Examining Areas in Need of Modification in the ‘13 Prevention Guidelines

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Disclosures: None

“Controversy is only dreaded by the advocates of error”
Dr. Benjamin Rush
1745-1813

Blaha MJ et al. JAMA; 2012;307:1489-90
Talk Outline

1. Limitations of ACC/AHA Risk Estimator
2. Clinician-Patient Risk Discussion
3. CAC & risk integration
4. Importance of CAC=0 in modern practice
5. Very high CAC in Primary Prevention
6. Why isn’t CAC already a first-line test?
7. How Low should we go with LDL and BP

Will not cover 2013 Lifestyle Guidelines

Guideline 1 - ASCVD RISK ASSESSMENT

2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk
A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

Some simple advice for all of us:

"Eat less, eat right, move more"
2013 Prevention Guidelines
ASCVD Risk Estimator

The ACC and the American Heart Association (AHA), in collaboration
with the National Heart, Lung, and Blood Institute and other specialty
organizations, have released guidelines focused on the assessment of
cardiovascular risk. These guidelines recommend a risk calculator and
management of elevated blood cholesterol and blood pressure in
adults.

In order to support the implementation of these guidelines, the ACC
and AHA have jointly published a new mobile application (app).

The ASCVD Risk Estimator application helps healthcare providers and
patients understand lifetime and 10-year risks for atherosclerotic
cardiovascular disease (ASCVD) using the Framingham Equations and
lifetime risk prediction tools. The
ASCVD Risk Estimator provides easy access to recommendations specific to calculated risk estimates. Additionally, the app
includes quality assurance guidelines reference information for both providers and patients related to therapy, monitoring, and
therapies.

This app is available on both iPhone (iPhone) and Google Play (Android, Blackberry, or other Android devices). Use the links
taken from your mobile device to download the app.

Results of Risk Estimator

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Diabetes Status</th>
<th>Depression Status</th>
<th>HDL</th>
<th>LDL</th>
<th>Total Cholesterol</th>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>Male</td>
<td>White</td>
<td>Yes</td>
<td>No</td>
<td>50</td>
<td>120</td>
<td>180</td>
<td>130</td>
</tr>
<tr>
<td>30</td>
<td>Female</td>
<td>Black</td>
<td>No</td>
<td>Yes</td>
<td>40</td>
<td>110</td>
<td>170</td>
<td>120</td>
</tr>
</tbody>
</table>

Results of Risk Estimator in 2 Years

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Race</th>
<th>Diabetes Status</th>
<th>Depression Status</th>
<th>HDL</th>
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<td>No</td>
<td>Yes</td>
<td>40</td>
<td>110</td>
<td>170</td>
<td>120</td>
</tr>
</tbody>
</table>
Primary Prevention Lipid Guidelines:
[Stone NJ et al. JACC 2014;63(25, Part B):2889-2934]

Concerns About the New ACC/AHA Risk Estimator

Top 3 Concerns
1. Even greater dependence on chronologic age
2. Disappearance of the “Intermediate Risk” group
3. Concern for risk overestimation
Overestimation

- Systematic problems, Ridker et al. Lancet. Overestimate 75-150%

Figure 1

<table>
<thead>
<tr>
<th>Patient Description</th>
<th>Calculated Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 58-year-old nonsmoking, nondiabetic white man with no family history of CHD, total cholesterol of 164 mg/dL, LDL 92 mg/dL, HDL 42 mg/dL, systolic BP of 136 mmHg on no medications</td>
<td>7.5%</td>
</tr>
<tr>
<td>A 44-year-old nonsmoking, nondiabetic white man with strong family history of MI, total cholesterol of 250 mg/dL, LDL 182 mg/dL, HDL 28 mg/dL, systolic BP of 120 mmHg on no medications</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

"It’s stunning," said Dr. Steven Nissen… "Something is terribly wrong". Using the calculator’s results, “your average healthy Joe gets treated, virtually every African-American man over 55 gets treated.”
The Risk Discussion

Clinician-Patient Discussion
Prior to initiating statin therapy, discuss:
1. Potential for ASCVD risk reduction benefits
2. If decision is unclear, consider primary LDL-C >160 mg/dL, family history of premature ASCVD, lifetime ASCVD risk, abnormal CAC score or ABI, or hs-CRP >2 mg/L
3. Potential for adverse effects and drug-drug interactions
4. Healthy lifestyle
5. Management of other risk factors
6. Patient preferences

Controversy increased the focus on a Covenant with the Patient

Clinician-Patient Risk Discussion for Atherosclerotic Cardiovascular Disease Prevention
Importance to Implementation of the 2013 ACC/AHA Guidelines

Seth S. Martin, MD, MHS; Lawrence S. Spiegel, MD; Michael J. Blaha, MD, MPH; Don W. Wilson, MD; Ty J. Glueckstad, MD; Roger S. Blumenthal, MD; Neil J. Stone, MD

ABSTRACT
Successful implementation of the 2013 American College of Cardiology/American Heart Association cholesterol guidelines hinges on a clear understanding of the clinician-patient risk discussion (CRPD). This is a dialogue between the clinician and patient that is complex, nuanced, and often influenced by personal and professional factors.

Tell me, I may listen.
Teach me, I may remember.
Involve me, I will do it.

~Chinese proverb
Checklist for clinician-patient risk discussion

- Review risk factors and the 10-year risk estimate.
- Address treatable nonlipid risk factors.
- Review diet and physical activity habits.
- Endorse a healthy lifestyle and provide relevant advice/materials/referrals.
- Discuss potential risk reduction from lipid-lowering therapy and recommend statins as first-line therapy.
- Discuss the potential for adverse effects/drug-drug interactions.
- Assess confidence in risk-based treatment decisions; if uncertain, offer further options to refine risk estimate.
- Invite the patient to ask questions and express values/preferences.

Recommendations for Use of Newer Risk Markers After Quantitative Risk Assessment

I IIa IIb III

If, after quantitative risk assessment, a risk-based treatment decision is uncertain, assessment of \( \geq 1 \) of the following—family history, hs-CRP, CAC score, or ABI—may be considered to inform treatment decision making.†

† Based on new evidence reviewed during ACC/AHA update of evidence.
Comparison of Markers Prior to the ACC/AHA Prevention Guidelines

Yeboah et al, JAMA 2012; 308;788-95

Comparison of Markers in the Context of the ACC/AHA Prevention Guidelines


Utility of Nontraditional Risk Markers in Individuals Ineligible for Statin Therapy According to the 2013 American College of Cardiology/American Heart Association Cholesterol Guidelines

Joseph Yeboah, MD, MS; Tamer S. Pohoryle, MD; Babshak Young, PhD; Rebecca L. McCollum, PhD; Joseph C. Delaney, PhD; Farah Desai, MD, MS; Michael J. Bahl, MD, MIPM; Michael H. Weintraub, MD; Christopher T. Miley, MD; John J. Gepa, MD; Ana M. Bonetti, MD, MPH; Steven M. Fain, MD, PhD; Philip Greenspan, MD; Carol M. Harrington, MD, MSc

Utility of Nontraditional Risk Markers in Atherosclerotic Cardiovascular Disease Risk Assessment

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-1 mSv

Coronary artery calcium: Location of coronary calcium with high density chest CT
Risk Factor vs. Disease Score

**RISK FACTOR**
- Measures increased risk for developing disease
- Separates risk elements
- Mild risk predictive value
- Cancer analogy – high hormone levels and breast cancer

**DISEASE SCORE**
- Measures the disease itself
- Integrates risk exposure
- Powerful predictor of risk
- Cancer analogy – detection of suspicious nodule on mammography

The Statin Reluctant Patient:

*Should a 55-year-old man who is otherwise well, with systolic blood pressure of 110 mm Hg, total cholesterol of 250 mg/dL, and no family history of premature CHD be treated with a statin?*

The Statin Reluctant Patient: Principles of Therapy in 1º Prevention

- Preventive therapies are *lifelong* therapies
- All medications have some cost & side effects
- In general, adults do NOT want to take medicines
- Absolute benefit in direct proportion to absolute risk
- If not destined to have an event, no Rx benefit
- Risk factor-based approach fails to identify many high risk, & most truly LOW RISK patients
CAC and Age

Biologic Age > Chronologic Age


CAC & Traditional Risk Factor Burden


A 15-Year Warranty Period for Asymptomatic Individuals Without Coronary Artery Calcium

A Prospective Follow-Up of 9,715 Individuals
Man in his 6th decade of life with elevated TC, normal BP, & FRS placing him at "intermediate risk" for a hard CHD event within 10 yrs. Conservative 35% CHD event reduction with statins is assumed. Data source: MESA, mean 7.1 yr f/u.
Risk/Benefits of Aspirin According to CAC Scores

Number Needed to Treat to Prevent a CHD event

* Represents number needed to harm for a major bleeding event


Continuum of ASCVD Risk

Primary Prevention → Advanced Subclinical Atherosclerosis? → Secondary Prevention

Focus on lifestyle therapy and discuss statin therapy

Recommend statin therapy

Recommend statin therapy and discuss aggressive LDL-C lowering to <70 mg/dL with statin + ezetimibe/PCSK9 inhibitor?

Spectrum of Coronary Atherosclerosis: Personalizing Rx to disease burden

CAC = 0 → CAC >0 → Advanced CAC
Overview of the major differences among ACC/AHA, NCEP ATP III, ADA, NLA Guidelines

- ACC/AHA & 2015 ADA guidelines recommend moderate to high intensity statins without a specific LDL-C target
- 2015 NLA guidelines use the ATP III paradigm on LDL-C targets of < 70 mg/dL in high risk individuals with ASCVD

![GLAGOV: Mean On-Treatment LDL-C vs. Plaque Regression with Evolocumab](image)

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Treatment Goal</th>
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<tr>
<td></td>
<td>Non-HDL-C</td>
</tr>
<tr>
<td>Low</td>
<td>&lt;130</td>
</tr>
<tr>
<td>Moderate</td>
<td>&lt;130</td>
</tr>
<tr>
<td>High</td>
<td>&lt;130</td>
</tr>
<tr>
<td>Very High</td>
<td>&lt;100</td>
</tr>
</tbody>
</table>

1.8mmol/L =70mg/dL, 2.5×100, 3.0×115
Resetting the (vascular aging) Clock

Robinson JG, Gidding SS. JACC. 2014;63(25, Part A):2779-2785

Risk-Based Blood Pressure Targets?

Coronary Artery Calcium to Guide a Personalized Risk-Based Approach to Initiation and Intensification of Antihypertensive Therapy

Conclusions—Combined CAC-imaging and assessment of global ASCVD risk has potential to guide personalized SBP goals (e.g., choosing a traditional goal of 140 or a more intensive goal of 120 mmHg), particularly among adults with estimated ASCVD risk 5-15% and hypertension or mild hypertension.
Possible SCCT CAC-Based Treatment Recommendations?

<table>
<thead>
<tr>
<th>CAC Score</th>
<th>Lifestyle</th>
<th>Statin and Statin Intensity</th>
<th>Non-Statin Add-on*</th>
<th>Aspirin</th>
<th>Blood Pressure Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-99</td>
<td>✓</td>
<td>Moderate</td>
<td>Routine</td>
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<tr>
<td>&gt;100-299</td>
<td>✓</td>
<td>Moderate to High</td>
<td>Consider</td>
<td>Aggressive</td>
<td></td>
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<tr>
<td>≥300%</td>
<td>✓</td>
<td>High</td>
<td>Consider</td>
<td>Aggressive</td>
<td></td>
</tr>
</tbody>
</table>

* To achieve an optional LDL-C target of <70 mg/dL.

Historical Challenges to CAC and Practical Advice for Your Practice

1. “ Screening”
2. Cost Effectiveness (+ Incidentalomas!)
3. Downstream testing
4. The Puzzle of CAC Progression
5. How to integrate into clinical practice?
SUMMARY: CAC, When Individualization of Primary Prevention Is Required

1. When Risk/Decision to Treat is Uncertain
   - Family History
   - Metabolic syndrome
   - Non-White, non-AA
   - Rheumatologic Diseases, etc
2. Statin Reluctant Patient
3. Statin Intolerant Patient
4. Decisions For Aspirin Therapy
5. Decisions for Non-Statin Add-on Therapy
6. Blood Pressure Targets
“Guidelines attempt to define practices that meet the needs of patients in most circumstances and are not a replacement for clinical judgment… situations might arise in which deviations from these guidelines may be appropriate.”

Dr. Venkman: “I make it a rule never to get involved with possessed people… Actually, it’s more of a guideline than a rule…”