## CHAPTER 2

## THE OLDER ADULT

Older adults constitute a heterogeneous population with varying needs. Chronological age is a constant for older individuals; however, functional age varies. This chapter discusses the past and projected demographic trends of aging in the United States (see Figure 2-1).

## GENERAL PROFILE OF OLDER ADULTS

According to the U.S. Administration on Aging (AoA, 2011), currently there are almost 40.4 million Americans age 65 years or older, an increase of almost $15 \%$ since 2000. Approximately $13 \%$ (about 1 in 8 ) of all Americans are older than 65 . This number will grow to more than 71 million ( $20 \%$ of all Americans) by the year 2030, and to 80 million by 2050. Decreases in infant and young adult mortality contribute to longevity, but death rates for older adults have also decreased in the past two decades. From 2009 to 2010, the death rate for older people age 65 to 74 decreased by $0.8 \%$, and by $0.7 \%$ for those age 75 to 84 , while it increased by $1.9 \%$ in those over the age of 85 . These numbers reinforce the prediction that people reaching the age of 65 have an increased life expectancy of an average additional 18 years (20.0 years for women and 17.3 years for men).

From 2009 to 2010, age-adjusted death rates decreased significantly for 7 of the 15 leading causes of death, including:

- Diseases of the heart
- Malignant neoplasms
- Chronic lower respiratory diseases
- Cerebrovascular diseases
- Accidents (unintentional injuries)
- Influenza and pneumonia
- Septicemia

Assault (homicide) fell from among the top 15 leading causes of death in 2010, replaced by pneumonia due to aspiration.

The age-adjusted death rate increased for five leading causes of death, including:

- Alzheimer's disease
- Nephritis, nephrotic syndrome, and nephrosis
- Chronic liver disease and cirrhosis
- Parkinson's disease
- Pneumonia due to aspiration

Other important trends and expectations include the following:

- The $85+$ population is projected to increase from 5.5 million in 2010 to 6.6 . million by 2020, making the oldest old the fastest-growing segment of the older adult population.
- A child born in 2011 can expect to live 78.7 years, or 31 years longer than a child born in 1900.
- People older than age 85 -more than 4 million Americans, and the fastest-growing age group-are most likely to have chronic care needs. This number is expected to surpass 9 million by 2030 and be more than 20 million by 2050 .
- Racial and ethnic minority populations have increased from 5.7 million in 2000 ( $16.3 \%$ of the older adult population) to 8.1 million in $2010(20 \%$ of the older adult population) and are projected to increase to 13.1 million in 2020 ( $24 \%$ of the older adult population).
- Older women outnumber older men at 23.0 million to 17.5 million.
- Older men are much more likely to be married than older women; $72 \%$ of men are married, as opposed to $42 \%$ of women, while $40 \%$ of older women are widows.
- Older adults are often divided into groups: young-old, 65-75 years; middle-old, 75-84 years; old-old, 85 plus; and elite-old, or centenarians (see Figure 2-1).
- Almost $15.9 \%$ of older adults were below the poverty level as a result of out-of-pocket medical expenses in 2011.
- In 2011, the first of the baby boom generation reached what used to be known as retirement age. For the next 18 years, boomers will turn 65 at a rate of about 8,000 a day (AoA, 2011).

FIGURE 2-1.
OLDER AMERICAN POPULATION BY AGE: 1900-2050


Adapted from "Projected Future Growth of the Older Population," U.S. Administration on Aging, 2011, http://www.aoa.gov/AoARoot/ Aging_Statistics/future_growth/future_growth.aspx\#age

## OLDER ADULTS WHO ARE MEMBERS OF A MINORITY GROUP

Currently, minority older adults make up more than $20 \%$ of the older population in the United States. Between 2010 and 2050, it is projected that $77 \%$ of older Americans will be White, down from $87 \%$ in 2010. Within the same age group, $12 \%$ are projected to be Black (up from $9 \%$ in 2010), and 9\% are projected to be Asian (up 3\% from 2010 levels; AoA, 2011).

## WHERE OLDER AMERICANS LIVE

According to AoA data (2011), of the 24 million households headed by older people in 2010, $77 \%$ were owners and $21 \%$ were renters. The median family income in 2010 was $\$ 25,704$ for men and $\$ 15,072$ for women. Households containing families headed by people over the age of 65 reported a median income of $\$ 45,763$. Social Security constituted $90 \%$ or more of the income received by $35 \%$ of beneficiaries ( $22 \%$ of married couples and $45 \%$ of nonmarried beneficiaries). About $29 \%$ of older people residing in the community live alone ( 8.1 million women and 3.2 million men). The proportion of older people living alone increases with advancing age, especially for women, with $47 \%$ of women over the age of 75 living alone (AoA, 2011).

About 485,000 grandparents age 65 or over maintain households in which grandchildren are present (AoA, 2011). Relatively few adults age 65 or older live in nursing homes (about 1.25 million, or $3.1 \%$ of older Americans), occupying about $85 \%$ of the 1.7 million nursing home beds; the number of persons over the age of 85 living in nursing homes is $14 \%$ those in that age group. From 2002 to 2007, the numbers of persons over the age of 85 increased by $6.5 \%$, while the number of nursing home beds increased by $1.7 \%$, and nursing home occupancy rates increased only slightly, by $0.9 \%$ (AARP, 2009). The decreased rate of nursing home usage is reflective of the increase in healthcare options for older adults, including home care services, adult day care, assisted living, and other options to delay or prevent nursing home placement. Table 2-1 illustrates the rates of residence in skilled nursing facilities (SNFs) by age.

TABLE 2-1.
POPULATION 65 YEARS AND OLDER IN SKILLED NURSING FACILITIES

| GENDER AND AGE | TOTAL <br> POPULATION | IN SNFS - NUMBER | IN SNFS - PERCENT |
| :--- | :--- | :--- | :--- |
| Both genders, all ages | $308,745,538$ | $1,502,264$ | $0.5 \%$ |
| Total, age 65 \& older | $40,267,984$ | $1,252,635$ | $3.1 \%$ |
| $65-74$ years | $21,713,429$ | 197,310 | $0.9 \%$ |
| $75-84$ years | $13,061,122$ | 420,790 | $3.2 \%$ |
| $85-94$ years | $5,068,825$ | 529,689 | $10.4 \%$ |
| $95-99$ years | 371,244 | 87,621 | $23.6 \%$ |
| 100 years \& over | 53,364 | 17,225 | $32.3 \%$ |

Adapted from The Older Population: 2010-2010 Census Briefs (p. 18), by C. A. Werner, 2011, Washington, DC: U.S. Census Bureau. Available at http://www.census.gov/prod/cen2010/briefs/c2010br-09.pdf

Geographically, compared with other states, Florida had the greatest share of the population age 65 and older in both 2000 and 2010 ( $17.6 \%$ and 17.3\%, respectively), followed by West Virginia (16.0\%), Maine (15.9\%), Pennsylvania (15.4\%), and Iowa (14.9\%). The state with the lowest share of the population age 65 and older was Alaska in both 2000 and $2010(5.7 \%$ and $7.7 \%$, respectively). Alaska also exhibited the largest growth rate for the 65 -and-over population, which grew from 35,699 in 2000 to 54,938 in 2010, representing a $53.9 \%$ increase in the number of older persons (U.S. Census Bureau, 2011).

The state or area of residence greatly affects older adults' access to health care and social services. Metropolitan areas generally offer more options for medical treatment. Those states in which a greater proportion of the population is over 65 usually provide a larger variety of services for older adults. Proximity of neighbors and other caregivers is also affected by location of residence. Many older persons relocate to be nearer to family, especially after the death of a spouse.

## MARITAL STATUS

In 2010, older men were much more likely to be married than older women- $72 \%$ of men, compared to $42 \%$ of women. Widows accounted for $40 \%$ of all older women in 2010. There were more than four times as many widows ( 8.7 million) as widowers ( 2.1 million; AoA, 2011).

Divorced and separated (including married with spouse absent) older adults represented only $12.4 \%$ of all older persons in 2010 . However, this percentage has increased since 1980, when approximately $5.3 \%$ of the older population were divorced, separated, or married with spouse absent (AoA, 2012; see Figure 2-2). Seniors living alone are at greater risk for adverse events, institutionalization, and poor health outcomes. Children and extended family or informal caregivers are needed to assist many older persons who lose the ability to care for themselves and do not have a spouse or significant other.

More than half (54.8\%) of the older persons residing in the community lived with a spouse in 2009. Approximately 11.4 million, or $72.0 \%$, of older men, and 8.7 million, or $40.7 \%$, of older women lived with a spouse (Figure 2-2). The proportion living with a spouse decreased with age, especially for women. Only $28.2 \%$ of women $75+$ years old lived with a spouse (AoA, 2011).

FIGURE 2-2.
MARITAL STATUS OF OLDER AMERICANS, 2009


Based on data from U.S. Census Bureau, including the 2009 Current Population Survey, Annual Social and Economic Supplement and the 2009 American Community Survey, by U.S. Administration on Aging, 2011. See: A Profile of Older Americans, 2010, Administration on Aging, 2011. Available at http://www.aoa.gov/aoaroot/aging_statistics/Profile/2010/6.aspx

## FINANCIAL STATUS

Adequate financial resources are essential to provide for housing, nutrition, and health care. Almost 3.5 million older adults ( $9.0 \%$ ) were below the poverty level in 2010. This poverty rate is not statistically different from the poverty rate in 2009 (8.9\%). Another 2.3 million, or $5.8 \%$ of older adults, were classified as "near-poor" (income between the poverty level and $125 \%$ of this level).

## PHYSICAL CHANGES OF AGING

Each system of the body is affected by aging. Most of these changes are progressive and gradual, beginning sometimes as early as the 20 s and 30 s. There is a growing understanding of what constitutes normal aging changes and what is the result of disease. Normal aging consists of changes that occur in all older people.

## Skin, Hair, and Nails

Many of the skin changes of aging result from loss of elasticity and subcutaneous tissue, coupled with sun damage. In general, skin appears thinner and more transparent (especially in lightskinned persons). Areas of increased or decreased pigmentation are common. The skin is drier, especially on the extremities, and can have a scaly appearance. Wrinkling is evident, and skin "tenting" over the extremities is common because of the loss of subcutaneous fat. As a result, skin turgor is not a reliable indicator of hydration status in older adults. If used at all, testing of turgor on the abdomen or chest wall, under the clavicles, or on the inner thigh is recommended, rather than on the forearm or sternum, as is done in younger adults (ConsultGeriRn.org, 2005).

Various types of skin lesions are common in older adults. Many are the result of sun damage accumulated through the years. Benign conditions include seborrheic keratoses, skin tags, senile lentigines, cutaneous horns, and cherry angiomas. The incidence of premalignant and malignant lesions is also higher, especially in light-skinned people. These lesions include actinic keratoses, basal cell carcinomas, squamous cell carcinomas, and malignant melanomas. Table 2-2 details characteristics of these lesions.

Skin changes, coupled with decreased circulation, increase the risk of pressure ulcer development in frail older adults who are immobile. Persons who are malnourished and diagnosed with multiple comorbidities are at even greater risk. Assessment of bony prominences and areas of pressure is critical, including the heels, sacrum, elbows, scapulae, back of the head, and ears.

Age-related changes in hair and nails also may be seen. Melanocytes stop functioning, which leads to graying of hair; hair also becomes thinner and drier. As they age, both men and women tend to develop more coarse hair on the face, ears, nose, and eyebrows. Symmetrical balding (male pattern baldness) is common in men. Fingernails and toenails generally thicken and become less transparent.

TABLE 2-2.
BENIGN AND MALIGNANT SKIN LESIONS COMMON IN OLDER PERSONS

| BENIGN LESION | DESCRIPTION |
| :--- | :--- |
| Seborrheic keratosis | Raised, pigmented, warty lesions with a "stuck-on" appearance; often <br> called "barnacles" |
| Acrochordon (skin tag) | Raised tag of skin occurring in areas of high friction, connected <br> by a narrow stalk (pedunculated) |
| Senile lentigines (age spots) | Irregular pigmented lesions with a rough surface; occur in <br> sun-exposed areas |
| Cutaneous horn | Small projection that is hard and arises from epidermis; common <br> on face |
| Cherry angioma | Tiny cherry-red papule that is made up of blood vessels |
| MALIGNANT LESION | DESCRIPTION |
| Actinic keratosis | Small crusty or scaly area, same color as or different color than skin; <br> often recognized by touch |
| Basal cell carcinoma | Raised pearly, pink papule; may have central umbilication or ulcerate; <br> occurs in sun-exposed areas |
| Squamous cell carcinoma | Soft, elevated, scaly mass that ulcerates; occurs in sun-exposed areas |
| Malignant melanoma | Asymmetric lesion with irregular borders and color variation; occurs <br> anywhere on body |

Adapted from Understanding Physiology, by S. Huether \& K. McCance, 2012, St. Louis, MO: Elsevier Mosby; Geriatrics at Your Fingertips, by D. Reuben, K. Herr, J. Pacala, B. Pollock, J. Potter, \& T. Semla, 2011, New York: American Geriatrics Society; and Promoting Sun Safety in Your Community: Senior Centers, by the Skin Cancer Foundation, 2012, retrieved from http://www. skincancer.org/get-involved/your-community/senior-centers.

## Functional Implication of Skin Changes

- Skin becomes more prone to injury and infection.
- Skin becomes dryer, sometimes resulting in itching and irritation.
- Onychomycosis, or fungal infection of toenails, can occur.
- A decrease in touch receptors may slow reflexes and reduce the sensation of pain.
- Vitamin D production becomes less efficient.

The Braden Scale can be used to assess pressure ulcer risk (Consultgeri.org, 2012; available at http://consultgerirn.org/uploads/File/trythis/try_this_5.pdf).

## Cardiovascular

Age-related changes in the cardiovascular system affect both the heart and blood vessels. The left ventricle becomes thicker and less compliant. This change is exaggerated in those with longstanding hypertension. This thickening leads to a decrease in filling during diastole, which results in a lower stroke volume and, thus, a reduction in cardiac output. Tachycardia is poorly tolerated, because an increased heart rate further reduces diastolic filling time. In addition, the thickened myocardium is more prone to irritability, leading to arrhythmias and to ischemia. Fibrosis and sclerosis of the cardiac muscle can also affect the SA node, other conduction tissue, and the valves. These changes can lead to arrhythmias (such as sick sinus syndrome, heart block, premature beats) and stenotic or incompetent valves. In addition, decreased baroreceptor sensitivity can lead to postural hypotension (Huether \& McCance, 2012).

Aging blood vessels become more calcified and tortuous as people age. The arteries lose elasticity and vasomotor tone and are less able to selectively regulate blood flow. Blood pressure increases because of increased peripheral resistance and can be worsened by atherosclerosis, which is a pathologic process, but occurs almost universally in "aging" arteries.

## Functional Implications of Cardiovascular Changes

- Decreased cardiac reserve
- Increased risk of arrhythmias
- Increased risk of postural hypotension
- Increased risk of varicosities or dependency edema, or both, in lower extremities


## Pulmonary

Lung expansion is diminished in the older population. This change results from several factors, including weakness of respiratory muscles, calcification of rib articulations leading to stiffness of the chest wall, and kyphosis. Pathologic conditions such as chronic obstructive lung disease (COPD) further reduce chest expansion because of air trapping at end-exhalation with emphysema, and excess mucous production and plugging with chronic bronchitis. COPD can lead to an increased anterior-posterior (AP) diameter of the chest, referred to as a "barrel chest."

## Functional Implications of Pulmonary Changes

Reduced pulmonary reserve

- Decreased cough reflex with increased risk of aspiration pneumonia
- Increased risk of infection and bronchospasm with airway obstruction


## Sensory

Age-related sensory changes are common and can be a source of frustration for older adults and their caregivers. Decreased vision can greatly affect function and independence, and is feared by many older adults. Skin changes around the eye can lead to lid laxity and senile ptosis and can obstruct vision. Age-related vision changes (presbyopia) begin around age 40. Loss of lens elasticity and increased thickness cause a decrease in the ability to see contrast, need for higher light requirements, and increased susceptibility to glare.
"Dry eyes" are another common complaint of some older adults. The constant sensation of a foreign body in the eye and "dryness" is often accompanied by excessive tearing. In addition, many older persons may develop ringlike deposits around the iris of the eye, or arcus senilis. It is caused by lipid deposits deep in the edge of the cornea, but is not related to high cholesterol levels, does not affect vision, and does not require treatment (Behrenbeck, 2012).
"Normal" aging changes can be accompanied by pathologic changes in the eyes. Further thickening and yellowing of the lens can lead to the formation of cataracts, which affect about one-third of the population by the time they reach age 80. The increased intraocular pressure is associated with glaucoma and causes diminished peripheral vision. These and other conditions of the eye are discussed further in Chapter 20.

Hearing acuity diminishes with aging, which may be the reslut of presbycusis, a sensorineural hearing loss that probably has many causes. Presbycusis is caused by degeneration of the cochlea and changes in central auditory processing. These changes lead to loss of awareness of highfrequency tones and problems with word discrimination.

Conductive hearing loss due to cerumen in the ear canals is also common. Accumulation of cerumen is aggravated by dryness and flaking skin in the canal, as well as proliferation of aural hairs.

Alterations in taste can result from medication side effects, poor dentition or improperly fitting dentures, tobacco use, or other systemic problems. Dry mouth is a common complaint among older adults, and is considered by many to be a normal age-related change; however, it can also be exacerbated by cigarette smoking, medications, dehydration, and other lifestyle-related factors (Gonsalves, Wrightson, \& Henry, 2008).

## Functional Implications of Sensory Changes

- Increased risk of falls, burns, and motor vehicle accidents
- Increased risk of social isolation, boredom, and depression due to inability to participate with others in activities
- Increased risk of communication difficulties due to hearing loss


## Musculoskeletal

The aging process has a profound effect on bone mineralization. Once women reach menopause, the process of bone resorption (osteoclast activity) outpaces the rate of bone building (osteoblast activity). By age 80 , a woman may have lost up to $30 \%$ of her bone mass. This decrease in bone density and strength (osteoporosis) leads to an increased possibility of fracture, particularly in the weight-bearing bones and vertebrae. Loss of subcutaneous fat may make bony prominences more visible. Joint cartilage erodes and synovial fluid thickens, possibly leading to more painful joint movement. Muscle mass usually declines and tendons become less elastic, which leads to decreased tone and strength.

Like the cardiovascular system, the musculoskeletal system experiences the effects of a sedentary lifestyle. Maintaining a healthy lifestyle and proper nutrition, with calcium and vitamin D supplementation, can help prevent or reduce age-related musculoskeletal changes.

## Functional Implications of Musculoskeletal Changes

- Increased risk of falls with injury
- Greater osteoarthritis pain and limited movement, leading to deconditioning
- Loss of muscle mass; general weakening may occur


## Gastrointestinal

## Functional Implications of Gastrointestinal Changes

- Becoming laxative-dependent, with negative effect on nutrient absorption
- Increased risk of drug toxicity due to decreased liver function
- Dysphagia and aspiration pneumonia more common
- Gastroesophageal reflux disease (GERD) more common with increased use of antacids, potentially affecting digestion and medication absorption


## Female Genitourinary

Ovarian function decreases during the fourth decade of life, and the ovaries atrophy. About 1 or 2 years later, menstrual periods stop, usually between the ages of 40 and 55 . This marks a decline in estrogen levels, followed by atrophy of the tissues. The labia and clitoris become smaller. The vaginal introitus constricts, and vaginal mucosa become pale, thin, and dry. These changes can lead to pain during sexual intercourse and also affect urinary continence. In addition, ligaments and connective tissues in the pelvis lose elasticity, causing a "shift" of the pelvic structures and occasionally bladder or vaginal prolapse. Pelvic laxity also has an adverse effect on urinary continence, especially during times of increased intra-abdominal pressure, such as with coughing or sneezing (stress incontinence). Bladder capacity decreases by about $50 \%$, and sensory changes may delay the signal that the bladder is full, which can lead to overflow incontinence.

## Functional Implications of Female Genitourinary Changes

- Pain and discomfort during vaginal intercourse (dyspareunia)
- Increased risk of vaginosis
- Increased risk of urinary incontinence


## Male Genitourinary

Structural changes in the older man include thinning of pubic hair and sagging of the scrotum. Erections may develop more slowly. Ejaculatory volume can decrease, and the viability of sperm decreases with age. Hypertrophy of the prostate gland may close off the urethra and cause obstructive urinary symptoms, such as hesitancy, decrease in force of stream, increased urinary frequency, nocturia, or retention.

## Functional Implications of Male Genitourinary Changes

- Increased risk of erectile dysfunction
- Increased risk of urinary retention, nocturia, and overflow incontinence


## Renal

Renal function begins to decline in middle age, and that decline continues slowly through the remainder of life. Much of this decline may be attributed to undocumented pathology, such as hypertension or impaired glucose metabolism. Creatinine clearance remains the most reproducible clinical measure of golmerular filtration rate (GFR). It is important to remember that creatinine clearance is affected by the amount of creatinine (a byproduct of muscle metabolism) produced in an individual. Persons of advanced age with decreased muscle mass and cachexia may have a serum creatinine within "normal limits," despite a markedly reduced glomerular filtration rate. Diminished production of creatinine does not require much effort for the kidneys to clear, thus maintaining a normal serum level. The most common formula to calculate creatinine clearance is the Cockcroft-Gault formula: $\{(140-$ Age $) \mathrm{x} w t(\mathrm{~kg}) \times \mathrm{F}\} /$ (Plasma Creatinine ${ }^{*} 0.8136$ ), where $\mathrm{F}=1$ if male and 0.85 if female.

## Functional Implications of Changes in Renal Function

- Increased half-lives of medication, contributing to potential toxicity
- Increased risk of fluid overload or dehydration


## Neurological

Age-related changes in the nervous system result from decreased velocity of nerve impulse conduction and diminished sensory perception. Responses to stimuli take longer. Cerebral neurons decrease slowly after age 50, but the excessive number of neurons present prevents this decrease from producing clinical signs or symptoms of cognitive impairment. Slowing of the autonomic nervous system may contribute to orthostatic hypotension.

## Functional Implications of Neurological Changes

- Slowed speed of cognitive processing
- Increased risk of sleep disorders, neurologic diseases, and delirium
- Increased risk of sensory overload or deprivation


## SUMMARY

This chapter has provided the necessary background information for the nurse to develop a perspective on the older person in America. Subsequent chapters will address the healthcare needs of this group.

The concept of health for older adults must be expanded beyond "disease-free." Felner and Williams (1979) crafted a definition of health that is most appropriate for older adults: "The ability to live and function effectively in society and to exercise self-reliance and autonomy to the maximum extent feasible, but not necessarily as total freedom from disease." This definition was incorporated into the Healthy People 2000+ documents (http://www.healthypeople.gov/2020).

Disease should not be the hallmark of old age; the definitioon of old age should include healthy independence. This goal can be achieved through careful follow-up and disease management, health promotion and screening, provisions for advance directives, healthy coping with physical and emotional loss, attention to housing and social services, and involving families and informal caregivers in aspects of care.

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## ADDITIONAL RESOURCES

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