

Normal Changes of Aging

(in general the body systems become less efficient)

Aging results in a diminished ability to maintain homeostasis and regulate body systems

Neurological:

- incidence of cognitive impairment increases with age so that by age 85, up to 1/3 of older persons have some degree of cognitive impairment
- the rate at which they process information declines
- declines in visual-spatial abilities

Cardiovascular:

- maximum heart rate decreases and it takes longer for heart rate and blood pressure to return to normal resting levels after exertion.
- aorta and other arteries become thicker and stiffer which may bring a moderate increase in systolic blood pressure with aging.
- valves between the chambers of the heart thicken and become stiffer. As a result heart murmurs are fairly common among older adults.
- the pacemaker of the heart loses cells and develops fibrous tissue and fat deposits. (may cause a slightly slower heart rate and even heart block, dysrhythmias may be more common).
- baroreceptors which monitor blood pressure become less sensitive. Quick changes in position may cause dizziness from orthostatic hypotension.

Gastrointestinal:

- the physiological changes of an aging digestive system are minor. With this in mind, it is important to recognize and actively treat most new G.I. problems in healthy older people, rather than ascribing symptoms to aging
- Increased prevalence of atrophic gastritis and achlorhydria.
- The liver is less efficient in metabolizing drugs and repairing damaged liver cells.
- Diverticuli in the colon may cause pain.
- Reduced peristalsis of the colon can increase risk for constipation.

Endocrine:

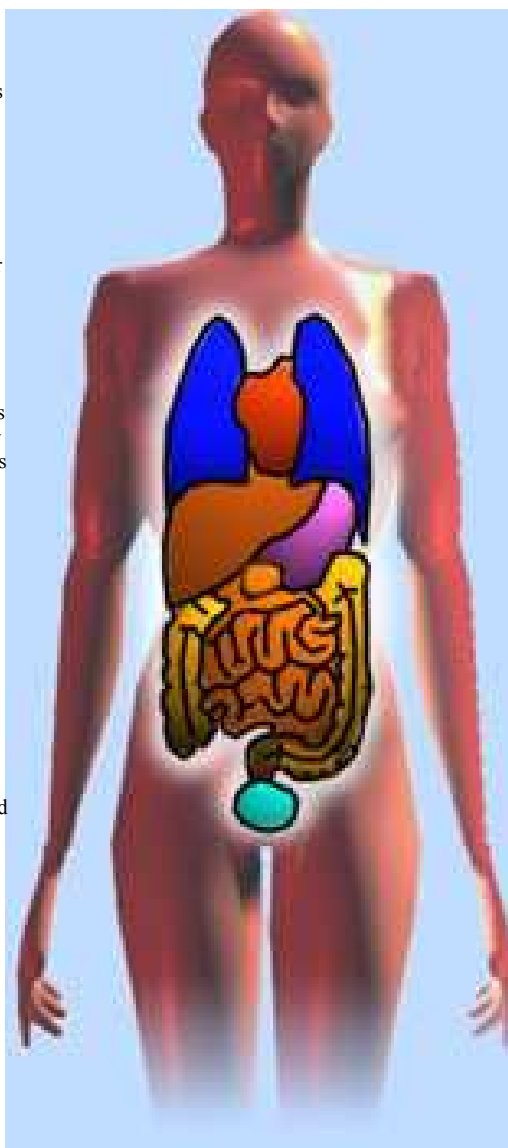
- Insulin resistance may prevent efficient conversion of glucose into energy.
- A decrease in aldosterone and cortisol may affect immune and cardiovascular function

Female Reproductive System:

- Ovulation ceases and estrogen levels drop by 95%.
- Vaginal walls become thinner and lose elasticity
- Most women experience a decrease in the production of vaginal lubrication.

Male Reproductive System:

- testosterone levels drop by up to 35%.
- size of the testes decreases.
- decline in the rate of sperm production (extent varies)
- Erectile dysfunction (impotence), is experienced by 15% of men by the age of 65 and increases to 50% by age 80



Musculoskeletal system:

- Height decreases an average of 2 inches.
- Weight increases until about age 60 and then declines.
- Body fat mass can double, lean muscle mass is lost
- Decline in bone density
- Skin becomes thinner and dryer
- Hair becomes gray

Immune System:

- Decreased production of thymic hormones
- Decreased levels of antibody response
- Response to antigens diminishes (in general, less able to fight off infection)

Sensory Systems:

Hearing:

- stiffening of ear structures may cause hearing loss
- stiffening of ear structures may result in vertigo

Smell:

- decrease number of smell receptors = loss of smell (may cause decrease in appetite, indigestion, food poisoning)

Vision:

- less light transmitted into the eye (corneal flattening)
- diminished lens transparency (yellowing, blue hard to see, red/orange become stronger)
- less efficient retina = less able to tolerate glare and have more trouble adapting to darkness or bright light.
- reduced lens elasticity = need reading glasses

Touch:

- sense of touch and response to (acute) painful stimuli decreases (higher risk for injury)

Respiratory:

- (respiratory changes reduce reserve capacity & increase vulnerability to resp. disease).
- lungs become stiffer, muscle strength and endurance diminish, and the chest wall becomes more rigid.
- Total lung capacity remains constant but vital capacity decreases and residual volume increases.
- The alveolar surface area decreases by up to 20 percent. Alveoli tend to collapse sooner on expiration.
- There is an increase in mucus production and a decrease in the activity and number of cilia.
- The body becomes less efficient in monitoring and controlling breathing. (greater risk for mortality from acute respiratory problems if they are less aware of respiratory symptoms and seek medical care later rather than sooner.)

Unirary:

- urinary changes are often associated with changes in the reproductive system
- Kidney mass decreases by 25-30 percent and the number of glomeruli decrease by 30 to 40 percent. These changes reduce the ability to filter and concentrate urine and to clear drugs.
- With aging, there is a reduced hormonal response (vasopressin) and an impaired ability to conserve salt which may increase risk for dehydration.
- Bladder capacity decreases and there is an increase in residual urine and frequency. These changes increase the chances of urinary infections, incontinence, and urinary obstruction.