Primary Prevention Programs to Reduce Heart Disease Risk in Women

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Cardiovascular disease is the number one killer of women. Despite this statistic, many women do not perceive heart disease as a priority health concern. Recognizing that prevention begins in the community, the American Hospital Association launched a national fellowship program in 1998 to improve cardiovascular health. This article describes a practice innovation designed by a clinical nurse specialist who participated as a 1999-2000 cardiovascular fellow. The Women's Prevention Center, a community-based clinic within the walls of a heart hospital, provides a personalized cardiovascular assessment for women, including both heart history and assessment of physical parameters (eg, blood pressure, fasting glucose, lipid panel, waist-hip ratio). From this assessment, women are counseled on strategies to modify their individual risk factors, such as smoking cessation, heart-healthy nutrition and exercise, and are assisted in developing realistic lifestyle or medical management goals. After the initial assessment, outcomes are measured at 3-, 6-, and 12-month follow-ups to determine both individual success with behavior changes and program effectiveness.

KEY WORDS: women and heart disease, primary prevention, lifestyle modification

In 1997, the American Hospital Association launched a national cardiovascular health improvement fellowship. The aim of this program, mirrored after the successful Healthy Communities Fellowship, is to improve the cardiovascular health of communities across the country. Each year the cardiovascular fellowship selects 30 fellows to learn how to bring about cardiovascular health improvement in their respective communities. Fellows come from all healthcare disciplines, ranging from medicine, nursing (including advanced practice nurses), nutrition, cardiac rehabilitation, and administration. Funding of the fellowship program was provided by Astra Pharmaceuticals for the fellow's tuition costs and by each fellow's organization for travel expenses.

As part of the program, each fellow designs and implements an action learning project (ALP) in his or her area of clinical interest and expertise. This article describes the ALP of the first author (Cardiovascular Fellow, Class II) in developing a primary prevention center to reduce cardiovascular risk factors of women in the communities served by her employing institution, the United Hospital of St. Paul, Minnesota.

From the John Nasseff Heart Hospital.
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THE ACTION LEARNING PROJECT

At the heart of the cardiovascular fellowship program is ALP implementation. The ALP is a self-directed collaborative project focused on lifestyle and health factors that contribute to cardiovascular disease. The fellowship provided a “community” whereby not only the faculty but also the fellows provided resources, guidance, and feedback to each other as the ALP’s were implemented in respective communities.

From the outset, the entire fellowship experience emphasized shifting the focus from the needs and services provided solely within the walls of the hospital (ie, traditional medical model of diagnosis and treatment) to the health improvement needs within the community. A new set of skills was promoted for fellows to make this large paradigm shift from the curative to the preventive focus. These skills, known as transformational leadership, provided the foundation for the fellowship curriculum. This transition required learning how to move from a traditionally based management orientation focused on specialized knowledge, analytic skills, conflict resolution, and authoritative focus on operations to becoming transformational leaders who are global thinkers, culturally literate, innovative, collaborative and participative, and integrators of stakeholders in cardiovascular health improvement initiatives.

The ALP that was designed centered on reducing heart disease risk among women in the community. Heart disease in women was chosen because it is the number one killer of American women. In 1999 alone, coronary artery disease claimed the lives of 53.5% (512,904) of women, compared to 46.5% (445,871) of men. In fact, heart disease kills twice as many women as do all forms of cancer combined. However, heart disease usually strikes 10 years later in women compared to men.1

Recently, the differences in not only the clinical presentation but also the medical management of heart disease between men and women have started to receive attention. Studies show that the signs and symptoms in women may differ from those classically seen in men.2 Penque et al3 found that more women experienced atypical forms of chest pain, with radiation to the neck, throat, shoulders, or back, compared with the classical substernal pain that radiates to the left arm as often seen in men. Women in this study also had more complaints of anorexia and paroxysmal nocturnal dyspnea. In addition to different symptoms, studies have found that women typically wait longer than men to seek medical attention when experiencing potential cardiac problems. Two different studies reported that the median number of hours that women waited to seek treatment was 5.4.5

Women have often been underdiagnosed and undertreated for signs and symptoms suggestive of heart disease. Although angiogram rates have reportedly been increasing, studies have shown that women with comparable manifestations to men are still less likely than men to undergo an angiogram as part of their workup.6 In relation to treatment, one study showed that women with acute myocardial infarction were less likely than men to receive intravenous (IV) heparin, nitroglycerin, and thrombolytics. Although not statistically significant, women in this study were also less likely than men to undergo percutaneous coronary angioplasty and surgical revascularization.2 Research findings such as these—coupled with stories from women across the country about their need to be persistent when describing their symptoms to get appropriate diagnosis and treatment—inspired the creation of a program to assist women in decreasing their risk for the leading killer of American women today—heart disease.

THE WOMEN’S PREVENTION CENTER

In the early phases of the fellowship, a core group of local stakeholders developed the primary mission and goals for the primary prevention program. This new program was named the Women’s Prevention Center (WPC), highlighting that this program was designed to meet the unique needs of women. The main objectives for the WPC program were to: (1) identify women at risk for heart disease, (2) provide risk factor education and counseling on the well-established cardiovascular risk factors (ie, smoking, hypertension, hyperlipidemia, obesity, diabetes, sedentary lifestyle, stress and estrogen loss at menopause), (3) assist women in developing plans for appropriate healthy lifestyle changes, (4) offer follow-up at regular intervals to assess women’s progress with primary risk factor modification goals, and (5) track women’s outcomes in risk factor changes, such as weight reduction, smoking cessation, and duration/frequency of exercise, to assess the success and effectiveness of the primary prevention program.

The target population for this intervention was women of all ages from the general population. The community of women appropriate for this program can be further stratified into healthy women (with varying numbers of cardiovascular risk factors) versus symptomatic women (those with a current or past history of heart disease). All of these women were targeted; however, the foremost aim of the preventive cardiology program was to provide primary prevention as opposed to secondary prevention.

Personalized Assessments

The primary prevention intervention involves a 1-hour personalized assessment. All women are asked to sign a release at the beginning of the appointment. No other consent for participation in the program was obtained. The release form states that women acknowledge that the personalized assessment is not intended to replace their relationship with their primary physician and that they are responsible to follow-up on any abnormal findings. For instance, laboratory results are mailed to women within a few days of their appointments, with an explanation of which values are within normal ranges. Any abnormal measurements are highlighted, and women are instructed to see their primary physicians. Consequently, this program has not developed a process whereby the results of the assessment are forwarded to the woman’s physician. Instead, the responsibility for any follow-up is placed with each woman.

During the appointment, a woman’s health history is reviewed using family genogram and heart risk screening tools. The physical component involves an assessment of heart rate and blood pressure (BP) and height/weight, calculation of body mass index (BMI), measurement of waist/hip ratio, and body fat analysis with skin fold caliper measurement at 3 sites (triceps, anterior thigh, and supra-
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MARKETING THE PROGRAM

The WPC opened in November 1999. A dedicated telephone line (651-220-KNOW) was established for women to call for an appointment. The first 25 women who called were offered free assessments. After their assessment, these women completed a willingness-to-pay survey to determine the price they were willing to pay for these services. This survey helped price the clinical service to ensure high perceived health value for women, as well as financial attractiveness. The results found that the majority of women were willing to pay $35, and, as a result, this was used as the initial fee for the prevention service. Because most insurance companies are not reimbursing for prevention, this fee remained an out-of-pocket expense, which is unfortunate because even this nominal fee may limit the ability of the program to reach vulnerable populations of women.

Figure 1. Women’s Prevention Center clinician counseling women.
Ongoing Marketing

A marketing plan was begun to get the word out to women about the WPC services. Internal marketing of our services focused on word of mouth and the use of signs, business cards, and pamphlets placed in highly visible locations throughout the heart hospital and main hospital. The hospital newsletter Update and lobby displays were also used as vehicles for sharing information with employees and hospital visitors.

External marketing focused on several different types of media. Word of mouth was a common form of communication in early months. As the word spread, other forms of marketing were used, such as writing articles for community, business, and the foundation’s newsletters. A brief article in Healthy Communities, a quarterly newsletter distributed by the hospital, has proved to be the most successful way to recruit women for the prevention program. A public relations intern also developed WPC public service announcements, which have been aired on several radio stations in the metropolitan area. The opening of the new heart hospital in summer 2000 provided television media coverage, as well as an opportunity to develop its own section within the heart hospital Web page.

The last form of external marketing that has been used is speaking at both lay and professional conferences. The WPC has received 12 requests (to date) for community education programs related to improving cardiovascular health. WPC staff has discussed the topic of women and heart disease and the prevention program at seminars for retired hospital volunteers, foundation donors, the parish nurse community, cardiac rehabilitation professionals, and at a “Women at Midlife” conference. These community programs focused on increasing women’s knowledge on what they can do to lower their risk for heart disease. Silent auctions for personalized WPC assessments have also been offered at the American Heart Association’s Annual Gala’s. Currently, the program is running multiple advertisements in local outlying newspapers.

Another way to market the services of the women’s prevention program is through referrals from previous cardiac patients. This method, however, is dependent upon getting the word out to patients about the WPC. In the first 2 years of the program, patients referred 6 women for our services. These women included other members of patient’s immediate or extended families, friends, or neighbors. We hope to increase this referral base through greater program visibility both within the hospital and the larger community.
Sustainability

The core team that developed the design, implementation, and evaluation of the WPC has been a key ingredient to the success of the program. This team included the clinical nurse specialist (CNS) (cardiovascular fellow), wellness specialist who is an exercise physiologist, the director of the Heart Hospital (cardiovascular fellow, Class I), and the cardiac rehab/outreach leader (cardiovascular fellow, Class III). The strong support of administration, at both the hospital and the system levels, was also important in not only ensuring participation in the fellowship experience but also designing a potentially large-scale community program within the hospital setting. Other key assets in getting the program off the ground was the financial support obtained from Merck and Company and the program support received from our cardiology group affiliated with the heart hospital for a women’s primary prevention service.

In the second year of the program, a WPC steering committee was formed to help market and sustain the ALP. Women were recruited to serve on this steering committee from prominent companies, colleges, television stations, and parish nurse communities, as well as Merck and Company who provided the initial start-up money. Hospital staff also sat on the steering committee, including the heart hospital director, female cardiologist from our hospital-affiliated cardiology practice, exercise physiologist, cardiac rehabilitation leader, fellow CNS, director of the laboratory, and vice presidents of marketing and patient care. The committee meets quarterly and oversees the activities of the program. The main charge to the steering committee is to identify better ways to reach women in the community about their risk for heart disease and to develop innovative strategies to help women with risk factor modification.

An outgrowth of the steering committee has focused on exploring corporate prevention programs. In developing a proposal for such programs, a market analysis was done that found similar programs in the region were charging $75 for comparable services. An item analysis revealed our services were worth a value of $250. To further sustain the program and cover our internal costs, the fee for the personalized assessment was increased to $75 toward the end of the second year. However, hospital employees are still offered assessments at a discounted fee of $35 to promote employee wellness.

OUTCOMES

Demographics

Since opening its doors in November 1999, approximately 175 women have gone through the primary prevention program (at the time this article was written). However, 6 additional women have contacted the center and not shown for their appointment. As a result, 97% of women contacting the WPC follow-through with their assessment, indicating a high level of commitment. Approximately 50% of women who canceled their appointments (N = 6), rescheduled their assessment for a later date.

The ethnic background of the women seen has primarily been Caucasian (95%), although 3% of the population has been Black American, 1% Native American, and 1% Hispanic. The average age of women has been 51 years of age, with an average educational level of 3 years of college. Most women were married (68%), while 15% were single, 9% divorced, 6% widowed, and 1% separated.

Cardiovascular Assessment Data

The cardiovascular assessment data for the 175 women seen in this program are shown in Table 1. This table includes the percentage of women with each of the cardiovascular risk factors, along with their physical assessment and laboratory data. On the “Heart Test for Women” women’s average risk score was 16, indicating medium risk (where scores of 0-15 indicate low risk, 16-32 indicate medium risk, and >33 indicate high risk).

Table 1 shows the ranking of cardiovascular risk factor occurrence in this population of women. Stress was the most frequently occurring risk factor, identified by 75% of all women. The average level of self-perceived stress was “moderate.” Almost three fourths of the women (69%) also reported a positive family history for heart disease. Obesity,
the top third risk factor, was present in 56% of women. The average weight of women was 169 pounds, with a body-mass index of 28 (normal 21-25), and 32% body fat (normal approximately 22%-28%). Related to obesity, sedentary lifestyle was a frequently occurring risk factor in 55% of women. The average woman reported exercising 2 times per week for 25 minutes; however, there were many women who reported not exercising at any regular interval.

The fifth most frequently occurring cardiovascular risk factor was the presence of hyperlipidemia in 54% of the women. The average cholesterol readings in this population of women are shown in Table 1. All of the values were within normal range, with the exception of the total cholesterol being slightly above the normal range at 210 (however, the cholesterol ratio remained normal). Menopause was the next most frequent risk factor, with just more than half of the women (54%) reporting being in menopause. Of these women, 58% were on hormone replacement therapy (HRT).

Hypertension, smoking, and diabetes were the least frequently occurring risk factors in this population. Only 23% of women had a history of hypertension. The majority of these women were on antihypertensive medication, while approximately 10 women had newly elevated BP readings at their WPC visit and were referred back to their primary care physician for management. Only 5% of women were current smokers, indicating that few female smokers are taking advantage of the prevention program, perhaps due to the threat of receiving smoking cessation advice, and perhaps indicating they have not moved beyond the “precontemplation stage”. Lastly, only 2% of women had a history of diabetes and were controlling their blood sugar with appropriate medications and diet. No new elevated blood sugars were identified in women during their initial WPC visit.

### Lifestyle Change Outcomes

The global indicator that has been used to track women’s health behavior changes over time is the percentage of change in cardiovascular risk factor parameters. At the 3, 6, and 12-month follow-up times, women report back on those parameters for which they developed a specific goal. In other words, follow-up data on all the risk factor parameters are not obtained for every woman. With regard to the follow-up data, there has been a trend toward a diminished return rate over time. With this sample of 175 women, response rates were 41% at 3 months (N = 72), 30% at 6 months (N = 53), and 18% at 12 months (N = 32).

Table 2 delineates the percentage of change seen in the cardiovascular risk factors for this population of women at 3, 6, and 12 months (N = 175). As shown on Table 2, positive changes at 3 months were seen in diastolic BP (4% †), and frequency and duration of exercise (52% † and 32% ††), respectively. At 6 months, positive changes were seen in weight (2% ††), and again in both frequency and duration of exercise (31% † and 25% ††), respectively. For the 12-month period, positive changes were only seen in the frequency and duration of exercise (52% † and 23% ††), respectively. Insufficient data were obtained for many of the parameters, especially at the 6- and 12-month follow-up periods due to the diminished response rate.

Some positive trends have been seen in health behavior changes of women participating in this program to date. Beginning improvements were reported with regard to diastolic BP and weight reduction, while significant

### Table 2. Percentage of Change in Follow-up Parameters

<table>
<thead>
<tr>
<th>Cardiovascular Risk Factor</th>
<th>3 Month</th>
<th>6 Month</th>
<th>12 Month</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>% Change</td>
<td>N</td>
<td>% Change</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>†</td>
<td>2</td>
<td>†</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>1</td>
<td>15</td>
<td>†</td>
</tr>
<tr>
<td>Diastolic blood pressure</td>
<td>-4*</td>
<td>15</td>
<td>†</td>
</tr>
<tr>
<td>Weight</td>
<td>2</td>
<td>48</td>
<td>-2*</td>
</tr>
<tr>
<td>Body mass index</td>
<td>3</td>
<td>47</td>
<td>1</td>
</tr>
<tr>
<td>Waist-hip ratio</td>
<td>7</td>
<td>10</td>
<td>†</td>
</tr>
<tr>
<td>Exercise frequency</td>
<td>52*</td>
<td>62</td>
<td>31*</td>
</tr>
<tr>
<td>Exercise duration</td>
<td>32*</td>
<td>60</td>
<td>25*</td>
</tr>
<tr>
<td>Blood glucose</td>
<td>†</td>
<td>0</td>
<td>†</td>
</tr>
<tr>
<td>Total cholesterol</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
</tr>
<tr>
<td>Low-density lipoprotein cholesterol</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
</tr>
<tr>
<td>High-density lipoprotein cholesterol (HDL)</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
</tr>
<tr>
<td>Cholesterol/HDL ratio</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>‡</td>
<td>‡</td>
<td>†</td>
</tr>
</tbody>
</table>

*Change in positive direction.
†Insufficient data (% change reported only in those variables with at least 10 respondents).
‡Not monitored at 3 mo.
The QOL indicator used tracked SF-12 QOL scores. The Quality-of-Life Outcomes will be more relevant as more women take advantage of the primary prevention program over time. This indicator of disease of women in the metropolitan counties served by our hospital could be monitored to track the long-term effect of the primary prevention program. This indicator will be more relevant as more women take advantage of the primary prevention program over time.

Quality-of-Life Outcomes

The QOL indicator used tracked SF-12 QOL scores. The physical and mental scores for the women who participated in this program are shown in Table 3. These data reveal that at baseline, the women’s physical score was above the norms (52.6 vs. 49.1 normative data), suggesting they perceived an overall excellent level of physical health. At 3, 6, and 12 months however, their physical QOL scores dropped below the norms. This finding can be understood by noting that many women reported having illnesses, injuries, or surgeries such as tendinitis, gallbladder surgery, and herniated discs that affected their physical health.

In regard to the mental dimension, the women’s scores were slightly below the norms at baseline (48.3 vs. 49.4 normative data). At 3 months, the mental scores increased to 51.2. One explanation for this finding may be that the prevention program increased the women’s motivation and self-esteem to make needed lifestyle changes. However, the lack of further change in the mental score at 6 months suggests that more follow-up intervention may be needed to help women continue on their path of lifelong healthy behavior changes. As noted, with the percentage of lifestyle change data, the QOL scores must also be interpreted cautiously due to the decreased return rate over time. The QOL data will be more meaningful when a larger sample of women have completed the program and thus, more conclusions will be able to be drawn on the impact of the intervention on QOL.

Program Evaluation Outcomes

At the inception of the program, an evaluation tool was created to obtain feedback from women who received a WPC assessment. To date, 31 evaluations have been received (18% response rate). The majority of the women (> 90%) reported the atmosphere was professional, warm, and caring, and that they were assisted promptly with their appointment starting on time. In addition, the majority believed that their questions were answered and that they knew their next steps.

Several opportunities for improvement have been gleaned from this evaluation data. Only 77% of the women reported that the center was easy to find. As a result of this feedback, better signs and directions at the Information Desk in the lobby were created to direct women to the third floor area of the hospital. Less than 90% of women felt they left with new, useful information or a plan on how to make lifestyle changes, or believed the assessment was thorough, complete, and met their needs. This feedback was taken to the WPC Steering Committee (of which many of the members had received a personalized assessment themselves) to discuss ways to improve the assessments and better support women after the initial appointment. Members of the steering committee suggested that perhaps some women who came through the program were looking for a “magic bullet” related to weight loss or exercise but instead were disappointed when the tried-and-true methods for lifestyle management were reinforced (ie, the “eat less, exercise more” adage).

Additions to the program in early 2002 were bimonthly educational offerings for women participating in the program. A survey of women who have completed the program indicated the majority felt additional learning opportunities on heart health would help them stay engaged with their goals. To date, opportunities have been developed on “Shaking the Exercise Blues” offered by our exercise physiologist, “Heart-Healthy Nutrition” by our clinical dietitian, and “Managing your Cholesterol” by a nationally recognized advanced practice lipid expert.

IMPLICATIONS FOR RESEARCH

The area of primary prevention of heart disease in women is open to research possibilities. To name a few, studies that explore factors that increase the likelihood that women are able to successfully maintain lifestyle changes to decrease their cardiac risk are needed. By determining the personal, psychologic, and behavioral variables that may impact success, health care professionals can better craft interventions.

### Table 3. SF-12 Quality of Life

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Norm*</th>
<th>Baseline (N = 175)</th>
<th>3 Month (N = 72)</th>
<th>6 Month (N = 53)</th>
<th>12 Month (N = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical score</td>
<td>49.11 (13-65)</td>
<td>52.6</td>
<td>48.6</td>
<td>47.4</td>
<td>48.4</td>
</tr>
<tr>
<td>Mental score</td>
<td>49.42 (11-70)</td>
<td>48.3</td>
<td>51.2</td>
<td>51.2</td>
<td>52.5</td>
</tr>
</tbody>
</table>

that best support women. As a result, intervention studies could test what methods assist women in making needed lifestyle changes, such as more frequent personalized follow-up or community support groups. Specifically, testing which interventions are most successful in assisting women with weight, lipid, and exercise maintenance would address the needs of this population of women who are striving to reduce their cardiovascular risk.

Another area worthy of investigation is the effect that educational interventions have on lifestyle changes. Changes in women’s knowledge level of heart disease, risk factors, and heart-healthy behaviors before and after participation in a primary prevention program like the one discussed in this article, could be measured to assess this impact. A recent study reported a support and education intervention to improve preventive heart behaviors in women. In this study, 380 women between the ages of 20 and 50 were assigned to one of two groups. Women who were in the control group received a phone call, whereas women in the treatment group received two phone calls offering support and connections to health experts. These women also attended 2 to 4 classes on heart-healthy living. The investigators found that women who received ongoing support and simple instruction on diet, smoking cessation, exercise, and stress management were more likely to make healthy lifestyle changes during the next 12 months. For instance, 34% of the women in the treatment group reported exercising more (compared with only 22% in the control group).13

Another area of interest is to determine if a woman’s participation in a heart disease prevention program and their subsequent increased knowledge and role modeling of heart-healthy behaviors has any impact on the risk factor profile of other family members. As women often serve as the vehicle for health information into the family, their role modeling could have a tremendous impact on their family members, coworkers, neighbors, or other community members with whom they interact with frequently. It would also be interesting to explore and investigate the interest that men would have in a similar primary prevention program to reduce heart disease risk.

CASE STUDY

Betty is a 49-year-old Caucasian woman who called the WPC for a personalized assessment. At the initial visit, identified risk factors were active smoking, borderline hypertension (138/88), hyperlipidemia (total cholesterol 245, LDL 162, HDL 37, cholesterol/HDL ratio 6.99, and triglycerides 233), and stress. Although her BMI was 20, her waist-hip ratio was elevated at .86 (normal < .8) indicating an apple shape, which increases the risk for heart disease. Initial QOL scores were 58.49 (physical dimension) and 48.87 (mental dimension) (normative data in Table 3). This initial assessment met the first goal of the WPC program—to identify women at risk for heart disease. With 3 major cardiovascular risk factors and a medium risk score on the Heart Test for Women, these results clearly indicated that Betty was a woman at risk for heart disease.

As a result of the assessment, Betty’s main goal was to quit smoking. This self-identified goal indicated that she was in the “contemplation stage” of the Stages of Change Model. The timeframe she gave herself to accomplish this goal was 6 months. To meet the second program goal of providing risk factor education and counseling, the WPC clinician talked with Betty about strategies for quitting and provided her with information on smoking cessation support groups. Additional goals she set were to reduce her BP under 110/70, walk 3 times/week for 30 minutes, and to increase her hobbies to control stress. These goals also supported the fact that Betty came to her assessment in the “contemplation stage,” ready and committed to make some heart-healthy behavior changes. Because women are sent their cholesterol results after the initial visit, Betty was not aware of her hyperlipidemia and therefore, did not create goals specific to this issue.

On 3-month follow-up, Betty reported that she had not quit smoking, an indication that she had not moved past the “contemplation stage” into the “action stage.” Her BP at 120/80 had come down but was not quite at her goal. She was walking 3-4 times/week for 45 minutes, so she was meeting her goal for exercise duration (but not frequency). These behaviors showed evidence that Betty had successfully moved from the “action stage” into the “maintenance stage” for blood pressure management and exercise. At this time period, her QOL scores changed significantly. Her physical score of 55.26 was slightly less than baseline (58.49), but her mental score jumped from 48.87 to 60.70. This may have reflected that she felt she was managing her stress better through her hobbies.

Three more months went by and we heard from Betty at her 6-month follow-up. She had still not quit smoking, and this was the timeframe she had established to meet this goal. Her BP readings were the same as at the 3-month follow-up, she was exercising for 30 minutes (still for 3-4 times/week), and her stress management continued. These findings again showed she was in the “precontemplation or contemplation stage” for quitting smoking and well into the “maintenance stage” for other heart-healthy behavior changes. Her mental QOL score was still up at 56.91, but her physical score was down to 37.93. Betty did not report to us any other physical problems occurring at this time.

At the 12-month follow-up Betty did not report on her smoking status. This led us to question whether she was still smoking and possibly having negative feelings because she had not met her goal. Her BP was now at her goal of 110/70, and she continued to exercise 3-4 times/week for 30 minutes. Her stress management and use of hobbies continued to help as her mental QOL score was 57.62 and her physical score had risen significantly from the 6-month period to 44.49. Besides the continuation of smoking, her behaviors continued to show success with the “maintenance stage” of the Stages of Change Model.

In summary, the WPC intervention educated Betty on her cardiovascular risk factor profile. At the initial visit, she set out to work on smoking cessation, BP control, an exercise program, and spending time with hobbies for stress management. In tracking her outcomes during the year, Betty was successful in meeting 75% of her goals, but she had not reported quitting smoking. Other interventions to re-engage women are needed to provide them with the necessary education, motivation, and resources to successfully change risk factors, such as smoking, that may drastically increase their risk of developing—and dying—from heart disease.
The experience with the cardiovascular fellowship to improve cardiovascular health provided an excellent opportunity to exert all 3 spheres of CNS influence.\textsuperscript{14} Within the patient/client sphere, the outcomes of CNS influence were evident as the CNS used her clinical expertise and knowledge on women and heart disease and preventive cardiology. The CNS was in a pivotal place to teach women during their personalized appointments, as well as in the community, about the risk of heart disease in women, common signs and symptoms, and ways to reduce risk through lifestyle and medical management.

With regard to the nursing personnel sphere, the CNS had an opportunity to share her knowledge of women and heart disease with the staff to enable them to incorporate it into their daily practice with cardiovascular patients, and teach family members the importance of cardiovascular risk factor modification. By also teaching the staff about the WPC program, the CNS could encourage them to be the best role models of cardiovascular health to their patients, family members, and colleagues.

In the organization/network sphere, the CNS was able to implement a primary prevention program with a common vision and readily identifiable practice outcomes. The CNS collaborated with other healthcare providers and sought their expertise not only in providing service to women in the personalized assessments but also with program development and evaluation. The program was designed as a best-practice model of care, in that it reflected up-to-date clinical research in the area of women and heart disease and primary prevention. By analyzing the outcomes of the primary prevention goals met by women, the CNS demonstrated to administration the effectiveness of the program and, ultimately, the value of the program to the larger community served by the hospital.

Regardless of specialty area, CNSs have a responsibility to branch out into the realm of prevention. As Karen Forbes stated in her editorial of almost 10 years ago, although advanced practice nurses are taught to care for ill patients, they must also work strongly to prevent people from becoming ill in the first place. They must learn to focus their cherished resources on health promotion efforts.\textsuperscript{15} The CNS can play a pivotal role as healthcare moves from the curative to the preventive model. CNSs in other specialties have tremendous opportunity to effect prevention. For instance, the critical care CNS could develop campaigns related to seatbelt use to reduce injury associated with motor vehicle accidents, the behavioral health CNS could make an impact on mental health by focusing on depression screening and suicide awareness, and the oncology CNS could concentrate on a never-ending array of preventive areas, from breast and testicular self-examination to proper nutrition and smoking cessation.

By exercising their expert knowledge base and leadership skills, CNSs can partner with nursing and interdisciplinary colleagues to effect healthcare outcomes across the care continuum from prevention to diagnosis and disease management. As outlined in the Statement on Clinical Nurse Specialist Practice and Education,\textsuperscript{14} the ability to influence is the hallmark of effective CNS practice. This ability to influence is directly related to core competencies related to professional attributes and skills in the realms of leadership, collaboration, and consultation. The WPC is one example of how a CNS partnered with an expert wellness specialist to help women reduce their risk for heart disease, the number one killer of women in our country today.

Acknowledgments
The authors thank the Administration of United Hospital, specifically Barbara Balik, Mary Ann Newman and Chris Seitz, and the Allina Health System, for their support of the Cardiovascular Fellowship Program. They also thank Sue Penke, Director of the John Nassif Heart Hospital, and Monica Rudiger, Cardiovascular Rehab Leader, for sharing their expertise as Cardiovascular Fellows and supporting the vision for this prevention program for women.

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