Update in Cardiology

Pharmacologic Management of Cardiovascular Risk

Christopher C. Roe, MSN, ACNP
Objectives

1. Verbalize understanding of new pharmacologic guidelines in the treatment of hypertension

2. Verbalize understanding of new pharmacologic guidelines to treatment of hyperlipidemia

3. Verbalize understanding of the current recommendations on the use of aspirin for primary preventions of atherosclerotic cardiovascular disease
Top 10 Causes of Death, Years of Life Lost from Premature Death, Years Lived with Disability, and Disability-Adjusted Life-Years (DALYs) in the United States, 2010.

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Deaths (N = 2664)</th>
<th>Years of Life Lost (N = 45,145)</th>
<th>Years Lived with Disability (N = 36,689)</th>
<th>DALYs (N = 81,835)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic heart disease</td>
<td>1</td>
<td>563 (21.1)</td>
<td>7165 (15.9)</td>
<td>685 (1.9)</td>
</tr>
<tr>
<td>Chronic obstructive pulmonary disease</td>
<td>5</td>
<td>154 (5.8)</td>
<td>1913 (4.2)</td>
<td>1745 (4.8)</td>
</tr>
<tr>
<td>Low back pain</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>3181 (8.7)</td>
</tr>
<tr>
<td>Cancer of the trachea, bronchus, or lung</td>
<td>3</td>
<td>163 (6.1)</td>
<td>2988 (6.6)</td>
<td>45 (0.1)</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2049 (8.3)</td>
</tr>
<tr>
<td>Other musculoskeletal disorders</td>
<td>36</td>
<td>14 (0.5)</td>
<td>254 (0.6)</td>
<td>2603 (7.1)</td>
</tr>
<tr>
<td>Stroke</td>
<td>2</td>
<td>172 (6.5)</td>
<td>1945 (4.3)</td>
<td>629 (1.7)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>6</td>
<td>86 (3.2)</td>
<td>1392 (3.1)</td>
<td>1165 (3.2)</td>
</tr>
<tr>
<td>Road-traffic injury</td>
<td>12</td>
<td>44 (1.7)</td>
<td>1873 (4.1)</td>
<td>373 (1.0)</td>
</tr>
<tr>
<td>Drug-use disorders</td>
<td>27</td>
<td>19 (0.7)</td>
<td>841 (1.9)</td>
<td>1295 (3.5)</td>
</tr>
<tr>
<td>Neck pain</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2134 (5.8)</td>
</tr>
<tr>
<td>Alzheimer’s disease and other dementias</td>
<td>4</td>
<td>158 (5.9)</td>
<td>1192 (2.6)</td>
<td>830 (2.3)</td>
</tr>
<tr>
<td>Anxiety disorders</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1866 (5.1)</td>
</tr>
<tr>
<td>Self-harm</td>
<td>16</td>
<td>37 (1.4)</td>
<td>1457 (3.2)</td>
<td>6 (0.05)</td>
</tr>
<tr>
<td>Cirrhosis of the liver</td>
<td>11</td>
<td>50 (1.9)</td>
<td>1233 (2.7)</td>
<td>16 (0.05)</td>
</tr>
<tr>
<td>Chronic kidney disease</td>
<td>9</td>
<td>60 (2.3)</td>
<td>780 (1.7)</td>
<td>410 (1.1)</td>
</tr>
<tr>
<td>Colorectal cancers</td>
<td>8</td>
<td>64 (2.4)</td>
<td>1074 (2.4)</td>
<td>73 (0.2)</td>
</tr>
<tr>
<td>Lower respiratory tract infections</td>
<td>7</td>
<td>85 (3.2)</td>
<td>1032 (2.3)</td>
<td>61 (0.2)</td>
</tr>
<tr>
<td>Asthma</td>
<td>61</td>
<td>4 (0.2)</td>
<td>100 (0.2)</td>
<td>932 (2.5)</td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>994 (2.7)</td>
</tr>
<tr>
<td>Other cardiovascular and circulatory diseases</td>
<td>10</td>
<td>57 (2.1)</td>
<td>765 (1.7)</td>
<td>213 (0.6)</td>
</tr>
</tbody>
</table>

Global DALYs Attributable to the 25 Leading Risk Factors in 1990 and 2010

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Rank</th>
<th>2010 DALYs (95% UI) in thousands</th>
<th>Rank</th>
<th>1990 DALYs (95% UI) in thousands</th>
</tr>
</thead>
<tbody>
<tr>
<td>High blood pressure</td>
<td>1</td>
<td>173,556 (155,939–189,025)</td>
<td>4</td>
<td>137,017 (124,360–149,366)</td>
</tr>
<tr>
<td>Tobacco smoking, including exposure to second-hand smoke</td>
<td>2</td>
<td>156,838 (136,543–173,057)</td>
<td>3</td>
<td>151,766 (136,367–169,522)</td>
</tr>
<tr>
<td>Household air pollution from solid fuels</td>
<td>3</td>
<td>108,084 (84,891–132,983)</td>
<td>2</td>
<td>170,693 (139,087–199,504)</td>
</tr>
<tr>
<td>Diet low in fruit</td>
<td>4</td>
<td>104,095 (81,833–124,169)</td>
<td>7</td>
<td>80,453 (63,298–95,763)</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>5</td>
<td>97,237 (78,087–107,658)</td>
<td>8</td>
<td>73,715 (66,090–82,089)</td>
</tr>
<tr>
<td>High body-mass index</td>
<td>6</td>
<td>93,609 (77,107–110,600)</td>
<td>10</td>
<td>51,565 (40,786–62,557)</td>
</tr>
<tr>
<td>High fasting plasma glucose level</td>
<td>7</td>
<td>89,012 (77,743–101,390)</td>
<td>9</td>
<td>56,358 (48,720–65,030)</td>
</tr>
<tr>
<td>Childhood underweight</td>
<td>8</td>
<td>77,316 (64,497–91,943)</td>
<td>1</td>
<td>197,741 (169,224–238,276)</td>
</tr>
<tr>
<td>Exposure to ambient particulate-matter pollution</td>
<td>9</td>
<td>76,163 (68,086–85,171)</td>
<td>6</td>
<td>81,699 (71,012–92,859)</td>
</tr>
<tr>
<td>Physical inactivity or low level of activity</td>
<td>10</td>
<td>69,318 (58,646–80,182)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Diet high in sodium</td>
<td>11</td>
<td>61,231 (40,124–80,342)</td>
<td>12</td>
<td>46,183 (30,363–60,604)</td>
</tr>
<tr>
<td>Diet low in nuts and seeds</td>
<td>12</td>
<td>51,289 (33,482–65,959)</td>
<td>13</td>
<td>40,525 (26,308–51,741)</td>
</tr>
<tr>
<td>Iron deficiency</td>
<td>13</td>
<td>48,225 (33,769–67,592)</td>
<td>11</td>
<td>51,841 (37,477–71,202)</td>
</tr>
<tr>
<td>Suboptimal breast-feeding</td>
<td>14</td>
<td>47,537 (29,868–67,518)</td>
<td>5</td>
<td>110,261 (69,615–153,539)</td>
</tr>
<tr>
<td>High total cholesterol level</td>
<td>15</td>
<td>40,900 (31,662–50,484)</td>
<td>14</td>
<td>39,526 (32,704–47,202)</td>
</tr>
<tr>
<td>Diet low in whole grains</td>
<td>16</td>
<td>40,762 (32,112–48,486)</td>
<td>18</td>
<td>29,404 (23,097–35,134)</td>
</tr>
<tr>
<td>Diet low in vegetables</td>
<td>17</td>
<td>38,559 (26,006–51,658)</td>
<td>16</td>
<td>31,558 (21,349–41,921)</td>
</tr>
<tr>
<td>Diet low in seafood n-3 fatty acids</td>
<td>18</td>
<td>28,199 (20,624–35,974)</td>
<td>20</td>
<td>21,740 (15,869–27,537)</td>
</tr>
<tr>
<td>Drug use</td>
<td>19</td>
<td>23,810 (18,780–29,246)</td>
<td>25</td>
<td>15,171 (11,714–19,369)</td>
</tr>
<tr>
<td>Occupational risk factors for injuries</td>
<td>20</td>
<td>23,444 (17,736–30,904)</td>
<td>21</td>
<td>21,265 (16,644–26,702)</td>
</tr>
<tr>
<td>Occupation-related low back pain</td>
<td>21</td>
<td>21,750 (14,492–30,533)</td>
<td>23</td>
<td>17,841 (11,846–24,945)</td>
</tr>
<tr>
<td>Diet high in processed meat</td>
<td>22</td>
<td>20,939 (16,982–33,468)</td>
<td>24</td>
<td>17,359 (13,537–27,949)</td>
</tr>
<tr>
<td>Intimate-partner violence</td>
<td>23</td>
<td>16,794 (11,373–23,087)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Diet low in fiber</td>
<td>24</td>
<td>16,452 (7401–25,783)</td>
<td>26</td>
<td>13,347 (5970–20,751)</td>
</tr>
<tr>
<td>Lead exposure</td>
<td>25</td>
<td>13,936 (11,750–16,327)</td>
<td>31</td>
<td>5,365 (4534–6279)</td>
</tr>
</tbody>
</table>

2014 Hypertension Guidelines

• JAMA 2014: 311(5): 507-520

• 11 years in development

• One APN on the committee

• Only nine recommendations!
2014 Hypertension Guidelines

• What is a guideline?

• “Although this guideline provides evidence-based recommendations for the management of high BP and should meet the clinical needs of most patients, these recommendations are not a substitute for clinical judgment, and decisions about care must carefully consider and incorporate the clinical characteristics and circumstances of each individual patient.”
2014 Hypertension Guidelines

- Recommendations 1-5 tell us who to treat
- Need to know four things about your patient
  1. Age
  2. CKD (eGFR <60 or albuminuria)
  3. Diabetes
  4. Ethnicity
## 2014 Hypertension Guidelines

<table>
<thead>
<tr>
<th>Age</th>
<th>Goal BP</th>
<th>Strength of Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 60</td>
<td>150/90</td>
<td>Grade A--Strong</td>
<td>If achieved SBP &lt;140 and tolerate w/o adverse effects then continue (Grade E)</td>
</tr>
<tr>
<td>30-59</td>
<td>DBP &lt; 90</td>
<td>Grade A--Strong</td>
<td>&lt; 60 target SBP &lt;140 (Grade E)</td>
</tr>
<tr>
<td>18-29</td>
<td>DBP &lt; 90</td>
<td>Grade E--Expert Opinion</td>
<td></td>
</tr>
<tr>
<td>≥ 18 w/ CKD</td>
<td>140/90</td>
<td>Grade E--Expert Opinion</td>
<td></td>
</tr>
<tr>
<td>≥ 18 w/ Diabetes</td>
<td>140/90</td>
<td>Grade E--Expert Opinion</td>
<td></td>
</tr>
</tbody>
</table>
2014 Hypertension Guidelines

Recommendation 6
(general, nonblack population including those with diabetes)

– Thiazide type diuretic, or
– Calcium Channel Blocker, or
– ACEi, or
– ARB

Grade B—Moderate Recommendation
Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT)

33,357 patients with HTN and ≥1 CHD risk factor randomized to chlorthalidone, amlodipine, or lisinopril for 5 years

All three BP lowering agents provide similar efficacy

Source: ALLHAT Investigators. JAMA 2002;288:2981-2997

BP=Blood pressure, CHD=Coronary heart disease, HTN=Hypertension, MI=Myocardial infarction
Losartan Intervention for Endpoint (LIFE) Reduction in Hypertension Study

9,193 high-risk hypertensive* patients with LVH randomized to losartan (100 mg) or atenolol (100 mg) for 5 years

An ARB provides greater efficacy in patients with LVH

*Defined by SBP=160-200 mmHg or DBP=95-115 mmHg

ARB=Angiotensin receptor blocker, CV=Cardiovascular, DBP=Diastolic blood pressure, LVH=Left ventricular hypertrophy, MI=Myocardial infarction, SBP=Systolic blood pressure

2014 Hypertension Guidelines

Recommendation 6 (con’t)
Key points to remember

1. Use any four for initial therapy and add-on
2. Does not apply to CAD and HF patients
3. Adequate dosages based on RCTs
4. Not all thiazides are the same
### Table 4. Evidence-Based Dosing for Antihypertensive Drugs

<table>
<thead>
<tr>
<th>Antihypertensive Medication</th>
<th>Initial Daily Dose, mg</th>
<th>Target Dose in RCTs Reviewed, mg</th>
<th>No. of Doses per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE inhibitors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Captopril</td>
<td>50</td>
<td>150-200</td>
<td>2</td>
</tr>
<tr>
<td>Enalapril</td>
<td>5</td>
<td>20</td>
<td>1-2</td>
</tr>
<tr>
<td>Lisinopril</td>
<td>10</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Angiotensin receptor blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eprosartan</td>
<td>400</td>
<td>600-800</td>
<td>1-2</td>
</tr>
<tr>
<td>Candesartan</td>
<td>4</td>
<td>12-32</td>
<td>1</td>
</tr>
<tr>
<td>Losartan</td>
<td>50</td>
<td>100</td>
<td>1-2</td>
</tr>
<tr>
<td>Valsartan</td>
<td>40-80</td>
<td>160-320</td>
<td>1</td>
</tr>
<tr>
<td>Irbesartan</td>
<td>75</td>
<td>300</td>
<td>1</td>
</tr>
<tr>
<td>β-Blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atenolol</td>
<td>25-50</td>
<td>100</td>
<td>1</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>50</td>
<td>100-200</td>
<td>1-2</td>
</tr>
<tr>
<td>Calcium channel blockers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amlodipine</td>
<td>2.5</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Diltiazem extended release</td>
<td>120-180</td>
<td>360</td>
<td>1</td>
</tr>
<tr>
<td>Nitrendipine</td>
<td>10</td>
<td>20</td>
<td>1-2</td>
</tr>
<tr>
<td>Thiazide-type diuretics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bendroflumethiazide</td>
<td>5</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Chlorthalidone</td>
<td>12.5</td>
<td>12.5-25</td>
<td>1</td>
</tr>
<tr>
<td>Hydrochlorothiazide</td>
<td>12.5-25</td>
<td>25-100*</td>
<td>1-2</td>
</tr>
<tr>
<td>Indapamide</td>
<td>1.25</td>
<td>1.25-2.5</td>
<td>1</td>
</tr>
</tbody>
</table>

Abbreviations: ACE, angiotensin-converting enzyme. RCT, randomized controlled trial.

*Current recommended evidence-based dose that balances efficacy and safety is 25-50 mg daily.
Figure 2. Mean 24-hour, daytime, and nighttime ambulatory SBP with change from baseline.

Michael E. Ernst et al. Hypertension. 2006;47:352-358
Recommendation 7
(General Black Population, including those with Diabetes), initial therapy:

- Thiazide-type diuretic, or
- Calcium Channel Blocker

Grade B—Moderate Recommendation (general black pop)

Grade C—Weak Recommendation (black pop w/ DM)
2014 Hypertension Guidelines

Recommendation 8
(≥ 18 years old with CKD, regardless of race or diabetes status)

• ACEi or ARB

Grade B—Moderate Recommendation
2014 Hypertension Guidelines

Recommendation 8 (con’t)

Didn’t you say not to use ACEi/ARB as initial therapy in Rec 7?

– Expert Opinion:

  • Black pop w/ CKD and proteinuria: ACEi/ARB
  • Black pop w/ CKD and no proteinuria:
    – ACEi, ARB, CCB, or thiazide
2014 Hypertension Guidelines

Recommendation 9
(if this, then that, etc. etc.)

• Main objective: get their BP to goal
• Second drug: thiazide, CCB, ACEi, or ARB
• Third drug: add from same list
• Still not at goal. . .
2014 Hypertension Guidelines

Gaps in the Guidelines

• Overall targets for BP, particularly young people

• What happens at age 60?

• How and whose BP measurements do we use
2013 ACC/AHA Cholesterol Guideline

“A healthy lifestyle is the foundation for cardiovascular health”*

- Diet
- Exercise
- Healthy body weight
- Avoid smoking
- Control HTN and DM

2013 ACC/AHA Cholesterol Guideline—Who to Treat?

1. Clinical ASCVD
2. LDL-C ≥ 190 mg/dl
3. Diabetic aged 40-75 with an LDL-C of 70-189 mg/dl
4. Nondiabetic aged 40-75 with an LDL-C of 70-189mg/dl (TBD)
2013 ACC/AHA Cholesterol Guideline—Intensity of Therapy

- High Intensity: ≥ 50% reduction in LDL
- Moderate Intensity: 30-50% reduction in LDL
- Low Intensity: only used when patients can’t tolerate either of the above
### Table 2. High-, Moderate-, and Low-Intensity Statin Therapy*

<table>
<thead>
<tr>
<th>Statin Therapy</th>
<th>Daily Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High-Intensity†</td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>40–80 mg</td>
</tr>
<tr>
<td>Rosuvastatin</td>
<td>20 (40) mg</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>–</td>
</tr>
<tr>
<td>Pravastatin</td>
<td>–</td>
</tr>
<tr>
<td>Lovastatin</td>
<td>–</td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>–</td>
</tr>
<tr>
<td>Fluvastatin</td>
<td>–</td>
</tr>
<tr>
<td>Pitavastatin</td>
<td>–</td>
</tr>
</tbody>
</table>

* Individual responses to statin therapy varied in randomized, controlled trials and vary in clinical practice. A less-than-average response may have a biological basis. Statins and dosages in bold reduced major cardiovascular events in randomized, controlled trials. Statins and doses in italics were approved by the U.S. Food and Drug Administration (FDA) but were not tested in randomized, controlled trials.

† Daily dose decreases low-density lipoprotein cholesterol (LDL-C) levels by an average of ≥50%.

‡ Daily dose decreases LDL-C levels by an average of 30% to <50%.

§ Daily dose decreases LDL-C levels by an average of <30%.

‖ Evidence from 1 randomized, controlled trial only; down-titration if patient is unable to tolerate atorvastatin, 80 mg.

¶ Although simvastatin, 80 mg, was evaluated in randomized, controlled trials, the FDA recommends against initiation of or titration to 80 mg of simvastatin because of increased risk for myopathy and rhabdomyolysis.

** Twice daily.
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

1. Clinical ASCVD

- ≤ 75 years old: high intensity
- > 75 years old or safety concerns: moderate
2. LDL-C $\geq 190$ mg/dl

- High intensity,
- Consider adding LDL lowering nonstatin agent if 50% reduction not achieved
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

3. Diabetic aged 40-75 with an LDL-C of 70-189 mg/dl

- Moderate intensity,
- or high intensity if their 10-year ASCVD risk is ≥ 7.5%
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

4. Nondiabetic aged 40-75 with an LDL-C of 70-189mg/dl

need to determine the patient’s 10-year ASCVD risk
2013 ACC/AHA Cholesterol Guideline—Who to Treat?
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

ASCVD Risk Estimator*

<table>
<thead>
<tr>
<th>10-Year ASCVD Risk</th>
<th>Lifetime ASCVD Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7% calculated risk</td>
<td>50% calculated risk</td>
</tr>
<tr>
<td>0.6% risk with optimal risk factors**</td>
<td>5% risk with optimal risk factors</td>
</tr>
</tbody>
</table>

Recommendation Based On Calculations:

- Gender: Male
- Age: 40
- Race: White/Other
- Total Cholesterol: 192
- HDL-Cholesterol: 80
- Systolic Blood Pressure: 140
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

Not In Statin Benefit Group Due To 10-Year ASCVD Risk <5%

In individuals for whom after quantitative risk assessment a risk-
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

- 47 yo white male
- HTN: takes metoprolol and irbesartan
- Total Chol 181
- HDL 35
- BP 163/92
- Does not smoke
- No history of DM
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

ASCVD Risk Estimator*

10-Year ASCVD Risk
- 5.8% calculated risk
- 1.5% risk with optimal risk factors**

Lifetime ASCVD Risk
- 69% calculated risk
- 5% risk with optimal risk factors

Recommendation Based On Calculations

- Age: 47

Race
- White
- African American
- Other

Total Cholesterol (mg/dL): 181

Based on the data entered (assuming no clinical ASCVD and LDL-C 70-189 mg/dL):
- Gender: Male
- Age: 47
- Race: White/Other
- Total Cholesterol: 181
- HDL-Cholesterol: 35
- Systolic Blood Pressure: 163
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

Consider Moderate-Intensity Statin

Before initiating statin therapy, it is reasonable for clinicians and patients to engage in a discussion
2013 ACC/AHA Cholesterol Guideline—Who to Treat?

ASCVD Risk Estimator*

10-Year ASCVD Risk
- 4.5% calculated risk
- 1.5% risk with optimal risk factors**

Lifetime ASCVD Risk
- 50% calculated risk
- 5% risk with optimal risk factors

Recommendation Based On Calculations

Age: 47

Race
- White
- African American
- Other

Total Cholesterol
- 181 mg/dL

Recommendation:

Based on the data entered (assuming no clinical ASCVD and LDL-C 70-189 mg/dL):
- Gender: Male
- Age: 47
- Race: White/Other
- Total Cholesterol: 181
- HDL-Cholesterol: 35
- Systolic Blood Pressure: 140
- Hypertension Treatment: Yes
- Diabetes: No
- Smoker: No

Not In Statin Benefit Group Due To 10-Year ASCVD Risk <5%

In individuals for whom after quantitative risk assessment a risk-
2013 ACC/AHA Cholesterol Guideline—Safety

• These meds are safe!

• Consider avoiding simvastatin

• LFT’s

• Muscle Symptoms
2013 ACC/AHA Cholesterol Guideline—Final Points

• No absolute number—instead looking for % reduction in LDL-C

• Recheck Lipid Panel 4-12 weeks after initiation

• If at max dose (or tolerated max dose) and not at goal consider adding nonstatin medication
Aspirin for Primary Prevention
Aspirin: Mechanism of Action

Membrane Phospholipids → Arachadonic Acid → Prostaglandin $H_2$ → COX-1 → Aspirin

Thromboxane $A_2$: ↑ Platelet Aggregation, Vasoconstriction

Prostacyclin: ↓ Platelet Aggregation, Vasodilation

References:
Aspirin Evidence: Primary Prevention

BDT, 1988
PHS, 1989
TPT, 1998
HOT, 1998
PPP, 2001

Combined

RR of MI in Men

RR = 0.68 (0.54-0.86)  
P=0.001

RR of MI in Women

RR = 0.99 (0.83-1.19)  
P=0.95

RR of CVA in Men

RR = 1.13 (0.96-1.33)  
P=0.15

RR of CVA in Women

RR = 0.81 (0.69-0.96)  
P=0.01

CVA=Cerebrovascular accident, MI=Myocardial infarction, RR=Relative risk

Ridker P et al. NEJM 2005;352:1293-304
ASA for Primary Prevention
Why not everyone?

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk of serious upper GI complications over 10 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>&lt;60</td>
<td>8/ 1,000</td>
</tr>
<tr>
<td>60-69</td>
<td>24/ 1,000</td>
</tr>
<tr>
<td>70-79</td>
<td>36/ 1,000</td>
</tr>
</tbody>
</table>
Central Illustration A Proposed Practical Stepwise Approach to the Use of Aspirin in Primary CV Prevention The first step should be an assessment of patient’s eligibility to the treatment, by assessing the 10-year risk of major cardiovascular (CV) events ...

Sigrun Halvorsen, Felicita Andreotti, Jurriën M. ten Berg, Marco Cattaneo, Sergio Coccheri, Roberto Marchioli...

**Aspirin Therapy in Primary Cardiovascular Disease Prevention : A Position Paper of the European Society of Cardiology Working Group on Thrombosis**

Journal of the American College of Cardiology, Volume 64, Issue 3, 2014, 319 - 327

http://dx.doi.org/10.1016/j.jacc.2014.03.049
Aspirin for Primary Prevention

What dose?

81mg daily
Questions?