

Heart Failure: Preventing the New Wave

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The heart is responsible for pumping every drop of blood to every cell in the body. The blood comes from the body to the right side of the heart, through the inferior and superior vena cava, and then pumped and carried to the lungs, where the lungs are receiving oxygen and eliminating waste products from the body. Then, the blood comes from the lungs to the left side of the heart to be pumped out to the rest of the body. So, if the heart is so important, why are there so many problems that occur with it? It can be very hard to listen to the doctor when they are advising an individual on cardiac health. Eat this! Not this! Do this! Not that! It can seem like everything is bad for the heart. Not to mention, when the doctors are talking, the complications are all scary, long worded, and can be fatal such as: cardiovascular disease, heart failure, myocardial infarction, etc. These words can feel overwhelming and scary. What is this thing that doctors refer to as Heart Failure? Is it preventable? Heart failure is the hearts' inability to pump blood effectively. So instead of blood being pumped from the heart to the rest of the body and providing oxygen to all the cells in the body, the heart is straining itself to pump, and therefore, not pumping as efficiently. Some of the things people with heart failure experience on a day-to-day basis are shortness of breath, Swelling in the legs/feet, weight gain, and so much more. All these symptoms can seem scary, but heart failure is preventable and manageable. This paper will discuss identifying who is at risk for developing heart failure, current treatments for heart failure, and the relationship between education of risk factors and decreased prevalence and severity. Now, lets get more of an overview of the problem.

Statement of the problem

Heart failure is not just an individual problem, it is a national problem. According to the CDC, "About 6.2 million adults in the United States have heart failure" (Center for Disease

Control and Prevention, 2023). This high number is due to the two main culprits. The first is the high incidence of risk factors for heart failure. Coronary artery disease, previous myocardial infarction, and hypertension are known as the top conditions that prelude heart failure. Other big factors for smoking, hyperlipidemia (high cholesterol), and obesity.

This high number of cases is also due to the insidious symptoms that are vague and occur later in heart failure. To make matters even worse, the symptoms depend on what side of the heart is affected. The two main types of heart failure are right sided heart failure and left sided heart failure. With right sided heart failure (also known as right ventricular heart failure), is when the right ventricle is not functioning properly, whether it be contracting (systole) or relaxing (diastole), is not functioning properly and is failing to pump deoxygenated blood to the lungs, meaning that it is backing up into the body instead, causing edema of the lower extremities. Left sided heart failure (also known left ventricular heart failure), happens when the left ventricle cannot pump or relax all the way, thus causing backup into the lungs, which can produce signs and symptoms such as shortness of breath, crackles in the lower lobes, fatigue, and chronic cough.

As discussed earlier, the prevalence of heart failure in the United States is shocking, and not only does it affect the individual client, but the economy as well. According to a CDC “Heart failure costs the nation an estimated \$30.7 billion in 2012. This total includes the cost of health care services, medicines to treat heart failure, and missed days of work” (Center for Disease Control and Prevention, 2022). This statistic is a great window into the non-symptomatic effects that heart failure has on a client. These financial factors can play into a client’s decision to seek treatment or not. If left untreated, this can lead to more hospitalizations for exacerbations of HF for fluid overload, which means nursing staff will be seeing more of this client population.

Nursing may also start seeing a different type of age group for this problem as well. One research study found that in today's generation, younger people are at greater risk for Heart failure due to increasing number of risk factors, stating "Despite evidence of a relative stabilization of the incidence of heart failure, its prevalence continues to increase owing to an enlarging population of people at risk. This includes young people, among whom a rapid increase in the prevalence of risk factors for developing heart failure, such as obesity and diabetes, forebodes a potential epidemic." (Tromp et al., 2021). Is there a way to prevent this new wave of Heart failure? Below, the treatments for heart failure are explained.

Risk Reduction/Treatment of the problem

As said before, the hardest part of heart failure is the slow progression of the disease, and it is usually not caught until symptoms present. The best thing to do is educate risk populations about risk factor reduction and screen high risk populations. An article published in the National Library of Medicine states that: "Given the significant and persistent poor outcomes associated with HF, increased efforts at identifying and increasing our understanding of modifiable risk factors predisposing to HF require emphasis, as such knowledge may lead to development of novel preventive and management strategies." (Wong et al., 2020). Increasing education about decreasing risk factors includes lifestyle adjustments, medical care/follow up, and prevention of those high-risk factors is important.

In addition to education about risk factors, the other side of is screening high risk populations. High risk populations include people aged 65 years and older, smokers, clients with a cardiac history, especially people who have had a previous MI. The American Heart association stated, "Women are at a 20% great risk at developing heart failure 5 years after the first MI," (American Heart Association, 2020). Screening on the medical side is also very

important. Having labs drawn, for example: Lipid panels, BNP, and hemoglobin A1C to assess heart health/ function. Having a diagnostic test to screen is just as important. Chest x-ray, MRI, ECG, stress test, and cardiac catheterization are diagnostic test that are great for assessing hart function/health. The best diagnostic test to assess how the heart is pumping blood is an echocardiogram, which looks at the blood flow through the heart and how the heart is pumping blood. From this, they can get an ejection fraction, which measures how much blood your left ventricle is pumping out to your body with each contraction. The normal ejection fraction is 55% - 70%. This test also helps determine if there is an issue of your left ventricle having trouble contracting (systolic HF) or relaxing and filling (diastolic HF). Having discussed diagnostics for heart failure, lets discuss treatment.

There are two types of treatment for Heart failure: medication and lifestyle modification. Digoxin is a highly used medication for heart failure, as it increases the strength of the heart's contractions. Other medication treatments are aimed at lowering risk factors. Hypertension medication (ACE, ARBS, Beta blockers, etc.) and Anti-cholesterol agents (ex: statins and fibrates) are very common. Diuretics are very common in treating peripheral edema and decreasing the load that the heart must pump. The last medication you might see people with heart failure take is an anti-platelets/blood thinners (warfarin, aspirin, Eliquis, etc.) because these clients are at high risk for developing blood clots.

The other treatment for Heart failure is lifestyle modification. The first thing they will tell you is to QUIT SMOKING! Nicotine vasoconstricts blood vessels, creating more pressure for the heart. Following a cardiac healthy diet is also such an important change (limit foods high in sodium and fats), as well as offering alternatives for clients and where they can find access to

healthy foods. Other important lifestyle modifications are exercise, avoid alcohol, limit caffeine, avoid overloading the heart with fluid, and manage stress.

Planning of Teaching Content

Due to the older population of Lewes, Delaware, the education topics will be geared towards reducing the high prevalence of risk factors that many residents in Lewes, DE have and good lifestyle modifications that residents can make now. A tri fold board will be set up to display important facts and offer visual aids, pamphlets to summarize key teaching topics, and a presentation with a team that is informative and promotes a lively discussion about heart failure and what residents can do now to prevent themselves from developing heart failure. By the end of our presentation, my measurable goals are, Attendees will be able to teach back three modifiable risk factors for heart failure by the end of the presentation and the second is attendees will teach back 2 ways they can reduce their risk of developing heart failure (increase exercise, limit salt/fat intake, etc.) by the end of the presentation.

Conclusion

Heart failure is a disease where the heart is not able to pump the blood as efficiently. Risk factors for developing heart failure are Previous MI, Hypertension, CAD, Diabetes, high cholesterol, smoking, poor diet, and a sedentary lifestyle. While there is no generalized age to start screening, make sure to share with the doctor any symptoms that develop, like sudden weight gain, shortness of breath, JVD, or edema in the lower extremities. The treatments for Heart failure include diuretics, hypertension medication, anti-cholesterol agents, and more. Prevention and reduction of risk factors is also key in management, such as controlling hypertension, diabetes, and cholesterol levels through lifestyle modification.

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