Aging Well
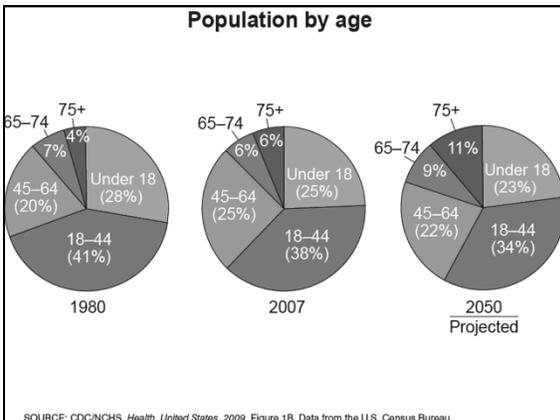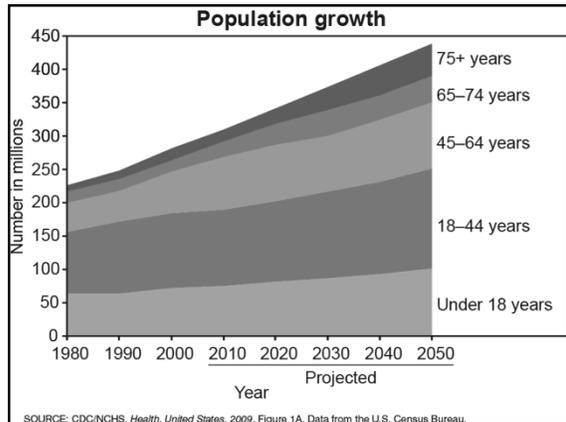
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Overview

- What is aging?
- Special concerns in aging
- What can I do to age well?

What is "Aging"

Population growth

SOURCE: CDC/NCHS, *Health, United States, 2009*, Figure 1A. Data from the U.S. Census Bureau.

Population by age

SOURCE: CDC/NCHS, *Health, United States, 2009*, Figure 1B. Data from the U.S. Census Bureau.

What is "Aging"

- "The process of growing old"; Increasing the number of years you live
- Increasing the risk of _dying_ (gerontological definition)
- Gradual _loss_ of physical and mental abilities (but what about appearance?)
- Genetic control of genes that _turn off_ or on, either _speeding up_ or slowing down the aging process
- Accumulation of toxins due to _failure_ of biological mechanisms that used to regulate toxin accumulation

What is "Aging"

- Most definitions of "Aging" emphasize *losses*
  - Lifestyle, habits, diet, other psychosocial factors can account for these losses (Rowe & Kahn, 1987)

- Aging is also associated with *gains*
  - Vocabulary, experience, wisdom, general knowledge

- Successful vs. Usual Aging (Rowe & Kahn, 1987)
  - Successful aging: Avoidance of disease and disability; maintaining physical & cognitive abilities; engagement in social and productive life activities
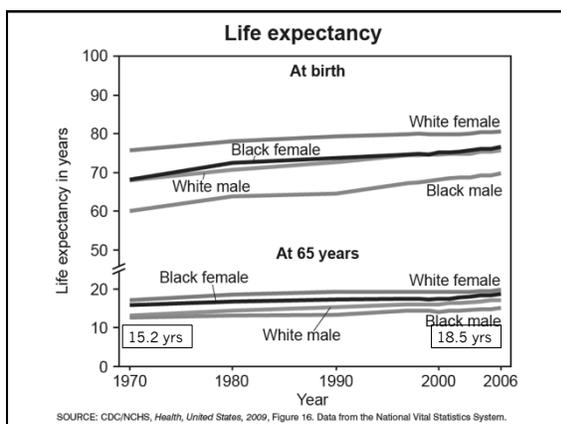
Life Expectancy vs. Life Span

- **Life expectancy** (number of years one can *expect* to live) has been rising over the last century

Ruth Frith, age 100
World Masters Games

  - 47.3 years-1900 (M/F=46.3 years/48.3 years) [1]
  - 68.2 years-1950 (M/F=65.6 years/71.1 years) [1]
  - 77.7 years-2006 (M/F= 75.1 years/80.2 years) [1]
  - 78.3 years-2010 (projected, M/F=75.7 years/81.4 years) [2]
  - 10 year projection: we will add about 1 year [2]
  - US ranks 49th in life expectancy; The top 3 countries are Monaco (89.8 years), Macau (84.4 years), San Marino (83 years) [3]

[1]National Center for Health Statistics. (2009). *Health, United States, 2008 With Chartbook*. Hyattsville, MD.
[2]U.S. National Center for Health Statistics, National Vital Statistics Reports (NVSR), *Deaths: Final Data for 2006, Vol. 57, No. 14, April 17, 2009*.
[3]The World Factbook 2009. Washington, DC: Central Intelligence Agency, 2009.

SOURCE: CDC/NCHS, *Health, United States, 2009*, Figure 16. Data from the National Vital Statistics System.

Life Expectancy vs. Life Span

- **Life span** (*the maximum number of years that a human can possibly live*) has probably not changed much throughout time
  - Genesis 6:3 "Then the LORD said, "My spirit shall not abide in mortals forever, for they are flesh; their days shall be one hundred twenty years"" (NRSV)
  - Hippocrates (c. 460-377 BC) ~83
  - Titian (c. 1488-1576) ~88?
  - Several documented British Members of Parliament[1,2] between 1550 and 1875 were centenarians
  - Jeanne Calment, longest-living human: 1875-1997 (122 years, 164 days)

[1]Razzell, P. (1993). *The growth of population in eighteenth century England: a critical reappraisal*. Journal of Economic History; 53:743-771.
[2]Razzell, P. (1994). *Essays in English Population History*. Caliban Books, London.

Centenarian Characteristics
Georgia Centenarian Study Phase III

- Life expectancy in 1905 was 45; our centenarians have lived 2 lifetimes!
- 244 centenarians or near-centenarians (98-108)
  - 1244 estimated to be in the sampling frame
- 84.8% Women; 21.3% African American
- 26.2% High School/GED; 19.3% College graduates
- 43% live in nursing homes
- 87.3% Widowed
  - 88.9 % women widowed (1/50 women married-1.9%)
  - 78.4% men widowed (1/5 men married-18.9%)
- 89.3% Protestant; 6.1% Catholic; 2% Jewish
  - 97.4% of 244 centenarians expressed a religious preference

Life Expectancy

- Average American life expectancy could be extended by 5-10 years if you took away heart disease, cancer, and stroke (Robert Kane)
- Our bodies are built like cars, designed to last about 100,000 miles. With the right genetic makeup, some cars can go up to 150,000 miles, but all cars deteriorate over time (Tom Perls)
- So what are some possible "bumps in the road?"
  - How long can I live?
  - How well can I live?

Dr. Frank Shearer, age 101

Aging and Carbohydrate Metabolism

- Aging is associated with reduced capacity to metabolize carbohydrates
  - Even among non-diabetics in the Honolulu Heart Program, the 12-year risk of stroke has been shown to be age-related and significantly higher for those at the 80th percentile for blood glucose level than those at the 20th percentile (Abbott, et al., 1987)
  - **Diet** and **exercise** have been shown to improve carbohydrate metabolism and to reduce insulin resistance in older adults (Zavaroni et al., 1986; Hollenbeck et al., 1985; Seals et al., 1984)

Aging and Osteoporosis

- Occurs in both men and women; begins in the 20s and 30s
- By age 65, 1 out of 3 women and 1 out of 6 men will have suffered a hip fracture
- Preventable risk factors: smoking, heavy alcohol intake, inadequate calcium intake
- Bone loss can also be reduced by beginning **moderate exercise programs** (Aloia et al., 1978; Krolner et al., 1983; Smith et al., 1981)

Aging and Cognitive Function

- Memory changes are among the most common age-related cognitive complaints
- Little information is known regarding etiology and clinical significance of subjective memory concerns
  - Objective memory impairment
  - Personality traits
  - Mood disturbances (Dux, Woodard et al., 2007)
    - Excessive reactivity to normal cognitive changes with aging
  - Cortisol levels (Wolf et al., 2005)
- Anticipatory Dementia (Cutler & Hodgson, 1996)
  - Link between negative memory appraisals and concerns about developing Alzheimer's disease

Aging and Cognitive Function

- Woodard et al. (2006)
  - Out of 116 adults aged 65 years and over:
    - "Do you think you have a memory problem?"
      - Total Sample: 40.5% Yes; 59.5% No
      - Mild cognitive impairment: 50% Yes; 50% No
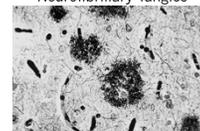   - Healthy: 38.8% Yes; 61.2% No

Dementia vs. Alzheimer's Disease

- Dementia is an 'Umbrella' term for any loss in thinking abilities that causes difficulties in everyday life and activities
- Alzheimer's disease is the most common type of dementia
  - Damage to the brain begins as long as 10-20 years before there are any symptoms

Alois Alzheimer-1906
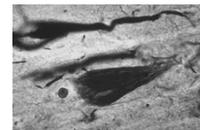
Neurofibrillary Tangles

Senile (Neuritic) Plaques

The Impact of AD

- Approximately 5.2 million Americans have AD
  - 13% of the US population aged 65 and over have AD (one out of every eight persons in this age group)
  - By 2050, 15 million persons are expected to have AD
- Currently, ~18 million people in the world have AD
  - 66% of people with AD live in developing countries
- Direct and indirect costs are ~$100 billion per year in US and $87 billion in Europe

Memory Problems and AD

- Memory *problems* are the first signs of AD
- Memory *changes* are NORMAL as we get older
  - But, asking the same questions over and over again, taking longer to complete daily tasks, trouble finding words on most days, and misplacing familiar objects may warrant brief testing
  - Other signs:
    - Forgetting where you are going
    - Becoming lost while driving or walking
    - Difficulty performing familiar tasks

Neuropsychological Testing

- Clock Drawing
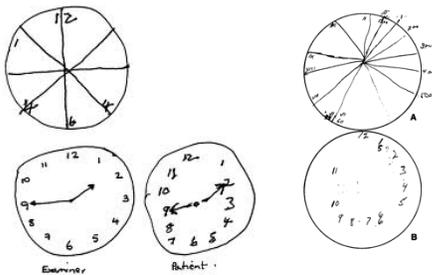
Aging vs. AD

- Memory changes are natural in healthy aging
  - Some changes due to structural brain changes with age
  - Anxiety, depression in late life can also cause perception of memory changes
- Much research directed at "Memory Enhancement"
  - Herbs and supplements
  - Physical and cognitively stimulating activity
  - Managing stress, anxiety, depression
  - Attending religious services as little as once per month can reduce the risk of death by one-third and is associated with LESS cognitive decline

Aging and Psychosocial Factors

- **Control or Autonomy**: Extent to which individuals are able to make decisions regarding choice of activity, method, and manner of engagement, timing, pace, etc.
  - Lack of control has adverse effects on emotional states, performance, subjective well-being and on physiologic indicators
    - Physical impairments, reduced economic capability, residential moves from separate households to institutional or combined arrangements
  - Negative health changes after nursing home admission were affected by degree of individual control over the move
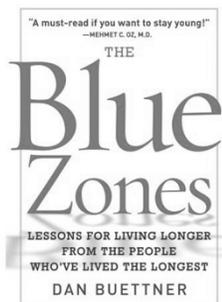 - The positive effects of increased control may be due to making life more predictable

Aging and Psychosocial Factors

- **Social Support and Extent of Social Networks** affect mortality and morbidity
  - Membership in a network of family and friends is associated with lesser mortality risk (Berkman et al., 1983; Blazer, 1982; House et al., 1982)
  - Social support also influences rate and completeness of recovery from injuries, heart attacks, cancer and other illnesses
- Support-disrupting life events have specific negative effects on morbidity and mortality
  - Bereaved individuals have a higher mortality rate than married individuals
    - Mortality after loss of a spouse is more characteristic of men than of women
  - Moves into or between nursing homes have resulted in excess mortality, especially during the early months after the move

Aging and Psychosocial Factors

- Support can either increase or decrease autonomy or control
  - Teaching, encouraging, and enabling are autonomy-increasing modes of support
  - Constraining, "doing-for," warning, etc. may convey caring but they teach helplessness
- Supportive behavior that is autonomy-enhancing has the greatest positive effects

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What Can I Do to Live Longer and Healthier?

"A must-read if you want to stay young!"
—MEHMET C. OZ, M.D.

THE

Blue
Zones

LESSONS FOR LIVING LONGER
FROM THE PEOPLE
WHO'VE LIVED THE LONGEST

DAN BUETTNER

Get Up and Move Without Thinking About It

- First, change your lifestyle
  - Walk instead of driving; take the stairs instead of the elevator; don't fight over the closest parking spot to the store; put down the remote control and change the channel yourself. Make life a little tougher and inconvenience yourself
  - Find activities you like to do, then do them!
  - Walk! As little as 15 minutes per day, every day, can make a huge difference
  - Find other people with whom to walk and socialize
  - Plant a garden
  - Take a yoga class and practice at least twice weekly

Modify Your Calories

- Stop eating when your stomach is 80% full (Hara hachi bu)
  - Okinawans and Sardinians consume 1900-2000 calories per day
  - Serve your plate, then store the food before sitting down to eat
    - People who use this approach eat 14% less
  - If you must eat a burger, take a quarter-pound burger and load it with lettuce, onions and tomatoes; you'll feel as full as if you ate a half-pound burger
  - Serve food on smaller plates and narrower glasses

Modify Your Calories

- Stop eating when your stomach is 80% full (Hara hachi bu)-continued
  - Weigh yourself daily to have a constant reminder
  - Eat more slowly
  - Focus on your food—turn off the TV, computer, and cell phone
  - Sit while you eat—NO Standing!
  - Eat most of your calories early in the day; a small dinner should be your goal

Eat Your Vegetables!

- Get at least 4 to 6 servings of vegetables each day

- Limit meat consumption to twice weekly; portions should be no bigger than a deck of cards

- Make fruits and vegetables easy to get to
  - Fill a bowl with fruit and use it as a centerpiece
  - Put vegetables front and center in the refrigerator rather than on the lowest drawer

- Beans should be a cornerstone of lunches and dinners

- Eat nuts daily

Live an Active and Engaged Life

- Why do you get up in the morning?

- What is your passion in life?

- Find someone to whom you can communicate your mission and purpose in life (and can keep you on track!)

- Learn something new
  - Take a foreign language
  - Travel
  - Take up a hobby

Relax and Slow Down

- Turn off the cell phone, iPod, radio, and TV and focus on the sounds around you

- Be early—plan to arrive 15 minutes early for every appointment

- Meditate—find a comfortable spot in your home and start with 10 minutes a day, every day
  - Work up to 30 minutes
  - *The Relaxation Response*- Herbert Benson
  - Centering Prayer-*Open Mind, Open Heart*-Thomas Keating

Spirituality & Aging

- 158 research articles listed in PubMed database
  - Of these articles, 27 are review articles
  - 97 of these articles published in the last 5 years

- Yet, the second half of life is associated with heightened religious or spiritual interest
  - Pew Forum on Religion and Public Life, 2008:
    - **69%** of those aged 65 and older reported that religion was very important (**59%** for ages 50-64)
    - **54%** reported attending worship at least weekly (**40%** for ages 50-64)
    - **68%** reported praying daily outside of religious services (**61%** for ages 50-64)

Faith and Centenarians

- Centenarians in Sardinia and Costa Rica (Nicoyan peninsula) are mostly Catholic

- Okinawans have blended religion stressing ancestor worship: relinquishes worry to a higher power
  - If something bad happens, it was meant to be
  - If something good happens, the ancestor was watching out for you

- Loma Linda centenarians are Seventh-day Adventists
  - Respect for Sabbath
  - Diet

Spirituality and Longevity

- <u>Attending religious services as little as once per month can influence how long you live</u>
  - Musick, House & Williams, 2004: 3,617 people were followed over 7.5 years; attending religious services at least once per month reduced risk of death by about one-third
    - Positive impact of spirituality on longevity was about the same as moderate physical activity
  - Adventist Health Study followed 34,000 people over 12 years; those who went to church services frequently were 20% less likely to die at any age
- Weekly attendance at religious services accounted for an additional 2-3 years of life (Hall, 2006)

Spirituality and Health

- Numerous positive health outcomes are associated with spirituality
  - There is a <u>positive association between religious involvement and better adaptation to medical illness</u> (Ell et al., 1989; Jenkins & Pargament, 1995; Kaczorowski, 1989)
  - Those who participate in religious activities <u>engage in fewer negative health behaviors</u> and <u>experience less anxiety and depression</u> (Koenig et al., 2000)
  - Religious activity is associated with <u>better compliance with taking blood pressure medication</u> (Koenig et al., 1998)
  - There is a <u>positive association between religious involvement and immune system functioning</u> (Dull & Skokan, 1995)
    - AIDS (Woods et al., 1999)
    - Breast cancer (Schaal et al., 1998)

Religious Attendance Reduces Cognitive Decline

- Corsentino et al. (2009)
  - Duke Established Populations for Epidemiologic Studies of the Elderly (2,938 adults aged 65+)
    - <u>More frequent religious attendance was associated with LESS cognitive decline over 3 years</u> (controlled for demographic, health status, physical functioning, socioeconomic status and social support)
    - Infrequent religious attendance was associated with the greatest cognitive decline over 3 years in older women with higher levels of depression
      - Religious attendance may be intellectually and behaviorally stimulating, which may be useful for reducing distress and improving health

Religious Attendance Reduces Cognitive Decline

- Van Ness & Kasl (2003)
  - New Haven EPESE
    - Persons who attend religious services once per week or more show a 36% reduction in likelihood of cognitive impairment over 3 years
- Hill et al. (2006)
  - Hispanic EPESE
    - Among older Mexican-Americans, religious attendance is associated slower rates of cognitive decline than those who do not attend services
    - Reyes-Ortiz (2008) also showed that infrequent religious attendance is associated with faster cognitive decline (especially for those with chronic depressive symptoms) than frequent attendance (weekly or more)

Religious Attendance Reduces Cognitive Decline

- Why?
  - Active, stimulating, and socially engaged lifestyles are required for healthy cognitive aging
    - Religious attendance may stimulate thinking in a variety of ways (singing, prayer/meditation, sermons, Bible study, socializing)
  - Religious participation is associated with a greater sense of hope, meaning, and purpose
    - Helps older adults cope with stress, anxiety and depression, which may provide a buffer against cognitive decline
  - Religious involvement may favor healthy behaviors (more preventive healthcare services, less smoking/drinking, greater physical activity)

Summary

Figure 1. Revised Rowe and Kahn Model of Successful Aging.

Summary

- There is no recipe to living a long and healthy life, but there *is* a recipe book

- There are no supplements or pills that will extend life; NOTHING will stop or reverse the aging process

- Although adding years to your life may be desirable, adding *life* to your *years* is probably most important

Thank You!