order the blood, start the transfusion and ensure connection of any subsequent bottles

Procedure

Preparation
1. Obtain the unit(s) from blood bank immediately before transfusion.
2. Inspect the unit for general appearance, clots and coloration.
3. Check the unit against the transfusion requisition
    a. The client's name
    b. In-patient number
    c. ABO grouping
    d. RH type
    e. Product unit number
    f. Expiry date

    NOTE: Check all together with bank staff
4. Double check each unit
5. Secure unit (tray/kidney dish) in a cool place while you make other preparations

Method

Starting the blood transfusion:

1. Explain procedure to the patient, specifically the need for regular vital sign checks
2. Clean and disinfect trolley
3. Wash hands, wear gloves
4. Assemble items on trolley
5. Open blood giving set package and close drip regulator (clamp roller).
6. Remove cap to reveal spike on one side of blood giving set.
7. Using a twisting motion; push spike into port of blood bag.
8. Hang blood bag onto drip stand
9. Open tube clamp and prime fluid chamber and flush tubing to end
10. Close clamp
11. Replace cap on tubing-end and place in a kidney dish on the locker / bed
12. Insert IV-line (brannula) if patient is not already on I.V. fluids. (See Insertion of IV-cannula's)
13. Remove cap and connect blood tubing to catheter hub.
14. Open tube clamp and regulate flow in drops per minute as ordered
15. Report in cardex and on fluid chart

During transfusion:

16. Check temperature, pulse and blood pressure every 15 minutes for the first ½ hour, then ½ hourly until blood transfusion is completed
17. Check on general change of patient

When blood transfusion is completed:

18. Clamp the giving set tube
19. Connect and turn on normal saline if ordered and proceed as per I.V. fluids
20. Remove copy of paper with details from the bag and put in client's file
21. Place all used tubing and blood bag in a tray and ensure all patient's identification are clear on bag to be returned to bank (in case of blood reaction)
22. Instruct patient on signs and symptoms of delayed reactions
23. Clear equipment
24. Remove gloves and wash hands
25. Record and report appropriately

GIVING ENEMA

Objective

To be able to give enema and flatus tube correctly and safely to the patient.
Specifically:

1. To understand the indications for enema administration
2. To be familiar with the equipment used for giving enema
3. To correctly use the equipment
4. To perform the procedure correctly

Figure 6.17: Disposable enemas: Oil-retention (L) & Medicated cleansing enema ®

Indications

To facilitate emptying of the bowel in the following situations:

1. Constipation
2. Pre-operative (pelvic and abdominal)
3. In labour or to stimulate progress of labour

Requirements

Top Shelf of Trollev

- Kidney dish with funnel, rubber tubing and a clip
- Jug (soap or prescribed
- Connector
- Gloves
- Enema solution (600-1000mls)
- Rectal catheter
- Lubricant
- Gauze swab in a receiver

Bottom Shelf of Trollev

- Mackintosh and towel or draw sheet
- Clean covered bed pan
- Air Freshener if available
- Toilet paper or cotton wool swabs
- Receiver dirty linen
- Clean linen in case needed

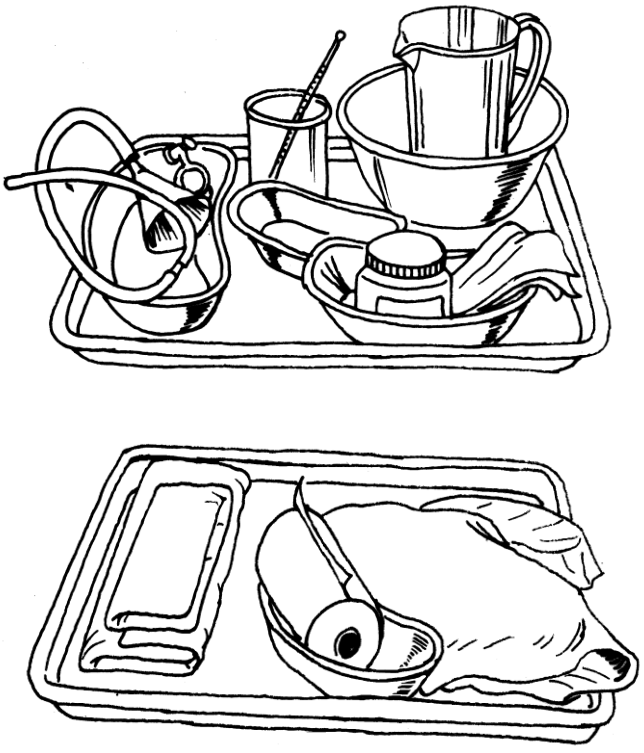


Figure 6.18: Requirements for administration of an enema

Procedure: Giving Enema

Preparation

1. Explain the procedure and purpose to the patient to ensure his cooperation.
2. Screen the bed while ensuring adequate working space
3. Open nearby window for fresh air
4. Prepare the prescribed enema ensuring that the solution is at normal body temperature by testing on back of hand
5. Assemble all equipments neatly and take trolley to bedside
6. Wash hands before starting the procedure
7. Put on gloves

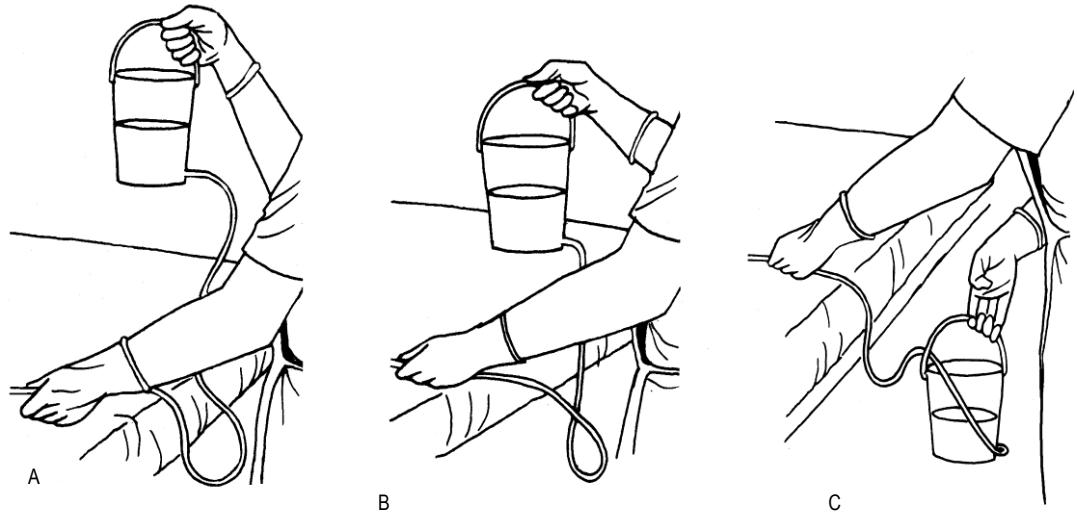


Figure 6.19: Regulating fluid pressure by height of container: A: Moderate pressure, B: Low pressure, C: Negative pressure, for siphoning

Method

1. Turn back the bed linen and leave the patient covered with top sheet
2. Put patient in left lateral position with knees flexed and buttocks on the side of the bed
3. Place mackintosh and towel under the buttocks
4. Take apparatus from the bowl and lubricate the catheter tip
5. Put a clip on the rubber tubing just above the glass connection
6. Pour the solution to pass through apparatus to expel air and then clip the tube
7. Insert the catheter into the rectum in an upward and forward position (8-10) cm
8. Fill in funnel with solution about ¾ of it and hold about 30cm above patient
9. Release the clip slowly to allow solution to run in by gravity and then clip the tube
10. Ask patient to breathe in and out as the fluid runs in, to avoid pushing it out

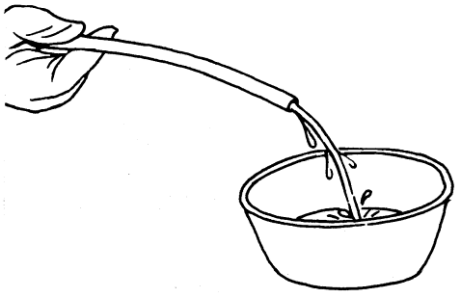


Figure 6.20: The solution is allowed to fill the tubing so that an unnecessary quantity of air is not introduced into the patient

NOTE: If cramping occurs, stop flow of fluid until cramp passes

11. Gently withdraw the catheter and urge the patient to retain the fluid for 2-3 minutes or longer if possible
12. Disconnect catheter from the rest of the apparatus and put it back into dirt receiver
13. Return the funnel, tube and connector to the bowl
14. Instruct patient to walk to toilet if near or to turn on the back and slip the bedpan under the buttocks
15. After patient has finished, remove bedpan and cover it
16. Clean the patient or assist him to do so
17. Remove mackintosh, tidy the bed and make patient comfortable
18. Clearing:
    a. Spray area with air freshener if necessary
    b. Remove the screens
    c. Take trolley to sluice room to clean and decontaminate
19. Observe the contents of the stool before emptying and cleaning the bedpan
20. Record, interpret and record observations

PASSING FLATUS TUBE

Objective

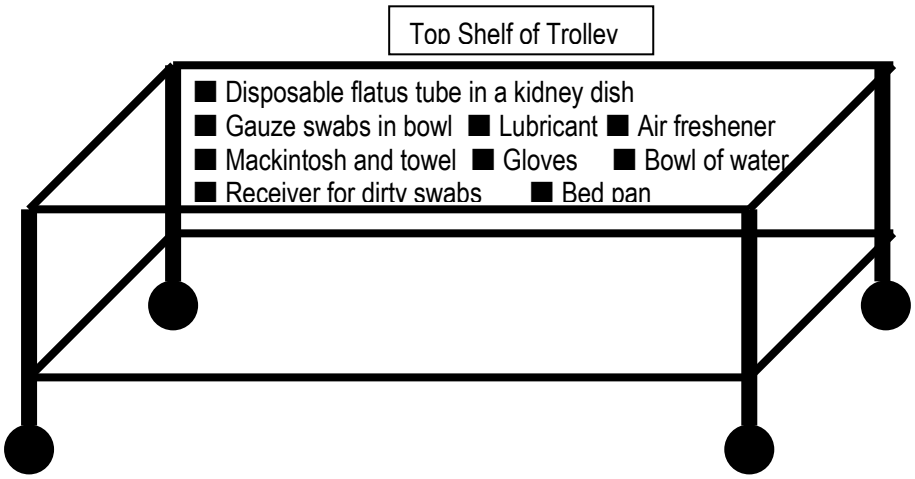
To be able to pass a flatus tube in the patients
Specifically:

1. Be familiar with the equipment used for passing flatus tube
2. Correctly use of the equipment
3. Perform the procedure correctly

Indications

- To relieve abdominal distension (primary or post-operatively)
- To give patient comfort

Requirements



Procedure

Preparation

1. Explain the procedure and purpose to the patient to ensure his cooperation.
2. Clean the tray and dry it
3. Wash hands
4. Arrange the requirements on the tray
5. Screen the bed
6. Open nearby window for fresh air
7. Ensure adequate working place

Method

1. Assist patient to lie on the left lateral position
2. Turn bedclothes to expose buttock but cover top of patient to avoid chilling
3. Place mackintosh and towel under the buttocks
4. Put on gloves and clean anal area
5. Lubricate the flatus tube and place distal end in the bowl of water
6. Insert the tube gently into the rectum through the anus (3-4 inches)
7. If effective bubbles will appear in the water
8. Leave the tube for about 15-20 minutes and continue observing for the bubbles

9. Remove the tube and place it in the kidney dish
10. Wipe the patient around the anus
11. Remove the mackintosh and towels
12. Make the bed and leave the patient comfortable
    NOTE: Give a bedpan if necessary
13. Remove the screens
14. Take the trolley to the sluice room, discard the flatus tube and used swabs
15. Decontaminate the equipments, wash, dry and store appropriately
16. Record

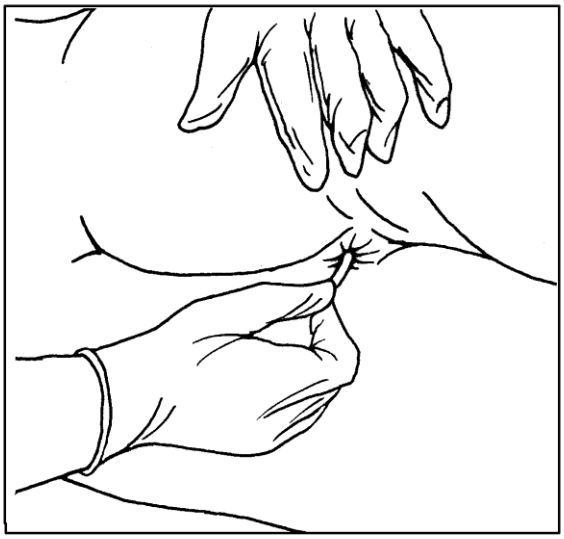


Figure 6.21: The nurse lifts the buttocks, exposes the anus, and prepares to introduce the rectal tube

CATHETERIZATION

Objective
The ability to carry out catheterization of female and male patients when indicated

Indications
1. Need for artificial removal of urine in case of (severe) retention
2. To obtain a urine specimen entirely free from contamination
3. For accurate assessment of fluid loss
4. Pre-operatively before pelvic surgery
5. As a last result to manage urinary incontinence

Requirements

A clean trolley arranged as follows:	
Top Shelf	Bottom Shelf
1. A sterile pack containing: a. Small hand towel b. Pair of gloves c. Draping towels d. Galipot e. Kidney dish f. Needle g. Straight artery forceps 2. Bowl containing cotton wool and gauze swabs	1. Bottle of antiseptic e.g. Hibitane 2. Protective mackintosh and draw sheet 3. Lubricant 4. 2 sterile Foleys catheters size 14 and 16 5. Measuring jug and strapping 6. Sterile specimen bottle if required 7. Receiver for used swabs 8. Decontaminant in receiver for used instruments 9. In case the catheter has to remain in situ: a. A bottle with sterile water for injection and 20 cc syringes b. Sterile spigot and / or urine bag

Procedure: Catheterization of a female patient
1. Clean and disinfect trolley and arrange items
2. Explain procedure to the patient
3. Screen the bed while ensuring adequate working space and close nearby windows
4. Place the trolley beside the bed appropriately
5. Ask assistant to open the pack to expose hand towel
6. Wash hands and dry them with sterile towel
7. Ask assistant to position patient appropriately and to fix mackintosh under buttocks
8. Put on gloves
9. Ask the assistant to pour antiseptic solution into the sterile bowl
10. Ask the assistant to open and drop the following on the sterile field:
    a. The required Foley catheter
    b. The spigot
    c. The 20 cc syringe and needle
11. Ask the assistant to hold the bottle of sterile water, swab the top of it with antiseptic and, using the sterile 20 cc syringe and needle, draw up 20 cc of water and place the syringe in sterile field.
12. Swab the vulva as follows:

    a. Using the right hand, pick the moistened swab, drop it to the left hand, swab the furthest labia majora with from up to down and discard swab
    b. Repeat the same to the nearest labia majora, then the furthest labia minora, ending with the nearest labia minora
    c. Use the left index finger and thumb to separate the labia to expose the vestibule and use the right hand, to swab it from up to down
13. Drape the patient using the four towels.
14. Ask assistant to pour lubricant into galipot.
15. Place the sterile kidney below the vulva.
16. Using your right hand pick the catheter and insert the tip into the lubricant
17. Separate the labia to visualise the urethral orifice with your left hand
18. Gently insert the lubricated tip into urethra for 4 – 5 cm and let the urine flow into the kidney dish
19. Secure the catheter with a straight artery forceps or strapping to prevent it from slipping out
20. Collect specimen if required, label and send to laboratory
21. If catheter is to be retained:
    a. Balloon the catheter with the sterile water in the syringe, following instructions on the catheter
    b. Connect the drainage bag or insert sterile spigot
22. Leave the patient comfortable.
23. Take trolley to sluice room.
24. Observe urine: amount, colour, deposits
25. Document in cardex or input/output chart

Figure 6.22: Method of spreading the labia's to insert a catheter

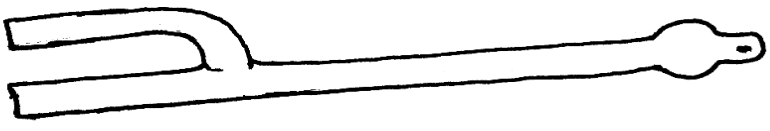


Figure 6.23: Foley's catheter: The balloon can be inflated by inserting the nozzle of the charged syringe into the side arm. The amount required is printed on the catheter

Procedure: Catheterization of male patient

Procedure the same as for female up to step 14: Ask assistant to pour lubricant into galipot.

1. Place the sterile kidney below the penis
2. With your left hand place a sterile swab over the prepuce. If necessary retract it so that the meatus is exposed. Clean the area with antiseptic lotion wiping with a backward motion from the meatus
3. Use your right hand to pick the catheter and insert the tip into the lubricant
4. Straighten the urethra by lifting the penis with your left hand at an angle of 60°
5. With your right hand insert the lubricated catheter gently for about 16 cm. Do not force the catheter into the urethra.
6. Let the urine flow into the kidney dish

Complete the procedure as for female catheterization after insertion of the catheter (from step 19 onwards)

SPECIMEN COLLECTION

Includes
Wound Swab
Stool Specimen (from a bed ridden patient)
Blood Slide on Malaria Parasites
Collecting 24-hour Urine Specimen
High Vaginal Swab (HVS)
PAP-smear

Objectives
To be able to collect and handle specimens from patients correctly and safely

Indications
- Monitoring a specific disease / condition in a patient
- Following complaints / symptoms in a patient
- A suspected disease/condition in client patient

Procedure: Wound Swab

Requirements
Trolley arranged with:
- A labelled pus swab in its test tube container
- A wound-dressing tray

Method
1. Clean and disinfect trolley
2. Arrange the items on the trolley
3. Explain the procedure to the patient
4. Screen the bed
5. Wheel trolley to bed side and ensure adequate working space
6. Position the patient appropriately
7. Expose the wound
8. Continue as per wound dressing (see manual on surgical dressing)
9. Remove the dressing from the wound
10. Withdraw the sterile swab from its tube and swab the wound in the most dirty part
    NOTE: As you swab roll the orange stick to ensure the whole swab is soaked moistened with the discharge
11. Return swab to the tube taking care not to touch the sides of the tube
12. Dress wound (as per surgical dressing procedure)
13. Label specimen and sent to laboratory
14. Make a report on the state of wound and specimen collection

Procedure: Stool Specimen (from a bed ridden patient)

Requirements

A clean trolley containing	
Top shelf	Bottom shelf
1. Stool container 2. A pair of gloves 3. Wooden spatula in kidney dish 4. Laboratory request form	1. Facilities for washing and drying hands 2. Two warm bedpans with covers, or a bedpan and urinal 3. Toilet paper

Method

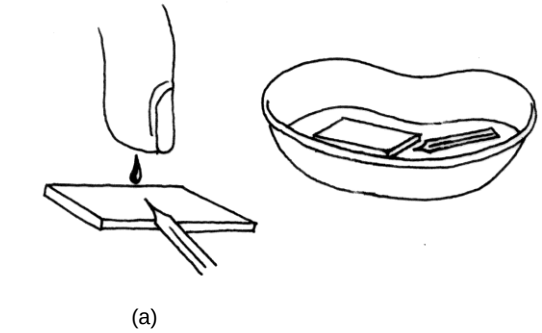
1. Arrange items on trolley
2. Explain procedure to the patient
3. Wheel the trolley to bedside
4. Screen the bed and close nearby windows
5. Ask patient to pass urine into one of the bedpan / urinal
6. Cover and place on bottom shelf of trolley
7. Wear gloves
8. Assist patient to sit on 2nd bedpan
9. Give patient time to open bowels
10. After he passes stool, offer tissue paper or clean him if unable to do so
11. Remove bedpan and cover it
12. Offer him facilities to wash and dry hands
13. Leave him comfortable
14. Open window and remove screen
15. Wheel the trolley to sluice room
16. Use the spatula to collect solid part of stool together with any abnormalities; and place this into the specimen bottle, taking care not to contaminate the outside of the bottle. Do not fill the bottle
17. Decontaminate and then clean the bedpan
18. Clear equipment
19. Record and report the procedure

Procedure: Blood on Malaria Parasites

Requirements

A tray containing the following:

1. Dry sterile swabs in container.
2. Spirit in container.
3. Receiver for the used swabs.
4. Laboratory request form.
5. Receiver for sharps.
6. Gloves
7. Three (3) slides
8. Sterile lancet or needle



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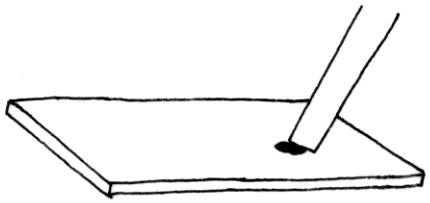

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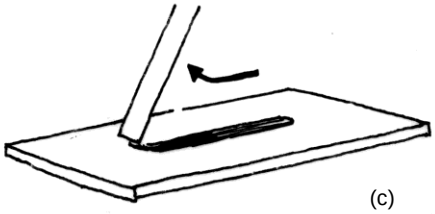


(c)

Figure 6.24: preparing a blood slide

Method

1. Clean tray and disinfect it
2. Arrange items on tray appropriately
3. Label two slides
4. Explain procedure to the patient and position the patient in a comfortable position
5. Wear gloves
6. Clean patient's thumb / finger with antiseptic and dry it thoroughly
7. Press the tip of patients finger between your index finger and thumb
8. Hold the sterile needle / lancet between the index and thumb of your other hand
9. With a single strike prick the tip of the patient's finger
10. Wipe the first blood that appears and then receive a drop on a labelled clean slide *(a)*
11. Squeeze for another drop and receive it on a second slide *(b)*
12. Spread the drop on the second labelled slide in one movement using a third slide *(c)*
13. Ask the patient to press the part with dry cotton wool to control any bleeding
14. Allow the slides to dry
15. Arrange to send slide to laboratory
16. Clear equipment
17. Record and report

Procedure: Collecting 24-hour Urine Specimen

Requirements

1. A 4-litres urine specimen bottle
2. Laboratory request form
3. Measuring jug

Method

1. Obtain the specimen bottle and label it with patients' identification data and time of the beginning and ending of collection of specimen
2. Place the bottle in a suitable place
3. Explain the procedure to the patient

4. Ask the patient to pass urine at the time the test begins, and discard this urine
5. Tell the patient to start, from then on, collecting all the urine he/she passes during the following 24 hours and putt into the specimen bottle using the measuring jug
6. Ask patient to pass urine the time collection ends and add it to the collection bottle
7. If the patient is on a fluid balance chart record the total amount on the chart
8. Take the urine specimen to the laboratory
9. Report appropriately

Procedure: High Vaginal Swab (HVS)

Requirements

1. Sterile vaginal speculum in a receiver
2. Sterile cotton tipped swabs
3. Sterile gloves
4. Mackintosh and towel
5. Sterile water/lubricant
6. Galipot
7. Sterile swabs
8. Pedal pin/container for dirty/used swabs.
9. Plastic container with Jik 1:6 for receiving used instruments
10. Request form

Method

1. Explain the procedure and purpose to patient to ensure her cooperation.
2. Let patient empty bladder and bowels to enhance comfort during the procedure
3. Ask client about previous experience of speculum examination
    a. In case of first experience, explain fully and show her how the speculum will be used to reduce tension
4. Screen bed while ensuring adequate working space and close windows.
5. Put pedal bin next to the bed
6. Assemble the requirements in a tray
7. Select speculum of appropriate size
8. Observe practices of medical asepsis: wash hands.
9. Preferable 2 health workers of whom 1 female should be present
10. Fold bed sheets
11. Assist patient into dorsal position with knees flexed apart and heels together to expose the vulva
12. Place mackintosh / towel under patients buttocks
13. Wash hands, dry them and put on gloves
14. Swab the vulva and insert speculum (See manual on vaginal examination)
    NOTE: Use warm sterile water to lubricate the speculum, no lubricant and use sterile water to swab, no disinfectant solution
15. Gently but firmly sweep once high in the fornix area ensuring swab is well soaked
16. Immediately put swab into container with medium
17. Continue conform procedure on speculum examination
18. Leave patient comfortable.
19. Wash and dry hands
20. Clear the area: remove screen, discard disposable items
21. Immediately take specimen to laboratory with request form.
22. Decontaminate equipments, wash with soapy water, rinse, dry and take speculum for re-sterilization
23. Document

Procedure: PAP-smear

Requirements

1. Equipment for speculum examination (see manual on vaginal examination)
2. (One) 1 ayre or wooden spatula
3. (One) 1 glass slide
4. (One) 1 hard diamond pencil
5. Fixative solution
6. Pathological request forms

Method

1. Clean and label the slide correctly with the diamond pencil:
    a. Client's name, number and Service Delivery Point (SDP) number
2. Fill the pathological request form:
    a. Name, age, parity, LMP
    b. SDP and FP number
    c. Method of FP
    d. Examination required
3. Place the equipment and slide on the table
4. ***Do not swab the vulva with antiseptic solution***
5. ***Do not lubricate the speculum***, if necessary use plain water
6. Perform speculum examination (see manual)
7. Introduce the wooden spatula / ayre
8. Rotate the spatula / ayre 360° in the ostium to allow the removal of surface cells at the squamocolumnar junction
9. Scope the scrapings from the ostium
10. Remove the speculum (see manual)
11. Spread the scrapings thinly and evenly on the glass slide
12. Fix with fixative solution 1-2 drops
13. Keep the slide away from the direct light
14. Leave the specimen to dry before taking into the laboratory for investigations

LUMBAR PUNCTURE

Introduction

Lumbar puncture is a procedure used for obtaining samples of cerebro-spinal fluid (CSF). This is done through penetrating the lumbar meninges by puncturing the meninges using a long hollow needle inserted between L3 / L4 or L4 / L5 interspaces which are below the level of termination of the *conus medullaris*. At birth, the spinal cord ends at the 3rd lumbar vertebrae while in adult life it terminates between the 1st and 2nd lumbar vertebrae. The CSF gives information in terms of CSF pressure, colour, cell content (cytology), chemical content and the Wassermann reaction.

Objective

To be able to perform a lumbar puncture and collect CSF specimen for analysis

Indications

1. Diagnostic
    a. Diagnosis of meningitis/encephalitis
    b. Diagnosis of suspected subarachnoid haemorrhage
    c. Diagnosis of miscellaneous conditions e.g. multiple sclerosis, neurosyphilis, sarcoidosis and certain polyneuropathies.
    d. Measurement of CSF pressure e.g. in idiopathic intracranial hypertension
    e. Myelography
2. Therapeutic
    a. Intrathecal injection of contrast media and drugs such as Methotrexate as in Burkitts lymphoma and Acute lymphocytic leukaemia (ALL)
    b. Removal of CSF therapeutically in idiopathic intracranial hypertension
3. Administration of spinal anaesthesia

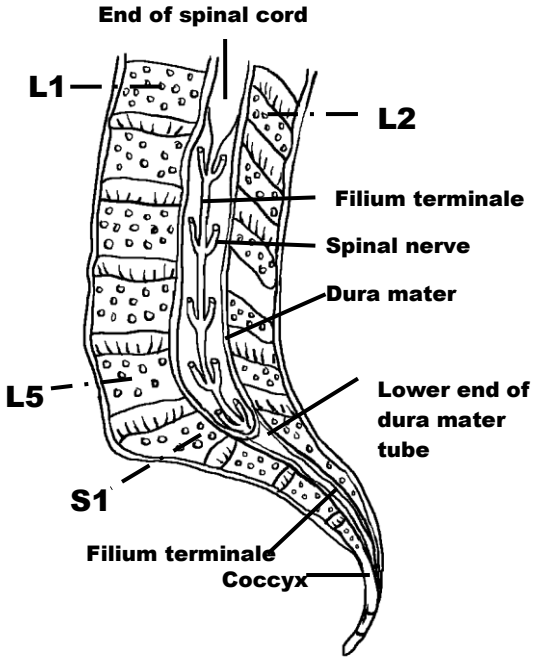


Figure 6.25: The lower end of the vertebral column and spinal cord

Contraindications

NOTE: Most of the following contra-indications are relative and apply particularly in spinal anaesthesia but can be out weighted by the importance of obtaining CSF for analysis

1. Sepsis of the skin overlying the spinal cord (local infection)
2. Anticoagulant therapy and uncontrolled bleeding diathesis
3. Spinal column deformities
4. Lack of patient cooperation
5. Uncorrected anaemia and heart disease (resultant hypotension may worsen the condition)
6. Intracranial hypertension

Requirements

A clean trolley containing	
Top shelf	Bottom shelf
A sterile lumbar puncture pack containing a. Small hand towel b. 1 sterile gown c. Pair of gloves d. 2 Draping towels e. 2 Galipots f. 2 Kidney dishes g. 1 Sponge holding forceps h. A long hollow lumbar puncture needle with a small diameter, preferable G26 or G27 with a stylet (cutting point needle like Quincke or Atraucan or non-traumatic needle like Whiteacre or Sprotte) i. Sterile needle G21 (for adults) or G23 (for children) j. Syringe 5 cc Bowl containing cotton wool and gauze swabs Spinal manometer	Local anaesthetic Antiseptic solution e.g. Hibitane Receiver for used swabs Decontaminant in receiver for used instruments Strapping Scissors 3 sterile specimen bottles Extra sterile needles (gauge 21 and 23) Extra syringes (5 cc) 3 masks Mackintosh/draw sheet Prepared medicines (if lumbar puncture is for administration of medicines and spinal anaesthesia)

Pre-Procedure Patient Education

1. Assess the indications for the procedure
2. Inform the patient about the major steps of the procedure, positioning and common side effects
3. Obtain informed consent
4. Examine the fundi (fundoscopy) to exclude increased intracranial pressure

Procedure: Lumbar Puncture

1. Screen the bed while ensuring adequate working space
2. In some cases, sedation is helpful in reducing patient anxiety and allowing maximal spinal flexion.
3. Place the trolley beside the bed appropriately
4. Ask the assistant to open the pack to expose the hand towel
5. Positioning the patient
    a. Lateral decubitus with “foetal ball” curling up
        i. Ask the patient to lie on the left side on a firm couch or on the firm edge of the bed
        ii. Ask the assistant to assist the patient to lie with the spine fully flexed so that the knees and chin are nearly as approximated as possible
    b. Sitting up position
        i. Ask the patient to sit at the edge of the bed
        ii. Ask the patient to lean forward in a curled position so as to maximally flex the spine while resting his head on a table
6. Locate the landmarks – locate the 3rd and 4th lumber spines (4th lumbar spine lies in the transverse plane of the iliac crest (on obese patients find the sacral promontory, the end of which marks the L5/S1 inter space and use this reference to locate the L4/L5 for the entry point). Mark your proposed site of injection

NOTE: Adhere meticulously to aseptic techniques described below to avoid causing meningitis

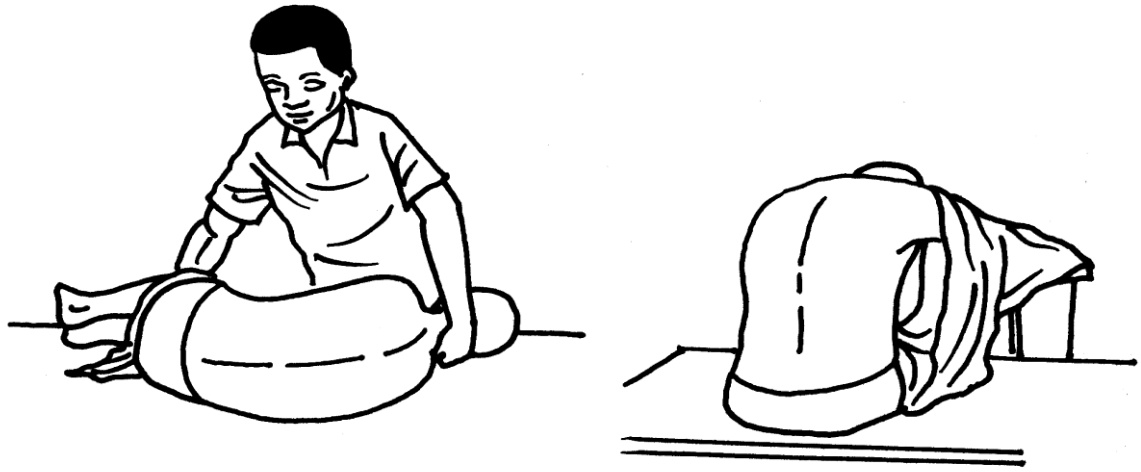


Figure 6.26: Foetal ball (left) and sitting up position (right)

7. Scrub your hands thoroughly and dry them with a sterile towel
8. Put on the sterile gloves
9. Ask the assistant to pour antiseptic solution into the sterile bowl
10. Thoroughly clean the skin over a wide area of the back
11. Drape the patient
12. Ask the assistant to open and drop the following items on a sterile green towel - 5 cc

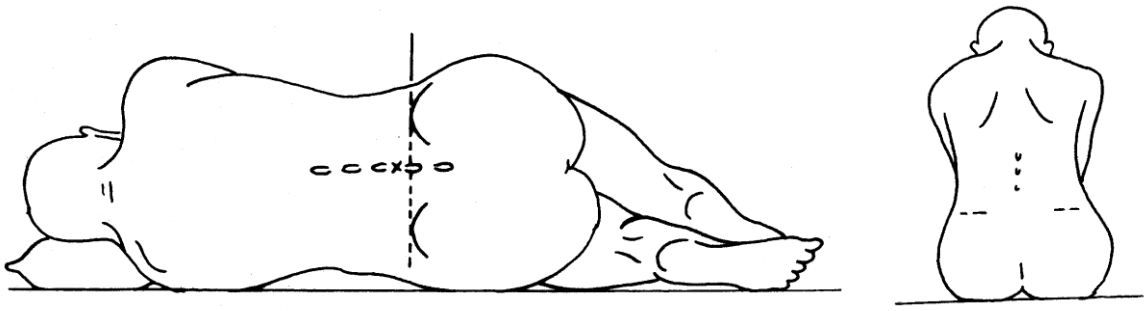


Figure 6.27: Locating the entry point

syringe and a needle (21 gauge for adults and 23 gauge for children)

13. Ask the assistant to hold the bottle of local anaesthetic and swab its top with antiseptic
14. Using the needle and syringe withdraw 5 cc of the local anaesthetic
15. Administer the local anaesthetic around the area (using 1% lidocaine with or without adrenaline)
16. Open the lumbar puncture pack and assemble the lumbar puncture needle with a stylet. Do not touch the shaft of the needle

NOTE: Fine needles should be used as an increasing diameter coincides with an increase in the incidence of post spinal puncture headaches. Furthermore, non-traumatic needles tend to cause less post spinal puncture headaches than cutting needles of the same Gauge

17. Insert the lumbar puncture needle perpendicular (at right angles) to the back
18. Push the lumbar puncture needle firmly through the skin in the midline or juts to one side of the midline and press it steadily forwards and slightly towards the patient's head until resistance of the tough ligamentum flavum is felt
19. If you strike the bone superficially it is probably the spine of the vertebrae above, make a new start 1 cm further down
20. If you strike bone deeper it is the vertebrae below, you will need to angle the needle more towards the head

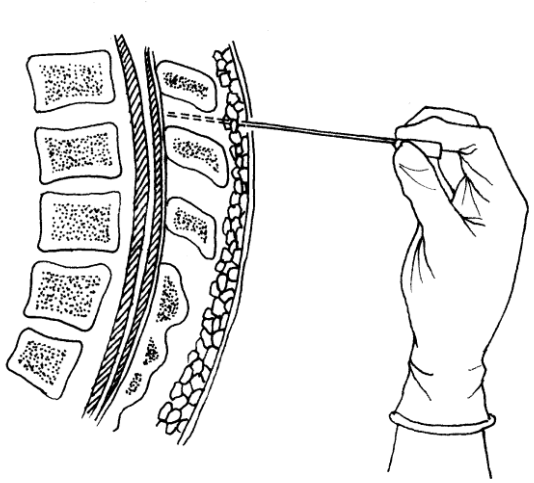


Figure 6.29: Insertion route of the lumbar puncture

21. Slowly withdraw the stylet
22. Apply a little pressure until "a give" or 'pop' is felt (this is a sign of puncturing the dura)
    NOTE: Insertion of the needle bevel-up minimizes dural trauma

23. When the needle enters the spinal cavity the CSF will drip slowly from the needle. Note the following:
    a. When using a manometer, measure the intracranial pressure. It should be ≤ 20 mm of water
       NOTE: Pressure reading is not reliable in a sitting position
       NOTE: Poor technique whereby the needle is not inserted in the subarachnoid space leads to incorrect readings (seemingly reduced CSF pressure)
    b. Colour – normal CSF is clear and colourless; blood stained (trauma, tumours, bleeding diathesis), yellow / xanthochromic (jaundice, haemorrhage
       NOTE: A traumatic "bloody tap" occurs when spinal venous plexus is penetrated. Often the fluid will clear as succeeding tubes are filled. Spin down the first tube: if red blood cells have been in the spinal fluid for sometime (for example, subarachnoid haemorrhage), xanthochroma will present in the supernatant fluid. If the fluid is clear after it is spun down, the tap was only traumatic
    c. Turbidity indicates infection or subarachnoid haemorrhage(turbidity clears on standing)

NOTE: Obtaining a dry tap with failure to obtain CSF which can be caused by incorrect puncture (incorrect position of the patient or needle) or complete block to CSF flow. In case of dry tap seek specialist advice

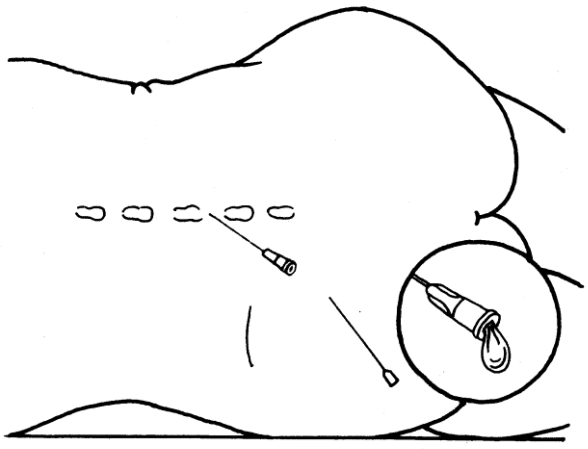


Figure 6.30: Withdrawing the stylet

24. Collect the 1 – 2 mls of the CSF in the four specimen bottles as follows: - 1 bottle for biochemistry (glucose, proteins), 1 bottle for cytology (cells and differentials), 1 for Gram stain and culture/sensitivity, and the last one as a reserve for any special tests.
25. After the tap remove the needle
26. Dress and strap the site of puncture with a sterile gauze
27. Inform the patient that he / she can mobilize on own initiative

NOTE: Bed rest was prescribed for several hours in the past to reduce post spinal puncture headache but has been proven to be ineffective

28. Label the specimen bottles and send to the laboratory

Normal CSF

Appearance	Crystal clear, colourless
Pressure	10 – 20 cm of water with patient in recumbent position
Cell content	5 cells / mm3, mononuclear cells only, no polymorphonuclear cells
Protein	0.1 – 0.5 gm/L
Glucose	2/3 – ½ of blood glucose
IgG	< 15% of total CSF protein

CHAPTER 7: SKILLS IN PAEDIATRICS

Annex to CMS 262: Paediatrics & Child Health I

Paediatric History Taking

Paediatric Physical Examination (Special Considerations)

Resuscitation of the Newborn

PAEDIATRIC HISTORY TAKING

Introduction

Paediatric patients could be considered as being children up to 12 – 14 years of age. They need special consideration and care during hospitalization.

Objectives

To highlight the special considerations in paediatric history taking

Requirements

1. Informant (in younger child) - Informant is important because the child may not speak for himself.
2. Interpreter (if necessary)

Procedure

Steps	Highlights
Rapport	Establish rapport with the informant and the child (if old enough to notice the new environment) as soon as you get in contact. Usually greeting the child and making a positive remark will put the child at ease and establish a relationship.
Personal identification	
Chief complaint	
History of presenting complaint / illness	
Review of systems	
Past medical / surgical history	
PERI-NATAL HISTORY *NOTE: This part of history may be important only in certain cases, for example: all neonates, infants and older children with mental symptoms and signs, jaundice, malnutrition, delayed milestones etc.*	
Pre-natal	Inquire from the mother about her pregnancy experience in relation to the following: 1. Any illnesses during the period 2. T.T immunization 3. Antenatal profile 4. Drugs taken during pregnancy 5. Nutrition during pregnancy. 6. P.V bleeding during pregnancy 7. Parental attitudes during pregnancy and parenthood towards the child

Natal period	Obtain the history of events occurring during delivery: 1. Length of labour *(normal, prolonged or precipitate)* 2. Nature of labour *(term, premature or post mature)* 3. Type of delivery *(SVD, assisted or C/S)* 4. Where the delivery took place *(hospital, home, any other place)* 5. The colour of the baby at birth *(pink, blue, any other colour)* 6. Whether the baby cried at birth or not 7. Birth weight of the child 8. Any immediate problems with the baby or mother. (1st week of delivery) a. Resuscitation b. Incubation c. Feeding problems d. Breathing problems
Post-natal	1. Events in the 1st week after delivery: a. Any presence of infections, cyanosis, convulsions, blood transfusions, jaundice etc 2. Dietary history of the child: a. Breast feeding history b. Ask whether the child was bottle fed instead. c. Is the child weaned? When? On what? d. What is the staple food of the child now? Who feeds the child? 3. Immunization history of the child: a. Look for the B.C.G scar and check the Road to Health Card 4. Growth and development history of the child: a. Physical growth b. Developmental milestones c. Social development history of the child(i.e. history of sleep, toileting, speech, habits like enuresis, discipline, schooling, personality, sexuality) d. Check Road to Health chart
Personal Social Economic history	Economic status of the parents Habits of the parents Living environment
Family history	Assesses the child's risks of developing certain diseases. It includes: 1. Position of child in the family 2. Enquire about other siblings whether they are alive and well. Enquire about their ages. Any stillbirths? 3. Any deaths (ages, causes)

PAEDIATRIC PHYSICAL EXAMINATION
(Special considerations)

Introduction
A good paediatric history and thorough physical examination is important for the following:
- Diagnosis of disease
- Evaluation of the normal child
- Evaluating parent – child relationships

Furthermore there are differences between adults and children during history taking:
- Paediatric history is generally obtained indirectly from an adult
- The impact of genetic, environmental and social factors is often more pronounced in children
- The predominant impact of disease may be on growth and development of children
- The growth and development status of children may influence expression of disease
- Clinical norms in children differ with age and from those of adults

Objective
To perform a full systematic physical examination of the child

Requirements
1. Privacy (in older children)
2. Comfort
3. Good lighting
4. Instruments for measuring height or length and weight
5. Thermometer
6. Otoscope
7. Torch
8. Sphygmomanometer
9. Tongue depressor
10. Watch with second hand
11. Ruler
12. Tape measure
13. Stethoscope
14. Patella hammer
15. Tuning fork

Procedure (special considerations)

1. Explain the procedure to the child/parent/guardian
2. Carry out the physical examination in a systematic manner starting from:
    a. General examination.
    b. Vital signs
    c. Systemic examination i.e.
        i. ***Respiratory*** system
        ii. ***Cardiovascular*** system
        iii. ***Abdominal*** examination
        iv. ***C.N.S.*** examination
        v. ***Musculoskeletal*** system

NOTE: Unlike in adults where focus is directed to the system(s) affected in the main complaint, in paediatric examination equal attention should be paid to all systems

3. Older children should be examined in the same way as adults. However there are special considerations:
    a. If the child is fretful and anxious uncomfortable procedures should be done last to avoid upsetting the child.
    b. Take time to gain the child's confidence. A positive remark for an older child and establishing rapport on an interesting topic can be helpful here. For younger children the use of toys may work.
    c. Young children should be examined on their parent's lap as much as possible to allay anxiety
    d. Observation is very important in paediatric history taking. Observe the way the child behaves before his parents or guardians. Observe how the parents react to the child.
    e. Observe the face of the child for dysmorphic features e.g. Down's syndrome, cretinism, depressed nasal bridge. Central cyanosis, pallor, jaundice and dehydration can be seen on the face.
    f. Pallor in children is observed on the palms (palmar pallor).
    g. The head should be observed for shape, size, bossing and fontanels (whether still open, normal closure or closed prematurely)
4. Anthropometric Data / Measurements are important in children. They include:
    a. Weight
    b. Length or height
    c. Mid-upper arm circumference
    d. Head circumference

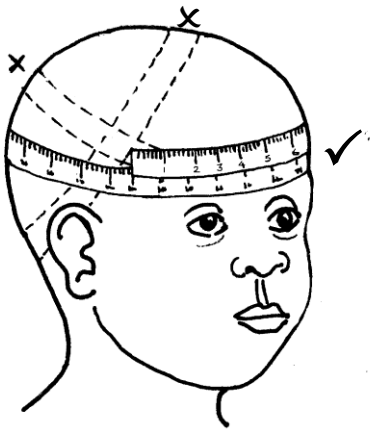


Figure 7.1: Measuring head circumference

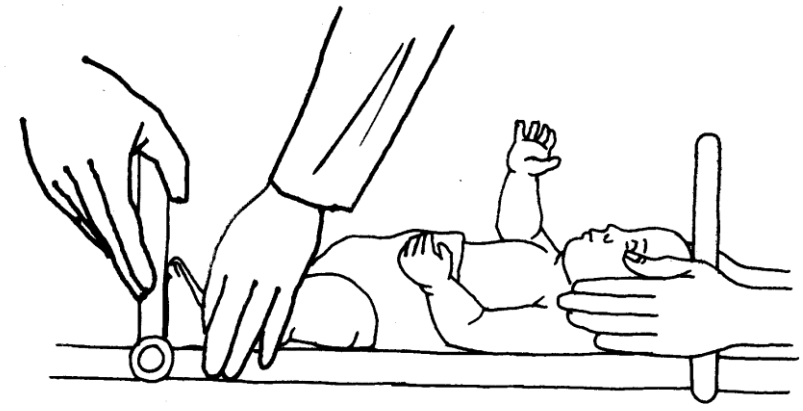


Figure 7.2: Measurement of length in infants

5. Systemic examination
    a. A sleeping child should not be woken up. This gives the clinician a good opportunity to examine the respiratory system, cardiovascular system and the abdomen.
    b. When using a stethoscope put it first on the chest of the mother or teddy bear to show the child that it is not harmful. Then pre-warm it before putting it on the skin of the child to avoid discomfort.

6. Chest/respiratory examination:
    a. ***Inspection***
        i. Chest form abnormalities are more common in children due to their relatively fragile ribs. Check for the following abnormalities
        ii. Harrison sulcus (in-drawing of the lowers ribs) may be seen in obstructive airway disease e.g. asthma, severe pneumonia, adenoidal hypertrophy
        iii. Rachitic rosary (thickening of the costo-chondral junction) is seen in rickets
        iv. Barrel chest / pigeon chest are common in chronic obstructive airway disease
        v. Pectus excavatum is usually of no clinical importance

Respiratory rate varies as the child grows. The following are normal values:

Up to 2 months:	60 cycles /min or less
2 months up to 2 years:	50 cycles / min or less
2 years up to 5 years:	40 cycles / min or less

    b. ***Palpation:*** Vocal fremitus is not of any clinical value in children.
    c. ***Percussion:*** Percussion of the chest is useful in older children but not in younger ones. When percussing the chest use the plexor without the pleximeter.
    d. ***Auscultation:*** As for adults

7. Cardio-vascular system examination:
    a. ***JVP Examination:*** Measurement of Jugular- Venous pressure can only be done in older children. In the younger child the neck is too short.
        i. ***Inspection of the chest:*** As for adults
    b. ***Palpation of the chest***
        i. As for adults
        ii. Below 7yr of age, the apex beat is normally found in the 4th intercostals space, just to the left of the mid-clavicular line
        iii. The apex impulse may be difficult to feel in children less than 2yr of age
    c. ***Auscultation of the chest:*** As for the adults
        i. Splitting of the second heart sound is common in normal children. It is best heard in the pulmonary area and the split widens on inspiration
        ii. A 3rd heart sound is common in children is best heard in the apex
        iii. Many children have murmurs without heart disease (innocent physiological murmur) and in addition children may have severe heart disease without murmurs

8. Abdominal Examination
    a. ***Inspection:*** In children up to 3 years the abdomen is usually protuberant due to the lordotic posture of the child.
    b. ***Auscultation and percussion:*** As for adults
    c. ***Palpation***
        i. The liver edge can be felt up to 2cm below the costal margin in normal children up to the age of 4 years
        ii. Ballottement method can be used to examine the abdomen of a child who is crying. The abdominal muscles are relaxed during inspiration
        iii. Examination of the ear, nose and throat should be done with the child sited on the mother's lap and held as shown in the diagrams below

Figure 7.3: Positioning the infant for ear examination

Figure 7.4: Positioning the infant for mouth & throat examination

RESUSCITATION OF THE NEWBORN
(Asphyxia Neonatorum)

Objective
To be able to perform acute management of a newborn with asphyxia neonatorum
Specific skills – in an asphyxiated newborn:
1. To establish and maintain a clear airway
2. To perform artificial ventilation
3. To perform cardiac massage in a newborn
4. To prevent complications, in particular hypothermia and hypoglycaemia

Indications
Baby with mild, moderate or severe asphyxia

Requirements
Warm resuscitative / heater
Sources of light
Stethoscope

Arranged for easy use in the resuscitation area:
1. Materials for suction:
    a. Mucus extractor and suction tubes FG 6–8
    b. Suction machine
2. Materials for oxygenation:
    a. Face mask
    b. Ambu-bag
    c. Infant airways
    d. Laryngoscope with small blade (baby size)
    e. Endotracheal tube 2.5-3 mm
    f. Moist oxygen through oxygen flow meter
3. Materials for insertion of IV-line and injection:
    a. Syringes sizes 2 ml, 5 ml, 10 ml and 20 ml
    b. Scalp vein needles G 23, G 25
    c. Brannula's G 23
    d. Needles G 23 and G 25
    e. Strapping
    f. Dry swabs
    g. Spirit swabs
    h. Infusion set (Solusets)
    i. Drip stand
4. Other materials:
    a. Umbilical catheters
    b. Sterile dressing pack
    c. Cord clamps
    d. Receivers for used swabs and instruments
5. Drugs
    a. Injection Vitamin K 1 ampoule (1mg)
    b. Injection Naloxone 1 ampoule
    c. Injection Sodium bicarbonate 4.2% to 8.4%

d. 10% glucose and 25% glucose (Dilute 50% glucose in an equal amount of sterile water to make 25% glucose)
e. Adrenaline
f. Hydrocortisone 100 mg
g. Infusion fluids: dextrose 5 – 10% and normal saline
h. Aminophyline
i. Dexamethasone
j. Calcium

Procedure: Resuscitation of the Newborn

Preparation

Upon suspicion of an asphyxiated baby before delivery:

1. Inform the paediatrician
2. Inform the Newborn Unit
3. Inform the Anaesthetist

Method

Upon suspicion of an asphyxiated baby immediately after birth:

1. Cut the cord between the two cord clamps
2. Quickly separate and put the baby on a warm resuscitation table
3. Dry the baby with a warm towel and discard it
4. Then wrap the baby in a dry second towel
5. Assess the baby / APGAR score at 1 minute

APGAR SCORE AT 1 MINUTE AFTER BIRTH		
No asphyxia	**Mild-moderate asphyxia**	**Severe asphyxia**
8 – 10	**5 – 7**	**1 (0) - 4**
• Pink or blue extremities only • Breathing • Active • Heart rate > 100 bpm	• Central cyanosis • Attempts to breath but breathing not regularly • Heart rate > 100 bpm • Fair to good muscle tone • Fairly responsive to stimuli (e.g. shaking) • Heart rate (60 – 80) beats per minute	• Pale gray • No attempt to breathe • Slow feeble heart rate (< 80 bpm) • Poor muscle tone • (Almost) unresponsive

If no asphyxia:

1. Stimulate mildly
2. Clean airway (no suction needed unless meconium)
3. Observe
4. Give baby to mother

First steps in treating asphyxia (mild-moderate or severe):

1. Quickly reassess the drugs given to the mother during labour
2. In case of maternal narcotic intake (pethidine, morphine) less than 3 hours before delivery, neonatal breathing might be suppressed: administer intravenous Naloxone hydrochloride 0.01 mg/kg (so about 0.03 mg in a newborn) to reverse the effects
3. Place baby's head in neutral position with head slightly extended.
4. Clear the airway with a swab and suck any observed meconium / mucus
5. Insert the infant airway to prevent obstruction

6. On suspicion of meconium aspiration, a skilled health worker (obstetrician or experienced midwife) can intubate to suction the deeper airways
7. Connect the ambu-bag to the oxygen supply

NOTE: Where oxygen supply is not available ambu-bag can deliver 21% of oxygen to the baby at positive pressure.

In case of mild-moderate asphyxia and when oxygen is available:

1. Hold the bag slightly above the head of the baby and supply extra oxygen around the face

In case of severe asphyxia or only normal air / no oxygen available:

1. While holding the baby's jaw forward and supported to maintain the airway, you place the ambu-bag tightly pressed on baby's nose and mouth taking care not to encroach on his eyes.
2. Squeeze the ambu-bag between thumb and forefinger intermittently for ½ a second every 2 seconds at a rate of 30-40 times per minute.
3. Look at the chest for expansion and relaxation
4. Most of the newborns will start respirations and the cyanosis will disappear
5. Continue checking the heart rate – if bradycardia of less than 60 bpm or heart beat becoming weaker / slower or absence of femoral or carotid pulse, prepare for cardiac massage (see below)
6. If no response, prepare for intubation (see below)
7. Handle the baby gently and keep him warm throughout the procedure
8. Assess the baby's APGAR score every 5 minutes
9. Keep accurate records of all events
10. Prepare for proper aftercare, in particular monitoring of signs of cerebral oedema or injury, blood sugar (risk of hypoglycaemia), temperature (risk of hypothermia), respiratory pattern and rate; apex beat; oedema, urinary output (risk of fluid retention), meconium / faeces (risk of necrotizing enterocolitis)
11. Label the baby
12. Administer vitamin K (Konakion) intramuscular or intravenously to reduce the risk of haemorrhagic disease of the newborn
13. When the newborn is stabilize, explain the events and the follow up care to the mother (transfer to Special Baby Unit)
14. Allow the mother to handle the baby before transfer
15. Clean the resuscitation table and prepare it for next use.
16. Decontaminate and clean used equipment

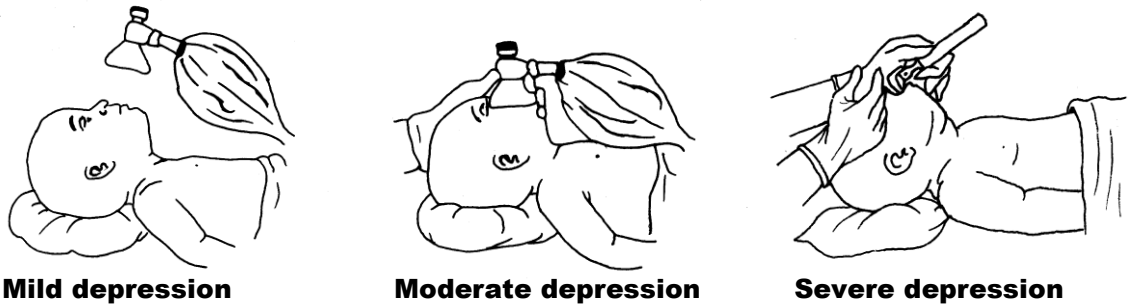


Figure 7.5: Techniques of oxygen administration

Cardiac massage:

1. Place two fingers just below the middle of middle of an imaginary line drawn between the baby's nipples, on the sternum
2. Apply gentle pressure to depress this area 1.5 – 2.0 cm at a rate of 120 per minute

NOTE: Excessive pressure may cause rib, long or liver damage

3. Release pressure immediately
4. Assess effect of the cardiac massage by monitoring the femoral pulse
5. Cardiac massage should be done at the same time as ventilation
6. Compress sternum 5 times while at the same time ventilating twice
7. In case of very slow or absent heart rate adrenaline can be administered via the endotracheal tube or intravenously

Intubation:

1. Place the baby head in neutral position with head slightly extended
2. After preloading with oxygen, insert endotracheal tube with the baby's head in neutral position:
   a. Introduce laryngoscope blade over baby's tongue into posterior of the pharynx until the epiglottis is seen
   b. Elevate epiglottis on tip of laryngoscope blade to reveal vocal cords
   c. Suck any secretion / blood before passing, the endotracheal tube
   d. Pressure can be applied on the cricoid cartilage to facilitate visualisation of the larynx if epiglottis not seen
   e. Introduce the endotracheal tube until 1–2 cm below the vocal cords
   f. Remove the laryngoscope gently
3. Administer oxygen by intermittent positive pressure ventilation (IPPV) to the end of endotracheal tube via ambu-bag:
4. Confirm correct insertion of the tube:
   g. Rise and fall of the chest
   h. Auscultation of the chest
   i. Note: Distension of the stomach indicates oesophageal intubation
5. Continue supplying oxygen with the ambu-bag until spontaneous respiration is established and heart rate exceeds 100 beats per minute

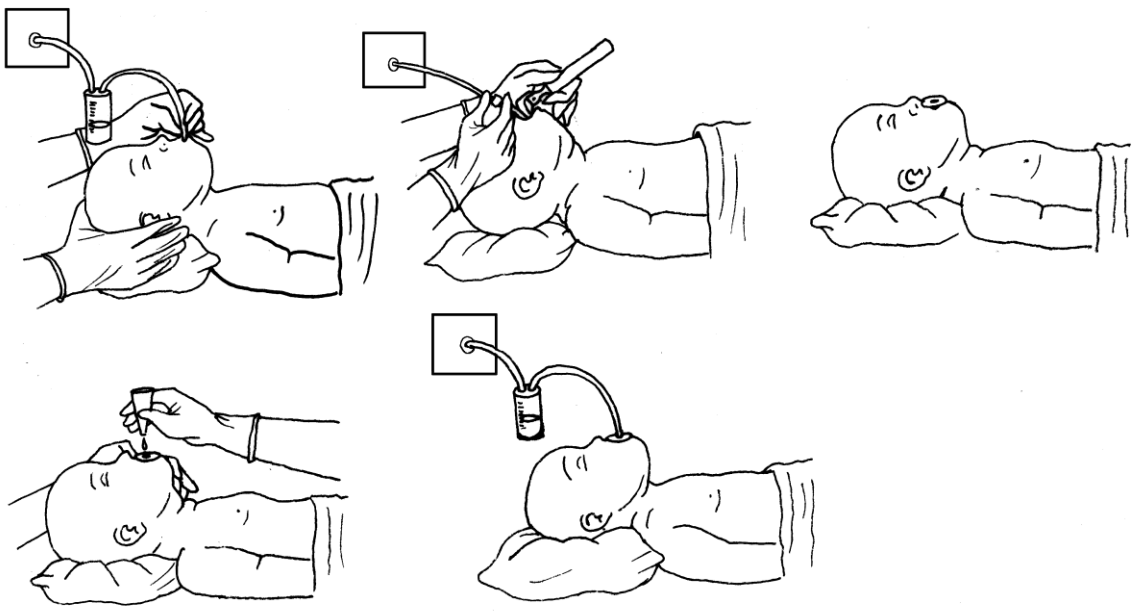


Figure 7.6: Cleaning the airway of an infant after aspiration of meconium: (1) The obstetrician aspirates the oropharynx and nasopharynx with mechanical suction before the infant utters its first cry. (2) Intubation of an infant to suction the deeper parts of the airway (3)Insertion of a sterile airway to (4) Instil saline into the airway (4)To facilitate suctioning

CHAPTER 8: SURGICAL ROTATION SKILLS

Annex to CMS 263: Surgery I

Surgical History Taking

Examination of Female Breast & Axilla

Examination of the Back

Examination of the Pelvis and Hip Joint

Examination of the Knee Joint

Local Examination

Assessment of Burns

Introduction to Wound Care

Administration of Local Anaesthesia

Wound Toilet (Social & Surgical Toilet)

Simple Wound Closure

Local Treatment of Burns

Incision and Drainage

Bladder Irrigation

Pre-operative Care

Post-Operative Care

Interpretation of X-rays

SURGICAL HISTORY TAKING

Objective

To highlight the special considerations in surgical history taking

Requirements

1. Informant – is necessary in case of severely injured or unconscious patient. May be the patients relative, friend, "good Samaritan", or police
2. A referral letter and patient's previous records also provide information about the patient

Procedure

Steps	Highlights
Personal identification	
Chief complaint	Most surgical complains are related to – Injury (Trauma), Swelling (Tumour), Chronic wound (Ulcer) or signs of luminal obstruction (oesophageal, intestinal, ureteral or urethral) and pain.
NOTE: It is important to determine the severity of the patient at this level before you proceed with further interview. If the patient is in a condition requiring resuscitation, you must resuscitate first before you proceed with further details of history; this could include stopping bleeding, giving analgesics to reduce pain, giving i.v. fluids to treat shock, positioning the patient in the most comfortable posture, maintaining patency of the airway etc.	
History of presenting complaint / illness	In case of **trauma** explore trauma cases under the following headings: 1. Prevailing circumstances just before incurring trauma – for example in a road traffic accident you can explore the following: where was the patient going to; where was the scene of the accident; which type of vehicle was (s)he travelling in, a small, big like a bus etc; which position in the vehicle was the patient seated – front, middle, back seat; was (s)he wearing a safety belt or not ; at what speed was the vehicle travelling in – slow, medium, fast or very fast. 2. The process of incurring trauma – was it a head on collision, a side roll, overturning, side impact, etc 3. After incurring trauma – was the patient conscious throughout, partially lost consciousness, or total lost consciousness and how long did it take before the patient regained consciousness? 4. How much time has passed since the trauma occurred? 5. Any First Aid given?

	For **acute or chronic pain, swelling or ulcers**, ask in a chronological order an account of symptoms for which the patient is seeking care: 1. Duration – when was it first noticed? 2. Location: a. Which part of the body does it affect? b. Is it localized or radiates to other parts of the body? 3. Progression and persistence – How as it changed since it was first noticed? Is it present throughout or it disappears at times? 4. Nature of pain– Please describe to me how you exactly feel? (Assist by giving examples of the various ways it can present e.g. pain can constricting, stabbing, colic, etc) a. Severity of problem b. Frequency c. Relieving and aggravating factors. d. Treatments given, laboratory reports, imaging reports, surgical procedures done, transfusions done so far, etc. *(NOTE: Many students get problems when clerking patients who are already admitted and undergone surgical treatment already. Students should be encouraged to follow the above procedure, even in such cases by including all that has been done to the patient during admission up to the moment of the interview)*
Review of systems	
Past medical / surgical history	
Personal, Social and Economic history	
Family history	

EXAMINATION OF THE FEMALE BREASTS AND AXILLA

Introduction

During the routine examination of the breast, we should never forget to inquire the necessary information about LMP, previous gravidities, recent delivery, lactation, etc., since this can reveal important information.
Examination of the breast is not complete until you have examined the axilla regions.

Development of the breast

The breast is an appendix of the skin in the milk-lines from axilla to groin. The development has different stages:

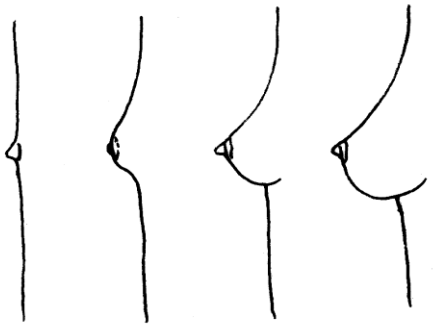


Figure 8.1: Stages of Tanner

Tanner 1 (Stage 1)	Pre-adolescent, elevation of nipple only
Tanner 2 (Stage 2)	Breast bud stage, elevation of breast and nipple as a small mound and enlargement of the areola diameter
Tanner 3 (Stage 3)	Further enlargement and elevation of the breast and areola, with no separation of their contours
Tanner 4 (Stage 4)	Projection of the areola and the nipple to form a secondary mound above the level of the breast
Tanner 5 (Stage 5)	Mature stage; projection of nipple only. The areola has receded to general contour of the breast, although in some individuals the areola continues to form a secondary mound

Objectives

To be able to perform an adequate physical examination of the female breast

Indications

1. Routine examination
2. Assessment of breast pathology

Requirements

1. Flash light with a trans-illuminator
2. Ruler/tape measure
3. Small pillow or folded towel

Procedure

Preparation

1. The breasts are examined while the patient, undressed as far as the waist, sits upright.
2. This position is also undoubtedly best for examination of the axilla but the supine position is sometimes better for examination of the breast itself.
3. It is necessary after examining the patient sitting upright, to ask her to lie flat and to re-examine the breasts.
4. Both breasts must be exposed completely

Method

Inspection

1. With the patient in the following sitting positions
   a. With arms hanging loosely at the sides (arms aside)
   b. With arms held over the head
   c. With the arms pressing the hips
   d. Leaning (bending) forward
2. Inspect each breast and compare them for: -
   a. Size
   b. Symmetry
   c. Contour
   d. Skin colour and texture
   e. Venous pattern
   f. Lesions
3. Inspect the nipple for
   a. Size (compare both breasts)
   b. Retraction
   c. Discharge
   d. Ulcerations
4. Inspect the areola for
   a. Pigmentation

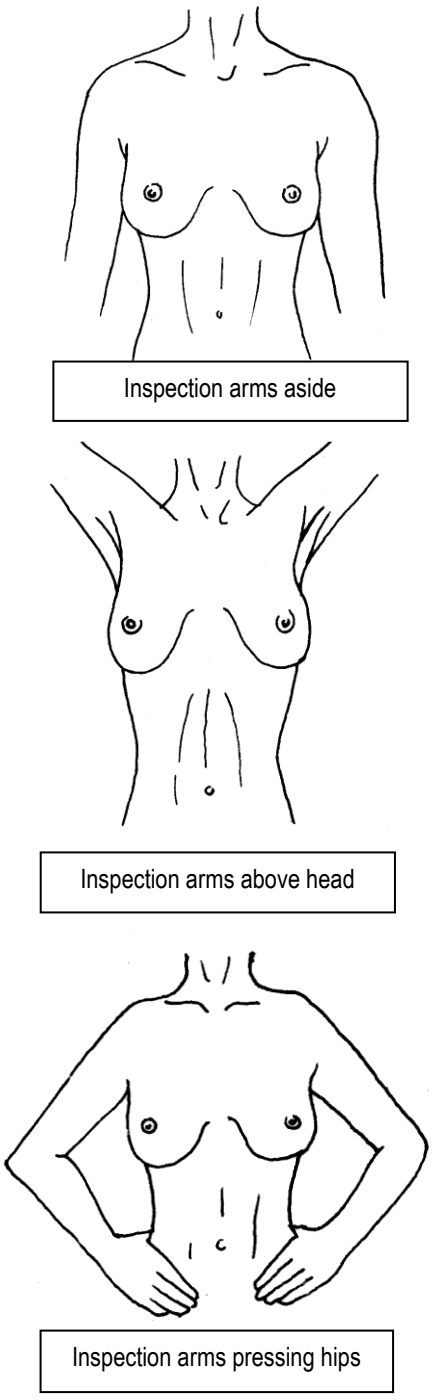


Figure 8.2: Different positions for inspection of the breast

Palpation

1. Systematically palpate the breast, axillae ,and supra-clavicular regions
2. Ask the patient to find first herself the lump and to point the “lesion” she has detected, before you attempt to do so and before you start your palpation.
3. Always start the palpation with the sound (normal) breast to have an impression of her normal breast tissue.
4. Palpate the areola and the nipple and finish with the axilla

Technique of Palpation

There are two techniques of palpation - palpation “with the flat of the hand” vs. “between the pulps of the finger and the thumb”.

Flat-hand-technique

1. Place the flat hand on the breast.
2. Exert a slight pressure on the skin with the pulps of the middle and end phalanges of the fingers 2-5 and perform a small circular movement.
3. While performing this manoeuvre on the sound breast, try to get a good impression how the "normal breast tissue" feels with this patient. (*The normal breast gives a firm lobulated impression with fine nodularity a feature, particularly before the periods. In fat patients and after menopause, expect to feel both lobulation and nodularity less easily.*)

Figure 8.3: Flat hand technique

4. In the "*flat-hand-technique*", as a rule there are three common accepted techniques. (1) vertical zigzag palpation (2) concentric circular palpation and (3) quadrant palpation. The most used technique is the quadrant technique for both the clinician's examination and the self-examination

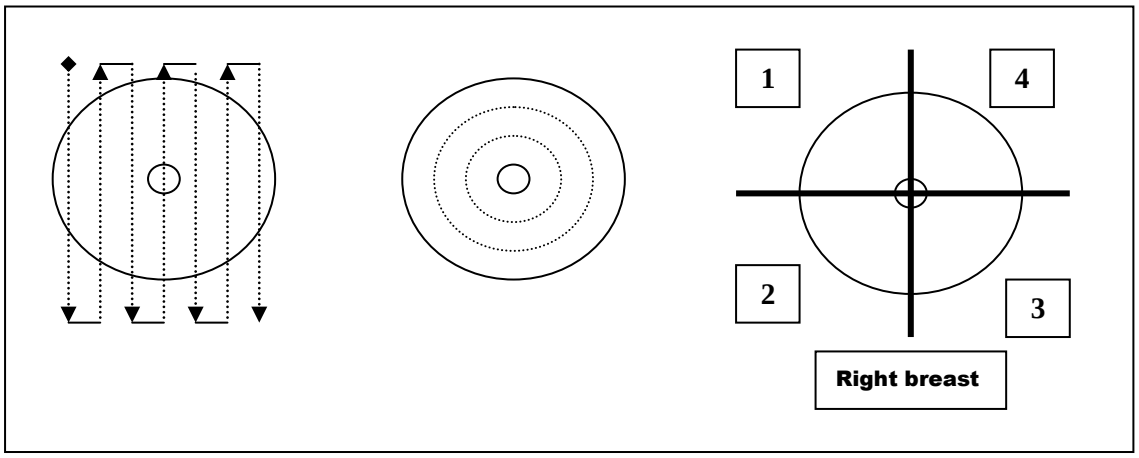


Figure 8.4: Three different ways of ordering palpation of the breast (1a for the axillary tail)

Palpation of the breasts

1. Perform the palpation calmly, with patience, not in hurry or hasty, and examine the total breast without skipping any part.
2. Palpate the quadrants always in the same order without omitting the axillary tail. (*A lump in this region may be difficult to differentiate from an enlarged axillary lymph node and vice-versa*).
3. In sitting position, the two upper quadrants 1 + 1a and 4 can be palpated very easily. On the other hand, it is often very difficult to evaluate the two lower quadrants 2 and 3, due to the breast hanging down in sitting position.
4. Re-evaluate and perform a more thorough examination of these two quadrants in supine position.

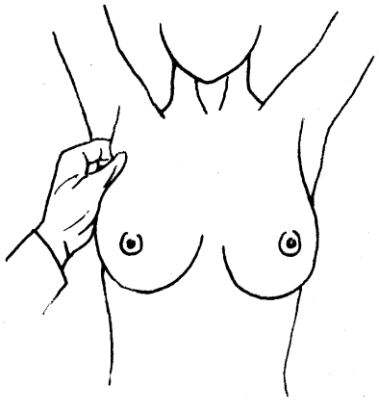


Figure 8.5: Palpating the tail of Spence

Palpation of areola

1. Gently squeeze the areola skin between thumb and index together with a rolling movement (small retention cysts and glands of Montgomery can be noted as well as small centrally located tumours)
2. Indirectly, by pressing with the top of the index on different places of the areola, elicit nipple secretion, if present.

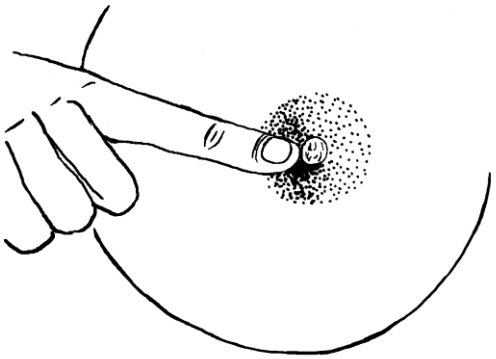


Figure 8.6: Examination of the areola

Palpation of nipple

1. Inform the patient in advance that this procedure could hurt a bit.
2. Perform a short but firm squeeze of the nipple between thumb and index finger
3. Notice if secretion is elicited.

Palpation of the Tail of Spence and axillae

1. With the patient seated with her arms over her head
2. Palpate the tail as it enters the axilla by gently compressing the tissue between the thumb and fingers

Figure 8.7: Examination of the nipple

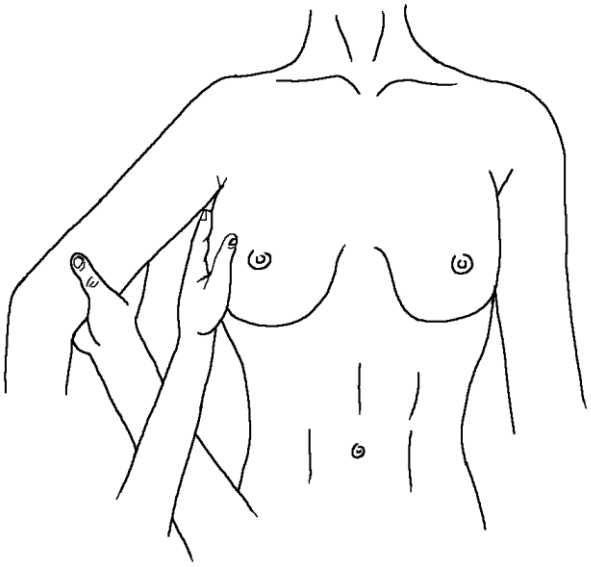


Figure 8.8: Palpation of axillary lymph nodes

Palpation of Lymph nodes

1. With the patient seated with arms flexed at the elbow
2. Support the patient's right lower arm with your right hand to examine the right axilla with your left hand (and vice versa)
3. With the palmar surface of your fingers reach deeply into the axillary hollow pushing firmly but not aggressively upwards
4. Bring your fingers downwards while gently lowering the soft tissues against the chest wall and muscles of the axilla
5. Explore all the sections of the axilla (apex, medial, lateral, anterior and posterior)

Examination of the Breast in Supine Position

1. Repeat now the whole examination in supine position.
2. Ask patient to lie flat in supine position on the examination coach. While patient is lying down… observe her and look very carefully if the breasts are spreading open over the thorax wall!
3. Ask the patient to lie with the arm of the examined breast above the head.
4. Elevate the homo-lateral shoulder is a bit with a small cushion and take care that the breast is on the thorax wall and not hanging aside laterally, what occurs with big breasts and/or breasts in involution.
5. In this position redo, the inspection and palpation of the breast, areola, and nipple completely.
6. Pay especially attention to the two spread quadrants 2 and 3 you can palpate more thoroughly as this was impossible in sitting position.
7. Palpating in supine position often gives more information than in sitting position. Sometimes it is a good technique to palpate in this position with both hands above each other to perform a better well-dosed palpation pressure.

Make always a well documented record of your examination		
1.	LOCALISATION	Name the quadrant or describe the location using “hours”
2.	SIZE	In millimetres of centimetres
3.	SHAPE	Round - discoid – regular – irregular
4.	CONSISTENCY	Very soft; soft; firm; hard; stony or bony hard
5.	CONTOUR	In relation to surrounding tissue
6.	TENDERNESS	Yes or no; spontaneous
7.	MOBILITY	In relation to the skin, breast tissue, fascia, thorax wall

EXAMINATION OF THE BACK

Objectives

To perform an adequate physical examination of a patient's back, specifically:

1. To perform inspection, palpation and percussion of the back
2. To test movements of the vertebral column
3. To be able to carry out several provocation tests and function tests of the back

Examination STANDING	**Examination LYING DOWN**
Inspection	Test of Lasègue (straight-leg-raising test)
Palpation	Pump-handle test
Percussion	Aird's test
Mobility and movements	Test of Magnusson
Flexion	
Extension	
Lateral deviation	
Rotation	

Box: The sequence of various skills and manoeuvres

Procedure: Examination of the Back with the PATIENT STANDING

First: inspection in frontal view (coronal plane)

1. Identify the landmarks: vertebra prominens, spinous processes, angles of scapulae, the posterior iliac spines and crests and the dimples. Use them as your orientation.
2. Observe the symmetry of the body, the muscles, the scapulae, the contours of the shoulders etc.
3. Compare the two sides of the trunk with reference to an imaginary line vertical prolonged upwards from the gluteal cleft
4. If you observe a scoliosis, determine which type of scoliosis is present and ask yourself the following questions:
    a. Is the curve single or S-shaped?
    b. Is the scoliosis postural, or compensatory or structural (fixed)?
        i. Assess by directing the patient to lean forward and to cross the arms over the chest so that the hands rest on the opposite shoulders. A postural scoliosis disappears in this position whereas a fixed deformity appears greater
        ii. A compensatory scoliosis (i.e. due to a short leg) disappears when the patient sits. If so, comparative measurement of the lower limbs is required
5. Sometimes, - i.e. obese persons - the spinous processes are not very prominent and it may be difficult to detect scoliosis. In this case, perform the dermography: ask the patient to fold his arms and lean forwards, and then run your index-finger firmly down the vertebrae without hurting them

Then: Inspection in a lateral view

1. Inspect for (ab)normal thoracic kyphosis and lumbar lordosis.
2. Instruct the patient to lean forwards and inspect on possible abnormal curves

Palpation

1. Palpate using the palm of your hand to determine spasm of muscles that flank the spine.. A spastic muscle feels firmer than a normal muscle
2. Palpate for pain locations, for spinous processes and for the intervertebral spaces with the top of the index finger. Tenderness may be due to local pathology, or irritation of the spinal nerves.

Percussion

1. Percuss the spinous processes with the finger or a percussion hammer.
2. Commence at the vertebra prominens and percuss consequently each spinous process down to the sacral region.
3. Tenderness over a particular vertebra indicates disease!

Measurement of mobility and movements

1. Test the flexion:
    a. Ask the patient to bend forward slowly, keeping the knees straight and endeavour to touch his toes
2. Measure the degree of flexion
    a. By the distance between fingertips and the ground, or
    b. By the distance between C7 and S1: in a normal adult the tape should measure an increase of at least 10 cm
3. For a young child:
    a. Ask a young child to pick up a dropped coin or a toy
    b. A normal child will pick up the coin or the toy by flexing the spine.
    c. When the child reaches for the coin or toy very cautiously by bending the knees, it is very suggestive for spinal rigidity.

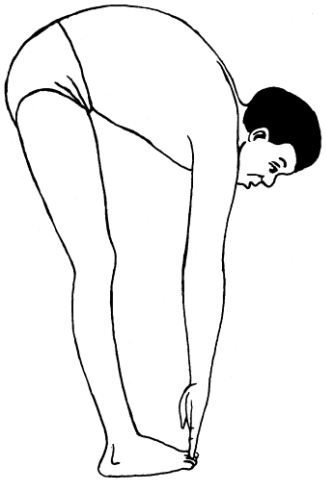


Figure 8.9: Flexion in the spine

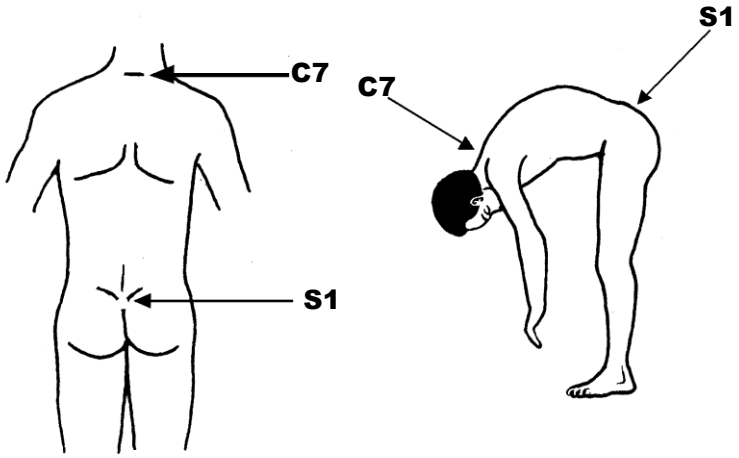


Figure 8.10: Measuring flexion of the spine

4. Test the extension:
    a. Ask the patient to lean backwards as far as possible and observe whether this movement causes pain.
    b. An angle of 30° with the vertical is possible in the normal person

5. Test the lateral bend
    a. Stabilize the iliac crest
    b. Ask patient to lean to the left, and then to the right as far as possible.
    c. Note how far the patient can bend to each side and compare the ranges of motion
    d. Limitation of this movement suggests osteoarthritis or early ankylosing spondylitis. An angle of 35° is normal.
6. Test the rotation
    a. To obtain reliable results, seat the patient on a couch with the popliteal spaces resting on the edge of the couch or on a low backless stool and with the feet on the floor. Thus, the buttocks are anchored.
    b. Then grasp the shoulders and rotate the patient's trunk to the right and the left. A 45° angle with the coronal plane is normal.

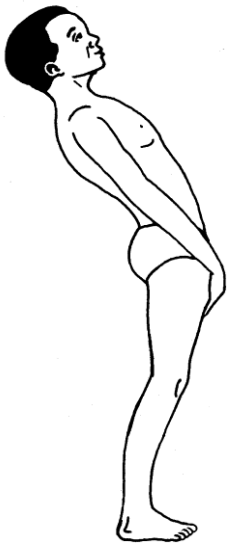


Figure 8.11: Extension of the spine

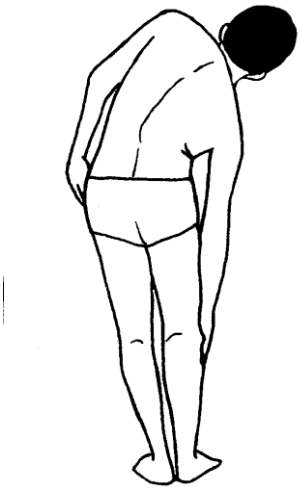


Figure 8.12: Lateral bend

Figure 8.13: Rotation

Procedure: Examination of the Back with the patient lying down

Preparation

1. Ask the patient to lie in a relaxed position on the examination couch with the head slightly flexed

NOTE:

1. In case you discovered a scoliosis during the examination in standing position, then you must perform the measurement of the length of the lower limbs.
2. In this position you can exclude deformities of the hip joint
3. Perform the straight-leg-raising test and the pump handle test

The straight-leg-raising test (test of Lasègue)
Purpose: Identification of sciatica

Figure 8.14: Test of Lasègue

1. First, ascertain that there is no compensatory lordosis by inserting a hand beneath the lumbar spine.
2. Grasp the ankle with the right hand
3. Place the left hand on the front of the thigh, to keep the knee straight
4. Raise the leg slowly until the patient experiences pain and watch the patients face or until the normal excursion is accomplished
5. During this procedure, watch also the lumbar curve, a change of which invalidates the test.
6. The angle at which the pain was experienced is recorded
7. Repeat the test and as this angle is approached, additional care is exercised, and at the very first twinge of pain, the hand resting on the thigh is moved to the forepart of the foot and the forefoot is dorsiflexed. This affords additional traction to the sciatic nerve and aggravation of the pain therefore suggests irritation of one of the nerve roots.

The Pump Handle test
Purpose: Examination of the sacro-iliac joints
Start the test on the pain-free side and complete the manoeuvre without undue discomfort to the patient. Then proceed to perform the test on the suspected side.

To test the right sacro-iliac joint of the patient:
1. Grasp the right limb of the patient with your right hand just below the knee.
2. Grasp the shoulder of the same side with your left hand and press it against the couch in order to steady the trunk of the patient
3. Fully flex the right hip and the right knee joint
4. Then by firm pressure, direct the flexed right knee steadily towards the opposite shoulder.
5. The test is POSITIVE if pain is experienced in the sacro-iliac joint.

Aird's test and Magnuson's test

Persistence of pain can indicate a problem with a cause on tissue level, but sometimes patients have other reasons to express lower back ache. The following two tests, Aird's test and Magnuson's test, can be helpful in distinguishing between a functional backache and malingerer's low back pain.

Aird's test ("reverse Lasegue test")

1. Ask the standing patient to touch his toes with the knees straight. If the flexion of his spine is greatly reduced, try to divert patient's attention from his back.
2. Several minutes later, ask your patient to sit down on the examining couch and to touch his toes. If his pain has a non-organic basis, your patient will be able to do so with ease.
3. A person with a positive Laségue test with an organic basic will not be able to do this; a malingerer patient might be perfectly able to touch his toes sitting on the examining couch.

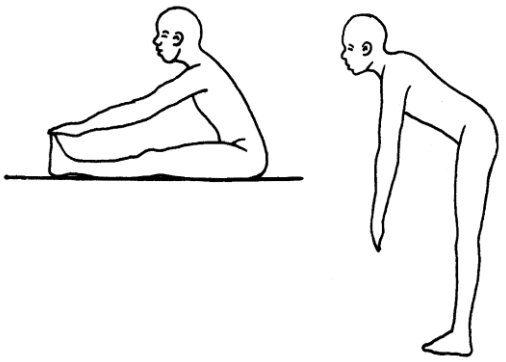


Figure 8.15: Aird's test

The Magnuson's test

1. Ask the patient to point to the site of pain. With a marker, you mark with a × on his skin the area he is pointing
2. Then look at patient's throat, or perform any relevant examination of parts well away from the site of the alleged pain. By this expedient, the patient's attention is diverted from his back for several minutes.
3. Then the examination if the back is resumed.
4. If your patient is experiencing real local pain, its position will remain steadfast. Without hesitation, the patient will point to the same spot, as he did at the first examination.
5. If your patient is malingering, he cannot remember the very exact place where he located the pain several minutes ago.

EXAMINATION OF THE PELVIS AND HIP JOINT

Objective

1. To perform an adequate physical examination of the pelvis and the hip joint. Specifically:
2. The inspection of the pelvis and hip joint
3. The movement tests of the hip joint
4. The measuring technique of the length of the limb.
5. The function tests for various disorders of the hip joint

• Anterior superior iliac spine	• Inguinal ligament
• Major trochanter	• Medial femoral condyl
• Head of femur	• Tibial tuberosity
• Femoral artery	• Medial malleolus

Box: Landmarks for inspection of the pelvis and hip joint

The scrutiny of the gait as the patient enters your consulting room occasionally provides a clue to the diagnosis. Many disorders of the musculoskeletal or neurological system present through a typical gait (see Examination of the neurological system).

Requirements

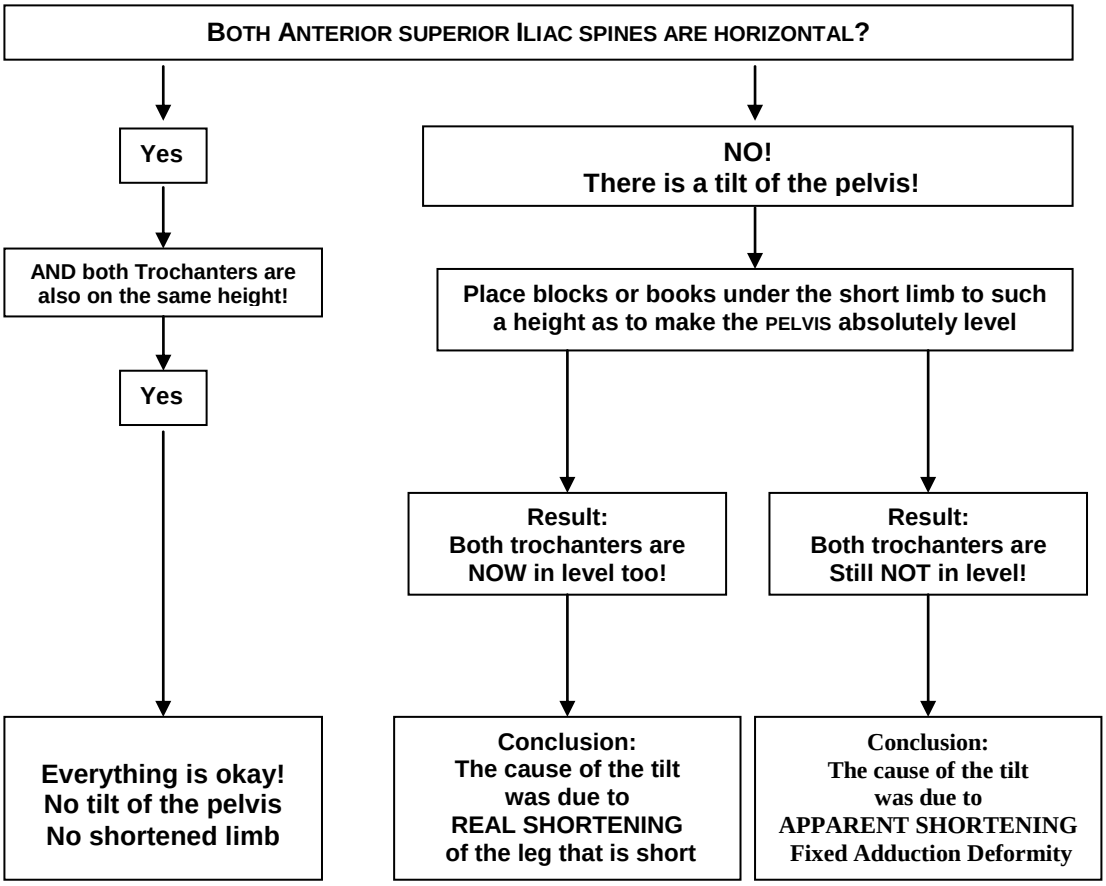
1. Small wooden blocks or boards of app. 1 cm (some thin books are also okay)
2. Measuring tape or piece of string
3. Skin marker

Order of examination of the hips and the pelvic joint

1. Examination with patient standing:
    a. Inspection
    b. Check for tilting Pelvis
    c. Check for shortened limb
2. Examination with the patient lying in supine and prone position:
    a. Movements of the hip joint
    b. Direct palpation of the hip joint
    c. The Hugh Owen Thomas' sign
    d. Mensuration for wasting
    e. Measuring of length
3. The "physical signs" of INDIVIDUAL HIP DISORDERS:
    a. Ortolani's test
    b. Trendelenburg's Sign

Procedure: Examination of the Pelvis and the Hip Joint with Patient Standing

1. Inspection
    a. Start inspection with the patient facing you followed with inspection from the posterior side of the patient.
        i. On what side is the patient bearing most of his weight. A patient tends always to bear most of his weight on the sound leg, resulting in a slight flexion of the knee on the affected side.
        ii. Any asymmetry?
        iii. Muscle atrophy
        iv. Pain: Pointing test: usually experienced in the groin and less frequently in the buttock. Referred pain in the knee?
    b. Kneel facing the patient until your eyes are on the same level as the pelvis of the patient.
        i. Place your thumbs on the anterior superior iliac spines, both sides
        ii. Place your ring finger and little finger behind both major trochanters, while your index and middle finger palpate the top of the trochanters.
        iii. Slight differences in the height of the trochanters are detected easily.
        iv. If there is any tilting of the pelvis, ascertain the cause of the tilting:
            1. Shortening of one leg?
            2. Adducted position of the lower limb?
            3. Fixed adduction deformity in the pelvis.



WHEN THE PATIENT IS CONFINED TO BED OR TOO YOUNG TO COOPERATE:
UNDERTAKE CAREFULLY MEASUREMENTS OF THE LENGTH OF EACH LIMB

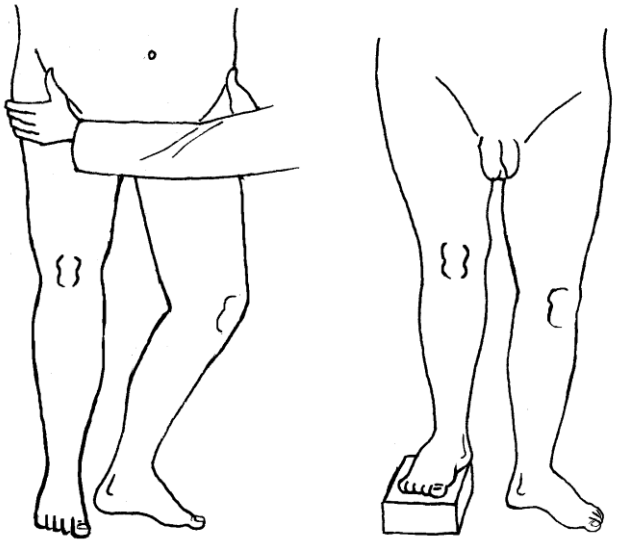


Figure 8.16: Measuring difference in lower limb length

Procedure: Examination of the Pelvis and the Hip Joint in Lying Position

The movement tests of the hip joint

Endo- and exorotation

1. The "gentle" or the "Rocking" method
    a. Lay the flat of your hand upon the thigh of the patient
    b. Rock his limb to and fro and back and forth. Observe his foot as an index of the degree of rotation.
    c. If this tests causes pain, curtail further testing of the various movements.
2. The "rather rough" method
    a. Flex hip and knee in a right-angle 90° flexion
    b. Use the foot to lever the limb. To test the left hip:
    c. Place your right hand on or just above the knee and grasp the foot with your left hand
    d. Move the tibia/foot outwards and inwards to control respectively the endo- and the exorotation.
    e. Do not confuse: inwards = exorotation and outwards = endorotation of the hip

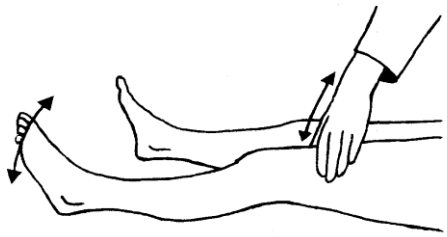


Figure 8.17: Endo- & exorotation

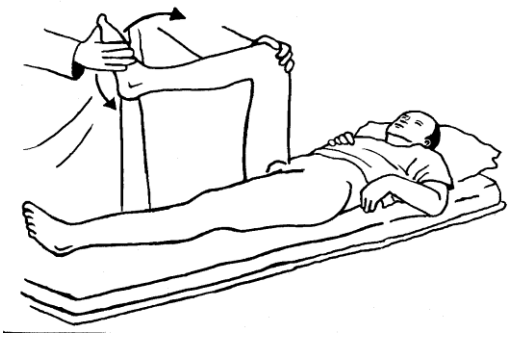


Figure 8.18: Endo- & exorotation – the "rather rough" method

Abduction

1. Flex the hips to a right angle
2. Ask the patient to place the soles of his feet together and carry his knees outwards as far as they will go (80° in children and 60° in adults)
3. To detect very slight limitations, you may repeat this also passively by grasping both knees and moving them simultaneously outwards.

Figure 8.19: Abduction in the hips

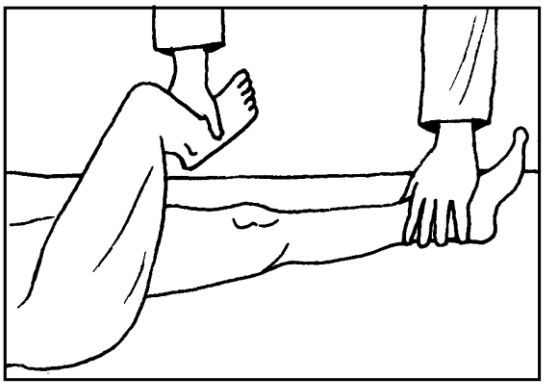


Figure 8.20: Adduction of the hips

Adduction

1. Steady the pelvis at the non-testing side by grasping the ankle of the straight leg and pressing against the examining coach.
2. Grasp the foot of the side being tested and carry this thigh over the other thigh = carry out an adduction
3. Normally it should cross the middle or even the upper third of the opposite thigh.
4. Record the result in terms of the opposite leg: i.e. whether the lower, middle or upper third of the opposite side can be crossed.

Flexion

1. Flex the knee on the affected side and then flex the hip as far as possible.
2. Proceed cautiously

(Look further: Hugh Owen Thomas's sign below)

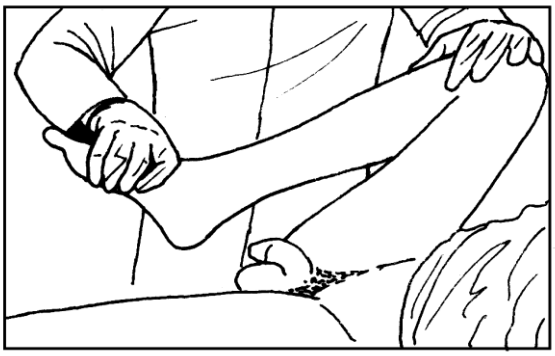


Figure 8:21: Flexion of the hip

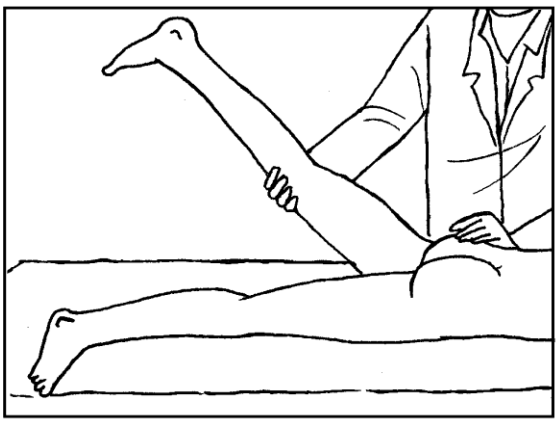


Figure 8.22: Extension of the hip

Extension

1. Ask the patient to turn over on to his abdomen.
2. Steady the pelvis by placing one hand on the buttock.
3. Place your other hand under the limb and just above the knee and lift the limb in extension.
4. Normal extension is only 10° and is limited early in all forms of arthritis

Direct palpation of (the head of) the hip joint and seeking joint crepitus

Locating the head of the femur

1. Draw an imaginary line between the anterior superior iliac spine (ASIS) and the pubis, imitating the inguinal ligament.
2. Draw a second imaginary line from the middle of the first imaginary line down to the medial condyle of the femur at the knee.
3. The head of the femur is located in the lateral corner

OR

1. Place your palpating finger on the ASIS and glide along the inguinal ligament till you palate the pulsations of the femoral artery.
2. Just beneath the inguinal ligament and laterally of the pulsations is the imaginary location of the head of the femur.

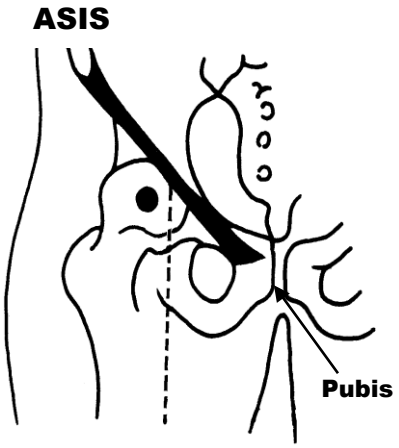


Figure 8.23: Locating the

Examining for abnormalities of the hip joint:

1. Absence of the head: signifies dislocation
2. Pain due to pressure on the femur head (indication of arthritis)
3. Rock the hip joint while palpating: the head of the femur will be felt to move and eventual joint crepitus may be transmitted to your palpating fingers

The Hugh Owen Thomas' Sign

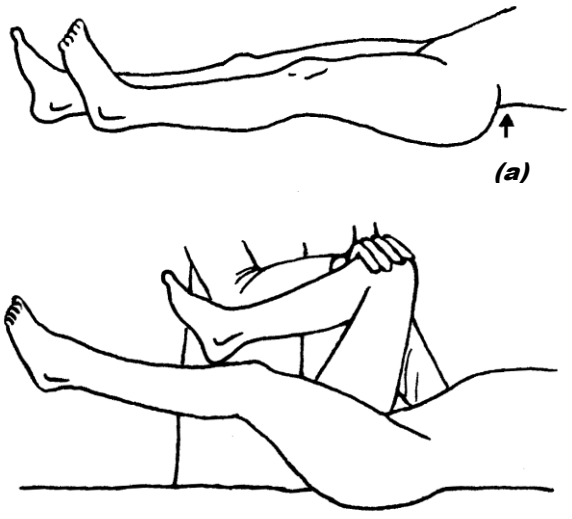


Figure 8.24: The Hugh Owen Thomas' sign

Assists in detecting a fixed flexion deformity or a flexion contraction of the hip joint

1. Fixed flexion deformity or a flexion contraction of the hip joint can be masked by an increased lordosis which enables the patient to lay his whole leg flat on the examining coach.
2. Thus, inspect the lordosis of the patient by looking and by placing your hand palm upwards under his lumbar vertebras *(a)* and evaluate the degree of lordosis.
3. For the further test of the LEFT fixed hip joint:
4. Place your left hand palm upwards under the lumbar vertebrae
5. Grasp the right leg of the patient with your right hand flex the sound right hip until you feel the lumbar vertebrae pressing against your hand (corrects lordosis)
6. Observe the affected limb: by further flexing the sound hip, the PELVIS will tilt and the limb on the affected side will rise from the examining coach

Measuring the length and girth

If a REAL shortening of the leg is detected, always undertake carefully measurements of the length of each limb.

Measuring length

1. Perform measurement of the length of a limb on both sides
2. Position both limbs identically
3. Mark with a marker the following landmarks on both sides as identical as possible:
    a. The tip of medial malleolus
    b. The medial level of the knee joint (meniscus level)
    c. The anterior superior iliac spine (ASIS)
4. Measure with a measuring tape the distance between:
    a. ASIS ⟷ medial malleolus
    b. ASIAS ⟷ medial level of the knee joint
    c. Medial level of the knee joint ⟷ medial malleolus
5. Alternative technique to localize shortening:
    a. Lie the patient flat with the feet together, the hips and the knees flexed and the heels quite level.
    b. View the patient from the side of shortening.

Figure 8.25: Measuring limb length

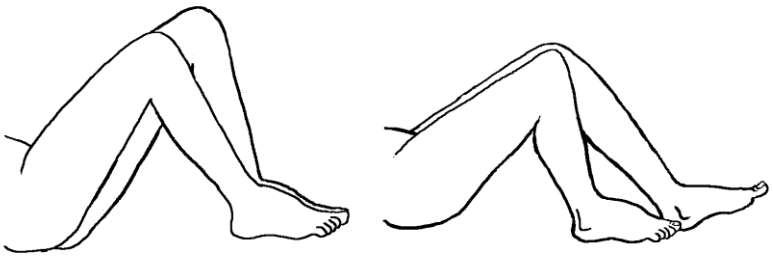


Figure 8.26: Shortening of the femur (left) and the tibia (right)

Measuring girth (diameter)

Minor differences in girth signify muscular atrophy and may be an indication for underlying pathology.

1. Measure the girth on the thigh as well as on the tibia on both sides on identical points:
    a. THIGH: From ASIS measure off a convenient distance down the thigh.
    b. TIBIA: From tibial tuberosity measure off identical points (i.e. 15 cm)
2. Take care to apply the same tension on the measuring tape while measuring!

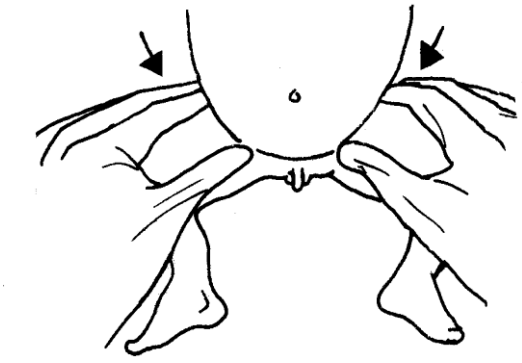

Figure 8.27: Measuring girth

The "physical signs" of the specific hip disorders

The Barlow's modification of Ortolani's test

This test aims on detecting a congenital sub-luxated head or dislocation of the hip joint. If this congenital disorder is present, note that before any weight bearing commences (the first six months) only a sub-luxated head is present.

1. Lay the infant on a firm and flat surface such as a table (not a mattress)
2. Flex and semi-abduct both knees and hips
3. Place your thumbs on both sides on the spot where the head of the femur is expected to be
4. Place your index- and middle fingers on the trochanters.
5. Your index and middle fingers push the trochanters to medial and ventral while simultaneously you abduct /exorotate the flexed hips.
    a. If there is a sub-luxated or dislocated head of the femur, this manoeuvre will slip the head back into the acetabulum on the affected side AND you will feel a palpable jerk under the appropriate thumb.
6. Release the pressure of the index and middle fingers and adduct / endo-rotate the hips
    a. This leads to another jerk as the subluxation or dislocation recurs.



8.28: Testing for sub-luxation of the hips

Trendelenburg test

This procedure is designed to evaluate the strength of the gluteus medius muscle.

1. Inspect the patient from behind
2. Observe the dimples overlying the posterior superior iliac spines.
3. Normally, when the patient bears weight evenly on both legs these dimples appear level
4. Ask the patient to stand on one leg. If you suspect a problem on one side, ask the patient to stand on the sound extremity first
5. When the patient stands erect, the gluteus muscle on the supported side should contract as soon as the leg leaves the ground and should elevate the pelvis on the unsupported side.
    a. Pelvis on the unsupported side is lifted = indicating proper functioning of the gluteus medius on the supported side (Trendelenburg sign negative).
    b. Pelvis on the unsupported side remains in position or actually descends = indicating a weak or non-functioning gluteus medius muscle on the supported side (Trendelenburg sign positive)

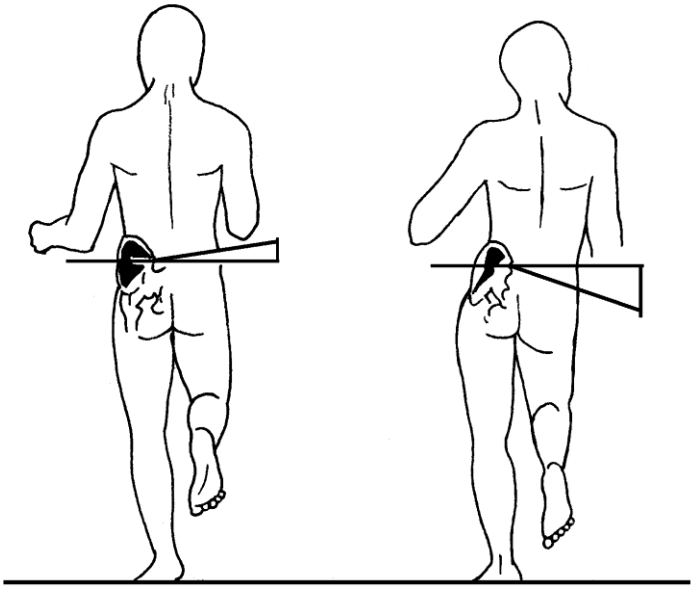


Figure 8.29: Trendelenburg Negative (L) & Positive (R)

EXAMINATION OF THE KNEE JOINT

Objective

To perform an adequate physical examination of the knee
Specific skills:

1. Inspection of the knee and the lower extremity
2. Movement tests of the knee joint
3. Tests for the pathologic disorders of the knee

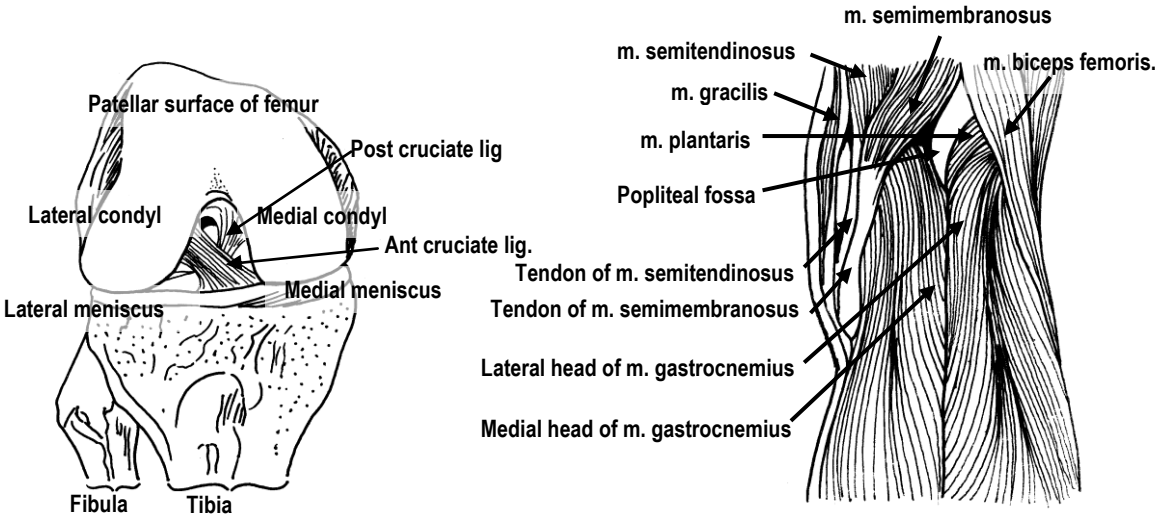


Figure 8.30: The knee joint and the muscles involved in movements of the knee

Procedure: Examination of the knee in upright and seated position

Preparation

For examination of the knee joint, the lower limb should be bare

The order of examination of the knee:

1. Start in upright position, examine both front and back
2. Continue in seated position
3. Than supine – always examine the hip joints if the patient has complaints without obvious abnormalities in the knee joint
4. End with examination in prone position

Inspection

1. Effusion into the Knee Joint is very easy to observe and to detect.
2. Notice carefully:
    a. Swelling / Effusion of fluid
    b. Symmetry vs. asymmetry
    c. Deformities
    d. Atrophy of the quadriceps / calf: L = R

Palpation

1. While the patient is lying on his back, palpate deeply and systematically beneath the overhanging edges of the patella for tenderness
2. Next push the patella medially and laterally, to palpate directly a small portion of the articular surface of the femoral condyles

Procedure: Examination of the knee in supine and prone position

Testing the movements

1. The neutral position is with the knee straight
2. Flexion: normal maximal flexion is 135° until the calf and the back of the thigh are contiguous
3. Extension is complete when the knee has locked the mobility of the patella
4. Free fluid in the joint limits full flexion and full extension

Patella tap

Good inspection can elicit small amounts of effusion of fluid in the knee joint. The "hollows" or "dells" above and on either side of the patella look full.
For large effusions you can test for the patellar tap.

1. Place one hand above the patella and exert a downward and distal pressure on the supra-patellar pouch
2. Drive so the fluid into the knee joint
3. With the index finger of the other hand, depress the patella with a sharp jerky movement against the condyles of the femur
4. The fluid under the patella is splashed and swept away with a sensation of "aqua-planning" and the patella will "tap" against the condyles of the femur with a short time interval. If this characteristic tap is felt, the "sign of patellar tap" is positive.

Figure 8.31: patella tap

Apley's test

This test assesses the state of the medial meniscus and the medial collateral ligament.

1. Ask the patient to lie in prone position on the coach
2. You are standing at the side on a platform of moderate height
3. Start with testing the unaffected side
4. Grasp the foot with both hands and flex the knee to a right angle
5. Exorotate the foot and note any pain or discomfort. Normally it should cause no more than a slight discomfort

6. Place your knee on the patient's hamstring, so as to fix the femur on the coach
7. Without changing the position of your hands, pull the leg upwards - to stretch the medial and lateral collateral ligaments - while performing a further exorotation. This manoeuvre results in one of two possibilities:
    a. YES, the patient has pain. Conclusion: probably a lesion of the medial collateral ligament.
    b. NO, the patient has no pain. Conclusion: probably a NO lesion of the medial collateral ligament
8. The clinician leans well over the patient and repeats the test while his full body-weight compresses the tibial plateau onto the condyles of the femur (compressing the menisci).This manoeuvre results in one of two possibilities:
    a. YES, the patient has pain. Conclusion: probably a lesion of the medial meniscus
    b. NO, the patient has no pain. Conclusion: probably a NO lesion of the medial meniscus

The procedure for the lateral meniscus and the lateral collateral ligament is identical, but with the foot in endorotation.

Tests for the total rupture of the medial collateral ligament

Procedure described for the RIGHT KNEE:
1. Ask the patient to sit on the coach with the knee joint extended fully
2. Stand on the patient's right side and with your left hand, lift the patient's right leg
3. Hold the back of the knee with your fingers hooked beneath the upper part of the popliteal space
4. Use your free right hand to grasp the leg above the ankle
5. Brace your own knee against the back of your left hand supporting the knee
6. Exert lateral traction on the leg with the other right hand in the direction of the right arrow on the figure above.
7. Compare the amount of lateral movement with that of the opposite knee joint.

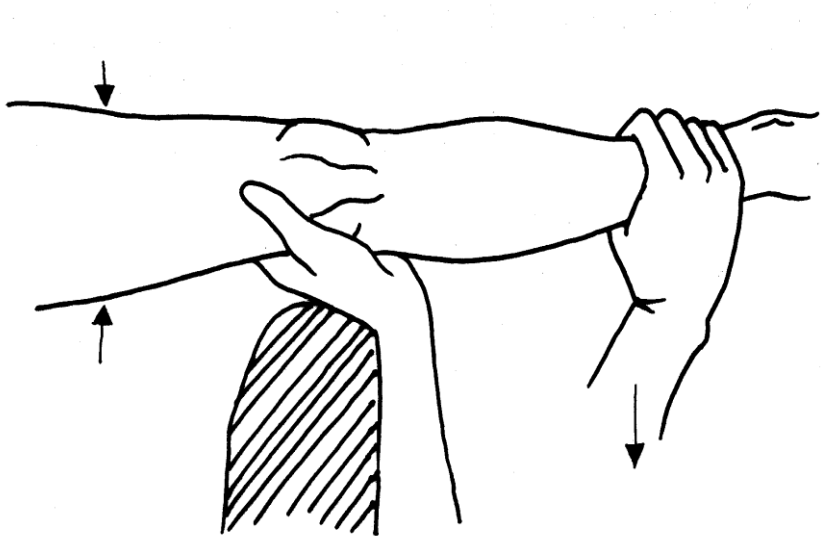


Figure 8.32: Testing the medial collateral ligament

LOCAL EXAMINATION

Includes
Local Physical Examination
Examination of a Lump
Examination of a Wound
Examination of fractures

Introduction
Local examination is the examination of a certain specific area of the body with the aim of finding out the cause of deviation from normal or to correlate the symptoms the patient has presented with.

Objectives
At the end of the session the student should be able to perform an adequate local physical examination.

The skills to be learned:
Visualization of Local physical signs
Interpretation of local physical signs to make a diagnosis

Procedure: Local Physical Examination

The sequence of conducting a local physical examination:
1. Inspection
2. Palpation
3. Percussion
4. Auscultation where appropriate

Inspection
A great deal of information can be gathered from local inspection. This may give you the right direction to further examination and diagnosis.

1. Expose the area plus the surrounding regions.
2. Describe the anatomical location.
3. Check for any of the following:
4. Skin for swellings, wounds, scars, rashes, veins, colour, and pigmentation

Palpation
1. Ask the patient to point to any site of pain
2. Place the dorsum of your hand on the area for 10-20 seconds to elicit local temperature.
3. Gently palpate the area as you look at the facial expression of the patient to elicit tenderness.
4. Check for pitting oedema:
    a. Apply pressure using your thumb, for 10-15 seconds
    b. Then pass one or two fingers over the area to feel for any depression.
5. Test for crepitus. There are several varieties of crepitus depending on the cause:
    a. Bone crepitus: Grasp the body parts on either side of the suspected fracture site and move them over each other.

i. A coarse, grating sound produced is characteristic of a bone fracture.

NOTE: This manoeuvre is used to assess presence or absence of a fracture. It should only be performed where X-ray facilities are not available. Be gentle as the manoeuvre is painful and a rough manoeuvre may cause further displacement of the fracture

b. Joint crepitus: Move the joint with one of your hands while the other is laid over the joint.
    i. Fine evenly distributed crepitus may suggest sub acute and chronic joint affections
    ii. Coarse, irregular crepitus may signify osteoarthritis
    iii. A 'click' that can be re-elicited often proves a displaced cartilage or a loose body

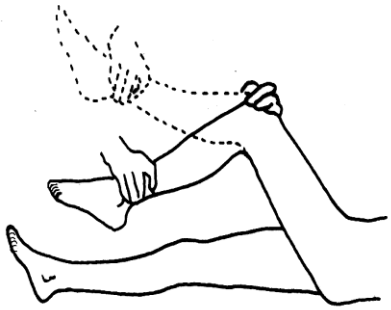


Figure 8.33: Examination for crepitus of the knee joint

c. Crepitus of Tendosynovitis: Place the palm of your hand over the affected tendon (usually proximal to the joint where it effects movement) and ask the patient to cause movement at the joint
    i. A crepitus will be felt if the tendon sheath is inflamed, for example in de Quervains disease
d. Crepitus subcutaneous / Emphysema – due to presence of gas in the subcutaneous tissues: Place your fingers fanwise (Abducted position) on the affected area and exert gentle pressure on the area
    i. A rustling sensation or crepitus is elicited

Auscultation / Percussion

Auscultation is only applicable when you suspect vascular anomalies or vascular involvement

Percussion of the head is of diagnostic value when you suspect hydrocephalus or sinusitis.

After completing the above stages of examination write your findings as you elicited them.

Procedure: Examination of a Lump

A localised swelling may arise from the local tissues like: the skin, subcutaneous tissue, muscle, tendon, nerve or bone. Some swelling may originate from one tissue but attach to other surrounding ones. The important part of examination is to determine the origin of the swelling.

Method

Inspection

1. Determine the location of the swelling
2. Describe its size (measure if possible or relate to a commonly known object like a pea, tennis ball etc)
3. Shape – round , oval
4. Borders – regular or irregular

Palpation

1. Tenderness – assess whether mild, moderate or very tender.
2. Temperature – assess the temperature on the site of swelling and compare with other parts of the body that are equally exposed.
3. Surface – assess whether smooth or irregular
4. Consistency – soft, firm, hard, fluctuant or pulsating
    a. Pulsating - place the index and middle fingers over the swelling. If pulsation is present, the swelling will be felt to move with every beat
    b. Elicit for fluctuation / transmitted impulses
        i. Use the index finger of each hand.
        ii. Place pulp of the tip of the right finger halfway between the centre and the periphery of the swelling. (This is the 'watching finger' and is kept motionless throughout the procedure)
        iii. Place the left finger upon a point at an equal distance from the centre diagonally opposite the first. (This is the 'displacing finger.')
        iv. Apply pressure on the swelling using the displacing finger.
        v. Feel for the outward movement of the watching finger.
        vi. If the 'watching finger' is displaced by pressure exerted by the 'displacing finger' in both axes of the swelling then fluctuation is present.
    c. Test whether it is possible to empty the swelling by compressing it and then noting any refill after releasing the pressure

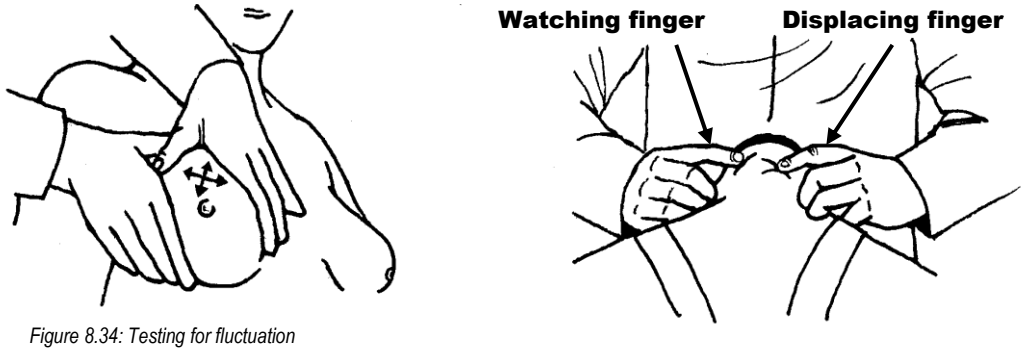


Figure 8.34: Testing for fluctuation

5. Mobility - using your fingers assess whether it is possible to move the lump. Mobility of the swelling is determined by its attachment to the underlying and / or surrounding tissues:
    a. Highly mobile swellings are usually situated in the subcutaneous tissue space
    b. Swellings that move with the movement of skin or can be pinched with skin originate from the skin
    c. Swellings that move with contraction or shifting of muscles in any direction originate from muscles or tendons
    d. Fixed or immobile swellings – can originate from bone or indicate malignancy
6. Translucency – to determine whether the swelling is cystic. The procedure of trans-illumination requires a powerful torch and a slightly dark room
    a. Place the torch on one side of the swelling.
    b. Observe for sparse illumination of the swelling

NOTE: Always remember to examine the lymph nodes draining the area, nerves and distal pulses to the swelling.

Procedure: Examination of a Wound

Wounds can vary depending on the cause and the intensity of the causative agent. For example:

1. A blunt agent can inflict wounds that range from bruises; lacerations; macerations; ecchymosis and haematoma
2. Sharp agent can cause excoriations; incisions; avulsion and amputation and even macerated wounds
3. Infections can cause inflammation, suppuration, ulceration and even maceration

The main aim of examination is to therefore determine the extent and severity of the wound depending on the causative agent.

Method

Inspection

1. Note the location of the wound
2. Describe its size (measure its dimensions if possible.)
3. Shape – round , oval
4. Borders – regular or irregular.
5. Edges – buried, steep, slanting towards the centre of the wound, raised edges, curling outwards
6. Colour – pink red (granulation tissue), pale, dark
7. Discharge – serous, purulent, sanguineous, frank blood
8. Smell – Foul or not

Palpation:

1. Tenderness – mild, moderate or very tender
2. Feel for warmth on the site of wound and compare with other parts of the body that are equally exposed
3. Mobility – mobile or fixed
4. Tendency to bleed – None, normal or easy to bleed

NOTE: Always remember to examine the lymph nodes draining the area, nerves and distal pulses to the wound.

Procedure: Examination of Fractures

1. Examine the patient either of a couch or seated, depending on the site and nature of the injury
2. Expose the injured part
3. Ask patient to locate the site of pain
4. Inspect the area for any swellings, bruises, obvious deformities or protruding bone
5. Ask patient to move or rotate the affected limb in all directions
6. Compare the injured side with the normal one and note the difference
7. Feel for warmth on the site of pain
8. Press gently the site of pain to check for tenderness
9. Examine the structures in the injured area, nerves, blood vessels, muscles, tendons

NOTE: Sometimes you may check for crepitus, but do not examine for it unless necessary (see examination of a lump).

ASSESSMENT OF BURNS

Requirements
Sterile needle

Procedure
1. Assess the extent of the burnt surface area (BSA) and depth of the burn(s) by:
    a. History taking:
        i. Causative agent (some agents cause more extensive damage than what is visible on the surface)
        ii. Temperature and duration of exposure to the agent
        iii. Alertness of patient at time of burn
        iv. First aid given at place of accident
        v. Pain experienced in relation to the extent of the burn
    b. Physical examination to estimate the percentage of burnt surface area using:
        i. Rule of 9s & 7s
        ii. Lund & Browder chart
        iii. Berkow's chart

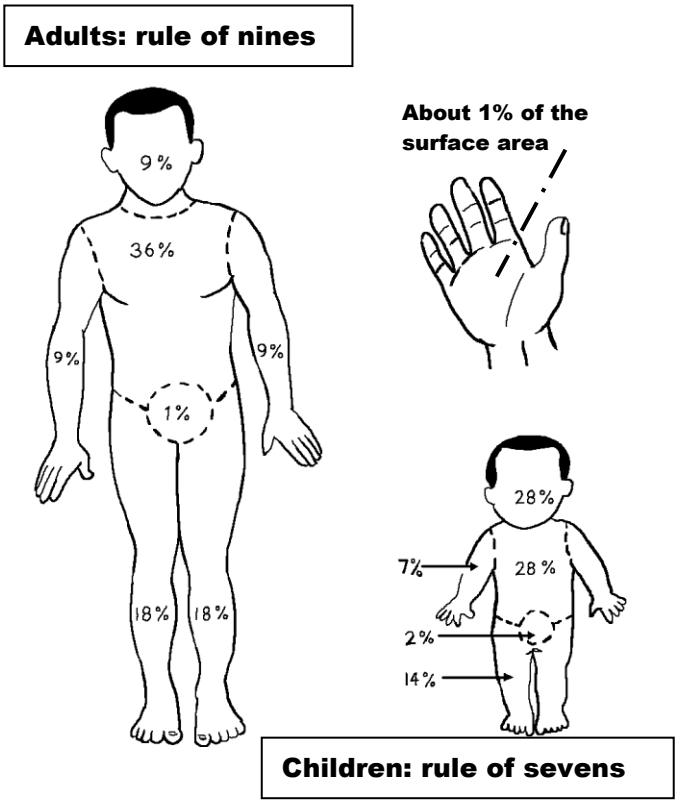


Figure 8.35: Rule of nines & sevens

2. Assess the depth of the burn by:
    a. Inspection – observe the following:
        i. Location of the burn
        ii. Colour of the skin
        iii. Presence of blisters
        iv. Level of the burn in relation to the surrounding skin

Region	%
Head	
Neck	
Anterior trunk	
Posterior trunk	
Right arm	
Left arm	
Buttocks	
Genitalia	
Right leg	
Left leg	
Total burn	

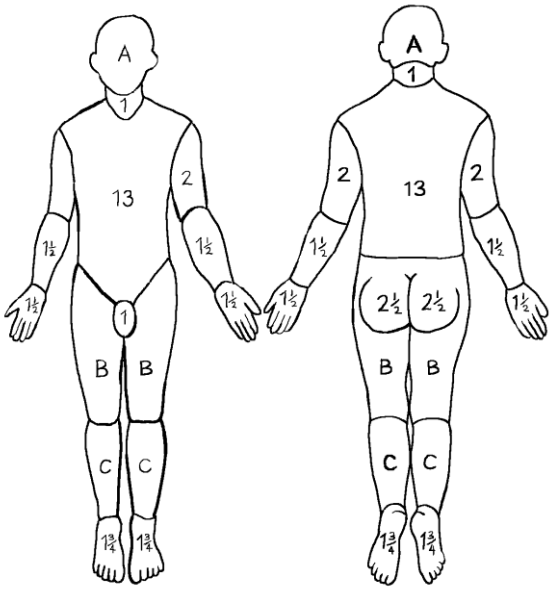


Figure 8.36: Lund & Browder chart with relative percentages of body surface area – partly affected by age

b. Prick pin test:
    i. Use a sterile needle on normal skin and ask patient to distinguish between sharp and blunt end
    ii. Then test the burn using the sharp end:
        1. Patient feels sharp: superficial burn
        2. Patient Assess feels dull: deep burn
        3. Prick bleeds: superficial burn

3. Assess the likelihood of complications by:
    a. Considering site involved(joints, face, hands, feet)
    b. Circumferential burn
    c. Perineum involved

NOTE: This procedure only deals with the examination of burn wounds. Obtaining information from general history taking and general examination is equally important but dealt with in other manuals.

INTRODUCTION TO WOUND CARE

Introduction

A wound is a break in the continuity of the skin. The best way to assist wound healing is to close the wound according to surgical standards as quickly as possible after injury. This is determined by the type of wound, the presence of contamination or possible infection and the anatomical region that allows both excision and adaptation of the wound border to close the wound by primary intention. In large surface and deep wounds in which primary wound closure is not possible or not practicable, the most important issue is to dress the wound with appropriate materials.

Major types of wounds include:
1. Clean, fresh wounds (surgical or accidental)
2. Complicated wounds (old / chronic / infected / huge wounds)
3. Burns

Aims in Wound Care

1. To keep the wound free from infection
2. To reduce or eliminate pain
3. Arrest haemorrhage in acute skin defects
4. To reduce or eliminate all potential factors inhibiting the natural healing process (e.g.: removal of necrotic tissue or superficial fibrosis)
5. To replace or substitute missing tissue as much as possible

Objectives

The learner should be able to:
1. Assess the severity of a wounds
2. Anaesthetize the patient
3. Clean the wound (social toilet)
4. Perform a surgical toilet
5. Close or cover the wound
6. Perform proper local treatment of a wound
7. Prevent wound complications

Procedures relevant in wound care

Local examination (wounds)
Assessment of burns
Administration of local anaesthesia
Social & surgical toilet
Simple suturing techniques
Surgical wound dressing
Local treatment of burns
Incision & drainage

ADMINISTRATION OF LOCAL ANAESTHESIA

Includes
Creating an intra-dermal weal
Diamond infiltration for minor wounds
Ring nerve block
Field block for operation on finger or toe digit

Introduction
Administration of local anaesthesia is common in the surgical department. It has many benefits when given properly but can have adverse effects when given by an unskilled person. Always give the lowest dose necessary to achieve the desired effect. The amount depends on the size of the area to be anaesthetised but should not exceed 10 ml of 2% lidocaine at once or max 20 ml of 1% lidocaine. If you need bigger amounts, use a lower concentration

Objective
To be able to give local and field nerve blocks for minor surgical procedures

Indications
Pain relief in:
1. Suturing of wounds
2. Wound cleansing and dressing
3. Surgical toileting
4. Circumcision
5. Minor amputations e.g. in polydactyl
6. Incision and drainage

Requirements
1. Syringes – various sizes
2. Hypodermic needles – various sizes
3. Local anaesthetic drugs – lidocaine hydrochloride, BP (brand name Xylocaine, Lignocaine) is the most commonly used local anaesthetic agent.

NOTE: Adrenaline can be added to any of the above mentioned drugs to increase the local effect, to reduce and delay systemic absorption and to limit bleeding. It should be avoided in elderly patients

Procedure: Creating an intra-dermal weal
1. Clean the skin around the area to be anaesthetised with an antiseptic
2. Withdraw the local anaesthetic
3. Use a fine (23-25 Gauge) needle and insert almost horizontally and with the eye of the needle downwards. In this way you stay intra-dermal (you should not reach the subcutaneous area)
4. Inject a small amount of the anaesthetic which will create an intra-dermal weal
5. In the weal sensation is removed and further injection is no longer noticed

Procedure: Diamond infiltration for minor wounds

1. Produce an intra-dermal weal as described above on one end of the wound, at 5 mm from the end
2. From the weal, pass the needle subcutaneously on one side at a distance of approximately 5mm from the margins until halfway without infiltrating
3. Aspirate to ensure that you have not entered a blood vessel
4. Infiltrate while pulling the needle backward the same way you entered but do not let the needle come out completely
5. Instead, once it is almost out, turn the direction and repeat step 2-4 on the other side of the wound
6. Remove the needle
7. Repeat step 1-6 from the other end of the wound with the same needle

NOTE: If the wound is small, infiltration from one end can be sufficient

6. When this technique is used in excision of a superficial lump, extra injection of anaesthesia under the area to be removed is often necessary
7. Allow 5 minutes for the block to take effect

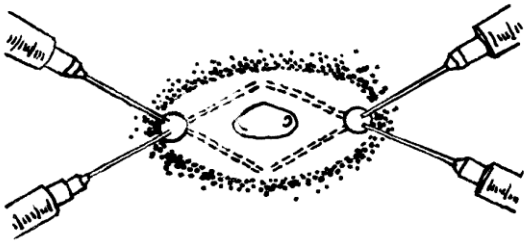


Figure 8.37: The diamond-shaped bleb

Procedure: Field block / penile block for circumcision

NOTE: Adrenaline (Epinephrine) should never be used as it may lead to ischemia distal to the infiltration

1. Inject a ring of intra-dermal and subcutaneous local anaesthetic around the base of the penis:
    a. Using a thin needle (23-25 Gauge), produce a weal at the base of the penis ventrally on the left side (figure 6)
    b. From the weal, infiltrate subcutaneous and intra-dermal as far as possible left and right around the penile base
    c. Remove the needle
    d. Repeat step a-c on the right side
    e. With the same needle, produce another intra-dermal weal at the base of the penis dorsally on the left side and complete the infiltration ring on this side
    f. Block the left dorsal penile nerve by infiltration of 2 ml lidocaine under the fascia (aspirate first to ensure that you have not entered a blood vessel
    g. Remove the needle
    h. Repeat step d-f on the right side

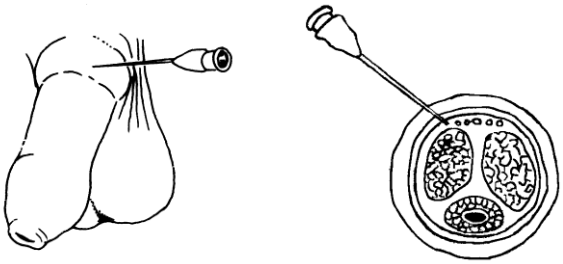


Figure 8.38: Dorsal injection for subcutaneous ring (left) and blocking dorsal nerve (right)

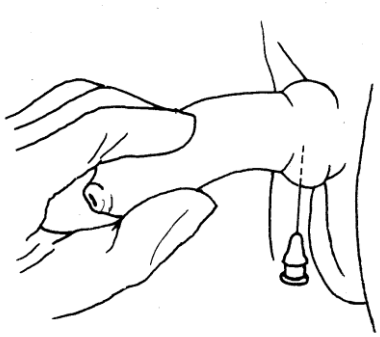


Figure 8.39: Ventral injection (subcutaneous ring)

Block the para-urethral nerve branches halfway between the base of the penis and the glans:

a. Pull the penis up
b. Inject about 1 ml lidocaine ventrally in the left groove between the corpora cavernosum and spongiosum
c. Repeat the same on the right side

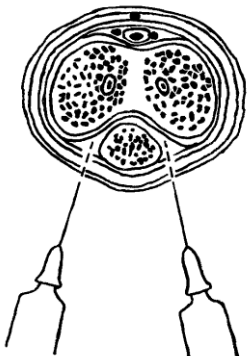


Figure 8.40: Blocking the para-urethral nerves

Procedure: Conduction anaesthesia – digital nerve block (ring block)

Can be used on fingers and toes (each having two dorsal and two palmar or plantar branches of the digital nerve).

NOTE: Adrenaline (Epinephrine) should never be used in a ring block as it may lead to ischemia distal to the infiltration

NOTE: Use a high concentration (2% lidocaine) as you should not infiltrate more than 2 ml of the anaesthetic per digit as this gives a lot of pain and might impair the blood flow to the digit

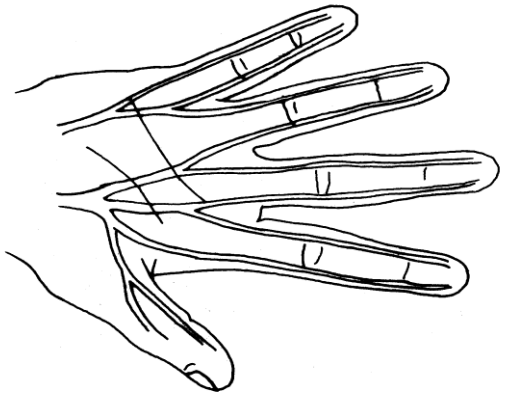


Figure 8.41: Innervations of the hand (dorsal view)

1. Using a thin needle (23-25 Gauge), produce an intra-dermal weal as described above dorsally on one side of the metacarpophalangeal joint
2. From the weal, enter the dorsal subcutaneous tissue
3. Aspirate to ensure that you have not entered a blood vessel
4. Infiltrate 0.5 ml of lidocaine 2%
5. Proceed with passing the needle to the palmar side until the tip touches the skin (but does not protrude) and inject another 0.5 ml of the anaesthetic
6. Remove the needle
7. Repeat step 1-6 on the other side of the metacarpophalangeal joint of the finger involved
   NOTE: Anaesthesia might take up to 15 minutes to become established

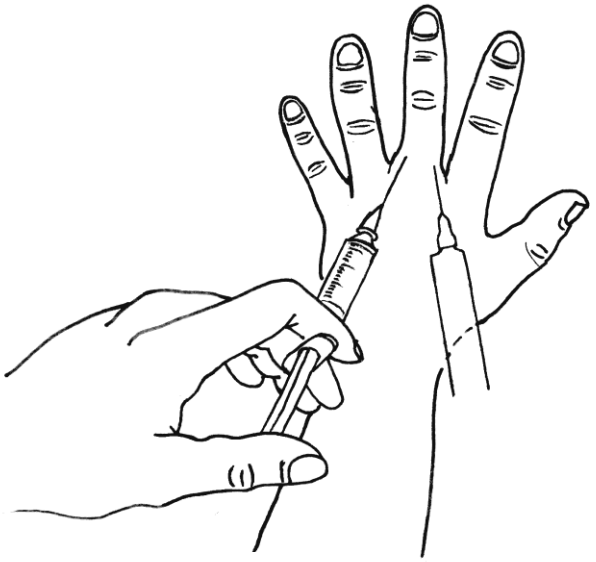


Figure 8.42: Digital nerve block

WOUND TOILET

Includes

Cleansing of the wound (social toilet)
Surgical toilet

Indications

1. All fresh dirty wounds (i.e.: all wounds except surgical incision): social toilet
2. Older wounds with signs of infection: social toilet
3. All wounds with signs of dead tissue / necrosis: social toilet + surgical toilet

NOTE: A surgical toilet should always be preceded by a social toilet

Procedure: Cleansing of the wound (social toilet)

Requirements

1. Equipment for anaesthesia. In case of local anaesthesia:
    a. Syringe
    b. Hypodermic needles
    c. Local anaesthetic drugs
2.
3. Two skin hooks
4. Cotton wool swabs
5. Two soft nail brushes
6. Several litres of clean water or normal saline
7. Soap and aqueous chlorhexidine (savlon / eusol)
8. Sterile gauze

Method

1. Swab the area around the wound
2. Anaesthetize the area:
    a. Local anaesthesia: lidocaine 1% or 2%
    b. If the wound is large, opt for regional or general anaesthesia
3. Pack the wound with a sterile swab to keep it dry while you clean the skin around it with saline, soap and a nailbrush
4. Ask an assistant to pour more saline / water until the patient's skin is very clean
5. Remove the swab
6. Put a basin under the wound so that the assistant can pour clean water over it continuously
7. Ask the assistant to pour more saline on to the wound itself
8. Clean the wound with antiseptic e.g. Savlon / Eusol
9. Dry the wound with sterile gauze
10. Dress the wound with sterile gauze and strap appropriately

Procedure: Surgical Toilet

Requirements

1. Antibiotic (give pre-operative if heavily contaminated)
2. Tourniquet
3. Draping towels (type and amount depending on wound size)
4. Minor operation set (for surgical toilet)
    a. 6 towel clips
    b. 2 sponge holding forceps
    c. 4 towel forceps
    d. 1 Scalpel handle (no 4 or 5)
    e. 1 toothed dissecting forceps
    f. 1 plain dissecting forceps
    g. 4 tissue forceps
    h. 1 self retaining retractor
    i. 2 Langenbecks' retractor
    j. 12 curved haemostats (2")
    k. 6 curved haemostats
    l. 2 kidney dishes
    m. 2 galipots
5. Sterile gauze
6. Bandage

Method

1. Swab the area around the wound
2. Select the appropriate anaesthesia
3. Ask an assistant to pour saline / water until the patient's skin is very clean
4. Drape the wound with sterile towels
5. Excise loosely attached tissue (excision) and dead tissue (debridement) as well as foreign bodies
6. Cut away a thin strip of skin edge all around the wound to ensure fresh and bleeding wound margins. Be careful not to cut any vital structures (nerves, tendons, vessels) while you:
    a. Cut way any damaged and dirty subcutaneous fat
    b. Cut away any dead muscle that does not contract when you pinch it with a dissecting forceps
    c. Remove any chips of bone that are not attached to anything
7. If bleeding occurs, control by pressure with dry gauze for 10 minutes or tie off any artery.
8. Using sterile normal saline irrigate the wound until you have a healthy wound with no dirt and no dead tissue
9. Decide on the appropriate consecutive management / procedure:
    a. Primary suturing
    b. Secondary suturing
    c. Delayed primary skin grafting
    d. Per secundam wound healing
10. Dress the wound with sterile gauze and bandage appropriately
11. Leave instructions for further management:
    a. When to inspect again and when to change the dressing
    b. Rest and elevation of the affected area if necessary

SIMPLE WOUND CLOSURE

Objective

After the session the student will be able to perform wound closure through stitching, which includes:

1. Selection of the appropriate suture material
2. Selection of the appropriate suturing technique
3. Performing basic suturing techniques (continuous and interrupted)

Indications

1. To bring the severed/cut edges together to facilitate quick healing
2. To bring out the best cosmetic result especially where it is crucial e.g. face
3. To arrest bleeding
4. To prevent wound infection

Contraindications

1. Gunshot
2. Bites
3. Septic would

Requirements

A clean trolley arranged as follows:

Top shelf

1. A sterile pack containing:
2. One (1) kidney dish
3. Two (2) gallipots
4. One (1) needle holder
5. Four (4) artery forceps (2 curved, 2 straight)
6. One (1) sponge holding forceps
7. Two (2) scissors (1 curved, 1 straight)
8. Two (2) green towels for draping (one with a hole)
9. Gauze swabs
10. One (1) dissecting toothed forceps

Bottom shelf

1. Sterile gloves in a pack
2. Sterile sutures in a pack (depending on the type of wound)
3. 2 antiseptic solutions (one for cleaning, one for dressing)
4. Strapping / bandages / antiseptic spray
5. Local anaesthesia (e.g lignocaine 1% or 2%)
6. Sterile needles and syringes
7. Mackintosh and a bath towel / linen saver

Accessories:

1. Pedal pin
2. Container for sharps

Suture materials	
Types	**Indication**
Absorbable	Inner tissue / layers Episiotomy
Non-absorbable	Skin Fixation of non-human materials Ligating big blood vessels Joining ligaments or bones
Clips	Skin (cosmetic reasons, little scar tissue)

Table: Selection of suture materials

Suturing technique	
Technique	**Indication**
Interrupted	Areas with a lot of tension
Continuous	Delicate tissue For cosmetic reasons (little scar tissue)

Table: Selection of suturing technique

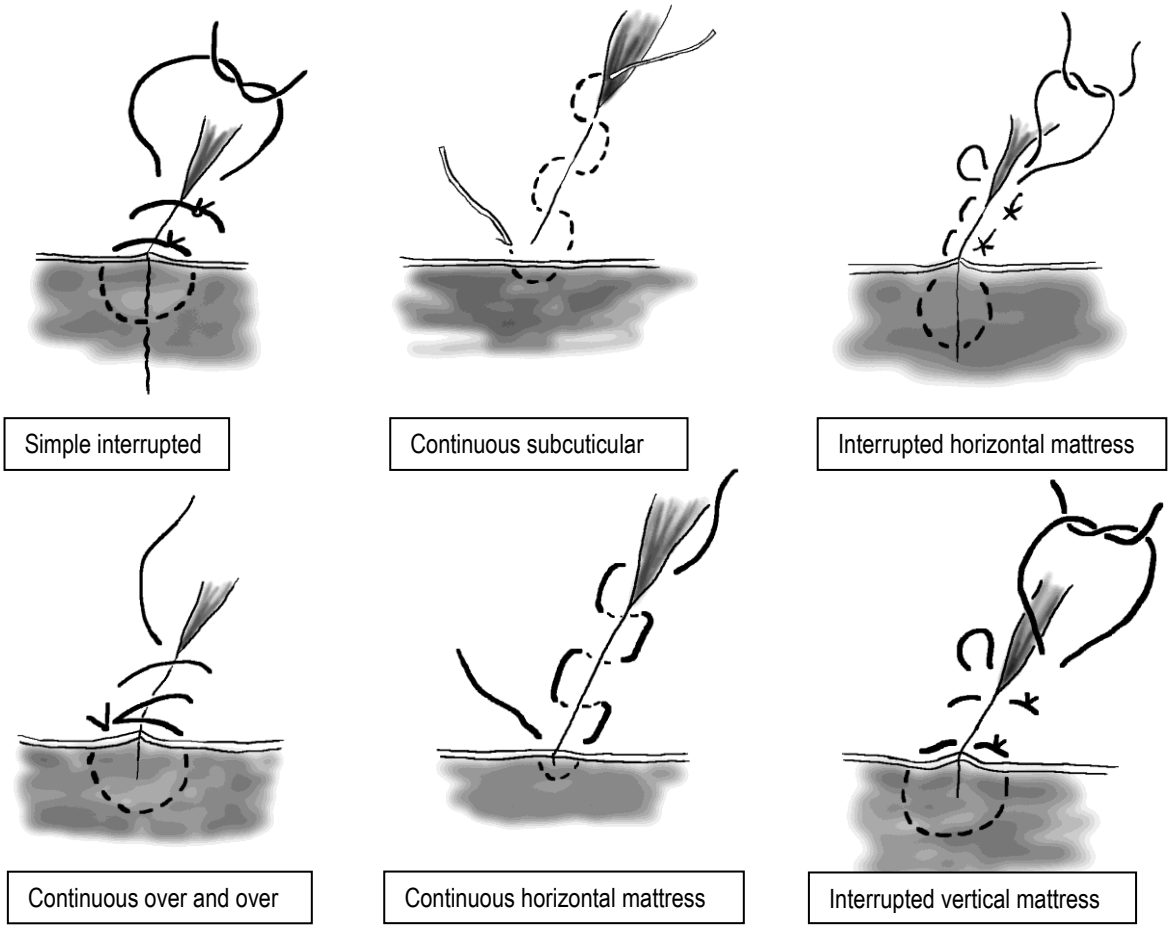


Figure 8.43: several types of suturing techniques

Procedure: Simple wound closure

Preparation

1. Explain the procedure to the patient
2. Ensure privacy and close nearby windows
3. Prepare the trolley as follows:
    a. Clean the trolley
    b. Disinfect the top shelf of the trolley with methylated spirit
    c. Place the sterile dressing pack on the top shelf
    d. Set the bottom shelf and wheel the trolley to the bed side
4. Remove dressing if any and discard it in the pedal bin.
5. Inspect the wound and select appropriate type of sutures, needles and technique with the help of the tables above.

Method (interrupted suturing)

Assistant nurse

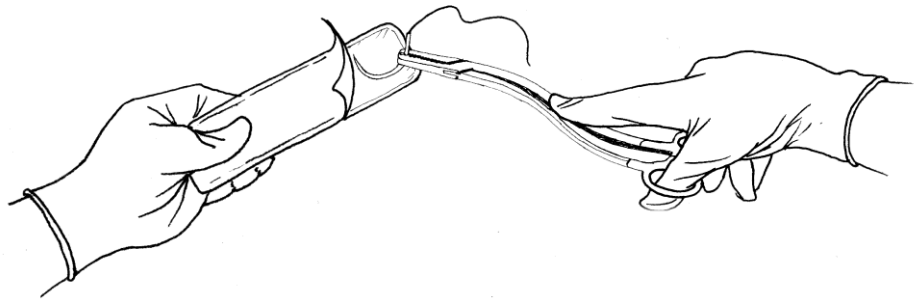
1. Put on clean gloves
2. Position the patient appropriately for the procedure
3. Place a dressing mackintosh and the bath towel under the area to be sutured
4. Remove gloves, wash and dry hands
5. Peal off the tape from sterile pack and open the pack to expose sterile hand towel

Sterile nurse

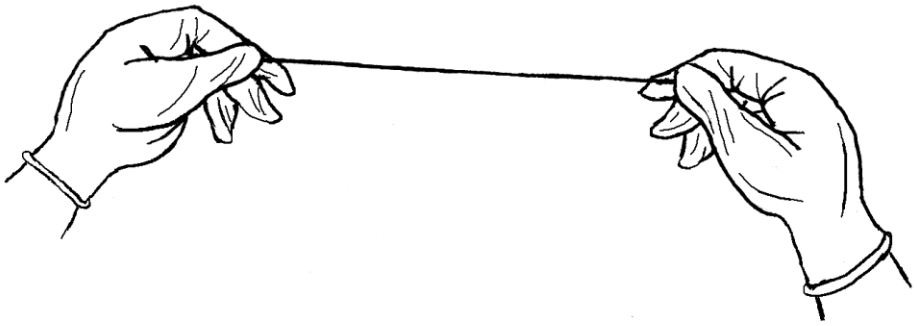
1. Scrub hands with soap under running water
2. Pick the sterile hand towel and dry hands, then discard the towel
3. Open the sterile pack further by picking the tips of the towel to expose the sterile field
4. Instruct the assistant to open pack of the sterile gloves and to drop them on the sterile field
5. Put on the sterile gloves and arrange equipments appropriately for use
6. Ask assistant nurse to pour antiseptic in one galipot for cleaning the wound
7. Roll the gauze on sponge forceps, dip it into antiseptic for cleaning
8. Clean the area around the wound using the aseptic technique
9. Repeat the procedure until outside of the wound is clean and dry the area around the wound
10. Ask the assistant nurse to tear open full packet of the suture and drop it in sterile field
11. Drape the wound with green towel with a hole
12. With the help of the assistant nurse, withdraw the lidocaine with sterile syringe and needle (amount depends on the size of the wound and the age of the patient)
13. Infiltrate the wound with the lidocaine from all angles without removing the needle completely, but changing the angle so that the area surrounding the wound is anaesthetized

    NOTE: Ensure you do not inject lidocaine into a blood vessel by withdrawing the syringe piston before injecting the lidocaine.
14. Wait for 2-5 minutes to allow skin and tissues around the wound to become numb
15. Gently clean the wound inside out using antiseptic for cleaning
16. Open suture further and load the needle holder by clamping the needle 3/4 distance away from the needle point.

A: Tear open the foil packet. Remove the strand from the protective folder



B: If necessary, straighten the suture by grasping the strand 1-2 inch away from the needle suture junction and pulling gently



C: Clamp the needle-holder about ¾ of distance from the needle point. Do not clapm at swaged area. Place needle near tip of the holder to facilitate suturing

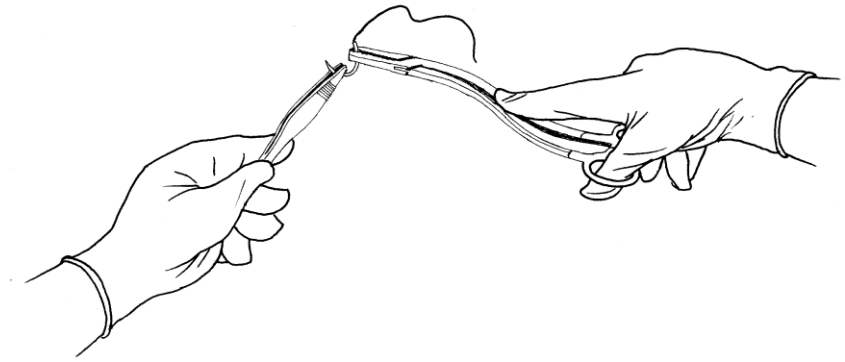


Figure 8.44: Handling the suture

17. Using a toothed dissecting forceps, grasp one edge of the wound at the extreme end and while applying traction, push the needle into tissue at an angle of 90 degrees. Repeat the same for other edge.
    NOTE: The needle should be inserted at a distance of between 0.5 and 1cm from the edge of the wound on either side.
18. Release the needle and re-clamp the holder near pointed end to pull needle and strand through tissues on both sides of the wound
19. While pulling the strand, leave about 3 cm of the strand on the side where the stitching started
20. Grasp the strand with left hand approximately in the middle of it so that the strand is stretched

21. Holding the needle holder with right hand place it on the stretched strand and make two loose loops around it in a clockwise direction.
22. Using the needle holder, pick the end of the strand left where stitching started and slip the loops over it. Pull the strands in opposite directions to make a firm knot.
23. Hold the needle holder with right hand and place it on the stretched strand and make a single loose loop anticlockwise, around it to reinforce the knot.
24. Using the needle holder, pick the end of the strand where stitching started and slip the loop over it.
25. Pull the strands in opposite directions to reinforce the knot.
26. Cut the ends of the sutures about 3mm above the skin
27. Repeat the same process for subsequent stitches until you close the wound, leaving equal distances between the stitches (making an imaginary cube) for uniformity.
28. With use of gauze clean any blood that oozes from the wound.
29. Clean the suture line with antiseptic
30. Apply dressing / antiseptic spray
31. Remove the draping towel and the mackintosh and leave the patient comfortable
32. Thank the patient for cooperating and share the relevant health messages including when to come for removal of stitches.
33. Open the windows and clear the trolley
34. Report appropriately

NOTE: Give Tetanus Toxoid where applicable

For Continuous closure – There is no cutting of the sutures after every stitch. Knots are made at the beginning and at end of suturing.

LOCAL TREATMENT OF BURNS

Includes

Open (exposure) method
Saline method
Closed (occlusive) method
Plastic bag method
Early excision of full thickness burns
Prevention of complications

Introduction

This section addresses mostly the burn wound itself. In taking care of patients with burns other general management issues also apply (I.V. fluid infusion, tetanus prophylaxis) which are not covered here.

Possibilities for burn wound treatment include:

1. The open (exposure) method which leaves a burn open to the air and encourages it to form a dry crust
2. The closed (occlusive) method in which the burn is isolated from the environment by a thick dressing
3. The method in which the burn is kept continuously wet with saline
4. The plastic bag method for burnt hands and feet
5. Early excision and grafting

The selection of the method depends partly on availability of nursing care and dressing materials. The closed method has wider indications when appropriate nursing care and dressing materials are available. Always remember to give appropriate analgesics when manipulating burns.

Open (exposure) method

Indications

1. Facial burns
2. Large partial thickness burn except hand
3. Full thickness burn anywhere except hand in situations where dressing and nursing care are minimal
4. Hyperpyrexic patient

Contra-indication

1. Extensive burn in a cold environment

Requirements

1. Sterile Mackintosh
2. Sterile gloves
3. Antibiotic cream / solution for topical application (e.g. 1% silver sulphadiazine cream or 0.5% silver nitrate solution
4. Cradle
5. Sterile sheet
6. Thermometer
7. Sterile needle
8. Aqueous chlorhexidine solution (savlon) or saline (IV)
9. Surgical blade
10. If applicable:
11. Mosquito net
12. Splinting materials

Method

1. Place the patient on a sterile mackintosh in a clean bed
2. Put on sterile gloves
3. Do not break blisters unless they are tense and painful
4. Apply local antibacterial agent
5. Put a cradle over the area and cover this with another sterile drape
6. If the wound is over a joint, use a splint to keep the joint in extension
7. Monitor patient's temperature carefully inclusive of assessment of temperature of the extremities. If necessary close the window or put a heater on
8. If flies are a problem, put the client under a mosquito net
9. From the 3rd or 4th day onwards let any dry point remain dry.
10. Split immediately any tight crust or eschar which might obstruct circulation
11. If blisters form, prick them and clean with normal saline only parts which remain wet
12. For full thickness burns, start the saline method at 48 hours

Saline method

Indications

1. All burns which are severe enough to require admission of the patient
2. Deep burns

Requirements

1. A mackintosh sheet
2. Gauze
3. A bucket
4. Jug
5. Basin
6. Half strength (0.5% saline). This can be prepared locally by dissolving one tea spoonful of salt in a litre of ordinary tap water

Method

1. Keep the room comfortably warm
2. Start at 48 hrs with minor burns or as soon as shock is over with major ones
3. To keep the burn moist with saline two different approaches are possible:
    a. If using a jug:
        i. Put a plastic sheet or mackintosh on the bed
        ii. Put a thick gauze dressing on the burn
        iii. If convenient arrange in a way that the saline poured over the burn flows into the bucket
        iv. Pour the saline over the burn
        v. Review the dressing and repeat every 4 hours
    b. Immersion of the burn
        i. Fill the basins with saline water
        ii. Ask the patient to keep dipping the burnt part in to the saline water 20 minutes twice a day (12 hourly)
        iii. Ask the patient to exercise the joints passively and actively while the burn is in the bath
        iv. If the patient has deep burns apply wet gauze soaks between the baths
4. Graft as soon as the granulations are favourable (usually, the slough on deep burns will separate between the 12th and 15th day)
5. If the slough has not come out completely, take the patient to theatre for sloughectomy

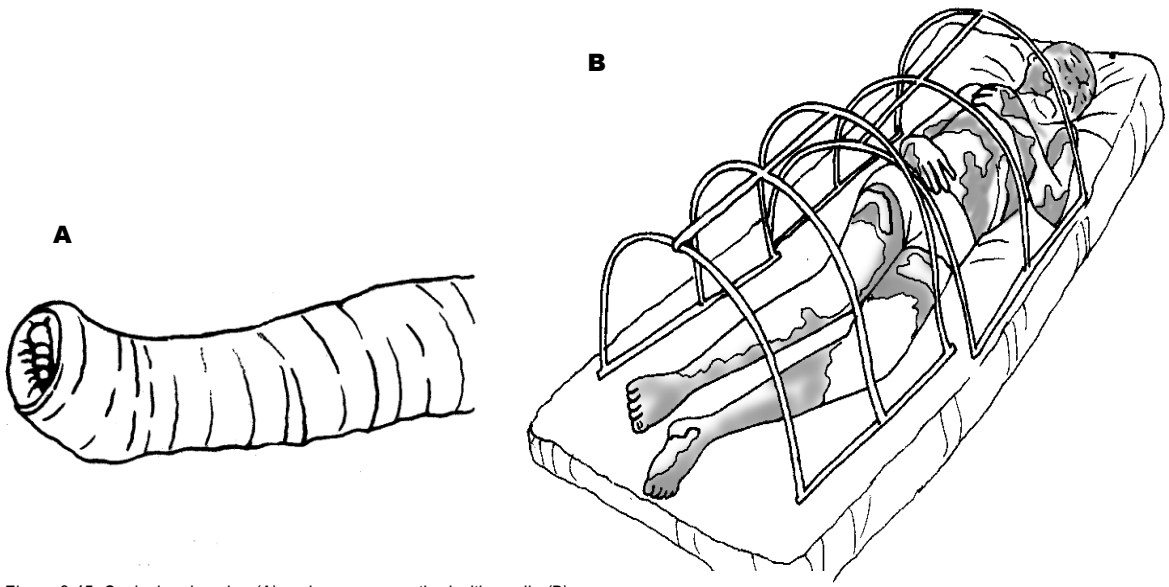


Figure 8.45: Occlusive dressing (A) and exposure method with cradle (B)

Closed (occlusive) method

Indications

1. Smaller burns if patient is to be treated as an outpatient, especially extremity burns
2. Minor burns of the hand
3. Larger burns for which the patient has to be transferred

Requirements

1. Gauze with antibacterial agent:
    a. Option 1:
        i. Local antibacterial agent, e.g.: 1% silver sulphadiazine cream or 0.5% silver nitrate with 2% chlorhexidine
        ii. Gauze
        iii. Spatula
    b. Option 2:
        i. Vaseline gauze or Sulfratulle
2. Surgical blade
3. Wound dressing equipment (see respective procedure)
4. Crepe bandage/gauze bandage
5. Material for splinting (if applicable)

Method

1. Use no-touch technique (= only touch the wound with sterile gloved hands or sterile forceps)
2. Clean the burn and skin around it with chlorhexidine 50% (savlon)
3. Do not puncture blisters
4. Split any eschar (escharotomy)when a deep burn is encircling a limb before applying dressing
5. Using a sterile spatula, spread the local antiseptic agent on sterile gauze or use the Vaseline gauze or Sulfratulle
6. Apply this gauze to the burn
7. Cover this with a layer of 2.5 cm of cotton wool and fix with crepe bandage which must extend 10 cm beyond the wound margin
8. If the wound is over a joint apply the dressing with the joint in extension to prevent contractures
9. When using 0.5% silver nitrate the dressing needs to be changed daily because of precipitations.
10. When using other local antibiotics:
    a. For partial thickness burns have the dressing on for 10 days
    b. For full thickness burns the dressing should be removed after 4 days
11. Remove the dressing earlier than this if:
    a. Exudates soak the dressing
    b. Foul smell
    c. Swelling
    d. Pain
    e. Fever
    f. Regional lymphadenitis
    g. Restriction of distal circulation
12. After 4 days the dressing of a full thickness burn needs to be replaced by a new dressing (this is limit of effectiveness of local antibiotics)
13. After 10 days a normal partial thickness burn should have healed
14. Deep burns may shed their slough in the dressing if the slough has not separated in 2 weeks. Remove them surgically under general anaesthesia

The plastic bag method

The plastic bag method is used in the treatment of burnt hands. It keeps the patient's fingers moist and mobile. It is almost completely painless and very simple.

Indications
1. Deep partial thickness burns on the dorsal surface of the hand
2. Small (less than 20 mm) full thickness burns
3. Burns with bare tendon, bone, cartilage or joints
4. In very severe burns unless amputation is indicated

Requirements
1. Any big clean plastic bag of a suitable size
2. Sterile gloves
3. Silver sulphadiazine 0.5% / Povidine iodine
4. Gauze
5. Strapping
6. Bandage

Method
1. Smear the patient's hand with silver sulphadiazine 0.5%
2. Wrap a piece of gauze round his wrist and hold it in place with a piece of strapping.
3. Place the hand in the bag with more antibiotics and secure the bag round his wrist with a bandage
4. The gauze already round his wrist will help to form a water tight joint or sweat band and prevent the exudates in the bag from dripping down his raised forearm.

Early excision of a full thickness burn

This forms additional treatment to all 4 methods mentioned earlier. The procedure should be performed by a skilled person for skin grafting and blood for transfusion should be available.

In case of full thickness burns smaller than 10% (preferably smaller than 2%) consider whether early excision can be done (= within 3 days) to enhance wound healing.

Prevention of complications

1. Preventing infections in burns:
    a. Cover the burnt surfaces as soon as possible
    b. Avoid spread of bacteria e.g. staff-to-patient or patient-to-patient through direct contact or from flies (use mosquito nets)
    c. Keep a separate apron for each patient
2. Preventing contractures in burns:
    a. Prevent full thickness skin loss where possible by preventing infections
    b. Always graft burnt joints
    c. Specific sites are very susceptible for contractures and should be handled carefully e.g. neck, axilla, elbow, hips, knees, feet and ankles:
        i. Joints to be splinted in such a way that areas which should not grow together do not touch each other. Splinting (mostly in extension), padding, pillows and frequent turning can be used to achieve this
        ii. Start physiotherapy / exercises as soon as possible (for example under analgesics during saline baths after a few days)

INCISION AND DRAINAGE

Introduction
An abscess is a localized infection of tissue marked by a collection of pus surrounded by inflammation tissue.

Objective
To be able to manage an abscess through incision and drainage (I&D) effectively

Indication
Any surface abscess

Requirements

A clean trolley containing the following	
Top shelf	Bottom shelf
Sterile I&D pack containing the following: 1. 2 Gallipots 2. 1 Kidney dish 3. 2 Artery forceps 4. 1 Sinus forceps 5. Surgical blade No 11 (preferred) with scalpel 6. Gloves sterile 7. Gauze 8. Cotton wool draping 9. Sponge holding forceps	1. A pair of scissors 2. Needles and syringes 3. Lidocaine or Ethyl chloride spray 4. 1 kidney dish for receiving dirty utilities 5. Antiseptics 6. Strapping 7. Culture swab

Procedure: Incision & Drainage

Two techniques are used in the management of abscess by incision and drainage:
- General method of incision and drainage
- Hilton's method of incision and drainage

Hilton's method is indicated in deep abscesses and those in anatomically risky areas (delicate, important structures surrounding it), e.g.: neck, axilla.
NOTE: In case of a deep, big abscess, general or regional anaesthesia is necessary. In that case, proceed from step 7. For small, superficial abscesses, local anaesthesia as described is sufficient.

Preparation
1. Assess the abscess and decide on the appropriate anaesthesia
2. Explain the procedure to the patient and obtain consent
3. Make the patient comfortable while exposing site of abscess
4. Clean the surface with antiseptic and cover with a drape
5. Infiltrate the area with local anaesthesia while avoiding to inject in infected tissue or use ethyl chloride spray
6. In case of lidocaine: wait for 2-3 minutes for it to take effect
7. Select the method to use: the general method or Hilton's method

a. General method

i. Make a linear or cruciate incision up to the abscess cavity using a blade as shown below
ii. Always make the incision at the point of maximum tenderness where the surface is softest or somewhat pointing out
iii. In case of linear incision follow skin lines or incise along muscle layers, not across

b. Hilton's method

i. Incise the tissues down to the deep fascia (skin / fascia only)
ii. Push blunt scissors or a sinus forceps into the abscess cavity
iii. Open the scissors or forceps to separate tissues up to the cavitus of the abscess
iv. Remove the forceps

8. Allow the pus to drain freely using the gauze to soak up pus and blood
9. If applicable (facility available) swab the abscess' cavity for culture and sensitivity
10. Using a sinus forceps (haemostat) or your finger gently explore the abscess cavity, to break up any locules within the abscess
11. Gently press out the pus using the thumb and index finger of both hands with gauze
12. If the abscess is small put a gauze in such a way that it allows drainage of more pus by keeping the wound open
13. If the abscess is deep, put a corrugated rubber drain to its deepest extensions
14. Place gauze dressing over wound and tape in place
15. Remove pack after 12-24 hours

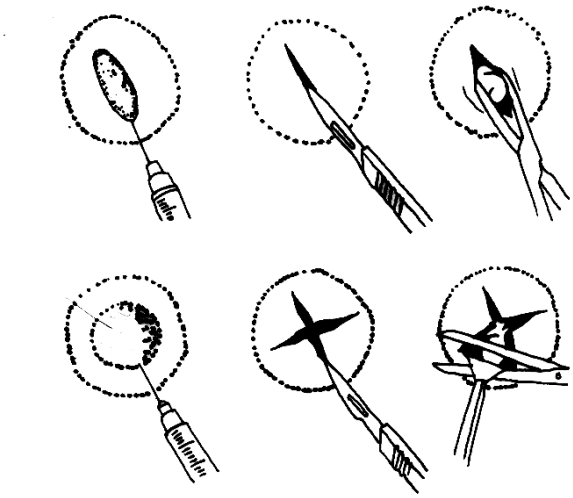


Figure 8.46: Linear and cruciate incision

NOTE: Do not put an antiseptic in the abscess cavity

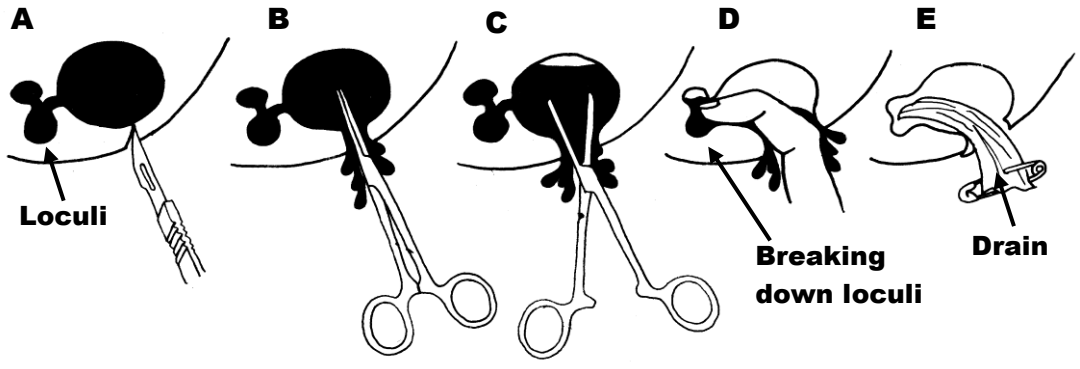


Figure 8.47: Exploring an abscess by Hilton's method

BLADDER IRRIGATION

Objective
To be able to perform bladder irrigation safely

Indications
Signs of inflammation or infection of the bladder

Requirements
A clean trolley containing:

1. Top Shelf
    a. Sterile catheterization tray with:
        i. Larger bowl
        ii. Mackintosh
        iii. Dressing towel
        iv. Spigot
        v. Graduated jug
        vi. Large catheter tip syringe clamp
        vii. Catheter
        viii. Small hand towel
        ix. A pair of gloves
        x. Large kidney dish
        xi. 3-way or 2-way in-dwelling catheter
2. Bottom Shelf
    a. Medication additives if ordered
    b. The ordered solution for irrigation
    c. Urine bag
    d. A pair of clean gloves
    e. Basin of warm water
    f. Soap
    g. Flannel / wash cloth
    h. Bath towel
    i. Mackintosh and draw sheet
    j. Betadine or Hibitane
    k. Strapping
    l. Receiver for used swabs
    m. Receiver with decontaminant for used equipment

Procedure

Preparation
1. Clean and disinfect trolley
2. Wash hands
3. Arrange items appropriately on the trolley
4. Explain procedure to the patient
5. Provide privacy

Method

1. If catheter is not already in situ, then:
    a. Wash hands and dry
    b. Wear gloves (from bottom shelf)
    c. Protect linen with Mackintosh and draw sheet on bottom shelf
    d. Wash and dry perineal area
    e. Discard gloves, bath water, washcloth, and bath towel
    f. Wash hands again
    g. Ask assistant nurse to open the catheterization try by picking the ends of the towel till the hand towel is exposed
    h. Dry your hands with the sterile towel
    i. Wear sterile glove and perform catheterization (see procedure manual)
2. If catheter already in situ, then:
    a. Cleanse the opening of the catheter with the antiseptic solution
3. Remove catheter – tip - syringe cap and place it in the sterile tray
4. Ask assistant to pour irrigation solution into the bowl
5. Fill the catheter tip syringe with the solution
6. Insert tip securely into catheter
7. Slowly infuse irrigation into catheter until full amount of ordered fluid has been infused or till patient say he/she cannot tolerate additional fluid infusion
8. Clamp catheter by bending end above syringe tip and remove syringe
9. Disinfect the catheter-end with betadine (or available anti-microbial agent)
10. Block catheter with sterile spigot or attach urine bag as necessary for about five minutes
11. Let fluid flow into kidney dish and repeat the irrigation from step 5 several times
12. Leave patient comfortable
13. Clear equipment
14. Record and report

PRE-OPERATIVE CARE

Objective
To ensure that the patient is well prepared to undergo surgery and anaesthesia

Indication
Patients who require operation under general or regional anaesthesia

Requirements

A trolley containing:

Top shelf
Mug with solution for dentures e.g. sodium bicarbonate
Bathing equipment
Theatre gown, socks and cap
Operation list
Patient identification bands
Thermometer
BP machine and stethoscope
Pre-operative medication
Pre-operative checklist (includes allergies)
Bottom shelf
Receiver for used swabs

Procedure

Remote pre-operative care

1. The patient (preferable with relatives) should be given good explanation of the operation by the clinician handling him / her and requested to give a written consent if patient is 18 years or above. For patients under 18 years parents or guardians should give written consent. A thumb print is acceptable for clients who are not able to sign. A new consent is required for every operation. In emergency surgery, it may be possible for a surgeon to give consent in the absence of close relatives.
2. Ensure all pre-operative investigations are done and reviewed.
    a. Routine investigations consist of blood for:
        i. Grouping and cross matching
        ii. Urea and electrolytes
        iii. Full haemogram
    b. Any other specific investigation
3. Review the patient's prescribed medication and decide on which ones to continue, which ones to discontinue and when to restart those ones discontinued
4. Prescribe any additional pre-operative medication if necessary
5. Improve the nutritional or hydration status if need be and time allows
6. Teach deep breathing exercises (to prevent hypostatic pneumonia) and leg exercises (to prevent deep venous thrombosis)
7. Ensure the bowels are empty if necessary

Immediate care (on day of surgery)

1. Ensure patient is not given anything by mouth for 6 hours before operation and 'Nil by Mouth' notice is put in appropriate place
2. Ensure patient is bathed pre-operatively
3. Ensure all the patient's notes including consent form, blood card, x-rays and observation charts are available in one file
4. Ensure patient has emptied his / her bladder or has been catheterized
5. Ensure any dentures and any other ornaments are removed
6. Ensure the patient wears an identification band
7. Ensure the patient is in the theatre gown, socks and head dress or cap
8. Prescribe the necessary pre-medication
9. Instruct on frequency of taking vital signs
10. When theatre staff calls for the patient, put him or her on the stretcher and wheel him / her there.
11. Hand over patient and his or her file to the theatre staff
12. Blood for transfusion (together with the blood card) should be collected from the blood bank and carried with the patient to theatre
13. Go back to the ward and make preparations to receive the patient

NOTE: Shaving is no longer recommended because of infection prevention. If necessary, it should be performed in the operating theatre.

POST-OPERATIVE CARE

Objective
To enable the student to prevent post operative complications and ensure quick recovery after surgery

Indications
Patients who have undergone surgery

Requirements
1. Ready-made post- operative bed depending on area operated, e.g. divided bed for amputation
2. Suction apparatus
3. Oxygen apparatus
4. Drip stand
5. Vomitus bowl
6. Resuscitation/ emergency tray
7. Vital signs tray
8. Infusion tray
9. Any special equipment for specific operations e.g. bed cradle, sand bags etcetera

Post-operative tray with the following instruments covered with a dressing towel:
1. Ambu-bag
2. Oral airway
3. Gloves
4. Tongue depressor
5. Mouth gag
6. Sponge holding forceps
7. Gauze swabs

Procedure

Preparation
1. Screen the post operative bed and close nearby windows when ready to receive the patient
2. Ensure adequate working space
3. Ensure all equipments are clean and tested to make sure they are in good working condition and within easy reach.
4. Ensure there is a helper at hand for lifting and positioning patient

Immediate care
1. When informed by theatre staff to collect the patient, take the post-operative tray and go to theatre together with the assistant
2. Receive summary of patient status from theatre nurse
3. Check that the patient is awake and responsive to verbal stimuli and then take the vital sign (Bp, pulse, respirations) and the wound for possible excess bleeding
4. Receive patient's notes and check on the operation done and post-operative instruction
5. Receive the patient plus any specific instructions and gently transfer him / her on the ward trolley together with the post-operative tray

6. Wheel the patient to the ward with the assistant holding the foot of the bed and being in front while you follow but staying the head of the patient to observe and talk to the patient if need arises
7. In the ward, lift the patient carefully with the stretcher canvas to the bed and leave him covered
8. Remove the canvas handles and the poles
9. Roll the patient to one side gently and fold the canvas close to the back
10. Turn patient to the other side and gently pull the canvas out and put on stretcher.
11. Put patient in the lateral or semi-prone position gently and carefully with head turned sideways (position determined by the operation site but it should ensure clear airway)
12. Put top bed linen on the patient and carefully remove theatre linen and place on stretcher
13. Connect any tubing, e.g. urine bag to catheter
14. Take the vital signs and record
15. Observe the wound for bleeding and report immediately any excess bleeding
16. Continue observing the vital signs and general condition ¼ hourly or as per surgeon's / anaesthetist's instructions till patient is fully awake
17. Give medications and treatment as necessary

Later care

1. Start on oral sips of water, liquid diet and full diet as warranted by the patient's condition or when bowel sounds return in case of laparatomy
2. Change position 2-4 hourly depending on the condition of the patient
3. Encourage early ambulation, depending on the nature of the operation to prevent complications (like orthostatic pneumonia and deep venous thrombosis).
4. General basic nursing care is maintained as for any other patient in hospital to include pressure area care
5. Change of wound dressing and removal of stitches is done as per surgeon's instructions
6. Give breathing exercises and other forms of exercises as necessary
7. Encourage and reassure the patient as you do all procedures

INTERPRETATION OF X-RAYS

Introduction

Radiographic interpretation is based on the visualization and analysis of opacities on radiograph. The radiograph will display a range of densities from white, through various shades of grey to black. Radio-opaque tissues/objects appear whitish while radiolucent tissues/object appears blackish.

Gas is more radiolucent than fluid and soft tissue, which are again more radiolucent than bone. Therefore air appears black, fluid and soft tissue appear as different shades of grey and bone appear white.

The thicker the object or tissue (more radio-opaque), the weaker the X-ray becomes as they go through them and therefore the more white the image will be.

When two tissues are superimposed, the composite shadow formed will appear opaque than either of the two separate tissues.

Air will appear black on a radiograph, compared with fluid and soft tissue, which appear greyer.
The thicker the tissue/object, the greater the attenuation of x-rays and the more white the image will be.

When two tissues are superimposed, the composite shadow formed will appear more opaque than either of the two separate tissues.
Good quality radiographs can be determined on the basis of the following attributes:

- Density (Tones of blackness and whiteness)
- Contrast (Differences between adjacent densities)
- Details (Distinctness of single entities)

NOTE:

- Correct interpretation of radiographs is easier if the films are examined methodically rather than gazing hopefully but haphazardly at the film.
- The common practice is to begin by determining the quality of the radiograph, check for tissues beginning from outside to inside ones – soft tissues, bones, blood vessels and any other significant features.
- Interpretation of radiographs requires knowledge of normal radiographic anatomy, pathology and abnormal appearances.

Objective

To be able to interpret radiographs

Requirements

1. X-ray viewing box
2. Power source
3. X-ray film

Procedure: Interpretation of Chest X-ray

The standard chest x-ray is a postero-anterior view taken with the film against the front of the chest and the x-ray source two meters behind the patient. Note: The lateral view may be requested to give additional information.

Figure 8.48: X-ray of the chest

1. Mount the x-ray film on to the x-ray viewing box
2. Check name, age, sex, IP/OP number and date on the X-ray film to ensure it belongs to the right patient.
3. Check the orientation of the film. Check for the marker for the side (L – for left and R- for right side). Assume the film is postero-anterior unless specifically marked as antero-posterior.
4. Check the soft tissues:
    a. Breast shadow in females
    b. Soft tissue masses
    c. Subcutaneous emphysema
5. Check the bones
    a. Ribs, clavicles, scapulae, vertebrae
    b. Look for fractures at the edges (cortices)
    c. Look for any abnormalities (sclerosis, rarefaction)
6. Check the lung fields
    a. They should be of equal translucency
    b. Identify the horizontal fissure (running from the right hilum to the 6th rib in the axillary line)
7. Check the lung apices
    a. Look specifically for masses, cavitations, consolidation, etc above and behind the clavicles
8. Check the trachea
    a. Confirm whether central or deviated to right or left
    b. A central trachea will be midway between the medial ends of the clavicles
    c. Look for para-tracheal masses, retro-sternal goitre, etc
9. Check the heart
    a. Shape
    b. Maximum diameter. Compare with half the internal trans-thoracic diameter (cardiothoracic ration, normal <50%
    c. Look for any retro-cardiac masses

10. Check the hila
    a. The left hilum should be higher than the right
    b. Compare the shape and density of the two hila – both should appear concave laterally. A convex appearance suggest a mass or lymphadenopathy
11. Check the diaphragms
    a. The right hemi-diaphragm should be higher than the left
    b. The anterior end of the 6th rib should cross the mid-diaphragm. If this does not reach, then there is hyperinflation
12. Check the costo-phrenic angles
    a. These should be well defined, acute angles
    b. Loss of one or both suggest pleural fluid or pleural thickening

Procedure: Interpretation of X-ray of bone

1. Mount the X-ray film onto the X-ray viewing box
2. Check name, age, sex, IP/OP number and date on the X-ray film to ensure it belongs to the right patient
3. Determine the part of the body X-rayed, the view(s) of projection and the maker for left (L) and right (R)
4. Note the quality of the radiography (positioning, centring, exposure, artefacts
5. Examine the soft tissues
    a. Look for areas of ossification or calcification
6. Look for any changes in bone density – which could be general of localized
7. Examine the cortex of each bone
    a. Breaks in the continuity of the cortex
    b. Irregularities or areas of erosion
    c. Thickening of the cortex
    d. Alteration of texture
    e. New bone formation
8. Examine the medulla of each bone
    a. Alteration of texture
    b. Areas of destruction
    c. Sclerosis
9. Examine the joints
    a. Narrowing of joint space (cartilage space)
    b. Erosion
    c. Irregularity or roughening of its surfaces
    d. Osteophytes
    e. Loose bodies

NOTE:

- Consider whether there is need for an x-ray of the opposite limb to assist in differentiating normal parameters from abnormal ones (especially in children and fractures close to epiphyseal plates)
- Determine whether there are abnormalities and define their anatomical location.
- Think about the differentials.

CHAPTER 9: BASIC OBSTETRIC & GYNAECOLOGICAL SKILLS

Annex to CMS 264: Reproductive Health I

Obstetric History Taking

Gynaecological History Taking

Gynaecological Pelvic Examination

Obstetric Abdominal Examination

Obstetric Vaginal Examination

Partograph – Monitoring first stage of labour

Second stage of labour – spontaneous vertex delivery

APGAR scoring system

Examination of the newborn

Third stage of labour – delivery of the placenta

Examination of the placenta

Performing episiotomy

Suturing of perineal tears / episiotomy

OBSTETRIC HISTORY TAKING

Introduction

History taking in obstetric relates to women attending clinics or being admitted in the ward while pregnant, during delivery or in the post-partum period.

Objectives

To highlight specific considerations in obstetric history taking

Requirements

1. Antenatal card
2. Privacy

Procedure

Steps	Highlights
Personal identification	As normal
NOTE: In routine antenatal clinic normally you move to obstetric history immediately. In case of specific complaints in a woman who is pregnant the normal order of history taking is followed	
Chief complaint	Ask if there is any other problem apart from the pregnancy. If it's there, handle it just like any other medical problem.
History of presenting complaint / illness	Depends on the presence of any complaints.
Review of systems	As normal
OBSTETRIC HISTORY	
History of current pregnancy	1. Parity 2. Gravidity 3. First day of last menstrual period (LMP) and how certain the patient is about the correctness of this date (regularity of menses, use of contraceptives around the LMP, whether the last period was like all the others, early ultrasound, ability of woman to tell the date) 4. Expected date of delivery (EDD): use the Naegle's rule = add 9 months and 7 days to the LMP in case of a cycles of 28 days (e.g. cycle 33 days, LMP 12/08/1995, EDD 24/5/1996 i.e. 9 months + 7 days + 5 days = 24th May 1996; Cycle 23 days, LMP 12/08/1995, EDD 14/5/1996 i.e. 9 months + 7 days - 5 days = 14th May 1996) 5. Gestation by date

	6. Antenatal profile: a. Any earlier antenatal clinic visits b. Obligatory laboratory investigation results: i. Haemoglobin ii. Blood group & Rhesus factor iii. Syphilis test: VDRL / RPR iv. HIV test v. Urine analysis (protein, glucose, ketones, pus cells) c. Optional, depending on setting i. Blood slide on malaria parasites and level of parasitaemia ii. Stool on ova and cysts d. Medications presently and previously e. Radiological examinations during this pregnancy f. Enquire about first foetal movements and their current frequency 7. Enquire about pregnancy related symptoms and assess their severity: a. breast changes (darkening of areola and breast enlargement) b. nausea and / or vomiting c. indigestion, constipation d. tiredness e. increased frequency of micturation f. swelling of the limbs g. leg cramps 8. Enquire about symptoms which could indicate complications of the pregnancy: a. per vaginal discharge b. per vaginal bleeding c. lower abdominal pains d. pain on micturation e. headache f. visual disturbance
Past obstetric history / previous pregnancies	1. Details of earlier pregnancies for each pregnancy: a. Date of earlier delivery. b. Where delivery took place: hospital / home c. At what gestation d. How long did labour take e. Mode of delivery. If vacuum delivery or C.S., enquire why f. How was the condition of the baby at birth and how is the child now. If the baby died or is unwell, enquire why g. Weight of baby at birth h. Sex of baby i. Any complications during pregnancy j. Any other complications during delivery k. Any complications post-partum l. Any blood transfusion

	m. Did she breast feed, if not why 2. Details of earlier miscarriages or early terminations of pregnancy: a. Date / Year b. At what gestation c. Where early termination / miscarriage took place d. Is she aware of any cause e. Any surgical intervention used to remove retained products of conception f. Any blood transfusion
Past medical history	Of particular importance are the following medical conditions: Diabetes, hypertension, heart disease, HIV and any medications or blood transfusions If applicable in the environment: whether the lady underwent female circumcision
Family history	As normal but with a focus on conditions that can threaten pregnancy
Personal, Social and Economic history	Among other things the following may be important in a pregnant woman: Occupation, diet, drinking and smoking habits, proximity to delivery site and access to transport if need arises.

GYNAECOLOGICAL HISTORY TAKING

Introduction

History taking in gynaecology relates to women attending clinics or being admitted in the ward with signs and symptoms related to genito-reproductive system or who have complications related to early pregnancy (1st term and early 2nd term).

Objectives

To highlight specific considerations during a gynaecological history

Requirements

1. Privacy

Procedure

Steps	Highlights
Personal identification	
Chief complaint	
Hx presenting illness	
Review of systems	
Gynaecological history	1. Parity 2. Menstrual history a. Age at menarche (normally 10-16 years) b. LMP c. Duration of flow d. Regularity and duration of cycle e. Amount of bleeding (number of pads used) f. History of dysmenorrhoea 3. Irregular bleeding (inter-menstrual or post-coital) – if so: bleeding pattern, duration, amount, clotting 4. Age at menopause (if appropriate) 5. Per vaginal discharge. If so, timing, amount, colour 6. Per vaginal bleeding, colour and smell if there are clots 7. Fertility / Infertility a. Use of family planning methods (duration & type) b. Any problems with fertility c. Previous pregnancies d. Last delivery (if applicable) 8. Sexual history: a. Sexual partner(s) and for how long b. Any problems, e.g. dyspareunia c. Frequency and timing of coitus (when applicable) 9. History of STIs: a. Any previous STI b. Treatment for STI c. Use of protective measures 10. Past gynaecological problems and operations (inclusive of female circumcision if applicable in the environment)
Past medical history	
Personal / SE history	
Family history	

GYNAECOLOGICAL PELVIC EXAMINATION

Includes
Speculum examination
Digital vaginal examination

Introduction
The pelvic examination is a feared procedure in the minds of many women and must be conducted in such a way as to allay her anxieties. The empathic health worker usually finds that by the time the history has been obtained and a painless and non-embarrassing general performed; a satisfactory gynaecological examination is not a problem.

Objective
The ability to perform adequate gynaecological examination

Indications
- Suspicion of pathology of the female genital system, e.g.: P.I.D., cancer, uterus myomatosus
- Exclusion of pathology of the female genital system, e.g. before insertion of IUCD
- Rape

Contraindication
Intact hymen

Requirements

1. Couch, preferably with stirrups
2. Sterile speculum: Cusco's; Sims' Ferguson's
3. A pair of non-sterile gloves
4. A pair of sterile gloves
5. Equipment to take specimen
6. Receiver with decontamination solution

Procedure: speculum examination & digital vaginal examination

Preparation

1. Prepare environment for pelvic examination
    a. Prepare the rooms/screens
    b. Ensure privacy
    c. Prepare equipment and supplies
2. Prepare client for pelvic examination
    a. Explain procedure and each step as it is performed throughout
    b. Ensure client empties bladder
    c. Ask the client to remove underclothing if any
    d. Position the client in lithotomy position
    e. Cover her to avoid unnecessary exposure

Method: Speculum examination

1. Maintain infection prevention throughout the examination:
    a. Wash hands with soap and water and dry them
    b. Put on sterile gloves without contaminating them
    c. Use high–level disinfected / sterilized instruments
2. Inspect the external genitalia to screen for STI:
    a. Warts
    b. Abnormal discharge
    c. Ulcers
    d. Bleeding from Vagina
    e. Sores
    f. Scars
    g. Swelling
    h. Presence and distribution of hair
3. Perform Speculum Examination:
4. Talk to the client and reassure her throughout the procedure
5. Hold the Speculum in the right hand while the index finger of the left hand presses downwards on the fourchette
6. Insert the Speculum Horizontally gently in a downward motion away from the urethral area and clitoris until you meet resistance
7. Open the blades to expose the cervix
8. Inspect the cervix and the ostium for colour, erosion, growths, friability and any discharge
9. Take Laboratory Specimen if necessary for investigations for PAP smear for Cytology Cervical /Vaginal secretions for microscopy
10. Rotate the Speculum and inspect the vaginal wall for:
    a. Warts
    b. Abnormal discharge
    c. Sores
    d. Bleeding
11. Remove the speculum gently in the Horizontal position and place it into the decontamination solution

Method: Digital vaginal examination

1. Put on a non-sterile glove on the right hand
2. Clean the vulva if necessary
3. Insert the index and middle fingers of the right hand gently into the vaginal canal while you avoid touching the clitoris with your right thumb
4. Examination of the cervix
    a. Locate the cervix and palpate, using the tips of your fingers, for:
        i. Ostium open or closed
        ii. Irregularity
        iii. Growth
        iv. Consistency
        v. Mobility
        vi. Tenderness
5. Examination of the uterus
    a. Place your left hand on the abdomen, just above where you expect the position of the uterus (in normal cases not palpable, so you place your hand just above the symphysis pubis; if during abdominal palpation you suspected an enlarged uterus, place your hand above the mass)
    b. Locate the uterus by feeling it between your left hand on the abdomen and the fingertips of your right index and middle fingers placed on the cervix (bimanual palpation)
    c. Palpate the uterus for:
        i. Size, Shape and Consistency
        ii. Mobility
        iii. Position: mid-position, anteverted or retroverted
6. Examination of the adnexa:
    a. Locate the left fornix and place the finger tips in this fornix
    b. Place your left hand on the abdomen left from the middle around the level of the umbilicus
    c. Try to palpate the left adnex for any mass or tenderness by making scoping movements with the ulnar side of the left hand downward and towards the midline along the pelvic ream while the fingertips of the right hand are kept in the fornix
    d. Repeat the same procedure on the right side
7. Excitation of the cervix for endometritis
    a. Use the tips of your right index and middle finger to gently move the cervix from left to right and check for any pain
8. Palpate the anterior, left and right lateral of the vaginal walls for:
    a. Rugae
    b. Growth
    c. Tenderness
9. Check vaginal muscle tone by asking the client to tighten vaginal muscle
10. Check for cystocele and rectocele:
    a. Press the left index and middle finger downwards and ask the client to cough to check for cystocele and then turn the two fingers pressing upwards and ask the client to cough to check for rectocele
11. Palpate the bartholin's glands on both sides of the labia majora
12. Press on the Trigon muscle to exclude cystitis
13. Milk the Skenes glands with left hand
14. Palpate the inguinal glands with the left hand

OBSTETRIC ABDOMINAL EXAMINATION

Introduction

Regular abdominal examination is an important component of both antenatal care and monitoring of labour. Any abdominal examination should be preceded by consideration of the history including past obstetric history and the record of the present pregnancy.

By abdominal examination it is possible to ascertain:

1. The size of the uterus and to note whether it corresponds with the period of amenorrhoea.
2. The size of the foetus.
3. The lie presentation and attitude of the foetus.
4. The relative sizes of the brim of the pelvis and the presenting part.
5. Whether the foetus is alive.
6. The presence of the abnormal conditions, such as excess of liquor amnii, twin pregnancy or abdominal tumours.

Objectives

The ability to perform abdominal examination of a pregnant woman

Indications

1. Routine examination of pregnant woman to ascertain:-
   a) The size of the uterus (Fundal height)
   b) The size of foetus and number
   c) The lie, presentation and attitude of the foetus.
   d) Engagement.
   e) Foetal heart rate.
2. During labour.

Requirements

1. Foetoscope
2. Watch with second hand.
3. A bowl with dry gauze and cotton swabs.
4. Receiver for dirty swabs.
5. Tape measure.
6. Mother's gown.
7. Bed sheet/blanket.
8. Comfortable examination couch or bed.

Procedure: Abdominal examination of the pregnant woman

Preparation

1. Explain the procedure to the mother and ask her to pass urine before the examination is started.
2. Wash and dry your hands and ensure that they are warm.
3. Ensure privacy
4. Ask the mother to lie comfortably on a firm couch or bed on her left lateral side and then slowly turn to supine position and put her hands on her sides.
5. Expose the abdomen
6. Enquire from the mother whether she has any complaints or comments.

Method

Inspection

1. Inspect and observe the following:
    a. Shape
    b. Size
    c. Skin
    d. Linear nigra
    e. Striae gravidarum
    f. Scars (particularly obstetric)
    g. Foetal movements/kicks
    h. Umbilicus

Palpation

Fundal height

1. Using the left hand, place either the ulnar border of the hand or the radial border of the index finger on the abdomen in the xiphisternum.
2. Apply pressure to feel for any underlying mass. If not felt, move downwards in steps until a mass is encountered.
3. Maintain the hand or finger at that level.
4. Using the right hand, on the abdomen, determine the number of fingerbreadths from the superior border of the umbilicus up to the level of the fundus.
5. Multiply the number of fingerbreadths by 2 and add to 22 – 24 to get the number of weeks of gestational size interpreted as fundal size
6. Correlate this with expected gestation by dates

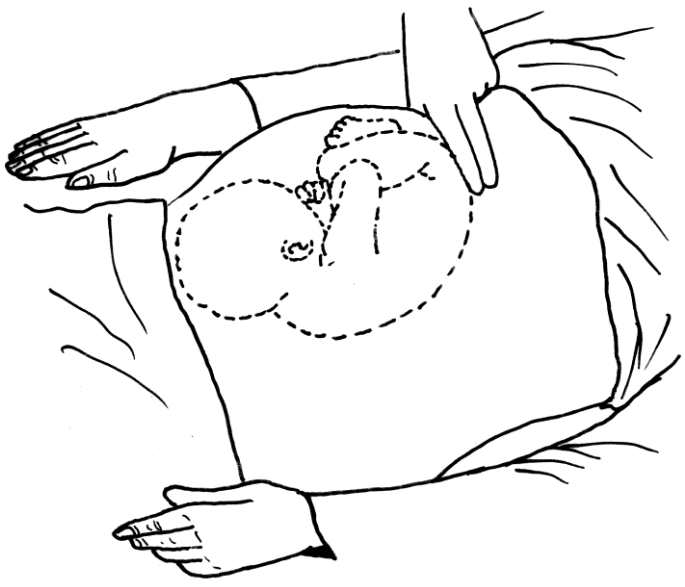


Figure 9.1: Assessing fundal height

7. Alternatively you can check the fundal height using the tape measure
    a. Identify the abdominal landmarks i.e. pubic symphysis, umbilicus and xiphoid sternum
    b. With a tape measure, take measurements from symphysis pubis to the estimated fundal height and note the length in centimetres.

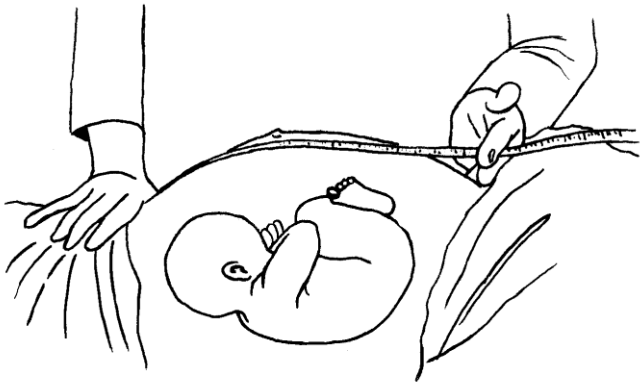


Figure 9.2: Measuring fundal height with measuring tape

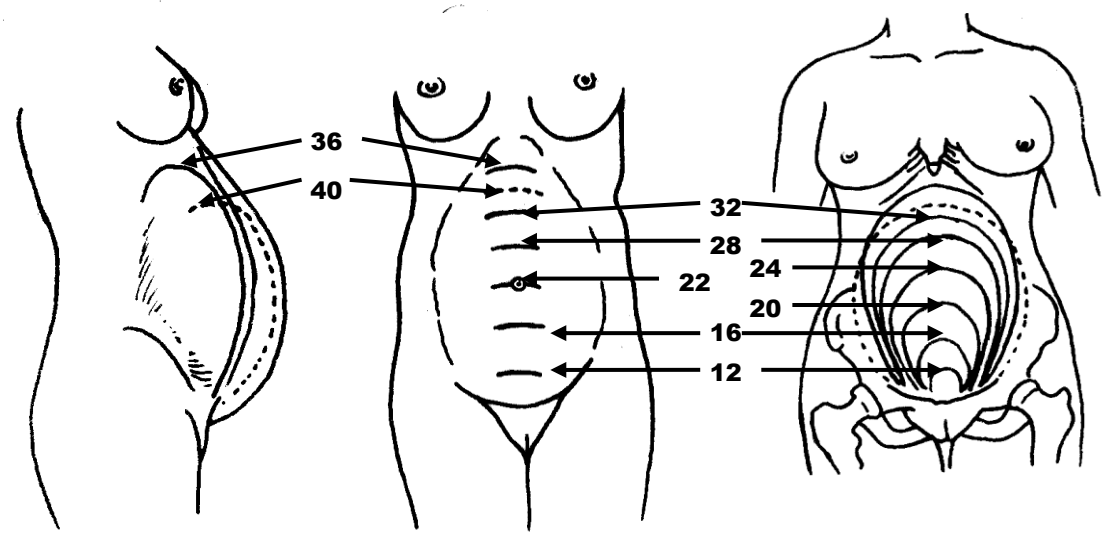


Figure 9.3: Height of the fundus in relation to weeks gestation

The Lie

The lie is the relation of the baby's long axis to the mother's uterus long axis.

1. Slide the hands to the sides of the abdomen and exert alternate pressure to feel for
    a. The foetal poles
    b. Regularity or irregularity and convexity
2. Absence of foetal poles in the flanks = longitudinal lie.
3. Uniform, firm convexity of contour = side with the foetal back.
4. Determine whether convex contour nearer the front or far out in the flank with small parts in front – gives an idea about position.

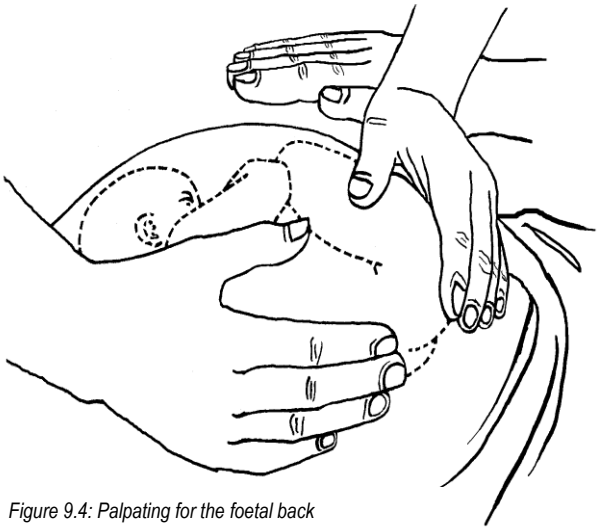


Figure 9.4: Palpating for the foetal back

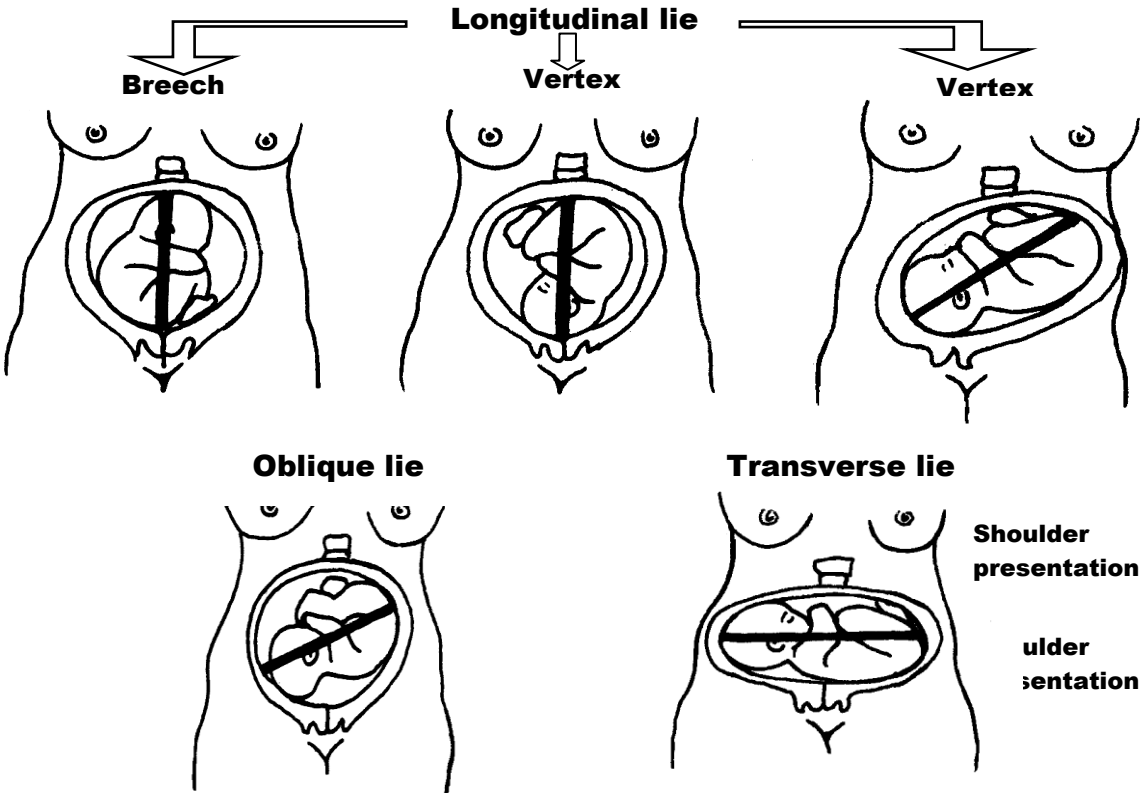


Figure 9.5: The foetal lie – note that the lie is only called oblique if it is oblique in relation to the uterus – the upper right position shows the uterus rather than the foetus is oblique and merely moving the uterus abdominally will rectify the presumed obliquity.

Presentation

Using the right hand apply the Pawlik's grip (single handed palpation) on the lower abdomen to feel for the part of the foetus overlying the pelvic inlet. If transverse lie – any mass felt most likely the shoulder, if longitudinal lie differentiate cephalic for breech and if oblique lie – grip applied off centre but still differentiate cephalic from breech.

1. The `Pawlik's grip is applied on the lower abdomen above the symphysis pubis.
2. In a longitudinal lie, a hard rounded mass indicates cephalic presentation while absence suggests breech presentation. One should recheck the contents of the fundus when findings are uncertain.
3. Pawlik's grip gives precise findings when the head is above the brim but is less precise when engaged.
4. Engagement is checked for while facing the mother's lower limbs and with both hands placed on the lower abdomen.

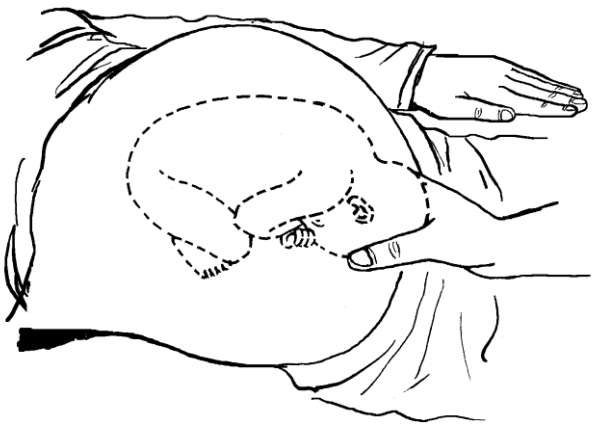


Figure 9.6: Pawlik's grip for the presenting part

5. If the fingers seem to meet below the presenting part then engagement has not occurred.
6. When engagement has occurred, the fingers will diverge along the foetal head into the pelvis and the head will be fixed.
7. Before deep engagement, as the fingers are passed down the presenting part, the area that is most prominent on the head is noted.
8. If the cephalic prominence is on the side of the small parts (limbs), it implies the head is well flexed hence vertex presentation.
9. If the prominence is felt equally on both sides → deflexed hence brow presentation
10. If the prominence is on the side opposite that with the small parts and with indistinct back curvature, the findings suggest face presentation.

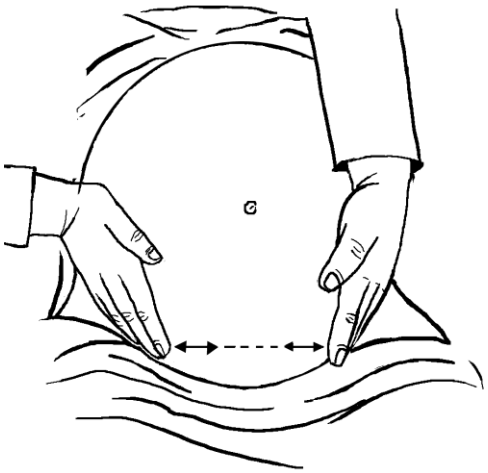


Figure 9.7: Bimanual palpation for presenting part and ballottement

Attitude

Attitude in this context refers to the position of the foetal head and limbs to its trunk. The normal position is complete flexion giving a vertex presentation. When there is deflexion, you get a brow presentation and when there is extension, you get a face presentation.

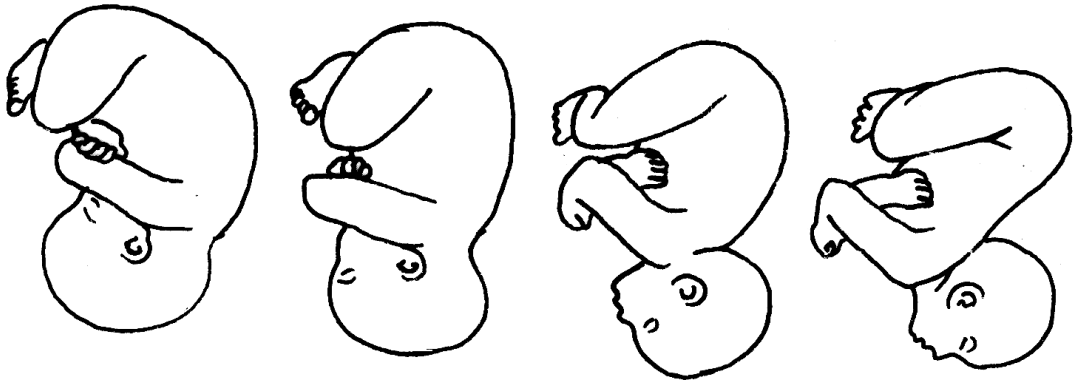


Figure 9.8: From left to right – well flexed vertex; deflexed vertex; brow, and face presentation

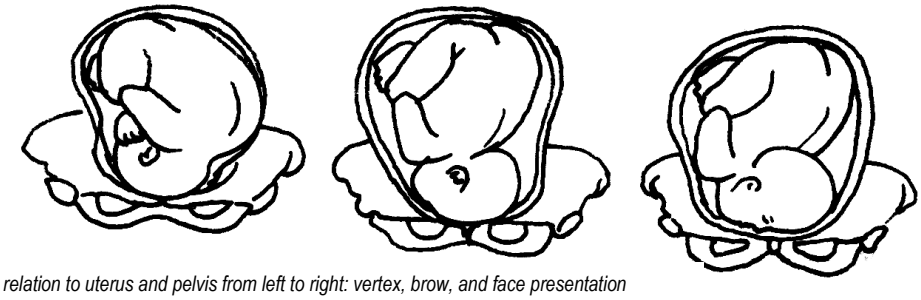


Figure 9.9: In relation to uterus and pelvis from left to right: vertex, brow, and face presentation

Denominator

This is an arbitrary point on the presenting part used as a point of reference in denoting the position of the presenting part in relation to the pelvis.

1)	**Vertex** presentation	the denominator is	**Occiput**
2)	**Brow** presentation	the denominator is	**Sinciput**
3)	**Face** presentation	the denominator is	**Mentum or Chin**
4)	**Breech** presentation	the denominator is	**Sacrum**
5)	**Shoulder** presentation	the denominator is	**Acromion**

Position

Position is the relationship of the denominator to the mother's pelvis.

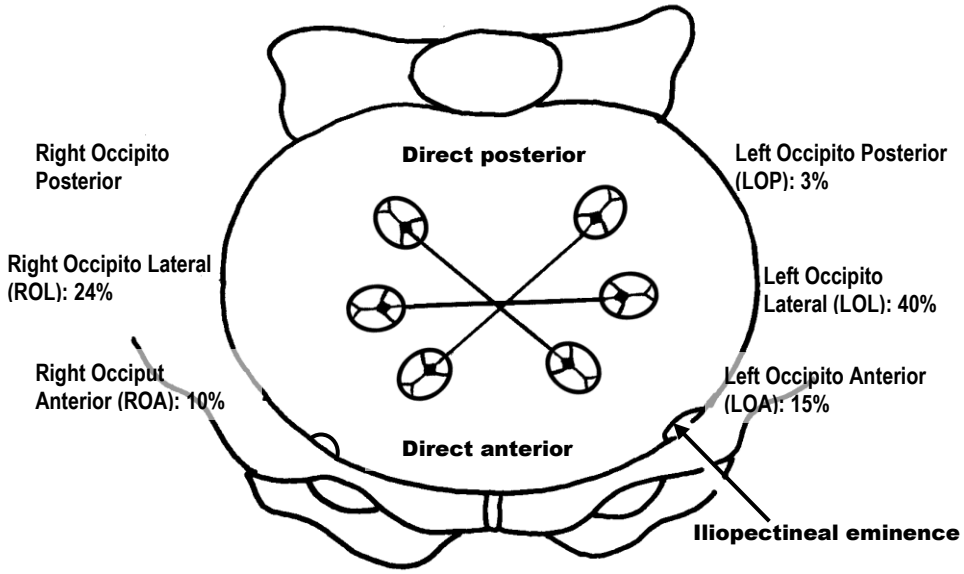


Figure 9.10: Relation between the occiput and the mother's pelvis in vertex (1)

Eight positions are described as follows:

1) When the denominator is directed towards the symphysis pubis it gives a **direct anterior position** and when the denominator is direct towards the sacrum it gives a **direct posterior position**.
2) If the denominator is directed towards the ileopectineal eminencies, the position is **left or right anterior position**.
3) If the denominator is directed towards the midpoint of the ileopertineal line, it gives **left or right lateral position**.
4) If the denominator is directed towards the left or right sacro-iliac joint then it is **left or right posterior position**

The normal presentation is the anterior position with the commonest position being the left occipital anterior.

Descent and Engagement

This refers to the entry of the presenting part into the pelvis. The head is the presenting part in 99% of all labours. Descent is recorded in terms of the span of the foetal head still palpable in the abdomen above the level of the symphysis pubis.

1. The whole span of the head is subdivided into 5 fifths, and each finger –breadth spans 1 fifth. When the head is completely free, the descent is 5/5, when a portion has entered the brim 4/5 and 3/5 when the portion above the basin is spanned by 3 fingers.
2. Once the widest diameter of the foetal head has entered, only 2/5 is palpable and strictly speaking, this is when engagement has occurred.
3. If presenting part is freely mobile – not engaged.
4. If a portion has sunk in the pelvis, the Pawlik's grip may not determine the identity of the presenting part in some cases.
5. Apply both hands on the sides of the lower uterus with fingers directed toward the pelvis.
6. Apply both a downward and inward pressure and note:
7. Consistency of the underlying mass – whether hard and rounded or broad and soft. If hard and rounded, note the side on which the fingers encounter resistance most on highest or downward pressure. This establishes the side of the cephalic prominence. Relate this to the position of the back to determine the degree of flexion.

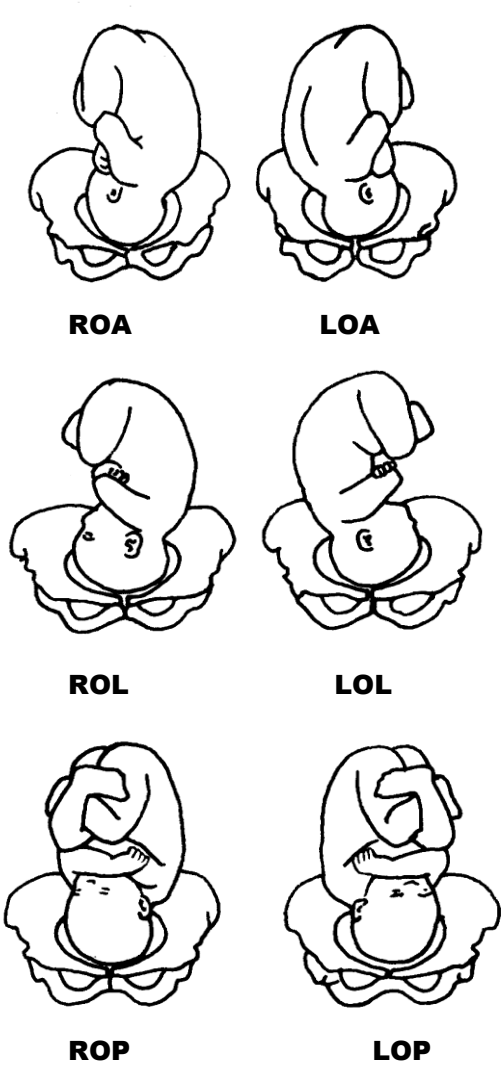


Figure 9.11: Relation between the occiput (denominator) and the mother's pelvis in vertex (2)

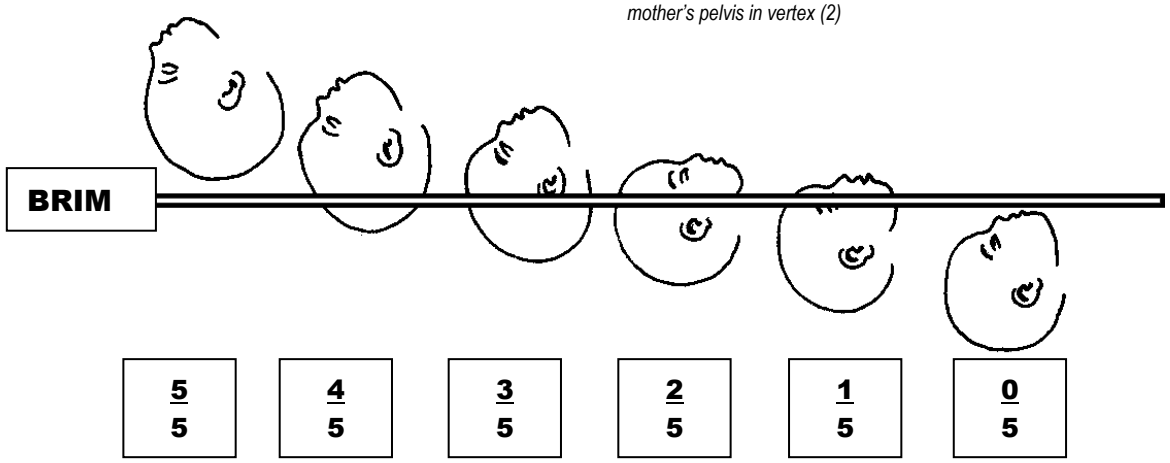


Figure 9.12: Descent of the foetal head (1)

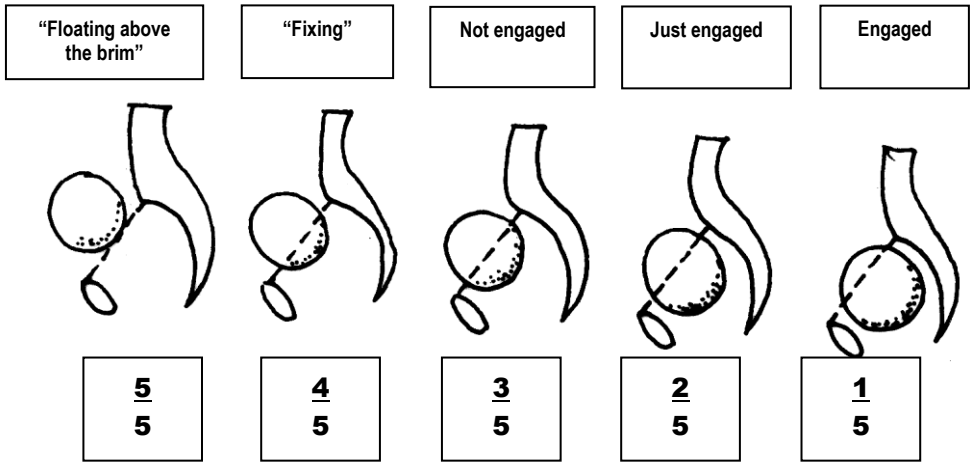


Figure 9.13: Descent of the foetal head (2)

NOTE: In convectional usage any descent of the presenting part into the pelvis with fixity suggests engagement. (Though strictly speaking engagement is only when the widest diameter on the presenting parts has entered the brim).

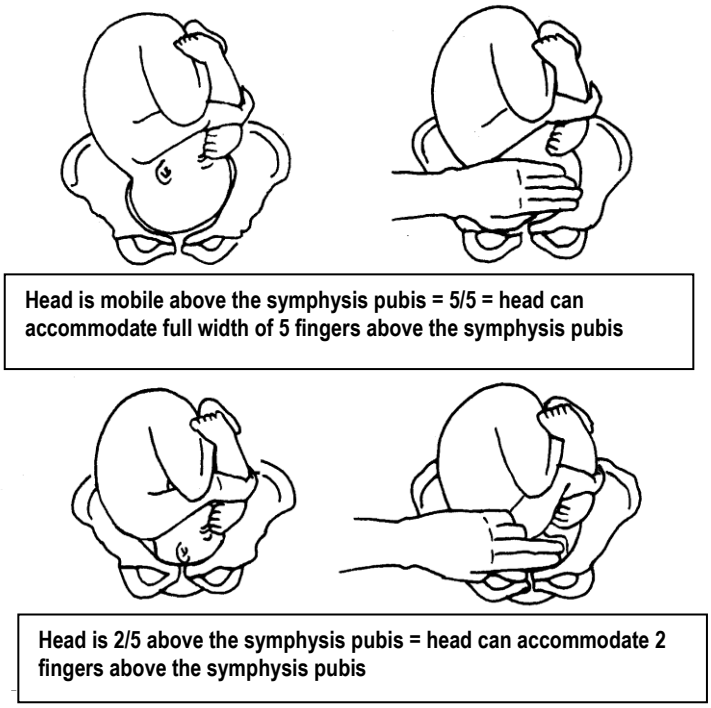


Figure 9.14: Abdominal palpation for descent of the foetal head

Auscultation

1. Having determined the presentation, descent and the side with the back.
2. Place the foetoscope on the side with the back as appropriate
3. i.e. – breech not engaged, slightly above the level of the umbilicus.
4. Near midline or the flank for occiput posterior positions.
5. Just below the umbilicus, 1/3 way along the line from umbilicus to anterior superior iliac spine – before engagement or lower if the head is engaged.
6. Apply sufficient pressure to exclude external sounds.
7. Take note of the count and regularity.

Figure 9.15: Auscultation of the foetal heart

OBSTETRIC VAGINAL EXAMINATION

Includes
Vulva toilet
Speculum examination
Digital examination
Pelvic assessment

Objective
To acquire skills and attitudes ensuring competence in performing obstetric vaginal examination and the interpretation of findings

Indications
1. To confirm labour
2. Pelvic assessment
3. Assessment of the progress of labour
4. Assessment of cervical ripening before induction of labour
5. Diagnose or rule out certain complications of pregnancy (e.g. cord prolapse)

Contra-indications
Contra-indications for digital vaginal examination
1. Suspected PROM (before onset of labour)
2. Suspected placenta praevia (antepartum haemorrhage)

Requirements
A clean trolley containing:
1. Top Shelf
    a. A pack containing:
        i. A sterile hand towel
        ii. A sterile cotton wool swabs in a bowl.
        iii. A sterile galipot for the antiseptic solution.
        iv. A sterile kidney dish
        v. 2 sterile green towels
    b. Light source
2. Bottom Shelf
    a. A lubricant
    b. An antiseptic solution
    c. A receiver for used swabs (peddle bin)
    d. A clean draw sheet if required for changing
    e. A pair of sterile gloves
    f. A container with Jik 1:6 for the used speculum
    g. A sanitary towel

Procedure

General preparation

Patient
1. Greet the patient and introduce yourself
2. Explain the procedure to the patient to obtain concept and ensure cooperation
3. Ask the mother to empty her urinary bladder to facilitate accurate examination

Personnel
4. 2 health workers are required for this procedure (1st & 2nd health worker)

Environment
5. Provide privacy
6. Close the nearby windows
7. Ensure adequate working space

Specific preparation for obstetric vaginal examination

1st Health worker
1. Clean trolley and disinfect the top shelf with spirit
2. Place the requirements on the trolley
3. Wheel the trolley to the bedside of the mother
4. Wash hands with plenty of soap under running water

2nd Health worker
5. Open the sterile pack to expose the hand towel

1st Health worker
6. Dry hands with the sterile towel
7. Discard towel on to the bottom shelf
8. Complete opening of the pack with the use of a sterile dissecting forceps provided in the pack
9. Discard the dissecting forceps on to the bottom shelf

2nd Health worker
10. Open up a pair of sterile gloves and drops it on to the top shelf
11. Pour some antiseptic solution into the gallipot
12. Position mother in lithotomy position
13. Expose mother from the waistline and down to the feet

1st Health worker
14. Put on the sterile gloves
15. Tell mother that you are ready to examine her

Inspection of the external genitalia

1. Inspect the morphology of the genitalia:
    a. Scars
    b. Warts
    c. Scratch marks
    d. Varicose veins
    e. Hair distribution
2. Assess presence of any discharge or blood at the introitus, if present:
    a. Colour
    b. Consistency
    c. Smell
    d. Quantity
3. The state of the urethral meatus

Vulva toilet

1. Roll the sterile cotton wool swabs into five (5) small balls
2. Pick five (5) swabs and soak them in the galipot containing an antiseptic solution
3. With your right hand pick one soaked swab and drop it into the left hand
4. Swab the furthest labia majora from the top to the perineum
5. In the same style, swab the nearest labia majora, furthest labia minora and nearest labia minora
6. With the right hand, pick a soaked swab
7. Separate the labia minora using your left hand then swab the vestibule with the swab in the right hand from the clitoris to the fourchette
8. Drape the mother by placing the sterile towel under her buttocks and another one on the abdomen up to the hairline of the pubic area

Speculum examination

1. Lubricate the speculum blades
2. Hold speculum with blades closed between index and middle finger of the right hand
3. With the left hand, spread the labia and ask the mother to push down (this is done to relax the perineal muscles)
4. Insert the speculum so that the blades slip horizontally into the vaginal canal to avoid pressing on the sensitive urethra and clitoris
5. Be particularly careful not to catch skin and hairs with the blade or hinges of the speculum
6. Advance the speculum slowly and gentle into the direction of the cervix and open
7. Make sure the blades are placed into the anterior and posterior fornix and the cervix is well visualised
8. Tighten the thumb screw to maintain the speculum in position
9. Inspect the cervix and vaginal mucosa for lesions, discharge, openers of the cervix, protrusion through the os and any other abnormality
10. Remove the speculum by loosening of the thumb screw and using straight downward traction

Digital examination

1. Lubricate the index and middle fingers of the right hand
2. Separate the labia with two fingers of the left hand
3. Insert index and middle finger of the right hand into the vaginal canal as follows:
    a. The terminal phalange of the middle finger is inserted first and pressed against the perineal body in order to relax the introitus
    b. The index finger is then slipped in and the two straight fingers directed towards the cervix
4. Assess the following features at the cervix;
5. Dilation of the cervix
6. Degree of thinning and softness (effacement)
7. Presence or absence of membranes
8. Confirm presenting part and its state e.g. Moulding or caput
9. Direction of sutures and position of fontanels
10. Level of presenting part compared to the ischial spines

Pelvic assessment

1. Feel for sacral promontory
2. Assess curvature of sacrum by sweeping your fingers downwards towards the outlet
3. Assess the prominences of ischial spines and tip of coccyx by sliding the examining fingers along the ischial spines and coccyx
4. Measure sub-pubic angle by fitting the two examining fingers in the sub-pubic angle
5. Measure the inter-tuberous diameter by fitting the four (4) knuckles of the examining hand between the ischial tuberosities

PARTOGRAPH – MONITORING FIRST STAGE OF LABOUR

Objective

To be able to use the partograph effectively to ensure safe delivery for mother and baby
Specific abilities:

1. To identify the elements of the partograph and interpret their value, in particular:
    a. The latent and active phase area
    b. The alert line and the action line
2. To record observations accurately on the partograph
3. To interpret information recorded on a partograph
4. To recognize the need for action at the appropriate time, and decide on timely referral

Indication

A woman in labour

Requirements

Partograph (labour chart)

Procedure

General preparation of a woman coming in labour

Note: The below applies for a woman who comes in first stage of labour without danger signs and with limited discomfort. In case of danger signs, complications or much discomfort focus on essential diagnostics and take action immediately.

1. Greet and welcome the patient
2. Make the patient comfortable
3. Take history of the patient if she is new to you:
    a. Personal data
    b. History of the current pregnancy
    c. Previous obstetric history
    d. General surgical / medical history and review of systems
4. Take history of the onset of labour
5. Do the following specific physical examination:
    a. Abdominal examination of a pregnant woman
    b. Obstetric vaginal examination
    c. Observations of vital signs
6. Do the following additional investigations
    a. Urine testing: protein, acetone

Recording of the partograph

1. Use the following information obtained through history taking:

    a. Fill patient's name and other ***personal*** admission information

    b. Fill patient's obstetric details: parity, gestational age, and expected date of delivery (EDD)

    c. Record time of arrival and time of obtaining the information

2. Plot the following information obtained through abdominal examination:

    a. Strength, duration and frequency of uterine contractions:

        i. Mild (normally <20 seconds and <2 / 10 minutes) 

        ii. Moderate (20-40 seconds, 2-3 / 10 minutes) 

        iii. Strong (>40 seconds, 4-5 / 10 minutes) 

        NOTE: Contractions should be assessed for a period of ten minutes every one (1) hour during the latent (early) phase of labour and half-hourly during the active phase (once dilatation has progressed beyond 3 cm) of labour

    b. ***Descent*** of the presenting part, usually the head. Use 'O' measured in 'fifths' of the head palpated above the pelvic brim

    c. Foetal heart rate

    NOTE: Listen to the foetal heart beats using the foetoscope or Doppler ultrasound just as a contraction fades. Count the foetal heart rate for one minute every one hour during the latent phase of labour and every half hour during the active phase of labour

3. Plot the following information obtained during digital vaginal examination:

    a. The ***cervical dilation*** using 'X'

    b. The status of the ***membranes and the amniotic fluid***:
        i. Use 'I' for intact membrane
        ii. Use 'A' for absent / ruptured membranes
        iii. Use 'C' for clear amniotic fluid / liquor
        iv. Use 'M' for meconium stained liquor
        v. Use 'B' for blood stained liquor

    c. ***Moulding*** of the foetal skull bones:
        i. 'O' for no moulding
        ii. '+' for small
        iii. '++' for moderate
        iv. '+++' for severe moulding

NOTE: There is no firm basis for a hard rule on how frequently to perform an obstetric vaginal examination. The underlying ratio for determining the frequency should be: the minimal number of vaginal examinations possible to ensure safe labour by detecting signs of obstructed or otherwise problematic labour early enough. Certainly, a digital

examination should be performed on arrival (after contra-indications are excluded – see manual on vaginal obstetric examination) and when there are signs indicating second stage of labour has started.

4. Take and record the ***maternal vital signs*** four hourly (or more frequent on indication: blood pressure, temperature, pulse rate and respiration

5. Record ***input and output:***
    a. Measure and record every time woman passes urine
    b. Record each time the patient vomits
    c. Record amount of IV fluids given

6. Record drugs given

Interpretation and use of the partograph

1. When the labour progresses from the latent to the active phase of labour, transfer the plotted information using a broken line to the active phase
2. When the progress of cervical dilatation crosses the alert line on the partograph, take action according to the local situation as progress is slower than expected (e.g: consider augmentation, refer in case of no local opportunities for surgery)
3. When the progress of cervical dilatation crosses the action line, take appropriate action (e.g.: augmentation or termination of labour)

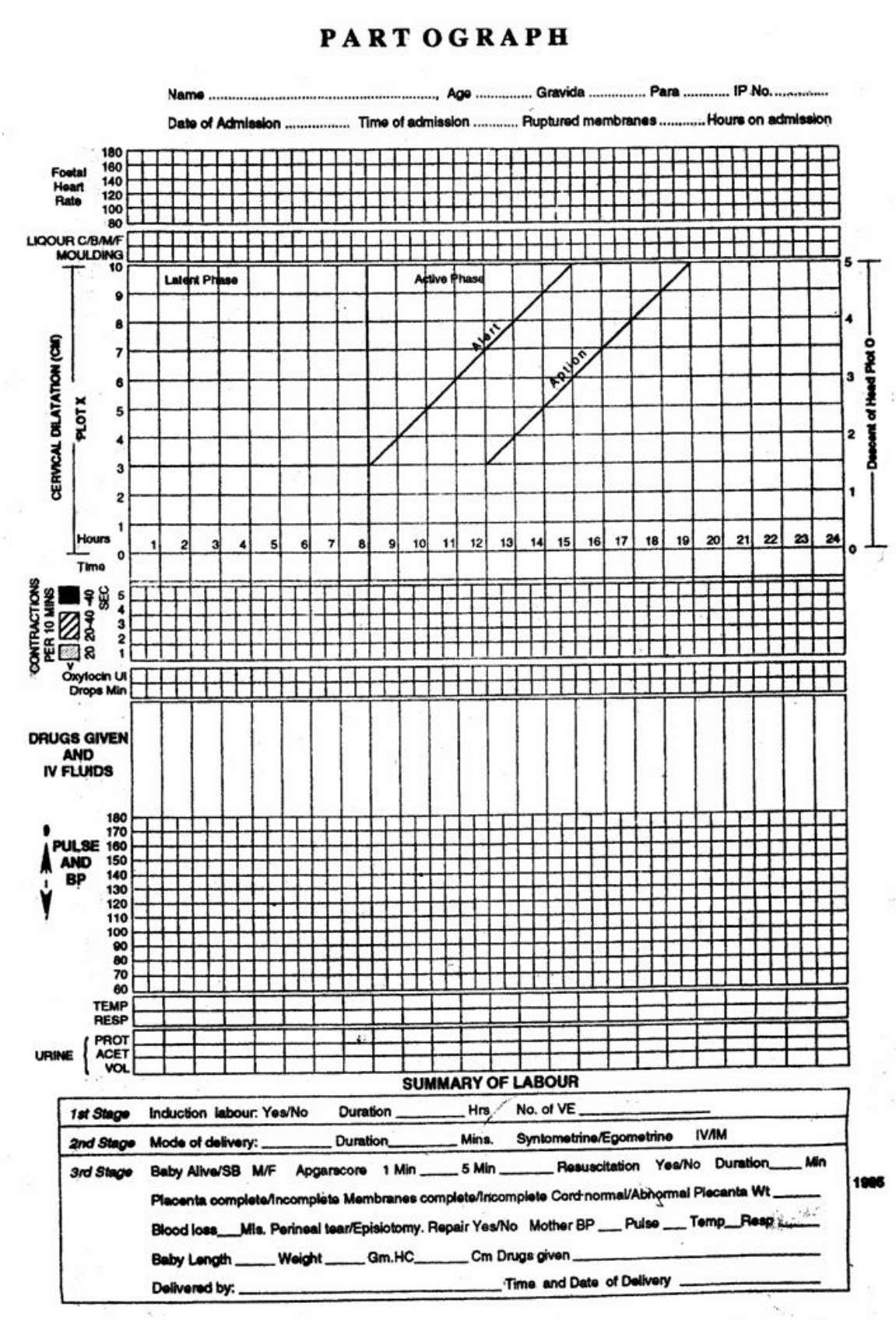


Figure 9.16: The partograph

SECOND STAGE OF LABOUR – SPONTANEOUS VAGINAL DELIVERY (SVD)

Objective
To conduct delivery with minimal trauma to both the mother and the baby

Indication
A mother in second stage of labour with a foetus in vertex presentation

Requirements

A clean trolley containing the following:	
Top shelf	Bottom shelf
1. One (1) gown 2. One (1) hand towel 3. Five (5) draping towels 4. One (1) pair of episiotomy scissors (Lister) 5. One (1) Mayo's scissors for cutting cord 6. Two (2) artery forceps 7. Two (2) perineal pads: a. 1 for supporting the perineum b. 1 for mother after the procedure 8. Two (2) medium bowls a. 1 for lotion b. 1 for baby's ligature & scissors 9. Cotton wool swabs (at least 10) 10. One (1) pair of blunt scissors for shortening the baby's cord	1. Face mask 2. Injection tray with syringes and needles i.e. 2 ml and 10 ml 3. Ergometrine / syntometrine ready drawn in a receiver 4. A file 5. Spirit swabs in a tin (container) 6. Foetoscope 7. Label/name tag for the baby 8. 1% procaine hydrochloride or 0.5% - 1% or 2% lignocaine 9. 3 pairs of sterile gloves (right size) 10. Lotion e.g. savlon 1:8 or hibitine in water 11. Extra linen 12. Disinfectant in a jug/basin e.g. Jik 1:6 for decontamination of used instrument 13. Cotton wool/gauze packs 14. Measuring jug
Accessories 1. Sucker or suction machine 2. Baby's cot / pre-warmed incubator 3. 1 bucket with Jik 1:6 for soiled linen 4. Pedal bin/bucket for dirty swabs 5. Oxygen 6. Resuscitation tray	

Procedure

Preparation
Mother
1. Explain to her what you are going to do
2. Confirm second stage of labour: full dilatation on digital vaginal examination
3. Inform her that she is ready to deliver and what to expect
4. Position her on the delivery couch

Assistant

1. Instruct the assistant on the following related to second stage of labour:
    a. Listen for the foetal heart rate after every contraction
    b. Take the maternal pulse and assess contractions
    c. Mop the mother's face and brow if necessary
    d. Give I.M. oxytocine (Syntocinon) with the birth of the anterior shoulder
2. Instruct the assistant on the immediate care of the baby after birth

Method

1. Wear apron or gown and a mask if prescribed in the health facility
2. Wash hands
3. Instruct assistant to open the pack
4. Dry hands with sterile towel
5. Put on sterile gloves
6. Arrange the top shelf
7. Ask assistant to pour lotion into the bowl
8. Instruct and position the mother in lithotomy position
9. Swab the vulva and drape the mother starting with the buttocks, furthest thigh, nearest thigh and then the abdomen
10. Remind and encourage the mother to push with every contraction
11. When the foetal head reaches the perineum, assess whether an episiotomy is required considering foetal and maternal factors
12. If necessary to control the advance of the head, place the palm of one hand on the foetal head with fingers pointing to the sinciput
13. Ask mother to breath steadily in and out and to stop pushing to reduce the speed of the delivery of the head.
14. Grasp the parietal eminences once they are born to assist in extending the head until face and chin are born, and support the perineum simultaneously with a pad
15. Quickly discard the perineal pad
16. Check for the cord around the neck. If there is a cord round the neck:
    a. Instruct the mother to breath in and out to avoid pushing
    b. If it is loose, slip it over the head
    c. If it is tight, clamp it using 2 Mayo's artery forceps at least 3 cm apart then cut in between, and release it from the neck
17. Clear the airway by wiping the nostrils and mouth with gauze
18. Wait for external rotation of the head which indicates that internal rotation of the shoulders has taken place
19. Place the palms of the hand on each side of the baby's head just above the ears
20. Ask the mother to push with the next contraction
21. Slowly and gently, push baby's head downwards to assist with delivery of the anterior shoulder until the mid-arm
22. Instruct assistant to give oxytocine with the birth of the anterior shoulder
23. Deliver the posterior shoulder then the trunk by lateral flexion
24. Note time of delivery
25. Place the baby on the couch between mother's legs, or abdomen or in her arms
26. Gently clear the airway
27. If the cord was not clamped and cut, clamp it at 3 cm and 5 cm from umbilicus and cut in between
28. Gently dry the baby
29. Show the mother the sex of the baby and congratulate her
30. Give your assistant a draping towel and instruct to cover baby with it
31. Score at one minute
32. Hand over baby to assistance for further management
33. Continue and conduct 3rd stage of labour

APGAR SCORE SYSTEM

Introduction

APGAR scoring takes place immediately after birth to assess the general condition of the baby. This manual is closely related to the manuals on Delivery of the Baby, Examination of the Newborn and the manual on Resuscitation of the Newborn.

Objective

To be able to use APGAR-score to assess the condition of a newborn, identify problems and take appropriate action

Indications

1. Routine immediate care at birth
2. Anticipated emergency of the newborn in difficult labour
3. Asphyxiated baby

Requirements

1. Flat surface
2. Stethoscope

As the immediate consequence of a low APGAR-score means resuscitation, a place in the delivery area set needs to be in place for resuscitation with all necessary equipment kept together in that place:

1. Flat surface (incubator, resuscitaire, cot, table)
2. Heat source
3. Light source
4. Clean dry cloth or gauze for wiping the baby
5. Clean dry cloth to keep the baby warm
6. Oxygen source
7. Mucus extractor of catheter
8. Suction machine
9. Second watch
10. Emergency drugs

Procedure

1. As soon as the head is born:
    a. Wipe the mouth and nostrils with sterile gauze or clean cloth
    b. Observe the colour / appearance of the face
2. As soon as the whole body is born:
    a. Dry the baby completely from head to toe with a towel / clean cloth
    b. Assess need for resuscitation, if so, take action accordingly (see manual on resuscitation of the newborn)
3. Look, listen, feel and decide the APGAR score one (1) minute after birth, again five (5) minutes after birth and again ten (10) minutes after birth if necessary.

4. Score the baby by giving it 2 points, 1 point or 0 points on each of the following five (5) signs to be tested – obviously, pulse and respiration are most important:

    a. **A: Appearance** (colour)
        i. Look at the colour of the baby's skin
    b. **P: Pulse** (heart) rate
        i. Listen to the baby's heartbeat with a stethoscope
        ii. Count the heart beats per minute
    c. **G: Grimace** (response to stimulation)
        i. Gently rub back and forth on the soles of the baby's feet with one finger
        ii. Observe the reaction on the face or
        iii. Notice the baby's reaction when you suck the mucus from the mouth and throat
    d. **A: Activity** (muscle tone)
        i. Watch the newborn move its arms and legs, or
        ii. Gently pull one arm or leg and release
        iii. Observe how the baby's arms and legs move in response to the stimulation
    e. **R: Respiration** (breathing)
        i. Look at the newborn's chest and abdomen and count the breaths in one minute
        ii. Watch the baby's cry
        iii. Observe if the baby sneezes or coughs

Sign	Score = 0	Score = 1	Score = 2
Appearance	Blue, pale	Body pink, extremities blue	Completely pink
Pulse	Absent	Slow (below 100)	Fast (above 100)
Grimace	No response	Grimace	Cough, cry
Activity	Limp	Some flexion of extremities	Active
Respiration	Absent	Slow, irregular	Good, crying

Table: Guidelines for APGAR scoring

5. Add up the points of the five signs tested
6. Record the score one minute after birth
7. Identify the need for resuscitation and take appropriate action as necessary
8. To enhance responses of the baby, stimulate gently by rubbing the back with your hand
9. If there is problem in breathing or observed mucus or meconium in the airway:
    a. Suction the baby starting with the pharynx and then the nostrils
10. Give oxygen 10 litres / minute if the score is less than 7 out of 10 points
11. Repeat the whole process of APGAR scoring five minutes after birth
12. Again, identify the need for resuscitation and take appropriate action
13. Record the score
14. Repeat the procedure of APGAR scoring 10 minutes after birth if necessary
15. Inform the doctor or transfer the baby to hospital is if the score is less than 7 out of 10 points

EXAMINATION OF THE NEWBORN

Includes

Examination from head to toe and Ortalani's test
Assessment of gestational age

Objective

The ability to carry out a systematically assessment the condition of a newborn infant
Enabling competencies:

1. Perform APGAR scoring
2. Assess gestational age of a newborn
3. Distinguish a normal newborn from a newborn with congenital abnormalities
4. Manage common newborn problems

Requirements

1. Cot/table (with mattress)
2. Sufficient lighting
3. Warm environment
4. Gloves
5. Water and soap
6. Face mask
7. Tape measure
8. Thermometer
9. Stethoscope

Procedures

Preparation

1. Wash hands
2. Put on gloves
3. Expose the body for general inspection but cover as soon as possible to keep baby warm

Method: APGAR scoring

See previous part on APGAR scoring

Method: Examination from head to toe

1. Head:
    a. Skull:
        i. Shape: caput succedaneum; moulding; cephalohaematoma
        ii. Circumference: using a tape measure take the head circumference (fronto-occipital diameter) to rule out hydrocephaly / microcephaly
        iii. Palpate the fontanels / sutures to determine whether they are fused or not
        iv. Palpate parietal bones to check for craniotabes
        v. Inspect the position of ears: normal position or low implant
        vi. Palpate the pinna for firmness

b. Eyes – inspect for
    i. Subconjunctival haemorrhages
    ii. Congenital cataract
    iii. Colour
    iv. Vision
    v. Discharge
c. Nose – inspect for
    i. Any blockage of the nostrils
    ii. Deformities:
    iii. Appearance of the nasal bridge
    iv. Septal deformity
d. Mouth – inspect for
    i. Cleft lip / cleft palate
    ii. Epstein's pearls
    iii. Micrognathia
    iv. Ranula
e. Neck:
    i. Inspect for abnormalities like webbed neck (Turners syndrome)

Hydrocephalus is caused by decreased drainage or an increased production of cerebral liquor.
Signs of hydrocephalus:

- The anterior fontanel – normally 3cm longitudinally and 2 cm transversely – progressively decreasing in size by age and closing around 18 months, is now enlarged and tense.
- The skull sutures will not close and their separation can be felt on palpation
- The circumference of the head is increased to the extent that the circumference of the head at the temporal bones is equal to or greater than the circumference of the thorax measured at the level of the nipples.
- "Setting Sun Sign": The sclerae are visible above the cornea at all times when the eyes are open

2. Skin – inspect for
    a. Inspect for:
    b. Discolouration: jaundice, pallor, cyanosis
    c. Haemangiomas (common over the nasal bridge, upper eyelids and occiput)
    d. Vernix caseosa and lanugo
    e. Milia around the nose
    f. Birth marks e.g. Mongolian spots

3. Chest:
    a. Respiratory System:
        i. Examine for breast engorgement through inspection and palpation
        ii. Auscultate for normal / abnormal breath sounds
        iii. Auscultate for presence / absence of any extra sounds like crepitations
    b. Cardiovascular System
        i. Compare the brachial and femoral pulses to determine synchrony (rule out coarctation of aorta)
        ii. Auscultate the heart sounds (1st, 2nd , any added sounds)
        iii. Count the heart rate for one minute
        iv. Auscultate for murmurs along sternal border to rule out congenital heart disease

4. Abdomen
    a. Inspect:
        i. Shape and size of the abdomen
        ii. Umbilical area for signs of inflammation
        iii. Vessels of the umbilical cord: 2 arteries & 1 vein
    b. Palpate for splenomegaly

5. Genitalia
    a. Inspect for the following in male:
        i. Presence
        ii. Foreskin
        iii. Colour of scrotum
        iv. Undescended testis
        v. Epispadias
        vi. Hypospadias
    b. Inspect for the following in female:
        i. Presence
        ii. Labia (majora / minora) abnormalities
        iii. Discharge
        iv. Vulva oedema

6. Back and in particular the spine – examine for:
    a. Spina bifida
    b. Meningomyelocel
    c. Meningocele

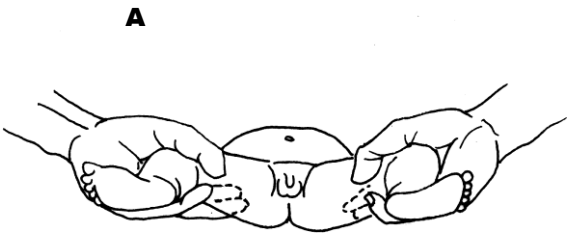
7. Anus:
    a. Inspect whether present
    b. Assess patency with a thermometer (should be inserted not more than 2 cm)

8. Limbs:
    a. Inspect fingers and toes for polydactyly and syndactyly
    b. Inspect for talipes
    c. Flex and extend the joints to confirm normal range of movement

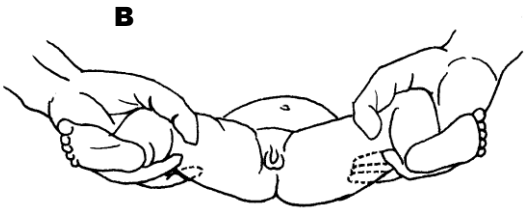
9. Hips (should be examined last):
    a. Inspect for signs of dislocation: unequal length / asymmetry
    b. Perform Ortolani's test

Ortolani's test - procedure

1. Grasp the baby's thigh with middle finger over greater trochanter and lift the thigh to bring the femoral head from the dislocated posterior position to opposite the acetabulum
2. If a palpable click is produced (indicates test is positive)



Normally the hips of a newborn can equally be flexed, abducted, and externally rotated without producing a "click"



Ortholani "click" test: in case of a congenitally dislocated hip the involved hip cannot be as far abducted as the opposite one and there is a "click" when the hip reduces

Telescoping of the femur to aid the diagnosis of congenitally dislocated hip

Figure 9.17: Ortolani's test

Method: Assessment of gestational age

Gestational age is can be estimated by determining the Parkin score. Another method, Dubowitz method, is more accurate, as it uses both neurological and external criteria, but is inappropriate in ill neonates who often have disturbed neurological function.

The Parkin score takes values from 0 to 13 and is determined by assessment of four physical features. A higher score parallels increasing gestational age – with 0 indicating approximately 26 weeks, 10 indicating 40 weeks, and 12/13 indicating 42 weeks.

Parkin score	
Skin texture Test by inspection and by picking up a fold of abdominal skin between the 2nd finger and thumb: 0 = Very thin and with a gelatinous feel 1 = Smooth and thin 2= Smooth, medium thickness, irritation rash, and superficial peeling may be present 3 = Slight thickening and stiff feeling, superficial cracking, and peeling especially on hands and feet 4 = Thick and parchment-like with superficial or deep cracking	**Ear firmness** Test by palpation and folding of the upper pinna: 0 = Pinna soft and easily folded into bizarre positions, does not recoil spontaneously 1 = Pinna soft along the edge and easily folded. Recoils slowly spontaneously 2= Cartilage felt to edge of pinna, though thin in places. Pinna recoils readily 3 = Firm pinna with definite cartilage extending to periphery, recoils immediately
Skin colour Estimate by inspection when the baby is calm: 0 = Dark red 1 = Uniformly pink 2 = Pale pink, though colour may vary to very pale over some parts of the body 3 = Pale, nowhere really pink except ears, lips, palms, and soles	**Breast size** Measure by picking up breast between fingers and thumb: 0 = No breast tissue palpable 1 = Breast nodule palpable on both sides 2 = Nodule palpable on both sides, one or both being 0.5-1.0 cm in diameter 3 = Nodules palpable on both sides, one or both being greater than 1 cm diameter

Eliciting primitive reflexes

Moro Reflex

1. Let the baby rest on a flat table
2. Support infant's trunk and head in supine position with the neck slightly flexed (use your palms and fingers)
3. Quickly but gently extend the neck by releasing the head from your fingers

Response of the infant:

1. Cries
2. Throws arms outwards and laterally with fingers extended
3. Then arms and fingers are flexed

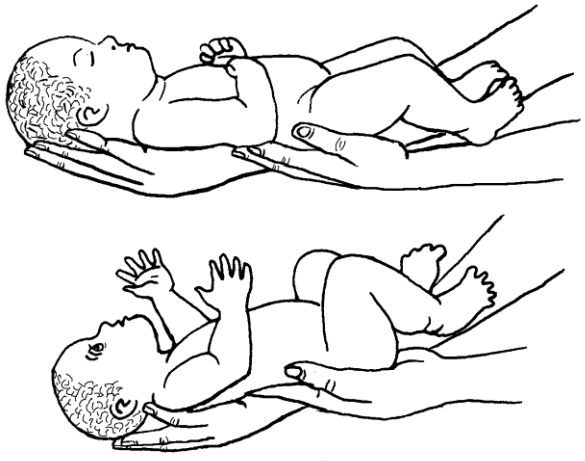


Figure 9.18: Moro reflex

Bilateral failure of response may indicate nervous system abnormality.

Unilateral response failure may suggest Erb's palsy, or a fractured clavicle or humerus

Rooting Reflex

1. Put child on flat surface in a supine position
2. Touch the cheek using a finger or tip of nipple (one side of cheek only)

Response of the infant:

3. Head turns towards the side of the check touched, the mouth opens and the tongue protrudes

Swallowing / sucking reflexes

1. Put the mother's nipple or finger in the child's mouth

Response of the infant:

2. Sucking commences automatically in normal cases

Palmar grasp /plantar grasp reflexes

1. Place any object on the newborns palm or plantar surface of the foot.

Response of the infant:

2. Any object placed on newborns palm on plantar surface of the foot is held tightly.
3. Fisting is an exaggerated grasp reflex due to cerebral irritation.

Stepping reflex

1. Put the child upright with the feet touching edge of a table

Response:

2. The child automatically moves the foot on top of table.

THIRD STAGE OF LABOUR – DELIVERY OF THE PLACENTA

Introduction
The placenta should be delivered within 5–30 minutes after delivery of the baby. Always check for signs of placental separation and descend such as vaginal gush of blood, increased uterine contractions, rise of the uterine fundus and lengthening of the cord.

Objective
To be able to conduct delivery of the placenta and its membranes

Indication
Mother in third stage of labour

Requirements
1. Kidney dish
2. Measuring jar
3. Sterile gauze
4. Forceps

Procedure
1. Explain the procedure to the mother
2. Place the kidney dish under the vagina (fix under the buttocks) to collect blood
3. Check for signs of separation of the placenta
4. Check whether the placenta is in the vagina using 1st and 2nd finger of your right hand
5. When the placenta has separated, conduct controlled cord traction to deliver it:
    a. Roll cord and clamp with a Mayo's forceps (you can use the one used during second stage to clamp the cord) close to the perineum
    b. Grasp the cord firmly and gently apply a downward and outward traction while supporting the uterus with the palm at the symphysis pubis to prevent inversion of the uterus
    c. Keep slight tension on the cord and await a strong uterine contraction (2-3 minutes)
6. When placenta appears in the vulva receive it with both hands.
    a. Twist it to assist in delivery of membranes (this can also be aided by asking the mother to cough).
    b. Slowly pull the membranes to complete delivery
7. Place the placenta in the receiver.
    a. Look carefully at the placenta to be sure none of its lobes is missing (see also Examination of the placenta)
8. Massage the uterus and expel clots by applying some pressure over the fundus and squeeze
9. Ensure uterus is well contracted.

Method: Assess for tears and lacerations of the birth canal
1. Explain to the mother that you want to examine the birth canal for tears and lacerations.

2. Wrap dry sterile gauze round the examining fingers index and middle fingers of your right hand.
3. Separate the labia with fingers of your left hand.
4. Gently insert the two fingers wrapped with gauze swabs straight to the cervix examine the cervix carefully. Making sure that the posterior wall is visualized.
5. Examine the lateral walls of the vagina then vulva and perineum paying particular attention to the area around the clitoris
6. If any tear or episiotomy present, suture as soon as possible or pack with dry gauze swabs to prevent bleeding while waiting for suturing

Method: Leaving the mother after completing the delivery

1. Leave the mother comfortable:
    a. Clean the vulva
    b. Fold the perineal pad into two with the side to be next to the skin uppermost
    c. Place the pad on the vulva with tapes (ends) away from perineum.
    d. Put the mother's legs together and ask her to lie on the side facing away from you
    e. Swab the perineum and anal region towards the anus then dry the area.
    f. Holding the folded pad with at one end bring it down to cover perineum and anus
    g. Clean and dry the buttocks
    h. Change soiled linen
2. Check whether uterus is well contracted
3. Prepare to examine the placenta
4. Advice the mother to report in case of excess bleeding and to remain in bed for one hour

EXAMINATION OF THE PLACENTA

Objective

1. To confirm completeness of the placenta and membranes
2. To detect any abnormalities
3. To assess blood loss

Requirements

1. Flat surface
2. Measuring jug
3. Weighing scale
4. Polythene paper
5. The placenta

Procedure

1. Separate blood loss from the placenta
2. Pour blood into measuring jug
3. Allow the jug to rest on a flat surface
4. Examine placenta and membranes as follows:
5. Hold placenta by the cord and check for completeness of membranes.
6. Place placenta on a flat surface.
7. Check for blood vessels in the umbilical cord (1 vein and 2 arteries)
8. Measure length of the cord
9. Examine for thickness, distribution of Wharton's jelly, true and false knots.
10. Examine foetal surface for colour, insertion of cord and distribution of blood vessels
11. Turn placenta so that the maternal surface faces upwards
12. Inspect for blood vessels running into the membranes beyond the placental edge
13. Separate amnion from chorion to confirm presence of both membranes
14. Examine the maternal surface for:
    a. Completeness of the robes (whether they are fitting together)
    b. Colour
    c. Oedema
    d. Infarcts
    e. Thickness
15. Measure blood loss to include estimates in soiled linen and swabs
16. Place the placenta in a polythene paper and weigh.
17. Clean the equipment and discard the placenta.
18. Record findings

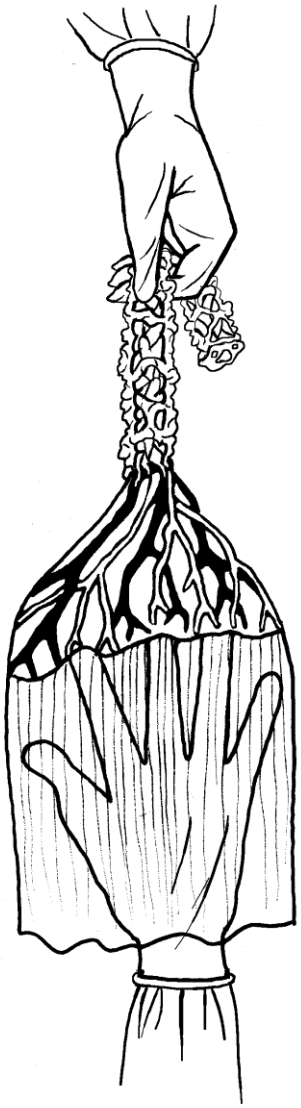


Figure 9.19: The placenta

PERFORMING EPISIOTOMY

Objective
To enlarge the vaginal orifice to facilitate delivery of the baby

Indication
1. Premature delivery
2. Big baby
3. Breech presentation
4. Persistent Occipital Posterior Position (POPP)
5. Vacuum extraction/forceps delivery
6. Third degree tear of the anal sphincter in previous delivery
7. Rigid perineum

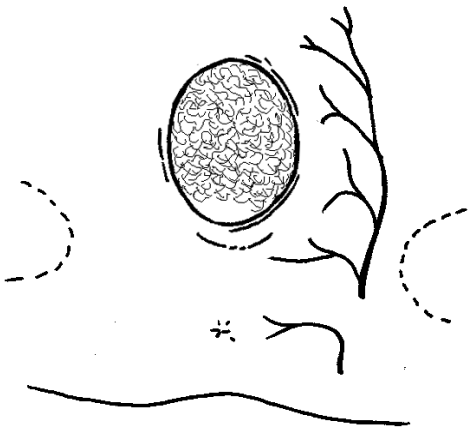


Figure 9.20: Innervation of the vulval area and perineum (innervation similar on right side)

Contra-indication
HIV-positive mother (partial contra-indication)

Requirements
1. Provided for in the delivery trolley
2. Episiotomy scissors
3. Syringe and needle
4. Local anaesthesia

Procedure
1. Explain the need for the procedure to the mother
2. Withdraw 10mls of 0.5% or 5 ml of 1% or 2.5mls of 2% lidocaine solutions;
3. Insert two (2) fingers into the vagina along the medio-lateral position (recommended site of incision) between the baby's head and the perineum to protect the head from the needle prick;
4. Infiltrate into the perineal muscles, after aspirating to be sure that no blood vessel has been penetrated (as per injection procedure): as you redirect the needle
5. Massage the infiltration site to enhance absorption of drug
6. Perform the episiotomy when the perineum is stretched and thinned out, and at a height of a contraction when the baby's head is visible at the vulva, to reduce the risk of excessive bleeding

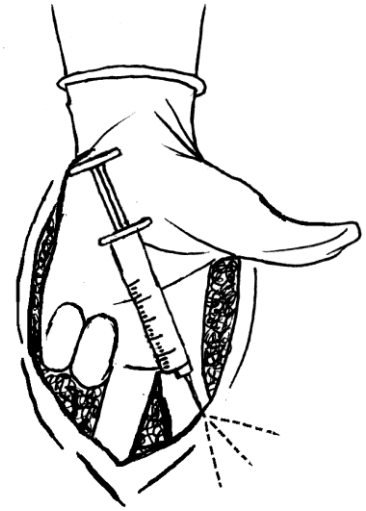


Figure 9.21: Infiltration for episiotomy

7. To perform an episiotomy, insert 2 fingers into the vagina to protect foetal head as for infiltration
8. Position the episiotomy scissors between these two fingers and the infiltrated area then wait for a contraction;
9. At the height of a contraction, making a single straight cut of about 3-4 cm incision in the mid-lateral direction
10. Proceed to deliver the baby's head

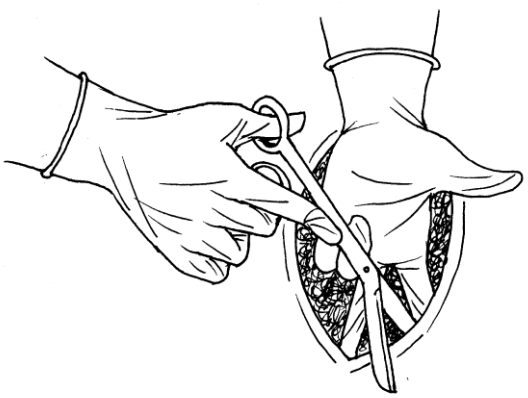


Figure 9.22: Performing an episiotomy

SUTURING OF PERINEAL TEARS / EPISIOTOMY

Objective
To be able to repair an episiotomy and perineal tears

Indications
Mother with an episiotomy or a perineal tear of a size which requires suturing

Requirements
A clean trolley containing the following:

1. Top shelf
    a. Suture pack containing the following:
        i. 2 sterile towels or 1 sterile towel with hole in the middle
        ii. Kidney dish with:
            1. Needle holder
            2. Dissecting forceps
            3. Straight scissors
        iii. Galipot with sterile cotton wool swabs
        iv. Vaginal pack
        v. Sterile gauze swabs
        vi. Sterile perineal pad
2. Bottom of shelf of trolley
    a. Lidocaine 0.5% or 1% or 2%
    b. 5 – 10 ml syringe
    c. 2 needles gauge 21
    d. Cat gut 2/0 or 1/0
    e. A pair of sterile gloves
    f. Gown or mackintosh
    g. Aseptic lotion: 1% Savlon or hibitane
    h. Receiver for used needles
3. Accessories
    a. Portable light/lamp

Procedure

Preparation

Mother

1. Explain the procedure to the mother and obtain consent
2. Assist her to lie in the lithotomy position with legs supported by stirrups

Equipment

1. Ensure presence of clean trolley set with the requirements stated above.

Environment

1. Place the receiver next to the couch
2. Wheel the trolley next to the couch
3. Position the portable light

Method

1. Wear mackintosh (and face masks if institutional guidelines prescribe)
2. Wash hands and put on sterile gloves
3. Ask the assistant to open the top flap of pack
4. Complete opening the pack and arrange the equipment
5. Ask the assistant to open and drop the syringe and needle on the sterile field.
6. Withdraw lidocaine (10ml of 0.5% or 5ml of 1% or 2.5ml of 2%)
7. Swab the vulva
8. Drape with a dressing towel with a hole in the middle
9. Insert the vaginal pack or known number of dry gauze swabs
10. Identify the depth of the incision / tear
11. Rule out a third degree tear of the anal sphincter (if present: refer)
12. Infiltrate, avoiding injecting the drug into the blood vessel (as for injection procedure)
13. Suture the incision in layers depending on depth of incision / tear
14. Start the repair about 1 cm above the apex of the incision / tear
15. Continue the suture to the level of the vaginal opening
16. Bring the vaginal edges together, then bring the needle under the vaginal opening and out through the incision and tie
17. Close / suture the perineal muscles using continuous (uninterrupted stitch) using 2.0 suture
18. Close the skin using interrupted stitch with 2,0 suture
19. Inspect and clean the wound
20. Remove the vaginal pack or the gauze swabs (confirm the number)
21. Insert a finger into the rectum (rectal examination) and check that you did not stitch too deep with your stitches penetrating the rectal mucosa:
    a. In case you feel the suture in the rectum: remove the suture and start afresh
22. Place a sterile perineal pad
23. Leave the mother comfortable

YEAR 3

Diploma in Clinical Medicine & Surgery (DCMS) Course

CHAPTER 10: ADVANCED COMMUNICATION SKILLS

Annex to CMS 341: Community Health III

- **Health Education**
- **Basics of Counselling Skills**
- **Communicating Bad News**

HEALTH EDUCATION

Introduction to Health Education

Health education is that component of health and medical programs which consists of planned attempts to change individual, groups and community behaviour with an objective of helping them to achieve curative, rehabilitative, disease prevention and health promotion. In other words, health education is that part of health care that is concerned with the promotion of healthy behavioural practices.

Who can conduct health education?

1. It can be conducted by anybody.
2. Health workers.
3. Teachers
4. Community health workers (CHW)
5. Community leaders e.g. Chiefs, District Commissioners (DC), District Officers (DO) Local Members of Parliament

Box: Health education can be done by everybody

Goals of Health Education

1. Achieve quality health
2. Reduce mortality (deaths) and morbidity (illness)
3. Reduce workload at health institutions
4. Reduce budgetary expenses of the Ministry of Health.

Means (channels) of carrying out health education

1. Print
2. Electronic Media
3. Audio Visual

Box: Channels for health education

Objective

The ability to educate and assist individuals and family to identify and meet their health needs by using available resources.

Specific Objectives of Health Education

1. Involve individuals in primary preventive and promotive health care in order to make them feel more responsible for their own health.
2. Create awareness about available health services.

Procedure: Sharing Messages

1. Start by welcoming the client and introducing yourself
2. Create a conducive environment, removing communication barriers as much as possible
3. Identify the problem / need that has to be addressed
4. Assess the client's (or clients) knowledge about his / her problem
5. Base your health education on the existing knowledge of the client
6. The health message should be:
    a. Timely
    b. Meaningful / relevant
    c. Acceptable (personally, socially and culturally)
    d. Easily understandable (practical, common language, brief – not exceeding 15 minutes)
    e. Applicable to the situation (technically correct) relevant
    f. Brought positively
7. Stimulate participation by asking open-ended questions
8. Use teaching aids effectively and appropriately
9. Allow time for questions from the client(s)
10. Summarize the main points
11. Evaluate understanding of the message and acceptance
12. Give appointment for follow up (when applicable)
13. Thank the client

Exercises on Health Education

Exercise 1: Nutrition

This exercise requires two (2) students:
Student 1: Will act the role of a parent
Student 2: Will act the role of a health worker

Student 1

Imagine you are a parent of a two-year-old child who is grossly underweight and sickly and this situation is worrying you. You have come to a Health institution to seek professional advice, which can help alleviate your child's condition. You have often wondered why your child appears smaller than children of his/her age, and why he/she delayed in walking despite being fed very well on ugali and occasionally beans

Student 2

Imagine you are a health worker in an MCH/FP clinic where you provide a variety of health services, among them; health education. The above parent presents the condition of his/her child to you. After taking history and weighing the child, you realize that, this is a case of malnutrition and you make a point of sharing health messages on the following;

1. Balanced diet
2. Feeding pattern
3. Follow up in an MCH clinic and monthly growth monitoring

Exercise 2 : Personal Hygiene

This exercise requires two (2) students:
Student 1: Will act the role of a parent
Student 2: Will act the role of a Health worker.

Student 1
Imagine you are a parent of a two-year-old child, who is suffering from scabies and you have taken your child to a health institution for medical assistance.

Student 2
Imagine you are a Health worker at an out patient clinic where you provide curative, promotive and preventive care. While you are at the clinic the above parent comes in with a child seeking medical attention .You treat the condition and before sending the parent home, you decide to share health messages with the parent so that the child's scabies does not recur.

Exercise 3: Post Operative Care

This exercise requires two (2) students:
Student 1: Will act the role of a post-operative patient
Student 2: Will act the role of a nurse/clinician

Student 1
You have come from theatre following a laparotomy and you are fully conscious. After a small nap, you wake up feeling very thirsty and you ask the nurse/clinician to give you some water to drink. The nurse/clinician declines and instead goes ahead to explain why.

Student 2
You are the nurse mentioned above. Explain to your patient the importance of not taking anything orally immediately after theatre.

Exercise 4: Antenatal Care

This exercise requires two (2) students:
Student 1: Will act the role of an antenatal mother
Student 2: Will act the role of a Health worker

Student 1
Imagine you are a mother of tree and expecting the fourth child. You are now in your eighth month (32) weeks, and because you would like to deliver in hospital, you decide to go to the antenatal clinic for the first time.

Student 2
Imagine you are working in clinic X, when the above client visits. As you take history you realize that she is coming for the first time, and take it upon yourself to advice her on the importance of antenatal care.

Exercise 5: Newborn Care

This exercise requires two (2) students:
Student 1: Will act the role of a postnatal mother
Student 2: Will act the role of a Health worker

Student 1
Imagine you have just been discharged from a postnatal ward after having delivered your first born; a bouncing baby boy. You have been advised to wait and share health messages on baby care.

Student 2
Imagine you have just completed around with a doctor where some patients have been discharged and among them is the patient above. Who is waiting to be advised on one of the following topics:

i. Feeding of the baby,
ii. Care of the cord,
iii. Maintaining warmth for the baby,
iv. Immunization.

Main area	Steps
Initiating the session	1. Welcomes the patient / client & introduces oneself 2. Summarizes to date 3. Determines expectations 4. Determines and prioritizes problem / need 5. Sets the agenda, time available 6. Assesses the patient's starting point: prior knowledge and the extent of the client's wish for information
The process of giving information	7. Gives information in dosed chunks 8. Checks for understanding and uses patient's response as a guide on how to proceed 9. Gives a message which is timely, meaningful, acceptable and applicable to the situation 10. Shares own thoughts, ideas, thought processes and dilemma's 11. Involves patient by making suggestions rather than being directive or judgmental 12. Encourages the patient to contribute ideas, suggestions, preferences, beliefs 13. Negotiates a mutually acceptable plan
Closing the session	14. Summarizes main points 15. Contracts with patient / client for next steps 16. Closes the session and thanks the patient / client
Core communication skills in health education (principles)	
Create a conducive atmosphere	
Organize explanation	1. Divides into discrete sections in a logical sequence 2. Uses explicit categorization or signposting (eg: "There are three important things that I would like to discuss… first,… now we shall move on to…"
Reinforcing the message	3. Uses repetition and summarizing to reinforce information 4. Uses concise, easily understood statements, avoids or explains jargon 5. Uses visual methods of conveying information: diagrams, models, written information and instruments
Relates information to the client / patient	6. Relates explanation to patient's illness framework – previously elicited beliefs, concerns, expectations 7. Picks up verbal & non-verbal cues, e.g. patient's need to contribute information or ask questions; information overload; distress 8. Provides opportunities / encourages patient to contribute – to ask questions, seek clarification or express doubt 9. Checks patient's understanding of the given information and plans made, e.g. by asking patient to restate in own words; clarifies as necessary 10. Checks patients acceptance

BASICS OF COUNSELLING SKILLS

Introduction to counselling

Definition of Counselling:
Counselling is a helping relationship between a trained counsellor and a client. In counselling trust between the patient and the counsellor and the skills of the counsellor help the client to understand his/her problems better and help him / her in deciding how to address those problems.

Counselling is face- to face communication and its outcome greatly depends upon the quality of the counselling relationship.

Communication forms the basis of counselling!

The counselling relationship is characterised by the following three qualities:
1. Unconditional positive regard : respect / warmth / acceptance
2. Genuineness: real / sincere/ congruent
3. Empathy: understanding the feelings of the client through listening to and communication with the client (note: it is not the same as sympathy)

The aim of a basic counselling session is to identify and clarify problems, both for the client and the health worker. Together they try to break down the problems into different components to improve insight of the client in his / her problems and to enable the client to find ways of solving them.

SOLER Skills

Sitting squarely, facing another person
Open posture
Leaning forward
Eye contact
Relax, be natural

Box: Components of good listening behaviour

Listening blocks
1. Directing and leading
2. Judging and evaluating
3. Blaming
4. Moralizing, preaching and patronizing
5. Reassuring and humouring
6. Not accepting client's feelings
7. Interrogating
8. Over-interpreting
9. Inappropriately self-disclosing
10. Faking attention
11. Putting time pressures on clients

Box: Qualities which block good listening behaviour

Objective

The ability to implement basic counselling skills in management of patients or client

Indications

- Family planning
- Pre- and post test counselling for HIV

Basic Elements of the Counselling Procedure

1. Establish rapport and trust:
    a. Ensure a good counselling environment:
        i. Quiet
        ii. Private
    b. Be welcoming the client – demonstrate unconditional positive regard and genuineness
    c. Discuss confidentiality and shared confidentiality
2. Be a *good listener*, show your attention to the patient in your non-verbal:
    a. Sit squarely, facing the other person
    b. Have an open posture
    c. Lean forward
    d. Maintain eye contact
    e. Relax, be natural
3. Demonstrate *active* listening:
    a. Listen to and make sure you understand the patient's verbal messages
        i. Use paraphrasing and summarizing skills
        ii. Use open-ended questioning techniques to clarify
    b. Observe and make sure you understand the patient's non-verbal behaviour
        i. Give feedback on the non-verbal you observe
        ii. Explore feelings (open-ended questioning; probing)
4. Demonstrate respect for the patient throughout the session
5. Use your voice appropriately with regard to volume, articulation, pitch, emphasis and rate

As you might have noticed, these basics of counselling are mainly about appropriate use of the basic communication skills with a focus on:

- Establishing good rapport
- Exploration of problems and feelings

VOICE MESSAGES

Volume
Articulation
Pitch
Emphasis
Rate

Box: Voice Messages

Exercises Basic Counselling Skills

Exercise 1: Paraphrasing

Exercise to learn to summarize in your own words the most important the other person tells you.
Make pairs and person A tells an own experience to person B.
Person B shows an active listening attitude to person A (Focus on: SOLER, summarizing, asking for feedback on the summary)
The summary should be short and in other words than used by person A.
Discussion: Was Person B really listening, how did you realise that? Was the summary reflecting the content of the story?

Exercise 2: Paraphrasing

Paraphrase the content of each of the following statements into clear and simple language. Use you or your where the speaker uses I, me or my. There is no single correct answer.

Example: I'm always getting hassled by my boss. / You're continually getting pressured by your employer.

Paraphrase the following statements:
1. I can't stand it when she ignores me
2. I get fed up working with that lazy bastard.
3. I'd like to give up drinking so much
4. I've always been shy in social situations
5. I don't perform to the best of my ability

Exercise 3: Assertiveness: talking in the "I-format"

Aim:
When you communicate with a client it is important to talk assertively. This also means you learn to say what you yourself think or feel. You need to talk about what you think or feel. The appropriate way to do so, is using the "I-format". Sometimes it can be very difficult to give your opinion about the other and to start your sentences in the I-form.

Exercise:
Make pairs. Sit opposite to each other. Alternating you make a remark about the other. If you talk your sentence should start with "I….". The others observe and give comment if the rule is not followed.

Discussion:
Discuss afterwards how it was to make remarks about the other in this way and how it was to get remarks like that.
Was it easy? If not, why?

Exercise 4: Reflection of feelings

Aim:
Empathising with the other. Describe how you think the other feels of felt and find out if what you thought was true.

Exercise:
Make pairs. Person A tells an own experience which evoked a strong positive or negative feeling.
Person B shows an active listening attitude (SOLER, summarise in own words the feelings of person A and find out if you are right).
Discussion:

Was person B really listening and how did you realise that? Was the description of the feeling of person A right?

Exercise 5: Reflection of feelings

Statements:
1. I find being without a job depressing. I'm so anxious about my future.
2. I've always envied women who manage to stay slim. I worry a lot about my weight
3. I was sexually abused by my father when I was nine. I've never forgiven him for betraying my trust and I'm still angry.
4. I hate it when my parents argue. I'm afraid the family is going to split up and I don't want that to happen.

Exercise: Give in your own words a reflection of the feelings.

Discuss the reflections in the group.

Other exercises

1. Discuss differences and similarities between counselling and helping in assisting a patient.

2. When available: discuss the video "5 IDEAS Videos" (Kenya/Belgian STI Control Project)

3. Role play with colleague students with feedback from the group.

The Full Counselling Process

Counselling is basically a problem solving process involving many decisions and actions. Heppner (1978) came up with a general model with the following steps:

Step 1: State concern and establish a need for help
Step 2: Establish the relationship
Step 3: Determine goals and explores alternatives
Step 4: Work on problems and goals
Step 5: Facilitate awareness
Step 6: Plan a course for action
Step 7: Evaluate outcomes and terminate the process. Prevent severe adjustment problems and support for situational pressures arising in the everyday lives of normal people.

NOTE: Steps 1 – 5 deals with exploration
Step 6 – 7 are concerned with action.

Counselling commits counselees to change. This is generally frightening to clients as change means giving up something dear – a comfortable habit. To let something cherished go can be painful and can initiate some kind of mourning process.

Who are the recipients of counselling?
1. Self-referred clients
2. Clients referred by others
3. Clients invited by counsellors
4. Clients referred by friends, teachers, parents, principal, etc.

The qualities a counsellor should have and the ones to be avoided	
The "do's" of counsellor	**The "don'ts" of a counsellor**
Respect and accept the client	Reject, ignore, ridicule or embarrass the client
Develop an empathic relation	Involve into an intimate / lovers relationship or be a father / protective figure to the client
Analyse alternative behaviour patterns (change) with the client and let the client make his / her own choice	Force clients to do things they do not want to do
Facilitate expression of views and values of the client and helps to clarify them	Express own views and values to the client
Keep appointments as agreed in time and place. Give the patient time to express within the given time	Hurry clients or interrupt them bluntly
Be honest: Admit when unable to solve a problem and refer; admit when a mistake was made	Be dishonest
Adjust communication level to that of the client	Use medical jargon
Keep confidentiality as much as ethical code prescribes	Break confidentiality

Table: The do's and don'ts of a counsellor

The counselling procedure

Preparation of a conducive counselling environment

(See also basic counselling procedure: establish rapport and trust)

1. Free from strangers walking in and out, free from noise
2. Conducive seating arrangement to allow client's comfort.
3. The counsellor and client face each other without barriers in between like large office tables
4. If possible provide a cup of tea during conversation
5. Use a small note book to note down only points to be elaborated later
6. Displays a counsellor's desired ethical behaviour and characteristics (genuine and with a positive attitude towards the client)
7. Discuss confidentiality and shared confidentiality

Method: the counselling procedure

1. The conditions of the counselling relationship are made clear to the client
2. The counsellor goes through the process of exploration with the client to form an impression of the issue at hand (using techniques like: open-ended questions, paraphrasing, non-interference when the client is talking)
3. The client explains his problems
4. The counsellor listens attentively and demonstrates empathy
5. The counsellor picks up non-verbal communication cues from the client
6. When necessary the counsellor clarifies, interprets or asks any question from the client
7. The counsellor reflects on the client's feelings after interpretation of the issues discussed to allow the client to "see" whether the counsellor has understood him / her well
8. Use transitional statements when changing from one areas of enquiry to another and, when applicable, thank the patient tactfully for sharing information
9. The counsellor and the client set their goals and explore ways to achieve those goals
10. A plan of action is agreed between the counsellor and the client (referring to what the patient can do before the next meeting), also attending potential adjustment problems and support
11. The counsellor summarizes the discussion and evaluates the outcome
12. The next appointment is made – date and time
13. After the client departs the counsellor writes a summary of the interview

Techniques to show acceptance during an interview or counselling session

1. Demonstrated in the non-verbal behaviour of the counsellor, SOLER, expresses acceptance and caring (in particular eye contact, facial expression, nodding, sitting closely)
2. Utterances of the counsellor, like “hmm hmm”, “Yes, go on”
3. Voice messages (tone, pitch, rate etc.) focussed on encouraging the client
4. Non interference or interruption of the client is narrating about emotional issues

Closing the counselling session

Time for interviews and sessions is always limited. Plan the available time with the client – both for the session and in planning of subsequent interviews/interactions in the action plan.

1. Refer to the time limit – remind the client that the available time is nearing its end
2. Summarize the essential elements of the session or ask client to state what was accomplished
3. Refer to the future: Indicate the counsellor wish to maintain the relationship if need be
4. Gestures can be used to indicate non-verbally that the session is over:
    a. Standing up
    b. Other subtle gestures – but ensure not to show irritation
5. Homework – as per plan of action or in general ask the client to think about issues and questions that arose during the conversation

Counselling skills in pre-and post test HIV-counselling

Benefits of testing for HIV

For seronegative individuals

1. Reassurance and reduction of anxiety
2. Motivation for behaviour change to prevent infection
3. Get information to base decisions with a relation to marriage:
    - Sexual Relationship
    - Child bearing
    - Breast feeding
    - Immunization to infants
4. Assisting in finding an alternative medical diagnosis for unexplained symptoms

For symptom-free persons with seropositive results

1. Closer medical follow-up
2. Treatment for other infectious diseases or for prophylaxis measures.
3. Protection of sexual partners.
4. Information as base for decisions about marriage, breastfeeding, future births and sexual relationships.

For the society

1. Reduction of the number of new HIV infections
2. Research use in experimental protocol – by studying natural history of HIV infection (incidence and prevalence of infection)
3. Assistance to health providers and planners in designing programmes to meet the HIV related needs of the Community and Provision of treatment and services.
4. Decrease of the economic costs to society of HIV/AIDS.

AIDS:	Acquired Immuno-Deficiency Syndrome
HIV:	Human Immunodeficiency Virus
STI or STD:	Sexually Transmitted Infection or Disease
MTCT:	Maternal To Child Transmission
VCT:	Voluntary Counselling Test

Box: Abbreviations

Cautions when testing for HIV-antibodies

1. False negative results:
    a. In the first 3 months the test might be false negative due to recent HIV infection which has not yet resulted in development of antibodies. A false negative test might result in a false sense of security and in unfortunate cases even encourage continuation of high risk behaviours and infection of others.
2. Seropositive test results:
    a. Possibility of false-positive results giving a lot of stress
    b. Discrimination and ostracism by health care professionals, resulting in medically inappropriate procedures
    c. Severe stress reaction: anxiety, depression, sleep disturbances and suicidal behaviour
    d. Disrupted interpersonal relationship
    e. Sexual dysfunction
    f. Stigmatization by society inclusive of exposure to hatred and violence.

In any HIV antibody testing programme every effort must be made to maximize the benefits and minimize the harm to persons tested. Comprehensive pre-test and post-test counselling can help achieve this goal.

Procedure of Pre–Test Counselling

HIV counselling should be culturally, competent, sensitive to issues of sexual identity, developmentally appropriate and linguistically relevant.

Follow the normal counselling procedure but to include the following elements:

1. Explore the risk assessment of the client
    a. Analysis of reasons for seeking testing
    b. Discuss clients assessment of risk behaviour
2. Discuss the meaning and implications of the HIV test:
    a. Review of what both positive and negative test results mean and do not mean
    b. Review possibility of false - positive and false – negative results.
3. Assure client of confidentiality
4. Provide general information on the virus and AIDS
5. Discuss methods of risk reduction:
    a. Safer sexual practices e.g. abstinence
    b. Provision and use of condoms
6. Give general health information on issues related to HIV-infection: diet, rest, exercises, alcohol, smoking, STIs, opportunistic infections
7. Give information on pregnancy (MTCT), breastfeeding, and immunization for infants if appropriate
8. Discuss psychological and emotional reactions to test results
9. Review potential interpersonal and social reactions to test results

10. Provide information on medical, social and psychiatric resources and plans for follow–up
11. Review of the risks and benefits of testing
12. Investigate client's coping history and guide on future strategies:
    a. Discuss notifying partners
    b. Investigate and assist with developing / finding support systems
13. Assist with reading and writing an informed consent for the test

Procedure of Post-Test Counselling

A comprehensive Pre-test counselling is essential for a satisfying flow of post-test counselling. It should have set the ground for continued counselling in a potentially more stressing situation if test-results are positive and it has created time for clients to reflect even if the results are negative. Ideally, the issues discussed during post-test counselling should also be given in a written format so that the client can review them later.

Post-test counselling with seronegative test results

1. Ensure confidentiality
2. Give results
3. Interpretation of the test result
4. Advice on HIV re-testing after 3 months (to cover the "window period")
5. Educate on how to maintain the seronegative status - risk reduction:
    a. Information on safer sex and drug use practices
    b. Provision of condoms
6. General information on healthy lifestyle practices
7. Information of alternative test sites for partners
8. Follow up:
    a. Further post test counselling
    b. Referral to psychological, social medical and rehabilitation programmes when applicable

Post-test counselling with seropositive test results in symptom-free persons

1. When necessary, review any issues discussed during pre-test counselling
2. Correct any information misunderstood e.g. difference between HIV and AIDS
3. Assess readiness to receive results
4. Give the news
5. Give emotional support
6. Interpretation of results (especially the difference between HIV-infection and AIDS)
7. Give information on the following:
    a. Opportunistic infections
    b. Transmission, safer sex and prevention of re-infection.
    c. Diet – healthy & balanced
    d. When applicable: MTCT – breastfeeding and delivery mode:
        i. Drugs currently available for prevention of MTCT transmission
8. Discuss coping strategies
9. Discuss the disclosure of the HIV-status
10. Discuss follow up for partners and children
11. Refer to support groups, persons living with AIDS (PLWAs)
12. Rule out suicidal tendencies
13. Reconfirmation of test results on a second specimen
14. Give alternative test sites when requested
15. Organize follow-up as applicable:
    a. Follow up counselling
    b. Early intervention programme (medical follow up, anti-retrovirals)

Voluntary Counselling and Testing (VCT)

The main aim of VCT is to influence towards a positive behaviour change of those infected and affected. VCT involves provision of gaps of HIV/AIDS information which the client does not know, pre-test counselling, HIV antibody test on informed choice and post-test counselling.

Elements of VCT

1. Testing is done in the same day of pre-test counselling
2. Qualities of a VCT counsellor exercised
3. Meaning of negative or positive results
4. Implications of testing
5. Risk behaviour assessment
6. Risk prevention
7. Coping strategies
8. Consent form is filled before testing

COMMUNICATING BAD NEWS

Introduction

Communicating bad news is an essential skill for health workers although many skilled health workers find it challenging. Patients have the right to know what is happening to them and to be aware of the consequences that may follow. Similarly, parents need to be informed about their children's conditions. Ethically it is necessary to inform a patient of his condition and also to inform parents about their child's condition. The task in itself is uncomfortable and instills fear within health workers in the sense that the information may be distressing and may adversely affect the patient, family or the therapeutic relationship. A part from this, the health worker may feel inadequately prepared or inexperienced. Looking at all these reasons there is no doubt need to train health workers on of communicating bad news.

Although legitimate cultural variations are important, breaking bad news in a compassionate but direct way can improve the patient's and family's ability to plan and cope, encourage realistic goals and autonomy, support the patient emotionally, strengthen the physician-patient relationship, and foster collaboration among the patient, family, physicians, and other professionals.

This manual is designed as a systematic guide to the communication of bad news. However, it may be viewed more generally as a model for communicating any important information. The recommended 6-step protocol has been adapted from. How to Break Bad News: A Guide for Health Care Professionals by Robert Buckman:

1. Getting started
2. What does the patient know?
3. How much does the patient want to know
4. Sharing the information
5. Responding to patients and family's feelings
6. Planning and follow-up

Bad News:

1. Terminal illness
2. Chronic conditions
3. Loss of part of the body
4. Poor prognosis
5. Congenital abnormalities
6. Results of delicate investigations e.g. H.I.V. Test
7. Death

Box: Examples of bad news

This 6-step protocol for delivering bad news offers guidelines and practical suggestions on how to communicate any medical information effectively and compassionately and respond to a patient's and family's feelings and needs.

This protocol is a framework for approaching this essential task for physicians and all other members of the interdisciplinary team. It is not meant to be a rigid set of rules that must be followed in all cases. When provided effectively, clear communication can only strengthen the physician-patient relationship. The vast majority of Americans (>90%) want to know about it if they have a life-threatening illness. Do you think Kenyans are different in this respect?

Objective

The ability to communicate bad news using the six step protocol

The six steps protocol for communicating bad news

The first 3 steps deal with preparatory activities that could be completed before the session at which the physician actually delivers the bad news. At the fourth step, the news is delivered. The last 2 steps permit the physician to respond to the patient's reactions and constructively plan for follow-up;

Step 1: Getting started

1. Before starting to communicate any news, plan what will be discussed.
2. Confirm medical facts of the case and ensure that all the needed information is available. If this is an unfamiliar task, rehearse what you will say. Don't delegate the task.
3. Create an environment conducive to effective communication. For paediatric patients, have staff available to be with the child while information is conveyed to the parents first.
4. Ensure privacy and adequate sitting arrangement. A box of facial tissues should be handy. Allot adequate time for the discussion. Do not slip this into a short interval between other critical tasks. Prevent interruptions.
5. Ensure that the right persons are present. Inquire who else the patient would like to have present for the discussion. This might include family, significant others, surrogate decision makers, and/or key members of the interdisciplinary team (nurse, social worker, chaplain, etc).
6. Assure confidentiality

Step 2: What does the patient know?

7. Start the discussion by establishing the knowledge level of the patient/client about the patient's health situation. This will help to determine your starting point. With this information, ascertain if the patient/client will be able to comprehend the bad news. Questions might include:
    a. What do you understand about your illness?
    b. How would you describe your medical situation?
    c. Have you been worried about your illness or symptoms?
    d. What did other doctors tell you about your condition or any procedures that you have had?
    e. When you first had symptom A, what did you think it might be?
    f. What did Doctor X tell you when he sent you here?
    g. Did you think something serious was going on when...?
8. Occasionally, a patient (or a parent if the patient is a child) will fall silent and seem completely unprepared or unable to respond. To ease the situation and stimulate discussion, try to clarify what the patient understands about his / her medical history and recent investigations. Identify absent family members or others on whom the patient relies. If this is ineffective, the patient remains silent, or if the patient seems to need more support, it may be better to reschedule the meeting to a later time.

Step 3: How much does the patient want to know?

9. Next, establish what and how much each patient, or parent if the patient is a young child, wants to know. People handle information differently. Each person has the right to voluntarily decline to receive any information and may designate someone else to communicate on his or her behalf. If the patient prefers not to receive critical information, establish to whom information should be given. Possible questions include the following:

a. If this condition turns out to be something serious, do you want to know?
b. Would you like me to tell you the full details of your condition? If not, is there somebody else you would like me to talk to?
c. Some people really do no want to be told what is wrong with them, but would rather their families be told instead. What do you prefer?
d. Do you want me to go over the test results no, and explain exactly what I think is wrong?
e. Whom should I share this information with?

10. Reconfirm confidentiality if applicable

When the family says, "don't tell"

Many times, family members will ask the physician not to tell the patient the diagnosis or other important information. While it is the physician's legal obligation to obtain informed consent from the patient, an effective therapeutic relationship requires a congenial alliance with the family. Rather than confronting their request with "I have to tell the patient," ask them why they don't want you to tell the patient, what it is they are afraid you will say, what their experience has been with bad news. Inquire whether there is a personal, cultural, or religious context to their concern. Suggest that you go to the patient together to ask how much he or she wants to know about his or her health and what questions there might be.

Box: Difficult situations – when the family says "don't tell"

When parents say "don't tell the child"

When the patient is a child, the parents may not want the child told about the illness. This protective instinct is understandable, but may ultimately be problematic. As the child experiences treatment and procedures, he or she will perceive there is a problem. The child may feel distrustful and misled when this happens. To avoid this, a better initial plan is to help the parents to understand that this is likely to occur. In some countries child psychologists are available to help the parents and the medical team communicates important medical information to the child at an age-appropriate level.

Box: Difficult situations – when the parents say "don't tell the child"

These situations may require significant negotiation. In particularly difficult cases, support from the institutional ethics committee may be very helpful. Ultimately, it may be decided, after discussion with the patient, that detail of diagnosis and prognosis and treatment decisions will be discussed only with the family. However, unless the patient has previously indicated that he or she wants no information, hiding the diagnosis or important information about prognosis or treatment from the patient is neither ethical nor legally acceptable. Physicians do not need to feel constrained to practice in a way that compromises care or feels unethical. If the physician and the family cannot come to agreement, the physician may choose to withdraw from the case and transfer care to another physician.

Ethnical and cultural differences in preferred handling of information

While knowledge of ethnical and cultural differences is useful as a background, global conclusions about them rarely help with decision making for an individual. Ask a patient about general preferences for the handling of medical information and decision-making early in the clinical relationship before significant information needs to be shared. This will help the clinician to avoid making a misstep.

Box: Ethnical and cultural influences

All of the discussion to this point is about preparation to give the bad news. Some of that preparation might best occur well before the bad news is actually given. The initial assessment, and subsequent discussions that prepare the patient for critical tests, all provide opportunities to determine what the patient already knows and how he or she would like to have information handled. It is important to note that people receiving bad news have limited capacity to listen and comprehend the information.

Step 4: Sharing the information

a. Deliver tinformation in a sensitive but straightforward manner. Say it, then stop. Avoid delivering all the information in a single, steady monologue:
    i. Use simple, easily understood language avoiding technical jargon
    ii. Pause frequently
    iii. Check for understanding.
    iv. Use silence and body language as tools to facilitate the discussion.
    v. Do not minimize the severity, avoid euphemisms. Well-intentioned efforts to "soften the blow" may lead to vagueness and confusion.

11. You might choose to break bad news by using language like:
    a. Mrs. Mwangi, I feel bad to have to tell you this, but the growth turned out to be cancer.
    b. I'm afraid the news is not good. The biopsy showed that you have cervical cancer.
    c. Unfortunately, there's no question about the test results: its cancer.
    d. The report is back, and it's not as we had hoped. It showed that there is cancer in your cervix.
    e. I have bad news: the bone marrow biopsy shows your daughter has leukemia.
12. The phrase "I'm sorry" may be interpreted to imply that the physician is responsible for the situation. It may also be misinterpreted as pity or aloofness. If you use the phrase, adjust it to show empathy. For example, "I'm sorry to have to tell you this."

Step 5: Responding to feelings

Patients and families respond to bad news in a variety of ways. Some respond emotionally with tears, anger, sadness, love, anxiety, relief, or other strong emotions. Others experience denial, blame, guilt, disbelief, fear, or a sense of loss or shame, or may even intellectualize why the situation is happening. A few may demonstrate reflexive psycho-physiologic responses such as "fight or flight" and may even try to bolt from the room or totally withdraw into themselves. Parents may become very emotional when thinking about actually telling their child the diagnosis. Outbursts of strong emotions make many physicians uncomfortable. Learn how to cope with it, how to respond.

13. Give the patient and family time to react.
14. Be prepared to support them through a broad range of reactions.
    a. Listen quietly and attentively.
    b. Acknowledge their emotions.
    c. Ask them to describe their feelings:
        i. I imagine this is difficult news...
        ii. You appear to be angry. Can you tell me what you are feeling?
        iii. Does this news frighten you?
        iv. Tell me more about how you are feeling about what I just said.
        v. What worries you most?
        vi. What does this news mean to you?
        vii. I wish the news was different.
        viii. I'll try to help you.
        ix. Is there anyone you would like for me to call?
        x. I'll help you tell your son.
15. Remind them that their responses are normal. Make a box of facial tissue available.
16. Non-verbal communication may also be very helpful. Consider touching the patient in an appropriate, reassuring manner. If available, offer a drink of water, a cup of tea, or something else that might be soothing.
17. Allow time for the patient and family to express all of their immediate feelings. Don't rush them. Once the emotion is "spent," most people will be able to move on. A shared understanding of the news and its meaning will enhance the physician-patient relationship and facilitate future decision-making and planning.

Step 6: Planning and follow-up

18. Establish a plan for the next steps. This may include gathering additional information or performing further tests.
19. Treat current symptoms.
20. It may include helping parents to tell their child about their illness and what treatment will be like for them.
21. Arrange for appropriate referrals.
22. Explain plans for additional treatment.
23. Discuss potential sources of emotional and practical support, e.g.: family, significant others, friends, social worker, spiritual counsellor, peer support group, professional therapist, hospice, or home health agency. Discuss sources of support for an ill child's siblings.
24. Reassure the patient and family that they are not being abandoned and that the physician will be actively engaged in an ongoing plan to help.
25. Indicate how the patient and family can reach a health worker to answer additional questions.
26. Establish a time for a follow-up appointment.
27. Ensure that the patient is safe when he or she leaves. Is the patient able to drive home alone? Is the patient distraught, feeling desperate or suicidal? Is there a supportive person at home?

At future visits, elements of this protocol may need to be revisited. Many patients and families require repetition of the news to gain a complete understanding of their situation.

When language is a barrier

This same 6-step protocol for communicating bad news can be used when the patient and physician do not speak the same language. Assistance of an experienced translator who understands medical terminology and is comfortable translating bad news is required. Brief translators before the interview and reassure them their role is only to translate. Verify that they will be comfortable translating the news you are about to give.

If possible, avoid using family members as primary translators. It confuses their roles in the family unit and may raise issues of confidentiality. Additionally, family members may not know how to translate the medical concepts the physician is trying to convey, and/or they may modify the news to protect the patient. Instead, when family members are present who do speak both languages, ask them to supplement the primary translation and support the patient and other members of the family.

When working with a translator, sit in a triangular arrangement so that you can face and speak directly to the patient, yet still turn to look at the translator. Speak in short segments to give the translator time to convey the information. Verify the patient and family understand and checks for an emotional response.

Box: Use of a translator in communicating bad news

Communicating Prognosis

Patients frequently ask about prognosis. There are many motivations for this request. Some want to have a sense of their future so they can plan their lives. Others are terrified and hope that you will reassure them that things are not so serious.

1. Before directly answering their questions about prognosis, inquire about their reasons for asking. Questions might include:
    a. What are you expecting to happen?
    b. How specific do you want me to be?
    c. What experiences have you had with others with a similar illness?
    d. What experiences have you had with others who have died?
    e. What do you hope/dream will happen?
    f. What is your nightmare about what will happen?

2. Consider the implications of the prognostic information you provide. Patients who wish to plan their lives want information that is more detailed. Those who are terrified may do better with answers that are more general. Definitive answers, i.e., "You have six months to live," run the risk of producing disappointment if the time proves to be less, and anger or frustration if you have underestimated the patient's lifespan.
3. Consider responding by giving a range of time that encompasses an average life expectancy, such as "hours to days," "days to weeks," "weeks to months," "months to years," etc. Alternatively, indicate averages such as "one third of people will do well a year from now, half will live about 6 months, exactly what will happen for you, I don't know."
4. After giving a range, it may help to emphasize the limits of prediction by saying something like:
    a. "What this will mean for you I can't tell. We need to hope for the best, while we plan for the worst"
    b. "We can't predict surprises and should plan in case something happens"
    c. "We'll have a better sense over time how things will evolve for you"
5. Always caution patients and families that unexpected surprises can happen.
6. Suggest that they get their affairs in order so they won't be so vulnerable if something unexpected does occur.
7. Reassure them that you will be available to them to deal with issues and support them throughout their illness, whatever happens.
8. Help clarify what can be realistically expected and distinguish this from what might be wished for, or what is most feared. Identify the miraculous for what it is-something outside of usual experience that happens exceedingly rarely.

Sharing of information among care givers

The sharing of information among caregivers is critical. Maintain a chart or log book close to the patient that can be shared by all who provide care, including physicians. Pooled information can facilitate a continuous plan of care. Avoid constant repetition of questions, and avoid unwanted activities. It will be most effective if the chart or log book includes goals for care, treatment choices, what to do in an emergency, likes and dislikes, things to do and or not to do, and contact information for family, physicians, and other members of the interdisciplinary team. Ensure that data is recorded accurately and accessible to everyone.

Box: Keeping all care givers informed

Exercises on Breaking Bad News – Role-Plays

Trainees can exercise their skills in breaking bad news using the following seven role-plays. Each of the seven scenarios represents a situation in which bad news has to be given to a patient (client) by the health worker.
In these scenarios two (sometimes three) trainees will play the roles of patient (and / or a relative) and the health worker respectively, while other students and the trainer observe and give feedback later.

The focus of the observers will be on the techniques used by the person playing the health worker in the communication of the bad news. Behind the scenarios you find an observer checklist which can also be used to guide the feedback.

After the first couple has finished and the observers have given their feedback, the persons role-playing exchange with others until all have practiced as health worker.

Scenario 1: HIV/AIDS

Student I: Health worker
You are a health worker in an insurance company. You have conducted a thorough examination on one of the company clients who needs to take a mortgage to purchase a home. The results revealed that he is HIV positive. Convey the bad news to the client in an appropriate manner.

Student II: Client
You are successful private practitioner, forty (40) years earning some good money from your practice. You have decided to take a mortgage to purchase a house in one of the leafy parts of Nairobi. You are aware that you have to undergo a thorough medical examination that includes HIV test. You are a married man who frequently engages in one night stands and most of the times you don't use any protection. You are thus very apprehensive of the outcome.

Scenario 2: Death

Student I: Health Worker
You are the ward in-charge where Mrs. Umoja has been undergoing management for stage IV cancer of the cervix.
In the course of caring for her, you have come to know that she if fifty (50) years old and a widow. She is a mother of three (3) children, two boys and a girl, aged twenty (20) years, twenty three (23) years and twenty five (25) years respectively. For quite some time she had shown some improvement, following radiotherapy.
However, one week ago, her general condition deteriorated. She passed away this morning. On this particular day, one of her children has paid her a visit. Inform her/ him about the death of her mother.

Student II: Relative
You are the daughter/ son to Mrs. Umoja. You have of late known her to be very sick but during your last visit, you noted with appreciation that she had shown some improvements.
Today, you have come to visit her and first decided to greet the in-charge of the ward before proceeding to your mother's bed.

Scenario 3: Chronic Condition

Student I: Health Worker
You are a health worker in a District hospital clinic. Mrs. Pata presents herself to the clinic, having been referred from a health centre for non-response to treatment of frequent headaches, constant thirst and loss of weight.
Through investigations you make a diagnosis of Diabetes Mellitus.
Inform Mrs. Pata of your findings.

Student II: Patient
You are Mrs. Pata aged five years. You have been having severe headache on and off for the last six months. For the last one month, you have been experiencing excessive thirst and frequent passage of urine. Your friend also tells you that you have lost weight.
You attended Kara Health centre where you were treated with painkillers for the headache, without improvement. The nurse in the health centre referred you to this medical clinic where investigations were done. The nurse in the District Hospital Medical Clinic had asked you to come today for the results of the investigations.

Scenario 4: Loss of function of part of the body

Student I:
You are Mr./Mrs. Tana, aged 56 years. You are married with four grown up children. You are a teacher by profession as is your spouse. You reside in Thika with your family.
You have come to attend an eye clinic accompanied by your spouse because you cannot see after undergoing a surgical operation on the left eye two weeks ago. You are hopeful your eyesight can be restored because three (3) years ago, you had undergone a successful surgical removal of cataracts on both eyes, and you were able to see with the help of glasses.

Student II:
You are the spouse accompanying the patient to the clinic because he/she cannot walk alone.

Student III:
You are a health worker in an eye clinic and the above patient comes to see you. After taking history and going through the summary of the patient's previous management, you come to know that the patient had undergone a surgical repair of retina detachment on the left eye. On examination of both eyes you realize that the operation on the left eye did not take, while the right eye too has developed retina detachment, and nothing much can be done to both eyes because of adhesions. Due to this, the patient's eyesight cannot be restored.

Scenario 5: Loss of part of the body

Student I: Patient
You are a health worker in labour ward and Mrs. Tembo aged 22 para 1+0 started bleeding profusely following a spontaneous vertex to a bouncing baby boy who cried well at birth.
Efforts to control the bleeding failed. The consultant took her to theatre to perform hysterectomy because of atonic uterus. You wanted to tell her about the situation but she requested you to wait for her husband who has now arrived.

Student II: Patient
You are Mrs. Tembo, 22 years. You have just come back from theatre and you feel very dizzy. You remember delivering of a crying baby boy and that you were taken to theatre because of bleeding. The nurse wanted to tell you what happened in theatre but you requested her to wait for your husband to arrive.

Student III: Relative
You are Mr. Tembo and you have come to labour ward to enquire from the health worker whether your wife has delivered. You are excited because you were expecting to get a baby. Since you know your wife has been feeling very tired after having discomfort from minor complications of pregnancy, she will feel relieved. You are not aware that she was taken to theatre.

Scenario 6: Poor prognosis

Student I: Health worker
You are a health worker in medical clinic at Kenyatta National Hospital. The physician who saw him/her after making a diagnosis of advanced stomach cancer sends this patient to you. The condition is serious and cannot be operated and therefore has a poor prognosis even with drugs and Radiotherapy. Please advice the patient on the possible outcome of this condition.

Student II: Patient
You are Mr./ Mrs. Pepo from Nairobi, and aged forty two (42) years and works as a teacher in a secondary school in the city while your spouse is a small time business person in the estate where you live.
You are married with three (3) children, two boys who are in secondary school and aged seventeen (17) years and fifteen (15) years while the third born, a girl is aged twelve (12) years and still in primary school.
You have come to Kenyatta National Hospital to see a specialist after having been referred from a city council clinic in your area.
For the last three years, you have been attending a few private clinics in the city suffering from severe abdominal pain, loss of appetite and general weakness. A month ago, you have noticed that you have lost a lot of weight and this is worrying you that you may be having a very serious disease that needs thorough examination, tests and treatment so that you can get relief.

Scenario 7: Terminal illness

Student I: Health Worker
You are a health worker in a district Hospital. Your next patient is Mrs. Sana (52) years. She comes to see you to get the results of the X-ray, which you had requested two days ago.
You know Mrs. Sana already for 4 years, since her left breast was removed because of cancer. She came a few times for follow up without many complains. But for the last 2 months you have seen her frequently. She was feeling unwell, had chest problems (coughing and for the last two weeks dyspnoeic). She has also developed a painful left hip. You gave her some antibiotics and analgesics, but the complaints persisted. That is why you sent her for X-ray of both the chest and the left hip.

Report of the X-ray
X-chest: Multiple spots in both sides of the lung, very suspect for metastasis
X-hip: Severe translucent spots in the left pelvis. Suspect for metastasis

Student II: Patient
You are Mrs. Sana (52) years. You are happily married and have 3 daughters of whom one is still staying at home. You are coming to see your health worker because of X-rays taken 2 days ago. You are nervous about the results. You have been feeling very unwell for the last 2 months; also you lost about 10kg. You started fearing something might be very serious when the medication you got did not help you at all. 4 years ago you underwent surgery because of cancer in your left breast. Except for this, you have always been feeling well. Your daughter Athi, the youngest one, has accompanied you to the hospital and is waiting for you outside. It has been very difficult for you to reach to the hospital because of your weakness and you also lack breath.

OBSERVATION SHEET
COMMUNICATION SKILLS

COMMUNICATING BAD NEWS

Nr.	Skill	Mastery of skill demonstrated		
		Yes	Yes, but	No
Initiation				
1	Greets patient			
2	Negotiates agenda			
Explanation & planning				
3	Assesses the patient's starting point – knowledge, fears and hopes			
4	Discovers what and how much the patient wants to know			
5	Uses sign posting; gives a warning shot			
6	Gives information in manageable doses			
7	Uses appropriate language, avoids medical jargon			
8	Does not minimize the severity of the situation (no false reassurance)			
9	Checks for understanding			
10	Gives hope based on realism			
11	Discusses options & opinions: treatment & prognosis			
Building the relationship				
12	Picks up non-verbal cues and shows empathy			
13	Allows time for patient's / client's emotions			
14	Provides support			
15	Demonstrates appropriate non-verbal behaviour			
Closure				
16	Discusses clear follow-up plans			

Observation sheet on issues the student should explain before and after the conversation

When	Skill	Mastery of skill demonstrated		
		Yes	Yes, but	No
Before	Prepares setting well (medical facts, environment, privacy & time, who to be present)			
After	Documents what the patient and relatives have been told			

CHAPTER 11: ADVANCED SKILLS IN INTERNAL MEDICINE

Annex to CMS 361: Medicine II

- **Administration of Oxygen**

ADMINISTRATION OF OXYGEN

Objective

The ability to prepare and assemble oxygen equipments and administer oxygen to the patient

Indications

- Signs and symptoms of hypoxemia – confusion, anxiety and restlessness
- Respiratory distress as in pulmonary lung disease – bronchitis, asthma, and T.B severe injury
- Chest pain
- Some heart conditions
- Profuse bleeding (haemorrhage)

Figure 11.1: Flow meter with valve control

Requirements

- Oxygen cylinder and key with reducing valve or oxygen wall point.
- Oxygen fitting stand with a holder.
- Oxygen flow meter with valve control.
- Oxygen tubing.
- Oxygen delivery apparatus in a tray, e.g.:
    - Oxygen masks (simple mask or mask with reservoir bag)
    - Nasal cannula's or catheters;
    - Tracheostomy collar or T-piece or Y-connectors
- Galipot with cotton wool swabs.
- Receiver for soiled swabs
- Oxygen humidifier

Accessories:

- "No Smoking" signs
- Wash cloth

Figure 11.2: Oxygen cylinder (black body, white top)

Procedure

Preparation

<u>Patient</u>

1. Explain the procedure and purpose to the patient to ensure his / her cooperation
2. Instruct patient not to smoke
3. Ensure patient is in a comfortable position preferably the Fowler's position

<u>Environment</u>

1. Ensure that the environment is safe: no smoking or sparks / open fire nearby

Equipment

1. When using an oxygen cylinder:
   a. Check if cylinder contains gas by opening the oxygen cylinder using the oxygen key. A loud hissing sound confirms presence of gas (Test away from patient)
   b. Fix the cylinder to the fitting stand with holder and close the holder
   c. Attach a flow meter to the oxygen cylinder
   d. Then attach a humidifier to the flow meter
   e. Confirm stability of oxygen cylinder on the fitting stand
   f. Now the equipment is ready to deliver oxygen to patient

NOTE: No grease should be used in cylinder valve fittings

   g. Take equipment to the bedside
2. If using oxygen wall point (piped in system):
   a. Attach flow meter to the oxygen wall point
   b. Attach the humidifier to the flow meter

Health Worker

1. Observe practices of medical asepsis: wash hands

General Notes on Oxygen Therapy whichever method:

- Observe patients continuously while on oxygen therapy
- Particularly, observe for signs of distress, discomfort, dyspnoea or restlessness in the patient
- Check flow meter and level of fluid for humidification frequently during course of oxygen therapy
- Place “No Smoking” sign on the door and over bed

Method: Application of oxygen therapy when using an oxygen mask

1. Attach oxygen tubings of face mask to the oxygen equipment
2. Flood mask with oxygen at the rate of 8 – 15 litres
3. Apply the oxygen mask over the patient’s nose and mouth and secure it with an elastic band, which fits round the patient’s head
4. Regulate the flow of oxygen as prescribed
5. Encourage patient to breathe normally
6. Ensure the patient is comfortable position him with head and bed elevated – help him to relax if he seems to struggle with receiving oxygen
7. If more than 60% concentration of oxygen delivery is required, use a mask with a reservoir bag. Assess reservoir bag used for giving oxygen – it should not collapse more than half during inspiration
8. Remove and clean the mask after every 2–4 hours to wipe away accumulated mist
9. Wash the face, assess underlying skin and dry it well each time mask is removed

Method: Application of oxygen therapy when using nasal cannula

1. Attach nasal cannula to humidified oxygen source
2. Start oxygen at prescribed rate usually 5 litres / min
3. Determine that oxygen is flowing by placing the cannula prongs in a glass of water
4. Place the cannula prongs in the patient’s nostrils and secure the cannula in place by slipping attached tubing around client’s ears and under chin
5. Instruct patient to breathe through the nose
6. Use small gauze squares to pad areas where the cannula could create pressure and irritate skin
7. Remove and clean cannula every 8 hours or when necessary
8. Clean nostrils around cannula as necessary

Method: Application of oxygen therapy when using oxygen tent (or inhalers)
NOTE: Mostly used for children and babies – as they permit unrestrained movement and is less likely to cause excessive dryness of mucous membrane

1. Inspect the oxygen tent for tears, non-functioning zippers or parts in need of repair
2. Place tent over the upper portion of bed (so that the patient's head and chest fit inside of it)
3. Flood tent with oxygen to achieve desired levels prescribed
4. Tuck all edges of tent securely beneath the mattress
5. Check oxygen level in the tent using an oxygen analyser
6. Fill and maintain liquid for humidification
7. Regulate the temperature settings that will be maintained within the tents
8. Supply patient with device for calling for help

NOTE: You can use a face tent or face hood over patients instead of a tent

Method: Application of oxygen therapy when using a tracheostomy or T- piece:
1. Regulate flow rate of oxygen
2. Attach device to the neck so that it covers the tracheostomy opening
3. Assess accumulation of condensation (moist) in the tracheostomy collar or T-piece
4. Remove tracheostomy collar (Y-connector) or T-piece frequently to drain and clean the tubings
5. Suction the tracheostomy tube and provide tracheostomy care frequently or when necessary especially when moisture and secretions accumulate

Method: Discontinuation of oxygen therapy when using oxygen cylinder
1. Detach the mask / tubing from the patient
2. Turn off the flow meter
3. Turn off main pressure gauge using key
4. Clean the equipments and return them to the treatment room

Method: Discontinuation of oxygen therapy when using piped in oxygen (oxygen wall point):
1. Detach the mask / tubing from the patient
2. Remove flow meter from the oxygen wall point
3. Turn off the flow meter
4. Clean the equipments and return them to the treatment room

Method: changing an oxygen cylinder
1. Remove cylinder fittings carefully
2. Open cylinder holder and remove empty cylinder
3. Place new full cylinder in holder and close holder
4. Attach the fittings to new cylinder and test pressure to ensure that it is in working order

CHAPTER 12: ADVANCED SKILLS IN SURGERY

Annex to CMS 363: Surgery II

- **Ear Nose Throat Examination**
- **Examination of the Thyroid Gland**
- **Eye Examination**
- **Ear Syringing / Irrigation**
- **Traction Application**

EAR NOSE AND THROAT EXAMINATION

Objective

To be able to perform a thorough physical examination of the ear, nose and throat and to distinguish the normal from the abnormal

Specific objectives

To be able to

1. Identify important anatomical land marks / projections
2. Use instruments for the examination of the ear, nose and throat
3. Inspect the ear, nose and throat
4. Palpate the ear, nose and throat

Requirements

1. A spotlight or torch (pocket one may be used)
2. Diagnostic set containing an auroscope / otoscope
3. In big hospitals and clinics, there may be head mirror with electric power source
4. Aural specula of different sizes
5. An ear probe
6. Tuning fork – 256 or 512 Hz. (vibrating frequency)
7. Cotton ear buds and swabs

Procedure: Ear Examination

Method: Inspection of the external ear:

1. Assess the position of the ears in relation to eye (Ears are lower in congenital conditions like Down's syndrome)
2. Look at the pinna and post-auricular areas for:
    a. Shape of the pinna
    b. Skin tags
    c. Pits and sinuses
    d. Pre- and post-auricular lymph nodes.
    e. Abnormal protrusion of the pinna which is associated with failure of development of the anti-helical fold (Bat ear)
3. Look at the mastoid area for:
    a. Scars – may indicate previous surgery of the middle ear.
    b. Erythematous swelling – may suggest mastoid infection
4. Inspect the auditory canal:
    c. Hold the pinna and retract it backwards (This straightens the ear canal)
    d. Do direct visual inspection for obvious:
        i. Foreign body
        ii. Discharge – serous, mucoid, purulent, sanguineous, frank blood.

Method: Perform otoscopy (auroscopy) to visualize the external meatus (ear canal) and the tympanic membrane (ear drum)

1. Choose the largest auroscopy speculum comfortably fitting the ear canal
2. Hold the auroscope like a pen between the thumb and index finger with the ulnar border of the hand resting gently against the side of the patient's head. (This protects injury to the ear in case of inadvertent movement of the head)
3. Straighten the external meatus by retracting on the pinna.
4. Put on the auroscope by a switch on it.
5. Insert the auroscope speculum in the ear canal.
6. Visualize the wall of the ear canal while gently moving the speculum into the ear.
7. Visualize the tympanic membrane by directing the light beam directly into the ear.
8. Visualize the tympanic membrane for landmarks, deformities and inflammation.

Method: Assess Hearing

Assessment of hearing can be done in various ways:

1. Use normal voice at a distance of about 3.6 metres (12 ft)
2. Place a wrist watch near a patient's ear and ask whether it is audible.
3. Whisper phonetically balanced words slowly e.g. "Window" or "Responding" and ask the patient to repeat them.
4. Perform Rinne test – compares hearing by air and bone conduction:
    a. Strike the tuning fork of 512 Hz (Higher frequencies are less accurate)
    b. Hold it in line with the external ear canal (air conduction) for a few seconds, then place on the post-auricular surface (bone conduction)
    c. Ask the patient – "In which test position did you hear the sound louder?"
    d. In normal subjects air conduction is better than bone conduction (Rinne test – Positive). This response is also found in those patients with sensori-neural deafness.
    e. In conductive deafness the converse is true (Rinne test – negative)

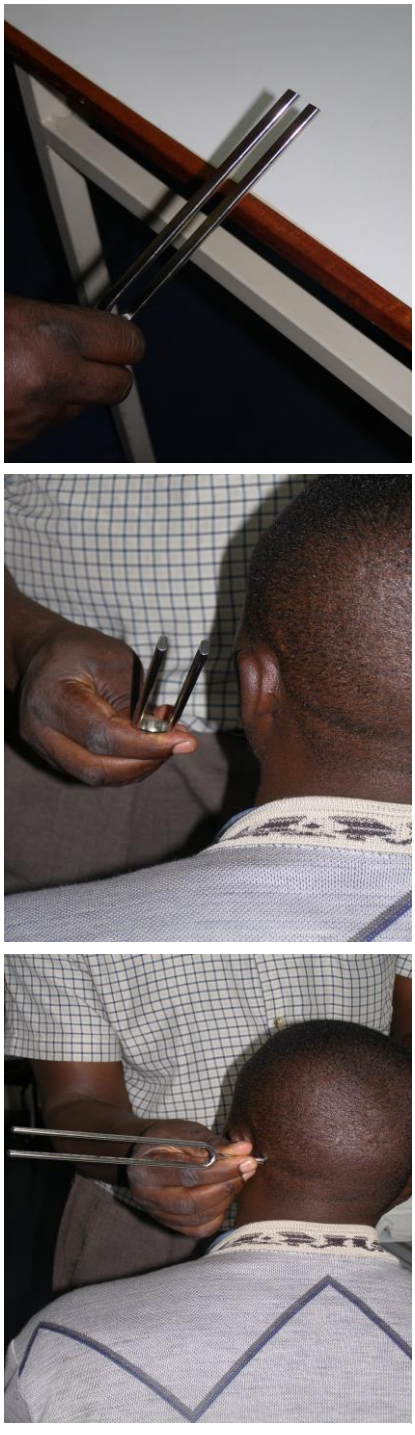


Figure 12.1: Rinne test

5. Perform Weber's test:
    a. Strike a tuning fork
    b. Place it on the vault of the skull (on the midline)
    c. Ask patient – "Is the sound louder in the midline or at the side?
    d. Normally, the sound is loudest in the midline; this is also true if the hearing is symmetrically reduced, but:
        i. In unilateral sensorineural hearing loss the hearing will be louder in the normal ear
        ii. In purely conductive hearing loss the hearing will be louder on the side with the conductive deficit

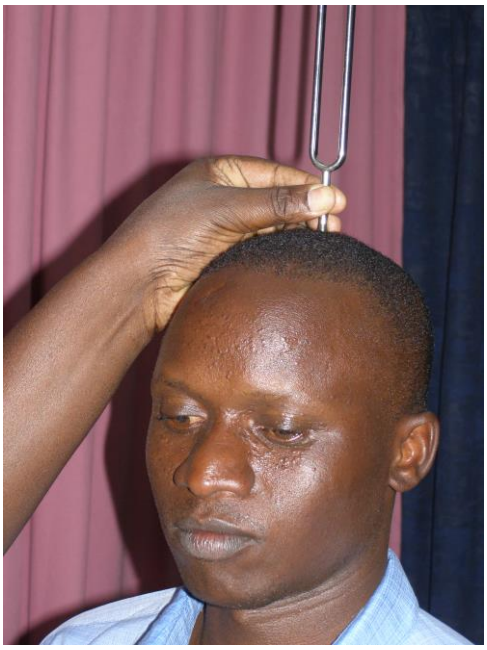


Figure 12.2: Weber test

CAUSES OF EAR PAIN / OTALGIA

- Infectious: Infection of the pinna (perichondritis), impetigo, herpes zoster, trauma, or localized infection of the external meatus / canal (furunculosis, carbuncle, meatitis)
- Neuralgic: Trigeminal neuralgia
- Disorders of the middle ear: otitis media, mastoiditis and malignancy.
- Referred pain – from: teeth / molars, thyroid gland, temporo-mandibular joint, larynx, oro-pharynx or from the cervical spine. Conduction through the 5th, 9th and 10th cranial nerves and also the 2nd and 3rd cervical nerves

VERTIGO

This is the feeling that the environment around you is going round. It is a common symptom of the disorders of the semi-circular canals (vestibule).

Resembling symptoms:

- The feeling of light-headedness due to causes unrelated to ear disease (anaemia, hypoglycaemia, fever, cardiac insufficiency or anxiety)
- Cerebral lesions of nervous origin present with loss of balance and unsteady gait (ataxia)

Box: Some symptoms commonly associated with the ear

Procedure: Nose Examination

1. Inspect the nose and assess the nose structure and position of the septum.
2. Visualize the nostril to determine patency.
3. Using a nasal speculum, inspect mucosa, septum and turbinates
4. Palpate the nose and sinuses (Frontal and maxillary)
    a. Feel for tenderness, protrusions, depression and any distortions both in bone and cartilage.
    b. Put on gloves and palpate the palate and buccal alveoli using you index finger.

Epistaxis:
Bleeding from the nose, which may be either arterial or venous in origin.
Varies from a simple non-disturbing condition to a serious life threatening emergency

The common sites for arterial bleeding are – the Little's area, the anterior nasal septum and the inferior turbinates. Venous bleeding on the other hand usually emanates from the pre-septal vein, which is situated anterior on the medial aspect of the nasal vestibule

A history of bleeding disorders (dyscrasia) or use of any drug that interferes with clotting mechanical should be actively looked for

Box: Epistaxis

Procedure: Throat Examination

1. Use a good source of light: torch, Bull's eye lamp or head light
2. Inspect colour and surface characteristics (sores, ulcers, swellings) on: lips, buccal mucosa, gums, hard and soft palate and floor of the mouth.
3. Inspect oropharynx – note the state of fauces (pharyngeal folds), uvula and tonsils. Rarely the epiglottis may also be visualized.
4. Inspect the teeth for: colour, number and surface characteristics
5. Inspect tongue for: colour, characteristics, symmetry and movement (Cranial Nerve XII)
6. Test gag reflex and "ah" reflex (Cranial Nerves IX and X)
    a. Ask the patient to open the mouth wide.
    b. Moisten tongue blade with warm water (will not trigger gag reflex as easily as a dry one)
    c. Touch the posterior pharynx of the tongue blade.
    d. The patient 'gags' – closure of fauces and swallowing.
    e. Test both sides of the pharynx.
    f. Expect a bilateral response
    g. Lack of 'gag' may suggest Cranial Nerves IX and X paralysis.
7. Perform taste test (Cranial Nerve VII)
    a. Prepare solutions of various tests – sweet, sour, salty, etc.
    b. Ask the patient to protrude the tongue.
    c. Using an applicator stick apply the various solutions at various regions of taste buds on the tongue using different applicator stick every time
    d. Ask the patient to identify the test each time.
    e. Offer a sip of water after each stimulus.

EXAMINATION OF THE THYROID GLAND

Objective
To be able to perform an adequate thyroid examination and check for other signs of dysfunction of the thyroid gland

Indications
- As part of standard general physical examination
- In case of suspicion of thyroid dysfunction

Introduction
The Thyroid Gland is situated low in the neck, bilateral of the trachea with a right and a left lobe, connected by the isthmus, situated in front of the trachea. *Struma* or *goitre* is any thyroid gland enlargement, regardless of functional activity and thus can be found in hyper-, normal and hypo-function. *Exophthalmia* is a common accompanying feature in primary thyreotoxicosis but absent in secondary thyreotoxicosis.

Procedure: Examination of the Thyroid Gland

Method: Inspection of the thyroid gland
1. In thin young women, the isthmus of a normal thyroid gland is sometimes visible, particularly on swallowing. Otherwise, a normal thyroid gland is not visible
2. Observe for any enlargement
3. Ask patient to swallow and pay attention to the movement of the thyroid gland: first rising and then descending
4. Look at contour and symmetry
5. On obese and bull-necked individuals, inspection is rendered easier by the patient throwing her head backwards and pressing her occiput against her clasped hands
6. Ask yourself the following questions during inspection:
    a. Has the patient stridor (partially obstructed air passage)?
    b. Are there signs of thyreotoxicosis?
    c. Are there signs of exophthalmia?
    d. Are there indications for myxoedema?

Method: Palpation of the thyroid gland
1. In routine palpation you stand behind the patient
2. Instruct the patient to lower the chin (to relax musculature)
3. Use both hands and place the thumbs upon the nape of the neck. In this position, a considerable portion of the fingers overlies the right and left lobes of the glandPut index fingers just beneath the cricoid
4. Palpate both lobes by moving your fingers downwards and backwards.
5. Instruct the patient to swallow and control the movements of the isthmus
6. Perform your palpation systematically and at pay attention to the contours of the lobes
7. Ask yourself the following questions during palpation:
    a. Is there an obstruction of the trachea?
    b. Does the gland feel malignant?
    c. Is the swelling or enlargement descending retro-sternal?

8. Do never forget to palpate the carotid artery! Often not palpable pulsations in case of a tumour or feel the presence of a “thrill”, being a first sign of beginning obstruction of the artery.
9. When the whole thyroid gland is enlarged:
    a. Determine whether its surface is smooth (as is found in primary thyreotoxicosis) or bosselated (in case of multinodular goitre)
    b. Ordinarily, unless the goitre is very large, it can be displaced laterally with the finger, thus making it apparent that the muscles slide freely over the swelling. If not and there is fixation, it suggest malignancy.
10. When a thyroid swelling is localized in one lobe, the additional examination of the gland is best conducted from in front with the clinician seated.

Figure 12.3: Palpation of the thyroid gland

In a patient suspected of primary thyreotoxicosis, the seriousness of the exophthalmia can be tested with the following tests:

- Von Graefe’s sign: *mild exophthalmia*
  Upper lid lag when the patient looks down
- Joffroy’s sign: *Moderate exophthalmia*
  There is absence of wrinkling of the forehead, when the head is bent down and the patient is asked to look upwards.
- Moebius’s sign: *Severe exophthalmia*
  Difficulty in convergence, when the patient is asked to look at a near object, i.e. following your finger approaching the base of he nose.

EYE EXAMINATION

Objectives

- To evaluate the function and the anatomy of the two eyes
- To assess the accuracy of central vision

Indication

- Every year routine examination of the eyes
- Following complaints of eye problem(s)
- Post operatively following eye surgery
- Before instillation of eye medication

Requirements

1. Well lighted room.
2. Hand magnifying glasses or binocular loupes.
3. Ophthalmoscope
4. Kidney dish with gauze swabs
5. Flash light
6. Cotton buds
7. A table or trolley for placing the items.
8. A couch or a chair
9. A tray containing:
    a. Occluder - E-model
    b. Torch
    c. Kidney dish with gauze swabs
10. Snellen's chart (mounted and R free)
11. E-chart

Procedure: Examination of the Eye

Note: The most common method used in eye examination is inspection. Examination starts from the eye lid and neighbouring structures and ends with the retina (red reflex). It is a clean procedure, not aseptic.

Preparation

1. Assemble all the required items on top of a table or trolley in a well-lighted room
2. Explain the procedure to the patient
3. Ask the patient to lie down or sit and look at the nose of the examiner
4. Sit at the same level with the patient

Method

1. Eye lids – Look for:
    a. Ptosis, proptosis, swelling, entropion, ectropion, discharge, discolouration, crusting etc.

2. Conjunctiva – Look for:
    a. Injection, hyperaemia, subconjuctival haemorrhage, chemosis, laceration growths
    b. Using a cotton bud – evert the eye lid and inspect the palpebral conjunctiva for follicles, papillae, foreign body etc.

3. Cornea – inspect for:
    a. Clarity, abrasions, ulcers, foreign bodies, etc
    b. Note: Fluorescent staining may be used to reveal defects in conjunctiva or corneal epithelium

4. Anterior chamber – inspect for:
    a. Hyephema, hypopyon, flare and cells
    b. Using a flash right – shine from either side of the eye to check the depth of the anterior chamber
    c. Note: A shallow anterior chamber will show darkening of the nasal iris when light is shone from the lateral side

5. Iris – inspect for:
    a. Colour, clarity, pattern , iris bombe, iris prolapsed

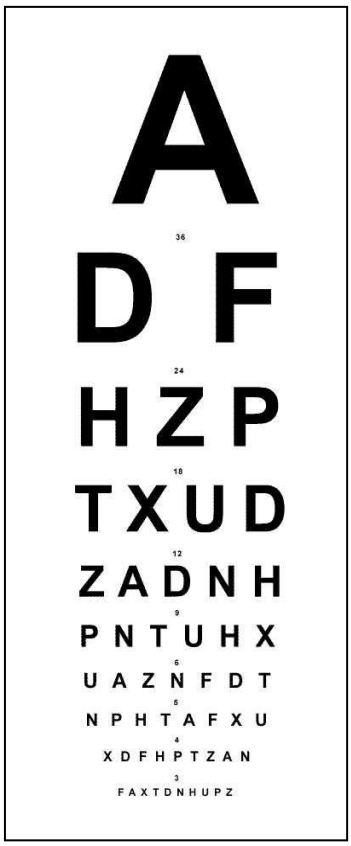
6. Pupil – assess for:
    a. Shape, size
    b. Reaction to light – by use of the torch
    c. Position of the pupil
    d. Colour

7. The posterior part of the eye
    a. To visualize the vitreous body and the fundus, a direct ophthalmoscope can be used. This is best done in a dark room. The fundus is the back part of the eye, which consists of the retina, choroid and optic nerve:
    b. Use mydriatic eye drops to dilate the pupil. It may be possible to visualize the fundus through a normal pupil, but it is much easier through a dilated pupil.
    c. Choose the lens you want to use in the ophthalmoscope:
        i. A weak positive lens (about + 5 D) is used to give a general view of the cornea, lens and vitreous, while a strong positive lens (about + 20 D) gives a magnified view of the same structures
    d. Hold the ophthalmoscope very close to your eye (i.e. your right eye if you are examining the patients right eye and vice versa)
    e. Hold the ophthalmoscope about 20 cm from the patient's eye and gradually move it close to the patient's eye:
        i. Check for clarity of the cornea, lens aqueous and vitreous body
        ii. Assess the fundus, i.e.:
            1. The optic nerve head and the retinal blood vessels emerging from it. Check with the patient looking straight ahead
            2. The macula. Check by asking the patient to look straight ahead at the ophthalmoscope light
            3. The periphery of the fundus. Check by asking the patient to look in different directions
8. Record the findings and inform the patient about the state of the eye
9. Give appropriate treatment or refer appropriately
10. Inform the patient on the next step
11. Clear equipment

Procedure: Visual Acuity

NOTE: If patient has glasses, visual acuity is taken with and without glasses and clearly recorded.

1. Place the Snellen's chart on the wall
2. Estimate a distance of 6 metres from the Snellen's chart and put a mark. This is the point where the patient should sit or stand
3. If using a mirror, place the Snellen's chart behind the seat of the patient and estimate 3 metres- place the mirror. Ensure the Snellen's chart can be read through the mirror
4. Identify the patient requiring visual acuity
5. Check patients record and using a torch examine the eyes to ascertain the need for visual acuity
6. Find out if the patient can read
7. Explain the procedure to the patient
8. Place the tray on the table, locker or stool near a chart
9. Ask the patient to stand or sit facing the Snellen's chart at an area marked 6 metres:
   a. If using a mirror – point marked 3 metres from the mirror
10. Cover the left eye with an occluder, or the palm of the left hand taking care not to press the eye.
11. Ask patient to read from the top letter to as far down as possible with the right eye
    a. Advice patient not to peep with the left eye
    b. If the patient cannot read – use the E – chart
12. Record the visual acuity according to the findings e.g. 6/6, 6/12 etc.
13. Repeat the procedure for the left eye
14. If the patient cannot read the first top letter, reduce the distance between the Snellen's chart and the patient by one metre (by moving the patient or by moving the Snellen's chart towards the patient)
15. If the patient can only read the first letter of the chart, visual acuity is recorded as 5/60
16. If the patient still cannot read at 5/60, move the patient progressively closer to the chart, a metre at a time until the patient is one metre from the chart
17. If the patient cannot read at 1 metre, Hold (examiner) your hand at 0.9 metres and ask the patient to count your fingers. If the patient is able to count fingers record vision as (count fingers)
18. If patient cannot count fingers at 0.9m reduce the distance to 0.6m and 0.3m respectively:
    a. If patient is able to count fingers, record vision corresponding with the distance at which patient can count fingers
    b. If patient cannot count fingers at 0.3m: Wave your hand in front of patient's eye and ask if patient can see the hand movement then record visual acuity as HM (hand movement)
19. If patient cannot see hand movement: Shine a torch into the eye from different directions and ask patient if he can tell the direction the light is coming from. If patient can see light then record visual acuity as LP (light perception)
20. If patient cannot see light and neither the direction its coming from, visual acuity is recorded as NLP (No Light Perception)
21. Give feedback to the patient about the vision
22. Provide gauze swab to the patient to wipe the eyes if necessary
23. Instruct the patient where and what to do next
24. Clear the tray



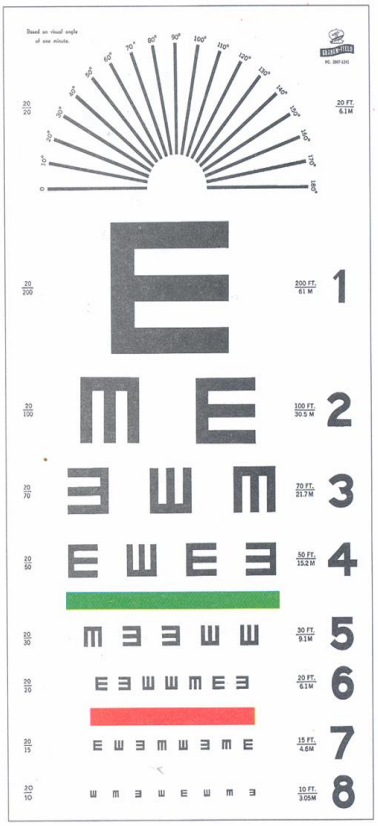


Figure 12.4: Snellen's charts

Procedure: Assessment of Peripheral Vision

The test used to assess peripheral vision is called confrontation test. This test assumes that the examiner's peripheral vision is normal.

1. Sit or stand opposite the patient at eye level at a distance of about 1 metre
2. Ask patient to cover the right eye while you cover your left eye, so the open eyes are directly opposite each other. Both examiner and the patient should be looking at each other's eye
3. Fully extend your arm midway between the patient and yourself and then move it centrally with the fingers moving
4. Have the patient tell you when the moving fingers are first seen.
5. Compare the patient's response to the time you first noted the fingers
6. Test nasal, temporal, superior, and inferior fields and record the results by shading the quadrant which the patient is unable to see the examining fingers.

Examining the Eyes of Young Children

This is often more difficult than for adult patients. It requires patience, and techniques to position the child appropriately.

It may be necessary to hold the child in either of the following positions:

1. Seat the child on the mother's lap so that her hands restrain the child's arms and steady his head. His legs may be retrained with her own legs.
2. Clinicians and mother sit opposite one another, such that the child's head is placed on the examiner's lap, and his body on the mother's lap:
    a. The examiner then opens the child's eyelids gently with the fingers and thumb of one hand
    b. The other hand is used to hold the light source (torch or ophthalmoscope)
    c. This gives a satisfactory view of the eye, which can then be examined as described above

EAR SYRINGING / EAR IRRIGATION

Objective
To be able to clear the external ear of the patient without causing damage

Indications
- To remove impacted wax
- To remove discharge
- To remove foreign body in the external ear

Requirements
1. Aural / Higginson syringe in a receiver
2. Aural speculum
3. Cotton wool in a galipot
4. Otoscope
5. Orange sticks
6. Wax hook
7. Receiver (kidney dish)
8. Lotion thermometer
9. Aural forceps
10. Jug of lotion at 30oc (plain water, normal saline or hydrogen peroxide)
11. Gloves
12. Mackintosh and towel
13. Head mirror and lamp
14. Sodium bicarbonate eardrops or olive oil

Procedure

Preparation

Patient:
1. If the ear has impacted wax put sodium bicarbonate ear drops or some olive oil, four hours before the procedure to soften
2. Explain the procedure to the patient and get his consent
3. Seat patient comfortably with the affected ear towards the light source

Environment:
1. Screen the bed / the area
2. Take the tray on a trolley to the patients side

Equipment:
1. Assemble the ear irrigation equipment and arrange them in order of use on a tray

Health Worker performing the procedure:
1. Wash hands and dry them and wear (non-sterile) gloves

Method

1. Place the mackintosh and towel protectively around the patient's neck
2. Tilt the patient's head slightly from the operator
3. Examine the ear and note the state of the external meatus
4. Demonstrate to the patient how to hold the kidney dish beneath the affected ear and ask him / her to hold it
5. Check the temperature of the lotion, fill the syringe from the jug and expel air
6. Hold the upper margin of the pinna of the affected ear firmly but gently between first and second fingers of the left hand
7. Pull the pinna gently upwards and backwards to strengthen the external auditory meatus
8. Steady the syringe against the thumb to have complete control
9. Direct a stream of fluid against the upper border of the meatus without inserting the nozzle of the syringe into the canal.
10. Syringing the ear
11. Let the fluid flow out into the kidney dish
12. Repeat the procedure until the returns are clear
13. When the wax is soft the wax hook and aural forceps can be used to remove it
14. The impacted wax in the ear may not come out completely with the 1st irrigation hence requiring instillation of the was softener then the procedure repeated after 24 hours
15. Dry the ear inside gently with the cotton wool on an orange stick and outside with a towel
16. Ask the patient to lie on the affected side for five minutes to drain out any fluid left behind
17. Thank patient for cooperating and leave him/her comfortable
18. Remove mackintosh and towel
19. Remove the screens
20. Take the tray to sluice room and discard the wastes appropriately
21. Decontaminate the instruments accordingly
22. Clean and keep the big tray in its place
23. Record and report

NOTE: If the irrigation fluid is too warm or too cold this can cause vertigo. In addition, stop the procedure if the patient complains of pain and inform your superior or check the tympanic membrane

TRACTION APPLICATION

Introduction

There are two main types of traction application:

1. Skin traction which includes, attaching adhesive strapping to the skin and which is mainly used in children and elderly people
2. Skeletal traction which includes passing a Steinmann pin, a Denham pin, or Kirchner wire through the bone. Mainly used in adults. The most commonly encountered are traction of the lower limb and cervical traction.

Objective

To be able to apply skin and skeletal tractions as indicated

Indications

- Treatment of fractures of the limbs, the neck, backbone or the pelvis
- Treatment of dislocations of joints
- Treatment of muscle spasms
- To prevent or correct deformities
- To relieve pain

Procedure: Skin traction

Requirements

1. Skin traction kit
2. Bed blocks
3. Orthopaedic bed
4. Balkan beam
5. Monkey pull
6. Pulley and weights
7. Scissors
8. Crepe bandage
9. Elastoplasts

Method: Skin traction of the lower limb

Examples: Russell's traction or Gallows' traction for fracture of the femur shaft in children

1. Explain procedure to the patient
2. Put the patient on the orthopaedic bed
3. Gently wash and dry the limb and shave in case of hairy skin
    a. Spray it with tincture of benzoin if using ordinary zinc oxide strapping.
4. Position the spreader to align the heel and place the cushioned parts of the traction kit over the malleoli

Figure 12.5: Gallows' traction

5. Remove gradually the non-adhesive strips over adhesive strapping to stick it over the skin on lateral and medial sides of the limb up to end and below the fracture line
6. Apply crepe bandage evenly and firmly over the strapping to keep it in place
7. Knot end of the cord into the hole in the centre of the spreader
8. Pass the cord over the pulley and attach it to the weights (which is about 10% of the patient's body weight) if sliding (continuous) traction or tie it to the splint if fixed traction is required

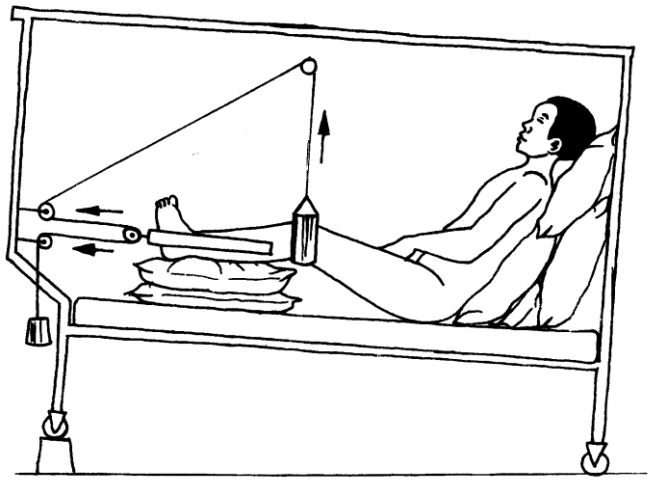


Figure 12.6: Traction by Russell's technique

Procedure: Skeletal traction

Requirements

1. Orthopaedic bed
2. Bed blocks
3. Balkan beam
4. Monkey pull
5. Pulley and weights
6. Traction cords
7. Trolley with the following:

Top shelf
1. Specific equipment for the procedure, e.g. Steinmann's pin introducer / hammer; Gardner-Wells tongs and halter (bandage to extend the neck)
2. Surgical blade
3. Local anaesthetic e.g. 1% lidocaine
4. A pair of sterile gloves
5. Syringes and needles
6. Sterile gauze and cotton wool swabs
7. Forceps
8. Antiseptic solution e.g. spirit, betadine, savlon
9. Galipot
10. Stirrup e.g. Bohler's
11. Draping towels
12. Kidney dish

Bottom shelf
1. Container with decontaminant to receive used equipment
2. Container to receive used swabs
3. Mackintosh
4. Sharps container
5. Antiseptic solution
6. Sedatives

Method: Skeletal traction - Perkin's traction
Specific indication: Femur shaft fractures

1. Explain the procedure to the patient
2. Decide whether to take the patient to theatre for general or regional anaesthesia or to work under local anaesthesia
3. When opting for local anaesthesia – sedate the patient
4. Ask assisting nurse to prepare orthopaedic bed, to put a mackintosh under the injured limb and to collect the necessary equipment
5. Clean hands and dry them with a sterile hand towel
6. Put on surgical gloves
7. Clean the limb around the area of insertion of the pin thoroughly with antiseptic solution
8. Drape the limb leaving the area for insertion and exit of the pin open
9. Apply betadine on the site of insertion and exit of the pin
10. Infiltrate the area with local anaesthesia down to the periosteum at both points of insertion and exit of the pin
11. Fix the Steinmann's pin into the Steinman's pin introducer
12. Make a wick with the surgical blade at the exact site of insertion
13. Put iodine on a gauze and apply on to the Steinman's pin
14. Introduce the Steinman's pin into the wick and start drilling in the bone from the lateral side through the skin and subcutaneous tissue but not the muscle so as to avoid injuring the common peroneal nerve. Make sure the Steinmann's pin goes straight to the medical side at right angles to the long axis of the bone until it comes out
15. Both ends of the Steinmann's pin should be the same length
16. Remove the introducer
17. Soak sterile gauze in betadine and apply to the skin at points of entry and exit of the Steinmann's pin. Strap the gauze in position.
18. Fix the stirrup to the Steinmann's pin
19. Tie the extension cord to the loop of the stirrup
20. Pass cord through the pulleys and attach the weights (1/10 – 1/7 of the body weight of the patient)
21. Elevate the foot of the bed with bed blocks
22. Give instructions for maintenance of traction

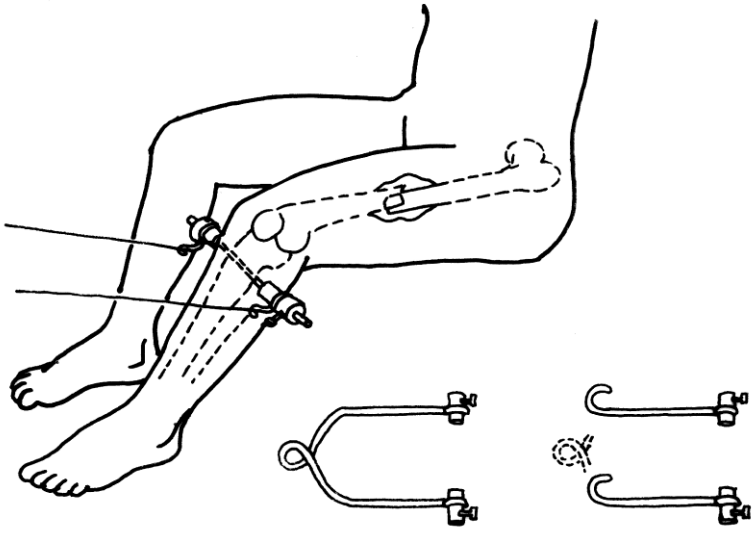


Figure 12.7: Perkins' traction application

Method: Cervical traction with Gardner Wells tongs

Specific indications:
1. Unstable fractures or fracture dislocation of a patient's cervical spine with partial quadriplegia or early complete quadriplegia in which there is hope for improvement
2. Rupture of the posterior ligament
3. As temporary splint for a cervical fracture while the patient is being treated for other injuries

Specific contraindications:
1. Complete permanent quadriplegia in which traction is pointless
2. Stable fractures

Method:
1. Explain the procedure to the patient
2. Sedate the patient
3. Put the patient on the orthopaedic bed
4. Fit the patient with a Halter (a bandage to extend the neck) temporarily while organizing traction device.
5. Identify the areas for insertion of the two screws Dab those areas with Povidone iodine (do not shave the scalp)
6. Infiltrate a wheal of lidocaine and anaesthetize the scalp at the relevant areas down to the periosteum
7. Apply iodine to the points of the screws
8. Apply the Gardner-Wells tongs on the patient's skull a finger's breadth above the ears in the line of the Mastoid process.
9. Apply them symmetrically; twist the screws so that their points go through the anaesthetized skin to grip the outer table of the skull.
10. Tighten the screws until the small nipple in one of the screws protrudes 1mm from its hole then tighten the lock nut.
11. Apply traction on a bed with fracture boards and connect to the pulley and weight.
12. Ensure that the patient is turned regularly and pressure areas rubbed 2 hourly.
13. Replace the traction at 6 weeks with a cervical collar
14. Elevate the head end of the bed with bed blocks

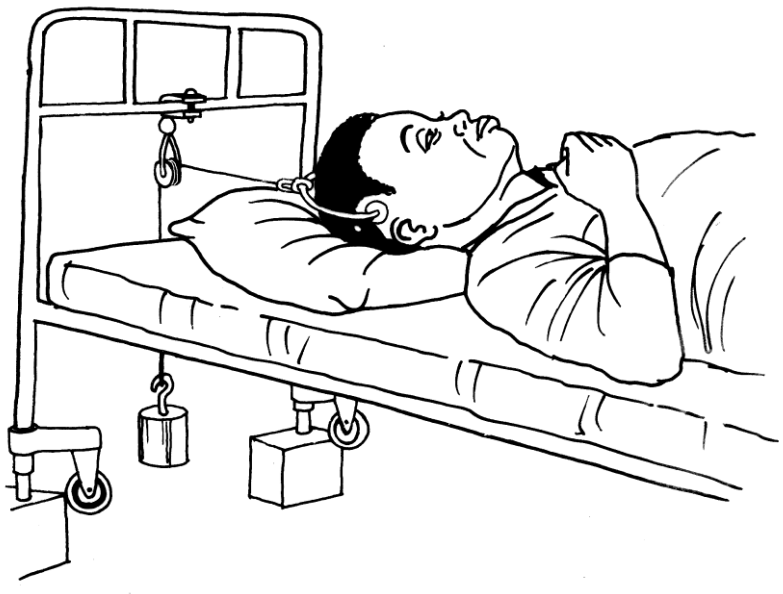


Figure 12.8: Cervical traction with Gardner Wells's tongs

Maintenance of traction

1. Check function of equipment 8 hourly and when necessary to ensure that:
    a. Traction cords are aligned in each pulley (centre of pulley tract)
    b. Cords are not stretched or frayed and that knots are secured
    c. Weights are hanging freely away from the bed and not touching the floor
    d. Spreader bars, foot plate or splints do not touch foot of bed
    e. Overhead frame / traction bars are tightly fastened
    f. Bed linen is not interfering with line of traction
2. Maintain correct body alignment and proper bed position for counter traction if indicated
3. Check circulation of the foot and toes by observing colour, temperature, sensation
4. Assist the patient with activities of daily life throughout the day while avoiding lifting the weights
5. Check weights after position changes
6. Encourage the patient to use the trapeze to assist with repositioning and to perform a range of motion exercises
7. Observe the patient for secondary complications of immobility like thrombophlebitis, constipation or urinary problems
8. Inspect pin entry / exit sites when applicable every 8 hours. Observe for redness, swelling, odour, bleeding and discharge
9. Perform pin site care where applicable: clean with antiseptic solution (ensure ends of pin are protected with corks / rubber stoppers)
10. Perform pressure area care to prevent pressure sores while turning / lifting the patient
11. Administer analgesics to relief pain as indicated

CHAPTER 13: ADVANCED SKILLS IN OBSTETRICS AND GYNAECOLOGY

Annex to CMS 364: Reproductive Health II

- **IUCD Insertion**
- **Manual Vacuum Aspiration**
- **Breech delivery**
- **Delivery in OPP**

IUCD INSERTION

Objective
To be able to insert an IUCD safely and correctly

Indications
To prevent pregnancy:
1. Client's choice of method provided there are no contra–indications
2. Clients who cannot use other FP methods

Timing of IUCD insertion
1. During menstruation (day 1–5) because of the following reasons:
    a. You are sure the client is not pregnant
    b. The cervical os is partially open at this time which enables the device to go through the cervical os easily
    c. The client will not worry of unnecessary bleeding that may be caused by the forceps during insertion
2. After vaginal delivery: after 4–6 weeks
3. Post-abortion: after 4 – 6 weeks
4. Post Caesarean Section: 6–8 weeks provided that on examination the scar is healed without any tenderness, the uterus is well involuted and there is no history of infection

Requirements
A quiet well ventilated and lighted room.
A couch with a sheet or blanket
Trolley with the following sterile equipment:
1. Two (2) Vaginal specula (Cusco's)
2. Two (2) kidney dishes
3. Two (2) bowls for swabs
4. One (1) tenaculum
5. One (1) uterine sound
6. One (1) artery forceps of 15 cm
7. One (1) curved pair of scissors
8. One (1) sponge holding forceps
9. One (1) non-toothed dissecting or artery mosquito forceps
10. Two (2) pairs of high–level disinfected and plunger
11. Sanitary towels
12. Plastic container with Jik 1:6 for used instruments
13. Leak proof container for soiled swabs
14. Bottle of lotion

Procedure:

Procedure described with Load Copper T 380A as an example

General preparation

1. Collect instruments and supplies required for IUCD insertion
2. Explain the procedure to the client and encourage her to ask question
3. Ask the client to empty her bladder, clean her genital area and wash her hands
4. Tell the client you will be gentle and careful but she may feel some discomfort during procedure
5. Wash your hands with soap and water

Method: vaginal examination (see also procedure manual)

1. Wear high level disinfected gloves on both hands
2. Inspect and swab the vulva
3. Inspect external genitalia:
    a. check for sores, warts and abnormal discharges
4. Perform speculum examination to inspect vagina and cervix:
    a. Assess for masses, any cervical discharge or abnormalities of the cervix and vagina, take the specimen if necessary
    b. Gently remove speculum and place in decontamination fluid.
5. Perform bimanual pelvic examination.
    a. Assess size, position, consistency, mobility and tenderness of uterus. ***If any possibility of pelvic infection or pregnancy, do not insert IUCD!***
    b. Assess cervix for abnormal discharge, friability, cervical motion tenderness
    c. Assess adnexa for masses or tenderness and for infection.
    d. Palpate Bartholin's and Skene's glands for any discharge, swelling or tenderness.
6. Remove gloves and dispose of as per infection prevention guidelines.
7. Wash hands with soap and water.

Preparation for IUCD insertion

1. Arrange equipment for IUCD insertion.
2. Load Copper T 380A in the sterile package using the no–touch technique:
    a. Sterile gloves are not necessary if IUCD is loaded in the sterile package (see guidelines attached to the IUCD)
    b. Do not load the IUCD more than 5 minutes before insertion, otherwise the IUCD may not return to its original shape after insertion

Method: IUCD insertion

1. Put on high level disinfected gloves.
2. Insert the second high level disinfected speculum, clearly visualize the cervix
3. Using antiseptic solution, swab cervix at least three times
4. Apply the tenaculum to the cervix at 10 o'clock or 2 o'clock position. Apply gently and slowly and close the tenaculum teeth only once to minimize discomfort. The tenaculum assists in stabilizing the uterus and minimizing the risk of perforation.
5. Slowly and gently pass the uterine sound to confirm the position, direction and depth of the uterine cavity. Gently apply counter–traction with the tenaculum by holding it downward and outward when passing the uterine sound to align the uterus and straighten endocervical canal.
6. If there is resistance at the cervix and / or the client begins to show signs of fainting or pallor, stop the procedure.
7. Pass the sound only once to minimize chances of infection. Be careful not to touch the speculum or the walls of the vagina with the sound (no touch technique). A slight resistance indicates that the tip of the uterine sound has reached the fundus. Note the direction of the sound.

8. Remove sound and note the depth of the uterine cavity by noting the level of mucus or blood on sound
9. Do not insert IUCD if uterine cavity is less than 6.5cm
10. Adjust the blue depth gauge of the IUCD so that the distance between the top of the folded arms of the blue - depth gauge closest to the top of the arms is equal to the depth of the uterus as it was measured on the sound.
11. Remove the loaded Copper T 380A from the package without touching any un-sterile surfaces

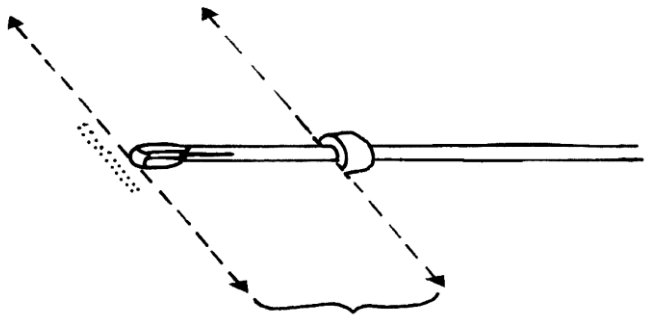


Figure 13.1: Using Blue Depth Gauge to Mark Depth of Uterus in Inserter Tube

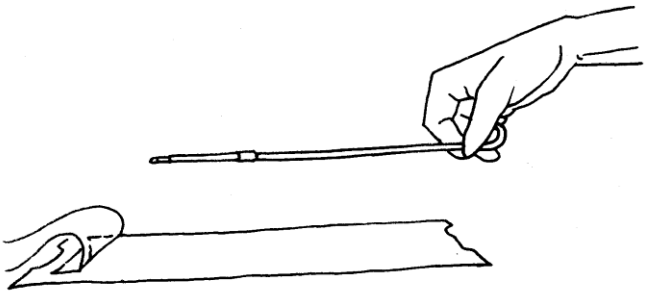


Figure 13.2: IUCD fully loaded in Inserter Tube

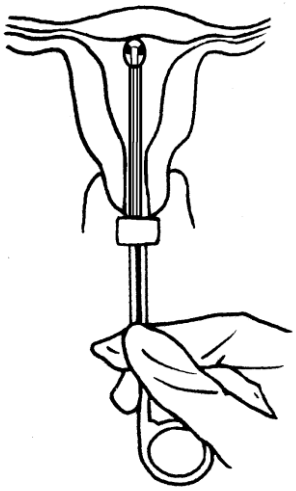


Figure 13.3: Advancing loaded inserter assembly

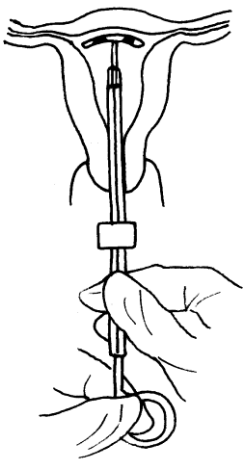


Figure 13.4: Withdrawing Inserter Tube to Release IUCD

12. To Insert the Loaded Copper T 380A IUCD:
    a. Grasp the tenaculum and pull firmly to align the uterine cavity and cervical canal with the vaginal canal
    b. Gently introduce the loaded IUCD through the cervical canal, keeping the blue depth gauge in a horizontal position
    c. According to the position and direction of the uterine cavity, advance the loaded IUCD until the blue depth gauge comes in contact with the cervix or resistance of the uterine fundus is felt. Be sure that the blue depth gauge is in the horizontal. Do not use force.
13. Hold the tenaculum and the white rod stationary in one hand.
14. With your free hand, withdraw (pull toward you) the inserter tube until it touches the thumb grip of the white rod without moving the rod:
15. This withdrawal will release the arms of the Copper T 380A high in the uterine fundus and ensures high fundal placement of the IUCD. Apply gentle counter-traction with tenaculum when releasing arms of Copper T
16. Once the arms have been released, very gently and carefully push the inserter tube upward toward the top of the uterus without moving the rod until you feel a slight resistance. This step ensures that the arms of the "T" are as high as possible in the uterus

17. Hold the inserter tube stationary while gently and slowly removing the white rod. Then remove the inserter tube slowly. The strings should be visible, protruding from the uterus.
18. Cut the strings so that they protrude only 3–4 cm into the vagina. This is done to minimize the chance of the strings being trapped between the rod and side wall of the inserter tube and dislodging the IUCD
19. Gently remove the tenaculum and observe for any bleeding from tenaculum sites
    a. Apply pressure to bleeding sites with swab, if needed.
20. Remove speculum
21. Leave the client clean and dry and give her a sanitary towel.
22. Place used instruments in decontamination solution and dispose off contaminated swabs/supplies in approved container
23. Assist the client from the table slowly (be alert to possible dizziness)
24. Instruct her how and when to check strings.
25. Invite questions and instruct her about return visits and what to do and where to find help if needed.
26. Have a client wait in clinic for 15 to 30 minutes after insertion to observe for excessive cramps, fainting or pallor and prescribe analgesics if appropriate
27. Give client instructions on use of IUCD
28. Decontaminate the couch and other contaminated surfaces (table) with a cloth soaked in the Jik solution
29. Remove gloves and dispose or process gloves per infection prevention guidelines
30. Wash hands with soap and water
31. Give return appointment date to come after 2 months and ask her to come earlier if need be
32. Record insertion in client record and daily activity register

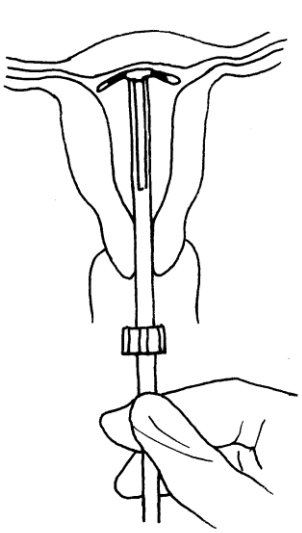


Figure 13.5: Positioning the IUCD high in the uterus

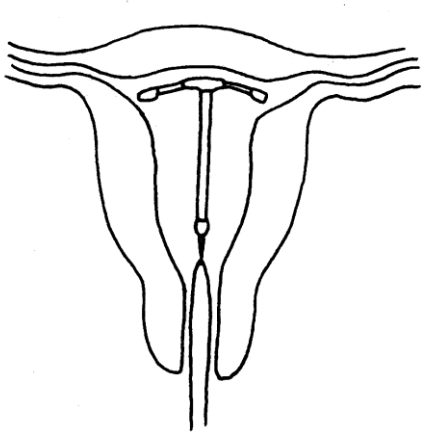


Figure 13.6: IUCD fully inserted in uterus

MANUAL VACUUM ASPIRATION (MVA)

Objectives
To be able to correctly carry out an MVA

Specific objectives
1. To assemble an MVA kit
2. To correctly follow the procedure used in evacuation
3. To perform a complete uterine evacuation with MVA
4. To decontaminate the equipment

Indications
This procedure is used diagnostically and therapeutically in removing uterine contents, products of conception or retained products of conception.
1. Incomplete abortion
2. Delayed post partum haemorrhage (PPH) due to retained placental fragments
3. Diagnostic dilatation and curettage
4. Therapeutic abnormal uterine bleeding
5. Inevitable abortion before 16 weeks
6. Molar pregnancy

Requirements
1. Plunger with its accessories
2. Syringe with its accessories
3. Various sizes of cannula's
4. Valves
5. Adaptors to fit to various cannula
6. Tenaculum or vulsellum
7. Speculum and sponge forceps
8. Antiseptic solution

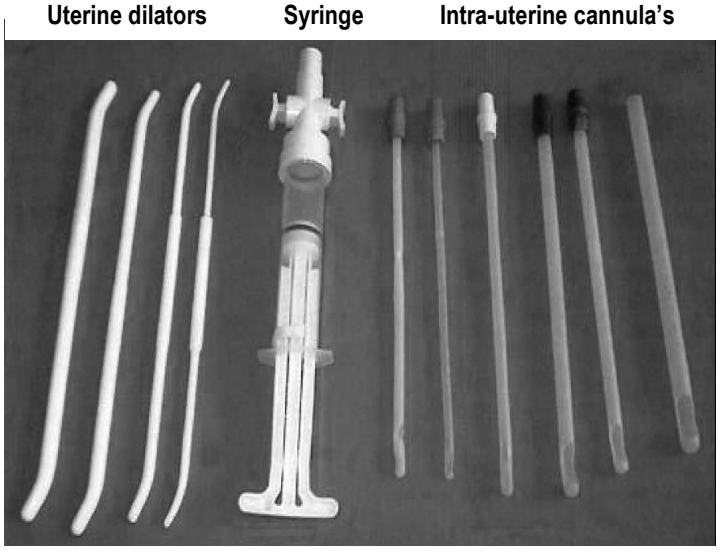


Figure 13.7: MVA set

Procedure

Preparation
1. Perform a bimanual pelvic examination to assess the size and position of the uterus and the condition of the fornices
2. Assist patient in lithotomy position, clean and drape the patient appropriately

Method
1. Put on sterile gloves
2. Prepare the MVA syringe
3. Assemble the syringe
4. Close the pinch valve
5. Pull back on the plunger until the plunger arm locks

6. Swab the vulva as follows:
    a. Using the right hand, pick the moistened swab, drop it to the left hand, swab the furthest labia majora with from up to down and discard swab
    b. Repeat the same to the nearest labia majora, then the furthest labia minora, ending with the nearest labia minora
    c. Use the left index finger and thumb to separate the labia to expose the vestibule and use the right hand, to swab it from up to down
7. Insert the vaginal speculum to expose cervix
8. Apply antiseptic to the vagina and cervix
9. Use tenaculum to grasp cervix at 10 or 2 o'clock (be gentle and close the teeth of the tenaculum only once)
10. Inject 1 ml of 0.5% lignocaine solution into the anterior or posterior lip of the cervix at 10 o'clock or 12 o'clock position.
11. While gently applying traction to the cervix, insert the cannula through the cervical canal into the uterine cavity just past the internal OS, starting with the smallest size up to the largest that can be accommodated. Rotate the cannula gently applying pressure to help it pass through the cervical canal.

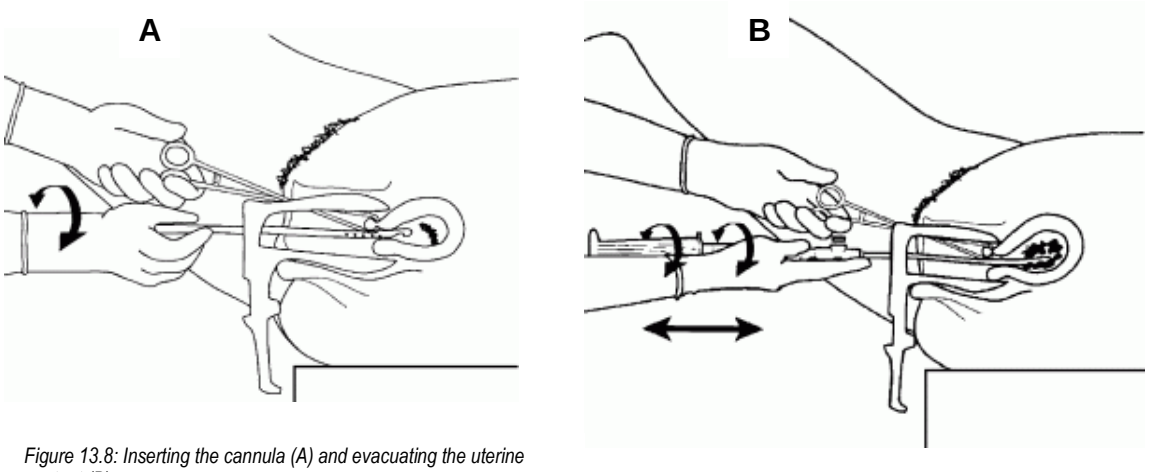


Figure 13.8: Inserting the cannula (A) and evacuating the uterine content (B)

12. Slowly push the cannula into the uterine cavity until it touches the fundus but not more than 10 cm
13. Measure the depth of the uterus by dots visible on the cannula and then withdraw the cannula slightly.
14. Attach the prepared syringe to the cannula by holding the tenaculum or vulsellum and the end of the cannula in one hand and the syringe in the other
15. Release the pinch valve(s) on the syringe to the transfer the vacuum through the cannula to the uterine cavity
16. Evacuate remaining contents by gently rotating the syringe from side to side (10-12 o'clock) and then moving the cannula gently and slowing back and forth within the uterine cavity.
17. Empty it then establish the vacuum.
18. Finally check for signs of completion:
    a. Red or pink foam but no more tissues are seen in the cannula
    b. A grating sensation is felt as the cannula passes over the surface of the evacuated uterus
    c. The uterus contracts around (grips) the cannula
19. After noting signs or completion, withdrawal the cannula.
20. Detach the syringe and place the cannula in decontamination solution.

DELIVERY OF THE BABY IN POPP (PERSISTENT OCCIPITO POSTERIOR POSITION)

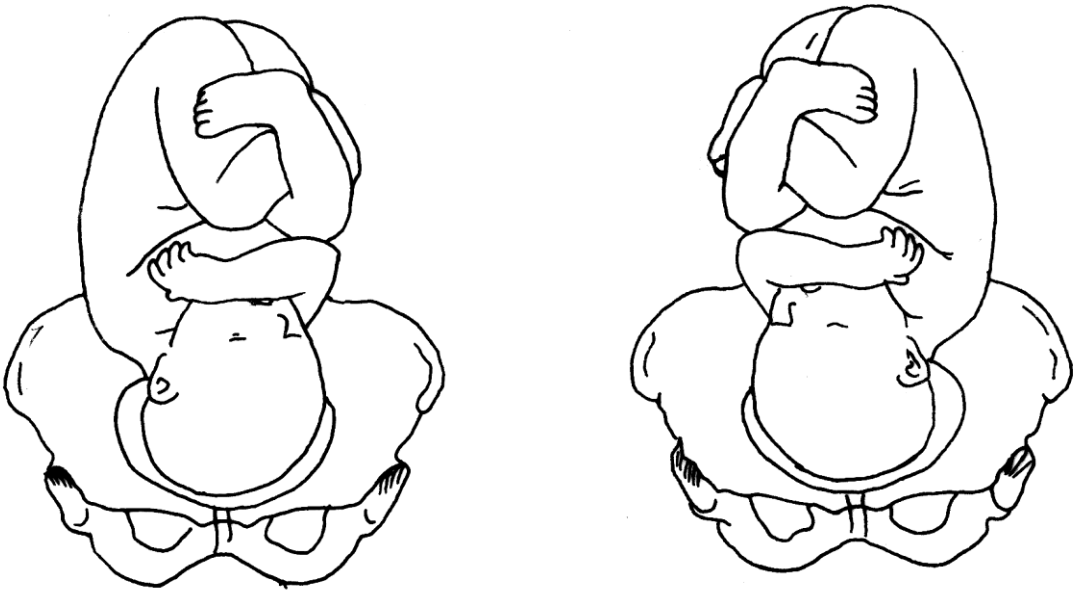


Figure 13.9: Foetuses in positions prone to develop into OPP

Objective
The ability to assist a safe delivery of a baby presenting in persistent occipital posterior position

Indications
Mother in 2nd stage of labour with POPP

Requirements
As per spontaneous vertex delivery: see manual

Procedure

Preparation

1. Greet the mother (when only coming in at the start of 2nd stage)
2. Explain the mother about the situation and possible outcomes and interventions
3. Explain to the mother what is expected of her and the importance of the following instructions
4. Reassure the mother to gain cooperation
5. Provide privacy, close nearby windows and ensure adequate working space
6. Ensure resuscitation trolley and incubator are ready
7. Alert the following people:
    a. Paediatrician / Neonatal nurse about the possible delivery of asphyxiated baby
    b. Obstetrician and anaesthetist for possible caesarean section
8. Position the mother in lithotomy on the delivery couch
9. Give instructions to the assistant:
    a. To listen to the foetal heart rate after every contraction
    b. To assess contractions and maternal pulse rate
    c. To encourage the mother and apply measures of relieving discomfort e.g. wipe the face
    d. To administer oxytocin with the birth of the anterior shoulder
    e. To provide immediate care to the baby
10. Perform digital examination to confirm full cervical dilatation and to confirm the position of the caput
11. Tell the mother that she is ready to deliver

Note: The labour and delivery is likely to be prolonged, therefore continue reassuring, supporting and involving the mother in every decision made

Method

1. Wear apron / gown and mask if prescribed by institutional guidelines
2. Wash hands
3. Request assistant to open the sterile pack
4. Dry hands with sterile towel
5. Put on sterile gloves
6. Arrange top shelf instruments / equipment on the sterile field
7. Ask assistant to pour lotion into the sterile bowel
8. Swab the vulva and drape accordingly
9. Encourage her to push hard with every contraction
10. Assess the perineum for adequacy and decide whether to give episiotomy
11. When the sinciput first emerges from under the symphysis pubis (outcome of short rotation) give time to emerge as far as the root of the nose
12. Maintain flexion by placing the fingers on the sinciput
13. Control and allow the occiput to sweep perineum to be born first
14. Grasp the head at the parietal eminences and extend it until the rest of the face is delivered from under the symphysis pubis
15. From here proceed conform step 16 under spontaneous vertex delivery (Check for the cord around the neck etc.)

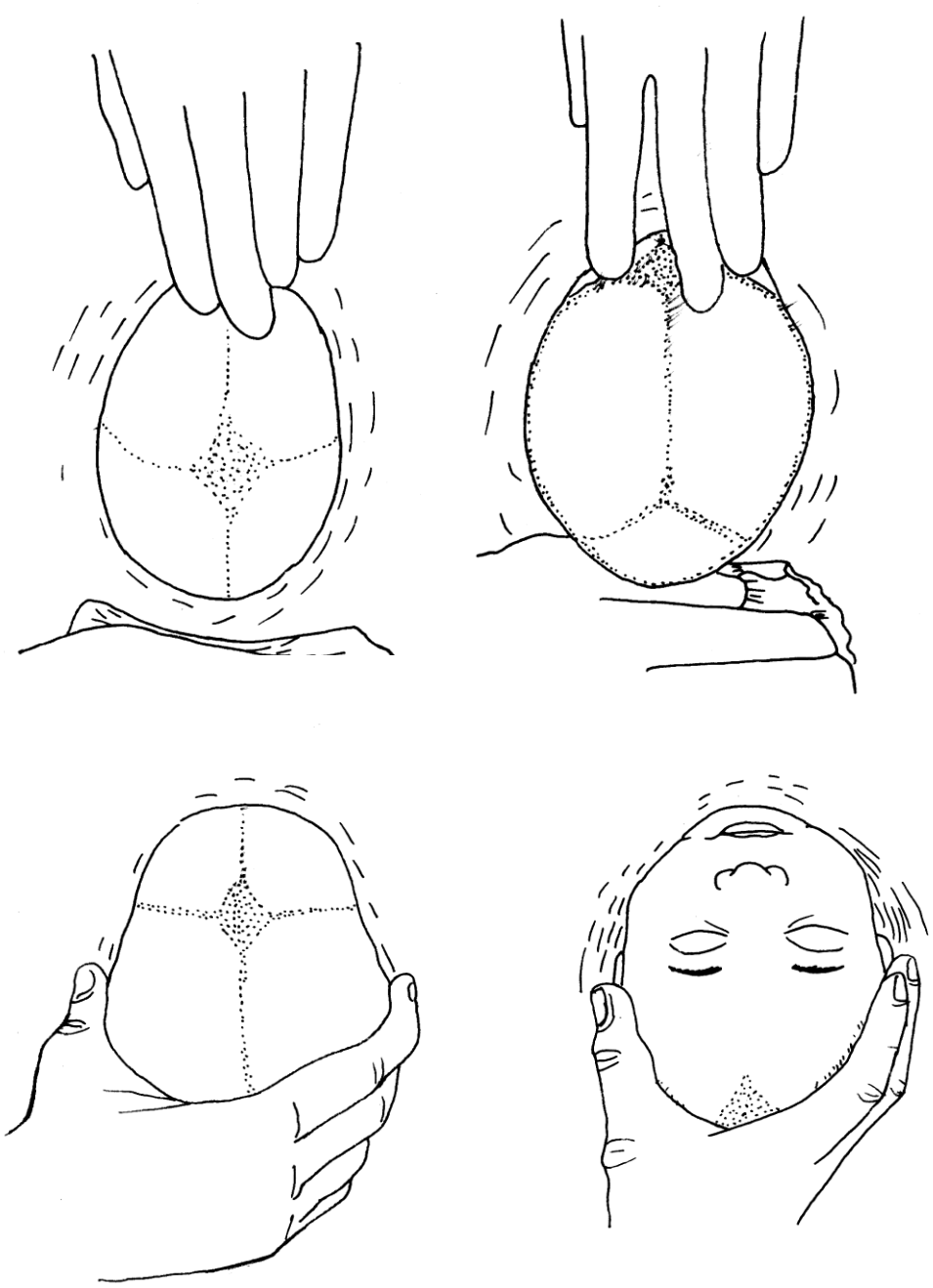


Figure 13.10: Assisting the head and perineum in POPP

VAGINAL DELIVERY OF THE BABY IN BREECH PRESENTATION

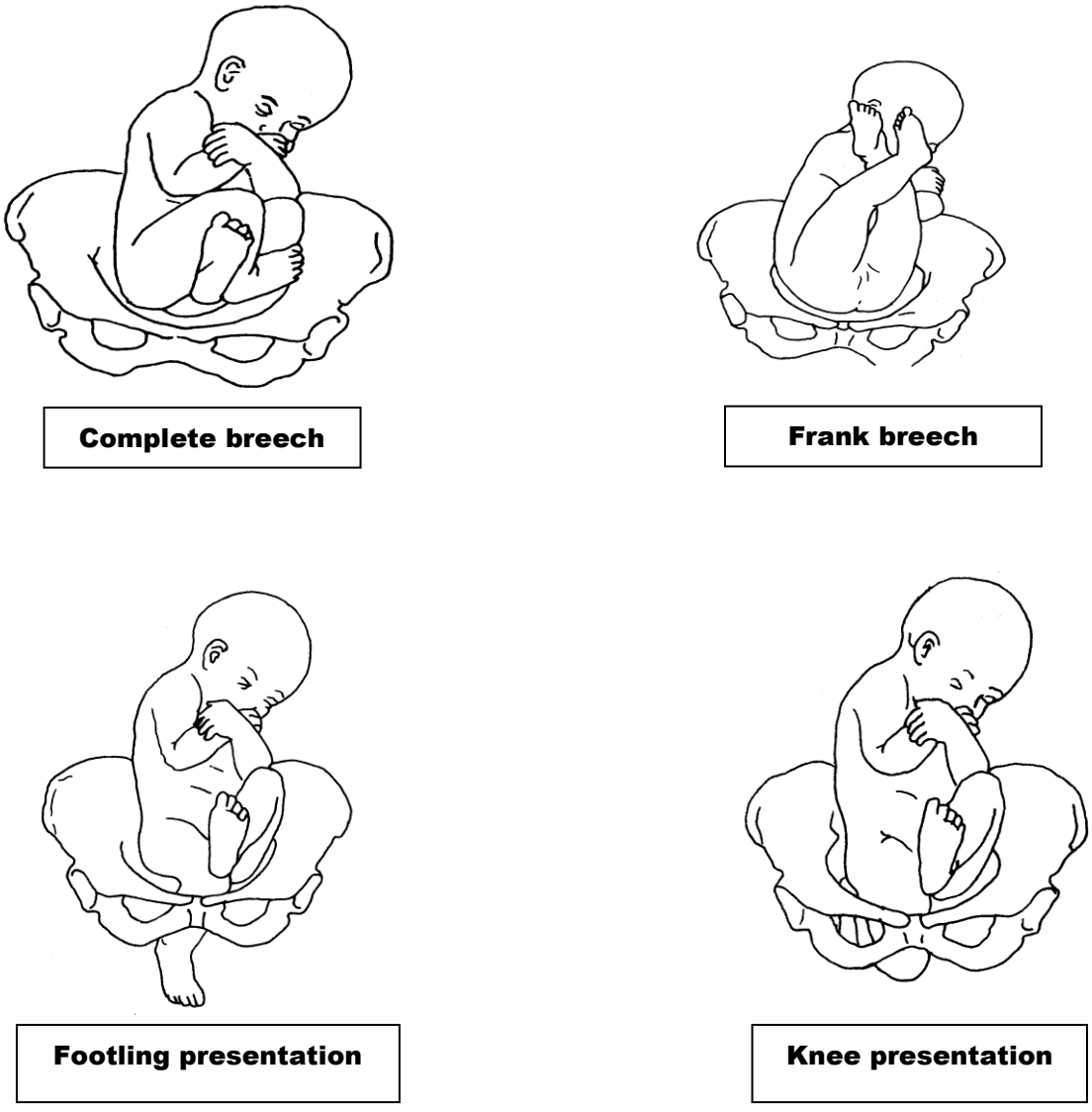


Figure 13.11: Different breech presentations

Introduction

There has been a lot of discussion as whether to perform an elective vaginal delivery of the breech or whether to conduct a caesarean section for every breech. In remote circumstances or when delivery has already progressed far into second stage, there is no choice but to deliver the baby vaginally.

Objective
To be able to conduct vaginal breech delivery with minimal trauma to mother and baby

Indication
A woman with a baby in breech position in advanced second stage of labour
Relative indication: A low-risk woman with a baby in breech position in second stage of labour

Contra-indications
Any indication that there might be cephalo-pelvine disproportion, e.g.:
1. Contracted pelvis of the mother
2. Short statute of the woman
3. Big foetus or hydrocephalus of the foetus
4. Complicated past obstetric history: Caesarean Section due to obstructed labour
5. Delayed progress of labour during first stage

Requirements
As for normal delivery + the following:
- Forceps
- Resuscitation tray
- Incubator

Procedure

Preparation
1. Explain and reassure the woman about the situation and possible interventions
2. Explain to the mother what is expected of her and the importance of following instructions given during delivery
3. Provide privacy, close near by windows and ensure adequate working space
4. Ensure resuscitation trolley and incubator are ready
5. Alert the following people:
   a. Paediatrician / Neonatal nurse about the possible delivery of asphyxiated baby
   b. Obstetrician and anaesthetist for possible caeserian section
6. Position the mother in lithotomy on the delivery couch
7. Give instructions to the assistant:
   c. To listen to the foetal heart rate after every contraction
   d. To assess contractions and maternal pulse rate
   e. To encourage the mother and apply measures of relieving discomfort e.g. wipe the face
   f. To administer oxytocin immediately after delivery of the head
   g. To provide immediate care to the baby
8. Perform digital examination: confirm full dilatation and the presenting part
9. Tell the mother that she is ready to deliver

Method: uncomplicated breech delivery: Burns Marshall manoeuvre
1. Swab the vulva
2. Wait for baby's buttocks to distend the vulva and perineum
3. Encourage the mother to push (bear down) with contractions
4. Prepare for episiotomy by administering local anaesthesia
5. Perform episiotomy, when the buttocks are distending the perineum.

6. Patiently wait for the baby to be born up to the umbilicus
7. Assist to disengage the legs if not born spontaneously
8. Check whether the cord is pulsating
9. Gently move the cord to the posterior to avoid compression on the pelvic bone
10. Assist delivery of the shoulders by elevating the posterior buttocks
11. Allow baby to hang by its weight to facilitate descent of the after coming head down to the pelvic floor
12. Feel for the sub-occipital region or see the nape of the neck
13. Grasp the baby by the ankles then applying some traction in upward direction carry the trunk up in a wide arch to deliver the mouth and the nose (Burns-Marshall manoeuvre)
14. Instruct the mother to stop pushing but take regular breathes to deliver the vault slowly
15. Clear airway by wiping out mucus and blood from nostrils and mouth.
16. Clamp umbilical cord in two places and cut in between.
17. Show baby to the mother allowing her to identify the sex.
18. Score baby at one minute
19. Give baby to the assistant to provide immediate care.
20. Continue with the management of third stage of labour.

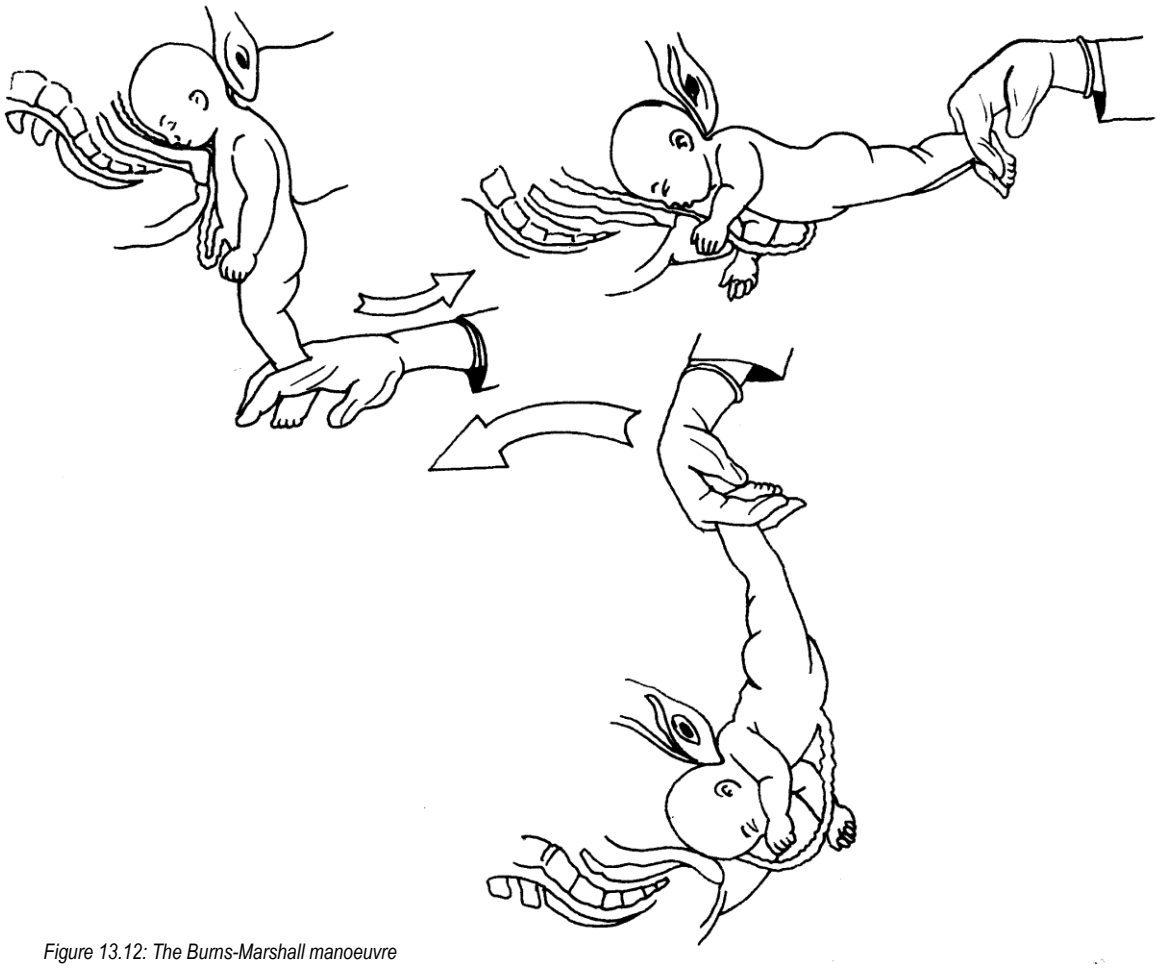


Figure 13.12: The Burns-Marshall manoeuvre

Method: Complicated breech delivery

Extended legs

If legs are not born spontaneously, this is an indication that they are extended.

1. Encourage the woman to push until the popliteal fossae appear in the vulva
2. Apply pressure on the popliteal fossa and abduct the thigh at the same time. This will help flex the knee and aid in the extraction of the foot, which will be swept over the baby's abdomen. (NB: The knee bends in one direction only!)
3. Repeat the same for he other leg and proceed with the delivery as before

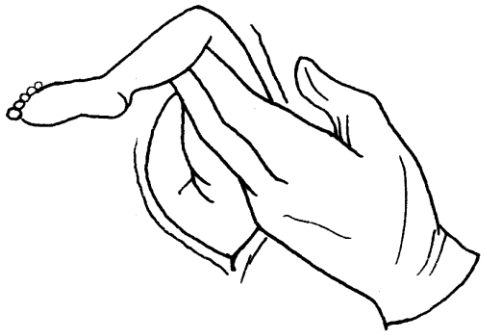


Figure 13.13: Assisting delivery of extended leg by pressure on popliteal fossa

Extended arms: Lövset's manoeuvre

If arms are not born spontaneously after the umbilicus is born, suspect extended arms

1. Insert your right index and middle finger starting from umbilicus and move them upward towards the chest to feel for the elbows
2. If you do not feel the elbows, the arms are extended
3. Deliver extended arms by Lövset's manoeuvre which is a combination of rotation and downward traction while ensuring that the foetal back remains uppermost
4. Grasp the baby by the iliac crest with your thumbs on the sacrum
5. Apply downward traction until the anterior axilla is visible
6. Raise the body slightly to allow the posterior shoulder to descend
7. While applying downward traction, rotate the body half or 180° circle clockwise or counter-clockwise depending on the position until the posterior arm has become the anterior arm
8. Deliver the now anterior arm under the pubic arch by splinting the humerus and drawing down the elbow
9. While still applying gentle traction, rotate the baby with the back uppermost ½ circle in the opposite direction so that the posterior arm which is still inside becomes now the anterior
10. Deliver the now anterior arm under the symphysis pubis by slight downward traction as above
11. Proceed with the delivery as uncomplicated breech delivery

NOTE: For the right arm of the baby use your left hand and vice versa.

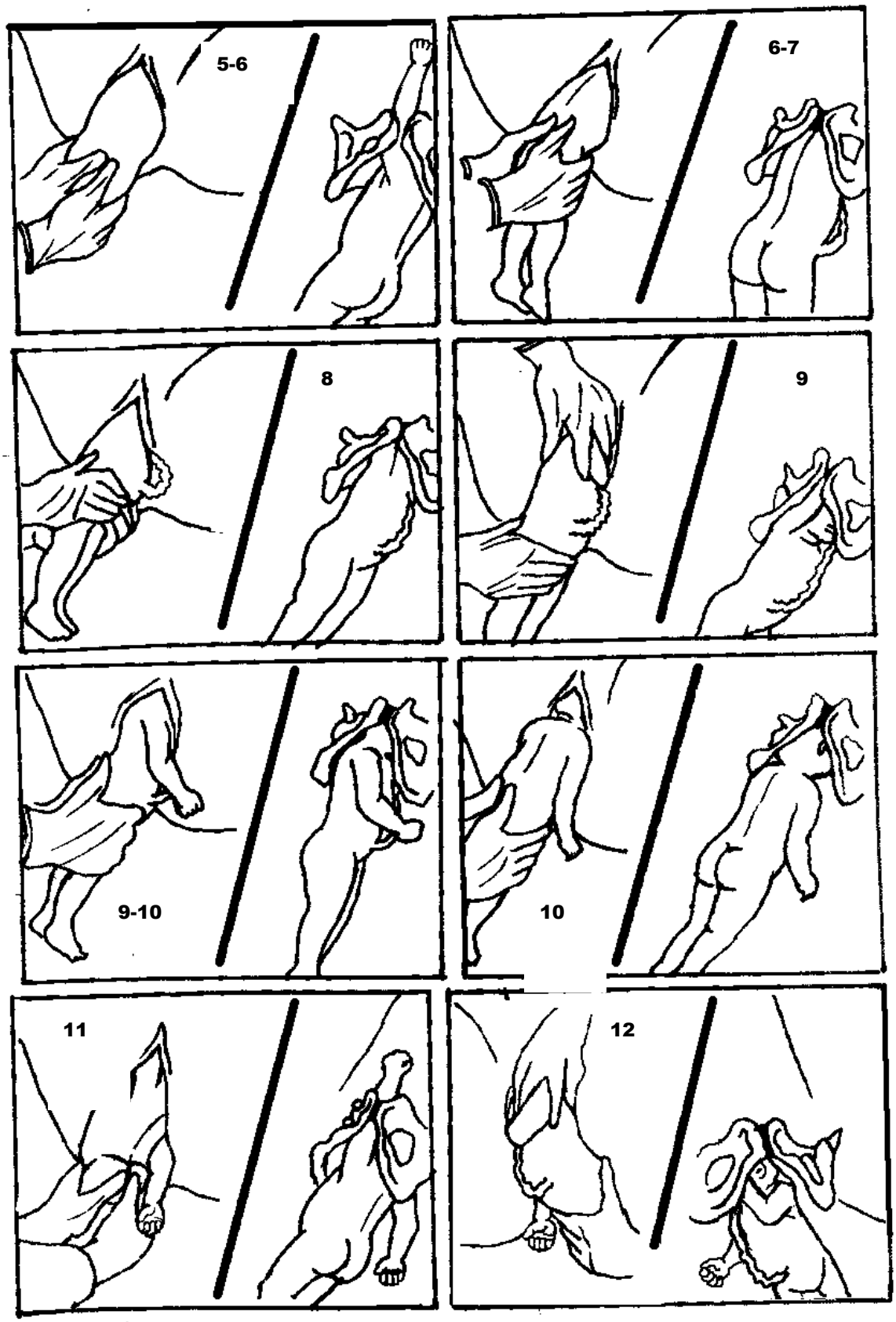


Figure 13.14: Løvset's manoeuvre for delivery of extended arms

Extended head: Mauriceau-Smellie-Veit manoeuvre

If neck and hairline are not visible after the baby has hung for a few seconds by its own weight, suspect extended head

In this case, when there is no obstetrician nearby, deliver the extended head by the Mauriceau-Smellie-Veit manoeuvre which is a combination of jaw flexion and shoulder traction. In case of a nearby obstetrician, forceps delivery is an alternative

1. Put baby astride across your left arm
2. Slide three fingers of your left hand into the vagina and feel for the baby's mouth
3. Insert the middle finger into the baby's mouth
4. Place the other two fingers, one on each molar bone to flex the head
5. Place your right hand over the baby's shoulders and hook index and ring fingers over the shoulders to apply traction while the right middle finger pushes the occiput downward to assist the flexion
6. Ask the assistant to give supra-pubic pressure
7. Gently pull the baby's head in a downward and outward direction, through the cavity and to the outlet (important: flexion before traction!)
8. Slightly raise the trunk to free the mouth
9. Change the right hand to grasp the feet and with upward traction assist delivery of the face (conform Burns-Marshall manoeuvre)
10. Clear airway
11. Deliver the vault

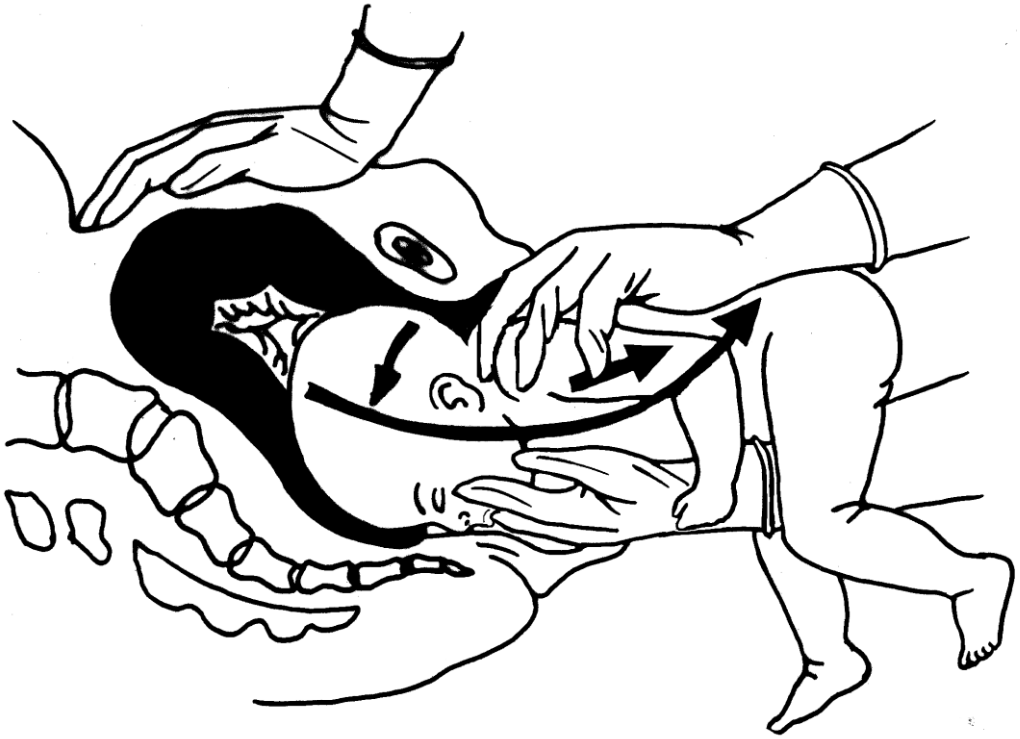


Figure 13.15: Mauriceau-Smellie-Veit manoeuvre

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