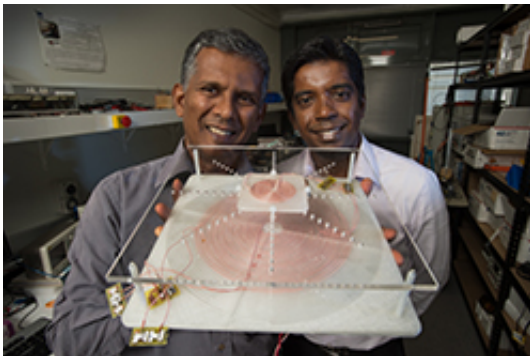


# Wireless system to power heart pumps could save lives currently lost to infection

May 15 2017

---



Professor Mahinda Vilathgamuwa and Prasad Jayathurathnage. Credit: Queensland University of Technology

A new wireless system to power heart pumps could save lives by reducing deadly infections caused by current forms of the device.

Professor Mahinda Vilathgamuwa and Prasad Jayathurathnage, from the power engineering group in QUT's Science and Engineering Faculty, said the current system used to power a [heart pump](#), which is attached directly to the heart to assist weakened muscle to keep working, requires a cable running from the heart pump through the skin to a battery.

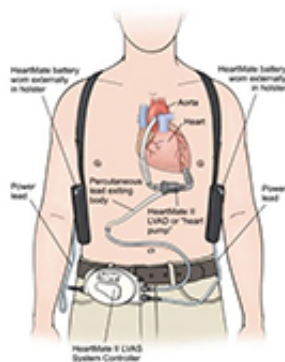
"The system we are developing includes a lightweight copper coil that could be worn outside the body to power the heart pump, or "[ventricular assist device](#)" (VAD), embedded in the body," Professor Vilathgamuwa

said.

"VADs are mechanical heart-support devices that help patients' hearts to keep pumping while they wait for a transplant or recover from cardiac surgery or to augment the action of weakened heart muscles.

"Many deaths occur from [infection](#) because the problem with VADs is that they are powered via a cable that goes through the skin from an external battery, worn in a holster, to the VAD which is implanted in the heart.

"Infection often begins at the point where the cable enters the body and is one of the most significant complications of VAD use."



**Current Technology**

Current technology to power heart pumps involve a cable from the pump through the skin leading to an externally worn battery. Credit: Queensland University of Technology

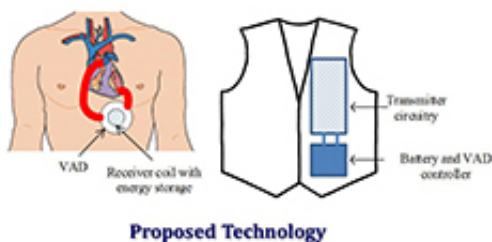
Professor Vilathgamuwa said the one-year survival rate for people with

VADs was 1-2 per cent better than that of [heart transplant patients](#).

"The US National Institute of Health estimates up to 100,000 people could benefit immediately from VADs," he said.

"However, because of the risk associated with these devices comparatively few VADs are implanted and sadly, many people have succumbed to heart disease.

"Although some patients have now survived more than 10 years with VAD support, VADs cannot continue to improve without wireless power to reduce the risk of life-threatening infection."



QUT researchers are developing a wireless way to power a heart pump.

Dr Jayathurathnage said the [wireless power transfer](#) system they had developed uses a small copper coil receiver which would be implanted inside the body, with a transmitter and battery worn in a holster or a jacket.

"The system we are developing will replace the cable completely. In tests it has achieved 94 per cent efficiency in powering a commercial heart pump, without the need to break the skin for a cable," Dr

Jayathurathnage said.

"We will conduct more laboratory tests and introduce a novel frequency tuning system to improve performance under dynamic operating conditions."

Provided by Queensland University of Technology

Citation: Wireless system to power heart pumps could save lives currently lost to infection (2017, May 15) retrieved 21 June 2024 from <https://phys.org/news/2017-05-wireless-power-heart-lost-infection.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.