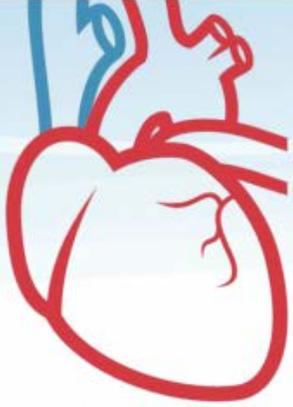


# Calculating Risk for Primary Prevention of Cardiovascular Disease (CVD)



**Heart Health Now!**  
The North Carolina Cooperative for AHRQ's  
**EvidenceNOW**  
Advancing Heart Health in Primary Care

## Calculating Risk for Primary Prevention of Cardiovascular Disease (CVD): Why, When, and How to Do It

Funded by the Agency for Healthcare Research and Quality (AHRQ) in the U.S. Department of Health & Human Services

 **UNC**  
THE CECIL G. SHEPS CENTER  
FOR HEALTH SERVICES RESEARCH

 **NCHQA**  
North Carolina Healthcare Quality Alliance

 North Carolina  
**AHEC**

 Community Care  
of North Carolina

**LENGTH:** About 13 minutes

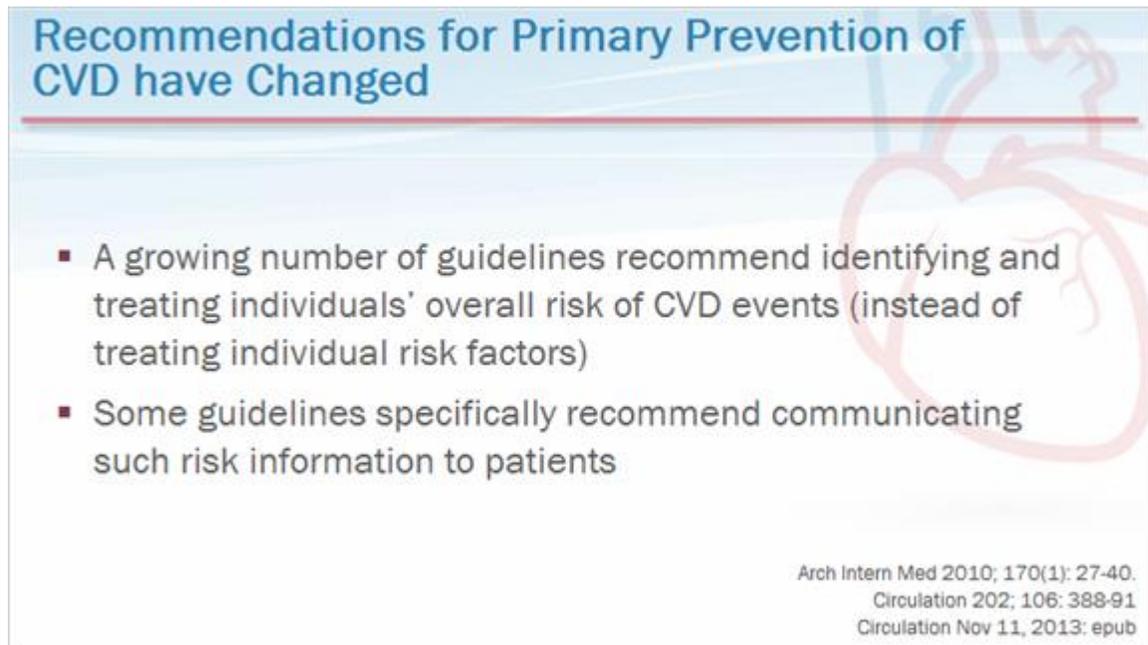
Updated on 12/15/2015

## **2. Welcome by Stacey Sheridan, MD, MPH**



Hello. My name is Stacey Sheridan, and I'm here as your partner in Heart Health Now. The North Carolina cooperative for the Evidence Now Project. In our time together today we'll be talking about calculating risks for primary prevention of cardiovascular disease including why, when, and how to do it. Before we begin, I'd like to acknowledge our collaborators across the state of North Carolina and also our funder, the US Agency for Healthcare Research and Quality. And, finally, the members of the evidence team who have brought together the evidence that I'll share with you today.

### **3. Recommendations for Primary Prevention of CVD have Changed**



**Recommendations for Primary Prevention of CVD have Changed**

- A growing number of guidelines recommend identifying and treating individuals' overall risk of CVD events (instead of treating individual risk factors)
- Some guidelines specifically recommend communicating such risk information to patients

Arch Intern Med 2010; 170(1): 27-40.  
Circulation 202; 106: 388-91  
Circulation Nov 11, 2013: epub

As I'm sure you know, recommendations for primary prevention of cardiovascular disease have changed. A growing number of guidelines recommend identifying and treating individuals' overall risk of cardiovascular disease events instead of treating individual risk factors. And some guidelines specifically recommend communicating such risk information to patients.

**4. As a result, providers need to develop a thorough understanding of a risk-based approach:**



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As a result, providers need to develop a thorough understanding of the risk-based approach including why, when, and how to do it.

## 5. Consider....

### Consider...

65 year old white man in good health who presents for care.

He is concerned about cardiovascular disease and wants to know what can be done to reduce his risk.

- No diabetes, non-smoker, no family history of CVD
- Blood pressure 139 / 82
- Total cholesterol 220 mg/dl; HDL 41 mg/dl; LDL 145 mg/dl
- Eats a healthy diet and likes to walk; is on no medicines



Consider a 65-year-old man in good health who presents for care. He's concerned about cardiovascular disease and wants to know what can be done to reduce his risks. He has no diabetes. He's a nonsmoker and has no family history of cardiovascular disease. His blood pressure is 139/82. His total cholesterol is 220 mg/dl. His HDL 41 mg/dl. And his LDL 145 mg/dl. He eats a healthy diet and likes to walk. He is on no medicines. How would you approach his care? Would you calculate his risks? If so, why and how? And if not, why not? Take a minute and think about that.

## 6. Now Consider Your Practice...

**Now Consider Your Practice...**

How does your practice approach CVD risk?

Do you as a group routinely calculate CVD risk?

If so, what risk? And, with what calculator?

Do you have a system for:

- Monitoring and tracking CVD risk?
- Communicating risk to CVD patients?

If not, why not?

Now consider your practice. How does your practice approach cardiovascular disease risk? Do you, as a group, routinely calculate cardiovascular risks? If so, what risks? And with what calculator? Do you have a system for monitoring and tracking cardiovascular disease risk, communicating risks to patients? If not, why not?

## 7. The Objectives

### The Objectives

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- Discuss CVD risk calculation:
  - The rationale for a risk-based approach
  - When to use a risk-based approach
  - How to effectively calculate risk and communicate it to patients
- Share some resources for CVD risk calculation
- Encourage you to think about whether your practice is ready to work on cardiovascular risk calculation as a way to improve **Heart Health Now!**

PROGRESS

25%

So, the objectives for this session were to discuss cardiovascular risk calculation, the rationale for risk-based approach, when to use a risk-based approach, and how to effectively calculate risks and communicate it to patients. We'll also share some resources for cardiovascular risk calculation and encourage you to think about whether your practice is ready to work on cardiovascular risk calculation as a way to improve Heart Health Now.

## ***8. Why Use a Risk-based Approach?***



So, why use a risk-based approach?

## 9. The Rationale



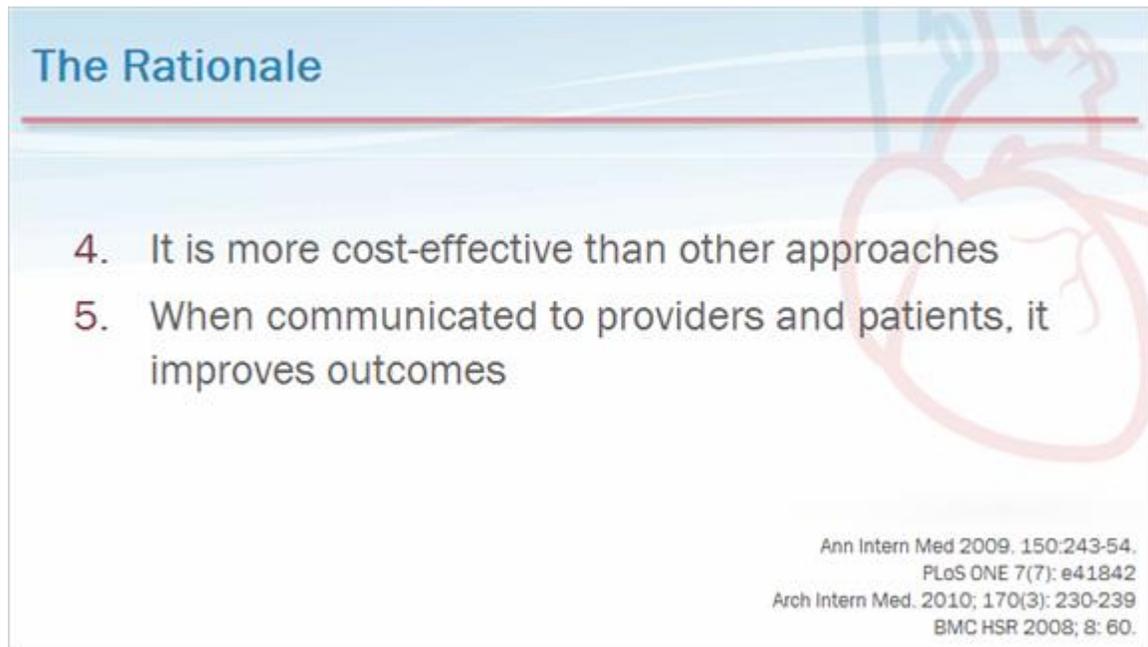
### The Rationale

1. It places focus on the right goal: reducing CVD events
2. It predicts events better than counting of risk factors
3. It allows targeting of therapy to those most in need of prevention (i.e. those at highest risk)

Circulation 1998. 97: 1837-47.  
Circulation 2002. 105: 886-92  
JACC 2010. 56(25): e50-103.

Well, it places the focus on the right goal: Reducing cardiovascular disease events. It predicts events better than counting of risk factors, and it allows targeting of therapy to those most in need of prevention, those who are at highest risk.

## 10. The Rationale



**The Rationale**

4. It is more cost-effective than other approaches
5. When communicated to providers and patients, it improves outcomes

Ann Intern Med 2009; 150:243-54.  
PLoS ONE 7(7): e41842  
Arch Intern Med. 2010; 170(3): 230-239  
BMC HSR 2008; 8: 60.

It is also more cost-effective than other approaches such as using electron beam CT for coronary artery calcium, and when communicated to providers and patients, it improves outcomes.

## 11. The Rationale

### The Rationale

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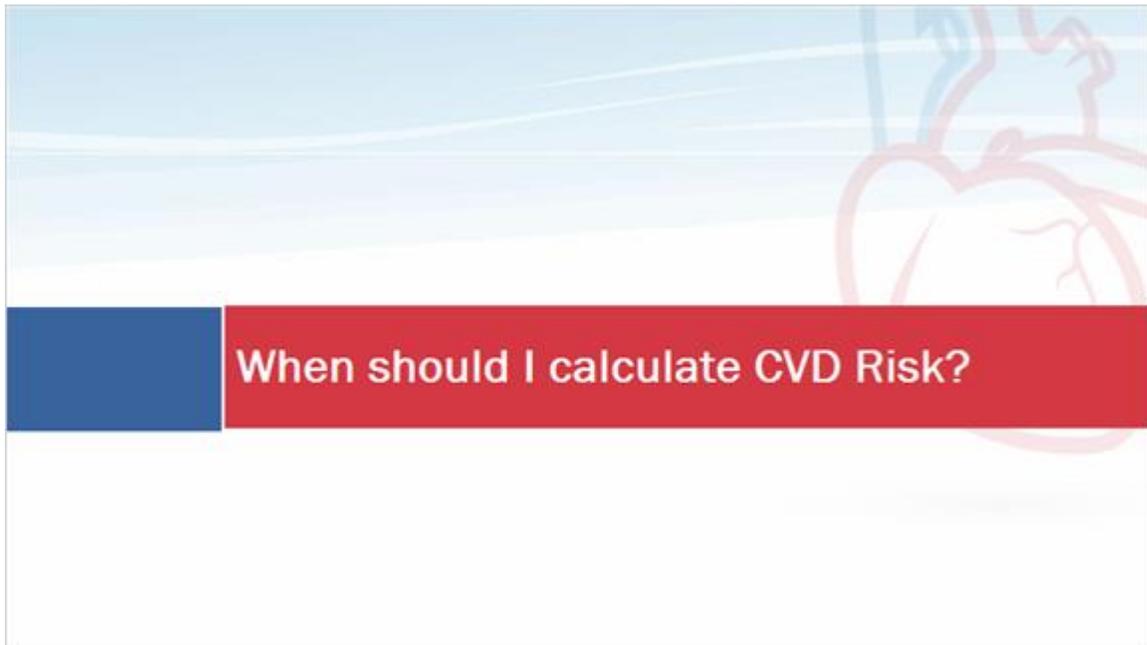
#### Reducing risk by 10% over 10 years:

- Prevent **250,000** new cases of CVD
- Result in **35,000** fewer deaths
- Save **\$2.7** billion
  - Overestimating risk causes patient harm, mostly notably excess bleeding in the 25% of patients inappropriately started on aspirin
  - Ignoring risk propagates disparities

BMJ 2011;343:d4044  
J Gen Intern Med 30(2):155-60

And if that's not enough, ignoring this calculation is costly for both patients and the healthcare system. Reducing risks by a relative 10 percent across a general population of patients over 10 years has been estimated to prevent 250,000 new cases of cardiovascular disease to result in 35,000 fewer deaths and to save \$2.7 billion. Further, overestimating risks causes patients harm. Most notably, excess bleeding in the 25-percent of patients inappropriately started on aspirin. Ignoring risks also propagates disparities. All of these reasons make a compelling case for considering cardiovascular risk estimation as a strategy for cardiovascular disease prevention.

## ***12. When should I calculate CVD Risk?***



So, when should I calculate cardiovascular risks?

### 13. The Quick Answer

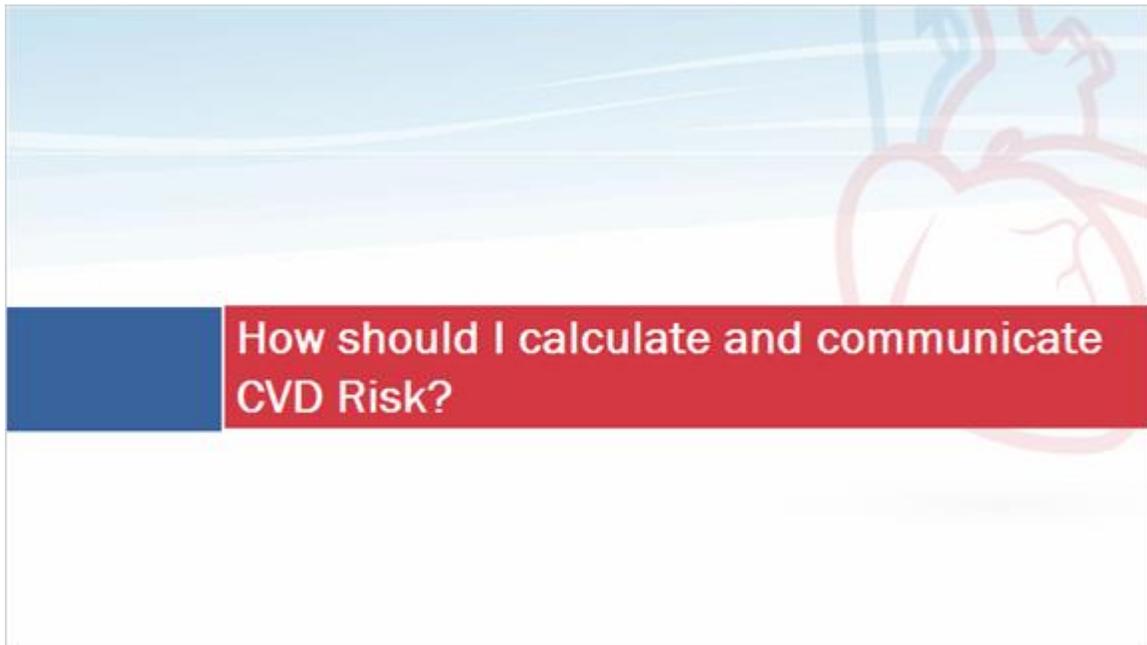


For all patients ages 40-79 without prior CVD to determine the need for risk reducing medicine

The Quick Answer

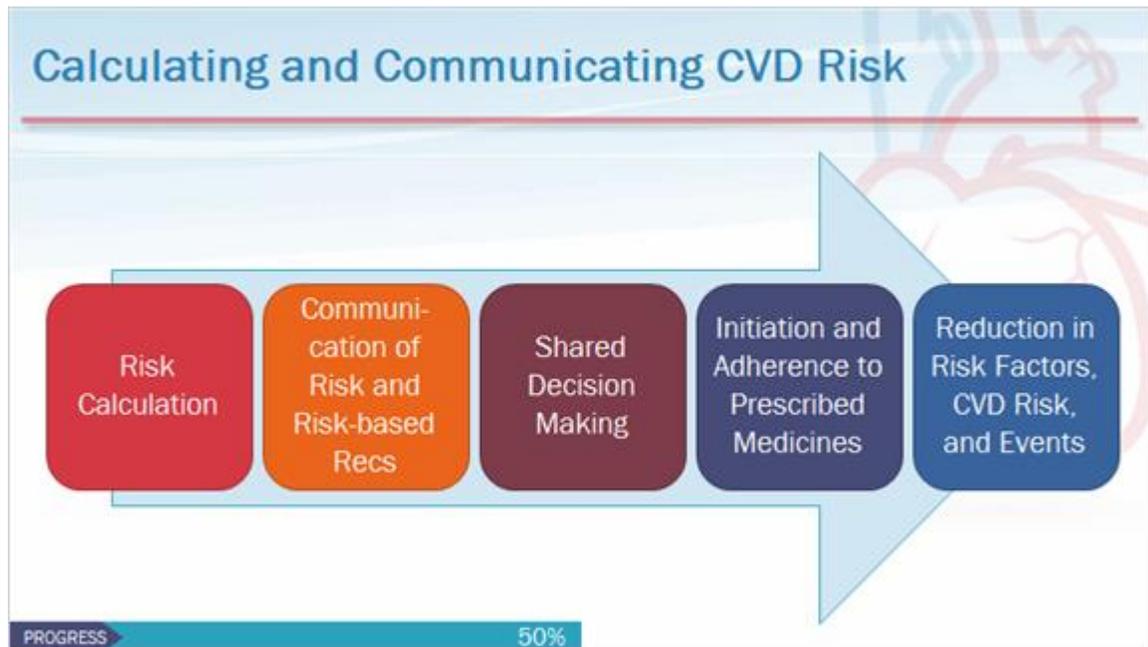
Well, the quick answer is, for all patients age 40 to 79 without prior cardiovascular disease to determine the need for risk-reducing medicine including aspirin and statins which are prescribed on a purely risk-based approach.

## ***14. How Should I calculate and communicate CVD Risk?***



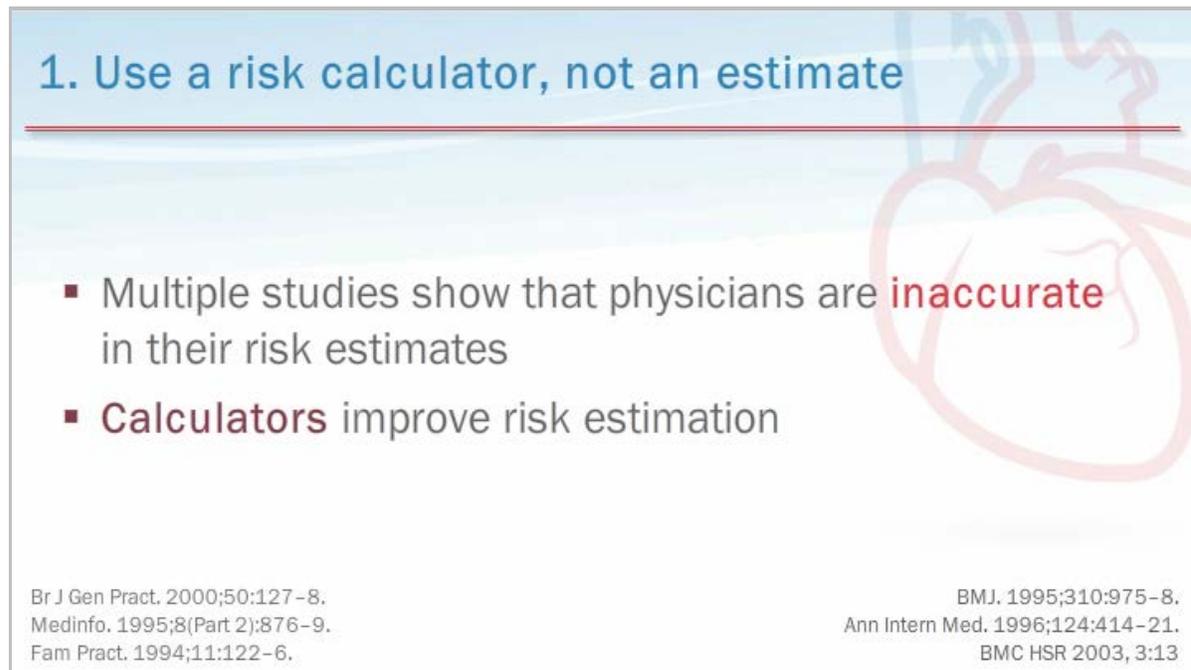
So, how should I calculate and communicate cardiovascular risk?

## 15. Calculating and Communicating CVD Risk



Well, the first thing is to know that risk calculation exists on a continuum to impact on cardiovascular events. The pathway starts with risk calculation, continues on through communication of risks and risk-based recommendations, and then it continues with shared decision making so that we can determine whether a risk-based recommendation aligns with patient's preferences and values. And, finally, it continues through initiation and adherence to prescribe medicines on to risk reduction of risk factors, cardiovascular risks; and, finally, events.

## 16. 1. Use a risk calculator, not an estimate



### 1. Use a risk calculator, not an estimate

- Multiple studies show that physicians are **inaccurate** in their risk estimates
- **Calculators** improve risk estimation

Br J Gen Pract. 2000;50:127-8.  
Medinfo. 1995;8(Part 2):876-9.  
Fam Pract. 1994;11:122-6.

BMJ. 1995;310:975-8.  
Ann Intern Med. 1996;124:414-21.  
BMC HSR 2003, 3:13

So, then, how can I communicate and calculate risks? Well, first, use a risk calculator, not an estimate. Multiple studies show that physicians are inaccurate in the risk estimates and that calculators improve risk estimation.

## 17. 2. Use the new ASCVD Calculator

### 2. Use the new ASCVD Calculator

#### The ASCVD calculator from Pooled Cohort data:

- Has been endorsed as the calculator of choice by the new cholesterol and aspirin guidelines
- Predicts 10-year risk of Atherosclerotic Cardiovascular Disease or “ASCVD” events
  - Heart attack, stroke, cardiovascular death
- Uses various risk factors for calculation
  - Age, gender, SBP, hypertension treatment, total/HDL cholesterol, smoking, diabetes, race

Circulation Nov 11, 2013; epub  
www.ahrq.gov/professionals

Second, use the new ASCVD calculator. The ASCVD, or Atherosclerotic Cardiovascular Disease calculator from the pooled cohort data has been endorsed as the calculator of choice by the new cholesterol guidelines from the American Heart Association, and the American College of Cardiology, and the new aspirin guidelines from the US Preventive Services Task Force. It predicts 10-year risks of Atherosclerotic Cardiovascular or ASCVD events including heart attacks, stroke, and cardiovascular death. And it uses various risk factors for calculation including age, gender, systolic blood pressure, hypertension treatment, total and HDL cholesterol, smoking, diabetes, and race.

## **18. 2. Use the new ASCVD Calculator**



2. Use the new ASCVD Calculator

Circulation Nov 11, 2013: epub  
Lancet, Nov 19 2013 epub

The calculator also has good predictive validity performing similarly to the older Framingham equations. It correctly classifies those with cardiovascular events higher than those without events, about 70 percent of the time. And like the older Framingham equation, it slightly overestimates the exact risks. This calculator has been reasonably well-studied in whites and African Americans.

### ***19. 3. Integrate risk calculation into your practice routine***

#### **3. Integrate risk calculation into your practice routine**

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- Clinicians report that the major barriers to risk calculation are time and having an available calculator
- To make risk calculation most successful
  - Integrate it into your EHR
  - Consider web and phone apps and decision aids
  - Couple risk calculation with population management strategies
  - Integrate it into your workflow

Third, you should integrate risk calculations into your practice routine. Clinicians report that major barriers to risk communication are time and having an available calculator. To make risk calculation more successful, you should integrate it into your Electronic Health Record. Consider Web, and phone apps, and decision aids to help. Couple risk calculation with population management strategies, and integrate it into your workflow.

## 20. 4. Communicate Risk to Patients

### 4. Communicate Risk to Patients

Optimal risk communication includes:

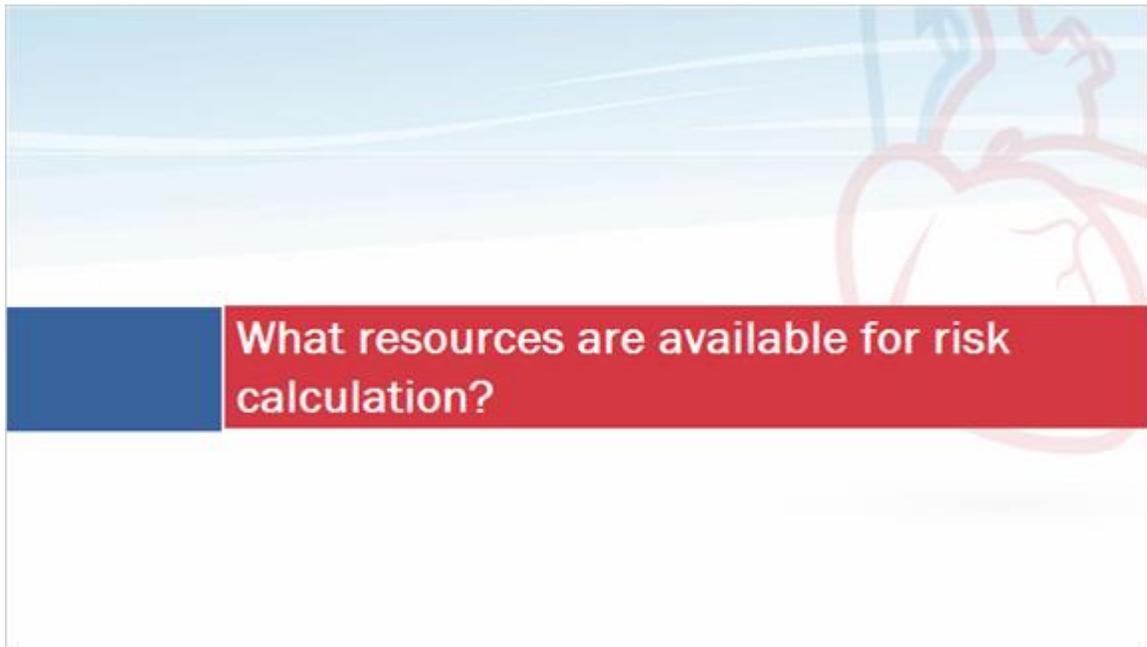
- A statement of risk:
  - “Your *chances* of future heart attack, stroke, or CVD related death over the next 10 years is x%”
  - Indication of how much risk can be lowered with one or multiple preventive treatments
  - Shared decision making and supportive counseling for risk reduction

PEC, 2011; 82(2):169-81.  
PEC, 2009; 76(2):233-9.

Arch Intern Med, 2010; 170 (3): 1-10.  
BMC HSR, 2008, 8: 60.

So, in four, communicate risks to patients. Optimal risk communication includes a statement of risks such as, “your chances of future heart attack, stroke, or cardiovascular-related death over 10 years is X percent.” I want you to notice a few things about this statement. First, the word *chances* instead of *risks*. This is more understandable to patients. Second, a statement of outcomes: heart attack, stroke, or cardiovascular-related death. And, third, a statement of time: over the next 10 years. All of these things make risks more understandable to patients. Optimal risk communication also includes an indication of how much risk can be lowered with one, or multiple, preventive treatments. We have evidence that patients pay more attention to how much the risk can be lowered than where they start with the risks. And, finally, optimal risk communication includes shared decision making and supportive counseling for risk reduction. This ensures that risk-based recommendations align with patient’s preferences and values. And that information is provided so patients can circumvent their barriers to risk reduction.

**21. What resources are available for risk calculation?**



So, what resources are available for risk calculation?

## 22. ACC-AHA ASCVD risk calculator

ACC-AHA ASCVD Risk Calculator

Heart Risk Calculator

Age (years)

Gender  Male  
 Female

Race  African American  
 Other

Total cholesterol (mg/dL)

HDL cholesterol (mg/dL)

Systolic blood pressure (mmHg)

Diastolic blood pressure (mmHg)

Treated for high blood pressure  No  
 Yes

Diabetes  No  
 Yes

Smoker  No  
 Yes

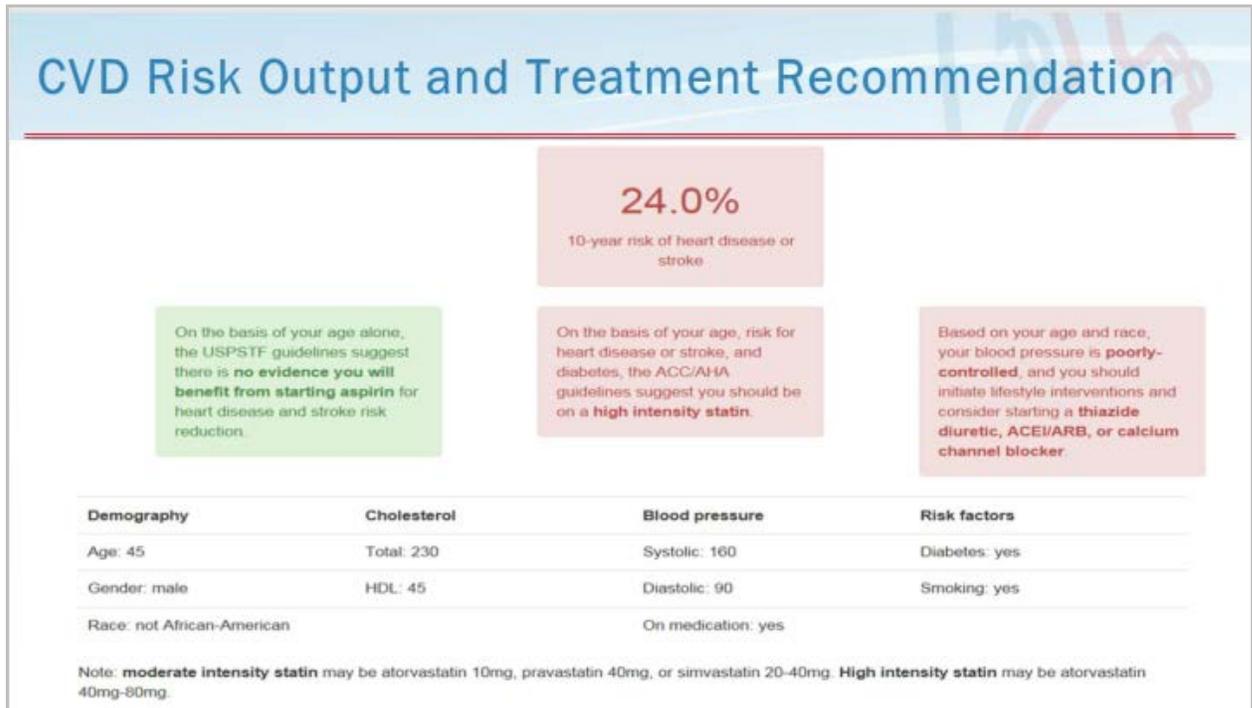
<http://www.cvriskcalculator.com>

PROGRESS 75%

Well, I want to draw your attention to this ASCVD risk calculator at

<http://www.CVRiskCalculator.com>.

## 23. CVD Risk Output



This risk calculator is great, because it allows you to enter information about your risk factors, and it provides information about how to address them. And it also reminds you about risk factors and their levels.

## 24. Other Risk Calculators or Information about CVD Risk

### Other Risk Calculators or Information about CVD Risk

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#### 2013 Prevention Guidelines Tools

## CV RISK CALCULATOR



There are also many other risk calculators or information about cardiovascular risk that you can access. These include risk calculators from The American Heart Association and American College of Cardiology that are associated with their statin guidelines, materials from Healthwise which can be accessed at our website and also information from a well-tested decision aide and counseling program for cardiovascular risk prevention.

## 25. Heart Health Now! Dashboard

The screenshot displays the 'Heart Health Now! Dashboard' interface. At the top, the title 'Heart Health Now! Dashboard' is prominently shown. Below the title, the dashboard header includes the 'CareAIM' logo, a user welcome message 'Welcome, democount!', and a 'Logout' link. The main content area features a 'Patient List' table with columns for Patient Name, MDM, Gender, Age, DOB, Risk Score, and other clinical data. A red box highlights the 'Risk Score' column header, with an orange arrow pointing to a white callout box. This callout box, titled 'Risk Score Filter:', lists three filter options: '7.5 - 9.9%', '10%', and 'Null'. The table data includes patient names such as Lynn Acevedo, Sharron Acevedo, Terry Acevedo, Veronica Acevedo, Jean Acosta, Shelia Acosta, Vanessa Acosta, Alfred Adams, Leo Adkins, and Sandy Adkins, along with their respective risk scores and other clinical metrics. A large 'DEMO DATA' watermark is visible across the center of the table.

Patient Name	MDM	Ge...	Age	DOB	Risk Score														
Acevedo, Lynn	18092902	F	62Y 8M	03/05/1953	9.0%	No	79												
Acevedo, Sharron	18092902	F	62Y 8M	03/05/1953	4.5%	No	84												
Acevedo, Terry	18090159	F	52Y 3M	07/26/1963	3.0%	No	75	40	140	110	false								
Acevedo, Veronica	18091560	F	57Y 8M	03/03/1958	23.5%	Yes	46	33	118	100	false								
Acosta, Jean	18092461	M	60Y 4M	07/03/1955	2.2%	No	83	45	156	122	false								
Acosta, Shelia	18092539	F	65Y 3M	08/06/1950	9.0%	No	39	36	93	128									
Acosta, Vanessa	18092539	F	65Y 3M	08/09/1950	1.7%	No	118	53	199	132	false								
Adams, Alfred	18089756	M	70Y 8M	03/09/1945	24.5%	Yes	65	36	166	136	false								
Adkins, Leo	18093293	F	75Y 4M	06/29/1940	2.3%	No	109	67	190	124	false								
Adkins, Sandy	18089802	F	51Y 11M	11/30/1963	5.6%	No	60	114	133	114									

Finally, I want to draw your attention to the Heart Health Now dashboard. This dashboard provides information about ASCVD risks, your risk factors, and ways that you can lower your risks. And it provides it for populations of patients so that you can manage risks at a population level.

**26. For additional questions and resources**



For additional questions and resources related to a risk-based approach, see our Website at

<http://www.HeartHealthNow.org>.

## 27. Deciding about CVD Risk Calculation and Your Practice



Are you ready to implement CVD Risk Calculation and Your Practice?

So, are you ready to implement cardiovascular risk calculation in your practice? In thinking about your readiness to implement cardiovascular risk calculation in your practice, think about: Do we have an approach to cardiovascular risk calculation? Could we use some additional help with identifying the best approach to risk calculation in practice? In figuring out how to integrate risk calculation for maximal efficiency? And in figuring out how to communicate with patients about cardiovascular risk? If you answered yes to any of these questions, talk to your practice facilitator about cardiovascular risk calculation. Because together we can renew our commitment and get to heart health now.

## 29. Congratulations

Congratulations on Completing the Module

Click *Exit* at top right of screen

Please review the attachments and begin the next course.

### **30. The Evidence Team**

#### **The Evidence Team**

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**Adam Goldstein, MD, MPH**

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### **31. The Evidence Team**

#### **The Evidence Team**

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