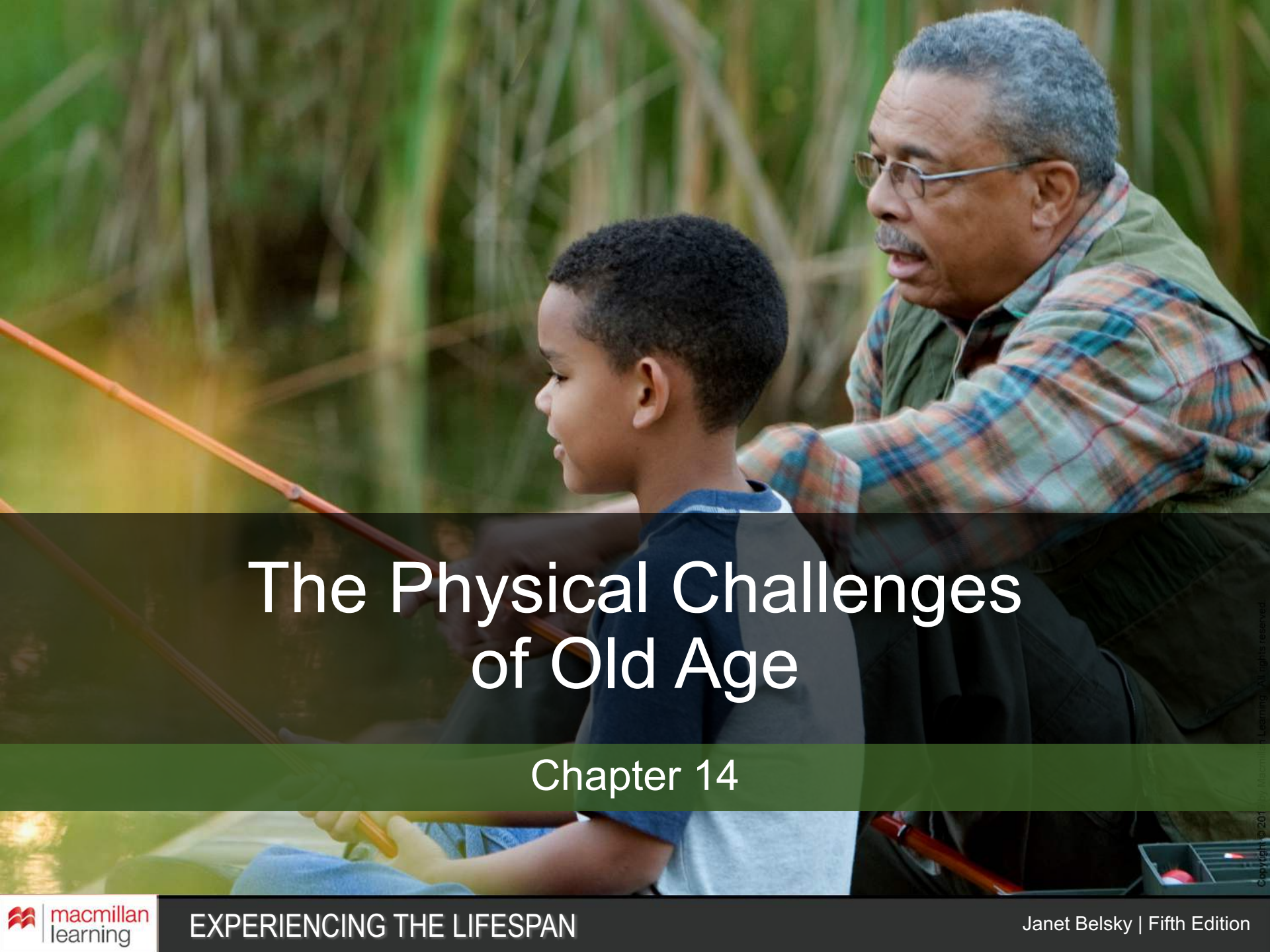




The Physical Challenges of Old Age

Chapter 14

In This Chapter

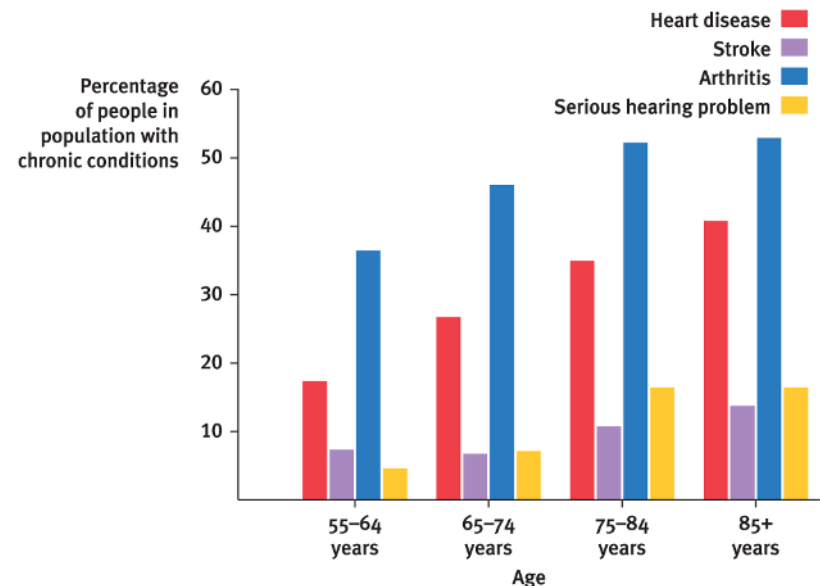
- Tracing Physical Aging
- Sensory-Motor Changes
- Dementia (Neurocognitive Disorders)
- Options and Services for the Frail Elderly



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Tracing Physical Aging

- Chronic disease is often normal aging “at the extreme”
- ADL impairments are a serious risk during the old-old years.
 - Instrumental ADL
 - Basic ADL problems
- The human lifespan has a defined limit
 - Super-centenarians

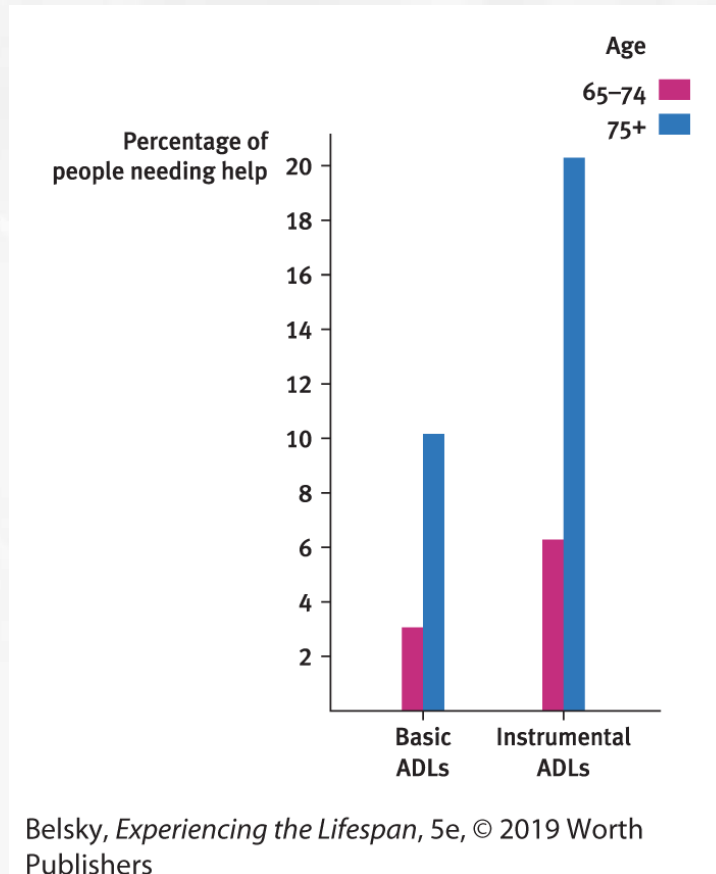


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Can We Live to 200?

- Scientific research
 - Calorie restriction may be a life-extension strategy
 - Biological limits of human life may cast doubts on extending maximum lifespan
 - Complex causes of body breakdown involved in aging
 - Body has evolutionary expiration date set below 100
- Concerns about life-extension
 - Ethical problems
 - Overpopulation
 - Spiritual grounds

Percentages of People Needing Assistance with Instrumental ADLs and Basic ADLs



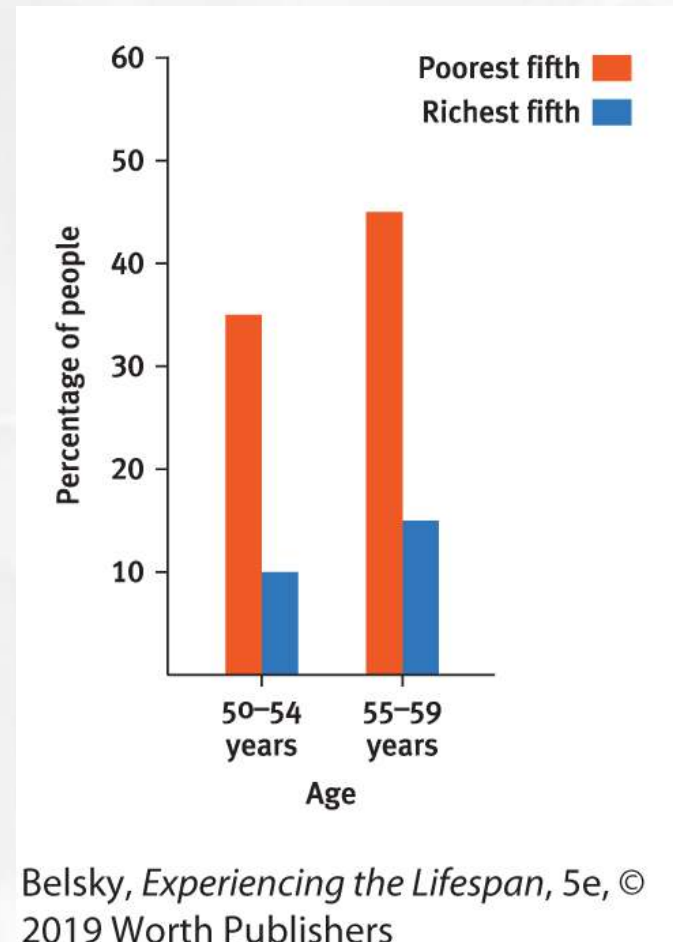
- Percentages of people needing assistance with instrumental ADLs and basic ADLs in the young-old years and over age 75.
- Although in the sixties and early seventies the fraction of people with ADL difficulties is relatively small, the risk of having these problems escalates dramatically over age 75.
- Over age 85, roughly one in six people living in the community have a basic ADL problem.

Socioeconomic Status, Aging, and Disease

- Socioeconomic and health gap are related
 - Universally, affluent people living longer and enjoying better health
 - Relationship between income and illness begins in middle age
 - Education and nurturing close relationships are predictors of aging rate and survival
- Accelerated aging process begins at beginning of life (fetal programming hypothesis)
 - Diet, illness, and life stresses can lead to accelerated aging
- Poverty-illness relationship is bidirectional
 - Childhood illness can lead to poverty
 - Poverty can lead to poor health-related choices in later life

Percentage of People by Income Aged 50–59 Who Report a Limiting Long-term Illness

- What does this reveal about the link between poverty and premature aging in the United Kingdom?



Gender, Aging, and Disease

- Women

- Survive longer due to wider web of social connections; second X chromosome
- Rank higher on sickness indicators throughout life
- Are more prone to illnesses that cause problems with ADLs but are not fatal

- Men

- Are twice as likely to die from a heart attack earlier in life
- Outlived by women in every developed world nation by at least four years

Close Communities, Childhood, and Combating Chronic Disease

- Strategies to increase healthy-life years and biological life limits
 - Focus on children: Preventing premature births, eliminating child poverty, improving education
 - Focus on constructing caring communities: Making cities senior-citizen friendly, promoting healthy nutrition and exercise, supporting nurturing social relationships; collective efficacy

Our Windows on the World: Vision

- Changes in vision, hearing, and motor abilities occur with age
- Signs of normal aging in vision
 - Presbyopia; lens
 - Poorer dark vision
 - More troubles with glare

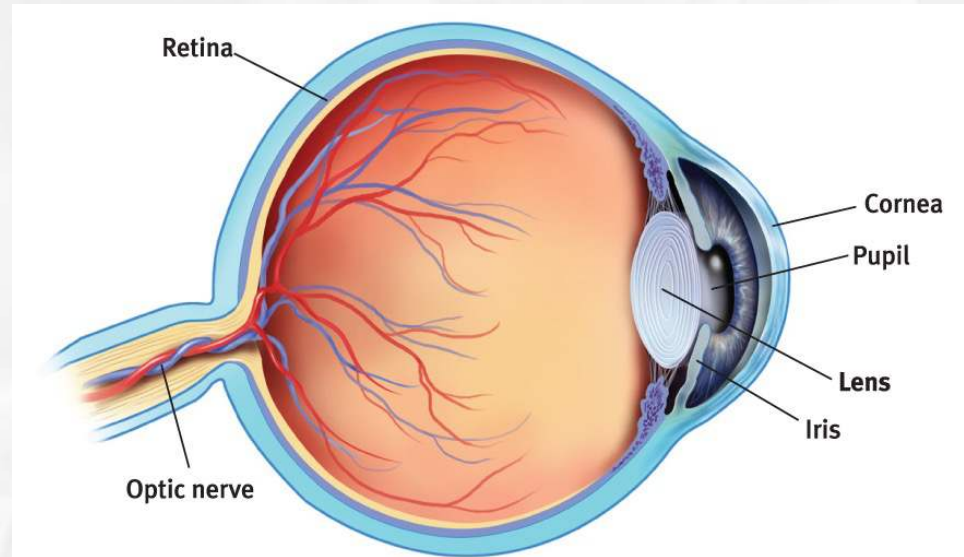


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What an 85-year-old might see

The Main Cause: The Lens

- Deterioration in many structures of the eye contributes to making older adults' vision poor.
- However, changes in the lens, shown here, are responsible for presbyopia and also contribute greatly to impaired dark vision and sensitivity to glare—the classic signs of “aging vision.”



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Clarifying Sight

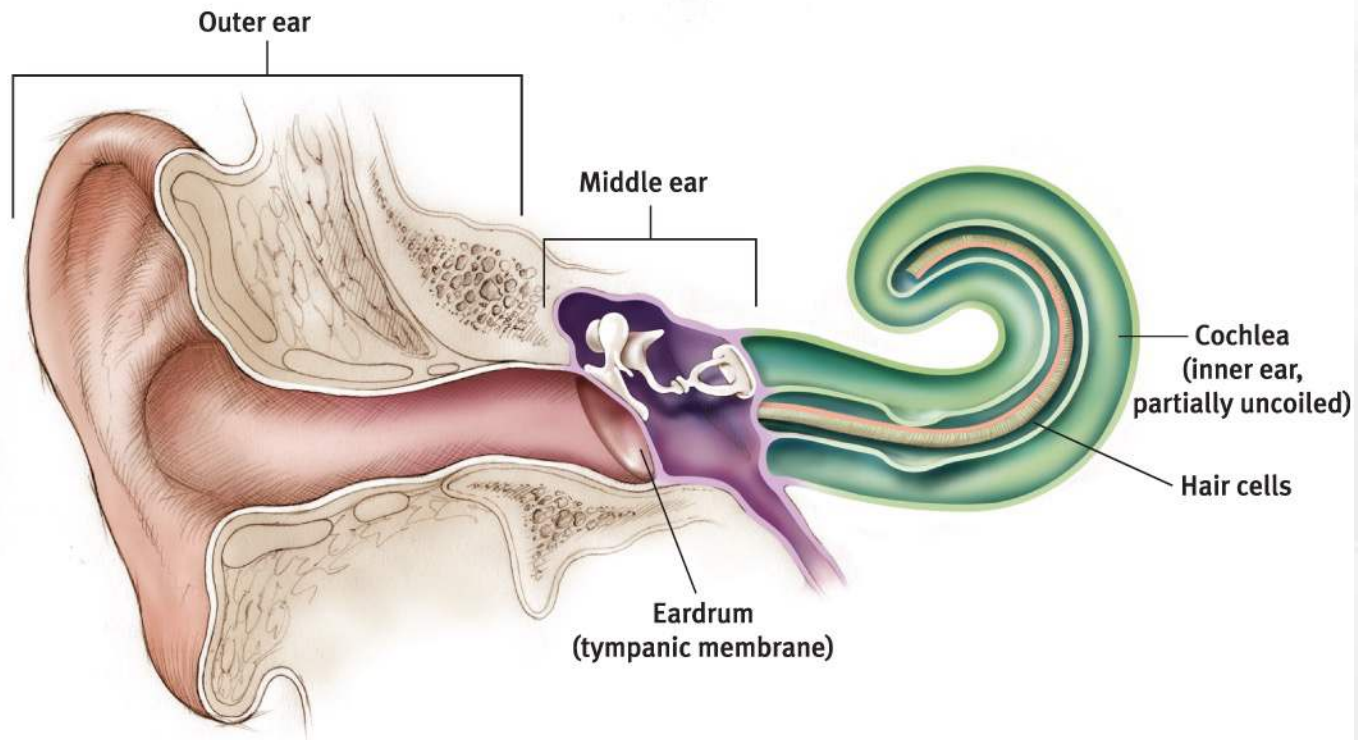
- Modifying the wider world is the key to reducing the impact of the normal vision losses basic to getting old.
 - Use strong indirect lighting.
 - Avoid fluorescent lighting that produces glare, especially on bare floors.
 - Use adjustable lighting and larger numerals on appliances, and provide nonreflective surfaces.
 - Use low-vision aids such as magnifiers.
 - Investigate low-vision clinic for rehabilitation resources.

Our Bridge to Others: Hearing

- **Hearing loss**

- Is common and causes as many barriers as vision loss
- May be more problematic than vision problems because the ability to connect with the human world through language is limited
 - Occurs in one in three older adults
 - Is more likely in men
 - Can have environmental cause

The Human Ear



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Presbycusis

- **Presbycusis is characteristic age-related, permanent hearing loss**
 - Caused by atrophy of inner ear hearing receptors
- **Selective problems**
 - Hearing higher-pitched tones
 - Overpowering background noise
- **Traditional hearing aids that magnify all sounds**
 - May not help much and are difficult to manage

Aiding Hearing in the Twenty-first Century

- Avoid high-noise environments
- Install carpeting in the house
- Replace noisy appliances
- Suggest assistive devices if appropriate; hearing loops
- Face the person when speaking
- Avoid elderspeak



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Motor Performances

- Primary motor ability change is slowness
- Problems with reaction time or decline in the ability to respond quickly to sensory input
- Changes in skeletal structures affect motor abilities
 - Osteoarthritis
 - Osteoporosis

Modifying Motor Problems

- **Vision**

- Use appropriate lighting and appliances
- Avoid driving at night and in rain

- **Hearing**

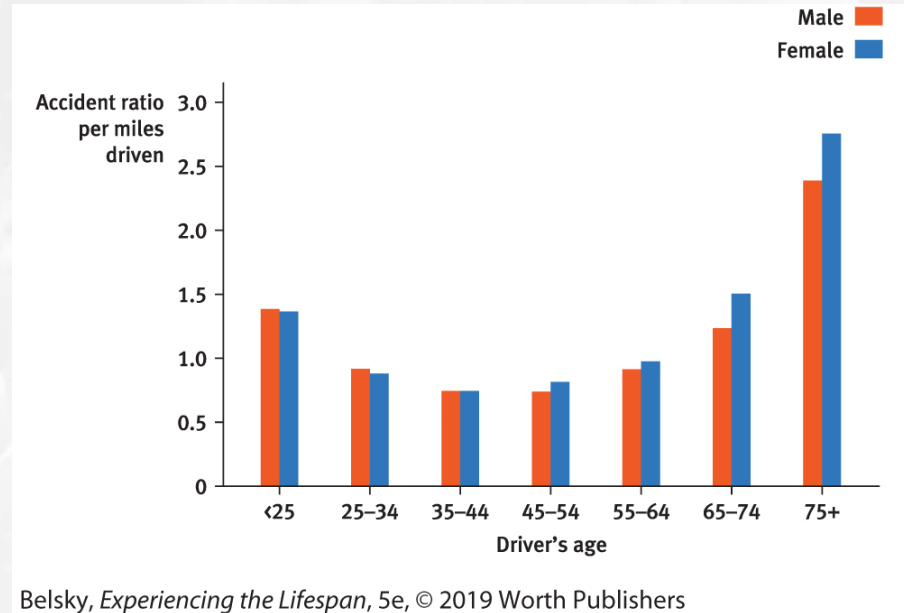
- Reduce background noise
- Face person and speak directly; avoid elderspeak

- **Motor abilities**

- Use caution in speed oriented situations
- Locate appropriate exercise programs
- Install assistive devices

Later-Life Driving Issues and Potential Solutions

- Vision, hearing, and reaction-time problems converge to make driving more dangerous especially in the old-old years.
- Driving is especially dangerous for drivers age 75 and over.



Driving in Old Age: Solutions

- **Potential solutions**

- Utilizing vehicle anti-crash features
- Requiring yearly license renewals along with vision tests
- Redesigning driving environments
- Investigate car-sharing services



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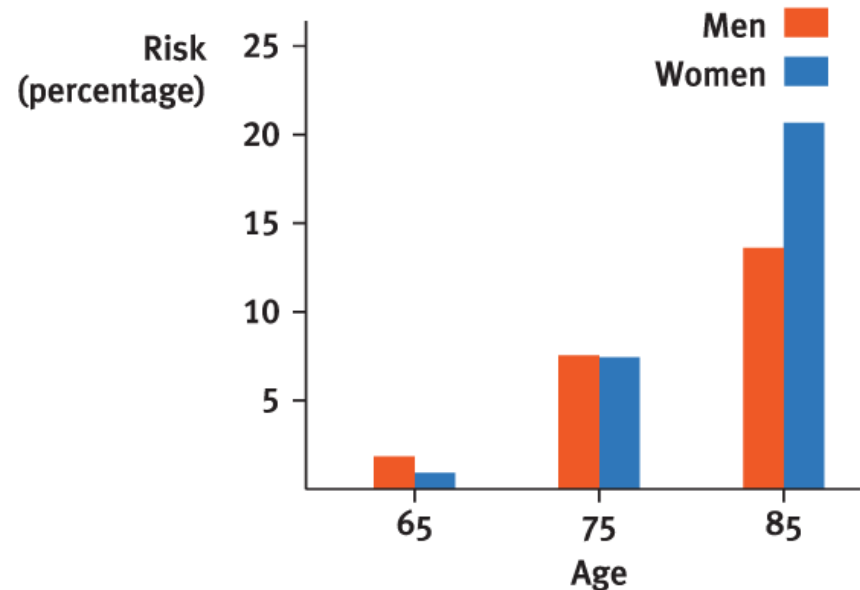
Dementia (Neurocognitive Disorders or NCDs)

- **Dementia**

- Is general label for any illness that produces serious, progressive, usually irreversible cognitive decline
- Is a chronic disease that involves total erosion of personhood
- Typically, is an illness in advanced old age, not young-old
- Can be seen in younger adults who experience brain injury or illnesses such as AIDS

The Dimensions of Dementia

- Deterioration progresses at different rates from person to person and varies depending on the specific disease
 - Semantic information forgetfulness
 - Impairment in executive functions
 - Affected abstract thinking
 - Compromised language
 - Gradually loss of all functions
 - Death



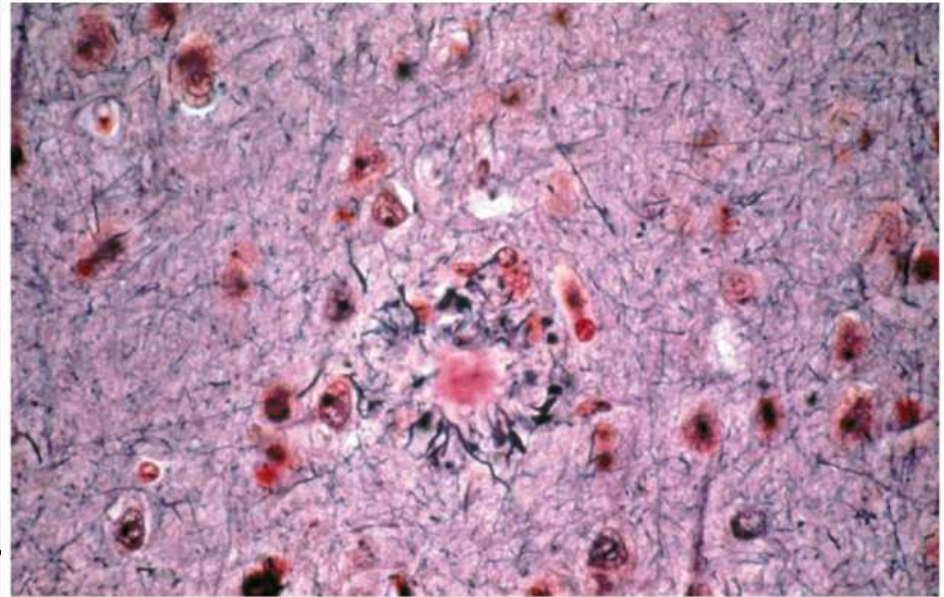
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Dementia's Two Main Causes

- **Vascular neurocognitive disorder (Vascular dementia)**
 - Caused by multiple small strokes
 - Involves impairments in the vascular system (blood flow in body)
 - Blood flow that feeds brain
- **Neurocognitive disorder due to Alzheimer's disease**
 - Age-related dementia characterized by neural atrophy and abnormal by-products, such as senile plaques and neurofibrillary tangles.
 - Neurons decay and wither away, and are replaced by neurofibrillary tangles and senile plaques
 - Genetically linked (Genetic marker (APOE-4))

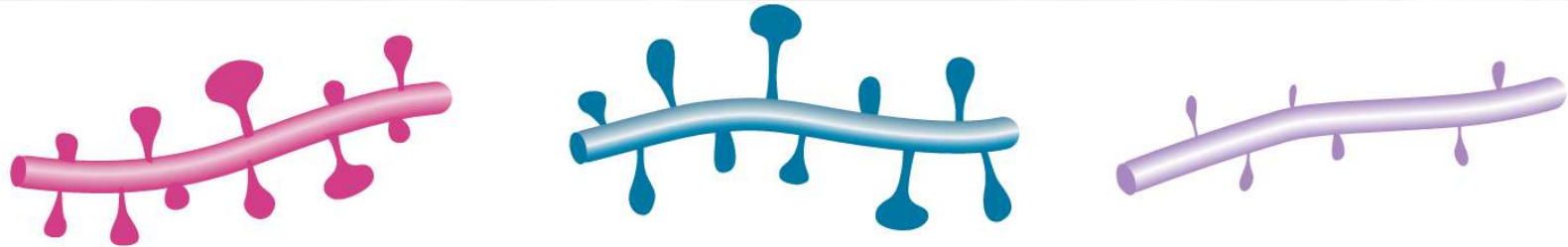
Targeting the Beginnings: The Quest to Nip Alzheimer's in the Bud (part 1)

- Major focus is on amyloid protein
 - Fatty substance that is the basic constituent of the senile plaques; tau accumulation
 - Cannot be dissolved
- Key lies in early detection and halting early neural decay
 - Measuring amyloid and tau-p levels in fluid of cognitively normal older people
 - MRIs assessing the brain's gray matter and volume add to the accuracy of a subsequent diagnosis



Martin M. Rotker/Science Source

Targeting the Beginnings: The Quest to Nip Alzheimer's in the Bud (part 2)



Cognitively normal group

Cognitively normal group with Alzheimer's pathology

Alzheimer's disease

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Targeting the Beginnings: The Quest to Nip Alzheimer's in the Bud (part 3)

- **Major focus is on amyloid protein**
 - Fatty substance that is the basic constituent of the senile plaques.
 - Cannot be dissolved
 - No cure and no proven effective treatment
- **Key lies in early detection and halting early neural decay**
 - Measuring amyloid and tau-p levels in fluid of cognitively normal older people
- **Recommended prevention**
 - Healthy diet
 - Physical exercise, particularly treatments or running wheels
 - Mental exercise, such as brain-stimulation games

Dealing with Dementing Diseases

- **For the ill person: Using external aids and making life predictable and safe**
 - Using external aids and making life predictable and safe; use note cards to jog memory
 - Focus on safety
 - Lock and put buzzers on doors
 - Remove toxic substances and deactivate dangerous appliances
- **For the caregiver: Coping with life turned upside down**
 - Relishing moments together that are left
 - Relying on faith for solace

Options and Services for the Frail Elderly

- **Setting the context: Scanning the global elder-care scene**
 - Family care model fraying in some collectivist countries
 - Turning to Western models in many countries
 - Scandinavian countries offer positive models for elder care
 - Family members still take primary responsibility for elder care
 - However, government often provides home health services allowing people to stay in their homes
 - Money provided to help remodel home
 - Presence of multigenerational villages

Alternatives to Institutions in the United States

- Continuing-care retirement community
- Assisted-living facility
- Day-care programs
- Home health services



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Nursing Home Care

- **Nursing homes or long-term care facilities**
 - Designed for people with basic ADL impairments
 - Provides 24-hour intensive care
 - Serves mainly very old and female residents
 - Entry often occurs after trauma
 - People without families are most at risk of entry
 - Primarily funded through Medicaid in United States

Evaluating Nursing Homes (part 1)

- **Nursing home system is often misunderstood and misrepresented**
- Myths include
 - Often viewed as “dumping ground”
 - Abuse is widespread
 - Residents are poorly cared for until they die
- Movement to change nursing home culture
 - Person-centered
 - Attentive to resident’s individual years

Evaluating Nursing Homes (part 2)

- **Certified nurse assistant or aide**

- Front-line care provider in a nursing home, who helps elderly residents with basic ADL problems
- Like child-care workers, these health-care providers have very low wages
- Facilities are often understaffed
- Research suggests that most get a true sense of satisfaction with their work



However...

*Nursing homes can vary dramatically
in quality.*

*Research shows one in four nursing homes
provide substandard care.*

Wrapping Up Age-Related Physical Decline

- Dealing with ADL impairments is a vital social challenge facing an increasing, aging population
 - Avoid natural temptation to infantilize old, frail population; autonomy matters
 - Recognize the U.S. and other countries do not have ideal system for providing optimal environments to people approaching the end of life
 - People can find their authentic self, fulfill their generativity, and reach integrity in their final months of life