Message from The Chairman

Dear members,

Welcome to our new MSCVT newsletter with a more vibrant and creative team. On this occasion, I would like to express my gratitude to the chief editor of MSCVT newsletter for giving me this opportunity. I also want to congratulate the newly formed MSCVT Media and Publishing Units for successful republish this newsletter that has long been halted. One of the missions of the MSCVT newsletter is to provide information regarding society programs, activities, knowledge sharing and new technology in the cardiovascular technology field.

Malaysian Society of Cardiovascular Technologist or MSCVT is the only society that represents the paramedics that work under Cardiology Specialty in Malaysia. This society was found in April 2009 and this year marked the 10th anniversary of this society. Over the years, MSCVT carefully counting steps into maturity, We are glad to be one of the societies under auspices of National Heart Association Malaysia. The society is getting stronger with infinite supports and ideas from NHAM. We really appreciate their contributions to make MSCVT more relevant throughout the years.

Finally, I hope that this medium can give positive impact in term of cardiovascular technology development in Malaysia.

Hamdan Ibrahim
Chairman
Malaysian Society of Cardiovascular Technologist 2019-2021

Letter from The Editor
Mohd Farid Bin Mohd Taufik  Bsc, RDCS, RCS, RCIS, RCES, RCCS, RCVT, CRAT, CCT, FSCIP, Editor In Chief

The role of cardiovascular technologist is increasingly complex and demanding. The cardiovascular technologist must be familiar with approved clinical protocols for each type of cardiovascular examination he or she performs, the cardiovascular technologist also must be able to analyze the patient’s clinical history fully, to identify the purpose of the examination, frame the clinical questions that the examination is intended to answer, and expand the examination as necessary to answer the clinical questions.

The cardiovascular technologist also plays an integral role in the treatment process, applying independent judgement, problem-solving skills, and the ability to obtain and integrate accurate diagnostic information whilst supporting the clinicians in performing the treatment. Therefore, a guideline for credentialing of the practicing cardiovascular technologist is important to ensure appropriate standards and patient safety is always upheld. The well-informed public nowadays must be assured that the quality of the services provided by healthcare practitioner including cardiovascular technologists does have a minimum knowledge and competency in these specialty areas.

Cardiovascular technologist is an allied health profession specifically focuses on diagnosis and treatment of patients with cardiac and vascular diseases. Using the specific high-technology equipment and at the direction of a qualified physician, they perform cardiovascular diagnostic examination and therapeutic procedures to create an easily definable data. The data from the specific cardiovascular examination gathered and analyzed. Then the anatomic and physiologic diagnosis may be developed for each individual patient. The cardiovascular technologist, therefore, is a highly specialized diagnostician of the various presentations of cardiovascular disease. The cardiovascular technologist is also trained in advance life support techniques as he or she deals with patients with a high risk of cardiopulmonary arrest.

So, to promote this positive towards knowledge and competency among members, MSCVT Publishing and Media Unit decided to revive our newsletter. This is the first edition of MSCVT newsletter for 2019/2021 session. Aim of this newsletter project is to open a new way of thinking among cardiovascular technologists so that they are moving forward in facing the era of globalization and internationalization. It’s also can inculturate the interest of cardiovascular technologists towards a new development in medical technology and cardiovascular technology sciences. Besides, act as one team, promotes an excellent attitude and further become a catalyst to form a relevant and functional society. It will be a platform to announce any society activities and programs.

That’s all from me, see u next time.

Mohd Farid Bin Mohd Taufik
Editor-in-Chief, MSCVT Newsletter

Media & Publishing Unit
MSCVT 2019-2021

- Kamarul Aizan
- Mohd Farid
- Norazilah
- Muhammat Shukri
- Mohd Afif Riduan
- Nurul Basaria
- Nur Musfirah
- Che Yang Aminah
- Faizah Zahra
- Hardy Kwalian
- Mohd Rachel
- Mohd Hafizudin
- Munim

In This Issue

- MSCVT Biennial General Meeting
- MSCVT Biennial General Meeting-Committee
- MSCVT Biennial General Meeting-Agenda
- CVT With International Credential
- CVT With Malaysia Book Of Record
- CVT Living Abroad: The Journey
- Essence Of Articles
- Echocardiography View
- New Technology: Shock Wave Balloon
- Crossword Puzzle

No.2, D-13A-06, Menara Suezcap 1, KL Gateway, Jalan Kerinchi, 59200 Kuala Lumpur
MSCVT Biennial General Meeting

The Biennial General Meeting was successfully held at level 3, meeting room 301, Kuala Lumpur Convention Centre on Saturday, 12th April 2019. It was attended by 16 registered MSCVT/NHAM members with 6 members absent with an apology. There were also some members who send their proxy for the meeting. The attendance was quite unsatisfactory. For the future, MSCVT is planning to hold the meeting during any MSCVT symposium to make sure the attendance will be improving.

Election for the new committee members for the year 2019-2021 has taken place.

The new committee members are as follows:
Important issues in MSCVT Biennial General Meeting includes:

MSCVT’s Credentialing and Constitution – Previous MSCVT Committee had a meeting with Dato’ Dr Abdul Kahar regarding this matter. Mr. Hamdan also brought up a variety of issues emphasizing on the currently employed non-certified CVTs in private hospitals in Malaysia that may be a potential hazard in patient’s safety. As feedback, Dato’ Dr Abdul Kahar suggested and supported the MSCVT initiatives to bring up this matter to the higher level. Mr. Hamdan had liaised with Mr. Amran, person-in-charge in BSKB regarding this matter and is currently waiting for an appointment to meet them as all the proposal and paperwork requested of MSCVT is completed.

MSCVT’s Locum Rate – Suggestion from the MSCVT Advisor, Mr. Mohd Shafullah, any of the MSCVT member who does locum, and wishes to get the MSCVT locum rate, is required to be an active MSCVT Member. He voiced out his concern regarding the patient’s safety and the society’s integrity and reputation, where with this method, the society can regulate the quality of CT. As for this, NHAM & MSCVT will send an official letter to the respective hospital, vouching for the requesting MSCVT members, for them to be paid according to MSCVT’s Locum Rate.

MSU bachelor’s degree in Cardiovascular Technologist (Hons) – Mr. Hamdan who is MSCVT Chairman also been selected and working as one of the lecturers in this program. This program is an idea and initiative from MSCVT and NCL Department, IJN and it has been approved by MQA and currently, MSU is enrolling their first batch student – 20 students for a full-time course, 4 students for the part-time course and newest is 12 students from Sabah. MSU actively promoting this course around Malaysia, including HUSM, Kelantan.

NHAM CPR Team – NHAM, with MSCVT collaboration, has been organizing BLS Course on the last Sunday of every month. The trainers for this course consist of qualified BLS Trainer among the MSCVT Member. This program has been conducted for over 2 years and gains a lot of encouraging responses from various parties. The NHAM Committee is impressed with this collaboration and suggested the trainers must be an active MSCVT member, to maintain the quality of the teaching and course.


1. MSCVT Research
* A MSCVT Research Team, Research Workshop, etc.

2. MSCVT TV
* As an educational and information tools among MSCVT member and other parties (private or and government healthcare)

3. MSCVT Training and Education collaboration with other centers (Private or and Government Hospitals)
* Organizing symposium or mini-workshops, e.g. 1st ECG Symposium with Hospital Sultanah Bahiyah, Kedah (done). Kuantan Hospital is in the discussion.
* For non-certification CVT’s who cannot afford to apply for Degree Program, MSCVT will plan an initiative modular course for those non-certification CVT’s, so they can be educated and certified according to their financial ability.

4. MSCVT Credentialing
* Suggestion from Mr. Chiang Ah Heng, to renew it yearly with a payment implement like other allied health organization e.g. Nurse and Medical Assistant.
* Having a Certified Board to do it.
* Suggest possible with a MSCVT member involved as one of MSQH Committee

5. MSCVT Echo Club
* Since the Echo Club in My Live has changed its modality from Echocardiography only to multimodality imaging, Mr. Hamdan has suggested to organize our own MSCVT Echo Club with collaboration from Hospital Serdang, Selangor. The participant is welcome only for the CVT’s, either in Government or and Private Hospitals.

6. Increased MSCVT Membership
* Will get a list of MSCVT membership from NHAM and will trace and update the status of each member.
* Will find a good solution regarding long standing non-payable MSCVT membership payment.
Congratulations to Malaysia Cardiovascular Technologist with International Credential

1. Mohd Farid Bin Mohd Taufik
   Registered Diagnostic Cardiac Sonographer-Adult Echocardiography (The American Registry for Diagnostic Medical Sonography)
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)
   Registered Cardiovascular Invasive Specialist (Cardiovascular Credentialing International)
   Registered Cardiovascular Electrophysiology Specialist (Cardiovascular Credentialing International)
   Registered Congenital Cardiac Sonographer (Cardiovascular Credentialing International)
   Certified Cardiographic Technician (Cardiovascular Credentialing International)
   Certified Rhythm Analysis Technician (Cardiovascular Credentialing International)
   Cardiac Physiologist-Echocardiographer (Clinical Physiologists Registration Board New Zealand)
   Cardiovascular Technologist (Saudi Commission for Health Specialties)
   Fellow Society of Invasive Cardiovascular Professionals (Society of Invasive Cardiovascular Professionals)

2. P.S Deventhiran
   Registered Diagnostic Cardiac Sonographer-Adult Echocardiography (The American Registry for Diagnostic Medical Sonography)
   Registered Diagnostic Cardiac Sonographer-Peds Echocardiography (The American Registry for Diagnostic Medical Sonography)
   Advanced Cardiac Sonographer (Cardiovascular Credentialing International)
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)
   Registered Cardiovascular Invasive Specialist (Cardiovascular Credentialing International)
   Registered Congenital Cardiac Sonographer (Cardiovascular Credentialing International)
   Adult Transoesophageal Echocardiography (The European Association of Cardiovascular Imaging ESC)

3. Mohd Shafullah Serdari
   Registered Diagnostic Cardiac Sonographer-Peds Echocardiography (The American Registry for Diagnostic Medical Sonography)
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)
   Registered Cardiovascular Invasive Specialist (Cardiovascular Credentialing International)

4. Norizan Ismail
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)

5. Suzanna Hani Binti Hussin
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)

6. Chan Pui Wai
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)

7. Abdul Muhaimin
   Registered Congenital Cardiac Sonographer (Cardiovascular Credentialing International)

8. Kartina Binti Azman
   Registered Cardiac Sonographer (Cardiovascular Credentialing International)
<table>
<thead>
<tr>
<th>No.</th>
<th>Name and Credential Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Fong Wee Ching, Registered Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>10</td>
<td>Gunachandran Veloo, Registered Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>11</td>
<td>Mohammed Dzaqqee Yamin Zainal, Registered Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>12</td>
<td>Atiqah Binti Zamani, Registered Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>13</td>
<td>Nalinimalar Kumarasamy, Registered Congenital Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>14</td>
<td>Mohd Rabani Bin Rosman, Registered Congenital Cardiac Sonographer (Cardiovascular Credentialing International)</td>
</tr>
<tr>
<td>15</td>
<td>Lee Lay Cheng, Registered Diagnostic Cardiac Sonographer-Adult Echocardiography (The American Registry for Diagnostic Medical Sonography)</td>
</tr>
<tr>
<td>16</td>
<td>Hanif Osman, Registered Diagnostic Cardiac Sonographer-Peads Echocardiography (The American Registry for Diagnostic Medical Sonography)</td>
</tr>
<tr>
<td>17</td>
<td>Yaw Huey Mien, Registered Diagnostic Cardiac Sonographer-Adult Echocardiography (The American Registry for Diagnostic Medical Sonography)</td>
</tr>
<tr>
<td>18</td>
<td>Lee Yoke, Registered Diagnostic Cardiac Sonographer-Adult Echocardiography (The American Registry for Diagnostic Medical Sonography)</td>
</tr>
<tr>
<td>19</td>
<td>Chong Kun Jin, Certified Cardiac Device Specialist (International Board of Heart Rhythm Examiners)</td>
</tr>
<tr>
<td>20 &amp; 21</td>
<td>Two Cardiovascular Technologist, Certified Cardiac Device Specialist (International Board of Heart Rhythm Examiners)</td>
</tr>
<tr>
<td>22</td>
<td>Henry Anak Delo, Cardiovascular Technologist (Saudi Commission for Health Specialties)</td>
</tr>
<tr>
<td>23</td>
<td>Azlan Bin Hasan, Cardiovascular Technologist (Saudi Commission for Health Specialties)</td>
</tr>
<tr>
<td>24</td>
<td>Erdie Nazrullah Zahar, Cardiovascular Technologist (Saudi Commission for Health Specialties)</td>
</tr>
<tr>
<td>25</td>
<td>Shamsuri Bin Mohamad, Cardiovascular Technologist (Saudi Commission for Health Specialties)</td>
</tr>
</tbody>
</table>
The Malaysia Book of Records would like to welcome Mohd Farid Bin Mohd Taufik our MSCVT committee member to their family of high achievers. The Malaysia Book of Records proud to recognize his achievement for being “Most Number of Certificates Received by An Individual”. The listing and recognition of his achievement would rank him as a national record holder and place him amongst the best of the nation.
I got asked this question often, “How did you end up in Norway?!”

Frankly speaking, it took some life altering events for this to happen.

Life was good, 6 years in the corporate world with Siemens as a clinical apps was a life changing experience. It has given me the continuous opportunity to travel around the globe, speak, satisfy my curiosity and quench my thirst for learning. But those extensive travelling schedules and meeting demanding demo deadlines had unconsciously drowned me to the brink of burnout. While we are all busy making plans, the Almighty has manifested that He is always hiring.

We took a bold leap when my ultra-supportive husband got an offer to relocate to the Global R&D Team in Norway. Clueless and unsure about what’s becoming of life and the adventures ahead, I rolled up my sleeves, sold all our properties and said goodbye to Malaysia.

I have been always chasing goals, working on projects and doing something if not learning most of my life. There is something about the stillness in Norway that seemed to bite into my soul, back then without a job to focus on when I first arrived, put me into a highly uncomfortable feeling, somewhat like an itch in the throat that I can’t seem to reach. Living in the moment or just being present was something I continued to struggle to cope.

I took the cues from my daughter; she is the queen of living mindfully. It is just so amazing learning how she takes joy in the simple pleasures in life: a hike in the forest, chasing birds in the park, cycling, frog nettings, “fiskekrabbe” – fish crabbing in summer, fishing at the docks in autumn, and skiing in winter.
Sandefjord is a charming summer seaside town where I have spent the last two and a half years here, a place I call home now. It has the historical landmark of Viking heritage and its whaling industry imprints. Making this new city as my home certainly takes effort and patience. I enjoyed living without any plans; typically, you will find me enjoying a good chat with my friend at my favorite local coffee shop enjoying a cup of java and learning Norwegian or out with my family in the nature. Strangely, it took me this far to learn to appreciate the small stuffs!

Travelling and collecting new memories topped my favorite activities at this moment and Norway’s nature trail and forests boasts some of the best views in the world. Lofoten’s midnight sun got me jawed-dropping, it literally never sleeps in summer.

Being in Norway means getting use to thick snow most of the winters.
Norway celebrated her 205th birthday (Gratulerer Med Dagen!) in the recent 17th of May. The Norwegian Constitution Day: Syttende Mai read as (Certain-eh Mai), is celebrated like no others with a day full of nations’ pride. The usual reserved Norwegian started coming out of their shell with their best attires and ladies in their traditional “Bunad” while men in their suits. Typically, in the olden days, they celebrate their early rise with a toast of Champagne in breakfast before hitting the streets to join the children’s parade (Barne Torget).

It was worthwhile to say that I embraced those adjustments pretty well. What seemed to be a closed door for me caught me by surprised. I joined GE Vingmed Ultrasound Norway in Jan 2019, as a clinical apps and Ultrasound Tester in their R&D Team. It also meant that the goal to get a job has finally come to become realistic instead of something I get by daydreaming. Being part of engineering team in the R&D always excite me as the project I am working on impacts the future innovations and trends of ultrasound products. The cold brutal winter are often the darkest period especially it entails a 3 hours daily long commute to Horten and Oslo and back home.

To be honest, despite all these, it is still one of the greatest periods of my life and I really love my life now, even if the adjustments are sometimes harsh and difficult.
Diastolic Dysfunction Assessed Using Contemporary Guidelines and Prognosis Following Myocardial Infarction

The aim of this study was to assess the prognostic value of significant diastolic dysfunction (DD) assessed using the algorithm recommended in the 2016 American Society of Echocardiography and European Association of Cardiovascular Imaging guidelines (DD2016) in comparison with the prognostic value of significant DD assessed using the 2009 guidelines (DD2009) as well as the individual parameters incorporated in the 2016 algorithm.

A total of 718 consecutive patients with STEMI and NSTEMI who underwent coronary angiography during the study period between January 2013 and December 2014 were included in this study. Comprehensive transthoracic echocardiography was performed within 24 hours of admission in all patients. Grades 2 and 3 were grouped together into a single group as “significant DD” for the purposes of this study. Exclusion criteria were previous MI, significant mitral valve disease, atrial fibrillation, paced rhythm, and significant hemodynamic instability, leaving a final study group of 419 patients. These 419 patients were then underwent a median follow up of 24 months. The primary outcome measure was composite major adverse cardiovascular events (MACEs), comprising death, myocardial infarction, and heart failure.

As a result, there were a total of 61 MACEs including 37 deaths, 19 reinfarctions, and 5 heart failure readmission. DD2016 showed a better association with MACEs than DD2009. DD2016 was the strongest independent predictor of MACEs. Of the four key diastolic parameters, only the left atrial volume index was independently associated with MACEs.

In conclusion, significant diastolic dysfunction assessed using the 2016 American Society of Echocardiography and European Association of Cardiovascular Imaging guidelines is a robust independent predictor of clinical outcomes following myocardial infarction and compares favorably with DD2009 as well as the individual parameters incorporated in the novel 2016 algorithm. (J Am Soc. Echocardiogr. 2018)
Functional Changes In Acute Eosinophilic Myocarditis Due To Chemotherapy With Ibrutinib

Eosinophilic myocarditis (EM) is a rare and acute life-threatening inflammatory disease of the heart, characterized by eosinophilic infiltration, and often accompanied by eosinophilia. EM has been reported in association with hypersensitivity reactions, immune-mediated disorders, such as eosinophilic granulomatosis with polyangiitis (EGPA); undefined complex hypereosinophilic syndrome (HES) or its myeloproliferative variant; infections; and cancer. Furthermore, in a relatively large number of cases, the underlying cause of EM remains unknown.
Knowledge Review: Echocardiography Views

SUBCOSTAL WINDOW

(in SC) A chamber
(in SC) IVC
(in SC) ABDOMINAL AOD

SUPRASTERNAL WINDOW

L. common carotid artery
Aortic arch
Ascending aorta
Descending thoracic aorta
L. main bronchus
R. pulmonary artery
L. brachiocephalic vein

MODIFIED ECHO VIEW

RIGHT PARASTERNAL WINDOW

A4C RV FOCUS VIEW

SLANTING 4 CHAMBER

SUPRASTERNAL SHORT AXIS VIEW
Technology Article: Shockwave-Intravascular Lithotripsy

The New Technology Dealing With Complex Calcified Coronary Artery Disease

Introduction

Over a decade, there has been a crucial development in procedural technique and technology in tackling Complex Calcified Coronary Artery Disease (CAD). Increasing population age that has the burden of comorbidities is one of the triggers to the pivotal development. Even though, Percutaneous Coronary Intervention (PCI) with Balloon or Stent Angioplasty remains to be one of the best Intervention options (Burneikaitė, 2017). Traditionally, CAD intervention via PCI has been attempted with cutting or scoring balloons, high-pressure balloons, coronary atherectomy (rotational and orbital). However, applications of these techniques are limited due to the risk of complications, degree technical difficulty, operator experience, and dependency and lack of evidence and may less effective in all types of calcified lesions especially in eccentric coronary lesions. Therefore, traditional PCI approach techniques often cause bias of luminal gain for balloon dilatation especially in eccentric lesions and suboptimal stent expansion, which is one of the greatest predictors of adverse effect or outcome such as stent thrombosis, restenosis, and coronary edges dissection (Wong, 2019).

What Is All About

Shockwave-Intravascular Lithotripsy (S-IVL) is a novel technology and innovative approach used in dealing with Complex Calcified CAD or coronary lesions without serious adverse effects compared with the traditional approach. S-IVL delivers pulsatile sonic pressure waves, modifying calcified lesions a safe and reproducing manner. The mechanism is leveraging Electro-Hydraulic-Generated Lithotripsy to produce high-speed sonic pressure waves that pass through soft tissue to selectively disrupt calcium. S-IVL concept adopted from Urology Extracorporeal Lithotripsy, but a bit differs and designed specifically for vascular applications by producing unfocused energy that creates an effect within the target vessel (Azeem, 2018).

What is S-IVL Devices

The S-IVL device is a single-use, monorail catheter with a central ultrasound core delivered over a 0.014” angioplasty wire. The balloon has two emitters 6 mm apart and two conventional marker bands 4 mm from the distal emitter and 2 mm from the proximal emitter, resulting in a working length of 12 mm. The S-IVL is available in 2.5-4 mm diameters in 0.5 mm increments. Low-pressure inflation (4 atm) ensures apposition to the vessel wall and is maintained throughout the time of Shockwave delivery. Each lithotripsy cycle is 10 seconds at a frequency of 1 pulse per second. Each catheter can perform 8 cycles of lithotripsy. A minimum of two cycles of lithotripsy is recommended in each area of concern and may overlap (SHOCKWAVE, 2019).

How S-IVL Functioning

Lithotripsy is delivered when emitters vaporize the fluid inside the S-IVL balloon, creating an expanding and collapsing bubble that generates sonic pressure waves. This acoustic energy wave travels through the vessel wall, selectively fracturing the intimal and medial calcium. This calcium modification ultimately increases vessel compliance and optimizes stent expansion. Electric signals that mimic pacing spikes may be seen on the electrocardiogram trace. There are two potential explanations. First is an electric spark created by the vaporization during delivery causing an artifact that is traced by the electrocardiogram. Second, it may be explained by the direct link between electrocardiogram signals and piezoelectricity. Piezoelectricity is the electric charge that accumulates in certain materials, including soft tissue, in response to mechanical stress (Wong, 2019).
What Is Recent Study Show

Based on Disrupt-CAD (2016) study, 60 patients who are suffered from severely calcified lesions were enrolled and undergone S-IVL procedure. The end results showed high yield device success (98%) and excellent angiographic outcomes, a large gain in vessel diameter (1.7 mm) and low residual percent of stenosis (13%) post-procedure. The results also demonstrate minimal vascular injury, with no incidence of perforation, abrupt closure or slow or no-reflow events. The rate of Major Adverse Cardiac Events (MACE) at 30 days was low (5%), with all events being zero Q-wave myocardial infarction.

31 out of 60 patients were undergone intravascular imaging using Optical Coherence Technology (OCT) and demonstrated that calcium was fractured completely through all calcified layers of the artery and around the circumference of the artery. The resulting gain in the luminal area after treatment was significant and was achieved independent of the degree of calcification.

Conclusion

S-IVL has been shown a safe and effective approach for both as an upfront calcium modification device and as a bail-out option when predilation with balloon angioplasty is inadequate. The utilization of S-IVL does not require specialized training for interventional cardiologists, as the S-IVL is compatible with all coronary guide wire and comparable with the balloon angioplasty technique. Unfortunately, S-IVL remains as a bulky device that requires some negotiation especially through tortuous vessels. Therefore, aggressive predilation is required for those vessels where the Shockwave cannot be passed.

References

Complete The Crossword Puzzle Below

Puzzle 1

Across
2. Cardiac .... is accumulation of increasing amounts of pericardial fluid results in predictable hemodynamic alterations
5. Two mitral leafets, referred to as anterior and ....
6. Syndrome that is familial condition, may succumb to deadly arrhythmias. Implantation with ICD can prevent sudden death
9. Method to determine severity of mitral regurgitation?
11. If leads V1 through V6 are imagined to be the spokes of wheel, the center of the wheel is the ..... 
12. An occlusion of LAD coronary artery will produce an anterior infarction, which often causes anterior ..... 
14. Myocardial ..... , coronary occlusion and heart attack refer to the same serious phenomenon
15. PR become progressively longer with each successive cycle and then drop beat occur. We now recognize as .... block.

Down
1. Bachmann's Bundle originates in the SA Node and distributes depolarization to the left....... 
3. The most common benign primary tumor of the heart
4. The main diagnostic test in acute myocardial infarction
7. Valve of coronary sinus
8. A classic form of mitral valve disease is .... heart disease
10. The most common type of atrial septal defect is the ostium ...... defect
13. The characteristic sign of ischemia is the ...... T wave

MSCVT Newsletter Crossword Puzzle

Cardiovascular Technologist

Who are CVT?

Be A MSCVT Members

Building Bridges For Better Ties

MSCVT NEWSLETTER CROSSWORD PUZZLE

!!!PLEASE SEND YOUR ANSWER!!!

COLLECT 3 CROSSWORD FROM MSCVT NEWSLETTER FOR 3 CONSECUTIVE MONTH AND WIN MALAYSIAN SOCIETY OF CARDIOVASCULAR TECHNOLOGIST MSCVT MERCHANDISE

SEND YOUR ANSWER TO mscvt.media@gmail.com
Announcement

Cardiovascular Technologist

16th MALAYSIAN CARDIOVASCULAR INTERVENTIONAL SYMPOSIUM with Live Transmission

25 – 27 JULY 2019, SHERATON HOTEL PETALING JAYA

Case submission before 30 April 2019
Early Bird Registration before 31 March 2019

www.mscvt.com

Create a new logo for MSCVT-TV
The winning entry will received
Reward and Sponsorship Cardiac conference.
Submission deadline is 1st July 2019
*Term & Condition apply*
mscvt.media@gmail.com
Step For MSCVT Membership Registration

**Steps for New Membership Registration Application**

1. **Make Payment to NHAM JomPay**
   - JOMPAY: 806859
   - Ref-1: Members(New)MSCVT
   - Ref-2: <Name>_<Last 4 digit of IC>
   - Example:
     - Ref-1: Members(New)MSCVT
     - Ref-2: Siti Fatimah 5032

2. **Fill in Online Form**
   - [Link](https://forms.gle/BqX5bdSPhg)
   - [Link](baG)

   ***You will be required to insert proof of payment in the form***
   ***Please upload close-up photo/pasport photo***

3. **Submit**

**Steps to Renew Membership Registration Application**

1. **Make Payment to NHAM JomPay**
   - JOMPAY: 806859
   - Ref-1: Fees_for_year
   - Ref-2: <Name>_<Last 4 digit of IC>
   - Example:
     - Ref-1: Fees 2017-2019
     - Ref-2: Siti Fatimah 5032

2. **Email Proof of Payment**
   - To: secretariat@malaysianheart.org
   - Cc: mscvt.membership@gmail.com

Cardiovascular Technologist

Let's Support

Malaysian Society of Cardiovascular Technologist

MSCVT Social Media Platform
STANDARD ECHO VIEW

PARASTERNAL WINDOW

PLA\textsubscript{x} R\textsubscript{V} INFLOW

PLA\textsubscript{x} R\textsubscript{V} OUTFLOW

Parasternal Long-Axis View (PLAX)

- Interventricular septum
- Right coronary cusp
- Ascending aorta
- Non-coronary cusp
- RV free wall
- LV
- LA
- Non-coronary cusp
- Descending thoracic aorta
- Pericardium

Diastole

PSA\textsubscript{x} A\textsubscript{O}/PA

PSA\textsubscript{x} AO LEVEL

PSA\textsubscript{x} PAPILLARY LEVEL

PSA\textsubscript{x} MITRAL LEVEL

RCC

NCC

LCC

Anterior wall

LV cavity

Septal wall

Lateral wall

Inferior wall

Right ventricular cavity

Interventricular septum

LVOT

MV

Pericardium

Diastole

RV cavity

LV cavity

Basal inferolateral LV wall

Inferior wall

Posterior medial papillary muscle

Anterolateral papillary muscle

Diastole

Right ventricular free wall

Aortic valve

Pulmonary valve

Main pulmonary artery

Diastole
Appendix
Appendix

SUPRASTERNAL WINDOW

MODIFIED ECHO VIEW

RIGHT PARASTERNAL WINDOW

A4C RV FOCUS VIEW

SLANTING 4 CHAMBER

SUPRASTERNAL SHORT AXIS VIEW