



IHH Healthcare

CARDIOLOGY

Left Ventricular Assist Device (LVAD)

KEY PROCEDURE HIGHLIGHTS

1

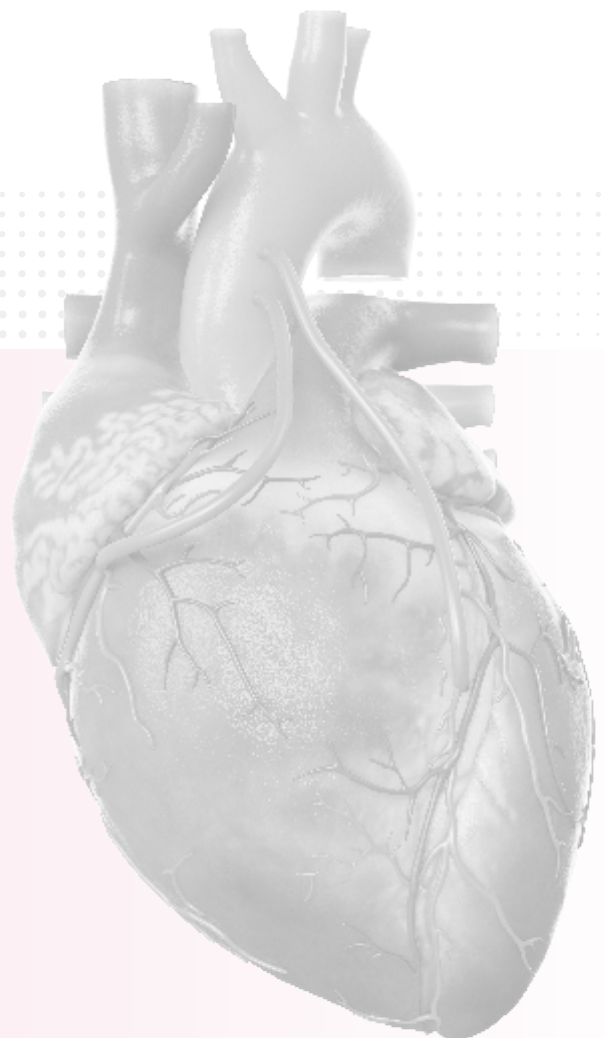
A **bridge to recovery and transplant**, and a **destination therapy** for advanced heart failure.

2

Significant improvement in NYHA class from NYHA III/IV to NYHA I/II at 6 months after LVAD implantation.³

3

Significant survival and quality of life improvement after LVAD implantation.³



LEFT VENTRICULAR ASSIST DEVICE (LVAD)

LVAD is a small electromechanical blood pump that is implanted inside a person's chest to help a weakened heart pump blood to the rest of the body. Unlike a total artificial heart, LVAD does not replace the heart but assists it to do its job.

Patient Selection



NYHA Class
IIIB or IV



Past medical treatments
and device therapies
no longer work

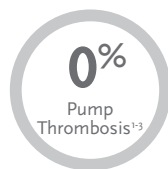


Waiting for heart
transplant but with no
donor or suitable heart



Advanced heart failure and
ineligible for heart transplant

PROVEN CLINICAL RESULTS



LVAD addresses the complex interconnectivity of hemocompatibility events by minimizing pump thrombosis without significantly impacting stroke or gastrointestinal bleeding.^{4,^}

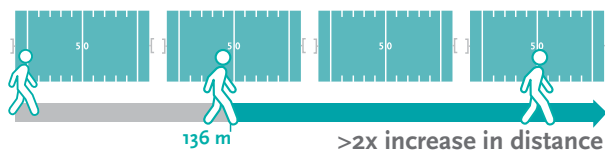
Surviving more than
8 years
post-implant^Δ



The first patient with severe heart failure at INTERMACS profile 1 was implanted with LVAD at Parkway Hospitals Singapore in 2011.

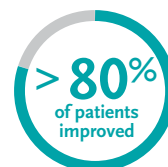
IMPROVED QUALITY OF LIFE (POST-OPERATION)¹

Improved Mobility



After 24 months, patients implanted with LVAD were able to walk an average of 308m in 6 minutes.⁵

Post-implant Improvements from NYHA III/IV

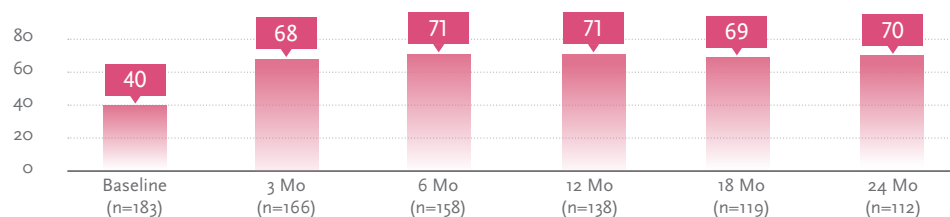


to NYHA Class I
or II by 6 months



to NYHA Class I
or II by 24 months

Improved Wellbeing



KCCQ Overall Score[∞]

30 point improvement in KCCQ overall summary score at 3 months was sustained out to 2 years

^Δ 2011 - 2020 Clinical outcomes data provided by Dr Kenneth Ng

[^] There is no significant difference between the HeartMate 3 and HeartMate II LVADs with regard to stroke or gastrointestinal bleeding in the MOMENTUM 3 study: 7.9% and 15.9% for the HeartMate 3 LVAD, respectively, vs 10.9% and 15.2% for the HeartMate II™ LVAD in the MOMENTUM 3 trial at 6 months.

[∞] KCCQ=Kansas City Cardiomyopathy Questionnaire

HOW IT WORKS

Blood flows from the left ventricle into the LVAD. When sensors indicate that the LVAD is full, the blood in the device is moved into the ascending aorta and to the body.

STEP 1

LVAD Pump Implantation

An open heart surgery is performed to place the pump at the apex of the heart. The pump will then be linked by a cortex to the aorta.

STEP 2

Driveline Connection

Once the pump is in place, a driveline will be passed through the skin of the abdomen and connected to the power cable.

STEP 3

Power Source

The power cable is then connected to the controller, outside of the body, and to the power supply.



Batteries



Battery charger

Power module which is plugged into an AC wall outlet



Mobile Power Unit

Plugs into an AC outlet to provide power to the LVAD system and is used while indoors, stationary or sleeping

Image Credit: Abbott

Components

A Heart Pump (LVAD)



HeartMate 3™

Connected to the left side of the heart and moves blood from the heart to the rest of the body.

B Driveline

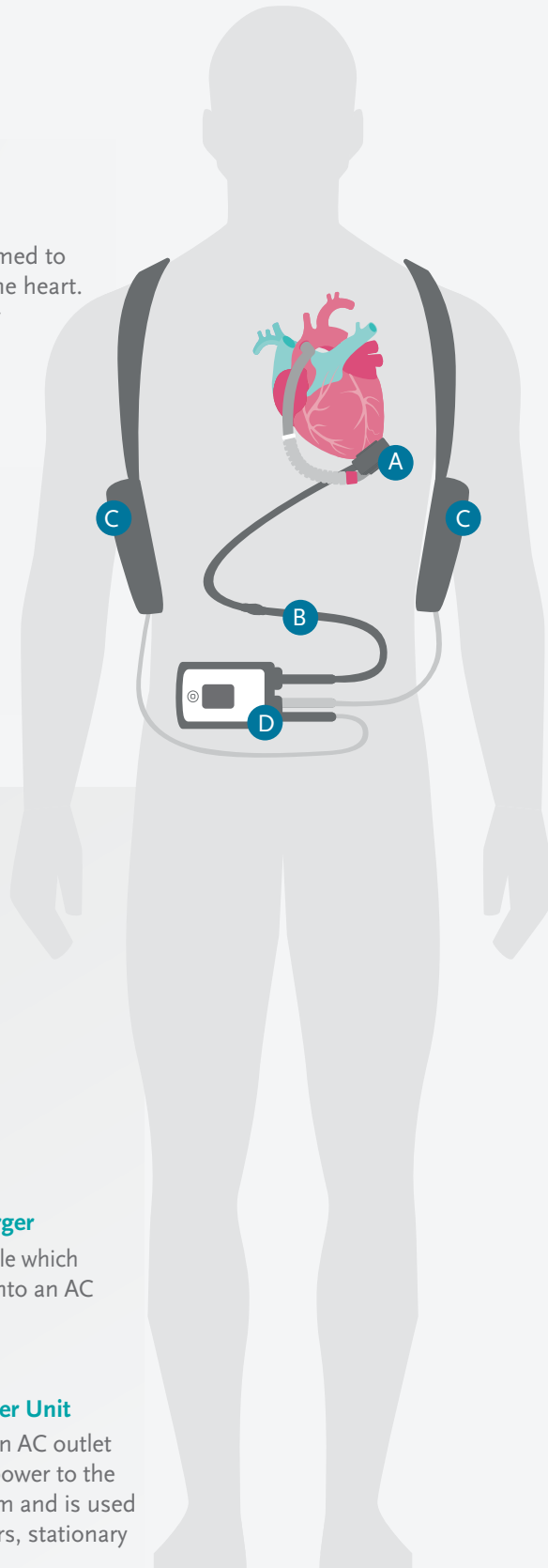
Transfers power and information between the controller and the heart pump. This component is partially outside of the body.

C Batteries

Provide up to 17 hours of uninterrupted power.

D Controller

Alerts on how the system is working and includes 15 minutes of emergency backup power.



GO THE DISTANCE WITH PARKWAY HOSPITALS SINGAPORE BECAUSE EXPERTISE MATTERS

Patients with LVAD implanted in Singapore have a survival rate of approximately 80% at 4 years, comparable with top international centres.⁴

0%
in-hospital
mortality rate

with strong clinical
team support and
multidisciplinary specialists
at Parkway Hospitals.*

* 2011 - 2020 Clinical outcomes of Parkway Hospitals Singapore



**The first centre in Singapore
to use LVAD as a destination therapy**

For patients with advanced heart failure, the cost of recurrent hospitalization, poorly controlled symptoms and reduced life survival outweigh the one-time cost of LVAD implantation.

LVAD, as a destination therapy, is now an international guideline-recommended standard of care therapy for advanced heart failure.

PROCEDURE OVERVIEW



Hospital Fee

\$320k - \$350k



Doctor's Fee

\$130k - \$200k



Length of Stay

3 - 6 weeks



Post-Operation Care

Follow up in 1 week,
1 month and subsequently
every 3 months.

REFERENCES

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3. Gustafsson F, Morshuis M, Zimpfer D, et al. Clinical Outcomes with Heartmate 3 as Treatment for Advanced HF: First Data from the European ELEVATE Registry. *The Journal of Heart and Lung Transplantation*. 2017;36(4). doi:10.1016/j.healun.2017.01.275
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5. Mehra MR, Goldstein DJ, Uriel N, Cleveland JC, Yuzefpolskaya M, Salerno C, Walsh MN, Milano CA, Patel CB, Ewald GA, Itoh A, Dean D, Krishnamoorthy A, Cotts WG, Tatroles AJ, Jorde UP, Bruckner BA, Estep JD, Jeevanandam V, Sayer G, Horstmannshof D, Long JW, Gulati S, Skipper ER, O'Connell JB, Heatley G, Sood P, Naka Y. Two-Year Outcomes with a Magnetically Levitated Cardiac Pump in Heart Failure. *New England Journal of Medicine*. 2018;378(15):1386-1395. doi:10.1056/nejmoa1800866



IHH Healthcare

IHH Healthcare has a global network of 83 hospitals and ancillary services in 10 countries.

As a patient at Gleneagles Hospital Singapore, Mount Elizabeth Hospital, Mount Elizabeth Novena Hospital and Parkway East Hospital, you enjoy easy access to a full spectrum of integrated healthcare services under the IHH Healthcare ecosystem.

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