

## **MEDICAL BREAKTHROUGHS** **RESEARCH SUMMARY**

TOPIC: IMPELLA 5.5: WORLD'S SMALLEST HEART PUMP GETS EVEN BETTER!  
REPORT: MB #4852

**BACKGROUND:** Cardiogenic shock is a condition where the heart suddenly stops pumping enough oxygen-rich blood to your body. This condition is considered an emergency that is usually brought on by a heart attack. The heart attack damages the heart's main pumping chamber, the left ventricle, where the body then can't get enough oxygen-rich blood. In rare cases of cardiogenic shock, it is the bottom right chamber of the heart that is damaged. The right ventricle pumps blood to the lungs, where it gets oxygen and then goes to the rest of the body. Other conditions that can make the heart weak include: inflammation of the heart muscle; an infection of the heart's inner lining and valves; an abnormal heart rhythm; too much fluid or blood around the heart; and a blocked artery in the lung, usually by a blood clot.  
(Source: <https://my.clevelandclinic.org/health/diseases/17837-cardiogenic-shock>)

**SYMPTOMS AND PREVENTION:** Because cardiogenic shock usually occurs in people who are having a heart attack, it's important to know some signs and symptoms to watch for: rapid breathing or severe shortness of breath; sudden, rapid heartbeat; loss of consciousness; weak pulse or low blood pressure; sweating; pale skin; cold hands or feet; and urinating less frequently. If not treated immediately, there can be damage to your liver, kidneys or other organs from lack of oxygen, which can be permanent. The best way to prevent cardiogenic shock is to make some lifestyle changes such as: not smoking and avoiding second-hand smoke; maintaining a healthy weight; eating less cholesterol and saturated fats; limiting added sugars and alcohol; and exercising regularly.  
(Source: <https://www.mayoclinic.org/diseases-conditions/cardiogenic-shock/symptoms-causes/syc-20366739#:~:text=Cardiogenic%20shock%20is%20a%20condition,fatal%20if%20not%20treated%20immediately.>)

**NEW HEART PUMP DEVICE:** Hackensack University Medical Center was selected for the initial rollout of the newly FDA-approved Impella 5.5 heart pump device. Currently, 39 patients have received the new device, and it recently received FDA pre-market approval for the treatment of cardiogenic shock. The Impella 5.5 can be used for up to 14 days to support the heart's recovery. It is inserted into the left ventricle of the heart through either the axillary artery or directly into the aorta. This device provides surgeons with a minimally invasive solution to maintain blood flow while allowing the heart to recover. It also effectively pumps blood at a peak flow of greater than 6 liters/minute to maintain vital organ blood supply while reducing the work and oxygen demands placed on the heart with its fully unloaded design. Results of the study in the *American Society for Artificial Internal Organs Journal* showed 83.6% of patients survived to explants, with 76.1% of these patients recovering heart function.  
(Source: <https://www.hackensackmeridianhealth.org/info/cardio/rtb4/>)

**FOR MORE INFORMATION ON THIS REPORT, PLEASE CONTACT:**

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**If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at [mthomas@ivanhoe.com](mailto:mthomas@ivanhoe.com)**