

procedure in low-volume centers with poorer outcomes, and the evolution of technology that outpaces the ability of studies to evaluate safety and effectiveness. In general, the discussants recommend that careful attention be focused on patient selection with respect to life expectancy and noncardiac comorbidities that are unrelated to AS. Multidisciplinary heart teams should direct all aspects of the AS patient care. Increased experience of operators, improved devices (valves and delivery systems that are currently used in Europe), and new technologies for prevention of complications might reinforce the role of TAVI in the future.

Prevention Guidelines in Women Broaden the Definition of CV Risk

Written by Anne Jacobson

In 2011, the American Heart Association (AHA) published updated guidelines for the prevention of cardiovascular disease (CVD) in women [Mosca L et al. *Circulation* 2011]. Lori Mosca, MD, Columbia University Medical Center, New York, New York, USA, reviewed the major updates in the new guidelines.

One key change compared with earlier guidelines is the approach to risk stratification. Historically, the term “high risk” has been defined as patients whose 10-year risk of coronary heart disease (CHD) was >20%. However, this definition underestimates the true risk of CVD in women. The 2011 AHA guideline shifts the focus from coronary risk alone to incorporate broader risk factors for CVD. In the new CVD prevention guideline for women, “high risk” now describes patients with any of the following features:

- Established atherosclerotic disease, including:
 - ◆ Clinically manifest CHD, peripheral arterial disease, or cerebrovascular disease
 - ◆ Abdominal aortic aneurysm
- Estimated 10-year cardiovascular disease risk >10%, based on traditional CV risk factors
- Diabetes mellitus
- End-stage renal disease (ESRD) or chronic kidney disease (CKD)

In previous prevention guidelines, the term “at risk” was used to describe patients with one or more traditional risk factors for CVD, such as cigarette smoking, hypertension, dyslipidemia, obesity, physical activity, poor diet, and

physical inactivity. The 2011 AHA guideline for the prevention of CVD in women adds two more risk factors to this list:

- Systemic autoimmune collagen vascular disease (eg, lupus and rheumatoid arthritis), and
- Pregnancy-related risk factors, including a history of pregnancy-induced hypertension, gestational diabetes, preeclampsia, or polycystic ovary syndrome.

These risk factors were added to reflect the unique underlying pathophysiology of CVD in women as compared with men. Notably, these are risk factors that tend to present more frequently in younger women. Although it is an intense focus of current research, it remains to be demonstrated that initiating lifestyle or pharmacological interventions in these patients changes the natural history of their progression to incident CVD.

Lifestyle Interventions

Lifestyle modifications are essential to cardiovascular risk reduction for all at-risk patients. Earlier guidelines used abstract concepts (eg, “moderate exercise”) that were difficult for patients to follow. To help physicians educate patients about lifestyle interventions, the 2011 guidelines include specific and relevant examples. For instance, moderate exercise can include dancing fast for 30 minutes, raking leaves for 30 minutes, gardening for 30–45 minutes, or pushing a stroller 1 mile in 30 minutes.

Pharmacological Interventions

Aspirin is the only drug intervention with gender-specific recommendations. Among high-risk women (see above), aspirin (75 to 325 mg/day) is recommended unless it is contraindicated for those with established CHD (Class I recommendation) and is reasonable for those with diabetes, ESRD/CKD, or >10% estimated 10 year CVD risk (Class IIa recommendation). Clopidogrel should be substituted when aspirin is indicated but not tolerated (Class I recommendation).

Aspirin recommendations for other at-risk and healthy low-risk women without established CVD require weighing the benefits of preventive antiplatelet therapy against the risks. For women aged ≥65 years, aspirin (81 mg/day or 100 mg every other day) is considered useful (if blood pressure is controlled) for prevention of incident ischemic stroke and myocardial infarction when the risks of gastrointestinal bleeding and hemorrhagic stroke are considered low (Class IIa recommendation). For women aged <65 years, there

is conflicting evidence whether aspirin can prevent ischemic stroke (Class IIb recommendation).

Future trials of primary and secondary prevention strategies in CVD should enroll diverse populations of female patients. With additional evidence, guidelines can be refined further to meet the specific needs of women who are at risk for adverse cardiovascular outcomes.

Further reading: Masca L et al. *Circulation* 2011.

New Revascularization Guidelines Focus on Collaborative Care

Written by Anne Jacobson

On November 7, 2011, the American College of Cardiology Foundation (ACCF), the American Heart Association (AHA), and the Society for Cardiovascular Angiography and Interventions (SCAI) published updated guidelines for the management of percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG) [Levine G et al. *JACC* 2001; Hillis D et al. *JACC* 2011]. Peter K. Smith, MD, Duke University Medical Center, Durham, North Carolina, USA, moderated a session that reviewed key updates. Selected recommendations from the guidelines are summarized in this article. The online version of the complete report, along with updated information and services, can be found at: <http://circ.ahajournals.org/content/early/2011/11/07/CIR.0b013e31823ba622.citation>.

The updated ACCF/AHA/SCAI guidelines for PCI and CABG emphasize the role of multidisciplinary heart teams that work together to develop a cardiac care plan for patients with coronary artery disease (CAD). Within this multidisciplinary model, cardiac surgeons and interventional cardiologists collaborate to review the patient's coronary anatomy and presenting symptoms to determine the appropriateness of PCI and/or CABG. The heart team concept is included as a Class I recommendation for patients with unprotected left main or complex CAD.

The new revascularization guidelines also recommend using the Synergy between PCI with TAXUS and Cardiac Surgery (SYNTAX) score [www.syntaxscore.com] in conjunction with the Society of Thoracic Surgeons (STS) surgical risk score [<http://209.220.160.181/STSWebRiskCalc261/de.aspx>] when planning treatment for patients with multivessel disease (Class IIa; Level of Evidence [LOE]: B). By incorporating angiography results to estimate the extent and complexity of arterial

disease, the SYNTAX scoring system provides an objective approach to guide the selection of revascularization strategies. By also utilizing the STS risk score, the risk/benefit comparison of the two procedures is placed in perspective for the heart team.

Based on recent clinical trial evidence, PCI to improve survival is reasonable as an alternative to CABG in selected stable patients with significant ($\geq 50\%$ diameter stenosis) unprotected left main CAD with: 1) anatomical conditions that are associated with a low risk of PCI procedural complications and a high likelihood of good long-term outcome (eg, a low SYNTAX score [≤ 22], ostial or trunk left main CAD); and 2) clinical characteristics that predict a significantly increased risk of adverse surgical outcomes (eg, STS predicted risk of operative mortality $\geq 5\%$) (Class IIa; LOE: B).

PCI to improve survival may be a reasonable alternative to CABG in selected stable patients with significant ($\geq 50\%$ diameter stenosis) unprotected left main CAD with: 1) anatomical conditions that are associated with a low to intermediate risk of PCI procedural complications and an intermediate to high likelihood of good long-term outcome (eg, low-intermediate SYNTAX score of < 33 , bifurcation left main CAD) [Genereux P et al. *Circ Cardiovasc Interv* 2011]; and 2) clinical characteristics that predict an increased risk of adverse surgical outcomes (eg, moderate-severe chronic obstructive pulmonary disease, disability from previous stroke, or previous cardiac surgery; STS [www.sts.org]-predicted risk of operative mortality $> 2\%$) (Class IIb; LOE: B). However, for patients with three-vessel disease, the updated guidelines reaffirm the superiority of CABG compared with both PCI and medical therapy (Class IIa; LOE: B).

The updated PCI guideline includes new guidance on optimal antiplatelet therapy (APT). Ticagrelor treatment for at least 12 months following insertion of a drug-eluting or bare metal stent is now included as a Class I recommendation. The guideline also recommends a simplified aspirin regimen (81 mg daily for all patients) following PCI, rather than higher maintenance doses, based on type of stent that is used, that could be reduced in the long term (Class IIa; LOE: B).

Recommendations for APT before and after CABG have also been updated. All patients who undergo CABG should be given aspirin preoperatively. For patients who are undergoing elective CABG, treatment with clopidogrel and ticagrelor should be discontinued 5 days prior to surgery. In cases of emergency CABG, these agents should be discontinued for at least 24 hours before surgery when possible. After surgery, aspirin should be restarted within