Evidence Report

Chapter 1: Introduction

Coronary heart disease (CHD) is the most common cause of death in women. Approximately 1 in 2 women develop CHD and 1 in 3 die from it,[1] accounting for over 250,000 deaths in women per year.[2] Despite the high prevalence of CHD in women, it has traditionally been thought of as a disease of middle-aged men, perhaps because women tend to develop CHD about a decade later in life than men.[3] During the last two decades, multiple important studies have helped define accurate clinical tests, important risk factors, preventive interventions and effective therapies for CHD. Unfortunately, the majority of these studies have either excluded women entirely or included only limited numbers of women.[4] Thus, much of the evidence that supports contemporary recommendations for testing, prevention and treatment of coronary disease in women is extrapolated from studies conducted predominantly in middle-aged men. Applying the findings of studies in men to management of CHD in women may not be appropriate since the symptoms of CHD, natural history and response to therapy in women differ from that in men.[5] Because large studies that include adequate numbers of women and minorities to answer the research question are generally not feasible, systematic reviews of the literature may be the best option for maximizing management of CHD in women.

The Agency for Healthcare Research and Quality (AHRQ) and the National Institutes of Health Office of Research on Women's Health funded the University of California, San Francisco (UCSF)-Stanford Evidence-based Practice Center (EPC) for the development of an initial review of evidence-based research on five key topics, including 42 subtopic areas related to the diagnosis and management of coronary heart disease in women and minority race/ethnic groups.[6] Based on the results of the initial report, four key questions were identified for systematic review and meta-analysis: (1) the accuracy of exercise myocardial perfusion imaging and exercise echocardiography for diagnosis of CHD in women; (2) the efficacy of lipid lowering to reduce risk of CHD in women; (3) the strength of diabetes as a risk factor for CHD in women, and (4) the prognostic value of elevated troponin for CHD in women. This report presents the results of these four systematic reviews.

Organization

The methods of conducting these systematic reviews were similar. However, the appropriate study designs, inclusion criteria, clinical outcomes and statistical methods differed. In addition, the audience for each of these systematic reviews will likely differ. For these reasons, we present the four systematic reviews sequentially to allow each systematic review to stand alone.

Key Questions

Recognizing the importance of the issues raised above, multiple groups have requested evidence-based research pertinent to diagnosis and management of CHD in women and minority populations. The groups include an ad hoc women's health coalition (American Heart Association, American College of Cardiology, American College of Obstetricians and Gynecologists, American Society of Echocardiography, Association of Black Cardiologists, Jacobs Institute of Women's Health, Mayo Clinic Women's Heart Clinic, Society for Women's Health Research, and WomenHeart: National Coalition for Women with Heart Disease), the American Association for Clinical Chemistry and the National Institutes of Health Office of Research on Women's Health. The Centers for Medicare & Medicaid Services and Harvard Pilgrim Health Services have also expressed interest. Concern about sex and gender-based differences in diagnosis and treatment of CHD was also noted in the U.S. Senate Appropriations Committee's report accompanying the FY 2000 Departments of Labor, Health and Human Services, and Education and Related Agencies Appropriations bill. Specifically, these groups have requested evidence related to the following four key questions:

1. **What is the accuracy of noninvasive tests for diagnosis of CHD in women: exercise myocardial perfusion-imaging (MPI) and exercise echocardiography?**
   a. What are the summary estimates of sensitivity, specificity and likelihood ratios for exercise MPI and exercise echocardiography in women?
   b. What is the accuracy of exercise MPI and exercise echocardiography in women compared to men?

2. **What is the effectiveness of treatment with lipid lowering drugs for reducing CHD risk in women with and without CHD?**
   a. What is the effectiveness of drug treatment in reducing total mortality, CHD mortality, CHD events or CHD procedures in women with known CHD and those without known CHD?

3. **What is the relative risk for CHD in women with type 2 diabetes?**
   a. What is the relative risk for CHD in women with type 2 diabetes compared to women without diabetes?
   b. Does the relative risk for CHD differ between women and men with type 2 diabetes?

4. **What is the prognostic value of troponin for CHD in women?**
   a. What is the impact of troponin on risk for death among women with non-ST elevation acute coronary syndromes?
   b. Does the prognostic value of troponin for mortality differ between men and women?
   c. What is the impact of troponin on risk for death or myocardial infarction for women with non-ST elevation acute coronary syndromes?

d. Does the prognostic value of troponin for mortality or myocardial infarction differ between men and women?

For each of the four questions, we also attempted to identify and summarize evidence stratified by race or ethnicity.

References for Introduction

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5. Wenger NK, Speroff L, Packard B. Cardiovascular health and disease in women. N Engl J Med 1993;329(4):247-56.
6. Grady D, Chaput L, Kristof M. Results of Systematic Review of Research on the Diagnosis and Treatment of Coronary Heart Disease in Women. Evidence Report/Technology Assessment No. 80. (Prepared by the University of California, San Francisco-Stanford Evidence-based Practice Center under Contract No 290-97-0013.) AHRQ Publication No. 03-0035. Rockville, MD: Agency for Healthcare Research and Quality. May 2003.