



Published in final edited form as:

Circulation. 2015 November 3; 132(18): e218–e220. doi:10.1161/CIRCULATIONAHA.115.012521.

ABCDE Steps for Heart and Vascular Wellness following a Prostate Cancer Diagnosis

Jian Guan, MD, PhD^{1,2}, Jay Khambhati, MD^{1,2}, Lee W. Jones, PhD⁵, Alicia Morgans, MD^{2,4}, Mohamad Allaf, MD⁶, David F. Penson, MD^{2,4}, and Moslehi Javid, MD^{1,2,3}

¹Cardiovascular Division, Vanderbilt University School of Medicine, Nashville, TN

²Cardio-Oncology Program, Vanderbilt University School of Medicine, Nashville, TN

³Vanderbilt-Ingram Cancer Center, Vanderbilt University School of Medicine, Nashville, TN

⁴Department of Urologic Surgery, Vanderbilt University School of Medicine, Nashville, TN

⁵Memorial Sloan Kettering Cancer Center, New York, NY

⁶Department of Urologic Surgery, Johns Hopkins Hospital, Baltimore, MD

Prostate cancer is the most common cancer diagnosed in men in the United States (US), with more than 240,000 new cases expected in 2015. Fortunately, close to 90% of patients are diagnosed at an early stage. Over the past several decades, the 5-year median survival of patients with prostate cancer has increased to more than 99%, largely owing to both the improvements in early diagnosis and innovations in treatment. As a result, there are nearly 3 million prostate cancer survivors in the US today, representing 4 out of every 10 male cancer survivors.

In the last several years, there has been growing recognition of health care needs of cancer survivors. This is true with prostate cancer survivors and is especially relevant to cardiovascular (heart and vascular) disease in this patient population. Cardiovascular disease is common in prostate cancer patients and survivors for several reasons. Prostate cancer occurs at an age when men may already have cardiovascular disease or may have risk factors (such as high blood pressure, high cholesterol, and diabetes). In fact, many prostate cancer patients actually die of heart disease rather than prostate cancer itself. In addition, several treatments for prostate cancer can have harmful effects on the heart and vessels. For example, inhibiting the male sex hormones (collectively called androgens) is an important means of treating prostate cancer. However, this “hormone therapy” (also called Androgen Deprivation Therapy or ADT) is associated with an increased risk of diabetes and may make

Correspondence: Javid Moslehi, M.D. Cardio-Oncology Program, Vanderbilt University Medical Center, 2220 Pierce Avenue, Nashville, TN 37232, javid.moslehi@vanderbilt.org.

Conflict of Interest Disclosures: None

Additional Resources: <http://www.cardio-onc.org> (This website lists some of the specifics of the cardiovascular care of cancer patients and cancer survivors and is both a reference for patients as well as physicians)

Harrison, Michael and Jones, Lee. “Exercise as treatment for androgen deprivation therapy-associated physical dysfunction: ready for prime time? *European Urology*, 65: 873-874: 2014.

Moslehi, Javid. “The Cardiovascular Perils of Cancer Survivorship.” *New England Journal of Medicine*. 368: 1055-1056: 2013. <https://twitter.com/CardioOncology> (Twitter updates on Cardio-Oncology)

men more susceptible to cardiovascular disease, especially older men. In light of this, experts from the American Heart Association, the American Cancer Society and the American Urological Society have come to a consensus that urges the surveillance of risk factors of cardiac risk factors in men receiving ADT. In addition, the U.S. Food and Drug Administration (FDA) labeled ADT as a therapy with increased risk of diabetes and heart disease.

Exactly why ADT may increase the risk of heart disease is not clear. It is well known that ADT leads to decreased muscle mass and strength, and bone loss with possible development of osteoporosis, and hot flashes. Weight gain, due to a 10-20% increase risk of total body fat, is an underemphasized side effect of ADT. Gaining weight puts men at risk of developing several cardiac risk factors, including high blood pressure, high cholesterol, and diabetes. These changes can increase the risk of cardiac diseases such as heart attack, heart failure, or heart rhythm irregularities. Researchers are very interested in understanding the skeletal muscle changes that occur after ADT. They are particularly interested to learn how skeletal muscle changes affect the heart. The hope is that modifying the skeletal muscle changes after ADT may lead to reduced cardiac risk factors and decrease the risk of cardiac disease.

How can you address cardiovascular risk factors?

In addition to the effects of ADT on the heart, cardiovascular disease risk factors are common in prostate cancer patients. Therefore, it is imperative to have a primary care physician or internist assess heart disease risk factors in all men with prostate cancer, especially those who are about to initiate or are already receiving ADT as part of their treatment for prostate cancer. Men can modify risk factors, including living a healthier lifestyle (heart healthy diet and regular exercise) and better manage high blood pressure, blood cholesterol, or blood sugar levels. All of these can help prevent heart disease. We have recently introduced a simple “ABCDE” algorithm (See Figure) to prevent heart disease in cancer patients and cancer survivors. We propose a modified version of the “ABCDE” algorithm that applies to the prostate cancer population.

Awareness

Awareness represents the understanding that heart disease risk factors are common in prostate cancer patients, and that these risk factors may be especially increased by certain prostate cancer treatments. Awareness also refers to the ability of patients to recognize the signs and symptoms of heart disease. These include:

1. Chest pain or discomfort on exertion.
2. Shortness of breath on exertion
3. Feeling tired easily.
4. The following symptoms may indicate a more severe form of heart disease (Heart attack):
 - Sudden onset of chest discomfort or pain without any obvious exertion

- Chest discomfort/pain moves to the neck and jaw
- Significantly longer chest discomfort/pain
- Others: nausea, shortness of breath, sweating, light-headedness, headache.

Aspirin

People at high risk of a heart attack and heart attack survivors commonly take a daily low dose of aspirin to decrease the risk of future heart attacks or strokes. Interestingly, recent reports show that aspirin may also decrease the risk of several types of cancers, including cancer of the intestines and prostate cancer itself. Aspirin does increase the risk of bleeding. Therefore, the decision to start taking aspirin (and risks versus benefits) should be discussed with your doctor. Although we do not recommend that all prostate cancer patients receiving ADT take a daily aspirin, we do encourage men to talk with their primary care doctors about whether their cardiac risk factors may warrant daily aspirin use for prevention of a heart attack or stroke. Aspirin has side effects, including increasing the risk of bleeding, and can be dangerous if not used properly. Therefore, the decision to start taking aspirin (including possible risks and benefits) should be discussed with your primary care doctor before starting treatment.

Blood Pressure

High blood pressure, characterized as blood pressure $> 140/90$ mm Hg in the general population or $> 130/80$ mm Hg in diabetes patients, is an important risk factor for heart disease. It often results in hypertensive heart disease, heart attack, stroke, and many other heart diseases if left untreated. Therefore, it is crucial for patients to work with their primary care doctors to monitor and treat their blood pressure with appropriate lifestyle changes and medication.

Cholesterol

Cholesterol can build up in the vessel wall, thereby blocking blood flow, and is an important risk factor for heart attack and stroke. Every prostate cancer survivor needs to have his cholesterol checked regularly by his primary care physician. It is particularly important for prostate cancer survivors who received ADT, since ADT can change cholesterol metabolism and increase the risk of heart disease. Men can work with their doctors to identify lifestyle changes and/or cholesterol lowering medications to lower cholesterol levels.

Cigarette smoking/tobacco cessation

Cigarette smoking is the number one preventable cause of cardiovascular disease in prostate cancer survivors. Recent research has also suggested that smoking is associated with an increased risk of prostate cancer and death from prostate cancer. Men with prostate cancer should talk with their doctors about ways to stop smoking. There are many options to help patients, including over the counter gum and patches, prescription medications, and support

groups. It is also important to have the support of family and friends to help remain smoke free after quitting.

Diet

The ancient Greek physician, Hippocrates, said more than two thousand years ago “Let food be thy medicine”; indeed, a healthy diet leads to a healthy heart. A healthy diet is an important part of lifestyle therapy for many conditions, including high blood pressure, high blood cholesterol and diabetes. Some steps to modify your diet include controlling serving size, eating more vegetables and fruits, minimizing trans fats, cholesterol, and salt, and eating low-fat protein sources like lean meats, seafood, and beans. Including your family in dietary changes can help make dietary changes last. It is much easier for everyone to eat healthy together than for one person to try to make changes completely on his own.

Diabetes

Diabetes or high blood sugar has been defined as a major risk factor for heart disease. Every prostate cancer survivor should be screened for diabetes by his primary care doctor, especially if he has been treated with ADT. Heart disease is the number one cause of death in diabetics. Men who are diagnosed with diabetes can make lifestyle changes and may be treated with medications to manage blood sugar. Controlling other risk factors, such as high blood pressure and cholesterol, is also an important part of decreasing the risk of heart disease for men with diabetes.

Exercise

There is a wealth of evidence showing that structured regular exercise (defined as 150 minutes of at least moderate-intensity / week) is associated with profound reductions in the risk of heart disease. The precise mechanisms of how exercise leads to such benefits are still being elucidated, but it is established that exercise improves a number of traditional risk factors for heart disease. These include controlling body weight, blood pressure, lowering cholesterol, and decreasing the risk of diabetes. There is also a growing body of evidence showing that structured exercise training is not only a safe and tolerable adjunct therapy for men with prostate cancer but is also associated with improvements or maintenance in exercise capacity, muscle strength, as well as body composition, especially among men undergoing ADT. Based on this evidence, as well as emerging evidence in other cancer populations, several national as well as international agencies now recommend exercise for all cancer patients both during and following cancer therapy.

Acknowledgments

Sources of Funding: LWJ has received research funding from the National Cancer Institute and AKTIV Against Cancer.

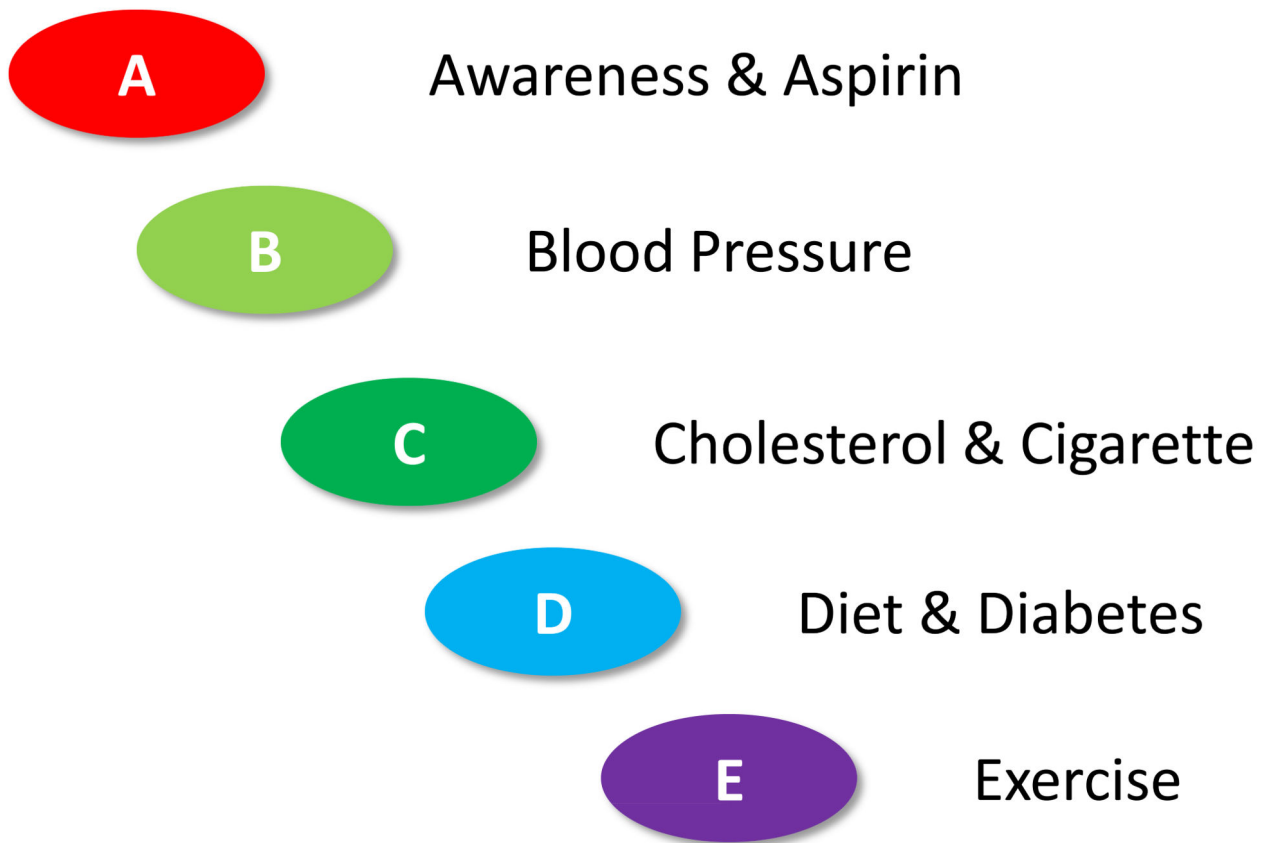


Figure 1. ABCDE Steps to Prevent Heart and Vascular disease in Prostate Cancer Survivors