Primary and Secondary Prevention of Heart Disease and Stroke

2020 ND Mission: Lifeline Stroke and Cardiac Conference
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Chief, Center for Health Metrics and Evaluation
American Heart Association
# Causes of Death: USA (2018)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Cause</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart diseases</td>
<td>655,381</td>
<td>23.1%</td>
</tr>
<tr>
<td>2</td>
<td>Cancer</td>
<td>599,274</td>
<td>21.1%</td>
</tr>
<tr>
<td>3</td>
<td>Accidents</td>
<td>167,127</td>
<td>5.9%</td>
</tr>
<tr>
<td>4</td>
<td>Chronic Lower Resp. Disease</td>
<td>159,486</td>
<td>5.6%</td>
</tr>
<tr>
<td>5</td>
<td>Stroke</td>
<td>147,810</td>
<td>5.2%</td>
</tr>
<tr>
<td>6</td>
<td>Alzheimer’s disease</td>
<td>122,019</td>
<td>4.3%</td>
</tr>
<tr>
<td>7</td>
<td>Diabetes mellitus</td>
<td>84,946</td>
<td>3.0%</td>
</tr>
<tr>
<td>8</td>
<td>Influenza/pneumonia</td>
<td>59,120</td>
<td>2.1%</td>
</tr>
<tr>
<td>9</td>
<td>Kidney disease</td>
<td>51,386</td>
<td>1.8%</td>
</tr>
<tr>
<td>10</td>
<td>Intentional self harm (Suicide)</td>
<td>48,344</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

| Total –all causes | 2,839,205 | 100% |

Life’s Simple 7
Ideal Cardiovascular Health

... the absence of clinically manifest cardiovascular disease together with the simultaneous presence of optimal levels of Life’s Simple 7 metrics, including

1) not smoking
2) having a healthy diet pattern
3) recommended levels of physical activity
4) normal body weight
5) normal levels of total cholesterol
6) blood pressure
7) fasting blood glucose

in the absence of drug treatment.

Source: Benjamin et al; Circulation 2017
Men and women in ideal heart health at age 50 have significantly lower risk of developing heart diseases.

Life Expectancy Increases from Lower Cardiac Death Rates

Table 2. Causes of Increases in Life Expectancy among Newborns, 1960–2000. *

<table>
<thead>
<tr>
<th>Cause</th>
<th>Increase in Life Expectancy</th>
<th>Relative Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in rate of death from cardiovascular disease</td>
<td>4.88 yr</td>
<td>70 %</td>
</tr>
<tr>
<td>Reduction in rate of death in infancy</td>
<td>1.35 yr</td>
<td>19 %</td>
</tr>
<tr>
<td>Reduction in rate of death from external causes</td>
<td>0.36 yr</td>
<td>5 %</td>
</tr>
<tr>
<td>Reduction in rate of death from pneumonia or influenza</td>
<td>0.28 yr</td>
<td>4 %</td>
</tr>
<tr>
<td>Reduction in rate of death from cancer</td>
<td>0.19 yr</td>
<td>3 %</td>
</tr>
<tr>
<td>Total</td>
<td>6.97 yr</td>
<td>100 %</td>
</tr>
</tbody>
</table>

* The data do not sum to the total because of slight increases in the rates of death from other causes (not listed) and because of rounding.

Improving Life’s Simple 7 has Collateral Benefits

A high LS7 score (≥5 ideal metrics) is associated with lower risk for a range of disabling and costly disease conditions:

• Heart disease and stroke (Lloyd-Jones et al, 2010, Ford et al., 2012)
• Diabetes (Joseph et al, 2016)
• Depression (Kronish et al, 2012)
• Improved cognitive function (Reis et al, 2013)
• Incident cancer (Rasmussen-Torvik et al, 2013)
• Incident dementia (Gottesman et al, 2017)
• Healthcare costs in a young, ethnically diverse working population (Osondu et al 2017)
• Healthcare costs in Medicare population (Willis et al 2015)
A team-based care approach is an effective strategy for the prevention of cardiovascular disease.

Clinicians should evaluate social determinants of health on individuals to inform treatment decisions.

Adults who are at least age 40 and are being evaluated for CVD prevention should undergo 10-year ASCVD risk estimation and have a clinician-patient risk discussion before starting on pharmacologic therapy.

Aspirin should infrequently be used in the routine primary prevention of ASCVD.

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease

- All adults should be assessed at every visit for tobacco use.
- All adults should consume a healthy diet which emphasizes the intake of vegetables, fruits, nuts, whole grains, lean protein, and fish and minimizes the intake of trans fats, processed meats, refined carbohydrates, and sugar-sweetened beverages.
- Adults should engage in at least 150 minutes per week of accumulated moderate intensity or 75 minutes per week of vigorous intensity physical activity.

For adults who have overweight or obesity, counseling and caloric restriction are recommended for achieving and maintaining weight loss.

Nonpharmacological interventions are recommended for all adults with elevated blood pressure or hypertension. For those requiring pharmacologic therapy, the target blood pressure should generally be less than 130/80 mm Hg.

Statin therapy is first-line treatment for primary ASCVD prevention in:
- Patients with elevated LDL-C levels (>190 mg/dl),
- Those with diabetes,
- Those at sufficient ASCVD risk following a clinician-patient risk discussion.

For adults with type 2 diabetes mellitus, lifestyle changes such as improving dietary habits and achieving exercise recommendations are crucial. If medication is indicated, metformin is first-line therapy followed by consideration of an SGLT-2 inhibitor or a GLP-1 receptor agonist.

AHA/ACCF Secondary Prevention and Risk Reduction Therapy for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2011 Update

- Tobacco use – smoking
- Blood pressure control
- Lipid management
- Physical activity
- Weight management
- Type 2 diabetes management

AHA/ACCF Secondary Prevention and Risk Reduction Therapy for Patients With Coronary and Other Atherosclerotic Vascular Disease: 2011 Update

- Antiplatelet agents/anticoagulants
- Aspirin (or clopidogrel, if aspirin intolerant/allergic)
- A P2Y12 receptor antagonist in combination with aspirin is indicated in patients after ACS or PCI with stent placement.
- Renin-angiotensin-aldosterone system blockers
- β-blockers
- Influenza vaccine
- Depression screening
- Cardiac rehab

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack

- Hypertension
- Dyslipidemia
- Glucose disorders
- Obesity
- Physical inactivity
- Poor nutrition

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack

- Antiplatelet therapy
- Sleep apnea
- Carotid disease
- Influenza vaccine

Now, more than ever...

• Prevention must be primary
• Optimizing Life’s Simple 7 is a guideline-based start
Hans Rosling (1948-2017)

Celebrity statistician; Gapfinder co-developer

“I’m not an optimist. I’m a very serious possibilist.”