RISK FACTORS FOR HEART ATTACK AND STROKE–2010.

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San Francisco, CA
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San Francisco Heart Institute
Seton Medical Center
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CV Disease and Its Prevailing Risk in the United States
<table>
<thead>
<tr>
<th>Health Status Measure</th>
<th>U.S.A.</th>
<th>U.S. Rank in OECD (30)</th>
<th>Best Rank of OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Life Expectancy from birth (y)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Women</td>
<td>80.1</td>
<td>22</td>
<td>Japan (85.3)</td>
</tr>
<tr>
<td>White women</td>
<td>80.5</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>All men</td>
<td>74.8</td>
<td>22</td>
<td>Sweden (78.4)</td>
</tr>
<tr>
<td>White men</td>
<td>75.3</td>
<td>19</td>
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<tr>
<td><strong>Life expectancy from age 65/-2004</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All women, years</td>
<td>19.8</td>
<td>10</td>
<td>Japan (23)</td>
</tr>
<tr>
<td>White women, years</td>
<td>19.8</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>All men, years</td>
<td>16.8</td>
<td>9</td>
<td>Iceland (18.1)</td>
</tr>
<tr>
<td>White men, years</td>
<td>16.9</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

* Data missing for six (6) countries
Determinants of Health

- Genetic predisposition
- Behavioral patterns
- Environmental exposures
- Social circumstances
- Health care

Proportions (Premature Mortality)

- Genetic 30%
- Behavior 40%
- Social 15%
- Environment 5%
- Health care 10%

Behavioral Causes of Annual Deaths in the United States, 2000

Number of deaths (thousands)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Number of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Behavior</td>
<td>20</td>
</tr>
<tr>
<td>Alcohol</td>
<td>85</td>
</tr>
<tr>
<td>Motor Vehicle</td>
<td>43</td>
</tr>
<tr>
<td>Guns</td>
<td>29</td>
</tr>
<tr>
<td>Drug Induced</td>
<td>17</td>
</tr>
<tr>
<td>Obesity/Inactivity</td>
<td>365</td>
</tr>
<tr>
<td>Smoking</td>
<td>435</td>
</tr>
</tbody>
</table>

Source: Mokdad et al, JAMA 2004;291:1238-1245
Mokdad et al; JAMA. 2005; 293:293

* Also suffer from mental illness and/or substance abuse
CVD disease mortality trends for males and females
(United States: 1979-2005).
Source: NCHS and NHLBI. Note: No comparability ratios were applied
Age-adjusted death rates for CHD, stroke, lung and breast cancer for white and black females (United States: 2005). Source: NCHS and NHLBI.
Deaths from diseases of the heart (United States: 1900–2006)

Note: See Glossary for an explanation of “Diseases of the Heart.”

Source: NCHS and NHLBI.
Deaths from cardiovascular disease
(United States: 1900–2006 preliminary). Source: NCHS and NHLBI.
Hospital discharges for cardiovascular diseases.
(United States: 1970-2006). Note: Hospital discharges include people discharged alive, dead and status unknown.
Source: NCHS and NHLBI.
Percentage breakdown of deaths from cardiovascular diseases (United States: 2006 preliminary)

* - Not a true underlying cause. Source: NCHS and NHLBI.
Prevalence of CVD in adults age 20 and older by age and sex (NHANES: 2005-2006). Source: NCHS and NHLBI. These data include coronary heart disease, heart failure, stroke and hypertension.

* Includes CHD, HF, stroke or intracerebral hemorrhage. Does not include hypertension alone.
CVD deaths vs. cancer deaths by age. (United States: 2005). Source: NCHS and NHLBI.
CVD and other major causes of death: both sexes.
(United States: 2005). Source: NCHS and NHLBI.
Hypertension: A National Health Crisis

An estimated 65 million Americans have hypertension, 1 in 4*

– 70% of hypertensive patients are uncontrolled†
– 50% of treated patients are not at goal†

Incidence of Systolic Hypertension Increases With Age

Prevalence of Uncontrolled Hypertension in Treated Individuals by Subtype, %

Age, y

<40  40-49  50-59  60-69  70-79  ≥80

ISH*, SDH†, IDH‡

*SBP ≥140 mm Hg and DBP <90 mm Hg.
†SBP ≥140 mm Hg and DBP ≥90 mm Hg.
‡SBP <140 mm Hg and DBP ≥90 mm Hg.

ISH, isolated systolic hypertension; SDH, systolic/diastolic hypertension; IDH, isolated diastolic hypertension; SBP, systolic blood pressure; DBP, diastolic blood pressure.

Systolic Blood Pressure Is a More Important Cardiovascular Risk Factor Than Diastolic Blood Pressure

Coronary heart disease death rate (%) per 10,000 person-years

SBP, systolic blood pressure; DBP, diastolic blood pressure.

BP and Cardiovascular Mortality

Risk Doubles With Every 20/10-mm Hg Increment*

*Individuals aged 40-69 years, starting at blood pressure 115/75 mm Hg
BP=blood pressure, SBP=systolic BP, DBP=diastolic BP.
Use of $\beta_1$-Selective Atenolol and Adverse Outcomes in Patients With Hypertension

All-cause mortality

Cardiovascular mortality

Myocardial infarct

Stroke

Primary outcomes studies in hypertension have not been conducted with COREG CR.

Trials included in meta-analysis vs placebo: Treatment of Hypertension in Elderly Patients in Primary Care (HEP); Dutch Transitory Ischemic Attack Trial; Tenormin After Stroke and TIA (TEST); Medical Research Council Trial of Treatment of Hypertension in Older Adults (MRC Old). Trials included in meta-analysis vs other antihypertensive agent: MRC Old; UKPDS; European Lacidipine Study of Atherosclerosis (ELSA); Heart Attack Primary Prevention in Hypertension Trial (HAPPHY); Losartan Intervention for Endpoint Reduction Study (LIFE).


Trends in cigarette current smoking among persons aged 18 or older

20.9% of adults are current smokers

70% want to quit

Graph provided by the Centers for Disease Control and Prevention. 1955 Current Population Survey; 1965–2001 NHIS. Estimates since 1992 include some-day smoking.
Prevalence of Adult Smoking, by Race/Ethnicity—U.S., 2004

- 33.4% American Indian/Alaska Native
- 22.2% White, non-Hispanic
- 20.2% Black, non-Hispanic
- 15.0% Hispanic
- 11.3% Asian

Tobacco Tipping Point?

- California 14% adult smoking prevalence
- Northern California Kaiser Permanente down to 9%
- Physicians around 2%
- Proliferation of smoke-free areas
- Increasing stigmatization of smoking
Emergence of an Inactive Society

- Millions of Person-Miles in Automobiles, 1970-1990
  - 1.4
  - 1.8
  - 2.3

- Hours of TV Viewed Daily, 1960-1992
  - 5:06
  - 6:07
  - 7:04

- Percent of Workforce in Sedentary Occupations, 1950-1996
  - 36%
  - 45%
  - 58%

- 800 k-calories/day decrease in 20 years

1970 1990

1970
1990
New Americans: Their Origins, Their Destinations

In 1998, the latest year for which immigration figures are available, 660,477 non-citizens from 208 countries around the world (19 of which are noted above) were granted permanent resident status. The largest group came from Mexico, boosting the Hispanic count to record levels in the 2000 census.
During the 1990s the U.S. population grew by 33 million; about one-third were immigrants. Hispanics surpassed blacks to become the nation’s largest minority.

U.S. total is projected to exceed 400 million by 2050. The greatest increase will be among Hispanics, due in part to higher birthrates.

Source: U.S. Bureau of the Census
### Demographic Change, San Mateo County
(as Indicated by 1990 & 2000 Census Data)

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>White</strong></td>
<td>393,088 (60.5)</td>
<td>- 40,733</td>
<td>- 10.4</td>
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<tr>
<td><strong>Hispanic</strong></td>
<td>114,627 (17.6)</td>
<td>+ 40,081</td>
<td>+ 35.0</td>
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<tr>
<td><strong>Asian/PI</strong></td>
<td>105,559 (16.2)</td>
<td>+ 43,866</td>
<td>+ 41.6</td>
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<tr>
<td><strong>Black</strong></td>
<td>34,000 (5.2)</td>
<td>- 10,222</td>
<td>- 30.1</td>
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<tr>
<td><strong>Nat. American</strong></td>
<td>2,349 (0.4)</td>
<td>- 803</td>
<td>- 34.2</td>
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<tr>
<td><strong>Other</strong></td>
<td>NA</td>
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<tr>
<td><strong>≤ 2 Races</strong></td>
<td>NA</td>
<td></td>
<td></td>
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<tr>
<td><strong>Total</strong></td>
<td>649,623</td>
<td>+ 57,538</td>
<td>+ 8.9</td>
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</table>
Asians in the San Francisco Bay Area

1990

2000

Percent Asian
By census tract, includes multiracial

Less than 1%
1% to 5%
5% to 10%
10% to 24%
25% to 100%

Percent Asian
By census tract, includes multiracial

Less than 1%
1% to 5%
5% to 10%
10% to 24%
25% to 100%
<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Year</th>
<th>Filipino</th>
<th>Hispanic</th>
<th>Caucasian</th>
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<tr>
<td>Obesity</td>
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<td>6.9</td>
<td>29.2</td>
<td>21.8</td>
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<td></td>
<td>2004</td>
<td>34.4</td>
<td>42.9</td>
<td>38.6</td>
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<td>Hypertension</td>
<td>1994</td>
<td>78.7</td>
<td>65.3</td>
<td>61.9</td>
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<td></td>
<td>2004</td>
<td>84.4</td>
<td>81.0</td>
<td>81.1</td>
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<tr>
<td>Diabetes</td>
<td>1994</td>
<td>35.9</td>
<td>29.6</td>
<td>26.9</td>
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<tr>
<td></td>
<td>2004</td>
<td>53.1</td>
<td>40.2</td>
<td>28.0</td>
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<tr>
<td>Smoking</td>
<td>1994</td>
<td>52.3</td>
<td>59.6</td>
<td>72.4</td>
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<td></td>
<td>2004</td>
<td>43.8</td>
<td>33.3</td>
<td>55.8</td>
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<tr>
<td>Hyperlipidemia</td>
<td>1994</td>
<td>72.8</td>
<td>60.2</td>
<td>74.5</td>
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<tr>
<td></td>
<td>2004</td>
<td>90.6</td>
<td>69.1</td>
<td>70.2</td>
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### Between 1994 and 2008

#### RISK FACTORS FOR HEART ATTACK AND STROKE – FILIPINOS

Colman Ryan, MD

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<td>Obesity</td>
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<td></td>
<td>2004</td>
<td>18.8</td>
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<td>2004</td>
<td>90.6</td>
</tr>
<tr>
<td></td>
<td>2008</td>
<td>89.1</td>
</tr>
</tbody>
</table>
Coronary Artery Disease

Healthy coronary artery

Photos courtesy of Boehringer Ingleheim International GmbH, by Lennart Nilsson.
The Beginning of Atherosclerosis

Photos courtesy of Boehringer Ingleheim International GmbH, by Lennart Nilsson.
Atherosclerotic Plaque

Photos courtesy of Boehringer Ingleheim International GmbH, by Lennart Nilsson.
Plaque Rupture

Photos courtesy of Boehringer Ingeheim International GmbH, by Lennart Nilsson.
Platelet Activation

Photos courtesy of Boehringer Ingleheim International GmbH, by Lennart Nilsson.
Myocardial Infarction

Photos courtesy of Boehringer Ingleheim International GmbH, by Lennart Nilsson.
WHY ARE WE SO

fat?

National Geographic, August 2004
Changing Portion Sizes

1954
Burger King
2.8 oz
202 calories
4.3 oz
310 calories

1955
McDonald's
2.4 oz
210 calories
7 oz
610 calories

1900
Hershey’s
2 oz
297 calories
7 oz
1,000 calories

1916
Coca-Cola
6.5 fluid oz
79 calories
16 fluid oz
194 calories

1950s
Movie popcorn
3 cups
174 calories
21 cups (buttered)
1,700 calories

National Geographic, August 2004
Visceral Adiposity

Fat Depots:

- Subcutaneous: 60-70%
- Intra-abdominal: 15-25%
  - Visceral (or intraperitoneal)
  - Retroperitoneal (5%)
- Intramuscular: 5-10%
Visceral Fat
Something in there sounds a little funny, Sid...

I think I should give you a stress test!
YOU'RE AT THE AGE WHEN PEOPLE START HAVING HEART ATTACKS!

A STRESS TEST WILL TELL US IF YOU'RE LIKELY TO DROP OVER DEAD!
SID, I DEFINITELY THINK YOU SHOULD HAVE A STRESS TEST!

HOW MUCH DOES IT COST?
OK - YOU PASSED THE STRESS TEST
Growing Percentage of People Over 60 Years of Age (2000-2025)

Americans Complacent About CVD

- 57% do not believe they are at “much risk”
- 41% do not believe CVD is a killer
- 76% say they try to maintain healthy weight, but only 36% actually do
- 68% say they try to exercise regularly, but only 19% actually do
- 60% say they try to avoid high-fat, high-cholesterol foods, but only 10% follow national nutritional guidelines

CVD Risk Factors

- Hypertension*
- Cigarette smoking
- Obesity* (BMI ≥30 kg/m²)
- Physical inactivity
- Dyslipidemia*
- Diabetes mellitus*
- Microalbuminuria or estimated GFR <60 ml/min
- Age (older than 55 for men, 65 for women)
- Family history of premature CVD
  (men under age 55 or women under age 65)

*Components of the metabolic syndrome.
I love this Doctor
Q: Doctor, I've heard that cardiovascular exercise can prolong life. Is this true?

A: Your heart is only good for so many beats, and that's it... don't waste them on exercise. Everything wears out eventually. Speeding up your heart will not make you live longer; that's like saying you can extend the life of your car by driving it faster. Want to live longer? Take a nap.
Q: Doctor, I've heard that cardiovascular exercise can prolong life. Is this true?

A: Your heart is only good for so many beats, and that's it... don't waste them on exercise. Everything wears out eventually. Speeding up your heart will not make you live longer; that's like saying you can extend the life of your car by driving it faster. Want to live longer? Take a nap.
Q: Should I cut down on meat and eat more fruits and vegetables?

A: You must grasp logistical efficiencies. What does a cow eat? Hay and corn. And what are these? Vegetables. So a steak is nothing more than an efficient mechanism of delivering vegetables to your system. Need grain? Eat chicken. Beef is also a good source of field grass (green leafy vegetable). And a pork chop can give you 100% of your recommended daily allowance of vegetable products.
Q: Aren't fried foods bad for you?
A: YOU'RE NOT LISTENING!!! ..... Foods are fried these days in vegetable oil. In fact, they're permeated in it. How could getting more vegetables be bad for you?

Q: Will sit-ups help prevent me from getting a little soft around the middle?
A: Definitely not! When you exercise a muscle, it gets bigger. You should only be doing sit-ups if you want a bigger stomach.
Q: Is chocolate bad for me?

A: Are you crazy? HELLO Cocoa beans! Another vegetable!!! It's the best feel-good food around!

Q: Is swimming good for your figure?

A: If swimming is good for your figure, explain whales to me.

Q: Is getting in-shape important for my lifestyle?

A: Hey! 'Round' is a shape!
Well, I hope this has cleared up any misconceptions you may have had about food and diets.

And remember:
'Life should NOT be a journey to the grave with the intention of arriving safely in an attractive and well preserved body, but rather to skid in sideways - Chardonnay in one hand - chocolate in the other - body thoroughly used up, totally worn out and screaming 'WOO HOO, What a Ride'

AND.....