



# EPIDEMIOLOGY OF AGING

- **DEFINITION AND INTRODUCTION TO RESEARCH IN THIS AREA**
- **PRESENTATION OF AGING AND PHYSICAL ACTIVITY AS AN EXEMPLAR FOR RESEARCH IN THE EPIDEMIOLOGY OF AGING**



# EPIDEMIOLOGY OF AGING

- **THE STUDY OF THE AGE-RELATED DISTRIBUTION AND CAUSES OF DISEASE, DISABILITY, AND MORTALITY IN HUMAN POPULATIONS.**



# EPIDEMIOLOGY OF AGING

- **CHRONOLOGICAL AGE IS ASSOCIATED WITH INCIDENCE AND PREVALENCE OF MOST HEALTH OUTCOMES.**
- **DESPITE THIS AGE ASSOCIATION, THERE IS CONSIDERABLE VARIATION IN HEALTH OUTCOMES WITHIN AGE CATEGORIES.**



# EPIDEMIOLOGY OF AGING

- **WHY ARE OLDER PEOPLE AT ELEVATED RISK FOR DISEASE, DISABILITY, AND DEATH?**



# EPIDEMIOLOGY OF AGING

- **ACCUMULATION OF ENVIRONMENTAL/BEHAVIORAL INSULTS.**
- **REDUCED IMMUNOLOGICAL SURVEILLANCE**



# EPIDEMIOLOGY OF AGING

- **WHY IMPORTANT?**
  - AGING OF THE HUMAN POPULATION
  - HEALTH AND VITALITY OF AN AGING POPULATION
  - QUALITY OF LIFE AND COST OF CARE



# EPIDEMIOLOGY OF AGING

- **AGING OF THE U.S. POPULATION, PERCENTAGE AGED 65+ YEARS BY YEAR**

<b>1900</b>	<b>4.0%</b>
<b>1940</b>	<b>8.0%</b>
<b>1980</b>	<b>11.5%</b>
<b>2000</b>	<b>12.6%</b>
<b>2030</b>	<b>20.0%</b>



# EPIDEMIOLOGY OF AGING

- **THERE IS CONSIDERABLE VARIABILITY BY REGION OF THE COUNTRY, 2000**

– FLORIDA	18.1%
– CALIFORNIA	10.4%
– ALASKA	5.8%





# EPIDEMIOLOGY OF AGING

- RACE, ETHNICITY, AND AGE, U.S.**

	<b>2000</b>	<b>2050</b>
<b>NH white</b>	<b>83.5%</b>	<b>64.2%</b>
<b>NH black</b>	<b>8.1</b>	<b>12.2</b>
<b>NH Asian/PI</b>	<b>2.4</b>	<b>6.5</b>
<b>Hispanic</b>	<b>5.6</b>	<b>16.4</b>



# EPIDEMIOLOGY OF AGING

- **MAJOR AGE-ASSOCIATED CAUSES OF DEATH**
  - **CARDIOVASCULAR DISEASE**
  - **CANCER**
  - **CHRONIC OBSTRUCTIVE PULMONARY DISEASE**
  - **DIABETES**



# EPIDEMIOLOGY OF AGING

## AGE-SPECIFIC COLORECTAL CANCER INCIDENCE RATES

(Per 100,000 in population)

	WM	WF	BM	BF
<65	20.4	14.7	25.3	20.4
65+	408.0	269.3	385.8	286.1



# EPIDEMIOLOGY OF AGING

- **COGNITIVE FUNCTION**
- **Moderate/Severe Memory Impairment**
- |                | <b>Male</b> | <b>Female</b> |
|----------------|-------------|---------------|
| • <b>65-69</b> | <b>5.3</b>  | <b>3.8</b>    |
| • <b>85+</b>   | <b>37.3</b> | <b>35.0</b>   |



# EPIDEMIOLOGY OF AGING

- **Moderate or severe memory impairment defined as four or fewer words recalled (out of 20) on combined immediate and delayed recall tests. Source: Health and Retirement Survey.**



# EPIDEMIOLOGY OF AGING

- **DEPRESSIVE SYMPTOMS**

- |         | <b>Males</b> | <b>Females</b> |
|---------|--------------|----------------|
| • 65-69 | <b>12.1</b>  | <b>18.0</b>    |
| • 85 +  | <b>22.5</b>  | <b>23.0</b>    |



# EPIDEMIOLOGY OF AGING

- **DEPRESSIVE SYMPTOMS ARE DEFINED AS FOUR OUT OF EIGHT SYMPTOMS FROM AN APPREVIATED CES-D SCALE.**
- **SOURCE: HEALTH AND RETIREMENT SURVEY**



# EPIDEMIOLOGY OF AGING

- **PERCENT OF MEN AND WOMEN AGED 60+ REPORTING TWO OR MORE HEALTH CONDITIONS**

•	<b>MEN</b>	<b>WOMEN</b>
• 60-69	35	45
• 70-79	47	61
• 80+	53	70





# EPIDEMIOLOGY OF AGING

- **FUNCTIONAL LIMITATIONS AND DISABILITIES**
- **FALLS, INJURIES, ACCIDENTS**



# EPIDEMIOLOGY OF AGING

- **FUNCTIONAL LIMITATIONS – DIFFICULTIES IN THE PERFORMANCE OF GENERIC TASKS, E.G., THOSE RELATED TO UPPER- AND LOWER-BODY STRENGTH, BALANCE, AND FINE DEXTERITY.**



# EPIDEMIOLOGY OF AGING

- **DISABILITY – DIFFICULTY OR INABILITY IN THE PERFORMANCE OF A SOCIAL ROLE CAUSED BY A PHYSICAL OR COGNITIVE PROBLEM.**



# EPIDEMIOLOGY OF AGING

- **FALLS**

- **30% OF PEOPLE AGED 65+ FALL EACH YEAR.**
- **10-15% OF THOSE FALLS ARE CONSIDERED “SERIOUS/NON-FATAL”**
- **FALLS REPRESENT THE LEADING CAUSE OF ACCIDENTAL DEATH IN PEOPLE AGED 65 AND OLDER.**
- **FEAR OF FALLING IS A LEADING REASON FOR NOT ENGAGING IN PHYSICAL ACTIVITY.**



# EPIDEMIOLOGY OF AGING

- **CAUSES OF FALLS IN THE ELDERLY**
  - - **DIZZINESS**
  - - **POOR COGNITIVE FUNCTION**
  - - **VISION PROBLEMS**
  - - **GENERAL FRAILTY**
  - - **ENVIRONMENTAL HAZARDS**



# EPIDEMIOLOGY OF AGING

- **HEALTH PROMOTION**
  - **NATIONAL INSTITUTE ON AGING STRATEGIC PLAN FOR 2001-05**
  - **CENTERS FOR DISEASE CONTROL, AGING WHITE PAPER**



# EPIDEMIOLOGY OF AGING

- **NIA STRATEGIC PLAN – PHYSICAL ACTIVITY**

**Delay the onset of disabilities and disease**

**Reduce the risk of falls and fractures**

**Improve mood and depression**

**Increase life span**



# EPIDEMIOLOGY OF AGING

- **CDC PLAN**
  - Key Component to Healthy Aging
  - Increases strength
  - Reduces risk of death
  - Improves mood
  - Improves muscular performance, flexibility, and mobility





# EPIDEMIOLOGY OF AGING

- **If it's such a good thing.....**
  - **Many Americans are not engaging in physical activity.**
  - **Although more and more older adults are aware of the benefits of physical activity, only one-third exercise regularly.**



# EPIDEMIOLOGY OF AGING

- **STUDY OF PHYSICAL PERFORMANCE AND AGE-RELATED CHANGES IN SONOMANS (SPPARCS PROJECT)**
  - Sonoma residents aged 55 and older (n = 2096)
  - Home and laboratory assessments. Four assessments over a 8.5 year period.
  - Focus on the effects of leisure-time physical activity and health, functioning, and survival.



# EPIDEMIOLOGY OF AGING

- **ECOLOGICAL MODEL**
  - **DIFFERENCES IN HEALTH AND WELL BEING ARE AFFECTED BY A DYNAMIC INTERACTION BETWEEN BIOLOGY, BEHAVIOR, AND THE ENVIRONMENT.**
  - **INTERACTION UNFOLDS OVER THE LIFE COURSE OF INDIVIDUALS, FAMILIES, AND COMMUNITIES.**
  - **AGE, GENDER, RACE, ETHNICITY, AND SOCIOECONOMIC DIFFERENCES SHAPE THE CONTEXT OF THAT INTERACTION.**



# EPIDEMIOLOGY OF AGING

## ECOLOGICAL MODEL

**MULTIPLE POINTS OF INTERVENTION TO POSTPONE DISEASE, DISABILITY, AND DEATH; AND ENHANCE THE CHANCES FOR HEALTH, MOBILITY, AND LONGEVITY.**



# EPIDEMIOLOGY OF AGING

- **PHYSICAL ACTIVITY ....**
  - **DECLINES WITH AGE**
  - **MEDICAL AND NON-MEDICAL CAUSES**



# EPIDEMIOLOGY OF AGING

- **FEMALES AGED 55-64 ARE MORE LIKELY THAN MEN OF THE SAME AGE TO LIMIT OR AVOID LTPA BECAUSE OF THE ABSENCE OF AN EXERCISE COMPANION.**
- **NEARLY 1/3 OF WOMEN AGED 75+ REPORT THE ABSENCE OF AN EXERCISE COMPANION AS A LEADING REASON.**
- **AMONG MARRIED COUPLES, THE LTPA OF THE SPOUSE WAS THE BEST PREDICTOR OF THE SUBJECT'S LTPA.**



# EPIDEMIOLOGY OF AGING

- **WHY IS THE ABSENCE OF AN EXERCISE COMPANION MORE SERIOUS FOR FEMALES THAN FOR MALES?**



# EPIDEMIOLOGY OF AGING

- **PERCENT AGED 65+ MARRIED BY GENDER IN THE U.S.**

**Male**

**Female**

**75.1%**

**42.9%**





# EPIDEMIOLOGY OF AGING

- **STRATEGIES TO ENHANCE HEALTH AND FUNCTIONING THROUGH PHYSICAL ACTIVITY**
  - RWJ PROGRAM IN “ACTIVE FOR LIFE”
  - RWJ PROGRAM IN “ACTIVE ENVIRONMENTS”