The PrestoPatch Delivers Safer Shocks to the Heart

PrestoPatch

In the United States alone, cardiac arrhythmias, or irregular heartbeats, afflict over 14 million people each year causing over 450,000 deaths. The standard of care for arrhythmias is to deliver electrical shocks to the heart via patch electrodes applied to the chest in procedures known as defibrillations and cardioversions. These shocks, however, do not successfully convert the patient in up to 20% of delivered shocks. Further, current patch electrodes limit the clinician's ability to improve the effectiveness of shock therapy by preventing easy switching of shock vectors and easy reduction of transthoracic impedance via application of external pressure. To improve shock delivery in cardioversion and defibrillation, we have designed and developed the PrestoPatch System—a device that 1) reduces the difficulty of switching the path that current takes through the body and 2) reduces the difficulty of applying standardized external pressure to the patches to reduce transthoracic impedance. The switching component of the PrestoPatch System adds a third patch electrodes and a high-load switch that gives clinicians the option to manually switch the shocking vector between the first and second patch and the first and third patch during subsequent shocks. The placement of the three patches on the patient is fully customizable based on user preference, thus, allowing for flexibility in producing a wide variety of shocking vectors and switching scenarios. The PrestoPatch System's compression component utilizes a hand-held force concentrator known as the PrestoPush. The depressor utilizes a piezoresistive force sensor that notifies the user via audio and visual feedback that the required 17.6 lbs. of force needed to optimally reduce transthoracic impedance has been met. These two aspects of the PrestoPatch System improves clinician's ability to delivery effective shocks and adequately respond to ineffective shocks.

Read: Heart Treatment Device, Cancer Test Take Top Prizes in Inventors Contest [1]

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