



Heartbeat 147

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Highlights of the 2010 ACC/AHA Guidelines for the Assessment of CV Risk

Magnitude of the Problem of Cardiovascular Disease (CVD) Risk in Asymptomatic Adults

Atherosclerotic CVD is the leading cause of death for both men and women in the United States.ⁱ It is estimated that if all forms of major CVD were eliminated, life expectancy would rise by almost 7 years.ⁱⁱ Coronary heart disease (CHD) has a long asymptomatic latent period, which provides an opportunity for early preventive interventions.

A new 54-page guideline was released online and presented during the recent 2010 American Heart Association meetings in November.ⁱⁱⁱ The aim of this *Heartbeat* is to provide the highlights of this evidence-based approach to risk assessment so that we can make informed decisions about appropriate interventions in an effort to lower coronary deaths in asymptomatic adults.

Risk Assessment Goes Low-Tech

Global risk scores (such as the Framingham and the Reynolds Risk Scores) that use multiple traditional CV risk factors *should be obtained for all asymptomatic adults without a clinical history of CHD*. These scores are useful for combining individual risk factor measurements into a single quantitative estimate of risk that can be used to target preventive interventions. These global risk score instruments take into

account modifiable risk markers that are also appropriate evidence-based targets for preventive interventions.

Framingham risk score (FRS) includes: age, sex, total cholesterol, HDL cholesterol, smoking, systolic blood pressure and whether taking antihypertensive medications.^{iv}

<http://hp2010.nhlbihin.net/atp/iii/calculator.asp?usertype=prof/>

Reynolds risk score includes: age, sex, smoking, systolic blood pressure, total cholesterol, HDL cholesterol, *hsCRP*, and parental history of MI at <60 y of age.^v <http://www.reynoldsriskscore.org/> Both scores can easily be obtained by loading Qx Calculate on to your Smartphone.

Asymptomatic adults are broadly characterized into low-(< 10), intermediate- (10-19) or high-risk (\geq 20) subsets, with the intensity and type of treatments based on assessments of risk per NCEP guidelines.

Family History Moves Up

The *risk score and family history* are the initial step in determining risk. They are the *only Class I indications* and are simple and inexpensive. (*Level of Evidence: IB*)

If an asymptomatic adult is low risk, no further testing is necessary. If a patient is very high-risk (CHD or any other vascular disease and CHD risk equivalents), intensive

preventive interventions (including goal LDL-C and non-HDL-C of less than 70 and 100mg/dL respectively) are warranted and there is no incremental benefit of added testing. If an asymptomatic adult is intermediate risk, additional testing can further define risk status. Recommendations are classified as follows: Benefit exceeds cost and risk (IIa); less robust evidence for benefit but shown to be helpful in selected patients (IIb); and not recommended for use due to no or limited evidence of benefit, potentially causing harm (III)—[Table 1](#).

Testing recommendations

According to the guidelines, the following recommendations should be considered based upon the patient profile:

- *Resting Electrocardiogram (ECG)* — A resting ECG is reasonable in asymptomatic adults with hypertension or diabetes (IIa C); may be considered in asymptomatic adults without hypertension or diabetes (IIb C).
- *Transthoracic Echocardiogram* — Echocardiography to detect left ventricular hypertrophy may be considered in asymptomatic adults with hypertension (IIb B), but it is not recommended in asymptomatic adults without hypertension (III C).
- *Measurement of Ankle-Brachial Index* — Measurement of ankle-brachial index is reasonable in asymptomatic adults at intermediate risk (IIa B). This would obviously include adults over 65 with diabetes or tobacco dependence.
- *Exercise Electrocardiography (ECG)* — An exercise ECG may be considered in intermediate-risk asymptomatic adults (including sedentary adults considering starting a vigorous exercise program), particularly when attention is paid to non-ECG markers such as exercise capacity (IIb B).
- *Stress Echocardiography (Echo)* — Stress echo is not indicated in low- or intermediate-risk asymptomatic adults (III C). Exercise or pharmacological stress echo is primarily used in advanced cardiac evaluation of symptoms suspected of representing CHD and/or estimation of prognosis in patients with known CAD or assessment of patients with valvular heart disease.
- *Myocardial Perfusion Imaging (MPI)* — Stress MPI may be considered for advanced CV risk assessment in asymptomatic adults with diabetes or with a strong family history of CHD or when previous risk assessment testing suggests high risk of CHD, such as a coronary artery calcium (CAC) score of 400 or more (IIb C). Stress MPI is not indicated in low- or intermediate-risk asymptomatic adults (III C). Exercise or pharmacologic stress MPI is primarily used in advanced cardiac evaluation of symptoms suspected of representing CHD and/or estimation of prognosis in patients with known CAD.
- *Calcium Scoring Methods* — Measurement of CAC is reasonable in asymptomatic adults at intermediate risk (10%-20% 10-year risk) (IIa B). Measurement of CAC may be reasonable for adults at low to intermediate risk (6%-10% 10-year risk). Adults at low risk (<6% 10-year risk) should not undergo CAC measurement (III B).
- *Coronary Computed Tomography Angiography* — Coronary CTA is not recommended (III C).
- *Magnetic Resonance Imaging of Plaque* — MRI for detection of vascular plaque is not recommended (III C).
- *Risk Assessment for Patients with Diabetes* — In asymptomatic adults with diabetes aged at least 40 years,

measurement of CAC is reasonable (IIa B). Measurement of HbA1c may be considered in asymptomatic adults with diabetes (IIb B). Stress MPI may be considered for advanced CV risk assessment in asymptomatic adults with diabetes or when previous risk assessment testing suggests high risk of CHD, such as a CAC score of 400 or more (IIb C).

- *Considerations for Women* — Because of frequent reporting of underutilization of diagnostic and preventive services among female patients, it is recommended that a global risk score be obtained in all symptomatic women (I B) and a family history of CVD (I B).

Testing that is not recommended for screening in asymptomatic adults

- Transthoracic echocardiogram without hypertension (III C).
- Stress echo or stress MPI in low or intermediate risk adults (III C).
- Coronary artery calcium scoring in low risk adults (< 6% 10-year risk) (III B).
- Coronary CTA (III C)
- Detection of coronary artery plaque by MRI (IIIC).

Hot topic Areas

- *Genetic testing* is a very sexy area right now but was not felt to be ready or to add value and is not recommended.
- *Apolipoproteins (apoB) and LDL particle concentration (LDL-P)* were not recommended beyond standard lipid profile (III C). We do agree, however we feel these values are extremely valuable in determining and treating residual risk once statin treatment is initiated in moderate and high risk patients.

- *Cardio or high sensitivity (hs) CRP* is not recommended in patients determined to be high-risk already (as it is used as a marker of risk) or in low-risk men < 50 or women < 60 (III B). However it is beneficial in fine-tuning risk assessment in intermediate 10-year risk based on their global risk assessment (IIb B). This includes men < 50 or women < 60. *I like the Reynolds risk score because it incorporates hs CRP and the family history into the score.*
- *Urinalysis to detect microalbuminuria* is reasonable in adults with hypertension or diabetes (IIa B).

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ⁱ D'Agostino RB, et al. Primary and subsequent coronary risk appraisal: new results from the Framingham Study. *Am Heart J* 2000; 139: 272–281.

ⁱⁱ Lloyd-Jones D, Adams R, Carnethon M, et al. Heart disease and stroke statistics—2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2009; 119: e21–e181

ⁱⁱⁱ Greenland P et al. 2010 ACCF/AHA Guideline for Assessment of Cardiovascular Risk in Asymptomatic Adults. A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Developed in Collaboration With the American Society of Echocardiography, American Society of Nuclear Cardiology, Society of Atherosclerosis Imaging and Prevention, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance.

JACC December 14/21 2010; 50: e50–e103.
Executive Summary: *J Am Coll Cardiol* 2010; 56(25): 2182–2199.

^{iv} D'Agostino Sr. RB, Grundy S, Sullivan LM, Wilson P. Validation of the Framingham coronary heart disease prediction scores: results of a multiple ethnic groups investigation *JAMA* 2001; 286: 180–187.

^v Ridker PM, Buring JE, Rifai N, et al. Development and validation of improved algorithms for the assessment of global cardiovascular risk in women: the Reynolds Risk Score *JAMA* 2007; 297: 611–619.