The WISE workshop was convened to review results from the Women’s Ischemic Syndrome Evaluation (WISE) study and other studies of ischemic heart disease to examine the nature and scope of gender differences in both chronic and acute cardiac ischemia, in terms of clinical manifestations, detection, and treatment. This section addresses research needs in the diagnosis and treatment of acute coronary syndromes in women and in the effective implementation of these findings into the community.

Scope of the Problem
There is a substantial body of scientific literature about the presentation of acute cardiac ischemia (ACI) in women, including acute myocardial infarction (AMI) and unstable angina pectoris, which can lead to AMI. However, the diagnosis and treatment of ACI in women in the emergency department (ED) is not optimal, resulting in missed diagnoses and treatments and leading to excess mortality. Women present at older ages, in different social support environments, with more comorbidity, and with some differences in symptoms compared with men, and women are more likely to present with unstable angina pectoris than with AMI.5–8 Also, gender-specific clinical practices are not well understood or implemented.9–18 Particularly needed for improving health outcomes in women with ACI is a better understanding of how care for women with (and without) ACI can be effectively delivered in the wide range of care settings in this country. Thus, there is a clear need to supplement prior, excellent, disease-targeted “efficacy research” with “effectiveness research” that targets the development and testing of approaches that are broadly applicable to usual clinical practice settings.19–20 This next phase of research must avoid the incomplete inclusion of all patients with the full range of symptoms of ACI (particularly of women) that has limited the findings and generalizability of many clinical studies and trials. This research should include effectiveness trials, with broad inclusion criteria applicable to general care, that demonstrate successful improvement of diagnosis and treatment of women (and men) with ACI/AMI.21–23

Clinical Application
Although part of the failure to translate what is known to be efficacious into practice reflects a lack of research findings on diagnosis and treatment of ACI in real-world practice settings, an important issue is better implementation of known effective interventions translated for the public and into the healthcare system. Thus, effectiveness research should also explicitly target the dissemination of and communication about effective interventions to the healthcare community and the public. Demonstration of successful dissemination of
improved methods of ACI diagnosis and treatment into the healthcare settings and improved understanding and behavior of the public are also needed.

Although the greatest short-term impact would likely derive from developing and testing ways of improving diagnosis and treatment, there is also a need to better understand the full details of the presentation of ACI/AMI in women to ensure accurate and complete understanding, not just in the ED, but in the hours after ACI onset. These include the following areas:

**Diagnosis Effectiveness**

To better understand the presentation of ACI, there is a need for development and testing of ways to improve the timeliness and accuracy of diagnosis of ACI and for demonstration of their impact on emergency care and clinical outcomes. Specifically, there is a need to develop and test ways to improve use of existing diagnostic methods and new ways to diagnose ACI in women, not only by ED physicians, but also by prehospital, nonhospital, and nonphysician clinicians. An example of an area clearly needing such attention is our state of knowledge on the proper use and benefit of diagnosis and treatment of biomarkers. This will require prospective complete inclusion to understand the true effectiveness of biomarkers in actual practice.

**Treatment Effectiveness**

There is an equally clear need to develop and test ways to improve treatment, including decision-making about treatment, of women with ACI/AMI—again, not only by frontline ED physicians, but also in prehospital, nonhospital, and nonphysician settings. An example of this is the need to do effectiveness research (as opposed to efficacy research) about how to put known effective treatments for women with ST elevation into practice. For example, clinical trials have demonstrated less benefit and greater complications with urgent percutaneous interventions in women with ACI than in men, suggesting that further research on risk stratification and decision-making with regard to ACI and percutaneous intervention in women is needed. We also need to better understand how to maximize functional status of women with ischemic heart disease, including psychosocial and physical functional status, and we need to learn what treatments, of all sorts, maximize function.

**Dissemination and Communication**

We need to communicate more effectively to the healthcare community about the optimal use of effective diagnostic technologies and strategies that improve diagnosis and treatment of women with ACI and find ways to disseminate these approaches into actual practice. Also, we need to raise awareness of the importance of heart disease in women and explain how individuals can lower their risk for ischemic heart disease/ACI.

**Understanding the Disease**

In order to communicate the right message to the public, patients, and the healthcare community, we need to better understand the presentation of ACI in women. An example of this is the need to do research about prodromal syndromes for ACI/AMI. An entire community–based registry function that collects data on all cardiac events/deaths in a community would be helpful for this, which would include more detailed symptom data collection than other cohort studies such as Framingham. Unlike the traditional cohort study, which looks to other risk factors for a disease, and unlike the disease- or treatment-based registry, this would focus primarily on the symptoms and signs of early ACI in the community, with details of care and autopsy used to help understand links between presentations and underlying diseases. In this, all patients seen and the families of all those who die of possible cardiac deaths would be interviewed in an effort to finally get a handle on presenting symptoms.

**Section 3 Recommendations**

1. **Diagnosis effectiveness.** To better understand the presentation of ACI, there is a need for development and testing of ways to improve the timeliness and accuracy of diagnosis of ACI and for demonstration of their impact on emergency care and clinical outcomes, for ED as well as prehospital, nonhospital, and nonphysician settings.

2. **Treatment effectiveness.** There is a need to develop and test ways to improve treatment, including decision-making about treatment, of women with ACI/AMI, in the ED and also in prehospital, nonhospital, and nonphysician settings.

3. **Dissemination and communication.** We need to communicate more effectively to the healthcare community and the public about the optimal use of effective and diagnostic technologies and strategies and about personal care strategies that improve diagnosis and treatment of women with ACI, and we must disseminate these approaches into actual practice.

4. **Understanding the disease.** To communicate the right message to the public, patients, and the healthcare community, we need to better understand the presentation of ACI in women, including prodromal syndromes for ACI/AMI.

**References**


**KEY WORDS:** AHA Scientific Statements women ischemia cardiovascular diseases
Women's Ischemic Syndrome Evaluation: Current Status and Future Research Directions: Report of the National Heart, Lung and Blood Institute Workshop: October 2–4, 2002; Section 3: Diagnosis and Treatment of Acute Cardiac Ischemia: Gender Issues

Endorsed by the American College of Cardiology Foundation

_Circulation_. 2004;109:e50-e52
doi: 10.1161/01.CIR.0000116208.41269.75

_Circulation_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2004 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the World Wide Web at:
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