

## Resource 3

<b>System</b>	<b>Physiologic Changes</b>	<b>Expected Signs or Symptoms</b>	<b>Nursing Implications</b>
<b>Eyes</b>	<ul style="list-style-type: none"> <li>• Loss of elasticity</li> <li>• Lens thickens and discolors</li> <li>• Decreased pupil size</li> <li>• Macular degeneration</li> </ul>	<ul style="list-style-type: none"> <li>• Eyelids drop or turn inward</li> <li>• Colour distortion</li> <li>• Decreased tolerance for Glare</li> <li>• Cataracts</li> <li>• Slower dark and light adaptation</li> <li>• Narrowing of visual field</li> <li>• Presbyopia</li> </ul>	<ul style="list-style-type: none"> <li>• Provide for brighter lights (3X the light is required) and colour contrasts to increase discrimination</li> <li>• Adjust lighting to decrease glare</li> <li>• Clean glasses</li> <li>• Approach the person from the front not the side.</li> </ul>
<b>Ear</b>	<ul style="list-style-type: none"> <li>• Thickening of Tympanic membrane</li> <li>• Ear Wax Build up</li> <li>• Sclerosis of Inner Ear</li> </ul>	<ul style="list-style-type: none"> <li>• Presbycusis</li> <li>• Increase auditory reaction time</li> <li>• Loss of high frequency sounds</li> </ul>	<ul style="list-style-type: none"> <li>• Face older adults when interacting</li> <li>• Speak in lower tones</li> <li>• Assess for wax in ears</li> </ul>
<b>Nose, Mouth, Throat</b>	<ul style="list-style-type: none"> <li>• Atrophy of taste buds</li> <li>• Loss of efficiency in relaying flavors</li> <li>• Decrease sense of smell</li> <li>• Retraction of gums</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in dentition</li> <li>• Decreased taste buds for sweet and salty; mostly able to taste bitter and sour</li> </ul>	<ul style="list-style-type: none"> <li>• Seasoning of food may need to be increased</li> <li>• Assess for ill fitting dentures</li> </ul>
<b>Gastrointestinal System</b>	<ul style="list-style-type: none"> <li>• Weakening of intestinal wall</li> <li>• Reduced gastric acid</li> <li>• Slower neural transmission</li> <li>• Decrease esophageal peristalsis</li> <li>• Decrease in secretion of digestive juices</li> </ul>	<ul style="list-style-type: none"> <li>• Food intolerances, difficulty with digestion</li> <li>• Reflux</li> <li>• Constipation and incontinence</li> <li>• Diverticulosis</li> <li>• Vitamin deficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Assess elimination patterns</li> <li>• Allow more time for eating</li> <li>• Space meals out</li> <li>• Ensure 1500-2000 ml/day fluid</li> <li>• Promotion of 6 small meals/day</li> </ul>

<p><b>Musculoskeletal System</b></p>	<ul style="list-style-type: none"> <li>• 30% reduction in muscle mass</li> <li>• Skeletal changes (bone resorption is greater than bone deposition)</li> <li>• Degenerative joint changes</li> <li>• Dehydration of intervertebral disks</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease in strength and stamina</li> <li>• Fractures, osteoporosis</li> <li>• Increased joint stiffness</li> <li>• Decreased height</li> <li>• Gait changes</li> </ul>	<ul style="list-style-type: none"> <li>• Muscle strengthening exercises</li> <li>• Adequate calcium intake, Vit. D</li> <li>• Flexibility exercises and weight bearing exercises</li> <li>• Encourage ROM exercises</li> <li>• Distinguish muscle weakness from electrolyte imbalance and/or medications side effects</li> <li>• Ensure well fitting footwear</li> <li>• Fall risk is higher</li> </ul>
<p><b>Cardiovascular</b></p>	<ul style="list-style-type: none"> <li>• Decreased cardiac output</li> <li>• Conductivity altered</li> <li>• Heart valves thicken</li> <li>• Left ventricle hypertrophy</li> <li>• Decreased stress response</li> <li>• Decreased coronary artery blood flow</li> </ul>	<ul style="list-style-type: none"> <li>• Decrease in peripheral circulation</li> <li>• Decrease in rate, rhythm of pulse</li> <li>• Fatigue, SOB</li> <li>• Dependent edema of lower extremities</li> <li>• Dizziness from too rapid change of position</li> <li>• Increased systolic blood pressure</li> <li>• Pulse takes a longer time to return to a resting heart rate.</li> </ul>	<ul style="list-style-type: none"> <li>• Pace activities</li> <li>• Monitor Blood pressure</li> <li>• Check for swelling/pitting edema-use of support hose</li> <li>• Elevate feet periodically during day</li> <li>• Instruct on proper way to get up after lying in bed or sitting to avoid Blood Pressure drop</li> </ul>
<p><b>Pulmonary</b></p>	<ul style="list-style-type: none"> <li>• Increase AP Diameter</li> <li>• Rigidity of chest wall</li> <li>• Decreased cilia</li> <li>• Fewer alveoli</li> <li>• Intercostal, accessory and diaphragm muscles become weaker</li> </ul>	<ul style="list-style-type: none"> <li>• Decreased cough reflex</li> <li>• Decreased removal of mucus, dust and irritants</li> <li>• Decreased vital capacity</li> <li>• Decreased chest expansion</li> <li>• Decreased endurance</li> <li>• Hyper-inflation of apices; under inflation of bases of lungs</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure upright position when eating, drinking</li> <li>• Limit exposure to air borne viruses and pollutants</li> <li>• Yearly flu immunization</li> <li>• Encourage deep-breathing, smoking cessation programs</li> <li>• Pace activities, provide adequate rest</li> </ul>

<p><b>Neurological</b></p>	<ul style="list-style-type: none"> <li>• Decrease in Neuro-transmitters</li> <li>• Nerve cell degeneration and atrophy (25-42%)</li> <li>• Decrease in rate of nerve cell conduction impulses</li> <li>• Altered pain perception</li> <li>• Decreased proprioception</li> <li>• Diminished stage 3-4 (deep) sleep</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty in changing positions or achieving balance</li> <li>• Loss of sensation in extremities</li> <li>• Learning occurs as usual but more slowly</li> <li>• Slower reflexes</li> <li>• More frequent awakenings at night</li> </ul>	<ul style="list-style-type: none"> <li>• Approach learning projects slowly</li> <li>• Use memory aids (calendar, post-it notes, etc.)</li> <li>• Assess mental status as required</li> <li>• Assess environment for safety</li> </ul>
<p><b>Renal &amp; Bladder</b></p>	<ul style="list-style-type: none"> <li>• Decrease in number of nephrons</li> <li>• Decrease in blood flow, glomeruli, renin and filtration</li> <li>• Decreased bladder capacity</li> <li>• Weak pelvic floor muscles</li> <li>• Replacement of smooth muscle and elastic tissue with fibrous connective tissue in bladder</li> </ul>	<ul style="list-style-type: none"> <li>• Increased creatinine clearance</li> <li>• More time needed for filtration; urine may be more dilute</li> <li>• Increased urinary frequency</li> <li>• Increased potential for inadequate excretion of drug metabolites</li> <li>• Incomplete emptying of bladder/urinary retention</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor renal function carefully</li> <li>• Remove barriers of getting to toilet</li> <li>• Assess pattern of voiding with continence log if incontinence is occurring</li> <li>• Toileting strategies as appropriate</li> <li>• Be alert to check for post- void residual</li> </ul>
<p><b>Reproductive (Female)</b></p>	<ul style="list-style-type: none"> <li>• Decreased estrogen production</li> <li>• Ovaries degenerate</li> <li>• Vagina, uterus and breast atrophy</li> <li>• Sagging and loss of firmness of breasts</li> </ul>	<ul style="list-style-type: none"> <li>• Vaginal dryness</li> <li>• Menopause</li> <li>• Uncomfortable intercourse</li> </ul>	<ul style="list-style-type: none"> <li>• Be sensitive that these changes may impact self esteem</li> <li>• Desire for closeness and for sexual activity does not diminish with age</li> <li>• Be aware of different products to assist with vaginal dryness</li> <li>• Continue to encourage safe sex practices.</li> </ul>

<p><b>Reproductive Changes (Male)</b></p>	<ul style="list-style-type: none"> <li>• Sperm count diminishes</li> <li>• Decrease penis size</li> <li>• Hypertrophy of prostate gland</li> <li>• Decrease in size of testes</li> </ul>	<ul style="list-style-type: none"> <li>• Erectile Dysfunction concerns</li> </ul>	<ul style="list-style-type: none"> <li>• As above</li> </ul>
<p><b>Immune System</b></p>	<ul style="list-style-type: none"> <li>• Decrease in Thymus Mass and productions</li> <li>• Increase in immunoglobulins</li> </ul>	<ul style="list-style-type: none"> <li>• More susceptible to infections</li> </ul>	<ul style="list-style-type: none"> <li>• Good hand washing</li> <li>• Ensure flu and Pneumovac inoculations are given</li> <li>• Limit exposure to obvious pathogens</li> <li>• Maintain aseptic technique in dressing changes and any invasive procedures</li> </ul>
<p><b>Skin</b></p>	<ul style="list-style-type: none"> <li>• Loss of subcutaneous tissue</li> <li>• Thinning of dermis</li> <li>• Atrophy of oil, moisture, sweat glands</li> <li>• Loss of elasticity</li> <li>• Paler face</li> </ul>	<ul style="list-style-type: none"> <li>• Wrinkling</li> <li>• Underlying Tissue more fragile</li> <li>• Inability to respond to heat or cold quickly</li> <li>• Loss of moisture</li> <li>• Dryness</li> <li>• Prone to Hypothermia</li> <li>• Altered Thermoregulation</li> </ul>	<ul style="list-style-type: none"> <li>• Handle individual skin with care</li> <li>• Use lotion to lubricate skin</li> <li>• Inspect skin when bathing</li> <li>• Repositioning every 2 hours</li> <li>• Hydrate</li> <li>• Wear light cool clothing in hot weather</li> <li>• Maintain warm environment in cooler temperatures</li> </ul>

**References:**

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