

Dear Delegate,

CEPIA looks forward to welcoming you to Module B of the CEPIA Vocational Graduate Diploma of Cardiac Electrophysiology (30733QLD).

Course Dates:

Module B consists of 5 lectures and will be held between Wednesday 27th – Friday 29th May 2009.

Course Times:

The course will commence on Wednesday at 9:00am, and will conclude on Friday at 4:00pm. Please arrive at the Fig Room between 8:30 - 9:00am on Wednesday to receive your programme agenda, lecture notes and workbook. Dress for the course is business casual.

Course Location:

Mercure Hotel Melbourne
Fig Room
13 Spring St
Melbourne, VIC, 3000, Australia
+61 3 9205 9999

Please visit the hotel website for further information regarding hotel accommodation and facilities:
<http://www.mercuremelbourne.com.au/>.

Organised Events:

There are no formally organised events, but delegates are most welcome to spend their free time at the end of each days lectures exploring the city sights and landmarks.

Food and Accommodation:

Morning tea, lunch and afternoon tea will be provided during the course; however travel, accommodation, breakfast and dinners will be at your expense.

Travel and accommodation expenses must be organised by the registered participant. It is not required to stay at the relevant hotel, and as such no rooms or special rates have been reserved or organised. Hotels often have special discounted rates available online, so it may prove cheaper to book online rather than ringing the reception desk by phone.

Sometimes cheaper rates can be obtained online from third party travel companies, so please also check the following websites:

Wotif:	http://www.wotif.com/
Need It Now:	http://www.needitnow.com.au/
Last Minute:	http://www.lastminute.com.au/home.html
Roamfree:	http://www.roamfree.com/

Map and Parking:

A map and other secure parking information is shown below (hotel is located under the )



Parking:

Parking for non-guests is available at the above locations marked with a purple icon.

Course Content

The course consists of nine (9) units of competency. Embedded in the required knowledge for the units of competency, is a significant body of high level underpinning knowledge related to cardiac anatomy and physiology, cardiac pharmacology, principles of ablation and mechanisms of arrhythmias. Participants must demonstrate competence in all nine (9) units to gain the qualification. A Statement of Attainment will be issued for any unit of competency satisfactorily completed if the full qualification is not completed (N.B. each unit consists of both online assessment and workbook submission).

Code	Unit Title	Module
CEPPR01A	Apply the principles of electrophysiology (EP) to diagnostic procedures	A
CEPBC01A	Define and diagnose bradyarrhythmias and conduction system dysfunction	A
CEPTA01A	Define, diagnose and treat AV Node re-entrant tachycardia	B
CEPTA02A	Define, diagnose and treat AV re-entrant tachycardia	B
CEPTA03A	Define, diagnose and treat rare supraventricular tachycardia syndromes	B
CEPTA04A	Define, diagnose and treat atrial tachycardia	C
CEPAFL01A	Define, diagnose and treat atrial flutter	C
CEPAFI01A	Define, diagnose and treat atrial fibrillation	C
CEPVT01A	Define, diagnose and treat ventricular tachyarrhythmias	C

The units are delivered and assessed in three Modules (A, B, C) as detailed below:

Module A

1. Cardiac Anatomy and Physiology
2. Principles of Electrophysiology: Part 1
3. Principles of Electrophysiology: Part 2
4. Bradyarrhythmias and Conduction System Dysfunction
5. Cardiac Pharmacology

Module B

6. Mechanism of Arrhythmias
7. Principles of Ablation
8. AV Node Reentrant Tachycardia
9. AV Reentrant Tachycardia
10. Rare Supraventricular Tachycardia Syndromes

Module C

11. Atrial Tachycardia
12. Atrial Flutter
13. Atrial Fibrillation
14. Ventricular Tachyarrhythmias

Expected Learner Outcomes – Module B

After successful completion of this module the participant should possess or be able to demonstrate the following:

- ♥ Possess a detailed and comprehensive understanding of the rationale for ablation as well as the risks and complications
- ♥ Demonstrate an in-depth understanding of the biophysics of radiofrequency ablation including RF circuit, power distribution, myocardial heating, thermal latency, catheter contact, impedance, temperature, resistive and conductive heating and the effects of blood flow, catheter stability, electrode size, power, duration and impedance on lesion formation
- ♥ Demonstrate an understanding of the biophysics of cryoablation including cryotherapy mechanism, lesion formation, lesion characteristics, cryomapping and cryoadhesion
- ♥ Understand the differences, pros and cons of radiofrequency, irrigated RF and cryoablation
- ♥ Increase awareness, risks and physiology of coagulum formation
- ♥ Possess a detailed and comprehensive understanding of the mechanisms of arrhythmias including automaticity, reentry and triggered activity
- ♥ Possess an in-depth understanding of the theory, principles and criteria for reentry, concealed conduction and entrainment
- ♥ Possess a comprehensive understanding of early and delayed afterdepolarisations
- ♥ Possess an in-depth understanding of the different pharmacologic and pacing diagnostic manoeuvres for evaluating and differentiating supraventricular arrhythmias
- ♥ Describe accurately the concept, anatomy and physiology of dual AV node physiology and accessory pathways
- ♥ Demonstrate an understanding of the demographics, clinical presentation, features, EP characteristics, progression and treatment options of dual AV node physiology and AV reentrant physiology
- ♥ Accurately diagnose and differentiate typical and atypical AV node reentry tachycardia, orthodromic and antidromic AV reentry tachycardia
- ♥ Understand the various mapping techniques and approaches for typical and atypical AV node reentry tachycardia, orthodromic and antidromic AV reentry tachycardia ablation including activation mapping, pace mapping, pathway potentials and fractionated potentials
- ♥ Demonstrate thorough knowledge and understanding of the different ablation therapies, indications, risks, success rates, recurrence rates, complications and endpoints for typical and atypical AV node reentry tachycardia, orthodromic and antidromic AV reentry tachycardia
- ♥ Accurately describe and interpret the anatomical and electrophysiological characteristics of atriofascicular fibres and tachycardia; fasciculoventricular fibres and persistent junctional reciprocating tachycardia
- ♥ Demonstrate knowledge of the pharmacologic and ablation strategies, mapping techniques, success rates and endpoints for atriofascicular, fascicular and rare atrioventricular fibres

Core References

The following are considered to be core reference material for Module B. Additional arrhythmia specific material is referenced at the end of each lecture.

Basic EP

1. Fogoros RN. Electrophysiological Testing, 3rd Ed. Blackwell Scientific. 1999.
2. Murgatroyd, FD., Krahn, AD, et al. Handbook of Cardiac Electrophysiology: A Practical Guide to Invasive EP Studies and Catheter Ablation. Remedica Publishing. 2002.
3. Hummel, JD et al. Pocket Guide for Cardiac Electrophysiology. W.B Saunders. 2000.

Advanced EP

1. Zipes, DP and Jalife, J (Ed's). Cardiac Electrophysiology: From Cell To Bedside. 4th Ed. WB Saunders Co. 2004.
2. Josephson ME. Clinical Cardiac Electrophysiology, Techniques and Interpretations. 3rd Ed. Lippincott Williams & Wilkins. 2002.
3. Huang, SKS and Wood, MA (Eds). Catheter Ablation for Cardiac Arrhythmias, 1st Ed. Saunders Elsevier. 2006.

Journal Articles

1. Knight, BP et al. Diagnostic Value of Tachycardia Features and Pacing Maneuvers During Paroxysmal Supraventricular Tachycardia. J Am Coll Cardiol. 2000;36:574-582.
2. Waldo, AL. From Bedside to Bench: Entrainment and Other Stories. Heart Rhythm. 2004;1:94-106.
3. Zipes DP. Mechanisms of Clinical Arrhythmias. PACE. 2003;26:1778-1792.
4. Blomström-Lundqvist, C et al. ACC/AHA/ESC Guidelines for the Management of Patients With Supraventricular Arrhythmias – Executive Summary. JACC. 2003;42(8):1493-1531.
5. Wittkampf, FHM and Nakagawa, H. RF Catheter Ablation: Lessons on Lesions. PACE. 2006;29:1285-1297.
6. Matsudaira, K et al. High Incidence of Thrombus Formation Without Impedance Rise During Radiofrequency Ablation Using Electrode Temperature Control. PACE. 2003;26:1227-1237.
7. Yokoyama, K et al. Comparison of Electrode Cooling Between Internal and Open Irrigation in Radiofrequency Lesion Depth and Incidence of Thrombus and Steam Pop. Circulation. 2006;113:11-19.
8. Heidbuchel, H and Jackman, WM. Characterisation of Subforms of AV Nodal Reentrant Tachycardia. Europace. 2004;6:316-329.
9. Geller, JC et al. Changes in AV Node Conduction Curves Following Slow Pathway Modification. PACE. 2000;23(Pt. I):1651-1660.
10. Haissaguerre, M et al. Elimination of Atrioventricular Nodal Reentrant Tachycardia Using Discrete Slow Potentials to Guide Application of Radiofrequency Energy. Circulation. 1992;85:2162-2175.
11. McGuire, MA et al. High Resolution Mapping of Koch's Triangle Using Sixty Electrodes in Humans with Atrioventricular Junctional (AV Nodal) Reentrant Tachycardia. Circulation. 1993;88:2315-2328.
12. Jackman WM et al. Treatment of supraventricular tachycardia due to atrioventricular nodal reentry by radiofrequency ablation of slow-pathway conduction. N Engl J Med. 1992;327:313-318.

13. Friedman, PL. How to Ablation Atrioventricular Nodal Reentry Using Cryoenergy. *Heart Rhythm*. 2005;2:893-896.
14. Wellens, HJ. When To Perform Catheter Ablation in Asymptomatic Patients with a Wolff-Parkinson-White Electrocardiogram. *Circulation*. 2005;112:2201-2207.
15. Pappone, C and Santinelli, V. Catheter Ablation Should Be Performed in Asymptomatic Patients With Wolff-Parkinson-White Syndrome. *Circulation*. 2005;112:2207-2216.
16. Friedman, PL et al. Catheter Cryoablation of Supraventricular Tachycardia: Results of the Multicentre Prospective "Frosty" Trial. *Heart Rhythm*. 2004;1:129-138.
17. Bottoni, N et al. Clinical and Electrophysiological Characteristics in Patients with Atrioventricular Reentrant and Atrioventricular Nodal Reentrant Tachycardia. *Europace*. 2003;5:225-229.
18. Ho, RT et al. Differentiating Atrioventricular Nodal Reentrant Tachycardia From Atrioventricular Reentrant Tachycardia by Δ HA Values During Entrainment from the Ventricle. *Heart Rhythm*. 2008;5:83-88.
19. McClelland, JH et al. Radiofrequency Catheter Ablation of Right Atriofascicular (Mahaim) Accessory Pathways Guided by Accessory Pathway Activation Potentials. *Circulation*. 1994;89:2655-2666.
20. Sternick, EB et al. Electrocardiogram During Tachycardia in Patients with Anterograde Conduction Over a Mahaim Fibre: Old Criteria Revisited. *Heart Rhythm*. 2004;4:406-413.
21. Ellenbogen, KA and Vijayaraman, P. Mahaim Fibres: New Electrophysiological Insights into an Unusual Variant. *J Cardiovasc Electrophysiol*. 2005;16:135-136.
22. Sternick, EB et al. Electrocardiogram in Patients with Fasciculoventricular Pathways: A Comparative Study With Anteroseptal and Midseptal Accessory Pathways. *Heart Rhythm*. 2005;2:1-6.
23. Sternick, EB et al. Fasciculoventricular Pathways: Clinical and Electrophysiologic Characteristics of a Variant of Pre-excitation. *J Cardiovasc Electrophysiol*. 2003;14:1057-1063.
24. Critelli, G. Recognising and Managing Permanent Junctional Reciprocating Tachycardia in the Catheter Ablation Era. *J Cardiovasc Electrophysiol*. 1997;8:226-236.
25. Noe, P et al. Rapid Recovery of Cardiac Function after Catheter Ablation of Persistent Junctional Reciprocating Tachycardia in Children. *PACE*. 2002;25:191-194.
26. Gaita F et al. Catheter Ablation of Permanent Junctional Reciprocating Tachycardia With Radiofrequency Current. *JACC*. 1995;25:648-654.
27. Aguinaga et al. Long-Term Follow-Up in Patients with the Permanent Form of Junctional Reciprocating Tachycardia Treated with Radiofrequency Ablation. *PACE*. 1998;21(Pt.I):2073-2078.
28. Meiltz, A et al. Permanent Form of Junctional Reciprocating Tachycardia in Adults: Peculiar Features and Results of Radiofrequency Catheter Ablation. *Europace*. 2006;8:21-28.

Websites

1. Medtronic. <http://www.medtronic.com>
2. Biosense Webster. <http://www.jnjgateway.com/home>
3. St Jude Medical. <http://www.sjm.com>
4. The Visible Heart Laboratory website. <http://www.vhlab.umn.edu/>
5. Heart Rhythm Society website. <http://www.hrsonline.org>
6. Cryocath website. <http://www.cryocath.com>
7. Bard Electrophysiology website. <http://www.bardep.com/education/>

8. The EP Lab: <http://www.theeplab.com/>
9. Cardiovascular Physiology Concepts: <http://cvphysiology.com/index.html>
10. Cardiovascular Pharmacology Concepts: <http://cvpharmacology.com/index.html>

Online Assessment Information

The CEPIA 2009 Module B Online Assessments will be available during the entire month of August 2009. You may undertake these assessments at any time during the month, but the due date for all assessment completion is midnight 31st August 2009 (Brisbane time; GMT +10:00).

Once you are ready, go to the website <http://testing.exambuilder.com/> and you will be prompted to log in to your account. Your account details have been sent to you in your information pack. If you have not received this information please contact CEPIA immediately at info@cepia.com.au. Once you have logged in you can change your account details to whatever you wish.

Each assessment consists of a series of multiple choice questions to be completed in a single uninterrupted time period (details listed below). This timer is a fixed timer, once started it cannot be stopped, so **do not** work for 20 minutes then log off and come back tomorrow as the timer will have expired. Once started, although the timer is always running, the “Time Remaining” will only be updated each time you submit an answer. You can check your time remaining during questions by clicking on “Update Time Left”. The timer will start once you *receive* your first question, not from when you submit an answer.

Results are automatically saved in the database every time you submit an answer. If you lose your Internet connection you can continue the assessment where you left off.

Some images displayed may be wider than the website screen allows. If this is the case use the scroll bar below the image to move it left and right so you can view the entire image. You can also click on the image to make it appear in full in its own separate window.

Each question will give you the option of Answering, Skipping or Flagging it. Answering will log your chosen answer and move onto the next question. Skipping allows you to move on to the next question *without* logging an answer. Flagging simply highlights a question (whether answered or skipped) so you are able to return to it easier at a later time. You may return to any question at any time by clicking “Review Questions”. Once you have finished the last question you will be given the chance to review all your questions. Any questions that have been skipped or flagged will have a tick next to it so you can return to it if you wish. Once you are satisfied you must submit the assessment by clicking “Submit Exam”. Once submitted your score will be calculated and you will receive an immediate result. CEPIA will email you a separate more detailed assessment summary at the completion of the assessment period.

Please ensure you have access to a broadband internet connection and a dedicated uninterrupted time frame in which to complete these assessment activities.

Module B Online Assessment Timetable

Online Assessment	Total Questions	Time Period (minutes)	Time Assessment Available	Assessment Resit Time Period
Principles of Ablation	40	80	1 – 31 August 2009	1 – 31 March 2010
Mechanisms of Arrhythmias	40	80	1 – 31 August 2009	1 – 31 March 2010
AV Node Reentrant Tachycardia	44	88	1 – 31 August 2009	1 – 31 March 2010
AV Reentrant Tachycardia	40	80	1 – 31 August 2009	1 – 31 March 2010
Rare SVT Syndromes	40	80	1 – 31 August 2009	1 – 31 March 2010

Each assessment will be available for the entire month as listed above. Assessments may be sat at any time during the month, but the due date for assessment completion is midnight on the final date shown (Brisbane time; GMT +10:00). Each assessment must be sat and completed in a single, uninterrupted time period.

In order to receive a Vocational Graduate Diploma you must successfully complete all fourteen (14) online assessment activities to the required level of performance in the allocated time period as detailed above. If you fail to meet the required level of performance you may apply to resit an assessment in the Assessment Resit time period (fees below).

Unsatisfactory performance in an assessment does *not* preclude you attending future modules. You are still able to attend future modules regardless of how you perform in this assessment.

Note that to receive the Vocational Graduate Diploma you must complete all online assessments and all workbook activities successfully.

Late Penalty

Due to administrative requirements associated with the marking of online assessments, a fee of \$50 will be incurred for every calendar day an assessment is overdue.

Online Assessment Resit Fee

The fee to resit any online assessment is \$100 per assessment.

If you have any questions please email CEPIA.

Workbook Assessment:

Practical assessment is an essential component to evaluate each student's ability to put the theory taught into clinical practice. Take home workbooks will compliment each module, and must be completed and returned to CEPIA for assessment. Workbook topics will cover all clinically relevant aspects of each module, including demonstration of basic electrophysiology, diagnostic pacing manoeuvres, ablation properties and tachyarrhythmias.

Access to an EP lab and procedures is essential for this component.

The accompanying workbook for Module B will be handed out to you during the module, and must be completed and submitted to CEPIA by the 31st August 2009.

- > All tasks in all workbooks must be completed satisfactorily, as defined for each task
- > If students initially submit workbooks which are not satisfactory, they will have the opportunity to resubmit their workbooks after first receiving feedback and instructions from CEPIA
- > Depending on the amount of work which has to be resubmitted, a fee of \$50-100 per workbook *may* be charged for remarking
- > Students are still able to attend future modules regardless of how they perform in each workbook

Late Penalty

Due to administrative requirements associated with the marking of workbooks, a fee of \$50 will be incurred for every calendar day a workbook is overdue.

I look forward to seeing you at the course. Please do not hesitate to contact me via email at jason.riley@cepia.com.au if you have any questions or concerns.

Regards,



Jason Riley
Director