



## Module 4: Heart Disease

The Ob/Gyn Alliance *Ask the Experts* series is supported by an unrestricted educational grant from Xanodyne Pharmaceuticals.

### BACKGROUND

Cardiovascular disease (CVD) is the leading cause of death among men and women accounting for nearly half of all deaths as well as causing significant morbidity within the United States. Many physicians and patients do not recognize the impact on females. In a recent national survey of physician awareness regarding prevention guidelines for CVD, it was noted that *fewer* than 1 in 5 physicians knew that *more women than men die each year from CVD*.(1)

For women, CVD tends to appear later in life by 10-20 years, perhaps due to the protective effects of estrogen. Yet, once women develop CVD, they have a poorer prognosis with 64% of women (compared to 50% of men) dying suddenly from CVD without prior symptoms.(2)

### WHAT PHYSICIANS NEED TO KNOW

- One in three female adults has some form of cardiovascular disease.
- Since 1984, the number of CVD deaths for females has exceeded those for males.
- In 2004 within the US, CVD was the cause of death in 459,096 females. Females represent 52.8 percent of deaths from CVD.
- In 2004 within the United States, all cardiovascular diseases combined claimed the lives of 459,096 females while all forms of cancer combined to kill 267,058 females. Breast cancer claimed the lives of 40,954 females; lung cancer claimed 68,461.(3)

### Signs and Symptoms:

In terms of assessment for coronary artery disease, the gold standard for testing is the angiogram. However, according to a study called the Women's Ischemia Syndrome Evaluation (WISE) angiograms may *not* pick up diffuse plaque that tends to form in the smaller coronary arteries of a woman's heart. This study is an NHLBI sponsored study that is set to evaluate innovative diagnostic methods that improves the diagnostic reliability of cardiovascular testing in evaluating ischemic heart disease in women ([www.edu.pitt.edu/wise](http://www.edu.pitt.edu/wise)).

The signs and symptoms of cardiovascular disease differ between men and women. Both may experience pain, pressure or discomfort in the chest area, however, a woman's symptoms may be more subtle. Pain may be the lesser of a number of other symptoms she may also be feeling, including:

- Anxiety
- Indigestion
- Overwhelming fatigue
- Trouble sleeping
- Dizziness or light headedness
- Sweating
- Nausea
- Shortness of breath
- Shoulder, neck, upper back or abdominal discomfort

Risk Factors for heart disease include the following:

#### Cigarette Smoking:

Cigarette smoking is the leading cause of preventable deaths in this country. Cigarette smoking is associated with a two-fold increase in CHD incidence and a 70% increase in CHD mortality. Short term effects of smoking include increased risk of arrhythmias, platelet aggregation, thrombosis and arterial spasms. Long term effects are seen in reductions in HDL levels, endothelial damage, inflammation and other atherogenic changes.(4) The prevalence of cigarette smoking declined between 1965 and 2005 in both men and women, however, 1 in 5 high school students is a current smoker.(5) In the Nurses Health Study, women who quit smoking had immediate health benefits and saw a long term decline in excess risk of CHD.

#### High Cholesterol:

Elevated blood cholesterol levels (LDL-C) are recognized as a major risk factor for heart disease and an increased risk of stroke among women. Population studies provide evidence of associations between diets high in saturated fatty acids and increased total cholesterol levels and LDL levels in a dose dependent manner.(6) Saturated fats from animal products, hydrogenated and trans fats found in processed foods have been shown to have a greater effect on serum cholesterol levels than dietary cholesterol intake. Trans fatty acids have the added disadvantage of lower protective levels of HDL cholesterol and research has shown that low levels of HDL cholesterol seem to be a stronger risk factor than for men. When evaluating cholesterol levels and risk, it is also important to determine the characteristics of the LDL cholesterol. With the LDL fraction known as Type B, the smaller, denser size is more atherogenic and more likely to accumulate in the lining of the arteries. The larger Type A LDL fraction is less dense and poses much less risk. Inflammatory markers should also be measured to get an adequate assessment of risk. Inflammation is thought to be an underlying cause of CVD increasing the risk of stroke and damage to arterial lining which precedes plaque formation.

#### High Blood Pressure:

High blood pressure is another major risk factor for CVD and the most important risk factor for stroke. Women are at an increased risk of developing high blood pressure if they are overweight or obese, have a family history of high blood pressure, are pregnant, take certain types of birth control pills or are at least 55 years of age and/or postmenopausal.

#### Type 2 Diabetes:

Type 2 diabetes is a major risk factor for CVD among women. As we noted in a prior "Ask the Expert" module, the rates of overweight and obese women (and men) are escalating in the U.S. Newly released estimates for 2006 indicate that two-thirds of our adult population is overweight, and 35% of women and 33% of men are obese. This rise in obesity is accompanied by a 61% increase in the prevalence of diabetes over the previous decade.(1) CVD and type 2 diabetes share common, lifestyle-related risk factors that are *largely preventable*. It is of paramount importance for physicians and other healthcare providers to emphasize this to female patients. Furthermore, the Nurse's Health Study found that 74% of CVD and 91% of diabetes cases in women could be prevented by changes in lifestyle risk factors. The risk factors that could be impacted include: smoking, participating in regular exercise or physical activity, maintaining a healthy weight, improving diet and consuming moderate amounts of alcohol.

Efforts directed at controlling these risk factors will go a long way towards reducing the gender differences in CVD outcomes.

#### Weight:

Excess weight is a major risk factor for CVD. Associated risk factors include cholesterol levels, blood pressure, blood sugar levels, insulin resistance, dyslipidemia, and elevations in inflammatory makers such as C-reactive protein, interleukin-6, and tumor necrosis factor  $\alpha$ . The distribution of excess fat also affects cardiovascular risk. Adipose tissue that is situated in and around the waist, abdomen, and upper body (also known as “apple” body type) is more metabolically active than in other regions of the body. These fat stores are more sensitive to lipolysis, increasing free fatty acids and glycerol in the blood and ultimately resulting in increased insulin resistance.(7)

#### Inactivity:

Leading health agencies have long recommended that adults perform a minimum of 30 minutes of moderate intensity exercise or activity most days of the week, and yet only 28% of US women and 31% of men exercise enough to meet these guidelines. Unfortunately, 41% of women engage in no physical activity at all.(8) The cardiovascular benefits of walking have been reported in a number of studies including the Women’s Health Initiative Observational Study and The Nurses’ Health Study.(9-10) Women who engaged in 3 hours per week of brisk walking or 1.5 hours per week of vigorous exercise had a 30 -40% lower risk of MI than their sedentary peers. Benefits in cardiovascular risk profile are seen as a result of in bouts of exercise lasting as little as 10 minutes.

#### Depression:

Occurring twice as often in women as compared to men, depression increases the risk of heart disease two to three times when compared to populations who are not depressed. It has been estimated that one in five women who are hospitalized for a cardiovascular event have evidence of depression. As primary care providers, Ob/Gyn physicians can impact the evaluation and treatment of depression.

#### Diet:

Many studies focus on whole diets rather than isolated nutrients or single foods. Many have shown that certain patterns of eating are associated with lower cardiovascular and metabolic risk factors and clinical CVD events.(11) These eating patterns include an emphasis on plant-based diets that include an abundance of fruits and vegetables, a variety of whole grains, healthy fats (unsaturated plant oils, nuts and omega 3 fatty acids), protein (nuts, legumes, fish and poultry), minimal refined grains, sweetened beverages and red meat. One example of this is the traditional Mediterranean diet, which adherence to has consistently demonstrated significant reductions in CVD mortality. Results from The Lyon Heart Study reported an astounding 72% lower risk of recurrent MI or cardiac death after 3.8 years for subjects randomized to a Mediterranean style diet, as compared to the control diet resembling the AHA Step 1 diet.(12) It is significant to mention that this type of diet also improved markers associated with metabolic syndrome (a known risk factor for CVD), including reduced insulin resistance, inflammation and endothelial dysfunction.

In summary, research has made great progress in identifying lifestyle factors that could drastically reduce the incidence of CVD. The challenge for health care providers is to establish how to best promote these preventive strategies within their patient populations, to educate patients on the subtle signs and symptoms of the disease, and to take the appropriate and necessary action.

## WHAT PATIENTS NEED TO KNOW

Cardiovascular Disease is the number one cause of death for women in the United States. Many women fear a diagnosis of cancer and believe this to be the greatest health threat, when in fact, nearly twice as many women in the United States will die of heart disease, stroke and other cardiovascular diseases compared to all forms of cancer, including breast cancer.

There are many risk factors that increase a person's risk for heart disease; The more factors, the greater the risk. Some of these factors are not preventable or controllable, including age, race, sex and family history. Many, however, can be impacted. These risk factors include:

1. **Smoking**
  - Smoking compromises your health. Smoking is a major cause of cardiovascular heart disease among women and the single most preventable cause of death in the United States. Women who smoke and use birth control pills have a higher risk of heart attack and stroke than nonsmokers who use them.
2. **High blood cholesterol**
  - High blood cholesterol is a major risk factor for heart disease. Beginning around age 55, a women's cholesterol level begins to increase. High levels of LDL (low-density lipoprotein) cholesterol (the "bad" cholesterol) raise the risk of heart disease and heart attack. High levels of HDL (high-density lipoprotein) cholesterol (the "good" cholesterol) are considered protective and help to lower the risk of heart disease. Research has demonstrated that low levels of HDL cholesterol seem to be a stronger risk factor for women than for men.
3. **High blood pressure**
  - Women who take certain types of birth control, have a family history of high blood pressure or are overweight have an increased risk of developing high blood pressure. African-American women have higher than average blood pressure levels compared to Caucasian women.
4. **Lack of physical exercise**
  - Lack of physical activity nearly doubles the risk of heart disease. When you're inactive and eat too much, you can gain excess weight which may lead to high cholesterol levels, high blood pressure, and diabetes. All of these factors increase the risk for heart disease and stroke. The American Heart Association recommends partaking in at least 30 minutes of physical activity on most or all days of the week.
5. **Obesity and overweight**
  - Being overweight and having an excess amount fat around your middle is a risk factor for high blood pressure, high blood cholesterol, high triglycerides, diabetes, heart disease and stroke. Waist fat is metabolically inactive and the source of compounds which increase inflammation in your body.
6. **Type 2 diabetes mellitus**
  - The risk of dying from heart disease is increased two to four times in adults with diabetes. This makes it even more imperative to keep your weight under control, eat a healthy diet and get regular exercise.

Know the signs:

- Unexplained feelings of anxiety or nervousness
- Indigestion
- Overwhelming fatigue
- Trouble sleeping
- Dizziness or light headedness
- Sweating
- Nausea
- Shortness of breath
- Shoulder, neck upper back or abdominal discomfort

#### Know your numbers:

- Blood pressure should be below 120/80 mm Hg
- LDL cholesterol should be below 100 mg/dl
- HDL cholesterol should be greater than 50 mg/dl
- Triglyceride levels should be under 150 mg/dl

#### Know your risk factors and take action:

- Smoking
- Overweight and obesity
- High blood pressure
- High cholesterol
- History of diabetes
- Lack of physical activity
- Stress and depression
- Menopause
- Hormonal replacement therapy
- Birth control pills
- Diet

#### Dietary factors:

- Consume a diet that is rich in a variety of fruits and vegetables. Try to achieve an intake of greater than 7-9 servings per day. Use every meal and snack as an opportunity to reach your goal.
- Increase consumption of interesting whole grains in salads and as side dishes in place of rice or pasta. Consider millet, amaranth, quinoa, teff, barley, wheat berries, etc.
- Consume more fish--especially cold water fish such as wild salmon, herring and sardines that are high in omega 3 fatty acids. If you are not eating fish three times per week or consuming at least 15oz of fish per week, consider the use of a high quality supplement.
- Limited saturated fats found in red meat and other animal products, and opt for alternatives that include plant proteins such as beans, peas and legumes. Select low fat or fat free dairy products and minimize your intake of foods that contain hydrogenated fats.
- Eat less refined and processed foods to decrease excessive sodium intake. Try to keep your sodium intake below 2300 mg per day (about 1 tsp). Check labels for actual sodium content.
- If you do not drink do not start. If you do drink, drink moderately consuming no more than one drink per day.

To ask a question related to program module, please email our experts at [info@obgynalliance.com](mailto:info@obgynalliance.com).

The next module in our series will discuss Metabolic Syndrome. The National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) defines Metabolic Syndrome as a clustering of interrelated risk factors which are associated with a two-fold increase in the risk for cardiovascular events and a four-fold increase in the risk for diabetes. The Metabolic Syndrome module will again address the need for primary prevention and the critical role of the physician.

## References:

- (1) Mosca L, Linfante AH, Benjamin EJ, et al. National study of physician awareness and adherence to cardiovascular disease prevention guidelines. *Circulation*. 2005;111:499-510
- (2) Rosamond W, Flegal K, Friday G, et al. Heart disease and stroke statistics - 2007 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation*, 2007;115:e69-e171.
- (3) Cardiovascular Disease Mortality Trends for Males and Females. United States: 1979-2004. *Source: NCHS and NHLBI*. Note: The overall comparability for CVD between the ICD/9 (1979-98 and ICD/10 (1999-04) is 0.9962. No comparability ratios were applied. Death rates are age-adjusted per 100,000 population, based on the 2000 U.S. standard. Some data are reported according to ICD/9 codes and some use ICD/10 codes. (ICD/10 codes I00-I99, Q20-Q28) (ICD/9 codes 390-459, 745-747)
- (4) Bolego C, Poli A, Pailletti R. Smoking and gender, *Cardovasc Res*. 2002;53:568-583.
- (5) Centers for Disease Control and Prevention. Cigarette use among high school students - United State, 1991-2005. *MMWR Morb Mortal Wkly Rep* 2006; 55:724-726
- (6) Allison DB, Egan SK, Barraj LM, Caughman C, Infante M, Heimbach JT. Estimated intakes of trans fatty and other fatty acids in the US population. *J Am Diet Assoc*. 1999;99:166-174.
- (7) Despres JP, Lemieux I. Abdominal obesity an metabolic syndrome. *Nature*. 2006;444:881-887
- (8) Barnes PM. Physical activity among adults: United States, 200 and 2005. Available at:<http://www.ede.gov/nchs/products/pubs/pubd/hestats/physicalactifity/physicalactivity.htm>
- (9) Manson JE, Greenland P, Lacroix AZ, et al. Walking compared with vigorous exercise for the prevention of cardiovascular events in women. *N Engl J Med* 2002; 347;716-725
- (10) Manson JE, Hu FB, Rich-Edwards JW, et al. A prospective study of walking as compared with vigorous exercise for the prevention of cardiovascular events in women. *N Engl J Med* 1999;341:650-658.
- (11) Knuops KT, de Groot LC, Kromhout D, et al. Mediterranean diet, lifestyle factors and 10- year mortality in elderly European men and women: the HALE project. *JAMA*. 204;292:1433-1439.
- (12) de Lorgeril M, Salen P, Martin JL, Monjaud I, Delaye J, Mamelle N. Mediterranean diet, traditional risk factors, and the rate of cardiovascular complications after myocardial infarction: final report of the Lyon Diet Heart Study. *Circulation*. 1999;99:779-785.

## Author Information:

B. Reardon and A. Lukes both serve on the Council for Nutrition created in 2006 and supported by Xanodyne Pharmaceuticals, Inc. Both are dedicated to education regarding nutrition, particularly as it relates to women's health and pregnancy.

Beth Reardon, MS, RD, LDN is the Director of Integrative Nutrition at the Carolina Women's Research and Wellness Center in Durham, NC. She is also an Integrative Nutritionist through Duke Integrative Medicine. She has published numerous articles relating to nutrition including ways to achieve optimal pregnancy outcomes through nutritional intervention.

Andrea Lukes, MD, MHSc, FACOG is the Founder and Chair of the Ob/Gyn Alliance. She has partnered with Beth Reardon to help create an educational channel for both providers and patients (TV segment in 2008 on Oxygen and ABC, formation of a Healthy Lifestyle Changes program through her private practice and research center - the Carolina Women's Research and Wellness Center).