NUTRITION

- Briefly describe infant feeding options of HIV positive women in resource constrained settings.
- Describe the 'baby friendly' hospital status and describe the following assessment requirements:
  - a) 10 steps to successful breastfeeding
  - b) Breastfeeding policy

Edit title

- Explain the AFASS Criteria for infant and young child feeding options for HIV positive mothers.
- List any five (5) nutritional related policies within the Kenyan Health Sector.
- Identify Four (4) anthropometric measurements of children collected during general programme in Gatundu District by the Fourth Year Medical Students in 2007 (4 Marks). Briefly explain how the measurements collected in Q (a) above can be used to explain the nutritional situation of children in the community. (3 Marks).
- List at least Two (2) nutritional status indicators relevant in explaining the children's nutrition situation I Gatundu using the measurements identified in Q..a above (2 Marks).

Cut off point measurements for defining severe under-nutrition

NUTRITIONAL STATUS	CHILDREN	PREGNANT WOMEN	OTHER ADULTS
Normal	13.5 cm or more	21 - 33 cm	18.5 cm or more
At risk of undernutrition	12.5-13.5		
Moderate under-nutrition	11.5 -12.4	Less than 21 cm	16-18.5 cm
Severe under-nutrition	Less than 11.5 cm		Less than 16cm
Obesity		33 cm or more	33 cm or more

Edit title

- Outline the factors that hinder effective food hygiene practices in Kenya?
  a) Low level of sanitation & poor and unsanitary practices
  b) Lack of proper storage facilities and transport facilities
  c) Use of untreated water
  d) Increasing no. of food street vendors
  e) Engagement of untrained food handlers and non-medically fit food handlers
  f) Laxity in application of relevant legal measures (Public health acts related to food hygiene/ sanitation)

Edit title

- PEM, among under 5z especially, is the single most widespread nutritional disorder in Kenya today. Briefly outline 4 prevention strategies that you would recommend to relevant policy makers.
  a) Improve Household food security
  b) Adequate maternal & child care
  c) Improve access to health care services
  d) Ensure a Healthy environment

Edit title

- Outline the role of Vitamin A.
  a) Vision- best known function of Vitamin A (Formation of rhodopsin pigments for vision)
  b) Physiological processes e.g fetal development, taste, hearing, appetite and growth
  c) Normal functioning of the mucosal epithelium
  d) Integrity of the immune system
  e) Maintenance of healthy epithelial tissues through cellular differentiation and proliferation

Edit title

- How can VAD be prevented?
  a) In all areas and all health contacts, encourage the daily intake of Vit. A rich foods particularly by women and children. Stress dietary diversification through counseling and other communication
  b) Encourage adequate breastfeeding in infancy and sustained breastfeeding for atleast 2yrs- mothers to give colostrums
  c) Encourage mothers to give Vit. A rich foods to young children including use of fortified foods
  d) Supplementation: sick-child contacts, give high dose Vit. A supplements to children with measles, severe malnutrition, prolonged/severe diarrhea and other infections
  e) In all areas, train staff to detect and treat clinical VAD e.g xerophthalmia
  f) Preventive supplementation for children 6-59 months of every 4-6 months and all post partum women
  g) Fortification of food commonly consumed by high risk groups in the community

Edit title

- Write short notes on the values and limitations of human breast milk for human nutrition in infancy?
- **Values**
  - a) Always available, free, sterile
  - b) Assists bonding
  - c) Can delay next pregnancy for upto 6 months (LAM)
  - d) Contains anti-infective factors
  - e) Baby less likely to become overweight
  - f) Mother continue to provide milk adequate in all nutrients
  - g) Breastfed babies have higher IQ scores compared to formula fed infants
  - h) Protects against breast cancer and ovarian cancer
  - i) Mothers get back to shape faster
- **Limitations**
  - j) Breast milk is adequate in most nutrients except Vitamin D
  - k) After 6 months Iron levels in milk reduce and must be supplemented

Edit title

- In what ways does culture define food?
  a) The meaning of food is an exploration of culture through food. What we consume, how we acquire it, who prepares it, whose at the table and who eats 1st is a form of communication that is rich with meaning
- Describe briefly measures that can be used to control contamination to food in an institution?
  b) Improve sanitation e.g clean work counters, separation of work counters and teach appropriate sanitary practices like washing hands before handling food, after visiting the toilet, washing uncooked vegetables and unpeeled fruits in chlorinated water
  c) Use of proper storage facilities like fridges
  d) Use of chlorinated water
  e) Screening food handlers for carrier state and yearly medical exams
  f) Enforce relevant legal measures if not complying to Public health act e.g cooking, storing

Edit title

- Briefly list the etiological factors and frequently used control measures of the two most common types of nutritional anemia seen in East Africa?
  - a) **Etiological factors**
  - b) Lack of adequate intake of iron, folic acid and cyanocobalamin
  - c) Protein deficiency is a secondary contributor as it is important in Hb molecule
  - d) Prematurity
  - e) Children born to anemic mothers
  - f) Children over 6 months who are still exclusively on breastmilk i.e after 6 months Fe stores run out
  - g) Women who are lactating because demands are higher
  - h) Any individual with hookworm or tapeworm
- **Control measures**
  - i) Encourage people to diversify food
  - j) Give foods rich in iron
  - k) Adequate food intake in children
  - l) Helminths and malaria control
  - m) Food based intervention like food fortification
  - n) Reproductive and obstetric intervention

KIMARAH.D

Edit title

- Discuss the immediate causes of malnutrition among children under 5 years in Kenya as espoused in the UNICEF Model on childhood malnutrition
- Explain why children who are sick with infections are more at risk of being malnourished
    a) Lack of appetite
    b) Increased metabolism
    c) Decreased food utilization
    d) Increased loss of nutrients

KIMARAH.D

QUESTIONS
(6 minutes per question)

1. Give at **least one reason** why it is important to include Nutrition in MBChB curriculum.
2. Identify & explain the **most at risk** population groups to malnutrition.
3. Diagrammatically explain the **synergistic relationship** between malnutrition and infection.
4. List **4 major nutritional disorders** of public health importance
5. List the **immediate** and **underlying** causes of malnutrition in children.

Importance of including Nutrition in MBChB curriculum.

- Health care providers are well placed not only to **ensure appropriate nutritional care & support of the sick, but also to promote appropriate nutrition at facility level thru' support for implementation** of priority nutrition interventions within the health sector.

- The Nutrition Course therefore equips medical students with the requisite **knowledge & skills necessary to support implementation of nutrition interventions** at facility & community level.

- This is in addition to **liasing with nutritionists & dieticians** within health facilities **to ensure appropriate dietary management** of patients.
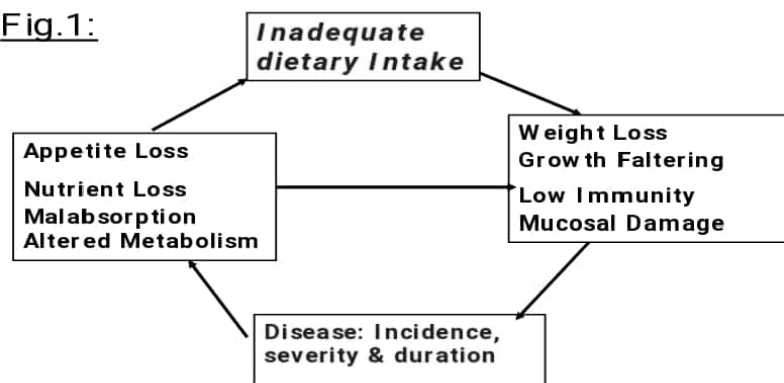
A malnourished child whose resistance to infection is compromised, falls ill & malnutrition worsens. One condition feeds off the other (Fig 1).

Malnutrition/Infection Cycle

Fig.1:

Inadequate dietary Intake

Appetite Loss

Nutrient Loss
Malabsorption
Altered Metabolism

Weight Loss
Growth Faltering

Low Immunity
Mucosal Damage

Disease: Incidence, severity & duration

Vulnerable groups to Malnutrition

- **Children < 5 year:** due to rapid growth

- **Adolescents:** due to growth spurt- hormal changes accelerate growth in height

- **Pregnant & Lactating mothers**: Increased nutrient demands for both mother & baby

- **The Elderly**: Majority rely or cereal-based diets and are at risk of chronic diseases

KIMARAH.D

REVISION

Nutritional Deficiency Diseases

1. Protein Energy Malnutrition (Moderate to severe forms of P.E.M)

2. Vitamin A Deficiency

3. Iodine deficiency disorders

4. Nutritional Anemia (Iron Deficiency)

KIMARAH.D

REVISION

Immediate & underlying causes of malnutrition in children

(See Conceptual Framework on Causes of Malnutrition)

County.

7. What is a Giffen good? Draw the demand curve for this good.
8. List the methods one would take to avoid or reduce Iodine deficiency disorders in their locality.

Body Mass Index.

Preventive

Program
Disease

8 Briefly explain the immediate and underlying determinants of under-nutrition in children. Infection Malnutrition

Education of mother

Socioeconomic "

-Household xhu
-Community "
-National & global

2. Mother & child care

1- Demographic outcome.
Mortality
Disability
3- Immediate.
Constitution at birth
Nutrition
Exposure, prevention
susceptibilities

Health care

graphy)

Outline Any Five significance of demography for health professionals.

X 9. Using examples, distinguish. between nutrition screening and nutritional surveillance.

10. a) State three methods of preventing fire outbreak

80%

Section II: SHORT ANSWER QUESTIONS - Answer any Eight [8] questions

$= 0.798$

Nutrit3. Briefly outline any five high impact nutrition interventions in Kenya.

$VE = 1 - RR$

80%

HINI

=

3. Briefly explain the synergistic relationship between nutrition and infections

4. Outline two ways by which urbanization increases th

5. Hygiene practices: handwashing, fecal disposal
6. Food preparation, storage & cooking

6. Identify and discuss at least five (5) care practices indicators that are important in understanding nutrition situation of children at household level

1. Infant feeding: Blfeeding practices; initiation, exclusive duration,
2. complinentary feeding introduction, age, types, prepara
3. Young child feeding: Foods no. of meals/day, snacks, methods

1° — Before dx, ITNs 2° — P early in dx e.g. diet, exercise, immuniz Screening for diabetes. 3° Curative to prevent worsening e.g HTN.

14. Briefly explain the main differences in use of mid-upper arm circumference (MUAC) in assessing nutritional status of children and adults in terms of:

Sex specific in adults / not sex specific in children.

different tapes

	Children (not sex-sensitive)	Adult
	13.5	21-33

NORMAL:
children: >13.5 cm
adult: 21-33 cm
kids: 25-13.5

a) Measurement technique.

b) Cut-off point measurements for defining severe under-nutrition
SAM ≤ children <110 mm   Mod. AM children 120-125
< 20.7   adults <210

Describe five main errors that are likely to occur before, during

4. Briefly explain the significance of using mid upper arm circumference (MUAC) indicator in assessment of nutritional status of children at health facility and community levels.

5. Briefly describe five main errors that are likely to occur before, during and after conducting a

... monetary value to attached to losses created by presence & effect of di.

2. (a) List FIVE national stakeholders who are charged with the responsibility of food safety/food hygiene. — Min of Health — Pest control product Board

Min of Agric, livestock & Fisheries — Min of Agriculture — Min of Industrialization
— Min of livestock — KEBS

(b) State TWO health conditions associated term exposure of drinking water with excess fluoride — Skeletal fluorosis : F replaces Ca in bone → demineralization

<0.7mg/L : dental carries. → 1.5 mg/L. > 10mg/L → crippling (F (knock knees).

eg 0.7-1.5 mg/L. — Enamel mottling > 1.5 ppm.

opt. EH — Briefly describe TWO control measures against exposure to particulate matter in a dust environment — Fabric filter systems /Baghouses

— Masks, PPE for workers who work as sweepers or in carpentry.
— Wet Scrubber : 20 Exp of particulate control

4. List FIVE United Nations Process Indicators for Monitoring Emergency Obstetric care. no. of emoc facilities : 1 comp. 4 basic per 500,000 people. obstetric planes in 100%

distribution ≤100% av of min. in every subnational area emoc 05 prop of LB 5-15%
proportion of births in emoc : ≤ 15% CFR for ≤ 1%

5. Briefly describe FIVE assumptions that are deemed necessary for the construction of a model life table. 1 cohort is closed, no in & out migration.

At each age rept 1 — deaths evenly distr 2 People in cohort die at each age according to a schedule fixed in advance
btn one birthday & next 3 cohort originates from some std no. of births called the radix
5 cohort normally contains member of only 1 sex

6. Briefly outline the key features of optimum complementary feeding practices in infant growth and development. → Nutrient density /quality.

→ frequency → Utilization through safe food to ↓ infections from contaminal
→ Sufficient amts /Quantity → Active feeding

UM **7.** A health goal is to "KICK OUT POLIO"

- Marital relationship ✓

2. List any 4 determinants of any of the following health problems
   a) Malnutrition
      - Age of child
      - Mothers level of education
      - Number of living children
      - Work status of mother
   b) Measles
      - Overcrowding
      - Intensive exposure
      - Intercurrent infections
      - Previous respiratory infection
   c) LBW
      - Nutrition
      - Low pre-pregnancy weight
      - Malaria
      - Short maternal stature
   d) HIV/AIDS
      - Sex
      - Culture
      - Religious beliefs
      - Socio economic status

3. Discuss management of PEM of a 4yr old

PEM describes a range of clinical disorders arising from lack of varying proportions of proteins and calories. It is common in young children under 5 and commonly associated with infection. In general usage PEM encompasses a spectrum of syndromes ranging from simple growth failure to pure and mixed syndromes of kwashiorkor, marasmus and marasmic kwashiorkor. Kwashiorkor is a disease that is primarily occurring due to the protein deficiency and hence the best way to compensate can only be with the diet. The dietetic management for PEM is framed in such a way that it should fulfill the protein and calorie needs and should eradicate any infection that is present in the body.

Census

Social economic ... ... country or a ... ...
do ... all reside in a country ... persons in a given ...
— complete enumeration of all persons in a given ...
area within a particular time line.

For fulfilling the need of proteins, adequate milk and milk products are necessary as this helps a lot in the prevention of kwashiorkor in children and in infants. Whole milk is also not tolerated so, skimmed milk or milk treated with lactose is given to prevent diarrhea. The protein diet that supplies 20% of the calorie is usually favored.

The administration of protein rich foods like skimmed milk products and Bengal gram proved to be a lot valuable. Fats should be given in usual amount to ensure necessary calorie intake. Multivitamin preparations can help a lot and can be administered orally. In kwashiorkor, minerals like potassium can also be low so, in order to compensate the mineral loss, minerals are administered orally to ensure the normal level of potassium.

The food stuffs that are allowed for a high protein diet are milk and milk products, bread made of wheat or rice, butter, sugar, fruits, ghee, wheat flour, bananas and vegetable protein mixture. The daily nutritional requirement for a child with kwashiorkor is 90 - 100 kcal per kg of the standard body weight at that stage

... ... that influence health seeking behavior?

and the factors that influence or determine their distribution.

18. PEM, among under 5z especially, is the single most widespread nutritional disorder in Kenya today. Briefly outline 4 prevention strategies that you would recommend to relevant policy makers.

- Improve Household food security
- Adequate maternal & child care
- Improve access to health care services
- Ensure a Healthy environment

Educate ¿ BF Grn
Adeq Comp foods

Jf Infections control of CD.

HCM 19. Briefly describe and illustrate by means of

personal hygiene, use of latrines and good nutrition

...encouraging good healthy behaviours and attitudes e.g breastfeeding,

NUTR 41. Briefly list the etiological factors and frequently used control measures of the two most common types of nutritional anemia seen in East Africa?

Etiological factors
- Lack of adequate intake of iron, folic acid and cyanocobalamin
- Protein deficiency is a secondary contributor as it is important in Hb molecule
- Prematurity
- Children born to anemic mothers
- Children over 6 months who are still exclusively on breastmilk i.e after 6 months Fe stores run out
- Women who are lactating because demands are higher
- Any individual with hookworm or tapeworm

Control measures
- Encourage people to diversify food
- Give foods rich in iron
- Adequate food intake in children
- Helminths and malaria control
- Food based intervention like food fortification
- Reproductive and obstetric intervention

HEALT 42. Write an account on psychological hazards...

- Accessible health services through the decentralization of health services
- Appropriate use of technology applicable to time and situations

50. Write short notes on the values and limitations of human breast milk for human nutrition in infancy?

Values

- Always available, free, sterile
- Assists bonding
- Can delay next pregnancy for upto 6 months (LAM)
- Contains anti- infective factors
- Baby less likely to become overweight

Nut

(2) Using relevant examples, describe uses of biochemical methods in assessment of nutritional status.

i) Stunting : Height - Weight

ii) Wasting : Weight / Height

iii) Underweight : Weight for...

Prevalence: $\frac{45}{1160} \times 100 = 0.0388$

0.0388

45.02

99%

99% of CI

$CI = $ proportion $\frac{4}{7} (z\text{-score} \times SE_p)$

$\pm z_i$

± 2.576

$\times \sqrt{\frac{2.1(1-2.1)}{1160}}$

$= 0 : c. 294568$

BONUS QUESTIONS

1. Briefly. List the etiological factors and frequent and control measures of the two commonest types of nutritional anemia seen in East Africa.

Fe deficiency anemia

Pernicious anemia

2. Write an account on psychological hazards in relation to industrialization in

10. Describe briefly, sources of contamination to food in an institution and measures that can be used to control such a menace.

11. Briefly describe the role of an Enrolled Community Nurse in Kenya's Health services.

9. Identify and discuss the causes and prevention strategies of 2 micronutrient deficiencies that are of Public Health significance in Kenya.

10. Describe the diagnosis, treatment and management of the following occupational lun

Nut 4

(2) — Regular check ups Medical
— X-ray chips — Recurrent

Outline five provisions of the baby friendly hospital initiative.

success of *Community Health Strategy*. Briefly discuss two essential contributions of CORPS.

Anthropometry provides one of the most important indicators of children's nutritional status. List five (5) advantages of use of anthropometry in nutritional status assessment. Explain using an example from your health centre practice how

opportunity to learn

Nut

-special t
-Least invasive
-Quick - Be
-cheap - grades
seventy
malnui

iii) The odds ...
table. Interpret your calculated odds ratio.

12. Explain why children who are sick with infections are more at risk of being → undernutrition
malnourished. Dx. Anorexia. + resistance   Low or appetite   Wt loss
↑ metabolism.   malabsorption.   Stunting
↓ Absn. @   Dx ←   Wasting

13. "Management is a universal, creative and social process. It is an Art and a Science.
Discuss this statement using appropriate examples.

2

Behaviourchange
① Awarenes of behaviour concerning
health problem
② info. or risks assoc. Ē behaviour
③ incentive for behaviour change
④ Training or skills required.
⑤ Reinforcement & maintenance.

0.2 ± 0.0256

C.D.

$0.1744 - 0.2256$

$$\frac{p(1-p)}{n}$$

2. Briefly outline the role and application of any two nutrition status indicators.

W/A – underweight

N/H – wasting — Wasting —

H/A – Height stunting — Stunting —

Assessment of growth failure & under nutrition & Assessment of body composition

A – Anthropometric me

B – Biochemical test

C – Clinical assessme

D – Dietary assessm

6. **Identify and discuss at least 5 care practice indicators that are important in understanding nutrition situation of children at household level**

These include the following:

- *Infant feeding practices* – *breastfeeding practices, initiation, exclusive duration, introduction of other liquids and solids, use of bottles, reason for stopping*
- *Complementary feeding* – *age-complementary foods introduced, types and preparation methods*
- *Young child feeding* – *foods fed to young children, number of meals per day, snacks, feeding methods, e.g., sharing plates*
- *Home health practices* – *treatment of simple childhood illness, traditional treatments*
- *Hygiene practices* – *hand washing practices, disposal of child feces*
- *Food preparation and storage* – *food preparation, storage, cooking*

14. **Briefly explain the main differences in use of mid-upper arm circumference (MUAC) in assessing nutritional status of children and adults in terms of:**
   a. **Measurement technique**
      The differences between children and adult measurements include:
      i.   The MUAC tape is different for both groups with different cut off values
      ii.

      The procedure of measuring MUAC is as follows:
      i.   First locate the tip of the shoulder
      ii. From the tip of the shoulder, with the elbow bent, find the tip of the elbow
      iii. Place the MUAC tape at the tip of the shoulder and extend it to the tip of the elbow
      iv. Mark the midpoint between the two with a non irritant substance
      v.   Then slide the tape around the midpoint and take the reading from the window where the two arrows are aligned with the reading; MUAC should then be measured on the left upper arm while the arm is hanging down the side of the body and relaxed.

   b. **Cut off point measurements for defining severe under-nutrition**

NUTRITIONAL STATUS	CHILDREN	PREGNANT WOMEN	OTHER ADULTS
Normal	13.5 cm or more	21 - 33 cm	18.5 cm or more
At risk of undernutrition	12.5-13.5		
Moderate under-nutrition	11.5 -12.4	Less than 21 cm	16-18.5 cm
Severe under-nutrition	Less than 11.5 cm		Less than 16cm
Obesity		33 cm or more	33 cm or more

4. Briefly describe the significance of MUAC in nutritional assessment of children at the health facility and community level.

HEALTH FACILITY LEVEL	COMMUNITY LEVEL
Monitoring treatment of severe acute malnutrition (SAM).	Referral of severe cases of acute malnutrition to the health facility.
Systematic case finding.	Active case finding i.e. surveillance and

	prevalence estimation.
Good predictor of infant death between ages 6-14 weeks.	Assessment of the nutritional status in a community.

5. Briefly describe 5 main errors before, during, and after conducting a census in Kenya.
   a. BEFORE
      Logistical challenges: incorrect and or inadequate planning, mapping, resource allocation and personnel allocation before the census.
   b. DURING
      - Coverage errors – arise from failure to adequately cover all of the population being studied. Includes under coverage, over coverage. The target population doesn't coincide with the population sampled.
      - Missing some people altogether.
      - Double counting.
      - Enumerating wrong people e.g. tourists, refugees leading to an excess number.

   c. AFTER
      - Faulty entry of data i.e. human errors.
      - Machine errors: may cause errors in analysis.
      - Delay in release of results may lead them to be obsolete.
      - Political interference may lead to errors in the results of a census.