

## Telemetry Guidelines (Remote ECG monitoring)

November 2018

### DOCUMENT PROFILE

<b>Document Registration</b>	HSS-GD-CG-0107-02
<b>Document Purpose</b>	Guidelines
<b>Short Title</b>	Telemetry (ECG Remote monitoring)
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<b>Publication Date</b>	November 2018
<b>Target Audience</b>	Nursing, Medical and Surgical Clinical staff
<b>Circulation List</b>	All HSS Users
<b>Description</b>	Telemetry guidelines
<b>Linked Policies</b>	
<b>Approval Route</b>	
<b>Review Date</b>	September 2021
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## TELEMETRY GUIDELINES - (REMOTE ECG MONITORING)

### 1. TELEMETRY

The rationale for remote ECG monitoring by telemetry, as with bedside monitoring on the High Dependency Unit (HDU), is the immediate recognition of relevant cardiac arrhythmias, allowing prompt and appropriate action/treatment.

(Telemetry should not be used as an accurate assessment of ST segment or QRS morphology changes)

### 2. CLINICAL AREAS COVERED BY TELEMETRY

Robin  
High Dependency Unit (HDU)  
Intensive Care Unit (ITU)

Rozel	Aubin
Sorel	Bartlett
Portelet	Emergency Admissions Unit (EAU)
Beauport	Pipon
Corbiere	Rayner
Plemont	
Maternity (antenatal wards – excludes labour ward)	

NB: There is **NO** coverage in the Emergency Department (ED), Radiology, any Ground Floor areas or any of the Outpatient block (Gwyneth Huelin) including Day surgery.

### 3. INDICATIONS FOR TELEMETRY OF ELECTROCARDIOGRAM (ECG)

- Ask the question – “Why does this patient need monitoring?”
- Following discharge from the high dependency unit after MI
- Whilst waiting to exclude either MI or unstable cardiac ischaemia as admission diagnosis
- Chest pain patients awaiting blood results
- Syncope or neurological symptoms that suggest a dysrhythmic origin
- Unstable ventricular dysrhythmias or potential for them (i.e. atrial dysrhythmias treated with Class I or III drugs, sustained bigeminy, multifocal ventricular beats or non-sustained VT)
- Clinically unstable AV block (second degree or more)
- New onset of significant atrial dysrhythmias (fibrillation or flutter) or instability of chronic atrial dysrhythmias (AF with fast ventricular response)
- Electrolyte imbalance requiring treatment

#### Not indicated for patients:

- Not meeting the above criteria
- **Meeting the above criteria but with “do not resuscitate” declared as no intention to act on their dysrhythmias**

- Meeting the above criteria but whose condition is stabilised with no dysrhythmias documented for 48hours and/or chest pain free for 24 hours.

### Consideration prior to Telemetry

Why does the patient need cardiac rhythm monitoring, considering clinical condition.

ECG arrhythmia detection is primarily by automatic analysis by the central monitor and it must be noted that a dedicated trained nurse does not view the telemetry recordings 24/7.

Alarm and alert settings are adjusted according to the clinical indications on the referral card and inappropriate referrals could result in arrhythmias being undetected.

Telemetry should not be a substitute for the appropriate level of observation of a patient depending on their clinical condition.

ST analysis is unavailable through the automatic system and it must not be used as a diagnostic indicator, full 12 lead ECG's must be undertaken to verify any suspected changes.

## 4. PROCEDURE

### Referral

The request for telemetry should be made at consultant or staff grade/associate specialist level and should be reviewed daily. The referral card should be fully completed, as any incomplete details will result in a delay in initiating the telemetry whilst the relevant information is obtained.

### Must include;

- Patient details, name, URN, DOB, Consultant (If attaching patient label, affix to **both** sheets of referral form)
- Relevant indication for telemetry
- Initial monitoring period, i.e. 24-48 hours
- Medications
- Patient location, including ward and bay/bed

The request **MUST** be accompanied with a recent 12 lead ECG or copy (performed within a maximum of preceding **24** hours)

For patients in the ED who will require telemetry once admitted to a ward, the referral form should be sent to HDU from the Emergency department to ensure that the transmitter is available when the patient reaches the relevant ward. ED staff should ensure that the transmitter is available on the ward prior to transferring the patient.

ED **must** communicate with HDU and admitting ward to ensure all parties are ready for the patient and that telemetry is available.

## **Ward responsibility**

The receiving ward **must** contact HDU once the telemetry is connected to ensure it is functioning correctly.

The ward nurse caring for the patient on telemetry will be contacted should any matters regarding the patient or their rhythm occur. If unable to contact them directly the senior nurse in charge of the ward will be contacted.

The ward nurse caring for the patient must have relevant experience and protocols in place to undertake any necessary actions following contact from the HDU about a patient's rhythm and monitoring, and must inform the unit staff of any changes in the patient's condition, treatment or location as appropriate.

See Appendix A for basic training requirements for ward staff responsible for patients on telemetry.

## **HDU staff responsibility**

An appropriately trained HDU nurse will be identified within the unit, for each shift, who will accept responsibility for the telemetry. This will include decisions on whether a patient fulfils the criteria for telemetry, which patients are eligible to be taken off telemetry, prioritisation of patients for telemetry and to ensure all the relevant documentation is undertaken. All decisions should be made in consultation with the referring medical staff and the clinical cardiology fellow (F3).

All staff dealing with the telemetry must be proficient in ECG rhythm interpretation and undergo regular assessment. (Training and competency assessments will form part of the National Competency Framework for Critical Care)

See Appendix C for competencies and training requirements for HDU/ICU staff responsible for patients on Telemetry

## **Medical Staff responsibility**

Patients on telemetry must be reviewed at least daily by the medical staff responsible for the patient (and/or the clinical cardiology fellow (F3) Monday to Friday).

Patients no longer fitting the criteria identified for telemetry should have it removed, this should be signed on the form by the doctor responsible.

The 24 hour review of telemetry provided must be reviewed and signed by the ward nurse caring for the patient daily.

The ward nurse caring for the patient must review the patients' ongoing management daily with the referring medical team (and/or the clinical cardiology fellow (F3) Monday to Friday).

## 5. INITIATION OF TELEMETRY

Telemetry units will not be sent through the tube system, but must be collected by the portering staff and hand delivered to the ward.

The patient should consent to the attachment of the telemetry monitor (if clinically possible) and be provided with the information sheets explaining the procedures and reasons for the telemetry. (See Appendix B)

The ward nurse caring for the patient must contact the HDU to inform them when a patient is connected and to initiate a rhythm strip.

It is the ward nurses responsibility to ensure they are competent in connection of the transmitter, electrodes and carry case to the patient. (Training is available to all staff through the Clinical Investigation Department)

The wards must ensure they have all the necessary consumables required to initiate and maintain telemetry (JDE order details);

Batteries AA (stationary order)

Electrodes (packet 30) (case 40pkts) FDI2043

Telemetry Carry case (box 25) FDI2651

Patient information sheet (Appendix B)

Electrodes should be dated and initialled during application.

Electrodes should then be changed daily and dated/initialled

A carry case must be used to house the transmitter to avoid cross infection issues, ensure patient safety, and improve ECG signal quality

### Clinical Investigation Department (CID)

Monday to Friday a review of patients previous 24 hours telemetry is undertaken and a report sent to the relevant wards. This review will consist of the CID team member, the nurse allocated to telemetries on HDU and the F3 cardiology fellow and will take place between 0830am and 0900am.

Monday to Friday, a clinical physiologist will check the electrodes, battery and carry case, plus electrode positions of all patients on telemetry. Any gross discrepancies from standard practice will be highlighted to the ward nurse caring for the patient and documented for audit purposes.

Any training issues should be directed to the clinical investigation department in the first instance to ensure maintenance of a standard approach to application and care of telemetry.

### HDU

Patient rhythm will be documented on the telemetry sheet at each shift change, any queries on this can be directed to the CID staff for remote review of the rhythm.

The HDU nurse in charge of telemetry will pass over a report on all patients on telemetry at each shift change.

Monday to Friday the HDU nurse will discuss the telemetry patients with the clinical physiologist and the clinical cardiology fellow (F3), prior to the reports going to the ward – this will form part of the official morning handover

ECG rhythm printouts will be stored if any rhythm change occurs or if the ECG complex changes due to movement of the electrode position.

Any alerts or alarms where relevant will be directed to the ward nurse caring for the patient, for the planned and appropriate response. (See section 6)

On discharge from telemetry and **after** receiving the cleaned transmitter from the ward, the completed documentation will be forwarded to the relevant ward for inclusion in patient notes.

## 6. REPORTING ADVERSE EVENTS

In the event of the HDU nurse in charge of telemetry being unable to contact the ward nurse caring for the patient, an alternative action will be to bleep the senior nurse on call at the time of the incident via switchboard.

## 7. CARDIAC ARREST

Cardiac arrest calls must not be put out by the HDU staff for patients on telemetry.

In the event of suspected cardiac arrest the HDU nurse in charge of telemetry must inform the ward nurse caring for the patient or senior ward nurse immediately. (see section 6)

As with all events this will be documented with printouts on the telemetry sheet.

## 8. DISCONTINUATION OF TELEMETRY

Patients –

-Not satisfying the current indications may have telemetry discontinued.

-Meeting the above criteria but whose condition is stabilised with no dysrhythmias documented for 48hours and/or chest pain free for 24 hours.

The ward nurse caring for the patient must take responsibility for returning the transmitter to the HDU.

The recommended cleaning protocol **must** be undertaken prior to returning the transmitter. (This must form part of the training provided to all users)

Transmitters will not be accepted by the HDU if they have not been correctly cleaned and with a signed confirmation of decontamination.

Patients should only be removed from telemetry after discussion with the medical staff responsible for the patient, the clinical cardiology fellow (F3) or the senior nurse responsible for the patient and this should be signed on the telemetry sheet



## Appendix 1: (2 pages)

### Ward Telemetry protocol guidelines 2013

- **Referral** form **fully** completed as recommended by Staff Grade/Associate Specialist this must include;
  - **Patient details, name. HSS, DOB, consultant**
  - **Relevant indication for telemetry** (see policy)
  - **Initial Monitoring period, i.e. 24-48 hours**
  - **Medications**
  - **The request must be accompanied with a recent 12 lead (within the previous 24 hours )**
  - **Only** on receiving the referral will the unit staff supply telemetry transmitter and leads. This must be collected from HDU.

#### Initial Application

- Shave the skin if needed.
- Clean skin of creams gels oil etc.
- Batteries inserted correctly
- Initials and Date to be written on electrode prior to application.
- Pouch applied tying straps around neck and waist to ensure comfort for the patient and also for safety stability, and to minimise cross infection.

**Placements** See instruction and picture overleaf.

#### Maintenance - To be performed daily

- Check Batteries (orange light flashing when low).
- Change electrodes and date each one.
- Ensure Pouch applied and comfortable for patient

#### Review

- Telemetry reports to be signed each day by the nurse in charge of the patient and reviewed with the medical team. Inform HDU of any change of patient location or treatment as soon as possible.

#### Bathing/washing

- If removing telemetry to enable showering, ward staff to inform HDU of reason and of removal, and again when reapplied.
- If washing by bedside ensure telemetry unit does not get wet.

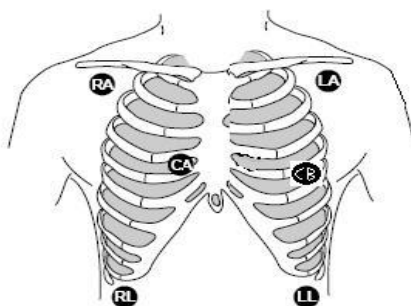
## Exiting ward

- If patient leaves the ward area for any reason eg: x-ray, shop etc. Inform HDU of the situation and again on return.

## Removal / Return

- Remove transmitter including all electrodes from patient.
- Dispose of electrodes and pouch.
- Remove batteries and dispose of, or store for further use.
- Clean telemetry unit as indicated overleaf.
- Please return telemetry box and leads to HDU with confirmation of decontamination (Green slip)
- File telemetry information into patient notes when returned from unit.

## PLACEMENTS



- |                      |  |
|----------------------|--|
| RA ( <b>red</b> )    | just below mid-clavicular- right side                                    |
| LA ( <b>yellow</b> ) | just below mid-clavicular-left side                                      |
| LL ( <b>green</b> )  | bottom mid rib cage - left side  |
| RL ( <b>black</b> )  | Bottom mid rib cage - right side   |
| CA ( <b>white</b> )  | right edge of sternal boarder. (V1) – 4 <sup>th</sup> intercostal space. |
| CB ( <b>white</b> )  | left anterior axillary line. (V5) – 5 <sup>th</sup> intercostal space.   |

## CLEANING PROTOCOL

- Remove telemetry transmitter from patient
- Remove all electrodes and dispose of in correctly coloured disposable refuse bag.
- Remove all batteries and dispose of in correct container
- Remove lead connection from transmitter unit, wipe transmitter unit and each lead with a detergent wipe e.g. clinell yellow, followed by a dry cloth  
If patient colonised/infected with a resistant organism discuss with infection control
- Complete decontamination slip and return to HDU.

## Appendix 2: Patient Information Leaflet (2 pages)

### Telemetry

#### Patient Information – Frequently asked questions?

**What is telemetry?** – This is the ability to remotely monitor your heart rhythm whilst allowing you more mobility.

**How does it work?** – The transmitter you wear sends a signal through an aerial system in the hospital to a central monitor located in the High Dependency Unit (HDU). This records the heart signals until the transmitter is removed and has alarms set to alert the HDU staff of any significant abnormalities or changes in your rhythm.

**How long do I wear it?** – This varies depending on the reason for monitoring your heart rhythm (please discuss this with the nurse looking after you)

**Can I use my mobile, iPod etc?** – Ideally you should minimise the use of your mobile telephone if used and keep it away from the transmitter. Do not leave the phone switched on in your pyjama/dressing gown pocket if possible. Other electrical items are acceptable and should problems occur you will be informed.

**How is it attached?** – The transmitter should be fitted in a cloth pouch which hangs around your neck (it must be kept in the pouch at all times). Six leads are then connected from the transmitter to electrodes (white stickers) attached to your chest. The position of these stickers is important and should they move or become loose for any reason please inform the nurse looking after you.

**What about washing/bathing?** – Discuss with the nurse looking after you whether it can be removed whilst you wash/bathe (they will have to inform the HDU if this is going to happen so please do not remove them without checking first) If not being removed please do not get the transmitter wet.

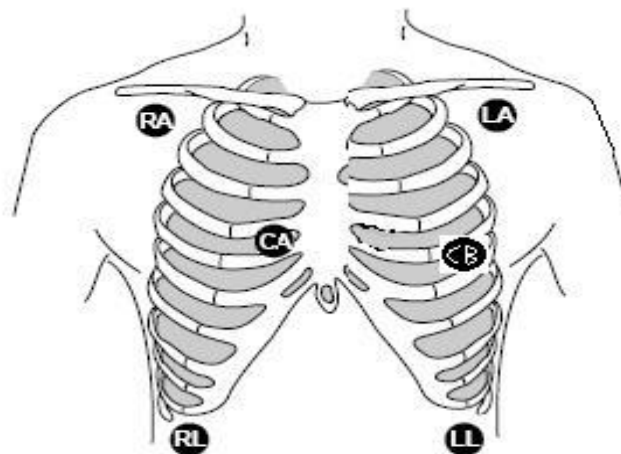
**Will it work if I leave the ward?** – The transmission only works on the ward areas in the hospital. The staff on HDU must be informed if you leave the ward for any reason e.g. X ray, shop etc

**What checks can I expect?** – Someone will check/change the electrodes daily, ensure the batteries are working and ask if you have any concerns regarding the equipment or monitoring. Please inform the nurse looking after you if you feel this has not happened.

**Who looks at the heart rhythm?** – Regular reports are sent to the nurse looking after you and these are discussed with the doctors responsible for your care.

**If you have any problems or concerns about the monitoring of your heart rhythm, please speak to the nurse looking after you**

### Correct placement of electrodes/stickers



Telemetry Patient Information leaflet 01/2009 AN

**Appendix 3 : (4 pages)**

Clinical Investigations Department  
Annual Assessment Competencies / Checklist for Link Nurses

*Performing & Recording an ECG  
 And Telemetry Placements*

Initial training and assessment of the individual must have been performed by a practitioner with a qualification from 'The Society for Cardiological Science & Technology' (SCST), or a member of the Clinical Investigations Department.

Re-assessment on an annual basis may be performed by a named person who has been designated as the Link member of staff. You are required to have been trained appropriately and you must attend annual updates with the Link Person (in association with the Clinical Investigation Department / ECG Competency Group) in your area.

<b>Competency – 12 Lead ECG Placement &amp;Recording</b>	<b>Checked</b>
Evidence of initial training with individual's ID number must be produced (ECG Lead Placement Competencies & Annual Updates Booklet)	
<p>1. Procedure</p> <p>The ECG machine must be checked, safe &amp; ready for use</p> <ul style="list-style-type: none"> <li>• Date &amp; time set correctly on machine</li> <li>• The paper speed must be set at 25mm/s with a gain setting of 10mm/mV</li> <li>• Sufficient &amp; correct equipment to perform test (electrodes etc)</li> <li>• The identity of the patient must be checked with the patient / identification wristband</li> </ul> <p>The importance of health &amp; safety of the patient and performer is identified</p> <ul style="list-style-type: none"> <li>• Hands are washed / clinically clean</li> <li>• Awareness of MRSA and other precautions as per infection control policy</li> </ul>	
<p>2. Patient Data</p> <p>All details entered correctly</p> <ul style="list-style-type: none"> <li>• Patient Full Name</li> <li>• Date of Birth</li> <li>• URN Number</li> <li>• Consultant / Referring Doctor Initials</li> <li>• Operator / User ID Number</li> <li>• ECG recording is a LEGAL document; reiterate the importance of correct information entry for this purpose &amp; that of clinical audit.</li> </ul>	
<p>3. Patient Preparation</p> <p>Patient is in semi-recumbent position &amp; comfortable as possible, you are</p>	

<p>able to identify and eliminate artefact from tracing.</p> <p>Electrical interference</p> <ul style="list-style-type: none"> <li>• Switch OFF nearby fans, TV, Electric Bed. N.B. any equipment must be checked to ensure that it is safe to turn it off</li> </ul> <p>Muscular interference</p> <ul style="list-style-type: none"> <li>• Muscle tension alleviated as much as possible; tremor in conditions e.g. Parkinson’s disease – hands tucked under patient.</li> <li>• At all times you must be considerate of patient comfort and in the case of continued artefact, provide appropriate written explanation of reason for artefact and that it is the ‘best obtained’ on the tracing</li> </ul> <p>Skin preparation</p> <ul style="list-style-type: none"> <li>• No preparation is usually necessary if using blue sensor electrodes</li> <li>• Chest hair removal if necessary</li> <li>• Skin cleaned with alcohol wipe / soapy water to remove: Creams, oils, gels, dry skin</li> <li>• Care should be taken for those having undergone recent surgical procedures, amputees, or wheelchair bound – electrodes must be placed as near as possible to correct position. Any deviation from standard electrode placement or protocol must be clearly written on the ECG tracing</li> </ul>	
<p>4. Electrode Placement</p> <p>Correct application and positioning of Limb and precordial electrodes in accordance with SCST, (2005). Clinical Guidelines by Consensus number 1 Recording Standard from 12-Lead electrocardiogram.</p> <p>Guidelines for electrode placement for dextrocardia and paediatric ECG’s will be provided for the appropriate wards.</p> <p>If any deviation from these positions or protocol is necessary then it must be clearly printed on the ECG.</p> <p>Limb Leads</p> <ul style="list-style-type: none"> <li>• RA (Red) – right forearm, proximal to wrist</li> <li>• LA (Yellow) – left forearm, proximal to wrist</li> <li>• LL (Green) – left lower leg, proximal to ankle</li> <li>• RL (Black) – right lower leg, proximal to ankle</li> </ul> <p>Chest Leads</p>	

<ul style="list-style-type: none"> <li>• V1 (C1) – 4<sup>th</sup> intercostal space at the right sternal edge</li> <li>• V2 (C2) – 4<sup>th</sup> intercostal space at the left sternal edge</li> <li>• V3 (C3) – Midway between V2 and V4</li> <li>• V4 (C4) – 5<sup>th</sup> intercostal space in the mid-clavicular line</li> <li>• V5 (C5) – Left anterior axillary line at same horizontal level as V4</li> <li>• V6 (C6) – Left mid-axillary line at same horizontal level as V4 and V5</li> </ul>	
<p>5. Recording the ECG</p> <p>Demonstration of ability to obtain the best ECG possible.</p> <p>The obtained ECG must be correctly labelled; any variation to the standard should be clearly written on the ECG.</p> <p>Removal of electrodes from patient and disposal in clinical waste bin.</p> <p>Ensure that the patient is left comfortable, with their clothing replaced and adequate access to a Call Button / Bell.</p> <p>The machine must be cleaned appropriately and stored ready for subsequent use.</p>	
<p><b>Competency – Telemetry Placement &amp; Care</b></p>	<p><b>Checked</b></p>
<p>1. Information / Telemetry Request Form</p> <p>It may be necessary to call MICU on the request of a physician to check that they have a telemetry box available.</p> <ul style="list-style-type: none"> <li>• A blue Telemetry request form must be completed and signed by a physician, and sent to MICU with ALL information sections completed.</li> </ul>	
<p>2. Patient Preparation</p> <p>Explanation to patient of why they are having telemetry fitted, care needed to ensure that it is kept safe &amp; clean.</p> <p>Skin preparation</p> <ul style="list-style-type: none"> <li>• Chest hair removal if necessary</li> <li>• Skin cleaned with alcohol wipe / soapy water to remove: Creams, oils, gels, dry skin</li> </ul>	
<p>3. Electrode Placement</p> <ul style="list-style-type: none"> <li>• RA (Red) is placed just below the clavicle (2nd intercostal space) right midclavicular line</li> <li>• LA (Yellow) is placed just below the clavicle (2nd intercostal space) left midclavicular line</li> <li>• CA(White) is usually placed in the MCL or V1 position (4th intercostal space, right sternal border)</li> <li>• CB (White) is usually placed anterior axilla 5<sup>th</sup> intercostal space position of V5.</li> </ul>	

<ul style="list-style-type: none"> <li>• LL (Green) is placed on the left lower rib cage (8th intercostal space, left midclavicular line)</li> <li>• RL (Black) is placed on the right lower rib cage (8th intercostal space, right midclavicular line)</li> </ul> <p>Care must be taken to ensure that the electrodes are placed in these positions.</p>	
<p><b>4. Checking Telemetry Equipment</b></p> <p><b>Leads</b></p> <ul style="list-style-type: none"> <li>• The leads must be checked for any obvious flaws / cracks or damage. If in any doubt, obtain a new set of leads from MICU, report &amp; return the damaged item to them.</li> </ul> <p><b>Pouch</b></p> <ul style="list-style-type: none"> <li>• ALL telemetry boxes MUST be placed in a disposable pouch. This may be tied around the waist and the neck, or attached to patient where stable and comfortable for the patient if appropriate.</li> </ul> <p><b>Batteries</b></p> <ul style="list-style-type: none"> <li>• The battery function must be checked on putting the telemetry box on the patient and checked on a regular basis (press battery check button, if ok, all lights will come on)</li> </ul>	
<p><b>5. Telemetry Removal, Cleaning &amp; Maintenance</b></p> <p><b>Electrodes</b></p> <ul style="list-style-type: none"> <li>• Remove electrodes after patient use and dispose of in clinical waste bag.</li> </ul> <p><b>Telemetry Box &amp; Leads</b></p> <ul style="list-style-type: none"> <li>• Prior to sending back to MICU, Electrode clips, the leads and the box must be cleaned carefully and thoroughly with wipe/cleanser as per infection control policy</li> <li>• Place in a plastic bag and mark as having been decontaminated.</li> <li>• It is not acceptable to send soiled telemetry equipment back to MICU, this is both hazardous and in the case of damage, expensive.</li> </ul>	



## Appendix 4:

### Competencies specific for all HDU and ICU nurses in line with the National Competency Framework for Critical care

**You must be able to demonstrate through discussion application of your knowledge and current evidence based practice in relation to:**

- Normal cardiac conduction pathway
- Factors which confirm sinus rhythm
- Elements of a 12 lead ECG
- Common cardiac dysrhythmias and their management
- Rationalise the differences between cardioversion and defibrillation
- Life threatening cardiac dysrhythmias and their management (including pacing)
- Identify key resuscitation equipment
- Key roles of the cardiac arrest team
- Shockable and non-Shockable rhythms identified within the European Resuscitation Guidelines
- Potential causes of a cardiac arrest (4 “H”s and 4 “T”s)
- Drugs in relation to cardiac arrests
- Post arrest management strategies

**You must be able to undertake the following in a safe and professional manner underpinned by current evidenced based practice:**

- Correctly attach the patient to a cardiac monitor
- Correctly attach and perform a 12 lead ECG
- Basic interpret of ECG
- Correctly check and/or use Emergency equipment:
  - Defibrillator
  - AED
- Recognise and manage:
  - Sinus rhythm
  - Bradycardia
  - Tachycardia
  - Ectopic beats
  - Atrial fibrillation
  - Supra ventricular rhythms
  - Heart blocks
  - Atrial flutter
  - Sinus arrhythmias
- Recognise and follow BLS/ILS guidelines where appropriate in particular:
  - Asystole
  - Pulseless Electrical Activity (PEA)
  - Ventricular tachycardia
  - Ventricular fibrillation