PREVENTING CARDIOVASCULAR DISEASE WITH LIPID MANAGEMENT: MATCHING TREATMENT TO RISK

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UCSF School of Medicine

Declaration of full disclosure: No conflict of interest

EXPLAINING THE DECREASE IN DEATHS FROM CHD

1980 to 2000:
- Death rate fell from:
  542.9 to 266.8 per 100K men
  263.3 to 134.4 per 100K women
- 341,745 fewer deaths from CHD in 2000


EXPLAINING THE DECREASE IN DEATHS FROM CHD

- 47% from CHD treatments, 44% from risk factor modification
- Reductions in cholesterol: 24%

Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

Placebo-Controlled Statin Trials

Reductions in Major Coronary Events Relative to Placebo

Placebo-Controlled Statin Trials – Celebrating Successes but Forgetting the Majority?

Remaining Major Coronary Events Relative to Placebo

Is there more we can do to identify the non-responders?

A RISK-BASED APPROACH

The benefit from any given intervention is a function of:
1) The relative risk reduction conferred by the intervention, and
2) The native risk of the patient
Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

63 yo woman; s/p MI

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL</td>
<td>115</td>
</tr>
<tr>
<td>HDL</td>
<td>45</td>
</tr>
<tr>
<td>TG</td>
<td>160</td>
</tr>
</tbody>
</table>

63 yo woman; s/p MI

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL</td>
<td>3.0 SI</td>
</tr>
<tr>
<td>HDL</td>
<td>1.2 SI</td>
</tr>
<tr>
<td>TG</td>
<td>4.1 SI</td>
</tr>
</tbody>
</table>

mg/dl / 38.67 = SI (mmol/l)

The best next step in lipid management is:

1. Continue current therapy
2. Begin a statin to goal LDL 100
3. Begin a statin to goal LDL 70
4. Begin a statin plus ezetimibe to LDL goal 70
5. Begin sustained release niacin
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### LDL Goal and Cutpoints in Patients with CHD and CHD Risk Equivalents (10-Year Risk >20%) 2004

<table>
<thead>
<tr>
<th>LDL Goal</th>
<th>LDL Level at Which to Initiate Diet</th>
<th>LDL Level at Which to Consider Drug Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 mg/dL, Optional: &lt;70</td>
<td>≥100 mg/dL</td>
<td>≥100 mg/dL (≥100 mg/dL: drug optional)</td>
</tr>
</tbody>
</table>

### Heart Protection Study: Vascular Events by Baseline LDL-C

<table>
<thead>
<tr>
<th>Baseline Feature</th>
<th>Statin (10,269)</th>
<th>Placebo (10,267)</th>
<th>Risk Ratio and 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL (mg/dL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;100</td>
<td>285</td>
<td>360</td>
<td></td>
</tr>
<tr>
<td>≥100 &lt;130</td>
<td>676</td>
<td>881</td>
<td></td>
</tr>
<tr>
<td>≥130</td>
<td>1087</td>
<td>1365</td>
<td></td>
</tr>
<tr>
<td>ALL PATIENTS</td>
<td>(2042 (19.9%))</td>
<td>(2606 (25.4%))</td>
<td>24% reduction (p&lt;0.00001)</td>
</tr>
</tbody>
</table>

### TREATING TO NEW TARGETS (TNT)

- RCT of 10,001 patients with stable CHD; 35-75 yr
- LDL <130 mg/dl
- Atorvastatin 10 vs atorvastain 80
- Followed for 4.9 years
- Research question: safety and efficacy of lowering LDL below 100 mg/dl
Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

TREATING TO NEW TARGETS (TNT)

<table>
<thead>
<tr>
<th></th>
<th>LDL</th>
<th>Event %</th>
<th>Death %</th>
<th>↑ LFTs %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atorv 10</td>
<td>101</td>
<td>10.9</td>
<td>2.5</td>
<td>0.2</td>
</tr>
<tr>
<td>Atorv 80</td>
<td>77</td>
<td>8.7</td>
<td>2.0</td>
<td>1.2</td>
</tr>
</tbody>
</table>

p value <0.001 0.09

The best next step in lipid management is:

1. Continue current therapy
2. Begin a statin to goal LDL 100
3. Begin a statin to goal LDL 70
4. Begin a statin plus ezetimibe to LDL goal 70
5. Begin sustained release niacin

CHD Risk Equivalents

Risk for major coronary events equal to that in established CHD e.g. >20% risk of MI or CHD death in 10 years

- Peripheral artery disease
- Abdominal aortic aneurysm
- Symptomatic CVD
- Diabetes
- Multiple risk factors with >20% risk in 10 years
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Other Potential CHD Risk Equivalents
Risk for major coronary events equal to that in established CHD e.g. >20% risk of MI or CHD death in 10 years

• Renal insufficiency: probably yes (but not ESRD on hemodialysis)
• Congestive heart failure: probably not
• Metabolic syndrome: probably not (calculate Framingham risk)

63 yo man; s/p MI

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LDL</td>
<td>70</td>
</tr>
<tr>
<td>HDL</td>
<td>25</td>
</tr>
<tr>
<td>TG</td>
<td>400</td>
</tr>
</tbody>
</table>

The best next step in lipid management is:

1. Continue current therapy
2. Begin a statin
3. Begin fenofibrate
4. Begin fish oil
5. Begin niacin (sustained release)
Preventing Cardiovascular Disease With Lipid Management:
Matching Therapy to Risk

63 yo woman: s/p MI
(LDL 70, HDL 25, TG 400, Total 175)

Total - HDL = Non-HDL
175 - 25 = 150

NCEP non-HDL goal:
LDL goal + 30 = 100

Low HDL-C is an Independent Predictor of CHD Risk
Even When LDL-C is Low

HDL AS A THERAPEUTIC TARGET

- Systematic review of 31 RCTs
- Currently available therapies (drug and non-drug) can increase by 20-30%
- “…proof that increasing HDL confers reduction in CV outcomes independent of changes in LDL or TG changes has been elusive.”
- Conclusion: only modest evidence to support aggressively increasing HDL beyond lifestyle interventions
Management of Low HDL-C

**Therapeutic lifestyle changes**

- Smoking cessation
- Regular aerobic exercise
- Weight loss
- Alcohol use?

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**CETP INHIBITORS TO INCREASE HDL**

- Inhibition of cholesteryl ester transfer protein markedly raises HDL (and raise BP)
- Two trials show no benefit on coronary atherosclerosis or carotid intimal medial thickness (compared to atorvastatin alone)
- Clinical trial of 15,000 stopped prematurely due to excess mortality and events in those on torcetrapib vs. placebo
- Pfizer abandons development of torcetrapib

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**VA-HIT: Major Coronary Events in Gemfibrozil vs. Placebo Groups**

![Graph showing VA-HIT study results]

-22% reduction

Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

**Combination Drug Therapy**
Adding Niacin or a Fibrate to a Statin

**Pros**
- Better ↓ TG and ↑ HDL-C
- May ↓ LDL-C more (niacin or fenofibrate)
- ↓ Lp(a) (niacin)
- ↑ LDL particle size
- ↓ Fibrinogen (fibrates)
- Angiographic data

**Cons**
- Increased cost and complexity
- Increased myositis risk
- Increased hepatitis risk (niacin)
- Potential for other drug interactions
- Lack of outcome data

**The best next step in lipid management is:**
1. Continue current therapy
2. Begin a statin
3. Begin fenofibrate
4. Begin fish oil
5. Begin sustained release niacin

**If, however, primary prevention?**
1. Continue current therapy
2. Begin a statin
3. Begin fenofibrate
4. Begin fish oil
5. Begin niacin (sustained release)
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Matching Therapy to Risk

Current Risk Prediction
The CHD Prevention Iceberg

- High
  - >20%, CHD or DM

- Intermediate
  - ~10-12%
  - 10% - 20%

- Low
  - <10%
  - ~80%

Estimated 10-Year Risk

63 yowoman, no risk factors

LDL 175
HDL 45
TG 160

The best next step in lipid management is:

1. Continue current therapy
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4. Begin a statin plus ezetimibe
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**POSITIVE RISK FACTORS**
- Age: Men ≥45; women ≥55
- Family history premature CHD
- Cigarette smoking
- Hypertension
- Low HDL-cholesterol (<40 mg/dl)

**NEGATIVE RISK FACTOR**
- High HDL-cholesterol > 60 mg/dl

**Truth About CVD Risk Prevention**
- Health professionals are not good at judging CV risk
- Counting risk factors is a “blunt instrument” and often leads to misclassification
- Calculate 10-year risk of hard CHD events (CHD death or non-fatal MI) using the Framingham Risk Score
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Matching Therapy to Risk

Criticisms of Framingham Risk Score
- Uncertainty about performance
- Does not account for family history
- Does not incorporate novel risk factors or biomarkers that might be helpful
- 10 year risk: not useful for young adults; undertreats women
- Applicability to race/ethnic groups

ROC Curves – Used to Determine Whether a Test Possesses the Ability to Discriminate (Future) Cases from Non-cases
AUC=0.5
Flip of a coin
AUC=0.75
Good Prediction

How Well Does the Framingham Risk Score Perform?

<table>
<thead>
<tr>
<th>COHORT</th>
<th>AUC - Men</th>
<th>AUC - Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHANES I</td>
<td>0.73</td>
<td>0.84</td>
</tr>
<tr>
<td>NHANES II</td>
<td>0.78</td>
<td>0.80</td>
</tr>
<tr>
<td>Framingham</td>
<td>0.80</td>
<td>0.86</td>
</tr>
<tr>
<td>Tecumseh</td>
<td>0.81</td>
<td>0.88</td>
</tr>
<tr>
<td>Honolulu</td>
<td>0.80</td>
<td>--</td>
</tr>
<tr>
<td>LRC Follow-Up</td>
<td>0.83</td>
<td>--</td>
</tr>
<tr>
<td>HDFP</td>
<td>0.73</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Ref: Heart 2002; 88: 222-228. Above models all include only age, SBP, cholesterol, smoking, and diabetes
Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

Comparing ROC Curves – Adding a new test

AUC = 0.75


Examples of Proposed Additional Risk Markers

- Family history
- Blood biomarkers
  - CRP
  - Multimarker approaches
- Subclinical disease biomarkers
  - Coronary calcium score
  - Carotid intima-media thickness
- DNA profiling

Examples of Proposed Additional Risk Markers

Area Under the Curve (AUC) for CV Risk Factors vs. CV Risk Factors + hsCRP

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sex</th>
<th>MV-adj RF Q4-Q1</th>
<th>AUC Traditional CVD RFs</th>
<th>AUC Traditional CVD RFs + hsCRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women's Health Study</td>
<td>Prospective</td>
<td>W</td>
<td>2.3</td>
<td>0.81</td>
<td>0.81</td>
</tr>
<tr>
<td>Rotterdam Study</td>
<td>Nested C/C</td>
<td>WM</td>
<td>1.2</td>
<td>0.773</td>
<td>0.778</td>
</tr>
<tr>
<td>MONICA Germany</td>
<td>Prospective</td>
<td>M</td>
<td>2.2</td>
<td>0.725</td>
<td>0.708</td>
</tr>
<tr>
<td>Reykjavik Cohort</td>
<td>Nested C/C</td>
<td>WM</td>
<td>1.4</td>
<td>0.84</td>
<td>0.83</td>
</tr>
<tr>
<td>Framingham Offspring</td>
<td>Prospective</td>
<td>WM</td>
<td>1.9</td>
<td>0.74</td>
<td>0.74</td>
</tr>
<tr>
<td>Framingham Heart</td>
<td>Prospective</td>
<td>WM</td>
<td>1.8</td>
<td>0.78</td>
<td>0.78</td>
</tr>
<tr>
<td>CHS (6 novel RFs)</td>
<td>Prospective</td>
<td>WM</td>
<td>N/A</td>
<td>0.73</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Conclusion: CRP does not add predictive value to the traditional risk factor models

Preventing Cardiovascular Disease With Lipid Management:
Matching Therapy to Risk

Risk Reclassification: ATP-III vs Reynolds Risk Score

Evaluating Biomarkers: Tug of War

Trial Design

JUPITER
Multi-National Randomized Double Blind Placebo Controlled Trial of Rosuvastatin in the Prevention of Cardiovascular Events Among Individuals With Low LDL and Elevated hsCRP

No Prior CVD or DM
LDL <130 mg/dL
hsCRP >2 mg/L

Rosuvastatin 20 mg (N=8901)

Placebo (N=8901)

CVD Death
Unstable
Stroke
CABG/PTCA

Ridker et al, JAMA 2007;297:611-9

Preventing Cardiovascular Disease With Lipid Management:
Matching Therapy to Risk

**Primary Trial Endpoint**
- MI, Stroke, UA, Revascularization, CV Death

**Placebo**
- HR 0.56, 95% CI 0.46-0.69
- P < 0.00001
- Cumulative Incidence: 44%
- Number at Risk: 8,901
- Follow-up (years): 0.08

**Rosuvastatin**
- HR 0.56, 95% CI 0.46-0.69
- P < 0.00001
- Cumulative Incidence: 44%
- Number at Risk: 142 / 8901
- Follow-up (years): 0.08

**Number Needed to Treat (NNT)** = 25

**Subgroup Analysis II**

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>P for Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Hx of CHD</td>
<td>2,645</td>
<td>0.67</td>
</tr>
<tr>
<td>No Family Hx of CHD</td>
<td>15,594</td>
<td></td>
</tr>
<tr>
<td>BMI &lt; 25 kg/m²</td>
<td>4,973</td>
<td>0.70</td>
</tr>
<tr>
<td>BMI 25-29.9 kg/m²</td>
<td>7,039</td>
<td></td>
</tr>
<tr>
<td>BMI ≥ 30 kg/m²</td>
<td>6,375</td>
<td></td>
</tr>
<tr>
<td>Metabolic Syndrome</td>
<td>7,375</td>
<td>0.14</td>
</tr>
<tr>
<td>No Metabolic Syndrome</td>
<td>10,296</td>
<td></td>
</tr>
<tr>
<td>Framingham Risk &lt; 10%</td>
<td>7,375</td>
<td>0.99</td>
</tr>
<tr>
<td>Framingham Risk ≥ 10%</td>
<td>8,892</td>
<td></td>
</tr>
<tr>
<td>hsCRP &gt; 2 mg/L Only (no other RF)</td>
<td>8,895</td>
<td></td>
</tr>
<tr>
<td>All Participants</td>
<td>17,602</td>
<td></td>
</tr>
</tbody>
</table>

Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

JUPITER

Should statins be added to the drinking water?

Not Yet!

(although we are inching closer)

Inclusion and Exclusion Criteria, Study Flow

20% of all screened subjects met eligibility criteria; Among all U.S. adults, only ~5% meet those criteria
Preventing Cardiovascular Disease With Lipid Management:
Matching Therapy to Risk

**JUPITER- Concerns**

- Cost-Effectiveness: $\text{NNT}_5 = 25$
- NNT based on multiple composite end points

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In most prior studies, NNT was based on CV Deaths and Non-Fatal MIs Only

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Rosuvastatin</th>
<th>Placebo</th>
<th>HR</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Endpoint*</td>
<td>142</td>
<td>251</td>
<td>0.56</td>
<td>0.46-0.69</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>Non-fatal MI</td>
<td>22</td>
<td>62</td>
<td>0.35</td>
<td>0.22-0.56</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>Any MI</td>
<td>31</td>
<td>68</td>
<td>0.46</td>
<td>0.35-0.61</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>Non-fatal Stroke</td>
<td>311</td>
<td>68</td>
<td>0.52</td>
<td>0.33-0.80</td>
<td>0.003</td>
</tr>
<tr>
<td>Any Stroke</td>
<td>221</td>
<td>46</td>
<td>0.52</td>
<td>0.34-0.79</td>
<td>0.002</td>
</tr>
<tr>
<td>Revascularization or Unstable Angina</td>
<td>76</td>
<td>143</td>
<td>0.53</td>
<td>0.40-0.70</td>
<td>&lt;0.00001</td>
</tr>
<tr>
<td>MI, Stroke, CV Death</td>
<td>83</td>
<td>157</td>
<td>0.53</td>
<td>0.40-0.69</td>
<td>&lt;0.00001</td>
</tr>
</tbody>
</table>

*Nonfatal MI, nonfatal stroke, revascularization, unstable angina, CV death

---

**JUPITER- Concerns**

- Contribution of age vs. hsCRP
Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

Baseline Clinical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Rosuvastatin (N = 8901)</th>
<th>Placebo (n = 8901)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years (IQR)</td>
<td>66.0 (60.0-71.0)</td>
<td>66.0 (60.0-71.0)</td>
</tr>
<tr>
<td>Female, N (%)</td>
<td>3,426 (38.5)</td>
<td>3,375 (37.9)</td>
</tr>
<tr>
<td>Ethnicity, N (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>6,358 (71.4)</td>
<td>6,325 (71.1)</td>
</tr>
<tr>
<td>Black</td>
<td>1,100 (12.4)</td>
<td>1,124 (12.6)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1,121 (12.6)</td>
<td>1,140 (12.8)</td>
</tr>
<tr>
<td>Blood pressure, mm (IQR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic</td>
<td>134 (124-145)</td>
<td>134 (124-145)</td>
</tr>
<tr>
<td>Diastolic</td>
<td>80 (75-87)</td>
<td>80 (75-87)</td>
</tr>
<tr>
<td>Smoker, N (%)</td>
<td>1,400 (15.7)</td>
<td>1,420 (16.0)</td>
</tr>
<tr>
<td>Family History, N (%)</td>
<td>997 (11.2)</td>
<td>1,048 (11.8)</td>
</tr>
<tr>
<td>Metabolic Syndrome, N (%)</td>
<td>3,652 (41.0)</td>
<td>3,723 (41.8)</td>
</tr>
<tr>
<td>Aspirin Use, N (%)</td>
<td>1,481 (16.6)</td>
<td>1,477 (16.6)</td>
</tr>
</tbody>
</table>

All values are median (interquartile range) or N (%)

ATP III Framingham Risk Scoring

Assessing CHD Risk in Men

Step 1: Age

Years Points
20-34 0
35-39 4
40-44 0
45-49 3
50-54 6
55-59 8
60-64 10
65-69 11
70-74 12
75-79 13

Step 2: Total Cholesterol

(mg/dL) Points at Points at Points at Points at Points at
using Age 20-39 Age 40-49 Age 50-59 Age 60-69 Age 70-79
<160 0 0 0 0 0
160-199 4 3 2 1 0
200-239 7 5 3 1 0
240-279 9 6 4 2 1
≥ 280 11 8 5 3 1

Step 3: HDL-Cholesterol

(mg/dL) Points at Points at Points at Points at Points at
using Age 20-39 Age 40-49 Age 50-59 Age 60-69 Age 70-79
≥ 60 1
<60 2

Step 4: Systolic Blood Pressure

(mm Hg) if Untreated if Treated
<120 0 0
120-129 0 1
130-139 1 2
140-159 1 2
≥ 160 2 3

Step 5: Smoking Status

Age 20-39 Age 40-49 Age 50-59 Age 60-69 Age 70-79
Nonsmoker 0 0 0 0 0
Smoker 8 5 3 1 1

Step 6: Adding Up the Points

Point Total 10-Year Risk
<0 <1% 11 8%
0 1% 12 10%
1 1% 13 12%
2 1% 14 16%
3 1% 15 20%
4 1% 16 25%
5 2%
6 2%
7 3%
8 4%
9 5%
10 6%
11 6%
12 6%
13 6%
14 6%
15 6%
16 6%

Step 7: CHD Risk

most points for age

JUPITER Concerns

- Mortality Reduction – significant only due to reductions in cancer deaths
- Safety of rosuvastatin was not adequately assessed due to short duration of study
Preventing Cardiovascular Disease With Lipid Management: Matching Therapy to Risk

AHA/CDC Guidelines for Appropriate Use of hsCRP in Primary Prevention

- CRP is an independent marker of risk
- CRP cut-points (≤1 mg/L, 1-3 mg/L, >3 mg/L)
- Consider CRP for patients judged at intermediate risk by Framingham global risk factor assessment (10 – 20% ten-year risk)
- CRP may be useful in motivating therapeutic lifestyle changes (exercise, dietary changes, smoking, wt. loss)


C-reactive protein (CRP)

Hard to directly integrate into the Framingham risk....

Rough calculations:
- CRP in top third increases risk by factor of 1.2-1.3
- Average risk = x
- Risk in top tertile = 1.3x
- Risk in middle tertile = 0.7x
- Risk in middle tertile = x

LDL Goal and Cutpoints

Patients with 0–1 Risk Factor
2001 and 2004

<table>
<thead>
<tr>
<th>LDL Goal</th>
<th>LDL Level at Which to Initiate Diet</th>
<th>LDL Level at Which to Consider Drug Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;160 mg/dL</td>
<td>≥160 mg/dL</td>
<td>≥190 mg/dL (160–189 mg/dL LDL-lowering drug optional)</td>
</tr>
</tbody>
</table>
Preventing Cardiovascular Disease With Lipid Management:
Matching Therapy to Risk

63 yo woman, no risks
LDL  175
HDL  45
TG   160
SBP  120
Nonsmoker
NCEP: no treat
10 yr risk: 3%...no

The best next step in lipid management is:

1. Continue current therapy
2. Begin a statin
3. Begin fenofibrate
4. Begin fish oil
5. Begin niacin (sustained release)

CONCLUSIONS

* Patients with CHD or CHD equivalent:
  * Treat aggressively with statin independent of LDL level (to LDL <70 in most cases)
  * Treat other risk factors aggressively as well, especially easy ones (HTN, Aspirin use)
  * Treat elevated non-HDL cholesterol and low HDL
  * Patients at high risk are undertreated
CONCLUSIONS

Patients without CHD:
- Assess overall risk with Framingham Risk Score
- Novel markers (hsCRP, coronary calcium score) may be useful for further discrimination among those with intermediate risk
- High hsCRP may identify additional patients who are candidates for statins
- Do a better job with what we have: HTN, smoking, weight, exercise, diet
- Engage patient in shared decision making, especially if risk <10%

CONCLUSIONS

Patients without CHD:
- Use medications at thresholds based on risk:

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>LDL goal (optional)</th>
<th>LDL drug treatment threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Risk (&gt;20%)</td>
<td>&lt;100 (&lt;70 optional)</td>
<td>≥100 (&lt;100 optional)</td>
</tr>
<tr>
<td>Mod high risk (10-20%)</td>
<td>&lt;130</td>
<td>≥130 (100-129 optional)</td>
</tr>
<tr>
<td>Moderate risk (5-10%)</td>
<td>&lt;160</td>
<td>≥160</td>
</tr>
<tr>
<td>Lower risk (&lt;5%)</td>
<td>&lt;190 (160-189 optional)</td>
<td></td>
</tr>
</tbody>
</table>