Special Feature
INNOVATION

Women at Risk for Coronary Heart Disease: How Research is Translated Into Innovation and Quality Outcomes at Kaiser Permanente

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Introduction

In the United States, coronary heart disease (CHD) is the primary cause of death in women and larger than the next 16 causes of death combined.[1] Six times as many women die of heart attack as from breast cancer.[1] Although onset lags ten years behind that of men, 38% of women die within one year of their first myocardial infarction (MI) compared with 25% of men.[1]

Despite these statistics, however, women and their health care providers have for many years perpetuated a misconception that CHD in women is less prevalent and more benign than in men. This mistaken belief has resulted in less aggressive health care for women and less attention to risk factors that require preventive care in women. However, clinical practice guidelines of The Permanente Medical Group (TPMG) have long emphasized the premise that both primary and secondary preventive treatment should be as aggressive for women as for men.[2-4]

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TPMG's Continuing Clinical Response to Evolving Research on Coronary Risk

Early trials of lipid-lowering therapy concentrated on male subjects. Some of the first studies showing the benefits of statins in women were the Air Force/Texas Coronary Atherosclerosis Prevention Study (AFCAPS/TexCAPS) trials,[5] in which 997 of 6605 participants were women. These trials showed that for men and women with high-density lipoprotein (HDL) levels <50 mg/dL and other risk factors, aggressive lipid-lowering treatment could reduce the number of adverse cardiac events by 36% over five years. As a result of these findings, TPMG Regional 1998 Clinical Practice Guidelines for cholesterol management reemphasized the importance of aggressive medical treatment for women. A randomized, controlled trial with a similar time frame, the Heart and Estrogen/Progestin Replacement Study (HERS),[6] showed that women with known coronary artery disease (CAD) received no benefit from starting HT; and later evidence from the Women's Health Initiative (WHI)[7] showed no benefit from primary prevention efforts. Each time, TPMG quickly revised its clinical practice guidelines.

From Words to Action: Making Guidelines Work

Guidelines alone have little benefit without effective implementation.[8] Assisted by many innovative Kaiser Permanente (KP) leaders in Northern California (Table 1), TPMG has effectively implemented its stated treatment guidelines by using a combination of approaches. These approaches variously focus on patients, practitioners, or systems of providing care.

Patient-Focused Approaches

Patient-focused approaches include implementing programs at all KP Medical Centers for managing chronic conditions (eg, cholesterol management programs, MULTIFIT cardiac rehabilitation, and diabetes programs); extensive use of nonphysician primary care providers, including clinical pharmacists, clinical health educators, extended role nurses, and behavioral medicine specialists; multiple modalities of patient education, including printed and electronic materials and resources as well as classes and group appointments to address management of cardiac risk factors; and outreach using reminder letters, phone calls, and preventive health prompts at visit registration. A special patient education effort initiated in 2003, The Heart Attack Prevention Outreach campaign, was directed at women over age 40 years and included articles in the KP publication, *Member News* (Fall 2003). Personal letters from their clinicians as well as a special newsletter


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containing tools for risk assessment were mailed to homes of selected high-risk members.

Practitioner-Focused Approaches

Practitioner-focused approaches include dissemination of evidence-based clinical practice guidelines; "Medicine Today" update videoconferences; physician champions at all medical centers; each medical center having its own quality goals for lipid management; clinician-specific outreach lists; and clinician-specific monitoring reports. In addition, Population Care Registry member summary sheets for patients listed in the diabetes and CAD registries are available when patients visit a clinic for primary care services.

System-Focused Approaches

System-focused approaches include development and maintenance of disease registries; the Patient Integrated Log and Outreach Tracking (PILOT) system; Population Care registry member summary sheets; quarterly disease-specific monitoring reports with medical center- and facility-specific performance reporting; clinician-specific outreach and monitoring reports; and a coordinated regional and local implementation effort led by clinical leaders and local physician champions. Through use of standing orders and preprinted discharge sheets that refer patients to outpatient disease management programs, inpatient care also promotes adherence to secondary prevention guidelines.

Additional Evidence-Based Approaches to Cardiac Risk Reduction

Other forms of therapy used for secondary and primary prevention of CHD have been shown to reduce CHD risk.[9] For example, although nationwide trends show more women smoking cigarettes at earlier ages—and cigarette smoking is the greatest preventable cause of cardiovascular morbidity, associated with a threefold increased risk of MI in women[10]—this trend is not observed in our KP member population in Northern California: The current rate of smoking among KP Northern California (KPNC) members is 12%, compared with 16% statewide[11] and 22% nationally.[12] As part of the "Smoking as a Vital Sign" initiative, KP clinicians assess and document smoking status at each medical visit. Multiple options—prescription aids, widely available single- or multiple-session classes (a covered benefit), and a state-funded California Smokers Helpline—are available to KP members for smoking cessation support and referral. State of California laws also support cessation efforts by banning smoking in most public places.

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Table 1. Core team translating coronary risk research into clinical practice in the Kaiser Permanente Northern California Region (KPNC)

Denise Myers, RN, MPH	Program Director, Chronic Conditions Care Management & Education, Regional Health Education
Adria Beaver, RN	Cardiovascular Coordinator, Regional Health Education
Warren Taylor, MD	Medical Director, Chronic Conditions Management, The Permanente Medical Group
Marc Jaffe, MD	PHASE and Hypertension Regional Clinical Leader, The Permanente Medical Group
Phil Madvig, MD	Associate Executive Director, The Permanente Medical Group
Mike Ralston, MD	Director, Quality Implementation, Quality & Operations Support, The Permanente Medical Group
Julie Lenhart, RPh, MS	Consulting Manager, Northern California Guidelines Director, Quality & Operations Support
Laura Skabowski, MS	Senior Managerial Consultant, Quality & Operations Support
Lisa C Arellanes	Consulting Manager, Quality & Operations Support
Rhonda Woodling, MS	Analytic Manager, Quality & Operations Support
Fred Hom, MD	Diabetes Regional Clinical Leader, The Permanente Medical Group
Nancy Moline, RN	Diabetes Program Coordinator, Regional Health Education
Jennifer Torresen, MPH	Chronic Conditions Education Project Manager, Regional Health Education
Mindy Boccio, MPH	Senior Health Educator, Regional Health Education
Care Managers and Physician Champions/Mentors	Cholesterol Management, MULTIFIT, Hypertension, and Diabetes Programs, The Permanente Medical Group
CCM Implementation Site Coordinators and Program Managers	The Permanente Medical Group
PHASE Advisory Group	The Permanente Medical Group
PHASE Operations Group	The Permanente Medical Group

Aspirin has been shown to reduce risk of second MI in men and in women.[9] For high-risk women, the American Heart Association and American College of Cardiology[9] as well as our TPMG guidelines recommend prevention in the form of low-dose (75 to 162 mg) aspirin therapy. For high-risk women who have had an adverse cardiac event, this preventive treatment is delivered through the MULTIFIT program or, for nonparticipants, through primary care providers. Because few data are available from primary prevention trials that included women, aspirin recommendations are less clear for women at intermediate and lower risk. The TPMG 2003 Heart Attack Prevention Outreach campaign was directed at high-risk women and included information and recommendations for taking low-dose aspirin for preventing MI.

Regular exercise is associated with decrease in all causes of mortality in women, and individual studies suggest that regular exercise may also reduce CHD (perhaps by modifying other risk factors).[9] In its clinical practice guidelines, TPMG has emphasized lifestyle change and encourages 30 minutes of moderate-intensity exercise on most days of the week. Within the MULTIFIT program, this emphasis is shown through an exercise prescription, which in the primary care setting is communicated via patient education materials and during clinic visits. MULTIFIT program participants report that they engage in a mean 5.2 sessions of physical exercise activity per week and that the mean duration of each session is 37 minutes.

Eighty-five percent of diabetic patients die because of a thrombotic event, and 70% of these deaths result from cardiovascular complications.[14]

Compared with nondiabetic women and diabetic men, women with Type 2 diabetes (diabetes mellitus, DM) have a greater risk of cardiovascular disease.[13] Eighty-five percent of diabetic patients die because of a thrombotic event, and 70% of these deaths result from cardiovascular complications.[14] In women, diabetes counteracts any delay of CHD onset that could otherwise be achieved by preventive efforts. National KP guidelines[15] for management of diabetes now emphasize the importance of giving special attention to CHD risk factors (ie, hypertension, dyslipidemia, and tobacco smoking) in addition to glycemic control. TPMG's care management programs for diabetes therefore place great emphasis on managing CHD risk factors concurrently with achieving glycemic control.

Looking Ahead: The PHASE Initiative

A new TPMG initiative described by the acronym PHASE (Prevent Heart Attacks and Strokes Everyday) was launched in 2004 to further reduce cardiac and cerebrovascular events among women and men at high risk for CHD. PHASE specifically targets patients with CAD, DM, peripheral arterial disease, stroke, chronic kidney disease, and abdominal aortic aneurysm. For all patients with these atherosclerotic conditions, the PHASE initiative has three primary objectives:

- to ensure that these patients are prescribed the quartet of recommended preventive medications consisting of aspirin, statin drugs, ACE-inhibitors (except for DM patients younger than 55 years), and beta blockers (for patients who have had MI, CAD, angina, ischemia, or peripheral arterial disease);
- to control lipid and glycemic levels and hypertension; and
- to ensure that these patients receive health advice regarding lifestyle change, such as tobacco cessation, engaging in regular physical activity, following a healthful diet, and weight management.

Outcome Measures Show Success

Substantial improvement in lipid and hypertension control for patients with CAD or DM have been achieved at KP during the past two years.[16] Lipid control (LDL levels <100 mg/dL) for the CAD registry population has improved from 51.8% (in 2003) to 61.8% (in 2004) and has improved for the DM registry population from 32.2% (in 2003) to 46.2% (in 2004). Hypertension control for patients with DM (blood pressure <129/79 mmHg) has improved from 22.8% (in 2002) to 34% (in 2003); in 2004, hypertension control for the combined PHASE populations has been measured at 35%. The PHASE initiative aims to accelerate this progress. ❖

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Dreams

Dreams pass into the reality of action.
From the actions stems the dream again;
and this interdependence produces the highest form of living.

— Anaïs Nin, 1903-77, French diarist