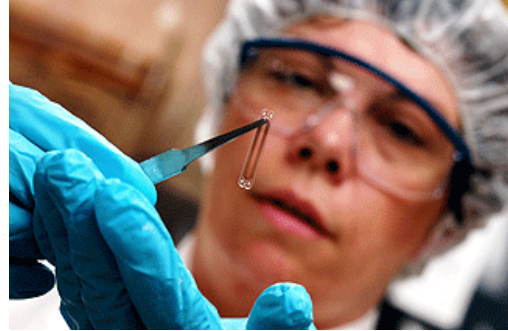


Breakthrough Medical Technology Helps Veterans with PTSD

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The Veterans Affairs is no stranger to the demons of war that follow soldiers back from combat. Post Traumatic Stress Disorder (PTSD) is a disorder that affects many soldiers returning from war. Some of the most common symptoms include vivid flashbacks, traumatic night terrors, and severe depression and anxiety. What most people don't know about PTSD is that it is directly linked to cardiovascular disease and heart failure. During combat, soldiers develop a "fight or flight" response that enables them to respond to danger or threats. The heart starts pumping, their arteries start to contract, and blood pressure starts to increase. During a time of war, this response could save a soldier's life, but when this action is repeated over a long period of time as a result of emotional stress, it becomes detrimental to one's heart and health (Department of Veterans Affairs).



Cardio Microelectromechanical systems is a wireless heart rate monitoring device unlike any device on the market. It measures each users diastolic pressure up to 1/1000 millisecond. It is implanted on the pulmonary artery, with a fifteen-minute minimally invasive surgery. Once inserted, it measures heart rate variability in real time, and transmits this data directly to the patient's physician and mobile device. Currently, this technology is being used for patients above the age of 65, who are hospitalized for heart failure. It has been very successful in its initial testing and implementation. 98.6% of their sample group has experienced no complications of any kind. Over the 12-month testing period, they have seen a 37% reduction in heart failure hospitalizations and a 58% drop in heart failure rehospitalizations (CardioMEMS HF System).

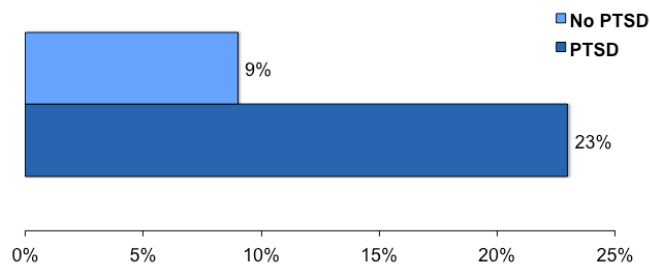


Figure 1 (Turner 2013)

A study was done on 281 twin pairs from the Vietnam War era, where one twin was diagnosed with PTSD and the other was not. After being followed for 13 years, the results showed that the twin diagnosed with PTSD was more than twice as likely to develop heart disease, as shown in Figure 1. Of the 560,000 soldiers that are diagnosed with PTSD in a year, 21% of those soldiers also suffer from some form of heart complication or cardiovascular disease (Turner 2013). That means that 118,000 soldiers have both PTSD and heart disease.

Recently, St. Jude's Medical Center has been conducting extensive research on patient's who suffer from heart disease. They have adopted a new breakthrough technology – CardioMEMS – that has revolutionized the medical industry.

Since there is a direct correlation between heart disease and PTSD, CardioMEMS technology would be of great use to veterans suffering from both ailments. By measuring their heart rate variability, CardioMEMS can detect a PTSD outburst and a myocardial infarction before it occurs. Heart disease is one of the most expensive conditions to treat – the cost for the VA per veteran to treat Heart Failure and PTSD is \$67,000 every 7 years. If the VA were to invest in CardioMEMS, they would see a drastic drop in their cost to treat each veteran, resulting in a return on investment of 13%.

Not only would this technology save the VA money, but it would also greatly improve their reputation by providing current and future veterans with the care that they need and deserve.