MEDIA RELEASE

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LOW UTILISATION OF IMPLANTABLE CARDIOVERTER DEFIBRILLATORS¹ (ICD) IN ASIA DESPITE ITS LIFE-SAVING CAPABILITY

Singapore ranked third in ICD eligibility² yet its ICD utilisation is below the Asian average, ranking fifth after Japan, Hong Kong, China and Thailand

A prospective multinational data study on Asian heart failure patients was presented this morning at the Asia Pacific Society of Cardiology Congress 2017 held from 13 to 15 July in Singapore.

Principal Investigator Professor Carolyn Lam (Senior Consultant, Department of Cardiology at the National Heart Centre Singapore and Professor, Duke-NUS Cardiovascular Academic Clinical Program) and her co-investigators analysed the baseline clinical characteristics and outcomes of the 5,276 HFrEF³ (EF<40%) and 1,204 HFpEF⁴ (EF≥50%) patients in the Asian Sudden Cardiac Death in Heart Failure (ASIAN-HF) registry⁵ whom they have followed up on since 2012, when the registry was set up.

Despite being younger than their Western counterparts, comorbidities were highly prevalent among Asian patients (two-thirds of patients had two or more comorbidities), with Southeast Asian heart failure patients, in particular, having the highest risk profile in Asia. In addition, the utilisation of ICDs in Asia was very low, with disparity across geographic regions and socioeconomic status.

“At six months, 13.1% (13.9% in HFrEF; 8.6% in HFpEF) of patients had died or were hospitalised for heart failure, with the highest rate of events among Southeast Asians (18.7% overall; 19.4% in HFrEF; 15.2% in HFpEF). Over a median follow-up of 417 days, the study showed that ICD implantation reduced risks of all-cause mortality and sudden cardiac deaths,” said Professor Lam.

Professor Lam continued, “Even though ICDs are known to be life-saving devices in patients with HFrEF, utilisation and determinants of ICD insertion in Asia remain poorly defined. In Singapore, almost two-thirds (704 patients, 66.0%) out of a total of 1,066 patients were
eligible for an ICD implantation for primary prevention of sudden cardiac death, yet only 66 (9.4%) of them received an ICD. This is despite that Singapore has one of the highest ICD eligibility rates in Asia, after India (71.7%) and Indonesia (67.7%). The average ICD eligibility rate across Asia is 61.4%.

Singapore’s ICD utilisation rate falls below the Asian average of 12.0%, and it is far lower than that of Japan, which has the highest ICD utilisation among the Asian countries studied of 52.5%. Some possible reasons for the low ICD utilisation rate in Singapore and across Asia (except Japan), according to Professor Lam, could be socio-cultural factors (such as the unwillingness to have an unnatural object in their body) and lack of knowledge on the advantages of ICD. Among the ICD recipients in Asia, the study also showed that they were likely to be older, have tertiary education and reside in a high income region.

Thailand's experience, said Dr Tachapong Ngarmukos, a co-author of the study, could possibly shed some light on how Asian countries can move towards raising the level of ICD acceptance in their respective countries. Thailand ranked first among the Southeast Asian countries studied in terms of ICD utilisation, ahead of Singapore, despite having a lower ICD eligibility rate. He shared, “We would not have reached our current level of ICD acceptance in Thailand without the pivotal role played by the DEBUT clinical trial that was conducted in Thailand showing that ICD played an important role in reducing Sudden Unexplained Death Syndrome in young, healthy Southeast Asian men. This is especially important since many Thais, particularly those in Northeastern Thailand, suffer from Brugada syndrome, for example. The results helped to set in motion the gradually increasing ease of acceptance of ICD therapy by the local patients, physicians, regulators and payers. Thus research studies can play a big role in increasing awareness and changing practice to improve patient outcomes.”

Adding on Dr Tachapong’s view, another co-author of the study, Dr Wataru Shimizu from Japan (which has the highest ICD utilisation rate among all 11 Asian regions), said, “The actual data regarding sudden death in heart failure patients in Asia, such as follow-up data on heart failure from the ASIAN-HF registry, are also important in the continual build-up of ICD utilisation awareness. Based on these data, the realisation of the significance of ICD therapy among Asian doctors can be strengthened and hopefully lead to an increased rate of ICD acceptance and implantation among heart failure patients.”
The implications from this study point to the opportunities for public health intervention to improve patient outcomes in Asia, such as creating and raising the awareness of ICD as a life-saving option for heart failure patients through patient education in Singapore and other Asian regions. The study’s results can help to assist public health administrators in planning targeted healthcare reforms to address the under-utilisation of ICDs in their respective regions, as well as guide healthcare resource allocation and global clinical trial design, and to identify potential novel areas of research for the betterment of outcomes in heart failure patients across Asia.

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**Notes / References:**

1. An Implantable Cardioverter Defibrillator (ICD) is a battery-powered device placed under the skin that keeps track of one’s heart rate. Thin wires connect the ICD to one’s heart. If an abnormal heart rhythm is detected, the ICD will deliver an electric shock to restore a normal heartbeat. ICDs are useful in preventing sudden cardiac death in patients with known ventricular tachycardia (when the heart beats at a dangerously fast pace) or ventricular fibrillation (when the heartbeat is both fast and irregular). [Sources: www.heart.org, www.nhcs.com.sg]

2. ICD-eligible patients were defined as those with ejection fraction≤35% and New York Heart Association Class II-III. The ejection fraction measures the amount of blood that is ejected or pumped from the heart’s ventricle with each heartbeat; it is used to determine how well one’s heart is pumping out blood to help diagnose and track heart failure. [Sources: http://www.heart.org, https://en.wikipedia.org].

3. Heart failure with reduced ejection fraction (HFrEF) occurs when the left side of one’s heart does not pump blood out to the body as well as normal. The ejection fraction (the amount of blood that is pumped from the heart’s left ventricle with each beat) is 40% or less. [Source: https://en.wikipedia.org]

4. Heart failure with preserved ejection fraction (HFpEF) is a form of congestive heart failure wherein the ejection fraction is greater than 50%. [Source: https://en.wikipedia.org]
5. The Asian Sudden Cardiac Death in Heart Failure (ASIAN-HF) registry gathered and analysed baseline clinical characteristics and outcomes of 5,276 HFrEF (EF<40%) and 1,204 HFpEF (EF≥50%) patients from 11 Asian regions, grouped as Northeast Asia (Hong Kong, Taiwan, China, Japan and Korea, N=2201); South Asia (India, n=1688); and Southeast Asia (Malaysia, Thailand, Singapore, Indonesia, Philippines, n=2591). The ASIAN-HF study is supported by grants from the Boston Scientific Investigator Sponsored Research Program, National Research Foundation Singapore under its Translational and Clinical Research (TCR) Flagship Programme administered by the Singapore Ministry of Health’s National Medical Research Council, the Asian Network for Translational Research and Cardiovascular Trials (ATTRaCT) programme funded by the Agency for Science, Technology and Research, and Bayer.

6. “Socio cultural barriers to device therapy among Asian patients with heart failure”, E. Lee; R. Chen; S. Aziz; PT. Tan; YH. Seow; WL. Toon; P. Chai; R. Wong; SC. Seow; C. Lam, National University Heart Centre, Department of Cardiology, Singapore, European Journal of Heart Failure Supplements-2012-S268- P1390


8. Brugada syndrome (BrS) is a genetic disease that is characterised by abnormal electrocardiogram (ECG) findings and an increased risk of sudden cardiac death. [Source: https://en.wikipedia.org]
About the National Heart Centre Singapore

The National Heart Centre Singapore (新加坡国家心脏中心) is a 185-bed national and regional referral centre for cardiovascular diseases. A one-stop facility with the largest heart specialists group in Singapore, NHCS treats complex cases and sees the highest volume of heart patients locally.

Each year, the Centre handles over 120,000 outpatient consultations, 6,000 interventional and surgical procedures and 9,000 inpatients. Its outcomes for heart attack treatment, balloon angioplasty with stenting and coronary bypass surgery have been shown to be equivalent to international standards.

NHCS is the first heart centre outside USA and in Asia to receive the prestigious Joint Commission International (JCI) since 2005, which is an assurance for safe and quality patient care for the patients.