

# Arkansas Nurses Association Continuing Education Activity

## Heart Disease in Women: Risk Factors and Symptoms

**Purpose:** The purpose of the continuing nursing education (CNE) activity is to inform nurses in Arkansas about statistics related to women and cardiovascular disease, women's risk factors by ethnicity for developing coronary artery disease, and women's most common prodromal and acute symptoms of coronary heart disease.

**Objectives:** Upon completion of this CNE activity, the learner will:

1. Identify the most frequent cause of death in women.
2. Identify the most common risk factors for heart disease in women, both nationally and in Arkansas.
3. Describe women's five most frequently reported early warning symptoms prior to myocardial infarction.
4. Recognize women's five most commonly reported acute symptoms of myocardial infarction.
5. Identify timing of and interventions for coronary heart disease that nurses can implement in a variety of health care settings.

**Contact Hours:** 1.0 contact hours will be awarded for successful completion of this CNE activity.

**Registration Fee:** ARNA Members: \$10.00; Non-members: \$15.00

**Directions:**

1. Please read the article "Heart Disease in Women: Risk Factors and Symptoms."
2. Complete the Continuing Education Registration Form which includes the post-test and evaluation.
3. When you have completed all of this information, return the form and the registration fee to the Arkansas Nurses Association; 1123 So. University, Suite 1015; Little Rock, AR 72204; (501)-244-2363.

**Successful Completion:** The post-test will be reviewed and if a score of 70 percent or better is achieved, a certificate of successful completion will be issued. If a score of 70 percent is not achieved, a letter of notification of the final score and a second post-test will be sent. It is recommended that the article be reviewed prior to taking the second post-test. If a score of 70 percent or above is achieved on the second post-test, a certificate will be issued.

This CNE activity has no commercial support and the author(s) have declared no vested interest, conflict of interest or off-label use.

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# Heart Disease in Women: Risk Factors and Symptoms

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## Purpose of manuscript:

The purpose of this manuscript is to inform the nurses in Arkansas about statistics related to women and cardiovascular disease, women's risk factors by ethnicity for developing coronary heart disease, and women's most common prodromal and acute symptoms of coronary heart disease.

## INTRODUCTION

Women continue to die at an alarming rate from cardiovascular disease (CVD). Despite CVD being the leading cause of death of women in the United States (U.S.) with deaths exceeding 460,000 per year, in a recent survey less than 1 in 5 physicians were aware that more women than men die from CVD.<sup>1</sup> In fact, one in 2.6 deaths in U.S. women is attributable to CVD.<sup>2</sup> Considering both direct and indirect costs associated with this disabling disease affecting both genders, costs in 2007 in the U.S. are estimated to reach \$431.8 billion<sup>2</sup> and to escalate to \$2.8 trillion by 2011.<sup>3</sup>

Coronary heart disease (CHD), a classification of CVD, exacts a terrible burden on the health of Americans and especially Arkansans. In 2005, the percentage of women with heart disease nationally was 3.6 percent, but women in Arkansas were more likely than the national average to have a diagnosis of heart disease (4.1 percent).<sup>4</sup> In 2003, 28.2 percent of female deaths in Arkansas were attributed to CHD, while another 10.8 percent of deaths were caused by other types of CVD.<sup>5</sup> Importantly, CHD killed more female Arkansans than the next five leading causes of death combined.<sup>6</sup>

Once CHD progresses and women experience a myocardial infarction (MI), the aftermath is especially devastating to women who survive the initial infarction. Women have both higher mortality and morbidity rates than men following a MI. Women having a first MI are more likely than men to die within five years and/or to develop heart failure.<sup>2</sup> Despite these major complications, women are 55 percent less likely to participate in cardiac rehabilitation,<sup>7</sup> although research has demonstrated that they benefit equally to men.<sup>8,9</sup>

A two-pronged approach is necessary to reduce the alarming toll that CHD inflicts on women in the U.S. and Arkansas. First, women need to be educated about their risks for CHD and advised about the actions they may take to modify their risk factors to either prevent the development of CHD or for secondary prevention if they have already experienced a MI. Secondly, they need knowledge about women's early warning symptoms of CHD to facilitate timely treatment that may prevent or delay onset of MI. They need to know women's most common MI symptoms to increase early recognition of these symptoms and to assist in decreasing delay time in seeking medical care.

Nurses, regardless of practice setting, are in a primary position to assist in combating this deadly and primarily preventable disease. At every encounter, nurses should assess all women for CHD risk factors and provide necessary education and assistance to women to promote bio-behavioral activities and lifestyle changes to reduce risk. The most common modifiable risk factors for CHD and women's most common symptoms associated with CHD and MI follow. We emphasize risk factors of women in Arkansas

## MODIFIABLE CHD RISK FACTORS

Men and women share the most common modifiable CHD risk factors, but women average a greater total number of risk factors than men. In Arkansas, the prevalence of multiple CHD risk factors was 40 percent in 2003.<sup>2</sup> The most common modifiable risk factors are sedentary life style, hypertension, obesity, diabetes, altered lipid levels, and smoking.

According to the most recent Behavioral Risk Factor Surveillance System Survey,<sup>4</sup> women in Arkansas have consistently more than the national average of every individual risk factor (see Figure 1). The national average of women who do not exercise (sedentary lifestyle) is 25.6 percent, versus 33.3

percent in Arkansas. Sedentary lifestyle often sets in motion a cascade of other recognized risk factors: hypertension, obesity, and diabetes. The national average for women with high blood pressure in 2005 was 24.9 percent, as compared with 28.5 percent in Arkansas. Although the percent of overweight women in Arkansas is only slightly higher than the national average, the percent of Arkansas women who are obese is 28.2 percent, essentially four percent higher than the national average of 24.0 percent. Over 7 million women are diagnosed with diabetes, one of the most potent risk factors for developing CHD. Minority women are almost three times as likely as white women to be diagnosed with diabetes.<sup>10</sup> Elevated lipid levels are influenced by eating patterns and food preparation styles. Nationally, 71.9 percent versus 74.8 percent of women in Arkansas do not eat the recommended five fruits and vegetables a day. This is important since eating a diet low in saturated fats and high in fruits and vegetables is associated with lower levels of cholesterol and other lipid measurements. Additionally, Arkansas and other southern states are well known for frying foods, which contributes to elevated lipid levels. Many women in Arkansas, as is true nationally, do not know their cholesterol/lipid levels. Without this knowledge, it is difficult for women to recognize the need to modify their diet to decrease their CHD risk. Finally, the percent of smokers in the U.S. in 2005 was 19.2 percent vs. 21.9 percent in Arkansas. Although the rate of smoking in Arkansas has declined from 25 percent in 2003, the current rate of smoking remains well above the national average.<sup>11,4</sup> Smoking is one of the most potent risk factors, with consumption of one cigarette daily increasing CHD risk.

#### WOMEN'S SYMPTOMS OF CHD

Health professionals assumed for years that women's causes, symptoms of, and treatment for CHD would mimic men's. Although CHD death rates in women have exceeded those of men since 1985,<sup>12</sup> women were essentially excluded from participation in clinical trials until the early 1990s, when their inclusion was mandated by the U.S. government. However, currently only 38 percent of subjects are women in mixed-sex CHD studies.<sup>13</sup>

Despite women's under representation in research studies, findings from studies with large numbers of women are beginning to dispel the assumptions that men and women with CHD have similar symptoms and response to treat-

ment. These sex differences are supported by a recent Institute of Medicine Report,<sup>14</sup> which concludes that after the reproductive system, the cardiovascular system has the most sex differences. This report highlights the research of many investigators who noted sex differences in CHD etiology, diagnosis, and response to treatment. For instance, women as compared to men, have smaller coronary arteries, higher levels of microvasculature involvement with CHD, higher rates of mitral valve disease, and more endothelial dysfunction.<sup>15-17</sup> These differences affect women's CHD symptom presentation and their response to treatment.

There is an expanding body of literature related to women and CHD but controversy exists related to women's CHD symptoms. Some of the controversy may be related to exclusion of persons from major clinical trials that do not present with chest pain or have other atypical presentation,<sup>18</sup> more commonly seen in women. Other studies also contribute to the confusion since the investigators grouped all data pertaining to chest sensations into a single symptom labeled chest pain, despite some women never describing their chest symptoms as pain.<sup>19</sup> Therefore, even when women were included in studies, their data were often not analyzed separately or presented in a manner to provide a clear picture of women's CHD symptoms.

McSweeney and colleagues conducted two recent studies,<sup>20,21</sup> funded by the National Institute of Nursing Research, that examined symptoms and descriptors of symptoms that women reported experiencing prior to and with a MI. They combined data from these two studies to create a large database of symptoms reported by 1270 women. The investigators queried women about both prodromal (early warning) symptoms that preceded the MI episode and acute symptoms during the MI. McSweeney and colleagues recruited women from 15 medical centers nationwide: Arkansas, Florida, North and South Carolina, Ohio, Louisiana, Texas, and California. Participating Medical Centers in Arkansas included the University of Arkansas for Medical Sciences University Hospital, Arkansas Heart Hospital, St. Vincent Infirmiry Medical Center, and Jefferson Regional Medical Center. Therefore, women throughout Arkansas provided valuable data for this national multi-site study

investigating women's CHD symptoms.

For these studies, McSweeney and colleagues recruited 1270 women racially diverse women: 43 percent were black/African American, 42 percent white, and 15 percent Hispanic. The women in the study were cognitively intact, 21 years of age or older, and had experienced a MI in the previous four to six months. The majority (85 percent) of women was over 50 years and had attended high school.

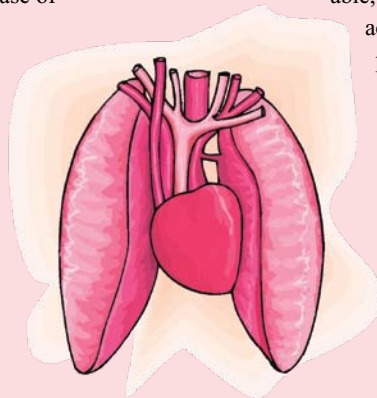
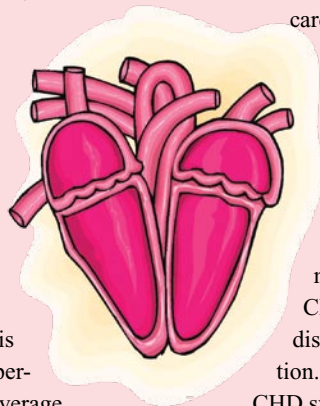
The women reported numerous risk factors: family history of CHD (92 percent), hypertension (78 percent), high cholesterol (64 percent), second had smoke exposure (62 percent), and no consistent leisure time physical activity (55 percent). These are commonly recognized risk modifiable risk factors for CHD except for family history. Since CHD is a primarily preventable disease, modifying these risk factors prior to MI may have prevented or delayed women's MIs.

The research team used the McSweeney Acute and Prodromal Myocardial Infarction Symptom Survey to query women about their symptoms. This instrument, that contains 33 prodromal and 37 acute symptoms, was developed over several years.<sup>22</sup> Its content is based on over 150 interviews with women who had experienced a MI.

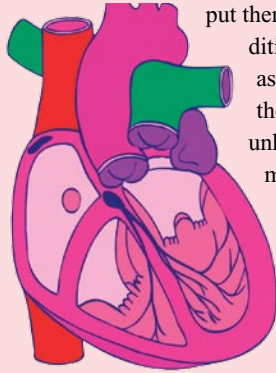
Prodromal (early warning) symptoms are intermittent symptoms that are either new or previously occurring symptoms that increase in intensity and/or frequency before the MI and revert to previous levels after the MI. Over 95.5 percent of women (n=1213) reported prodromal symptoms. The most frequently reported prodromal symptoms were unusual fatigue, sleep disturbance, anxiety, shortness of breath, and frequent indigestion (see Table 1). Women described the fatigue as unusual, unexplainable, and it interfered with their

activities of daily living. Chest pain/discomfort was not one of the most frequently reported prodromal symptoms. Since we asked about four locations of chest involvement, we combine these plus all descriptors of chest involvement, such as burning, pressure, pain, etc., to determine the number of women who reported any chest symptoms during the prodromal period. A total of 457 (38 percent) reported some type of chest involvement. Therefore, chest pain/discomfort was not a frequently reported prodromal symptom in the month(s) prior to MI.

Acute symptoms are defined as symptoms that appear during the MI episode and are not resolved until treatment is received for the MI.



Essentially, all 1270 women reported at least one acute symptom. The most frequently reported acute symptoms were shortness of breath, weakness, fatigue, dizziness, and breaking into a cold sweat (see Table 2). We combined all locations and descriptors of chest involvement as we did for the prodromal symptoms, to accurately determine the number with chest involvement. After combining the four chest location questions, 785 (65 percent) reported experiencing some type of chest involvement, making it the most frequently reported acute symptom. However, women often described this involvement as burning, ache, pressure, etc., rather than pain. Therefore, nurses need to assess for any type of chest discomfort, not just chest pain. Additionally, since 35 percent of the women in this study never reported any chest symptoms during the MI, assessing for the other most frequently reported acute symptoms, such as shortness of breath, generalized weakness, etc., is essential to assist in decreasing the number of women who are mistakenly sent home from emergency departments and health care clinics with an undiagnosed MI. This is an important finding since diagnosing MI in patients without chest pain is a difficult challenge and often results in less than optimal health outcomes.



Numerous studies support that health care providers continue to have difficulty recognizing non-chest pain symptoms as indicative of MI or acute coronary syndrome (ACS). This is especially pronounced in women and the elderly.<sup>23</sup> In a study of 20,881 persons presenting with ACS, 1762 (eight percent), did not report any chest pain (majority of women). The most common non-chest pain symptoms were dyspnea (49 percent), diaphoresis (26 percent), nausea and/or vomiting (24 percent), and pre-syncope/syncope (19 percent). These symptoms are similar to those reported by McSweeney and colleagues. Of those presenting without chest pain, 24 percent were not diagnosed correctly versus two percent reporting chest pain diagnosed incorrectly. This is extremely important as it results in women being less likely to receive diagnostic tests and optimal treatment before and even after ACS.<sup>24</sup> Those without chest pain had more in-hospital complications and mortality. These findings support a study by Canto et al.,<sup>25</sup> who reported that one third of 434,877 ACS patients did not have chest pain on admission, were more likely to be women 75 or over, and less likely to receive aggressive treatment, to have higher mortality rate, and more likely to develop complications such as heart failure. Despite the cumulating evidence, researchers continue to report that ACS/MI is often missed in women.<sup>26</sup>

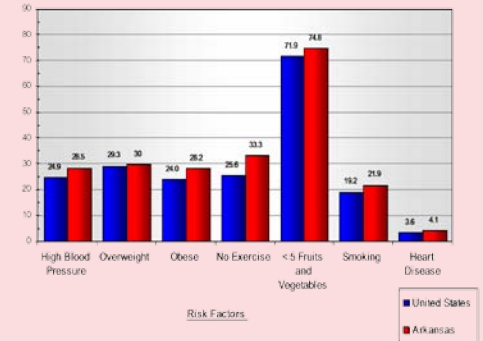
### Practice Applications

CHD is a primarily preventable disease. If all women would decrease or control their CHD risk factors, the number of women diagnosed with CHD and MI each year would substantially decrease. Nurses have an essential role in promoting prevention of CHD. Nurses are in a position to talk with clients about their lifestyles to detect CHD risk factors using a formal assessment checklist or simply while discussing health issues. Although persons may be aware of their unhealthy behaviors, they may not realize these behaviors put them at greater risk for developing CHD. Additionally, persons need encouragement and assistance from a health provider to change their behavior and to learn how to modify unhealthy behavior. A variety of educational materials are available, but the effectiveness of these materials is enhanced when a health professional discusses them with the client. A model program for smoking cessation in Arkansas is funded by the Arkansas Tobacco Settlement money. A website, AR STOPS, includes free materials for patients and healthcare providers. These materials can be accessed at: <http://uams.edu/coph/tobacco/>.

In all settings, nurses can assist with health fairs to educate families on heart health and conduct screenings and referrals for those at risk. They can collaborate and serve on community organization committees to develop interventions or promote policy change to improve community/organizational health. This could involve advocating for well-lit neighborhoods for walking and sidewalks for children to walk or bike to school. Nurses can advocate for system change in clinic practices to develop an organized practice team and teach patients to be proactive to improve quality of care and control risk factors for CHD. The Arkansas Chronic Illness Collaborate provides learning sessions on the use of care models for organizing clinic practice teams and working with patients to control their chronic diseases, such as CHD. The Arkansas Department of Health has resources available to assist nurses in carrying out these activities, as well as health educators to help conduct healthy heart classes. The health department also has chronic disease community grants available to promote heart health.

In worksites, occupational nurses can work with human resource departments to encourage employee health assessments, council those with risk factors for CVD, and hold smoking cessation and weight management classes. School nurses can work with superintendents, teachers, and parents to encourage heart healthy foods in schools. They also may help identify children with elevated levels of cholesterol, high blood pressure, and diabetes and urge parents to seek further evaluation or assist them to find providers.

In summary, nurses play an important role in educating Arkansas citizens on the importance of heart health, especially in worksite, community, and health care settings. Nurses should assess clients for CHD risks at every encounter and encourage appropriate action. Knowing women's most common CHD and MI symptoms, especially if combined with potent CHD risk factors, should assist nurses and women to take appropriate action. All nurses, working together, can make a difference in Arkansas women's heart health.



Centers for Disease Control and Prevention (CDC). (2005) Behavioral Risk Factor Surveillance System Survey Data. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

**Table 1.**  
**Women's 5 Most Frequently Reported Individual Prodromal Symptoms. N=1270**

Prodromal Symptoms	Total Number	Percent Reporting
Unusual Fatigue	930	73%
Sleep Disturbance	638	50%
Fleeting Anxiety	573	45%
Shortness of Breath	565	45%
Frequent Indigestion	494	39%

**Table 2.**  
**Women's 5 Most Frequently Reported Individual Acute Symptoms. N= 1270**

Acute Symptoms	Total Number	Percent Reporting
Shortness of Breath	798	63%
Generalized Weakness	697	55%
Fatigue	613	48%
Dizziness	559	44%
Cold Sweat	508	40%

Questions for Continuing Education Credit

- The most common cause of death in women in Arkansas is:
  - breast cancer
  - coronary heart disease
  - accidents
  - lung cancer
- After experiencing a myocardial infarction, women are more likely than men to:
  - develop congestive heart failure
  - die
  - attend cardiac rehabilitation
  - a and b
  - b and c
- According to the Behavioral Risk Factor Surveillance System Survey, what percentage of women in Arkansas do not exercise?
  - 10.4%
  - 18.6%
  - 33.3%
  - 50.1%
- What is the prevalence of multiple risk factors for CHD in Arkansas?
  - 10%
  - 20%
  - 30%
  - 40%
- Women's most commonly reported early warning prodromal symptom in the study by McSweeney and colleagues was:
  - unusual fatigue
  - chest pain
  - nausea and vomiting
  - sleep anxiety

- In McSweeney and colleague's study, the two most common acute symptoms (including both individual and inclusive symptoms) during a myocardial infarction were:
  - chest pain and anxiety
  - anxiety and generalized weakness
  - nausea and vomiting
  - shortness of breath and chest discomfort
- Persons who present with non-chest pain acute coronary syndrome (myocardial infarction) as compared to those with chest pain:
  - are just as likely to receive aggressive and appropriate treatment
  - have fewer complications after MI
  - have shorter hospital stays
  - are more likely to be women and older
- The prime time for nurses to discuss CHD risk factors with women is:
  - during the annual exam visit
  - during scheduled patient education
  - at every encounter
  - when women have questions

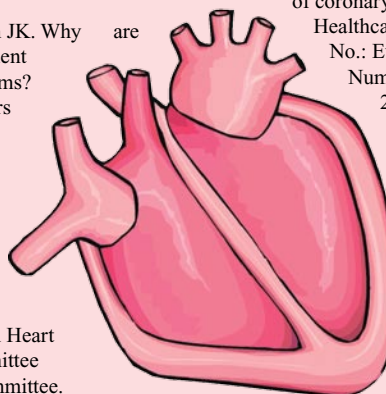
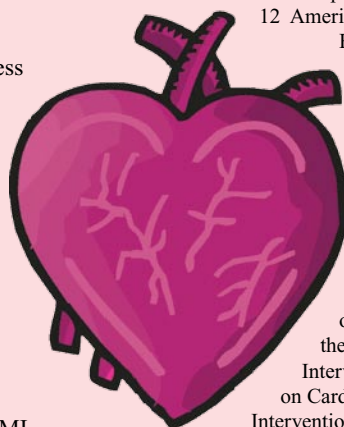
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# Arkansas Nurses Association Continuing Nurses Education Registration Form

Program Title: Heart Disease in Women: Risk Factors and Symptoms

Expiration Date: December 2011

Registration Fee: ARNA Member: \$10.00; Non-Member: \$15.00

Directions: To earn 1.0 contact hours, complete sections A, B, and C of this and return with the registration fee to:  
Arkansas Nurses Association, 1123, S. University, Suite 1015, Little Rock, AR 72204

Phone: 501-244-2363

If paying by credit care, you may fax this form to: 501-244-9903

Visa/Master Card # \_\_\_\_\_

Expiration Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Section A (please print and complete all information)

Name (first, mi, last) \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail \_\_\_\_\_

State of Licensure:  RN  LPN  Other

Section B: Mark your answers in the space provided. Each question has only one correct answer.

- | A  | B                        | C                        | D                        | A   | B                        | C                        | D                        |
|----|--------------------------|--------------------------|--------------------------|-----|--------------------------|--------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 5. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Section C: Learner evaluation, please circle the appropriate answer

1. Were the objectives met? Y  N
2. Was the learning method effective? Y  N
3. Was the author(s) effective in presenting the material? Y  N
4. How long did it take to you to complete the activity and test? \_\_\_\_\_

The Arkansas Nurses Association is accredited as a provider of continuing nursing education by the American Nurses Credential Center's Commission on Accreditation.