The Simple 7 Approach to Health

Community Medical School, October, 2013

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Please get out pen and paper to write down your ideas for discussion later.
Outline

- What is the problem with cardiovascular disease?
- What’s Life’s Simple 7?
- Review of research on this
- What can we do to improve health?
Circulation of the Heart

- Right internal mammary a. (RIMA)
- Left internal mammary a. (LIMA)
- Aorta
- Left main coronary a. (LMCA)
- Left circumflex coronary a. (LCX)
- Right coronary a. (RCA)
- Left anterior descending coronary a. (LAD)
- 1st obtuse circumflex marginal a. (OM 1)
- 2nd obtuse circumflex marginal a. (OM 2)
- 1st diagonal a. (D 1)
- Right posterior descending a. (RPDA)
- Right posterolateral a. (RPL)
- Left posterolateral a. (LPL)

© David Klemm '99
Anatomy of MI

Atherosclerosis

Inflammation

Blood Clot
Acute MI of Left Ventricle
Stroke

1 in 6 people will have a stroke in their lifetime

4th leading cause of death

Leading cause of disability
Spot a Stroke

SPOT A STROKE

FACE DROOPING
ARM WEAKNESS
SPEECH DIFFICULTY
TIME TO CALL 911

Stroke Warning Signs and Symptoms

American Heart Association / American Stroke Association
Leading Causes of Death of US Women in 2009

Coronary Heart Disease = 24%
Cancer = 22%
Stroke = 6%
Lung Disease = 6%
Alzheimer’s Disease = 5%

480,000 lives every year
1 in 3 women die of it
The Best Way to Change these Statistics is PREVENTION
Some Prevention Milestones

- 1960: Smoking causes heart disease
- 1961: High cholesterol and blood pressure cause heart disease
- 1967: Physical activity lowers risk of heart disease
- 1967: Obesity increases risk of heart disease
- 1970: High blood pressure increases risk of stroke
- 1978: Psychosocial factors affect heart disease
We have known for a long time that risk factor control and prevention are key in reducing vascular disease risk

- Primary Prevention
- Secondary Prevention

Most CVD events occur in people with normal or modest risk factor levels

- Primordial Prevention
American Heart Association (AHA) 2010 Impact Goal

To reduce coronary heart disease and stroke death, and risk by 25 percent by 2010
2004-8 trajectories of:
- Mortality rate from CHD and stroke
- Rate of uncontrolled high blood pressure
- Prevalence of high cholesterol

\[ \text{Change in Rate/Prevalence from Baseline} \]

- Coronary Heart Disease
- Stroke
- High Blood Pressure
- High Blood Cholesterol


Copyright ©2010 American Heart Association
2004-8 trajectories of:
Mortality rates from CHD and stroke
Rate of uncontrolled high blood pressure
Prevalence of high cholesterol

Diabetes and Obesity
Increasing

Coronary Heart Disease  Stroke
High Blood Pressure  High Blood Cholesterol

Copyright ©2010 American Heart Association
AHA 2010 Impact Goal

To reduce coronary heart disease and stroke death, and risk by 25 percent by 2010

Coronary heart disease
 Stroke
Risk Factors

😊
😊
+/-
Lifetime Risk: Age 50

Men

Women

Incidence vs. Attained Age

- ≥2 Major RFs
- 1 Major RF
- ≥1 Elevated RF
- ≥1 Not Optimal RF
- Optimal RFs

Men:
- 69% at age 50
- 50% at age 60
- 46% at age 70
- 36% at age 80
- 5% at age 90

Women:
- 50% at age 50
- 39% at age 60
- 39% at age 70
- 27% at age 80
- 8% at age 90

Lloyd-Jones, Circulation 2006
Defining and Setting National Goals for Cardiovascular Health Promotion and Disease Reduction
The American Heart Association’s Strategic Impact Goal Through 2020 and Beyond

AHA Special Report

Circulation
AHA 2020 Impact Goal

By 2020, to improve the cardiovascular health of all Americans by 20 % while reducing deaths from cardiovascular diseases and stroke by 20 %
Defining Cardiovascular Health: What Is Ideal Health?

Absence of disease

Favorable levels of health factors

Favorable health behaviors
Health Behaviors / Factors

Behaviors
- Nonsmoking
- Healthy weight
- Appropriate levels of physical activity
- Healthy eating pattern

Health Factors
- Total cholesterol
- Blood pressure
- Non-diabetic
Life’s Simple 7 for Adults

1. Never smoked or quit more than 1 year ago
2. Body mass index $<25 \text{ kg/m}^2$
3. Physical activity $\geq 150 \text{ mins}$ (moderate intensity) or $\geq 75 \text{ mins}$ (vigorous intensity) each week
4. Four - five components of a healthy diet
5. Cholesterol $<200 \text{ mg/dL}$
6. Blood pressure $< 120/80 \text{ mm Hg}$
7. Fasting blood glucose $<100 \text{ mg/dL}$
Life’s Simple 7 for Children

1. Never smoked or haven’t tried in last month
2. Body mass index <85th percentile
3. Physical activity ≥60 mins moderate/vigorous daily
4. Four - five components of a healthy diet
5. Cholesterol <170 mg/dL untreated
6. Blood pressure < 90th percentile
7. Fasting blood glucose <100 mg/dL
Healthy Diet
(4-5 Dietary Goals met)

Fruits and vegetables:  \( \geq 4.5 \) cups per day

Fish (preferably oily):  \( \geq 2 \) 3.5-oz servings per week

Fiber-rich whole grains:  \( \geq 3 \) 1-oz servings per day

Sodium:  \(< 1500\) mg per day

Sugar-sweetened beverages:  \( \leq 450 \) kcal (36 oz) per week
<table>
<thead>
<tr>
<th>Health Factors &amp; Behaviors</th>
<th>POOR</th>
<th>INTERMEDIATE</th>
<th>IDEAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Pressure</strong></td>
<td>SBP ≥140 or DBP ≥90 mm Hg</td>
<td>SBP120-139 or DBP 80-89 mm Hg or treated to goal</td>
<td>&lt;120/&lt;80 mm Hg</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical Activity</strong></td>
<td>None</td>
<td>1-149 min/wk mod or 1-74 min/wk vig or 1-149 min/wk mod + vig</td>
<td>150+ min/wk mod or 75+ min/wk vig or 150+ min/wk mod + vig</td>
</tr>
<tr>
<td>Adults &gt; 20 years of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>≥240 mg/dL</td>
<td>200-239 mg/dL or treated to goal</td>
<td>&lt;170 mg/dL</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td>≥200 mg/dL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Healthy Diet</strong></td>
<td>0-1 components</td>
<td>2-3 components</td>
<td>4-5 components</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Healthy Weight</strong></td>
<td>≥30 kg/m²</td>
<td>25-29.9 kg/m²</td>
<td>&lt;25 kg/m²</td>
</tr>
<tr>
<td>Adults &gt; 20 years of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Smoking Status</strong></td>
<td>Current Smoker</td>
<td>Former ≤ 12 mos</td>
<td>Never /quit ≥ 12 mos</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood Glucose</strong></td>
<td>126 mg/dL or more</td>
<td>100-125 mg/dL or treated to goal</td>
<td>Less than 100 mg/dL</td>
</tr>
<tr>
<td>Adults &gt;20 years of age</td>
<td></td>
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</tr>
</tbody>
</table>
Cardiovascular Health Metric

Goal: 20% overall improvement
Novel Aspects of 2020 Goal

- Defines cardiovascular health
- Emphasis on movement of the population to a better level of health
What is the Current Status?
REGARDS Study

- 30,239 blacks & whites age 45+ enrolled 2003-7
- Studying why there are racial and regional differences in stroke death in the US
Weighted % at Each Level of Health

N = 17,800 without CVD

- No Smoking
- BP <120/80
- Glucose <100
- Cholesterol <200
- Physical Activity 4+
- 4+ Healthy Diet
- BMI
Distribution of Simple 7 Score

Mean (SD)
- Black: 13.9 (2.0)
- White: 14.9 (2.0)

29% had 4+ Ideal
2 people had 7 Ideal
Does Life’s Simple 7 Predict Health Outcomes?
Risk of Death by Number of Ideal Factors

1099 deaths

Adjusted for age, race, sex, income, education

Cushman et al, unpublished
20-year Risk of **Cardiovascular Disease** by # of Ideal Factors: ARIC Study

Adjusted for age, race, sex, income, education

Folsom et al. *JACC* 2011
Health Factors and Behaviors are BOTH Important

Folsom et al. *JACC* 2011
Risk of Stroke by Number of Ideal Factors: 450 strokes

Adjusted for age, race, sex, income, education

Folsom et al. JACC 2011
Risk of Dialysis by Number of Ideal Factors: 162 cases

Adjusted for age, race, sex, income, education

Folsom et al. JACC 2011
Does a Small Difference in Life’s Simple 7 Score Matter?
REGARDS: Simple 7 Score

- 0 points for poor
- 1 point for intermediate
- 2 points for ideal

Score 0 → 14
Risk of Outcomes for 1 Point Better Life’s Simple 7 Score

-25 -20 -15 -10 -5 0

Percent Reduction

Death: -18
CHD: -23
Stroke: -8
ESRD: -22
Cognitive Decline: -10

Adjusted for age, race, sex, income, education

Muntner P. JASN 2013
Kulshreshtha A. Stroke 2013
Thacker, submitted. Unpublished data
AHA 2020 Goal Achieved

CVD, Stroke and VTE

ESRD

Cognitive Function

Cancer

Death
Forecasting the Future
If recent trends in CV health behavior and health factor levels continue, CV health will only improve by 6% by 2020.
Research Conclusions

- There is a large opportunity to improve population levels of Ideal Health Status, especially in African-Americans.
- Improving the population average by even 1 Ideal Factor would predict substantial reductions in adverse outcomes.
- We are only going partly in the right direction.
- It is up to all of us to make a difference.
Example Activities

Personal Scape (Kids/Family)
- Play hoops with kids after work
- Cut Screen time

Food Scape
- Less sugar in cereal
- Less sodium in foods

Work Scape
- Pleasant stairs at work
- Healthier cafeteria

Health Scape
- Worksite wellness
- ACA
- Million Hearts

Community Scape
- Safe bike lanes for commute
- Playgrounds

Example Activities

Less sugar in cereal
Less sodium in foods
industry
What Can We Do?

- Public Policy
- Industry Partnerships
- Prevention Services – Affordable Care Act
- Non-Profit and Community Based Education and Intervention Programs
Increasing Population Impact

- Counseling and Education
- Clinical Interventions
- Long-Lasting Protective Interventions
- Changing the Context to Make Individuals' Default Decisions Healthy
- Socioeconomic Factors

Increasing Individual Effort Needed

AHA Community Guide 2013, Circulation

Frieden T33
Policy Examples
Cigarette Sales & Cigarette Prices, United States, Inflation Adjusted, 1970-2011

Cigarette Sales, Million Packs

Cigarette Price, Inflation Adjusted

Source: Tax Burden on Tobacco, 2012, Frank Chaloupka, PhD
Cigarette Price and Youth Smoking Prevalence, United States, 1991-2011

Cigarette Price

- 12th grade prevalence
- 10th grade prevalence
- 8th grade prevalence

Price per pack (8/11 dollars)

Year


35%
18%
5%

Source: MTF, Tax Burden on Tobacco, 2012, Frank Chaloupka, PhD
How Much Sugar are Americans Eating each Day?

- 475 calories per person!!!
- This is 30 teaspoons a day = 2/3 cup or
- 2.5 servings of a 12 ounce soft drink
“Sweet Surrender: Sugar Curbs Urged” - Wall Street Journal

- “The American Heart Association is taking aim at the nation's sweet tooth, urging consumers to significantly cut back on the amount of sugar they get from such foods as soft drinks, cookies and ice cream.”

- “In a scientific statement the organization says most women should limit their sugar intake to 100 calories, or about six teaspoons, a day; for men, the recommendation is 150 calories, or nine teaspoons.”

Courtesy of Rachel Johnson, UVM
36% of added sugar in the American Diet comes from Sugary beverages
Rethink your drink.
SSBs Account for 20% of the Obesity Epidemic

Woodward-Lopez  Pub Health Nutr 2010
The Vermont American Heart Association believes that an excise tax on sugary beverages could reduce their use and lower obesity rates.

Overweight / Obesity affects 25% of Vermont kids and 50% of Vermont adults.

½ of Vermont’s Medicare and Medicaid expenses can be linked to obesity = $163 million a year.
Why a Tax?

- Average American drinks 45 gallons a year
- Single biggest contributor to obesity
- Soda is a liquid – doesn’t fill you up
- Soda purchasing behavior is influenced by cost
- Substitutes (diet soda, water) are safe and satisfying
- Revenue would be used for health care and obesity programs
Industry Partnerships
Sodium

- Sodium intake increases blood pressure
- The lower the sodium, the lower the BP, the lower the cardiovascular / stroke risk
- Sodium intake in USA is >2x recommended
  - Causes 100,000 deaths
Sodium

- 70% of dietary sodium from processed food
  - Limits individual’s ability to make change

- UK experience
  - Government partnered with industry to voluntarily reduce sodium in processed food
  - 9.5% decrease in population sodium intake over 5 years

He FJ, J Hum Hypertens 2009
www.food.gov.uk
Sodium Reduction is Cost Effective

- 9.5% reduction in sodium intake in the USA
  - Reduce population SBP: 1.25 mm Hg
  - Prevent 514,000 strokes and 480,000 heart attacks over the lifetime of adults age 40 – 85
  - Save $32 billion in medical costs

Smith-Spangler CM. Ann Intern Med 2010
Alliance for a Healthier Generation and McDonald's Announce Groundbreaking CGI Commitment to Promote Balanced Food and Beverage Choices

McDonald's Commits to Leveraging Menu and Marketing Power to Increase Access to Fruits and Vegetables to Help Families Make Informed Choices
"Small changes create a big impact," says Alex Macedo, president of Burger King North America. "This will grow, just like diet soda grew over time."
"Small changes create a big impact," says Alex Macedo, president of Burger King North America. "This will grow, just like diet soda grew over time."

Just don’t eat more of them!!!!!
What can an Individual Do?
My Life Check Assessment

My Life Check™

Life’s Simple 7 Success Plan

This assessment is based on the knowledge and experience of American Heart Association medical experts.

It can help you:
- Understand your current level of cardiovascular health
- Assess your individual health needs
- Commit to steps to improve your health and quality of life
- Move closer to your personal health goals

436,000 participants

MyLifeCheck.heart.org
# My Life Check Assessment

## Questions 1 to 9

### Are you male or female?  
- Male  
- Female

### What is your age?  
[Input box for age in years]

### What is your ethnicity?  
[Input box with select dropdown]

### How tall are you?  
[Input box for height in feet and inches]

### What is your zip code?  
[Input box for zip code]

- I am not in the USA.

### Do you have diabetes? (either type 1 or type 2)  
- Yes  
- No

### What is your weight?  
[Input box for weight in pounds]

### How much physical activity do you get in a week?  
- [Input box for minutes of moderate activity]
- [Input box for minutes of vigorous activity]

#### Moderate intensity
A person doing moderate-intensity aerobic activity can usually talk, but not sing, during the activity.

#### Vigorous intensity
A person doing vigorous-intensity activity usually cannot say more than a few words without pausing for a breath.

More about physical activity

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## More about conditions

- Coronary heart disease/chest pain  
- Heart attack  
- Heart failure  
- Stroke/TIA  
- Vascular disease  
- Congenital heart defects
My Life Check Assessment

Your Heart Score

- Blood Cholesterol: Warning
- Healthy Diet: Excellent
- Blood Pressure: Needs Improvement
- Healthy Weight: Excellent
- Blood Sugar: Excellent
- Physical Activity: Needs Improvement
- Smoking Status: Excellent

You're doing well, but consider all the aspects of your behaviors that lead to good health. Make adjustments to strengthen your position.

Result Report
Includes your Simple 7, your action plans, and heart score.

Note: Print or save a PDF of this report for your records. Use your email program to send the PDF anywhere you want.

PRINT OR SAVE PDF
Helps you plan – part of my report!

### LIFE'S SIMPLE 7

<table>
<thead>
<tr>
<th>Smoking Status</th>
<th>WHERE YOU ARE NOW</th>
<th>WHERE YOU WANT TO BE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Never smoked</strong></td>
<td></td>
<td><strong>No smoking</strong></td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Healthy Weight</th>
<th>WHERE YOU ARE NOW</th>
<th>WHERE YOU WANT TO BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>142 pounds</td>
<td></td>
<td>104 to 140 pounds</td>
</tr>
<tr>
<td>(BMI of 25.2)</td>
<td>Needs improvement</td>
<td>(BMI of 18.5 to 24.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Activity</th>
<th>WHERE YOU ARE NOW</th>
<th>WHERE YOU WANT TO BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 min. moderate</td>
<td></td>
<td>150 min. moderate or 75 min. vigorous</td>
</tr>
<tr>
<td>and 30 min. vigorous</td>
<td>weekly (weekly)</td>
<td>(or equivalent combination)</td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Healthy Diet</th>
<th>WHERE YOU ARE NOW</th>
<th>WHERE YOU WANT TO BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needs improvement</td>
<td></td>
<td>4-5 components</td>
</tr>
<tr>
<td></td>
<td>Excellent</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

- Eat at least one fruit and vegetable with every meal
- Eat more whole grain foods
- Eat fish twice per week
- Limit foods and beverages with added sugars
- Choose processed foods less often to reduce sodium intake
- It is important to follow the guidelines for other dietary components like fats, etc.
Conclusions

- AHA and others are working hard to address health status and prevention
- This will impact many chronic diseases
- Mixed progress so far
- I am optimistic!
- What ideas do you have?
The Team

University of Vermont
Russell Tracy
Nancy Jenny
Neil Zakai
Elaine Cornell
Sarah Gillett
Kristine Alexander
Peter Callas

UAB
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Virginia Howard
Virginia Wadley
Leslie McClure
Suzanne Judd
Evan Thacker
Abraham Letter
Paul Muntner

U Cincinnati
Brett Kissela
Dawn Kleindorfer

NINDS
Claudia Moy

U Indiana
Fred Unverzagt

Emory
Ambar Kulshrestha
Viola Vaccarino

Funding:
NINDS  U01  NS041588
NHLBI  K08  HL096841
T32   HL07504
Complete My Life Check at www.MyLifeCheck.org