

## Answers to Critical Thinking Exercises, Chapter 2, Theories of Aging

- 2.1** A student's answer would include that, as a person ages, disease is not necessarily the result, if the person practices healthy habits and adapts successfully to the stressors encountered in daily living. Positive wellness and healthy aging can be achieved with healthy actions. Disease is a negative consequence of aging and can result if damaging risk factors are not modified. Damaging effects caused by the environment, psychosocial stressors, poor health habits and nutrition, and adverse medication effects are cumulative and progressive over time. The negative consequences of aging, resulting ultimately in disease, are thought to be attributed to not one, but multiple causes or risk factors. One theory of causation attempting to link the aging process and disease is not sufficient. This link can only be explained by myriad theories and causes.

The stochastic theories try to help explain the link between our physiological functioning and aging. These include cross-linkage, error, wear and tear, and free radical theories. As the person ages, it is proposed that proteins become intertwined, resulting in errors in metabolism and accumulation of waste products in the cell. Accumulation of abnormal proteins in the aged cells can result in Alzheimer's disease. Alzheimer's disease is thought to be caused by an abnormal accumulation of the amyloid and tau proteins in the nerve cells. Collagen, another protein that provides for elasticity in the cell membrane, decreases, making tissues more rigid and impermeable. These changes result in disorders, as muscular atrophy leading to immobility, hernias, cataracts, and rupture of spinal discs. Over time with accumulative damage, multiple body systems fail as well.

Changes in the composition and organization of DNA are also thought to bring about errors in protein production and manufacturing, resulting in organ failure and eventual death. It is also thought that over time, as a person is bombarded with multiple stressors, the organs are overwhelmed and eventually wear out. This can eventually lead to disorders, such as gastric ulcers, heart attacks, thyroiditis, and inflammatory dermatoses and, ultimately, to organ failure. This wear and tear on the body can also lead to a decreased immune response, leading to infections and sepsis.

In addition, the aging process results in an accumulation of free radicals, a product of metabolism. If left unchecked by antioxidants, free radicals accumulate in the

cell, damaging proteins, the cell membrane, enzymes, and the DNA. This damage results potentially in cancer. The accumulation and deposition of fats, calcium, and proteins in the cell membrane is thought to lead to arteriosclerosis. These changes result in stiffness and a lack of compliance in the blood vessel wall and an increase in peripheral resistance, placing the older adult at risk for myocardial infarction, stroke, hypertension, and renal disease.

The non-stochastic theories try to explain the aging process in terms of preprogrammable cell death and cell changes. These include immunity, genetic, and programmed cell theories. Changes in the T lymphocytes result in a lack of cell protection and probable cancers. A reduction in our immune capabilities can also lead to an increase in antibodies that attack the tissues, resulting in an increase in autoimmune disorders, as arthritis and cancers. A cell's clock is thought to be predetermined by the person's genetic composition. It is thought that eventually, as the cell's clock runs out of time, the cell stops dividing. This process is termed apoptosis. If apoptosis goes awry, the cell keeps dividing without stop, placing the older adult at risk for various cancers. If the cells are not replaced, organ failure and death is the outcome.

- 2.2** Students should include these recommendations to promote a healthy environment for older adults. Pesticides should not be used near our water supply (resulting in an increase in free radicals in the cell), trash should not be dumped in our rivers and streams, medications should be disposed of properly and not flushed down our sewers, and alternative energy sources, such as electric cars, should be used to prevent air pollution. Nurses should promote smoke-free environments to prevent respiratory diseases and cancers; use of smoke and carbon monoxide detectors and fire extinguishers in the home; and a quiet milieu to prevent hearing loss.

Water heaters should be programmed to low temperatures, a maximum of 140°F, to prevent burns. Nurses should provide easy access to soap and water for hand hygiene and assistance if necessary in self-care, such as bathing and toileting, to prevent infections. Nurses should caution older adults not to smoke in bed or near oxygen, after taking a medication that might cause drowsiness or without safe disposal nearby. Space heaters should have safety devices that will turn it off, if overturned.

Nurses should be political advocates for older adults in their community councils and state legislatures to prevent abuse, neglect, violence, crowded living conditions, homelessness, and loss of quality health care. A healthy environment is also a safe environment. The home should be assessed for risk factors that predispose older adults to falls. Environmental factors, such as loose throw rugs or carpeting, obstacles, and dark stairways, can lead to falls. Homes should be designed for the at-risk older adult, with bars on the tub and toilet and easily distinguishable hot and cold faucets. Ample transportation that is handicapped accessible will promote mobility and prevent social isolation leading to abuse or depression. In addition, access to today's technology, such as telehealth and medical alerts in the home, will promote independence and a higher level of wellness.

**2.3** Students should include these examples of engagement and disengagement:

Older adults can be seen engaging in exercise at the local YMCA and adult day care facility daily. They also can play cards and bingo and learn more about hobbies at the adult day care. At their church, they are given the opportunity to volunteer and network with others. They may pursue part-time jobs or volunteer at their local hospital or a community health organization. They might babysit their grandchildren or for young mothers in the neighborhood. There are many opportunities for community service at their churches, food pantries, and health organizations as well.

Older adults disengage without satisfaction or their consent when they are forced to retire at age 70 or when they are neglected by their family. They mutually disengage when they choose to retire and enjoy other life pursuits, such as travel. They live apart from their children and grandchildren, but see them when they choose but are not responsible for them anymore. They delegate this life task to their children. These later examples have the consent of the older persons.

**2.4** A nurse might use reminiscence therapy to accept and find meaning in the life the person has lived. This can take place with one person or in a group at an adult day care or any other social setting in the community. Getting an older person to relate their life story can result in a sense of self-worth and acceptance.

A nurse might also take the time to establish a relationship with an older adult to give him or her the opportunity to open up about their feelings related to life events. If there is a sense of despair or sorrow related to past events, journaling may assist that person to feel at peace and feel good about himself or herself. A grief or depression support group, found either online or at a local hospital, can provide some peace as well.

Pet therapy or music therapy can also stimulate sharing of feelings and events associated with past memories. Sharing photo albums is also a way to stimulate a life review.

Nurses could also promote opportunities in their community or parish for activities involving older adults, such as health fairs, knitting or quilting clubs, book clubs, or bible studies. Nurses can assist older adults in their care to locate a church in their community, get spiritual support from a chaplain, or access an appropriate support group.