

How architectural design is breaking down healthcare silos

Jacobs Institute idea to Reality (i2R) Centre addresses major health crisis

A medical innovation centre shows how a one-stop-shop approach to CVD medical device creation is accelerating impactful results for all stakeholders.

There is a global health crisis in cardiovascular disease that will require out-of-the-box thinking, collaborations, and partnerships in innovation in order to change course. Hospitals, universities, industry, and more will have to partner to take a fresh approach.

The Jacobs Institute in Buffalo, New York, is hoping to make such strides with the opening of its i2R, or Idea to Reality Centre, to impact medical device innovation and hopes others will collaborate and take a similar path in order to impact patient lives.

The Heart of the Crisis

Stroke and cardiovascular disease are the leading causes of disability and death in the world. According to the World Health Organization, an estimated 17.7 million people died from cardiovascular disease in 2015, representing 31% of all global deaths (WHO 2017).

Of these deaths, an estimated 7.4 million were due to coronary heart disease and 6.7 million were due to stroke. In addition to personal devastation, the economic impact on society, communities and individual families is staggering.

The World Heart Federation notes that by 2030, the total global cost of cardiovascular disease is set to rise from approximately \$863 billion USD in 2010 to a staggering \$1,044 billion USD (World Heart Federation 2018).

Innovation saves lives

The medical device industry has quite literally transformed modern medicine, saving or improving the quality of life for those suffering from heart attacks or strokes, known as vascular disease.

In vascular disease, thanks to catheter-based procedures using medical devices, minimally invasive treatments of the brain and the heart are today important alternatives to traditional invasive treatments. However, the field is still in its infancy, and the need for better devices is critical.

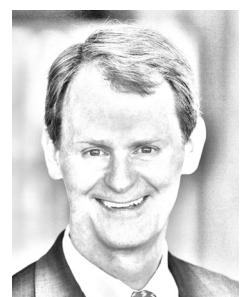
New breakthrough devices illustrate the potential for significant advances in the treatment of vascular disease. Until recently, the treatment of heart attack and stroke was limited to the use of drugs designed to dissolve the clots inside arteries causing the dangerous blockages. The risk of haemorrhage, lack of success and short time limitations for treatments proved to be major concerns. Today, catheter-based treatment with stents has revolutionised the treatment of heart attack, and stroke appears to be following a similar trajectory. Several recent clinical stroke trials including MrCLEAN (Berkhemer, O.A., et al. 2015) have provided Level I evidence of the safety and efficacy of the mechanical removal of clots in stroke patients to restore blood flow to oxygen-starved brain. New devices used in these trials represent a groundbreaking advance in reducing the number of patients devastated by the 15 million strokes suffered worldwide annually, according to the World Stroke Organization (2012).

Rapid mechanical clot removal to reverse the effects of stroke in its early stages is just one example that clearly illustrates the need for a place where new and better ideas for devices can quickly become reality.

Right people, right place, right time

The Jacobs Institute (JI), located in Buffalo, New York, is dedicated to developing next-generation technologies to treat cardiovascular disease through collisions of physicians, engineers, entrepreneurs, and industry. It recently launched the i2R, or Idea to Reality Centre, which focuses on developing smart-engineered endovascular medical devices at a faster pace and in a more cost-effective way to improve quality of life and reduce costs for patients, providers, and health systems across the globe.

The i2R is located in a one-of-a-kind building in which the entire product development, vetting, and proof-of-concept process, can occur in one place. It is sandwiched between and partnered with Kaleida



Leo Nelson Hopkins

Founder and Chief Scientific Officer
Jacobs Institute.
Buffalo, U.S.A.
Professor of Neurosurgery and Radiology.
State University of New York (SUNY) Albany, U.S.A.

lnhopkins@icloud.com

jacobsinstitute.org

@JacobsInstitute