MANAGEMENT OF LIPID DISORDERS: IMPLICATIONS OF THE NEW GUIDELINES

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Declaration of full disclosure: No conflict of interest

EXPLAINING THE DECREASE IN DEATHS FROM CVD

1980 to 2000: death rate fell by approximately 50% in both men and women

2000 to 2010: Death still falling: down 31%

• About 1/2 from acute treatments, 1/2 from risk factor modification

• Reductions in cholesterol: 1/4

Go, Circulation, 2014
Management of Lipid Disorders

Placebo-Controlled Statin Trials

Reductions in Major Coronary Events Relative to Placebo

- AS: 38%
- LIPID: 25%
- CARE: 25%
- HPS: 27%
- WOSCOPS: 31%
- ACCAPSE/TEYCAPS: 38%

Risk
reduction

$\text{Harm}$

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
### 2013 ACC/AHA Guidelines

**What is New?**

- 4 groups of patients who benefit from statins
- Identifies high and moderate intensity statins
- No LDL treatment targets
- Non-statin therapies no not provide acceptable risk reduction
- Estimate 10-year ASCVD risk with new equation

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

<table>
<thead>
<tr>
<th>Baseline Feature</th>
<th>No. Events</th>
<th>Risk Ratio and 95% CI</th>
</tr>
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<tbody>
<tr>
<td>LDL (mg/dL)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;100</td>
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<td>Statin better</td>
</tr>
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24% reduction ($p<0.00001$)
2013 ACC/AHA Guidelines
Four Groups of Patients Who Benefit From Statins

- Individuals with clinical ASCVD
- Individuals with primary elevations of LDL $\geq 190$
- Individuals age 40-75 with diabetes and LDL $\geq 70$
- Individuals without ASCVD or diabetes, age 40-75, with LDL $\geq 70$, and 10 year risk 7.5% or higher

Stone, Circulation 2013

2013 ACC/AHA Guidelines
Importance of Lifestyle Recommendations

- Heart healthy diet
- Regular aerobic exercise
- Desirable body weight
- Avoidance of tobacco

Stone, Circulation 2013
Heart Healthy Diet 2015

- Two dietary factors increase LDL:
  - Saturated fat
  - Total Calories
- Restriction of dietary cholesterol is no longer recommended (Dietary Guidelines 2015)

Saturated Fat 2015

- Observational studies: no association between sat fat and CVD
- But: RCTs that replace sat fat with unsat fat reduce total and LDL cholesterol and CVD events and mortality
- And: replacing sat fat with carb reduces total and LDL cholesterol but increases triglycerides and HDL and does not lower CVD events
2013 ACC/AHA Guidelines
What Statin for Each Group?

• Individuals with clinical ASCVD:
  ▪ Treat with: high intensity statin, or moderate intensity statin if > age 75

• Individuals with primary elevations of LDL ≥190:
  ▪ Treat with: high intensity statin

Stone, Circulation 2013

2013 ACC/AHA Guidelines
What Statin for Each Group?

• Individuals 40-75 with diabetes and LDL ≥70:
  ▪ Treat with: moderate intensity statin, or high intensity statin if risk over 7.5%

• Individuals without ASCVD or diabetes, 40-75, with LDL ≥70, and 10 year risk 7.5% or higher:
  ▪ Treat with: moderate-to-high intensity statin

Stone, Circulation 2013
**2013 ACC/AHA Guidelines**

**High Intensity vs. Moderate Intensity Statin**

- **High Intensity**: lowers LDL by >50%
  - Atorvastatin 40 - 80
  - Rosuvastatin 20 - 40
- **Moderate Intensity**: lowers LDL by 30-50%
  - Atorvastatin 10 - 20
  - Rosuvastatin 5 – 10
  - Simvastatin 20 - 40
  - Pravastatin 40 – 80
  - Lovastatin 40

*Stone, Circulation 2013*

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**How Best To Calculate 10 Year Risk?**

**Old issues**

- Hard vs. hard + soft CHD end points (angina)
- CHD or CVD
- Include diabetes or not
- Include peripheral vascular disease or not
- Race/ethnicity (usually not)
- Include family history and hs-CRP (Reynolds)
- Ranges vs. exact numbers
- Paper vs. computer vs. phone
How Best To Calculate 10 Year Risk?

Old issues

- Insufficient shared decision making

How Best To Calculate 10 Year Risk?

New

Pooled Cohort Risk Assessment Equations: hard CHD events and stroke

- http://my.americanheart.org/professional/StatementsGuidelines/PreventionGuidelines/Prevention-Guidelines_UCM_457698_SubHomePage.jsp
Pooled Cohort Risk Assessment Equations

- Age
- Gender
- Race (White/African American)
- Total cholesterol (170 mg/dl)
- HDL cholesterol (50 mg/dl)
- Systolic BP (110 mmHg)
- Yes/no meds for BP
- Yes/no DM
- Yes/no cigs
- Outcome: 10-year risk of total CVD (fatal and non-fatal MI and stroke)

Do the Pooled Cohort Risk Assessment Equations Overestimate Risk?

Ridker PM, Cook NR, Lancet Nov 19, 2013
Percent of U.S. Adults Who Would Be Eligible for Statin Therapy for Primary Prevention, According to Set of Guidelines and Age Group.


How Best To Calculate 10 Year Risk?
Baron Approach Spring 2015

- Use both CHD (hard end points) calculator and new CV risk calculator
- Include both in shared decision-making discussion
How Best To Calculate 10 Year Risk?

Mayo Clinic Statin Choice Decision Aid:

- http://statindecisionaid.mayoclinic.org/index.php/statin/index?
  PHPSESSID=0khk8nm14h9vubjm3423e6h6b2

63 yo woman; s/p MI

LDL  115
HDL  45
TG   160
The best next step in lipid management is:

1. Atorvastatin 40 mg
2. Rosuvastatin 10 mg
3. Pravastatin 40 mg
4. Simvastatin 40 mg
5. Lovastatin 40 mg
6. Whatever works to get her LDL below 70 mg/dl

2013 ACC/AHA Guidelines
What Statin for Each Group?

- Individuals with clinical ASCVD:
  - Treat with: high intensity statin, or moderate intensity statin if > age 75

Stone, Circulation 2013
The best next step in lipid management is:

1. Atorvastatin 40 mg
2. Rosuvastatin 10 mg
3. Pravastatin 40 mg
4. Simvastatin 40 mg
5. Lovastatin 40 mg
6. Whatever works to get her LDL below 70 mg/dl

63 yo woman; s/p MI. On atorvastatin 80.

LDL  95
HDL  40
TG   200
The best next step in lipid management is:

1. Continue current therapy
2. Switch to rosuvastatin 40 mg
3. Add fenofibrate
4. Add fish oil
5. Add niacin
6. Add ezetimibe

Summary Lipid-Lowering Drugs

• Statins are treatment of choice based on RCT to decrease risk

• No evidence to support adding niacin or fibrates to statins

• If completely statin-intolerant, niacin may reduce CVD risk (weak evidence)

• Fibrates appear to lower MI risk, but no other CVD endpoints

• Ezetimibe: just say no
Summary Lipid-Lowering Drugs

- Ezetimibe: new study (IMPROVE-IT) presented as abstract November 2014

18,000 ACS patients (40% from North America)

RCT: Simvastatin vs simvastatin + ezetimibe. Took 7 years. Death, MI, Stroke

Simvastatin: 34.7% vs Simva/ezetimibe 32.7% (270 fewer events over 7 years)

2013 ACC/AHA Guidelines

What Statin for Each Group?

- Individuals with clinical ASCVD:
  - Treat with: high intensity statin, or moderate intensity statin if > age 75

Stone, Circulation 2013
The best next step in lipid management is:

1. Continue current therapy
2. Switch to rosuvastatin 40 mg *(Also potentially correct, but medication still on patent)*
3. Add fenofibrate
4. Add fish oil
5. Add niacin
6. Add ezetimibe

<table>
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<tr>
<td>LDL  155</td>
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<tr>
<td>TG   160</td>
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<tr>
<td>SBP  120</td>
</tr>
<tr>
<td>No BP meds</td>
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<tr>
<td>No DM</td>
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<tr>
<td>Nonsmoker</td>
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</tbody>
</table>
The best next step in lipid management is to calculate 10 year risk and:

1. Continue current therapy (no meds)
2. Begin atorvastatin 40
3. Begin atorvastatin 10
4. Begin simvastatin 20
5. Begin sustained release niacin
6. Begin red yeast rice

2013 ACC/AHA Guidelines
What Statin for Each Group?

- Individuals without ASCVD or diabetes, 40-75, with LDL ≥ 70, and 10 year risk 7.5% or higher:
  - Treat with: moderate-to-high intensity statin

Stone, Circulation 2013
63 yo woman, no risks

LDL  155, HDL  55, TG  160
SBP  120, No BP meds
Non smoker, No DM

10 yr CHD risk (old calculator): 2%…
10 yr CV risk (new calculator): 4.5%…

Therefore no medication recommended

63 yo man, no traditional risk factors

LDL  155
HDL  55
TG  160
SBP  120
No BP meds
No DM
Non smoker
The best next step in lipid management is to calculate 10 year risk and:

1. Continue current therapy (no meds)
2. Begin atorvastatin 40
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2013 ACC/AHA Guidelines
What Statin for Each Group?

- Individuals without ASCVD or diabetes, 40-75, with LDL ≥ 70, and 10 year risk 7.5% or higher:
  - Treat with: moderate-to-high intensity statin
63 yo man, no risks

LDL 155, HDL 55, TG 160
SBP 120, No BP meds
Nonsmoker, No DM

10 yr CHD risk (old calculator): 10%…
10 yr CV risk (new calculator): 10.8%…
“Toss-up.” Shared decision making. If start statin (per new guidelines), can start with moderate intensity statin
The best next step in lipid management is to calculate 10 year risk and:

1. Continue current therapy (no meds)- old (but toss-up)
2. Begin atorvastatin 40-new (but still close call)
3. Begin atorvastatin 10-new (but still close call)
4. Begin simvastatin 20-new (but still close call)
5. Begin sustained release niacin
6. Begin red yeast rice

Key is shared decision-making

Other Factors That Could Affect Treatment Decisions

- LDL $\geq 160$ mg/dl or evidence of genetic disorder
- Family history of premature ASCVD (<55 in first degree male relative, <65 in first degree woman)
- hs-CRP $\geq 2$mg/dl
- CAC score $\geq 300$ (or $\geq 75\%$ for age, sex, ethnicity
- Ankle brachial index $<0.9$
- Elevated lifetime risk of ASCVD

Stone, Circulation 2013
The **Good** and The **Controversial** of the New Cholesterol Guidelines

- Focus on healthy lifestyle is **good**
- Focus to use statins (and not other agents) is **good**
- Focus to treat patients at high risk is **good**
- Focus to treat all patients with LDL <190 mg/dl and treat patients with DM/existing CV disease is **good**
- Not having target LDL is **controversial**
- Adults with no DM or heart disease and 10-year calculated risk >7.5% (using new risk calculator) to be treated – **controversial**

**Conclusions I**

- Statins are effective and cost effective in selected groups of patients

- Screen most patients (shared decision-making) at age 21 (to identify those > LDL 190, other genetic lipid disorders)
Conclusions II

- Use statins in patients with ASCVD, LDL ≥190 and diabetes

- For those without ASCVD and diabetes, calculate 10 year risk (how best uncertain), and treat those with risk greater than 7.5% (or maybe 10% or 15%). Use shared decision making.

- Use appropriate intensity statin (high and moderate)

Conclusions III

- Monitor adherence, but do not treat to specific LDL goal

- Do not treat those over age 75 (unless ASCVD), on dialysis or moderate/severe CHF

- Do not treat with other lipid-modifying drugs in addition to statins (but may need if truly statin intolerant)

- Avoid other factors that raise risk as much as statins lower it (i.e. NSAIDS)