

Module 3: Management of arrhythmias

Introduction

12-Lead electrocardiogram (ECG) was developed as a teaching and learning tool for Victorian clinical educators. The information contained in each module was developed using evidence-based resources and examples of best practice. Where expert opinion varies, a discussion section is included. However, it is not within the scope of *12-lead ECG* to address the full spectrum of local variations. Variations can occur in several areas, including practices relating to types of equipment used, infection control processes, practice guidelines and so on. Therefore, educators should, where appropriate, adapt content to reflect their local policies, procedures and protocols. This will ensure the relevancy of the package content to your learners.

The modules are designed to be discrete courses in their own right. They are timetabled so they can be completed in a 1–2 hour timeframe. This timeframe was chosen after we received feedback from clinical educators requesting shorter courses, because health professionals often have limited time to educate away from patients. However, the packages may also be combined into a one- or two-day course.

12-lead ECG should be used as an educational tool to assist in the teaching of clinical skills. It is structured as a guide to assist clinical educators, and uses many concepts taught in the *Clinical Skills in Hospitals Project* (Train-the-Trainer courses). Educators are encouraged to build on this resource by adding their own scenarios which incorporate hospital/health service protocols, policies and other resources. Each module is designed as a lesson plan to incorporate the simulations into the teaching of clinical skills.

Aims

12-lead ECG aims to make participants confident in their recording and interpretation of electrocardiogram (ECG) tracings on adult patients, and when they initiate appropriate therapeutic interventions for patients with common clinical conditions that lead to ECG abnormalities. It is not intended to be a comprehensive textbook on ECG interpretation. In contrast to adult patients, the need to perform an ECG on a paediatric patient is a rare occurrence outside of specialist paediatric cardiology services. This module does not address the issue of ECGs in children.

Package structure

12-lead ECG contains four modules which provide learning opportunities for health professionals at all levels of experience and from all health disciplines. Modules 1 and 2 are regarded as fundamental. Modules 3 and 4 are more difficult, and are regarded as intermediate.

Level of complexity	Package structure
<p>Complex For participants with more than 4 years experience or who have completed Modules 1–4</p>	<pre> graph TD A[Management of arrhythmias] <--> B[Management of acute coronary syndrome] C[Basic ECG recording and interpretation] <--> D[Abnormal ECGs] A <--> C B <--> D </pre>
<p>Intermediate For participants in postgraduate years 3–4 or who have completed Modules 1 and 2</p>	
<p>Fundamental For participants in postgraduate years 1–2</p>	

12-lead ECG was designed to develop participants' knowledge, skills and behaviours in ECG interpretation, and to expose them to increasingly complex scenarios aimed at testing their ability to combine these skills, work as a team and problem solve in more difficult situations.

Educators delivering these modules should be aware of participants' level of experience and choose appropriate modules. Modules presume an increasing level of knowledge as they progress, ranging from a fundamental knowledge of anatomy and physiology for the fundamental modules, up to detailed knowledge of arrhythmia and acute coronary syndrome management for the more complex modules. Novice participants (such as first-year graduates) are expected to start with the fundamental modules, and only move onto intermediate and more complex modules as they demonstrate proficiency. More experienced participants may start at the intermediate level if the educator is satisfied that they have the prior knowledge and skills. Individual educators are responsible for assessing each participant's baseline knowledge and determining which modules they need to complete. While the intermediate modules contain considerable medical detail, non-medical participants can still gain valuable experience from these modules by focusing on their roles and expectations in these scenarios. If the group contains no medical staff, facilitators may need to play the medical roles. More specific descriptions of presumed knowledge are outlined in each module.

The design of these packages presumes that the clinical educators using them have knowledge and expertise in current best practice regarding the teaching of clinical skills and conducting facilitated discussions. Knowledge and expertise are presumed commensurate with the Department of Human Services' basic and advanced Train-the-Trainer Programs. Clinical educators are encouraged to refer to Department of Human Services' *Clinical Skills Facilitators Manual* for theory on:

1. Peyton's model for teaching clinical skills
2. leading small group discussions
3. giving feedback
4. crisis resource management skills.



Module 3: Management of arrhythmias

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Aims

The purpose of this module is for participants to practise diagnosing common arrhythmias and initiate appropriate management.

Presumed knowledge

This module is targeted to health professionals, such as junior doctors and more senior nursing staff with experience in ECG interpretation. They should have a basic knowledge of arrhythmia management, and an intermediate level of knowledge and skills relevant to:

1. interpretation of *12-lead ECGs*
2. recognition of ECG appearances of common arrhythmias
3. pharmacotherapy, as it applies to common cardiac arrhythmias, including indications and contraindications for the use of common anti-arrhythmic drugs
4. use of the manual external defibrillator.

Participants are expected to have completed *12-lead ECG—Module 1: Basic ECG recording and interpretation* and *12-lead ECG—Module 2: Abnormal electrocardiograms* before undertaking this module, as well as skills stations and simulation sessions in other packages in this project. If participants do not yet feel confident with the individual skills, they should be redirected to these modules.

Objectives

By the end of this module, participants should have:

1. reviewed the medications used to treat common arrhythmias in the acute setting
2. discussed the appropriate management of these common arrhythmias
3. applied their knowledge of anti-arrhythmic medications to common arrhythmias
4. practised recognition and management of these arrhythmias on a simulated patient (manikin).

This module focuses on cardiac arrhythmias other than those associated with cardiac arrest—that is, ventricular fibrillation (VF) and ventricular tachycardia (VT). Some discussion of these arrhythmias occurs in this package, but educators and participants are referred to the *BLS adult* and *ALS adult* packages for a greater emphasis on these particular arrhythmias.

Background information for educators

The main purpose of this module is for participants to practise rhythm recognition in a simulated environment and make decisions about appropriate treatment. Depending on the knowledge level of the group, some pharmacology, as it applies to arrhythmia management, will need to be covered. ECG recognition was covered in *12-lead ECG—Module 1: Basic ECG recording and interpretation* and *Module 2: Abnormal electrocardiograms*. Educators should be familiar with the professional background of participants and tailor the module accordingly. Medical staff and senior nursing staff are expected to have a greater knowledge of medical interventions compared to junior nursing staff and allied health. Non-medical staff are not expected to initiate treatment of some of these conditions, but ought to be familiar with the concepts, recognise abnormal signs and be aware of the general principles behind management.

Supraventricular tachycardia (SVT)

Several treatment options exist for SVT^{1, 2}:

- Unstable patients should be reverted with synchronised cardioversion (see below).
- Vagal stimulation may be applied, for example, carotid sinus massage, Valsalva manoeuvres.
- Adenosine may be given rapidly via a proximal vein, followed by saline flush: initial dose 6 mg, and then 12 mg if unsuccessful.
- Verapamil may be given: 1 mg per minute IV, up to 15 mg with careful blood pressure monitoring. Verapamil should not be used if the SVT is a result of conduction through an accessory pathway, such as occurs with Wolf-Parkinson-White (WPW) syndrome, because this may increase the ventricular rate.

Cardioversion involves delivering a synchronised direct current shock to the heart in order to stop all electrical activity. The heart's natural pacemaker, the sino-atrial (SA) node, then takes over to return the heart rhythm to normal. This procedure requires the patient to be anaesthetised or sedated, and carries a risk of precipitating a more serious cardiac rhythm or even cardiac arrest. Cardioversion should only be performed under the guidance of an experienced clinician.

Atrial fibrillation

Many appropriate treatment options are available for acute AF^{1, 2}. Practitioners must decide whether the aim is to control the ventricular rate or to revert to sinus rhythm. The decision to attempt to revert to sinus rhythm needs to take into account the risk of thromboembolism and the need for anticoagulation. This risk is greater with increased duration of AF, and reversion should not be attempted if AF is present for longer than 48 hours^{1, 2}. These decisions should be made by or in conjunction with senior clinicians.

Rate control can be achieved with^{1, 2}:

- **beta-blocking agents:**

- atenolol 25–100 mg orally
- metoprolol 25–100 mg orally or 5–10 mg IV

- **calcium channel blocking agents:**

- diltiazem SR 180–360 mg orally
- verapamil SR 160–480 mg orally, or 1 mg per minute IV up to 15 mg with careful BP monitoring

- **digoxin:**

- 62.5–250 µg orally, or up to 500 µg IV

- **magnesium:**

- 20 mmol IV³

- **esmolol:**

- 500 µm per kg body weight IV over 1 minute, then titrate.

Rhythm control can be attempted with^{1, 2}:

- **immediate synchronised cardioversion** in unstable patients

- **flecainide:**

- 50–100 mg orally, or 2 mg per kg body weight IV in patients with normal left ventricular function and no coronary artery disease

- **amiodarone:**

- 200–400 mg orally, or 5 mg per kg body weight IV over 20 minutes up to 2 hours.

Atrial flutter

Management of atrial flutter is essentially the same as for atrial fibrillation (see above)¹. However, atrial flutter is often resistant to standard anti-arrhythmic therapy, so synchronised cardioversion should be considered¹.

Ventricular tachycardia (VT)

Treatment options for VT include:

- **immediate cardioversion** in unconscious or unstable patients (200 J biphasic):

- semi-urgent cardioversion may be indicated if patients fail to respond to drug therapy

- **lignocaine:**

- 1.0–1.5 mg per kg body weight (75–100 mg) IV over 1–2 minutes followed by lignocaine infusion if successful

- **amiodarone:**

- 5 mg per kg body weight IV over 20 minutes, then 10–15 mg per kg body weight over 24 hours

- **sotalol:**

- 1–2 mg per kg body weight IV over 10–30 minutes, repeated if necessary every 10 minutes

Polymorphic VT or torsade de pointes can be treated with¹:

- **magnesium sulphate:**

- 2 g (4 mL of 50%) IV over 10–15 minutes

- **isoprenaline:**

- 20 µg IV

- **lignocaine:**

- 75–100 mg IV over 1–2 minutes.

For ventricular arrhythmias associated with tricyclic antidepressant toxicity, the treatment of choice is sodium bicarbonate 1 mmol per kg body weight IV over 2–3 minutes, repeated as necessary.

Ventricular fibrillation (VF)

VF should be treated immediately by defibrillation at 200 J biphasic, 360 J monophasic.

Heart block²

No treatment is required for first-degree heart block.

Symptomatic patients with Type 1 second-degree heart block may require treatment with atropine 0.5–1.5 mg. Patients with Type 2 second-degree heart block should be considered for cardiac pacing. Atropine (0.5–1.5 mg) or adrenaline infusion (2–10 µg per minute) might be effective while this is organised.

Complete heart block (third-degree block) usually requires cardiac pacing. Atropine (0.5–1.5 mg IV) or adrenaline infusion (2–10 µg per minute) may maintain an adequate heart rate and blood pressure temporarily while pacing arrangements are made.

Educators are referred to *ALS adult* for further information on the treatment of complete heart block and external cardiac pacing.

Learning activities

Suggested learning activities and timetables are outlined below. Timetable 1 is designed for 12 participants working in two groups of six. Timetable 2 is designed for six participants working together.

Timetable 1			
Timing	Activity	Objective	
35 minutes	Facilitated discussion	1, 2, 3	
10 minutes	Simulation 1	Simulation 2	All
25 minutes	Debrief	Debrief	All
10 minutes	Simulation 2	Simulation 1	All
25 minutes	Debrief	Debrief	All
10 minutes	Summary		All
5 minutes	Evaluation		

Total time = 2 hours

Timetable 2			
Timing	Activity	Objective	
35 minutes	Facilitated discussion	1, 2, 3	
10 minutes	Simulation 1		3, 4
25 minutes	Debrief		1,2
10 minutes	Simulation 2		
25 minutes	Debrief		
10 minutes	Summary		All
5 minutes	Evaluation		

Total time = 2 hours

Facilitated discussion

The facilitator should lead a discussion amongst participants to review the pharmacological management of common cardiac arrhythmias. This should focus on the acute management of these arrhythmias, rather than being a comprehensive lecture on the management of arrhythmias in general. The discussion should then introduce the simulation training to follow.

Facilitators should be aware of the different professional groups that may be present during this discussion (particularly if they include junior nursing staff or allied health professionals), and allow these groups to discuss their roles in managing patients with

arrhythmias. Where the group comprises a mix of participants, facilitators may split them into smaller groups to discuss a clinical scenario and report back to the group. A selection of scenarios is provided with this module for this purpose; however, educators also may wish to develop their own. Thus, participants can concentrate on issues relevant to their craft group and skill level while informing other craft groups of their capabilities and limitations.

The discussion should not go beyond the 30 minutes allotted, in order to keep the module to time. Facilitators are reminded that debriefing time is also a valuable opportunity to clarify or further discuss the management of these clinical conditions.

PowerPoint slides are available for the facilitator to use to summarise these main points at the end of the discussion, or as triggers if participants have not identified the major issues.

The facilitator should ensure these major issues are covered:

- appropriate avenues for calling for assistance
- appropriate anti-arrhythmic therapy for SVT
- appropriate anti-arrhythmic therapy for atrial fibrillation and atrial flutter
- appropriate anti-arrhythmic therapy for VT.

Scenario 1

You are conducting a ward round (medical, nursing or allied health) and arrive to assess Mr Jones, a 60-year-old patient on the medical ward for investigation of syncope. You note that his heartrate is 150 bpm and he is short of breath. What is your role in his initial management (medical, nursing, allied health)?

Provide participants with an ECG (in the Appendix) that demonstrates SVT. Ask them to discuss their role in management with respect their health professional group.

Scenario 2

Mrs Jones presents to your outpatient clinic for review of her bunions. At the reception desk she appears to be short of breath and sweaty, and the receptionist defers to you for assistance. You note that her heartrate is irregular and at a rate of 160 bpm. What is your role in her initial management (medical, nursing, allied health)?

Provide participants with an ECG (in the Appendix) that demonstrates atrial fibrillation. Ask them to discuss their role in management with respect to their health professional group.

Scenario 3

Mr Smith has just returned to your ward from theatre after knee surgery. You go to review him about his immediate needs (medical, nursing, allied health) and find that he appears pale and complains of palpitations. You take his pulse and find that his heartrate is 140 bpm. What is your role in his initial management (medical, nursing, allied health)?

Provide participants with an ECG (in the Appendix) that demonstrates VT. Ask them to discuss their role in management with respect to their health professional group.

Scenario 4

You are reviewing Mrs Smith, an 80-year-old woman on the medical ward, and ask her to walk so that you can assess her mobility. She stands, but feels dizzy and weak and needs to return to bed. You note that her heartrate is 35 bpm. What is your role in her initial management (medical, nursing, allied health)?

Provide participants with an ECG (in the Appendix) that demonstrates complete heart block. Ask them to discuss their role in management with respect to their health professional group.

Simulation sessions

This exercise allows participants to practise their ECG interpretation and arrhythmia management skills as a team in a simulated environment.

The program assumes two facilitators and 12 participants. Participants should be divided into two groups of six (Timetable 1). Three participants each take part in one scenario and observe a second. Those not participating in the scenario should observe and participate in the debriefing session. The debriefing period should include all six participants—both the active participants and their observers. It is possible to run these scenarios with smaller groups. If only six participants are present, the scenarios can be run consecutively (Timetable 2).

With less-experienced participants, this module can extend beyond the expected timeframe. In that instance, the second scenario can be omitted and offered as a stand-alone session at a later date, along with a modified version of the facilitated discussion.

If no medical participants are present, facilitators should fill these roles and allow nursing or allied health participants to contribute to the scenarios as they would in real life.

These scenarios can be run on low-fidelity simulators (for example, Resus Anne), but are also quite suitable for more sophisticated simulators (for example, Sim Man, HPS METI).

Simulation 1: Narrow complex tachycardia

Scenario design

In this scenario, participants are exposed to a patient with a rapid narrow complex tachycardia in the resuscitation cubicle of the emergency department (ED). The final diagnosis is SVT. Their task is to differentiate between the possible diagnoses and initiate appropriate management. The diagnosis should be fairly straightforward, although the differential diagnosis of narrow complex regular tachycardia needs to be addressed. While the patient may temporarily revert after the administration of adenosine, the SVT is persistent despite other treatments until the end of the scenario. The purpose of this is to push participants to consider the differential diagnosis and to decide how to proceed when it becomes apparent that first-line treatments are not working.

Case history	
Patient details	
Sex	Male
Age	50 years old
Past history	Smoker, borderline hypertension, not keen on taking BP medication
Social history	Lives at home with wife
History of present illness	Woke well this morning Mid-morning suddenly felt short of breath, no chest pain Felt that heart was racing
Presenting symptoms	Presents to the ED with above symptoms

Resources	
General	
Setting/environment	Hospital emergency department
Patient attire	Hospital gown
Monitoring	ECG monitoring, pulse oximetry, non-invasive BP monitoring
Supporting documentation required	ED observation chart, 12-lead ECG

Equipment		
Equipment	Number	Sourced from
Manikin capable of simulating narrow complex tachycardia (or manikin with rhythm generator)	1	
Hospital trolley	1	
Hospital gown	1	
Pillow/blanket	1	
Treatment chart	1	
ECG monitor	1	
IV cannulae	1	
12-lead ECG machine	1	
ECG prop (SVT)	1	
Medication props: digoxin, verapamil, adenosine, amiodarone, metoprolol and so on	1 set	
Defibrillator and pads	1	
Oxygen mask and supply	1	
IV fluid and infusion set	1	
Needles and syringes	Various	

Roles

Participant 1

You are a health professional working in the ED of your local hospital. A 50-year-old male has just been triaged to the resuscitation cubicle complaining of shortness of breath and palpitations. Your task is to assess him and instigate appropriate management. You have two colleagues to call on for assistance and a fully equipped ED resuscitation room.

Participants 2 and 3

You are health professionals working in the ED. Your colleague (Participant 1) has gone to attend to a patient in the resuscitation cubicle. They may ask for your assistance in managing that patient. You have access to a fully equipped ED resuscitation room.

Faculty role play: senior clinician

You are a senior clinician working in the ED. At the end of the scenario, you may enter the room to enquire as to the wellbeing of the patient. You may enter the scenario earlier if it appears that the participants are having difficulty in devising an appropriate management plan.

Simulator programming considerations				
System	Baseline state	Change in State 1	Change in State 2	Resolution
CVS	SVT rate 150 bpm BP 90/60	Sinus rhythm 90 bpm BP 120/80	SVT rate 150 bpm BP 100/60	Sinus rhythm 90 bpm BP 120/80
Respiratory	RR 26	RR 20	RR 26	RR 20
Neurologic	GCS 15	GCS 15	GCS 15	GCS 15
Response to participant intervention	If prescribed adenosine → go to State 1 If prescribed anything else → remain in baseline	If no further drug prescribed → go to State 2 after 1 minute	If prescribed verapamil or beta-blocker → go to resolution after simulation has run for 8 minutes	

Debriefing points:

- differentiating sinus tachycardia, SVT, atrial flutter and AF
- appropriate anti-arrhythmic therapy for each of the above
- reminder of the role of synchronised cardioversion in unstable patients.

Simulation 2: Wide complex tachycardia

Scenario design

In this scenario, participants are exposed to a patient with a wide complex tachycardia (VT) on the surgical ward. They are expected to recognise and manage this arrhythmia accordingly. Treatment with anything other than lignocaine, amiodarone or cardioversion will precipitate VF.

Case history	
Patient details	
Sex	Male
Age	60 years old
Past history	Atrial fibrillation treated with digoxin 250 µg daily, warfarin 3 mg nocte
Social history	Lives at home with wife
History of present illness	Three days post elective inguinal hernia repair Currently on the surgical ward
Presenting symptoms	Complains to the ward nurse of palpitations and shortness of breath

Resources	
General	
Setting/environment	Hospital surgical ward
Patient attire	Hospital gown
Monitoring	ECG, non-invasive BP, pulse oximetry
Supporting documentation required	Treatment/drug chart, 12-lead ECG 'Old notes' with ECG showing narrow complex AF

Equipment		
Equipment	Number	Sourced from
Manikin/simulator capable of simulating wide complex tachycardia, VT	1	
Hospital trolley	1	
Hospital gown	1	
ECG machine	1	
ECG monitoring	1	
Oxygen and supply	1	
12-lead ECG (VT)	1	
12-lead ECG (AF)	1	
Defibrillator	1	
Arrhythmia medication props (lignocaine, amiodarone, verapamil and adenosine)	Various	
Pillow/blanket	1	
IV cannulae	Various	
IV fluids and infusion set	1	
ETT tube	Various sizes	
Bag mask ventilation unit	1	
Sedation/induction medication props (thiopentone, propofol, midazolam, fentanyl, suxamethonium and so on)	Various	

Roles
<p>Participant 1</p> <p>You are a health professional working in the surgical ward. A 60-year-old male patient had an elective inguinal hernia repair three days ago. He now complains of palpitations and shortness of breath. His treating nurse has arranged an ECG monitor and performed a 12-lead ECG for you. You are required to assess him and instigate initial management. You have a fully stocked ward crash trolley, and two colleagues you can call on for assistance.</p>
<p>Participants 2 and 3</p> <p>You are two health professionals working in the surgical ward. Your colleague (Participant 1) has gone to assess a 60-year-old man. They may call on you for assistance. You have a fully stocked ward crash trolley at your disposal.</p>
<p>Faculty role play: senior clinician</p> <p>You are a senior clinician working in the hospital. At the end of the scenario, you may enter the room to enquire about the wellbeing of the patient being treated. You may enter the scenario earlier to offer assistance if the participants appear to be having difficulty managing their patient.</p>

Simulator programming considerations				
System	Baseline state	Change in State 1	Change in State 2	Resolution
CVS	VT, 150 bpm BP 100/50	VT, 150 bpm BP 80/70	VF	Sinus tachycardia, 110 bpm BP 130/80
Respiratory	RR 26	RR 26	RR 0, apnoeic	RR 24
Neurologic	GCS 15	GCS 15	GCS 0	GCS 15 (GCS 14 if patient passed through State 2)
Response to participant intervention	If prescribed verapamil, b-blockers or digoxin → go to State 2 If prescribed adenosine or lignocaine, go to State 1 If prescribed defibrillation, go to resolution If prescribed amiodarone, go to resolution after 5–8 minutes*	If prescribed verapamil, b-blocker or digoxin → go to State 2 If prescribed adenosine → stay in State 1 If prescribed defibrillation, lignocaine or amiodarone → go to resolution	If prescribed defibrillation 200 J biphasic, 360 J monophasic → go to resolution	

* Time to resolution will depend on time taken so far in scenario.

Debriefing points:

- differential diagnosis of wide complex tachycardia
- importance of assuming VT until proved otherwise
- drug therapies for conscious VT
- immediate synchronised cardioversion for unstable or unconscious VT.

Summary

The summary session reinforces content covered in the learning activities, and is an opportunity for participants to reflect on what they have covered. No new material should be introduced.

Major points to recap in the summary include:

- differential diagnosis of narrow and wide complex tachycardias
- appropriate medical therapy for narrow complex tachycardia, that is, SVT, AF and atrial flutter
- differential diagnosis of wide complex tachycardia
- appropriate medical therapy for VT
- reinforcing the need for synchronised cardioversion in any unstable patient.

Participants should be encouraged to read from the reference list to reinforce the skills acquired in this module. They should be offered access to ECG libraries and educators in the future if they need to practise or improve their skill level or confidence.

Resource list

The following resource list assumes two facilitators for every six participants, a ratio of 1:3. As a minimum, the following resources are needed to conduct this module.

Resource	Quantity	Additional comments
Equipment and resources as listed for each of the scenarios	1 set each	
PowerPoint presentation	1 set	Provided with this module

Evaluation

A formal evaluation has been specifically developed for this module. It incorporates the objectives of the module and the perceptions of the participants about whether they have increased their understanding by working through the module. It is highly recommended that this formal evaluation be copied and completed by all participants at the completion of the module.

A range of informal evaluation tools may also be used in conjunction with this evaluation throughout the module, including those available in the Department of Human Services' *Clinical Skills Facilitators Manual* from the basic course conducted in 2007.

References

1. Therapeutic Guidelines Limited 2007 Arrhythmias (revised 2003 July) in: *eTG Complete*, Melbourne, November 2007 (accessed February 2008) <http://etg.hcn.net.au/>
2. American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care 2005 Part 7.3: Management of symptomatic bradycardia and tachycardia. *Circulation* 2005 112: IV67–IV77
3. Davey M., Teubner D. 2005 A randomised controlled trial of magnesium sulfate, in addition to usual care, for rate control in atrial fibrillation. *Ann Emerg Med* 45: 347–353

Module 3: Management of arrhythmias—evaluation

Thank you for participating in this module. As part of our commitment to quality improvement the following questionnaire will be used to plan future implementation of this module. We appreciate your time completing this evaluation.

1. Overall

How would you rate this module?

poor fair good very good outstanding

2. Learning objectives

Please consider whether this module was successful in meeting the following learning objectives:

Please consider whether this module was successful in meeting the following learning objectives:

<i>12-lead ECG</i>	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree
Learning objectives of Module 3: Management of arrhythmias					
Interpretation of 12-lead ECGs	<input type="checkbox"/>				
Recognition of ECG appearances of common arrhythmias	<input type="checkbox"/>				
Pharmacotherapy as it applies to common cardiac arrhythmias, including indications and contraindications for the use of common anti-arrhythmic drugs	<input type="checkbox"/>				
Use of the manual external defibrillator	<input type="checkbox"/>				

3. Important learning outcomes

What are the three most important things you have learned from this module?

4. Module implementation

Please indicate to what extent you agree or disagree with each of the following statements in relation to the implementation of the module.

	Strongly disagree	Disagree	Slightly agree	Agree	Strongly agree
The facilitator respected my experience	<input type="checkbox"/>				
The facilitator encouraged my participation	<input type="checkbox"/>				
I was able to ask the facilitator questions	<input type="checkbox"/>				
The facilitator was able to answer my questions	<input type="checkbox"/>				
The feedback I received was clear	<input type="checkbox"/>				
The feedback I received will assist me my future performance	<input type="checkbox"/>				
There was adequate time for the skills stations	<input type="checkbox"/>				
There was adequate time for the facilitated discussions	<input type="checkbox"/>				
There was adequate time for the simulations	<input type="checkbox"/>				
I have increased my confidence in interpreting 12-lead ECGs	<input type="checkbox"/>				
I have identified future learning needs in this topic area	<input type="checkbox"/>				

5. Future module implementation

Do you think the module should be altered in any way? yes no

If yes, what recommendations do you have?

Thank you

PowerPoint Presentation

1.

Clinical Skills in Hospitals Project

**Electrocardiogram
MODULE 3
'Management of
Arrhythmias'**

 A Victorian Government initiative 

2.

Module Outline

- Facilitated discussion
- Simulation 1
 - Debrief
- Simulation 2
 - Debrief
- Summation
- Evaluation

3.

Arrhythmia Management

- SVT
- Atrial fibrillation
- Atrial flutter
- Ventricular tachycardia
- Ventricular fibrillation
- Heart block

Appendix 1: Clinical scenarios

Scenario 1

You are conducting a ward round (medical, nursing or allied health) and arrive to assess Mr Jones, a 60-year-old patient on the medical ward for investigation of syncope. You note that his heart rate is 150 bpm and he is short of breath. What is your role in his initial management (medical, nursing, allied health)?

Participants should be provided with an ECG that demonstrates SVT and be asked to discuss their role in management with respect their health professional group.

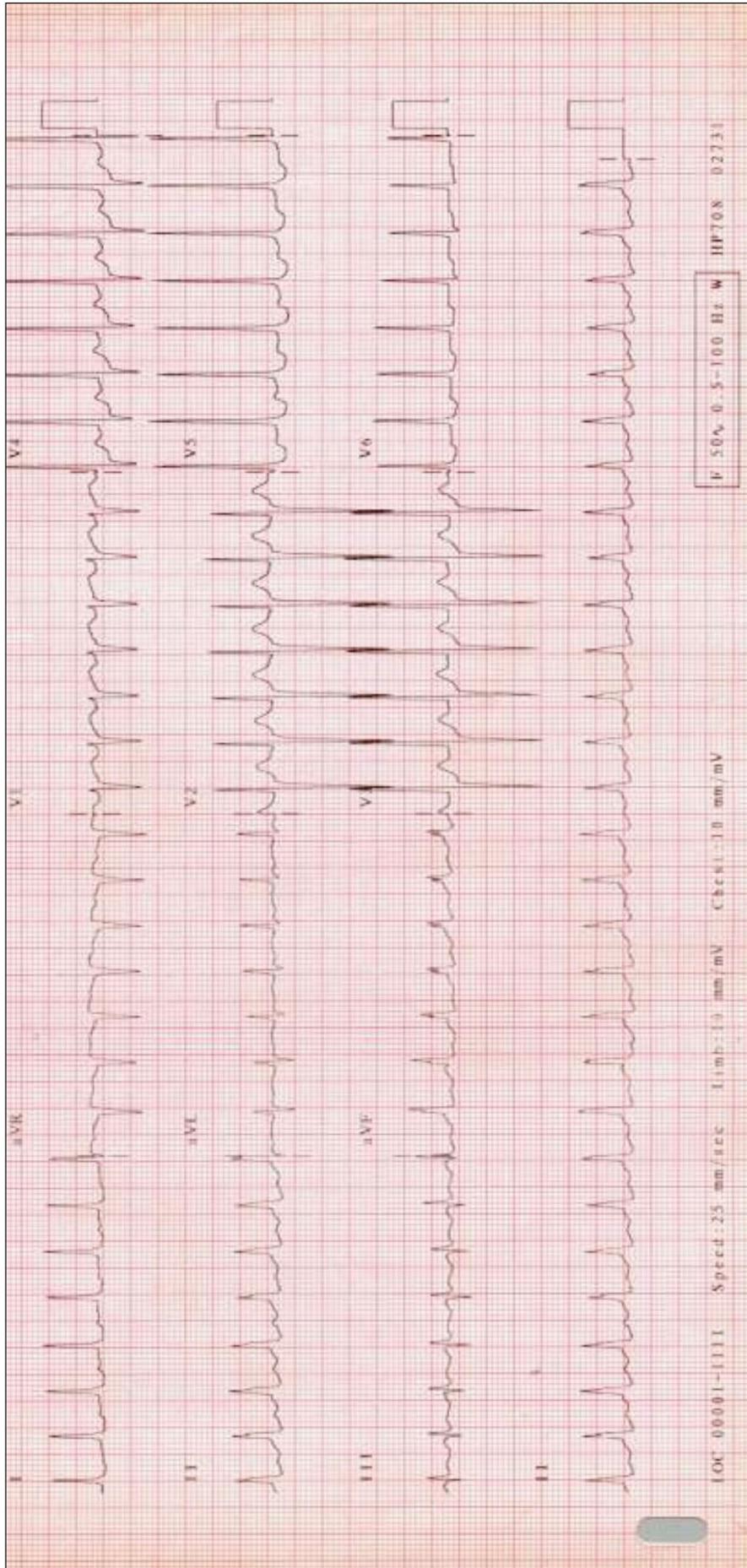


Figure 1: Clinical scenario 1 ECG

Scenario 2

Mrs Jones presents to your outpatient clinic for review of her bunions. At the reception desk she appears to be short of breath and sweaty, and the receptionist defers to you for assistance. You note that her heart rate is irregular and at a rate of 160 bpm. What is your role in her initial management (medical, nursing, allied health)?

Participants should be provided with an ECG that demonstrates SVT and be asked to discuss their role in management with respect their health professional group.

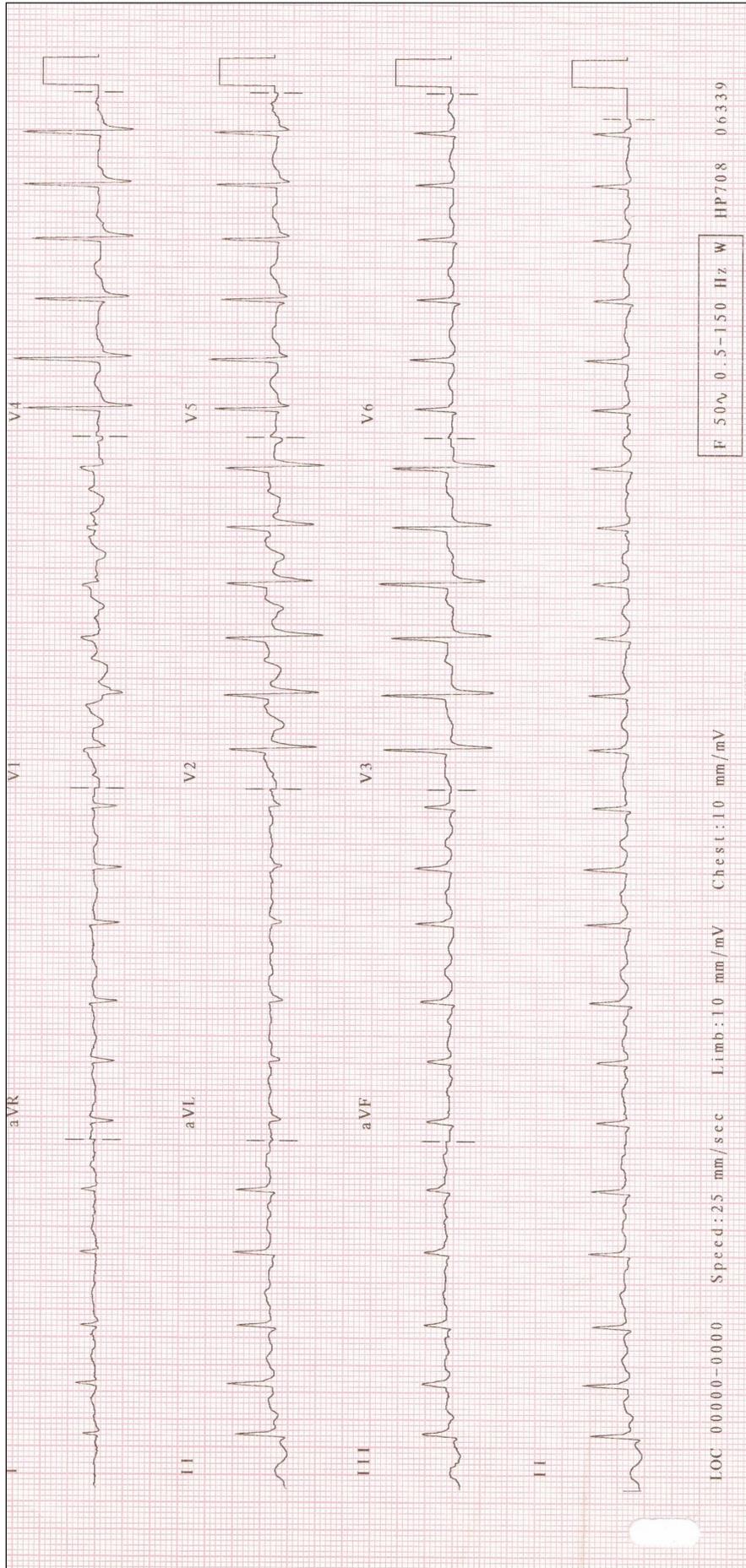


Figure 2: Clinical scenario 2 ECG

Scenario 3

Mr Smith has just returned to your ward from theatre having had knee surgery. You have gone to review him with respect to his immediate needs (medical, nursing, allied health) and find that he appears pale and complains of palpitations. You take his pulse and find that his heart rate is 140 bpm. What is your role in his initial management (medical, nursing, allied health)?

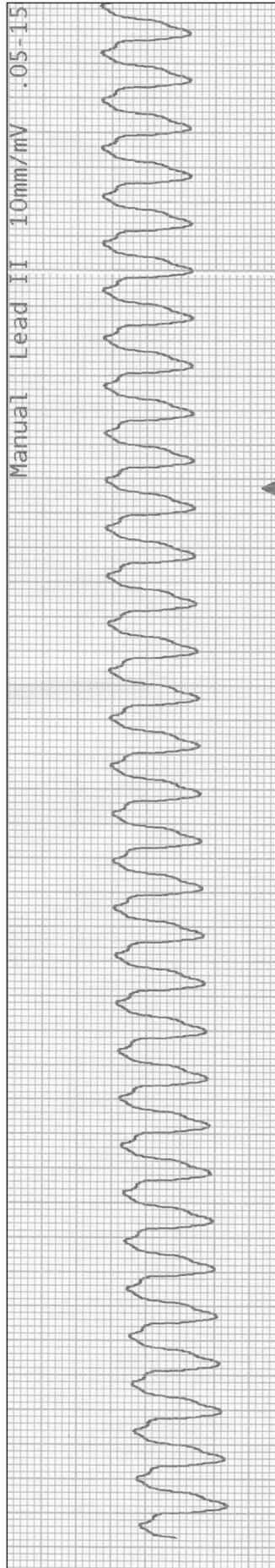


Figure 3: Clinical scenario 3 ECG

Scenario 4

You are reviewing Mrs Smith, an 80-year-old woman on the medical ward, and ask her to walk so that you can assess her mobility. She stands, but feels dizzy and weak and needs to return to bed. You note that her heart rate is 35 bpm. What is your role in his initial management (medical, nursing, allied health)?

Participants should be provided with an ECG that demonstrates complete heart block and be asked to discuss their role in management with respect to their health professional group.

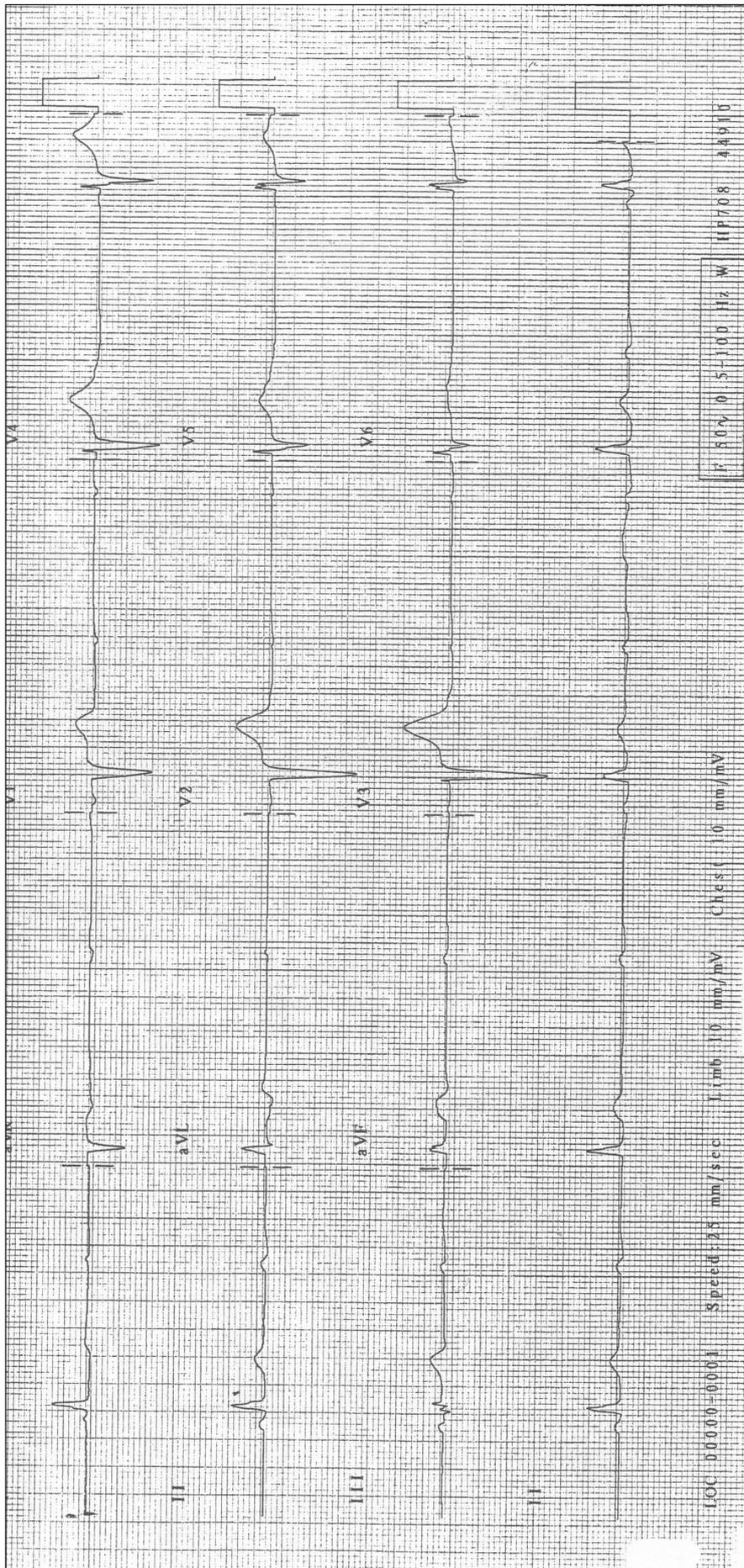


Figure 4: Clinical scenario 4 ECG

Module 4: Management of acute coronary syndrome

Introduction

12-Lead electrocardiogram (ECG) was developed as a teaching and learning tool for Victorian clinical educators. The information contained in each module was developed using evidence-based resources and examples of best practice. Where expert opinion varies, a discussion section is included. However, it is not within the scope of *12-lead ECG* to address the full spectrum of local variations. Variations can occur in several areas, including practices relating to types of equipment used, infection control processes, practice guidelines and so on. Therefore, educators should, where appropriate, adapt content to reflect their local policies, procedures and protocols. This will ensure the relevancy of the package content to your learners.

The modules are designed to be discrete courses in their own right. They are timetabled so they can be completed in a 1–2 hour timeframe. This timeframe was chosen after we received feedback from clinical educators requesting shorter courses, because health professionals often have limited time to educate away from patients. However, the packages may also be combined into a one- or two-day course.

12-lead ECG should be used as an educational tool to assist in the teaching of clinical skills. It is structured as a guide to assist clinical educators, and uses many concepts taught in the *Clinical Skills in Hospitals Project* (Train-the-Trainer courses). Educators are encouraged to build on this resource by adding their own scenarios which incorporate hospital/health service protocols, policies and other resources. Each module is designed as a lesson plan to incorporate the simulations into the teaching of clinical skills.

Aims

12-lead ECG aims to make participants confident in their recording and interpretation of electrocardiogram (ECG) tracings on adult patients, and when they initiate appropriate therapeutic interventions for patients with common clinical conditions that lead to ECG abnormalities. It is not intended to be a comprehensive textbook on ECG interpretation. In contrast to adult patients, the need to perform an ECG on a paediatric patient is a rare occurrence outside of specialist paediatric cardiology services. This module does not address the issue of ECGs in children.

Package structure

12-lead ECG contains four modules which provide learning opportunities for health professionals at all levels of experience and from all health disciplines. Modules 1 and 2 are regarded as fundamental. Modules 3 and 4 are more difficult, and are regarded as intermediate.