**[The Normal Aging Process](http://nursingplanet.com/nr/blog5.php/2009/11/22/the-normal-aging-process)**

INTRODUCTION

Aging is not merely the passage of time. It is the manifestation of biological events that occur over a span of time. It is important to recognize that people age differently. The aging body does change. Some systems slow down, while others lose their "fine tuning." As a general rule, slight, gradual changes are common, and most of these are not problems to the person who experiences them. Sudden and dramatic changes might indicate serious health problems.

**BIOLOGICAL ASPECT OF AGING**

Individuals are unique in their psychological and physical aging process. As the individual ages, there is a quantitative loss of cells and changes in many of enzymatic activities within cells resulting in a diminished responsiveness to biological demands made on the body. Age related a change occurs at different rate in different people.

**NERVOUS SYSTEM**

* The brain atrophies as a result of aging process. The brain weight decreases, decrease in enzymes, protein and lipids in brain tissue.
* There is shrinkage of large neurons resulting in loss of large neurons with an increase in smaller neurons.
* There is alterations in the amount for some neuro-transmitters.
* Clinical changes due to the above are decreased sensation of vibrations(particularly in legs), less brisk deep tendon reflexes with ankle reflex absent entirely and a decreased ability for upward gaze.
* Functional changes include slowing of response to tasks and the increase in time to recover from physical exertion
* Cognitive changes include memory loss, decrease in perceptual ability and decrease in proficiency.

**SENSORY CHANGES**

**1. Eyes**

* The eye's external changes give evidence of advancing age. These changes result from loss of orbital fat, loss of elastic tissue and decreased muscle tone.
* The skin around the eyes darkens and wrinkles referred to as "crow's feet" appear.
* Xanthomas(cutaneous deposits of lipid material) found at the inner portion of the lid; these may indicate elevated blood lipid levels.
* The cornea flattens which reduces the refractory power
* The retina of older individual becomes thinner because of fewer neural cells and receives only 1/3rd of the amount of light that of a younger person. Due to this problem in reading, not able to see in dim light and also have difficulty in colour perception.
* The lens of the eye loses its elasticity and increases in density

**2. Ear**

* Cerumen gland are reduced in number leads to dry and hard ear wax, along with itching.
* Degenerative changes occur in ossicles contributing to hearing loss
* Loss of cochlear hair cells leading to hearing loss;
* Inner ear changes affect the auditory processing system leading to auditory processing disorder and a peripheral hearing sensitivity loss
* Presbycusis is the term used to describe hearing loss associated with normal aging.

**3. Taste and smell**

* Very rarely the capacity to smell diminishes;
* Taste perception and taste discrimination decreases as the age advances

**INTEGUMENTARY SYSTEM**

* Systemic decrease in circulation, loss of cells and loss of elastic collagen fibers and muscle mass.
* The number of pressure and light touch sensors decreases with age
* Subcutaneous fat atrophies on the face, hands, shins and soles; whereas it hypertrophies on the abdomen (in men0 and thighs(in women).
* Immune, vascular and thermoregulatory responses of the skin decrease with age.
* Loss of hair colour and thinning of pubic, axillary and scalp hair.

**CARDIOVASCULAR SYSTEM**

* Collagen and lipid deposits increase intercellularity in the heart muscle
* Lipofuscin, a yellow-brown granular material accumulates in the myocardial cell.
* Valves of the heart becomes thicker and more rigid as a result of calcification
* The SA node is infiltrated by fat and connective tissue resulting in a decrease in the heart's ability to regulate the rate of SA node, also causing a slowing of electrical impulses through the AV tissue.
* There is 10% decrease in the number of pacemaker cells in the SA node by age 75 years. Many of the arrhythmias seen in the older person are a result of either the decrease in pacemaker cells or the infiltration of fat in the SA node.

**RESPIRATORY SYSTEM**

* Degeneration of the intervertebral discs leading to development of kyphosis and scoliosis
* The trachea and large bronchi are also increased in diameter because of the calcified cartilage changes
* The muscles involved in respiration weaken with age. It results in less forceful contraction which decreases inspiratory and expiratory effort.
* The combination of increased stiffness of the chest wall and decreased muscle strength results in less efficient breathing.
* Older people depend more on accessory abdominal muscles to compensate for weakened thoracic muscles.

**MUSCULOSKELETAL SYSTEM**

* Bone resorption takes place without the successful formation of new bone mass leading to gradual  bone loss.
* Loss of trabecular bone leads to compression fractures in vertebral column.
* Reduction in cortical thickness and increased porosity results in progressive cortical thinning.
* In aging, the increased parathyroid hormone, decreased vitamin D and calcitonin also play role in calcium loss in older people.
* In women, estrogen deficiency, calcium malabsorption, lifestyle factors (calcium intake and exercise) can result in bone loss.Aging brings decline in numbers of muscles resulting in reduced muscle mass.
* The muscle strength also reduces especially due to lack of exercise.

**URINARY SYSTEM**

* In men, BPH is associated with aging leads to urinary incontinence (dribbling).
* In women, estrogen deficiency causes changes in the squamous epithelium of the distal urethral and vaginal wall, a decrease in the vaginal muscular tone and vascular profusion. These changes contribute to urinary incontinence.
* Increasing age is also associated with an increase in involuntary bladder contractions, a reduction in bladder capacity and an increase in residual volume. These contribute to development of incontinence in older adults.
* Weak pelvic muscles causes stress incontinence.

**GASTROINTESTINAL SYSTEM**

* Teeth become brittle; there is resorption of bone in the jaw leading to loosening of teeth, increased infections of teeth and gums and eventual loss of teeth.
* Difficult to chew food because of loose teeth.
* Common bile duct undergo progressive dilatation with age
* Presence of gall stones increases with age.
* Liver weight and size decreases with age
* There is decrease in number of hepatic cells and as a result, a diminished capacity for metabolism of drugs and hormones.

REPRODUCTIVE SYSTEM

**1. Changes in women**

* Menopause begins between the ages of 45 to 50 years. The cessation of ovarian secretion of estrogen and progesterone is the major physiologic event of menopause. Women may experience hot flashes due to vasomotor instability. Also another associated feature of menopause is bone loss leading to osteoporosis.
* Decrease in estrogen production leads to reduced vaginal lubrication, the vaginal mucosa becomes thin and the vagina shortens in length and width. Due to this reason, the sexual arousal is reduced which results in painful intercourse and vulvo-vaginitis.

**2. Changes in men**

* Erectile ability undergoes changes. Takes longer time for erection, amount of semen is reduced and the intensity of ejaculation is lessened.
* It is not clear that whether the increase in impotence is age related.

**PSYCHOLOGICAL ASPECTS OF AGING**

**Memory functioning**

* Short term memory deteriorate with age, long term memory does not show similar changes.
* A well educated and mentally active person does not exhibit such changes in as fast a rate as otherwise.
* The time required for memory scanning is longer for both recent and remote recall among older people.
* This can be attributed to social or health factors (stress, fatigue, illness), but it can also occur with certain physiological changes due to aging. (decreased blood flow to the brain)

**Intellectual functioning**

* Fluid abilities or abilities involved in solving novel problems, tend to decline from adult period to old age.
* High degree of regularity in intellectual function present on most of the old age people
* Intellectual abilities of older people do not decline, but do become obsolete.
* Their formal educational experience is reflected in their intelligence performance

**Learning ability**

* The ability to learn does not decline with age.
* The slowing of reaction time with age and over arousal of central nervous system are noted in old age. It may lead to lower level of performance in tasks which requires high efficiency.
* Ability to learn continues throughout the life, although strongly influenced by personal interests and preferences.
* Accuracy of performances diminishes.

**Adaptation to the tasks of ageing**

1.       Loss and grief

* By the time individuals reach 60-70 yrs of age , they have experienced numerous losses, and mourning has become a life long process.
* It is impossible for some of the older age people to complete the grief process in response to one loss before the other loss occurs.
* Because the Grief is cumulative, this can result in bereavement over load.
* This can further predispose to depression.

2.       Attachment to others

* The need for attachment is consistent through out the life span
* Well being of senior citizens can be contributed through socialization and companionship.

3.       Maintenance of self identity

* Self concept and self identity appears to remain stable over life time.
* Factors which contribute to good psycho social adjustment are sustained family relationships, maturity of the ego defenses, absence of depressive disorder and absence of alcoholism.

4.       Dealing with death

* Death anxiety among the elderly is more of a myth than reality
* The feeling of abandonment, pain and  loss may leads to fear or anxiety in elderly

5.       Psychiatric disorders

* The later life constitute a time of  especially high risk for emotional distress, Dementia, depressive disorders, delirium, sleep disorders etc are the most common psychiatric illness seen among elderly.

**SOCIOCULTURAL ASPECTS OF AGING**

* Old age brings many important  socially induced changes, some of those changes have the potential for negative effect on both the physical and mental well being of older persons
* They want protection from hazards and weariness of every day tasks
* They want to be treated with respect and dignity and also want to die with respect and dignity
* In developing countries and Asian countries the aged are awarded a position of honor, that place emphasize on family cohesiveness
* In industrialized countries many negative stereotyped perspectives on aging still persisting, aged are always tired or sick, slow and forgetful, isolated and lonely, unproductive etc
* Employment is one of the areas where the aged face discrimination. Although compulsory retirement has been eliminated, discrimination still persist in hiring and promoting aged employees.
* The status of elderly may improve with time as the number of elderly persons increases world wide.

**SEXUAL ASPECTS  OF AGEING**

**PHYSICAL CHANGES**

**a) Changes in female**

* Menopause may begin anytime during the 40s or early 50s
* Gradual decline in the functioning of the ovaries and subsequent reduction in the production of estrogen.
* The walls of the vagina become thin and inelastic and vaginal lubrication decreases.
* Orgasmic uterine contractions become spastic.
* All these changes result in  vaginal burning, pelvic aching, irritability etc
* In some women these changes result in avoidance of sexual intercourse
* These symptoms  are more likely to occur with infrequent intercourse of only one time a month or less
* Regular and more frequent sexual activity result in a greater capacity for  sexual performance

**b) Changes in male**

* Testosterone production decline gradually as the age increases
* As a result of these hormonal changes the erection takes place slowly and requires more genital stimulation to achieve.
* The volume of ejaculate decreases and the force of ejaculation lessens
* The testis become smaller, but most men continue to produce viable sperm well in to old age**.**

**SEXUAL BEHAVIOUR IN ELDERLY**

* Sexual activity can continue and well preserve till the age of late 70s and 80s for both males and females who have regular opportunities for sexual expression
* As the sexual practices continues frequently, the sexual capacity can be prolonged
* Studies reveal that for healthy men and women with healthy partners, sexual activity will probably continue throughout life if they had a positive attitude about sex when they were young.