

# APHRS NEWSLETTER

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## Contents

- 02 Getting to Know APHRS Leader
- 04 Systematic Screening for AF in Post-ESUS Patients
- 07 COVID-19 Pandemic and the Evolving Cardiac Electrophysiology Service in Thailand
- 09 Upcoming Meetings

## GETTING TO KNOW APHRS LEADER



**Takashi Nitta, MD, PhD**

Nippon Medical School, Emeritus Professor  
Hanyu General Hospital, Cardiovascular  
Surgery, Presiding Consultant of Cardiology

### **Why did you choose to enter medicine and above all, prefer to specialize in Electrophysiology?**

Dating back to the days when I was a last year medical school student, Professor Kimura, the chief of Cardiology, examined the recordings of EP studies performed last week and explained to us his interpretation of the studies every week after his medical round. I had no idea what the complex intracardiac electrograms meant and the electrophysiological terms he used sounded like space speak to me. However, the experience was so mysterious and exciting to me. I was also interested in cardiac surgery because the procedures, arresting the heart and fixing the problems, were shocking to me. At the time when I graduated from medical school, I was pretty much divided between Cardiology and Cardiovascular Surgery.

I have not noticed until recently that above episodes were the reasons why arrhythmia surgery fitted perfectly to my personality. In cardiac electrophysiology, there is always a theory or mechanism behind the event, and if there is anything happens that cannot be explained reasonably, there should be an undiscovered underlying mechanism. It is exciting to solve the mysterious electrophysiological mechanism. In addition, it is amazing to cure or correct invisible electrophysiologic problem by a surgical procedure!

### **What do you regard as the most significant development in Electrophysiology in the recent past?**

All ablative procedures for cardiac arrhythmias have started from surgery. Without the invention of surgical procedures, such as those for WPW syndrome (1968) or Maze procedure (1987), catheter ablation for these diseases was not possible.

### **Can you talk about an accomplishment that you are particularly proud of?**

Return cycle mapping after entrainment of ventricular tachycardia. The return cycle is the time interval between the first and second activation times after the last stimulus of entrainment. In the distribution map of the return cycle, the return cycle isochrones equal to the tachycardia cycle length converged on the lines of conduction block irrespective of the stimulation site, and the central common pathway was localized at the region between the intersections of the return cycle isochrones after entrainment from different stimulation sites. This unique mapping method localizes the central common pathway without pacing at the pathway or recording the potentials from the pathway. The return cycle mapping should be applied in epicardial or endocardial mapping using multiple electrodes and computerized mapping system for surgical or catheter ablation.



Nitta T, Schuessler RB, Mitsuno M, Rokkas CK, Isobe F, Cronin CS, Cox JL, Boineau JP. Return cycle mapping after entrainment of ventricular tachycardia. *Circulation* 1998;97:1164-75.

**If you could have an alternative career, what would it be and why?**

Musician, I love music. But I know that I do not have any gift to become a musician. How hard I could practice musical instruments and improve technical skills, the difficult aspect of music is a gift that very few people is given.

Music and electrophysiology have a common aspect: theory. In music, in addition to feeling and emotion or imagination, there are theories like in electrophysiology. Not only in tonality, harmony, chord progression or others, there is a complex theory even in structure of melody. Surprisingly, emotions of the people who listen to the music can be controlled or managed by the theories of music.

**Who has inspired you the most in your life and why?**

Drs Tasuku Shoji and James L. Cox.

Dr. Shoji was a chief and professor of the department of surgery where I joined after graduating from medical school. He set up a cardiovascular surgery program at our medical school in 1964. He gave us all possible chances and supports, and his policy was "first, do it and examine extensively and discuss deeply". He always gave me thoughtful advice when I got lost. Regrettably, he passed away last January at the age of 93.

Dr. Cox who was a chief and professor of the department of cardiothoracic surgery at Washington University in Saint Louis, MO where I studied for 4 years. He showed me how to manage the difficult questions in problem-oriented fashion that I followed when I became a professor. At the same time, he has a warm sense of humanity and value the relationship with his friends and fellows, so many of the old fellows gather at the meeting or party. He is also giving me help and suggestions.



**What are your hobbies and interests outside of medicine?**

I play Tenor saxophone and have been a member of a local big band jazz band. I have also played at the reception party of the past APHRS and JHRS meetings with other members, so you might have heard our musical performance. Unfortunately, because of the COVID-19 pandemic, the band activities have been shut down for more than a year. I am tired of practicing saxophone alone these days. I really hope the COVID-19 pandemic is controlled and we can play together again.



**What is your best life advice, motto or favorite quote?**

Life is long, but short. Enjoy the life so as not to regret every day and moment.

**What advice would you give to your younger self?**

I have always defined the outline and deadline of each project. This was successful but might have limited the possibilities and pleasure of thrill. If I could redo my life, I would try not to define any outline or deadline and enjoy the life freely.

**What are your thoughts about some of the emerging technologies, and the way they will shape the future care of arrhythmia patients?**

There is no question that navigation and monitoring technologies will further make revolutionary changes in the diagnosis and therapy of cardiac arrhythmias. For instance, three-dimensional body surface mapping and frequency analysis will identify electrophysiology of complex arrhythmias non-invasively, and provide precise information for ablative therapy. Non-contact or non-trans-vascular ablation technology may be possible in the future.

# SYSTEMATIC SCREENING FOR AF IN POST-ESUS PATIENTS – REWARDING COLLABORATION BETWEEN STROKE PHYSICIANS AND ELECTROPHYSIOLOGISTS AT NUHS

Dr Pipin Kojodjojo – Senior Consultant Cardiac Electrophysiologist  
Dr Seow Swee Chong – Senior Consultant Cardiac Electrophysiologist

International guidelines recommend opportunistic screening for atrial fibrillation (AF) with pulse palpation and episodic ECGs. As shown in the SAFE study, this approach is more cost-effective compared to systematic screening. However, the yield with such approaches is generally low and many cases of asymptomatic AF will be missed. In higher risk patients such as those who have already developed a thromboembolic stroke, failure to detect AF will strongly predispose them to often disabling, recurrent strokes. On the other hand, once AF is detected, anticoagulation is highly effective at preventing recurrent strokes, much more effectively than dual anti-platelet therapies (the standard therapy for non-AF strokes) as shown in the ACTIVE-W study. This difference is further accentuated with the use of direct acting oral anticoagulants (DOAC) as shown in landmark studies such as ROCKET-AF, RE-LY and ARISTOLE.

However, a blanket approach of anticoagulating all patients with embolic stroke of unknown source (ESUS) with either dabigatran (RESPECT ESUS), rivaroxaban (NAVIGATE ESUS) and apixaban (ATTICUS) was not successful in reducing recurrent stroke but may instead increase bleeding events. Thus, it is still necessary to detect and anti-coagulate only those patients with AF within the ESUS population, which makes up 20 to 30% of all strokes.

As a result of this, a collaborative project was initiated between the stroke team and cardiac electrophysiologists at National University Health System, Singapore in 2014. Patients admitted with acute ischemic stroke and classified as to be embolic of unknown source by the stroke team were advised to receive an implantable loop recorder (ILR) during or early after their stroke hospitalization.

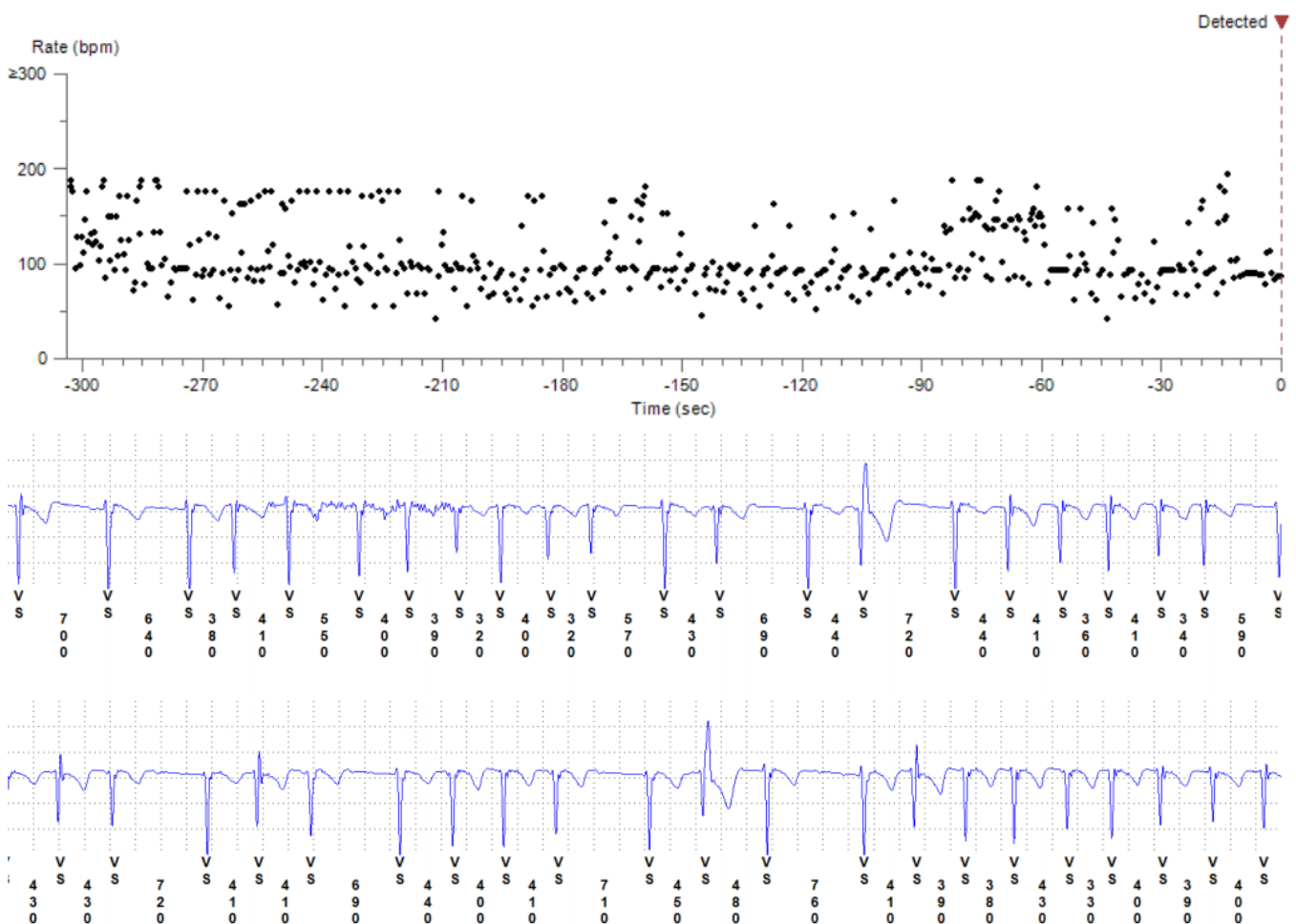
Typically, ESUS patients have no significant intracranial or extra-cranial stenosis supplying the area of infarct, normal echocardiography and absence of AF during 24 hours of inpatient ECG monitoring. Patients already diagnosed with AF or receiving oral anticoagulation for any clinical indications would be excluded from this program. Patients who underwent ILR implantation were enrolled to the remote monitoring system whereby any detected episodes of AF would trigger an alert. (Figure 1) Upon receiving this alert, the cardiac electrophysiology team would notify the referring stroke physician and patient, the latter will be counselled for initiation of oral anticoagulation provided they do not have significant bleeding risks. Otherwise, the only physical visit to the device clinic given to these patients will be at 4 years after implant, to discuss whether they would choose to have the ILR removed after end of battery service. Such initiatives are supported by a Class IIA recommendation (Level of Evidence B) by the American Heart Association, American College of Cardiology, Heart Rhythm Society and European Society of Cardiology AF Guidelines that states that for cryptogenic stroke patients, prolonged monitoring with a loop recorder is reasonable to optimize detection of silent AF.

This rewarding collaboration has been ongoing for more than 7 years and to date, more than 250 ESUS patients have received ILR, of which more than 15% have been diagnosed with AF and almost all AF patients have been initiated on anticoagulation. Most importantly, all but 1 patient have remained free from recurrent stroke. On the other hand, 10% of ESUS patients without AF detected during follow-up developed recurrent stroke, indicating a residual risk that has not been identified or lowered with current secondary prevention measures.

Amongst ESUS patients, those diagnosed by the ILR to have AF were more likely to have bilateral cerebral infarcts on CT, increased cardiac calcification on echocardiography, greater left atrial volume index and higher P-terminal force in lead V1 (an ECG marker of left atrial abnormalities such as fibrosis, dilatation and has been previously linked to increased risk of stroke even in the absence of AF).

Further research efforts are going in the field of machine learning algorithms to analyse sinus rhythm ECG to predict the likelihood of AF and detailed cardiac magnetic resonance imaging to identify atrial cardiopathy are ongoing to better predict or sub-select ESUS patients most likely to develop AF. If successful, such efforts could increase the diagnostic yield of implanted ILRs and reduce the cost of this systematic screening program. Until these strategies are proven, implantation of ILR remains the gold-standard for diagnosing AF in the stroke patients.

Our findings are consistent with the recently published STROKE-STOP system, that a highly targeted but systematic AF screening program focusing on those with the highest risk of AF complications is beneficial and considered cost-effective. We hope that similar programs can be replicated in the Asia Pacific region to improve diagnosis of AF in such high risk patients and reduce the incidence of AF-related strokes and its significant socio-economic sequelae.



**Figure 1:** Dot plots and electrograms from implantable loop recorders in a patient with embolic stroke of uncertain source demonstrating paroxysmal AF



# Tiny device detects heart problems, alerts doc immediately

Insertable Cardiac Monitor able to spot atrial fibrillation, a heart rhythm disorder responsible for 1 in 4 strokes

Timothy Goh

One November morning in 2016, Mr Ng Kok Seng's heart stopped beating for six seconds but the retiree, then 62, did not notice and carried on with his daily activities.

He found out only later in the day after a tiny device implanted in his chest, known as an Insertable Cardiac Monitor (ICM), alerted a team at the National University Health System (NUHS), which called him and told him to go for an emergency consultation.

Mr Ng learnt he had atrial fibrillation, a common heart rhythm disorder, which causes the organ to beat much faster than usual – over 300 beats per minute, up from the usual 60 to 80. It is also responsible for about one-quarter of all strokes.

The device was inserted into Mr Ng after he had a stroke in October 2016.

Dr Seow Swee Chong, a senior consultant at the National University Heart Centre's Department of Cardiology who treated Mr Ng, said his experience with atrial fibrillation. "Around 80 per cent to 90 per cent of our patients who have atrial fibrillation don't have any symptoms," he said.

Typically, atrial fibrillation is diagnosed using an electrocardiogram (ECG).

Dr Pipin Kojodjojo, another se-

nior consultant at the Department of Cardiology, said, however, that this method has problems. As a majority of patients with the disorder do not have symptoms, they are unaware of their condition and do not get checked. The ECG will appear abnormal only if atrial fibrillation occurs during the test.

"Atrial fibrillation can come and go... if you just had a check-up yesterday, it doesn't mean you can't have the condition today," said Dr Pipin.

So in 2015, the Heart Rhythm and Stroke teams at the National University Hospital and National University Heart Centre did a study to find a better way to detect atrial fibrillation.

A total of 205 patients like Mr Ng, who had strokes with no known cause, were implanted with ICMs. The device, which is roughly the length of an AAA battery but flatter, takes around three minutes to be inserted into a patient under local anaesthesia via injection.

ICMs have a battery life of about three years and can record and analyse patients' heart rhythms throughout the day.

In the event of a heart rhythm disturbance, a team at NUHS is alerted. Once the condition is detected, appropriate treatment can be done to reduce the risk of stroke.

Atrial fibrillation was detected in about 12 per cent of the patients who had ICMs inserted, whose con-



Dr Seow Swee Chong (left), a senior consultant at the National University Heart Centre's Department of Cardiology, and his patient Ng Kok Seng, 65, who has an Insertable Cardiac Monitor implanted in his chest. In the picture, Dr Seow is demonstrating how the device, which is roughly the length of an AAA battery but flatter, is inserted into a patient via injection. The procedure takes around three minutes. ST PHOTO: KELVIN CHNG

dition might have otherwise been missed.

The study also found that ICMs are more than seven times more effective than traditional methods in detecting atrial fibrillation with no symptoms.

Dr Seow said accurate diagnosis is important as without a diagnosis of atrial fibrillation, stroke patients are typically discharged on weaker blood thinners such as aspirin.

However, such medication is ineffective to prevent strokes caused by atrial fibrillation, which re-

quires specific blood thinners called oral anticoagulants.

A patient whose atrial fibrillation is undetected is thus at higher risk of getting a second stroke.

Dr Seow noted that all the patients in the study who had their condition detected were given such medication and have not been hit by a second stroke.

In Mr Ng's case, after his ICM alerted Dr Seow that he had an abnormal heart rhythm, he had a pacemaker inserted and was given anticoagulants.

The retiree said: "Because of the ICM, the atrial fibrillation was detected... It saved me."

Given its success, Ng Teng Fong General Hospital will also be introducing ICMs to detect atrial fibrillation in patients with unexplained stroke. This will start in December.

NUHS will also be expanding the operating hours of its nurse-led clinic for atrial fibrillation at Bukit Batok Polyclinic to better facilitate management of the condition.

## SILENT CONDITION

Atrial fibrillation can come and go... if you just had a check-up yesterday, it doesn't mean you can't have the condition today.



DR PIPIN KOJODJOJO, senior consultant at the National University Heart Centre's Department of Cardiology

timgoh@sph.com.sg

## What is atrial fibrillation?

Dr Pipin Kojodjojo, senior consultant at the National University Heart Centre's Department of Cardiology, estimated that 50,000 Singaporeans have atrial fibrillation, although the actual figure could be higher.

It is a chronic and progressive condition, which means that with time, it will recur more frequently until the heart is unable to beat regularly again. It affects around 15 to 20 per cent of those over the age of 80.

Those who have certain conditions including obesity, hypertension and obstructive sleep apnoea are also at higher risk of atrial fibrillation, which is responsible for about one-quarter of all strokes. Atrial fibrillation-related strokes are also typically more disabling, said Dr Pipin.

He added that Singapore has seen a significant increase in the proportion of stroke patients with atrial fibrillation – 20.6 per cent in 2016, up from 16 per cent in 2007. Citing the growing number of patients requiring treatment for the condition here, he said: "It's really a major healthcare issue for us, and even more so in future."

Timothy Goh

Figure 2: Local media coverage of this stroke prevention program

# COVID-19 PANDEMIC AND THE EVOLVING CARDIAC ELECTROPHYSIOLOGY SERVICE IN THAILAND

Assoc. Prof. Satchana Pumprueg, M.D.

Asst. Prof. Arisara Suwanagool, M.D.

Division of Cardiology, Department of Medicine

Faculty of Medicine Siriraj Hospital, Mahidol University

It has been almost three years since the first case of COVID-19 infection was reported in 2019. Since then, health care service has changed forever. Several new strategies and policies have been employed. Here we share our experience regarding cardiac electrophysiology service change in Thailand and the direction of the plan from now on.

## Timeline of COVID-19 pandemic in Thailand:

The first human case of COVID-19 infection was reported in China in December 2019; Thailand was the world's first country reported for a confirmed case outside China. In the beginning, the cases reported were from tourists only. However, due to the lack of law enforcement and government policy, the infection spread throughout the whole country shortly after. As a result, the government decided to "lockdown" the region with a high infection rate, which initially seemed constructive. However, due to the lack of law enforcement and a low rate of adequate vaccination, there was an uncontrolled outbreak again in April 2021 and continuing so far.

## Effect of COVID-19 outbreak on cardiac electrophysiology service

In the early stage of the outbreak, the whole country was panicking. Even though the government had no tight "lockdown," there was less travel and transportation. All patients with COVID-19 infection were admitted to the hospital for treatment and infection control. Most people stayed at home, and most health facilities tried to decrease service. The number of outpatient visits, as well as inpatient admission, decreased.

So even though the hospital bed was available, there was a more than 50% decrease in the number of intervention procedures. Later, during the uncontrollable outbreak, most of the hospital bed was occupied by COVID-19 patients. Again, there was a more than 50% decrease in the procedure number due to a lack of available hospital facilities. Most of the hospital facility was relocated to take care of infected patients.

Management of arrhythmia patients during the period was as follows:

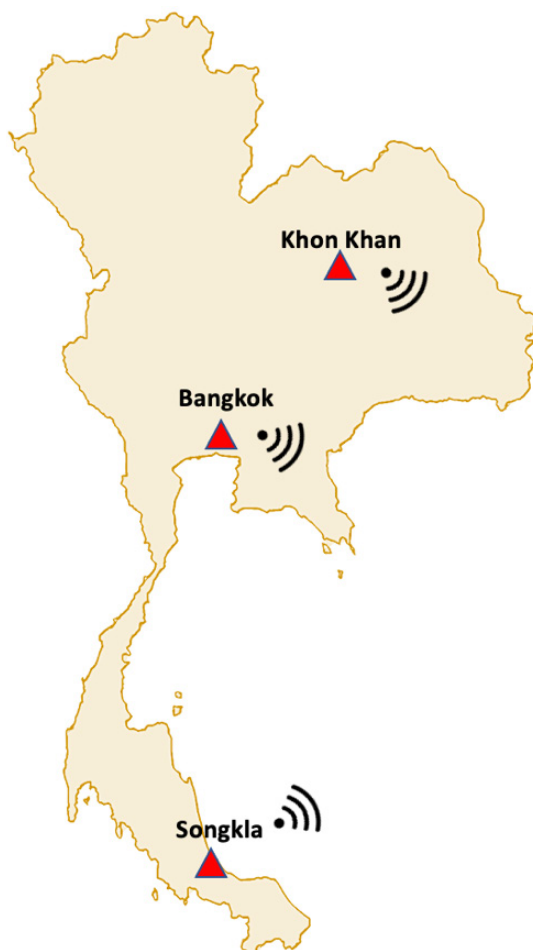
1. All elective procedures were postponed.
2. Patients with urgent conditions, e.g., complete AV block, needed a real-time PCR test for COVID-19 before the procedure.
3. In an emergency, the operator needed personal protective equipment, and the procedure was performed in the negative pressure operating room.
4. Telemedicine was adapted to most hospital outpatient follow up.
5. Some institutes require that all medical staff have a weekly or monthly PCR test.

During this struggling period, there was some fascinating experience shared by many EP physicians. One of the most compelling cases was an elderly female with a long asymptomatic complete AV block history. She was admitted to the intensive care unit with COVID-19 infection. Combining various treatments, she developed QT prolongation and nonsustained polymorphic VT.

Therefore, instead of placing a temporary pacemaker and waiting for a low infectivity state, a permanent pacemaker was implanted urgently. The reasons were a concern of lack of time for PPE preparation in case of emergency and the risk of viral spreading during multiple procedures.

The device follow-up clinic was the most effective place where telemedicine application changed our practice. Before the outbreak, patients with CIED had a bi-annual device check in the hospital clinic.

However, online follow-up for device checks was generally unavailable concerning a lack of personnel and legal issues. During the “lockdown” period, there were 2 EP centers in the North-eastern and Southern parts of Thailand that started the online clinic. Since there was no established system, e.g., CareLink in Thailand, patients were gathered at the local hospital, and the programmer was sent by mail for device interrogation. Data was sent online to the EP center, and treatment recommendation was given to the local hospital.



### Effects of effective vaccination

Early in the outbreak, Thailand's primary vaccination was based on an inactivated vaccine, which was known to be inefficient for the current viral strain. The mRNA vaccine was available in early 2021. After effective vaccination, the mortality rate went low despite a high infection rate. The outpatient visit and procedure number increased to the level prior to the outbreak. There was evidence that COVID-19 vaccination and infection increased the arrhythmia, e.g., atrial fibrillation, premature ventricular contraction, and nonsustained VT. However, severe cases were scantily reported. In general, a PCR test for COVID-19 infection was needed before the procedure.

### Current situation

The COVID-19 infection rate in Thailand is still high. Currently, there are more than 20,000 confirmed cases daily. Most believe the actual total cases were much higher. However, hospitalization is reserved for severely ill patients only. Most infected patients are in home isolation, and the death rate is considerably low. EP service returned to a level prior to the outbreak, with a “new” normal lifestyle. A dramatic change occurs in follow-up clinics, e.g., device clinics, as telemedicine is more frequently applied. At least one EP center is developing a fully online device follow-up. Less travel, less cost, and less burden are expected soon.





# UPCOMING MEETINGS

01

## HEART RHYTHM ASSOCIATION SINGAPORE

**21<sup>ST</sup> MAY 2022**

**11:00 TO 16:15 (GMT+8)**

The 2<sup>nd</sup> HRAS Annual Scientific Meeting 2022 (Online Meeting)

 Venue:  
Online



[Visit Website](#)

[Register Here](#)

02

## JAPANESE HEART RHYTHM SOCIETY

**8<sup>TH</sup> - 11<sup>TH</sup> JUNE 2022**

The 68<sup>th</sup> Annual Meeting of the Japanese Heart Rhythm Society (On-site Meeting)

 Venue:  
Pacifiko Yokohama North, Japan



[Visit Website](#)

# 03 KOREAN HEART RHYTHM SOCIETY

**24<sup>TH</sup> - 25<sup>TH</sup> JUNE 2022**

The 14<sup>th</sup> Annual Scientific Session  
of the Korean Heart Rhythm Society

 Venue:  
Online

[Visit Website](#)

[Register Here](#)



**KHRS 2022**

**OVERVIEW**

- Title: KHRS 2022: The 14th Annual Scientific Session of the Korean Heart Rhythm Society
- Date: June 24 (Fri) – 25 (Sat), 2022
- Host: The Korean Heart Rhythm Society
- Language: KOR / ENG \*The language of each session may vary.

**PROGRAM**

SPECIAL SESSIONS	SCIENTIFIC SESSIONS
<ul style="list-style-type: none"> <li>- Cross Specialty</li> <li>- New Research in Major Companies</li> <li>- Policy &amp; New Technology</li> <li>- Special Lecture</li> <li>- Syncope and Others</li> <li>- YIA Competition</li> </ul>	<ul style="list-style-type: none"> <li>- Atrial Fibrillation</li> <li>- Basic</li> <li>- CIED</li> <li>- Joint Symposium with Overseas Society</li> <li>- Noninvasive</li> <li>- Oral/Poster</li> <li>- Pediatric</li> <li>- PSVT</li> <li>- SCD</li> <li>- Ventricular Tachycardia</li> </ul>

**EDUCATION SESSIONS**


- Allied Professional
- Arrhythmia Review Course
- EGM Tracing
- EKG Educational Course
- MR Education

대한부정맥학회  
Korean Heart Rhythm Society

# 04 HONG KONG COLLEGE OF CARDIOLOGY

**8<sup>TH</sup> - 10<sup>TH</sup> JULY 2022**

The 30<sup>th</sup> Annual Scientific Congress of  
the Hong Kong College of Cardiology

 Venue:  
Hong Kong Convention and Exhibit  
Centre & Online

[Visit Website](#)

[Register Here](#)



**30<sup>TH</sup> ANNUAL SCIENTIFIC CONGRESS**  
**Hong Kong College of Cardiology**  
8-10 July 2022 (Fri to Sun)  
Hong Kong Convention and Exhibition Centre

**First Announcement  
Call for Abstracts  
and Cases**

Abstracts and Cases  
Submission Deadline:  
**30 April 2022**

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For more information, please visit our website  
[www.hkccasc.com](http://www.hkccasc.com)

05

## CARDIAC SOCIETY OF AUSTRALIA AND NEW ZEALAND

**11<sup>TH</sup> - 14<sup>TH</sup> AUGUST 2022**

The 70<sup>th</sup> Annual Scientific Meeting of the Cardiac Society of Australia and New Zealand



Venue:

Gold Coast Convention and Exhibit Centre & Online

[Visit Website](#)[Register Here](#)

# CSANZ 2022

70TH ANNUAL SCIENTIFIC MEETING  
OF THE CARDIAC SOCIETY OF  
AUSTRALIA AND NEW ZEALAND  
HOSTED BY CSANZ NEW ZEALAND

11 – 14 AUGUST 2022

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# APHRS 2022

## SINGAPORE

15<sup>TH</sup> ASIA PACIFIC  
HEART RHYTHM SOCIETY  
SCIENTIFIC SESSION

**18-20 November 2022**

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## CALL FOR ABSTRACTS

### THEMES

1. ABLATION TECHNOLOGY
2. ATRIAL FIBRILLATION
3. BASIC SCIENCE
4. CARDIOVASCULAR IMPLANTABLE ELECTRONIC DEVICES
5. GENERAL ELECTROPHYSIOLOGY / PREVENTION / SCREENING / IMAGING / ECG
6. HEART FAILURE
7. PEDIATRICS AND GROWN-UP CONGENITAL HEART DISEASE
8. SYNCOPE AND SUDDEN CARDIAC DEATH
9. SUPRAVENTRICULAR TACHYCARDIA
10. VENTRICULAR TACHYCARDIA



#### Step 1

Register & Submit  
Abstracts by

31 Jul 2022



#### Step 2

Receive Abstract  
Submission  
Acknowledgement  
email



#### Step 3

Receive Acceptance  
Notice by

Aug / Sep 2022



#### Step 4

Complete payment on  
or before

30 Sep 2022

## REGISTRATION OPENS MID-MAY



For more information and future updates,  
visit [www.aphrs2022singapore.com](http://www.aphrs2022singapore.com)

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Association  
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