Cardiovascular Care in the Aging Population

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University of Colorado, Division of Geriatrics
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Learning Objectives

• Describe the prevalence of cardiovascular disease in an aging population

• Summarize the economic impact of cardiovascular disease in the United States
We’re living longer....

Source: U.S. Census Bureau, Population Estimates and Projections
Cardiovascular Disease

**Cardiovascular diseases** include arteriosclerosis, coronary artery disease, heart valve disease, arrhythmia, heart failure, hypertension, stroke, endocarditis, diseases of the aorta and its branches, disorders of the peripheral vascular system, and congenital heart disease.

Most common in our aging population: hypertension, heart failure, atrial fibrillation, coronary disease, peripheral vascular disease
Cardiovascular Disease and Aging

At risk, but not inevitable

Age related changes to the cardiovascular system increase the risk and prevalence of disease in this growing population.

Lifestyle modification, primary prevention and disease modification strategies hold benefit at all ages.
Public Awareness: Google it!
Why this trend?
Medical Advancements (Acute MI)

1910s-1930:
Bedrest 2-3 weeks
Hospitalization: 6 weeks
Rx: Morphine, Digitalis

1930s-1950:
Recognized as a medical emergency
Rx: IM adrenaline, Quinidine

1950-1960:
Oxygen for pulmonary edema
Bedrest: 5 days
Hospitalization: 1 month
Rx: nitroglycerin, heparin

1960s:
Birth of CPR, EMT and specialized cardiac units;
In hospital mortality decreases from 30% to 15%

1970s:
Lifestyle contributors recognized
1st balloon angioplasty
ASA for primary prevention

1980s:
First stent placed;
Treatment with aspirin and clot busting agents proved to be life saving

1990-2010:
Early recognition
Immediate PCI
Mortality rates 2-3%
Still a leading cause of death

Chart 13-9. Cardiovascular disease (CVD) and other major causes of death: total, <85 years of age, and ≥85 years of age.

Deaths among both sexes, United States, 2014. Heart disease includes International Classification of Diseases, 10th Revision codes I00 to I09, I11, I13, and I20 to I51; stroke, I60 to I69; all other CVD, I10, I12, I15, and I70 to I99; cancer, C00 to C97; chronic lower respiratory disease (CLRD), J40 to J47; Alzheimer disease, G30; and accidents, V01 to X59 and Y85 and Y86. Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

Circulation. 2017;135:e146–e603. DOI: 10.1161/CIR.0000000000000485
Cardiovascular disease (International Classification of Diseases, 10th Revision codes I00–I99) does not include congenital heart disease. Before 1933, data are for a death registration area and not the entire United States.
Source: National Center for Health Statistics.
Coronary Heart Disease

Subclinical, myocardial infarction, Angina and sudden cardiac death

80% of CHD related deaths occur after age 65

65% of MI-related deaths are in 75 years and older

Hypertension

At age 65: a decrease in blood pressure of 10mm systolic and 5mm diastolic =

- 25% reduction in heart attacks
- 40% reduction in strokes
- 50% reduction in heart failure

Hazzard’s Geriatric Medicine and Gerontology, 7th e. Chapter 82
Arrhythmias

>80% of pacemakers placed in patients over 65 years old

Increasing risk of brady-arrhythmia and atrial fibrillation with age

Both hold significant increases in morbidity and mortality

Figure 1. Cumulative risk for AF at selected index ages for men and women, with death free of AF considered a competing event. Lifetime risk for a given index age is cumulative risk through age 94 years. Lloyd-Jones et al. Circulation. 2004; 110: 1042-1046

Hazzard’s Geriatric Medicine and Gerontology, 7th e. Chapter 80
Heart Failure

Increasing in prevalence...

Improved mortality in other diseases contribute to increasing heart failure diagnoses

By 2030, estimated to exceed 8 million individuals, and $70 billion in costs alone
Figure 3. Risk-Standardized 1-Year Mortality Rate by State in 1999 and 2008

1999 (Mean 1-year mortality rate, 31.7%)

2008 (Mean 1-year mortality rate, 32.0%)

Risk-standardized rate = observed rate/expected rate × unadjusted mean rate calculated independently for each year.

a Significantly lower than national mean (2-sided P < .05) based on bootstrapped 95% CIs.

b Significantly higher than national mean (2-sided P < .05) based on bootstrapped 95% CIs.

# Economic Impact

## Table 27-2. Costs of Total CVD and Stroke in Billions of Dollars by Age and Sex: United States, Average Annual 2012 to 2013

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>Age &lt;65 y</th>
<th>Age ≥65 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>189.7</td>
<td>98.8</td>
<td>90.9</td>
<td>91.6</td>
<td>98.1</td>
</tr>
<tr>
<td>Indirect mortality</td>
<td>126.4</td>
<td>94.1</td>
<td>32.3</td>
<td>107.9</td>
<td>18.5</td>
</tr>
<tr>
<td>Total</td>
<td>316.1</td>
<td>192.9</td>
<td>123.2</td>
<td>199.5</td>
<td>116.6</td>
</tr>
</tbody>
</table>

CVD indicates cardiovascular disease.
Numbers may not add to total because of rounding.
Source: Medical Expenditure Panel Survey, average annual 2012 to 2013 (direct costs) and mortality data from the National Center for Health Statistics and present value of lifetime earnings from the Institute for Health and Aging, University of California, San Francisco (indirect costs).
All estimates prepared by Michael Mussolino, National Heart, Lung, and Blood Institute.

Circulation. 2017;135:e146–e603. DOI: 10.1161/CIR.0000000000000485
Chart 27-4. Projected total (direct and indirect) costs of total cardiovascular disease by age (2012 dollars in billions).

Unpublished data tabulated by the American Heart Association using methods described in Heidenreich et al.\textsuperscript{6}

\textit{Circulation}. 2017;135:e146-e603. DOI: 10.1161/CIR.0000000000000485
Frequent cause of hospitalizations

Hospital discharges include people discharged alive, dead, and “status unknown.”
Source: National Center for Health Statistics and National Heart, Lung, and Blood Institute.

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Further consequences for older adults
Opportunities Ahead!

• Prevention
• Treatment and comorbidity management
• Improved Outcomes/Reducing morbidity
• Patient activation and engagement
• Research in targeted older adult population

http://tacticalminc.com/blog/exercises-to-prevent-dementia/
# 15th Annual Rocky Mountain Geriatrics Conference

**August 28-29, 2017**

## Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
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<tbody>
<tr>
<td>7:55-8:00 A.M.</td>
<td>Welcome Opening Remarks</td>
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<tr>
<td>8:00-8:30 A.M.</td>
<td>Cardiovascular Care in the Aging Person: Implications of Vascular Aging on Cardiovascular Disease Risk</td>
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<tr>
<td>8:30-9:00 A.M.</td>
<td>Cardiovascular Aging Physiology</td>
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<tr>
<td>9:00-9:30 A.M.</td>
<td>Break</td>
</tr>
<tr>
<td>9:45-10:45 A.M.</td>
<td>Keynote: Stress, Lifestyle and Vascular Health Implications for Disease Prevention in Older Adults</td>
</tr>
<tr>
<td>10:45 - 11:30 A.M.</td>
<td>Motivational Interviewing: Supporting Lifestyle and Behavior Change</td>
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<tr>
<td>11:30-12:00 P.M.</td>
<td>Family Support and Multiple Chronic Conditions</td>
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<tr>
<td>12:00-1:10 P.M.</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:10-2:10 P.M.</td>
<td>Keynote: The Role of Nursing in the Care of the Patient with Cardiovascular Disease</td>
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<tr>
<td>2:10-3:10 P.M.</td>
<td>Vascular Neuropsychiatric Disorder (Dementia): How to Spot it and What to Do Next</td>
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<tr>
<td>2:10-3:20 P.M.</td>
<td>Break</td>
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<tr>
<td>3:20-4:20 P.M.</td>
<td>The Dash Diet and Dietary Recommendations for Patients Post Discharge</td>
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<tr>
<td>4:20-4:45 P.M.</td>
<td>Evidence Based Health Promotion Programs for Older Adults</td>
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<tr>
<td>4:45 P.M.</td>
<td>Adjourn</td>
</tr>
<tr>
<td>12:00 - 1:10 P.M.</td>
<td>Lunch</td>
</tr>
<tr>
<td>1:10 - 1:55 P.M.</td>
<td>Creating a Culture of Shared Decisions: Shared Decision Making and Decision Quality</td>
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<tr>
<td>1:55 - 2:40 P.M.</td>
<td>Role of Long Term Care in Cardiovascular Disease</td>
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<tr>
<td>2:40 - 3:10 P.M.</td>
<td>Communication Regarding Advance Care Planning and Palliative Care</td>
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<tr>
<td>3:10 - 3:20 P.M.</td>
<td>Break</td>
</tr>
<tr>
<td>3:25 - 3:55 P.M.</td>
<td>Session Summary: Review and Evaluations</td>
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<tr>
<td>3:55 P.M.</td>
<td>Adjourn</td>
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</table>
Thank you!

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