Reference Number: UHB 531 **Version Number: 2**	**Date of Next Review:** *September 2029* **Previous Trust/LHB Reference Number:** *All Resuscitation Documents have been merged and included in one document.*

Resuscitation Procedures

Introduction and Aim

The provision of an efficient, expedient and effective Resuscitation Protocol for victims of cardiopulmonary arrest must be an operational priority within every hospital. Healthcare organisations have a responsibility to deliver quality resuscitation care, and to ensure that staff are trained and updated regularly to a standardised level of capability appropriate to everyone's expected role.

The provision of an effective Resuscitation Service for patients who suffer cardiopulmonary arrest must be an operational priority. The performance of this service has wide ranging implications with respect to training, standards of care, risk management and clinical governance.

Objectives

The aims of the Resuscitation procedures document are as follows:

· To ensure patients receive appropriate and effective resuscitation when necessary and without delay

· To promote common and current practice based on ERC and RC(UK) guidelines

· To implement a consistent approach to dealing with a cardiopulmonary resuscitation within all acute and community hospital facilities throughout Cardiff and Vale UHB. Training will be provided by the Resuscitation Service.

· To reduce post-cardiac arrest morbidity and mortality

· To ensure patient and staff safety during resuscitation

· To provide support for clinical staff – clinical, debriefing, educational etc.

· To satisfy legal and professional requirements

· To minimise clinical risk, litigation and material loss

· To comply with UHB requirements for formal organisation-wide policies

· To ensure that cardiopulmonary arrest procedures are monitored and audited.

Scope

This procedure applies to all our staff in all locations including those with honorary contracts

Equality and Health Impact Assessment	*An Equality and Health Impact Assessment (EHIA) has not been completed.*
Documents to read alongside this Procedure	*All Wales DNACPR Policy*
Approved by	*RADAR (Recognition of Acute Deterioration and Resuscitation).*

The Health Board discourages the retention of hard copies of policies and can only guarantee that the policy on the Health Board website is the most up-to-date version.

Accountable Executive or Clinical Board Director	*Chair of RADAR*
Author(s)	*Resuscitation Service RADAR*
Disclaimer **If the review date of this document has passed, please ensure that the version you are using is the most up to date either by contacting the document author or the Governance Directorate.**	

Summary of reviews/amendments			
Version Number	**Date of Review Approved**	**Date Published**	**Summary of Amendments**
1	*RADAR Sept 2024*	*19/12/2024*	*All Resuscitation Documents have been merged and included in one **new** document. **This supersedes UHB 222, 227, 230, 231 and 232.***
2	*RADAR Dec 2025*		**December 2025** – Review p19 Adult Resuscitation Team – Airway expert Addendum added re: AED Training

Contents

1.0 EXECUTIVE SUMMARY

Purpose of the document

The provision of an efficient, expedient, and effective Resuscitation Protocol for victims of cardiopulmonary arrest must be an operational priority within every hospital. The adequate performance of such a service has wide reaching implications with respect to training, standards of care, risk management and clinical governance. Trusts and Organisations have a duty of care to provide an effective Resuscitation Service.

Target Audience

All members of staff who are involved with adult, paediatric and neonatal cardiac arrests and resuscitation attempts within the acute and community hospital setting. All staff within Cardiff and Vale University Health Board.

2.0 RESUSCITATION PROCEDURE

2.1 Introduction

This procedure applies to all the acute and community hospital facilities within Cardiff and Vale UHB. It includes the guidelines for managing a cardiopulmonary arrest, the resuscitation team members and the resuscitation equipment required within these facilities.

Resuscitation should always be attempted if any patient, visitor, or member of staff suffers a cardiac or respiratory arrest unless a valid DNACPR order has been made or a clear 'advanced decision' has been made by the patient.

Adequately trained personnel will perform resuscitation to standards dependant on their role following current ERC & RC(UK) guidelines.

Resuscitation Teams will be identified for each of the acute hospitals and up to date procedures will be maintained throughout all acute and community hospitals.

3.0 PROCEDURE STATEMENT

The purpose of the procedure is to provide guidelines for clear direction, standards, and training for the practice of Cardiopulmonary Resuscitation (CPR) and the management of the deteriorating patient within Cardiff & Vale UHB.

4.0 DEFINITION OF TERMS FOR THE DOCUMENT –

Automated External Defibrillator (AED)	The AED analyses cardiac rhythms and advises whether a shock is indicated or not. It has pre-set energy levels according to the Resuscitation Council (UK) guidelines. AEDs (Automated External Defibrillators) allow appropriately trained staff to defibrillate a person in cardiac arrest prior to the arrival of more expert help. All those attempting resuscitation will be expected to use a defibrillator if one is available locally including in the community. AEDs (Automated External Defibrillators) can be used on paediatric patients ideally with the use of attenuated pads that reduce the energy delivered to Management of Resuscitation Policy 7 of 36 Version 2 children weighing less than 25kgs. In the event these pads are not available, adult pads should be used. It is not recommended to use AEDs on the under one year old age group due to potential problems with rhythm recognition.
Agonal Breathing	Occasional gasps, slow, laboured, or noisy breathing associated with the first stages of cardiac arrest and are clear in up to 40% of cardiac arrest victims. This is not a sign of life and resuscitation should be started unless resuscitation is not appropriate i.e. current and valid DNAPCR decision in place
Anaphylaxis	An acute, life-threatening hypersensitivity reaction which should be considered when there is an acute onset of life-threatening airway and/or breathing and/or circulation problems, especially if skin/ mucosal changes are present.
Basic Life Support (BLS)	BLS is maintenance of airway patency and supporting breathing and the circulation without the use of equipment other than a protective device. This is carried out by artificial ventilations using a pocket mask or bag valve mask (not a face shield) with/ without supplemental oxygen and the provision of chest compressions.
BVM	Bag valve Mask.
Cardiac Arrest	The sudden cessation of mechanical cardiac activity, confirmed by the absence of any obvious sign of life (or pulse for those appropriately trained to carry out pulse checks), unresponsiveness and agonal/ complete cessation of normal breathing.
Cardiac Arrest	The sudden cessation of mechanical cardiac activity, confirmed by the absence of any obvious sign of life (or pulse for those appropriately trained to carry out pulse checks), unresponsiveness and agonal/ complete cessation of normal breathing.

Cardiopulmonary Resuscitation (CPR)	A combination of airway management, artificial ventilation, chest compressions, defibrillation, and drug therapy.
Clinical Staff	A member of staff whose job description includes direct patient care.
CPR	Cardiopulmonary Resuscitation includes chest compressions, defibrillation, and artificial respiration to restart the heart
CPR	Cardiopulmonary Resuscitation.
Defibrillation	This is the definitive treatment for shockable cardiac arrest rhythms i.e. ventricular fibrillation and ventricular tachycardia. It involves the delivery of a DC electric shock to the myocardium, the energy level of which is recommended by the Resuscitation Council (UK).
DNACPR and TEP	**DNACPR and TEP** Do Not Attempt Cardiopulmonary Resuscitation orders apply only to cardiopulmonary resuscitation. It should be made clear to the patient; people close to the patient and to the health care team that it does not imply "non-treatment" and that all other treatment and care right for the patient will be considered and offered. To avoid confusion the '**Do Not Attempt Cardiopulmonary Resuscitation**' order should be used and included in the front of the patient's notes on the correct form. Please refer to the All Wales Policy "Sharing and Involving" A Clinical Policy for Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) for Adults in Wales. All adult patients should have a Treatment Escalation Plan (TEP) completed
ERC	The European Resuscitation Council is a professional body who produce guidelines and advice regarding issues surrounding resuscitation.
HCSW	Health care support workers.
IM	Intramuscular
Mandatory training	training named by the UHB that is essential for staff to undertake.
National Early Warning Scoring System (NEWS)	A standardised track and trigger system for acute illness in patients presenting to, or within inpatient areas also used in the community. Based on a simple scoring system in which a score is allocated to physiological measurements that have been taken including respiratory rate, pulse rate, blood pressure, oxygen saturation level, temperature, and conscious level using AVPU (Alert, Voice, Pain, Unresponsive). A response is triggered according to the resulting score

PARIS	refers to the electronic patient record system used by Mental Health Services, Community Services and Podiatry Department.
PPE	Personal Protective Equipment.
RADAR	Recognition of Acute Deterioration and Resuscitation.
RC(UK)	The Resuscitation Council (UK) is an active member of the ERC and promotes the practice of the international guidelines.
Situation, Background, Assessment, Recommendation, Decision (SBARD)	A structured format for communicating critical information. E.g. shift handover, nurse to doctor over the telephone, critical information during an emergency.

5.0 AIMS OF THE RESUSCITATION PROCEDURE

The aims of the Resuscitation procedure are as follows:

- To ensure patients receive evidence based, effective resuscitation when necessary and without delay.
- To ensure that patients observations are undertaken and managed as per the Health Boards Deteriorating Patient Policy. Please refer to the policy for further information. This policy is also ratified by RADAR.
- To promote common and current practice based on RC(UK) guidelines
- To implement a consistent approach to dealing with a cardiopulmonary resuscitation within all acute, community, Adult Mental Health and Mental Health Services for Older People hospital facilities throughout Cardiff & Vale UHB.
- To reduce post-cardiac arrest morbidity and mortality.
- To ensure patient and staff safety during resuscitation.
- To provide support for clinical staff.
- To satisfy legal and professional requirements.
- To minimise clinical risk, litigation and material loss.
- To follow UHB requirements for formal Organisation-wide policies and to ensure that cardiopulmonary arrest procedures are monitored and audited.
- To commission and review audits, examining relevant resuscitation related issues, including responding to Datix.
- Analyse Developments and national guidance, plan future requirements in service, education and training accordingly.

Introduction and Aim

The provision of an efficient, expedient, and effective Resuscitation Protocol for victims of cardiopulmonary arrest must be an operational priority within every hospital. The adequate performance of such a service has wide-reaching implications for training, standards of care, risk management and clinical governance. Health providers have a duty of care to provide an effective Resuscitation Service.

This procedure applies to all the acute, Adult Mental Health, Mental Health Services for Older People (MHSOP) and community hospital facilities within Cardiff and Vale UHB. It includes the guidelines for managing the resuscitation of patients, the Resuscitation Team members and the resuscitation equipment needed within these facilities.

Resuscitation should always be attempted if any patient, visitor, or member of staff suffers a cardiac or respiratory arrest unless a valid Do Not Attempt Cardiopulmonary Resuscitation order has been made or a clear 'advanced decision' has been made by the patient.

Adequately trained personnel will perform resuscitation to standards dependent on their role following current Resuscitation Council (UK) (RC(UK)) guidelines.

Resuscitation Teams will be named for each acute hospital and up-to-date procedures will be maintained throughout all Adult Mental Health, MHSOP and community hospitals.

All clinical staff must attend adult basic life support training and those working in an area which routinely deals with children must also be trained in paediatric basic life support. This training must be attended annually.
The Board will support the resuscitation service and the training it delivers by ensuring adequate resources are available to provide relevant levels of training to staff members specific to their role and specialty in managing Resuscitations and Medical Emergencies.
This will include having an experienced Senior Nurse for the Resuscitation Service, Resuscitation practitioners, designated training areas and resuscitation equipment.

Scope

This procedure applies to all staff in all locations, including those with honorary contracts.
All members of staff who are involved in Adult, Paediatric and Neonatal Resuscitation within the acute, Adult Mental Health, MHSOP and community hospital settings.

Objectives

The aims of the Resuscitation procedure are as follows:

- To ensure patients receive appropriate and effective resuscitation when necessary and without delay
- To promote common current practice based on RC(UK) guidelines
- To implement a consistent approach to dealing with cardiopulmonary resuscitation within all acute, Adult Mental Health, MHSOP and community hospital facilities throughout Cardiff and Vale UHB
- To reduce post-cardiac arrest morbidity and mortality
- To ensure patient and staff safety during resuscitation
- To provide support for clinical staff
- To satisfy legal and professional requirements
- To minimise clinical risk, litigation, and material loss
- To follow UHB requirements for formal organisation-wide policies
- To ensure that cardiopulmonary arrest procedures are monitored and audited.
- Ensures the safe delivery of resuscitation within the available financial resources and other resource limits;
- Ensure compliance with national guidelines and standards
- Ensures there is a standardised, systematic mechanism to identify, assess and control resuscitation across the organisation, principally through the adherence to policy and the audit cycle.

Recognition of the Deteriorating Patient - Refer to the Health Board Deteriorating Patient Policy. This policy is ratified by RADAR.

- The recognition of the deteriorating patient is essential in the chain of survival and for the prevention of cardiac arrest.
- The assessment of the deteriorating patient will depend on the knowledge and skills of the rescuer and equipment available to them.
- All resuscitation courses will have an element of recognition of the deteriorating patient at a level appropriate to the course.
- Deteriorating patients will be taught to use the ABCDE approach as recommended by the Resuscitation Council and applied to common medical emergencies.
- The Health Board uses a National Early Warning Scoring (NEWS) system to recognize patients at risk and prevent cardiac arrest in primarily inpatient areas. During an adult inpatient acute episode, the patient’s observations are recorded and scored as per NEWS.
- To ensure the right action is taken because of a calculated NEWS score, the process is supported by an escalation procedure.

6.0 HOW TO INITIATE A RESUSCITATION TEAM RESPONSE

The University Hospital of Wales and University Hospital Llandough all call 2222.

In case of a Resuscitation emergency, the correct emergency team must be alerted immediately – Adult/Paediatric/Neonatal.

Resuscitation (2222) calls take precedence over all other activities unless the cardiac arrest bleep holder is already involved in another life-threatening situation, if this is the case, please contact Switchboard so other staff may be contacted. If a team member becomes indisposed, they must inform switchboard immediately and arrange for a member of staff of at least equal ability to carry their cardiac arrest bleep. Switchboard should be notified as soon as the situation returns to normal.

All Health Board and temporary staff must familiarise themselves with the layout of the hospital to enable a rapid response in emergency situations

The precise location and site of the patient must be communicated promptly and clearly to the switchboard operator (do not use old names/locations). The switchboard operator will activate all emergency bleeps simultaneously via a speech channel. Each member of the emergency team must respond at their earliest opportunity to this call. All emergency calls are logged by switchboard.

It is the responsibility of the caller to ensure correct, specific information is given to the switchboard operator

All doctors, nurses, midwives, and Allied Health Professionals must be adequately and regularly trained in cardiopulmonary resuscitation specific to their discipline. The level of that training is determined by their respective professional bodies and / or the duties that those staff would be expected to undertake when in attendance at a cardiac arrest /medical /obstetric /neonatal emergency. Departmental managers are responsible for ensuring all clinical and clinical support staff attend training appropriate to their role. Training and facilities must ensure that, when cardiorespiratory arrest occurs, as a minimum all clinical staff can:

- Recognise cardiorespiratory arrest
- Summon help
- Start CPR

- Attempt defibrillation, if appropriate, within 3 minutes of collapsing using an automated external defibrillator or manual defibrillator Clinical staff should have at least annual updates.

Non-clinical Staff As a minimum, non-clinical staff should be trained to:

- Recognise cardiorespiratory arrest
- Summon help
- Start CPR using chest compressions

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Signage

All inpatient areas are expected to display:

- Signage that informs staff how to summon emergency assistance
- Location of the nearest AED/resuscitation equipment.
- Signage on the door where portable oxygen is stored.
- Signage on the door where the AED is stored.

All Community Services are expected to display signs that inform staff:

- How to Contact Emergency Services.
- The location of the AED/resuscitation equipment.
- Signage on the door where the AED is stored. (if not stored on the resuscitation trolley)
- Signage on the door where portable oxygen is stored (if applicable).

Deteriorating Patient

Observations and management of the patient must follow the Deteriorating Patient Policy .

6.1 Areas which place a 2222 Call

Resuscitation calls take precedence over all other activities unless the cardiac arrest bleep holder is already involved in another life-threatening situation, if this is the case, please contact Switchboard so other staff may be contacted. If a team member becomes indisposed, they must inform switchboard immediately and arrange for a member of staff of at least equal ability to carry their cardiac arrest bleep. Switchboard should be notified as soon as the situation returns to normal.

- All wards/departments within the University Hospital of Wales site (inc Lakeside Wing)
- All wards/departments within the Llandough Hospital site (inc. Hafan y Coed)

- A non-clinical area within the acute hospital building (e.g., cafeteria)
- A 2222 call is made via switchboard
- Personnel making the 2222 call need to inform switchboard of the location of the patient and the reason for the call; adult, paediatric or neonatal. On arrival the Resuscitation Team will need to be informed of the nature of the emergency e.g., cardiac or respiratory arrest, collapse, or NEWS score greater than 9
- Switchboard will then immediately alert the designated Resuscitation Team
- A second alert will be put out moments after, clearly saying a second call for cardiac arrest team. To avoid miss communication via black spots that have been found within the hospitals
- The number to call in the event the need of a Resuscitation Team should be clearly displayed next to the telephones in all clinical areas

If insufficient members of the arrest team arrive, or there appears to be an inappropriate delay in response, repeat the 2222 call. Create a Datix system alert if this occurs & results in suboptimal patient care.

6.2 Areas which place a 2222 call followed by a 999 Call

- All Community Hospitals (refer to 9.0). Areas immediately outside the hospital entrance (e.g., outside concourse entrance) and the outbuildings listed below will use a 2222 to initiate a Resuscitation Team response. This allows switchboard to summon any doctors that may be in the vicinity. Switchboard will then ring back on the extension that the 2222 call came from and connect them to summon the Emergency Medical Services and Advanced Life Support.

- The Outbuildings on the University Hospital of Wales site:
    - Institute of Medical Genetics
    - Welsh Heart Research Institute
    - Mental Health Services, Monmouth House
    - Dental Hospital and School and annex)
    - Institute of Dermatology, Glamorgan House
    - Occupational Health, Denbigh House
    - Children's Centre

- The Outbuildings on the Llandough Hospital site:
    - Children's Rapid Access Unit
    - Diabetic Unit
    - Routledge Building (Academic Building)
    - Occupational Health Unit

- All these facilities will use a 2222 call and a 999 call to ensure that that the patient can be transferred to an area of definitive care once immediate resuscitation has been delivered. Procedure should be visible in all areas.

6.3 999 calls only

- All non-clinical areas outside the acute hospital buildings including:
    - Staff residences on all the acute hospital sites
    - Ronald McDonald House
    - Office blocks on all the acute hospital sites;
    - Cardigan House
    - Lakeside complex – office block (Lakeside Hospital is a 2222 call)
    - Estates and Facilities buildings
    - PSA building
    - Laboratory Services buildings, Llandough
    - Car parks within all hospital sites.
    - Park Road House
    - Phoenix, Wordsworth Avenue

There is no Resuscitation team available for these areas, so upon induction staff must be made aware of their emergency calling procedure for their area. The Resuscitation Team may respond to 2222 call requests in these areas if the situation is a Cardiac/Respiratory arrest. Switchboard should notify the team.

Switchboard should ensure that ambulance control is informed that an ambulance is needed to attend a non-clinical/public area of the hospital, and that an emergency ambulance rather than a Rapid Response Vehicle (RRV) will be needed.

Non-Clinical Departments in these areas may choose to purchase “Public Access” Automatic External Defibrillators (AED) for use in case of a cardiac arrest in their area, to aid colleagues prior to the arrival of the Ambulance Service. Training in the use of AED is available to all UHB staff in open sessions that may be booked with the Resuscitation Service.

7.0 THE ACUTE HOSPITAL ADULT RESUSCITATION TEAM

- The Resuscitation Team is the specialist medical and nursing team, which attends all cardiac arrest calls within the hospital site including specified out-buildings and where administers prompt advanced life support. The team also responds to provide expert acute care to acutely unwell patients and those that score a 9 or more on the NEWS chart.

- Resuscitation teams are given a rota. It is the team’s responsibility to look at their rota to see who is on call for the team

- All resuscitation teams are based on the on-call rotas.

- All medical and nursing resuscitation team bleeps are designated bleeps.

- All bleeps must be given to someone of equal status before leaving the hospital site.

- Test calls are made at least once a day by switchboard at 09.00 hours. It is recommended that the bleeps are also tested during the evening period. All bleep holders must respond to switchboard once they have received this call.

- If a test call is not received, the bleep holder should contact switchboard to ensure that their bleep is working.

- If there is no response received to the bleep, switchboard need to escalate to medical staffing.

- There will be a twice daily Resuscitation Team Meeting on both Acute sites. This is to enable good teamwork and foster a team approach to the acutely unwell patient, or those in Cardiac Arrest.

- A member of the team should ensure that a Cardiff & Vale uLHB Cardiac Arrest call reporting form is returned to the Resuscitation Service as soon as possible. Forms should be completed at the time of the resuscitation team call and not retrospectively.

- The Resuscitation Team should include at least two doctors with valid RC(UK) Advanced Life Support certification.

- The team must have the following skills:

  - Airway interventions, including tracheal intubation
  - Intravenous cannulation/Intraosseous cannulation
  - Defibrillation (advisory and manual) and cardioversion
  - Drug administration
  - The ability to undertake advanced resuscitation skills (e.g., external pacing, pericardiocentesis)
  - Skills needed for post resuscitation care
  - *(Quality Standards for cardiopulmonary resuscitation practice and training, 2020)*

Adult Resuscitation Team mandatory team members

University Hospital of Wales	Llandough Hospital
On-call Airway Expert [1] Duty Medical SpR/ST4 or above/IMT3[2] Duty Medical CT1/CT2 Duty Medical FP1 or FP2	On-Call Airway Expert [1] Duty Medical SpR/ST4 or above/IMT3[2] Duty Medical CT1/CT2 Duty Medical FP1 or FP2 Site practitioner

1. UHW - Airway Expert can refer to either an Anaesthetic ST4 or ITU ST4 or higher UHL - A doctor with two years of experience between anaesthetics and ITU and completion of the anaesthetic initial assessment of competence or equivalent.Airway Expert can refer to either an Anaesthetic ST4 or ITU ST4 or higher.
2. An IMT3 trainee can be the most senior medical member of the Resuscitation Team. However, in this case there should be a named Medical ST4 or above available and contactable for the support of the IMT3 if necessary.
3. Between August and September of each year, FY1 doctors may not have a valid RC(UK) Advanced Life Support (ALS) Certificate. In these instances, the FY1 doctor may be part of the Resuscitation Team but will not be able to act without direct supervision of a current ALS provider. They may not be in a leadership role within the Resuscitation Team.

These team members are the core members of the Resuscitation team. It is therefore mandatory for them to attend every resuscitation team call within their hospital. The team members should also attend the daily Resuscitation Team Brief.

Other personnel who are bleeped and may attend a resuscitation call:

- Nurses who are part of the deteriorating patient response for the HB. Staff must hold a current ALS provider certificate.

Resuscitation Practitioner (RP's) whose role is multi-faceted, the RP may provide practical support to the resuscitation team. May take responsibility for leading the resuscitation team if the most senior and experienced in adult resuscitation is unavailable or at a simultaneous call. The RP will also support ward staff and encourage later debriefing of staff involved in the emergency.

For all adult resuscitation team calls, the mandatory team members will be bleeped; however, due to the many specialties within UHW (University Hospital of Wales) (University Hospital of Wales) (University Hospital of Wales), extra specialists will also be called.

<u>Children's Rapid Access Unit (UHL (University Hospital Llandough))</u>

The Children's Rapid Access Unit will use a 2222 call and 999 call to summon help. It is acknowledged, however, that there is no dedicated Paediatric Resuscitation Team at UHL. However, the Adult Resuscitation Team for the UHL site will attend this area to provide support to the staff at the Children's Rapid Access Unit, until the 999 response is in attendance. The nominal team leader for the Resuscitation Team in this instance will be the most senior team member who has relevant experience and/or qualifications in the resuscitation of paediatric patients.

<u>B4 Neurosurgery</u>

- Mandatory Adult Resuscitation team
- Neurosurgery ST1/ST2/ST3 (on call)
- Neurosurgery SpR/ST4 or above (on call)

C5 Cardiac

- Mandatory Adult Resuscitation team
- Cardiac surgery ST1/ST2/ST3 (on call)
- Cardiac surgery SpR/ST4 or above (on call)

Coronary Care Unit

- Mandatory Adult Resuscitation team
- Cardiology ST1/ST2/ST3 (on call)
- Cardiology SpR/ST4 or above (on call)

General Intensive Care Unit/Emergency Unit

Due to the specialty, there is no 2222 call routinely made from General Intensive Care or the Emergency Unit.

Cardiac ITU

Due to the specialty the mandatory Resuscitation team will not be called. The following will attend

- Duty Cardiac Anaesthetist
- Cardiac surgery ST1/ST2/ST3 (on call)
- Cardiac surgery SpR/ST4 or above (on call)

Airway Emergencies

For Adult Airway emergencies (e.g.Tracheostomies) ENT Specialist Registrar needs to bleeped (bleep 6468, between 8 & 6, after 6pm contact the ENT Specialist Registrar on call) in addition to 2222

Cardiac Catheter Room(s)

- Mandatory Adult Resuscitation Team

For the Cardiac Catheter room(s) the Mandatory Adult Resuscitation Team should attend. Although, the whole team may not be needed and may be dismissed by the Consultant in Charge of the Cardiac Catheter Room. However, having strong ALS leadership in the Cardiac Catheter Room(s) is advisable, so that Interventional Cardiologists can remain focused on revascularizing the patient. This may mean that some of the Resuscitation Team remain at the 2222 call.

7.1 Roles and Responsibilities of the Team Leader in Adult Resuscitation

- The role of the most senior doctor is to lead the Resuscitation team in carrying out assessment and treatment of acutely unwell patients who trigger a 2222 response, and those patients in Cardiac Arrest. Cardiac Arrests will be led according to current RC(UK) guidelines. However, any team member with an ALS qualification could act as the team leader should the Resuscitation Team attend concurrent Resuscitation calls. It is therefore imperative that all members of the Adult Resuscitation team have current ALS provider status.

- The team leader has a specific role of directing and coordinating the resuscitation attempt and ensuring that it continues in a coordinated manner. Their responsibilities include:

- To respond to all 2222 calls within their hospital and assess the patient on arrival even if informed by nursing staff that it was a mistaken call.

- To identify him/herself to other team members at the start of the resuscitation.

- If the resuscitation is successful, it is the team leaders' responsibility to communicate to the team responsible for the patient's care about further care and treatment.

- To ensure relatives are informed of events and if the arrest is seen by a relative, they are well supported throughout the resuscitation attempt.

- To make the final decision to stop the resuscitation attempt. This should be done after a discussion and with consensus with all members of the Resuscitation team.

- To ensure that all the necessary documentation is complete as soon as possible after the resuscitation attempt.

- To maintain and update skills and knowledge related to resuscitation as considered appropriate by the Resuscitation Council (UK).

- Ensuring that a Cardiff and Vale UHB Resuscitation Call Reporting Form is completed contemporaneously during the Resuscitation call with the white copy placed in the patient’s notes and the yellow copy sent to the Resuscitation Service, Jubilee Courtyard, UHW

7.2 Airway Expert Roles and Responsibilities

To attend all 2222 calls within the hospital site including specified out-buildings.

- Should be competent in the immediate management of events compromising the airway, ventilation, and circulation.

7.3 Roles and Responsibilities of other team members

- Gaining circulatory access to enable the administration of IV/IO fluids and medication
- Perform CPR
- Relieve other personnel doing CPR
- Administration of medication as per IV administration policy and current Resuscitation Council guidelines
- Completion of cardiac arrest record form (audit form)
- Carry out safe defibrillation
- Perform any other interventions needed, including debrief

8.0 PAEDIATRIC RESUSCITATION

- UHW has a separate paediatric Resuscitation Team. All Mandatory members of the Paediatric Resuscitation Team should have a qualification in Advanced Paediatric Resuscitation (Advanced Life Support Group, Advanced Paediatric Life Support (APLS) or RC(UK) European Paediatric Advanced Life Support (EPALS)

- All staff with regular commitment to paediatric resuscitation should be encouraged to attend national paediatric resuscitation courses e.g., APLS, EPALS, NLS.

- When resuscitating a child, consideration should be given to the presence of the relatives (please see Family Witnessed Resuscitation Policy provided by the Resuscitation Service). A member of staff should be delegated to stay with them and liaise with the team on their behalf.

- If a child's weight is not available, the use of paediatric resuscitation charts, based on the length of a child, or current recommended calculations is encouraged.

- The Paediatric resuscitation call for the University Hospital of Wales and the Children's Hospital for Wales is 2222.

8.1 The Acute Hospital Paediatric Resuscitation Team

The paediatric resuscitation team is a specialist medical and nursing team, which attends all paediatric respiratory, cardiac and peri-arrests within the hospital site and where appropriate, administers prompt paediatric advanced life support.

- Resuscitation Teams are given a rota. It is the team's responsibility to look at their rota to see who is on call for the resuscitation calls

- All Resuscitation Teams are based on the on-call rotas

- All medical and nursing resuscitation bleeps are designated bleeps

- It is imperative that all bleeps are handed over to someone of equal status prior to leaving the hospital site

- Test calls are made at least once a day by switchboard at 09.00 hours. It is recommended that the bleeps are also tested during the evening period. All bleep holders must respond to switchboard once they have received this call.

- If a test call is not received, the bleep holder should contact switchboard to ensure that their bleep is working

- The team must have the following skills:

    - Airway interventions, including tracheal intubation
    - Intravenous/ intraosseous cannulation
    - Defibrillation (advisory and manual) and cardioversion
    - Drug administration
    - The ability to undertake advanced resuscitation skills
    - Possess skills needed for post resuscitation care

- The team leader should be someone with expertise and training in the resuscitation of paediatrics.

- All members of the team should be familiar with their expected roles and have expertise in the resuscitation of paediatrics.

- All members of the team with regular commitments to paediatric resuscitation should also be encouraged to attend national paediatric resuscitation courses which are provided by the UHB Resuscitation Service

Paediatric cardiac arrest mandatory team members

University Hospital of Wales
Duty Anaesthetist carrying the 6000 bleep Paediatric SpR/ST4 or above (on call) Paediatric ST1/ST2/ST3 (on call)

Paediatric Medical SpR/ST4 or above (on call)

These team members are the core members of the cardiac arrest team. It is therefore mandatory for them to attend every cardiac arrest call within the hospital

Other personnel who are bleeped and may attend a cardiac arrest call:

- Paediatric Intensive Care Consultant
- Paediatric Intensive Care Nurse
- Paediatric Nurse Practitioner
- Resuscitation Practitioner (RP's) whose role is multi-faceted, the RP may provide practical support to the resuscitation team.

  The RP will also support ward staff and encourage later debriefing of staff involved in the emergency.

Airway Emergencies

For Paediatric Airway emergencies (e.g.Tracheostomies) ENT Specialist Registrar needs to bleeped (bleep 6468, between 8 & 6, after 6pm contact the ENT Specialist Registrar on call) in addition to 2222.

8.2 Roles and Responsibilities of the Team Leader in Paediatric Resuscitation

- It is the responsibility of the team leader to respond to all paediatric 2222 calls within their hospital.

- The team leader should be someone with expertise and training in the resuscitation of paediatrics. Specialist knowledge of the equipment that is needed, doses of drugs used and the differences in both aetiology and treatment are essential.

- The most senior doctor's role is to lead the resuscitation team in carrying out APLS/EPALS UK Resuscitation Council guidelines. However, any member of the team who has an APLS/EPALS qualification could act as the team leader

- The team leader has a specific role directing the resuscitation attempt and ensuring it continues to be coordinated. Their responsibilities include:

  - To respond to all 2222 calls within their hospital
  - To identify him/herself to other members of the team at the start of the resuscitation
  - If the resuscitation is successful, it is the team leader's responsibility to communicate to the team responsible for the patient's care regarding further care and treatment
  - To ensure that relatives will be informed of events and if the arrest is seen by a relative, to ensure that they are well supported throughout the resuscitation attempt

- To make the final decision to stop the resuscitation attempt. This should be done after a discussion with all members of the resuscitation team
- To ensure that all the necessary documentation is complete as soon as possible after the resuscitation attempt.
- Ensuring that a cardiac arrest record form (audit form) is being completed; this data should be recorded on a central database

University Hospital Llandough

Children's Rapid Access Unit (UHL)

The Children's Rapid Access Unit will use a 2222 call and 999 call to summon help. It is acknowledged, however, that there is no dedicated Paediatric Resuscitation Team at UHL. However, the Adult Resuscitation Team for the UHL site will attend this area to provide support to the staff at the Children's Rapid Access Unit, until the 999 response is in attendance.

It may be necessary for departments within University Hospital Llandough to make a 999 call for paediatric resuscitations as there is no paediatric medical cover within the hospital, whilst the adult team would provide support, a transfer to UHW may be required. This will ensure that advanced paediatric life support is summoned as soon as possible via the Welsh Ambulance Service Trust.

9.0 NEONATAL RESUSCITATION

- UHW has a separate Neonatal Resuscitation Team. All Mandatory members of the Neonatal Resuscitation Team should have a qualification in Neonatal Resuscitation at an Advanced Level – ARNI or NLS.

- All staff with regular commitment to paediatric resuscitation should be encouraged to attend national paediatric/neonatal resuscitation courses e.g., APLS, EPALS, NLS.

- When resuscitating a newborn, consideration should be given to the presence of the relatives (please see Family Witnessed Resuscitation Policy provided by the Resuscitation Service). A member of staff should be delegated to stay with them and liaise with the team on their behalf.

- The Neonatal resuscitation call for the University Hospital of Wales and the Children's Hospital for Wales is 2222.

9.1 The Acute Hospital Neonatal Resuscitation Team

The neonatal resuscitation team is a specialist medical and nursing team, which attends all paediatric respiratory, cardiac and peri-arrests within the hospital site and where appropriate, administers prompt paediatric advanced life support.

- Resuscitation Teams are given a rota. It is the team's responsibility to look at their rota to see who is on call for the resuscitation calls

- All Resuscitation Teams are based on the on-call rotas

- All medical and nursing resuscitation bleeps are designated bleeps

- It is imperative that all bleeps are handed over to someone of equal status prior to leaving the hospital site

- Test calls are made at least once a day by switchboard at 09.00 hours. It is recommended that the bleeps are also tested during the evening period. All bleep holders must respond to switchboard once they have received this call.

- If a test call is not received, the bleep holder should contact switchboard to ensure that their bleep is working

- The team must have the following skills:

    - Airway interventions, including tracheal intubation
    - Intravenous/ intraosseous cannulation
    - Drug administration
    - The ability to undertake advanced resuscitation skills
    - Possess skills needed for post resuscitation care

- The team leader should be someone with expertise and training in the resuscitation of neonates.

- All members of the team should be familiar with their expected roles and have expertise in the resuscitation of neonates.

- All members of the team with regular commitments to neonatal resuscitation should also be encouraged to attend national neonatal resuscitation courses which are provided by the UHB Resuscitation Service

Neonatal cardiac arrest mandatory team members

0038	Resuscitation Practitioner??
0040	??
5422	SHO
6129	Resuscitation Practitioner
6221	
6223	Neonatal Specialist Registrar
6224	Neonatal SHO
6225	Neonatal Nurse
6547/6548	Resuscitation Practitioner

University Hospital of Wales

These team members are the core members of the cardiac arrest team. It is therefore mandatory for them to attend every cardiac arrest call within the hospital

Other personnel who are bleeped and may attend a cardiac arrest call:

- Resuscitation Practitioner (RP's) whose role is multi-faceted, the RP may provide practical support to the resuscitation team. The RP will also support ward staff and encourage later debriefing of staff involved in the emergency.

10 COMMUNITY HOSPITAL RESUSCITATION PROCEDURE

- Staff in the following community hospitals will make a 2222 call to summon any medical doctors that may be in the vicinity. Switchboard will then call back on the number used to dial 2222 and connect this number to 999 to summon the Welsh Ambulance Service Trust and advanced life support:

    - Cardiff Royal Infirmary
    - Rookwood
    - Barry Hospital

- St David's Hospital

- Ward staff will have to provide the following information when calling 999:
  - Name of hospital and ward
  - Telephone number of where the call is being made from
  - What is the problem?
  - How old is the patient?
  - Is he/she conscious?
  - Is he/she breathing?

A separate document covers GP (General Practitioners) Surgeries as staff are independently contracted. Refer to this document for Resuscitation Procedure Information.

Cardiff and Vale University Health Board Advisory Resource for Resuscitation Equipment and Emergency Medication for General Practice. The documents must be ratified by the RADAR committee and follow current C and V and Resuscitation Council (UK) guidance.

11 RESUSCITATION EQUIPMENT

It is the responsibility of the ward/department manager to ensure that all resuscitation equipment and supplies are checked and documented on the Trust standard check sheet at least once every 24 hours, and following the use of equipment, to replenish supplies. The expiry dates on all accessible items should be checked and documented, including drugs and disposable items.
A list should be kept of equipment and a record signed saying ALL equipment is present and functioning correctly

All departments within Cardiff and Vale UHB will ensure that they have a Resuscitation Trolley with the equipment as designated by the RADAR Committee. All resuscitation and related equipment must always be kept in a state of readiness and must be checked by a suitable member of staff every day there is clinical activity and at once following a situation where equipment has been used. Resuscitation equipment should be for single-patient use and latex-free whenever this is possible (e.g., bag-mask devices, oxygen masks and tubing). Disposable items must be replenished. The procurement, storage, replenishment, maintenance, and cleaning of resuscitation equipment must be following the Health Boards Medical Devices Policy.
Responsibility for checking resuscitation equipment rests with the staff at the site where the equipment is held. This process should be appointed to named individuals, with reliable arrangements for cover in case of absence.
The manufacturer's instructions must be followed regarding the use, storage, servicing, and expiry of equipment. Electrical equipment, including the Automated External Defibrillator must be checked following the manufacturer's guidelines. Defibrillator faults should be reported to Clinical Engineering.

Defibrillators are serviced regularly by Clinical Engineering. If a defibrillator malfunctions, it should be reported at once to Clinical Engineering at once, removed from service, and temporarily replaced with a spare defibrillator.
If no replacement defibrillator is available, clinical areas should share defibrillators until the problem is resolved. It is the nurse/person in charge's responsibility to inform all relevant staff of the situation and ensure they know the location of the defibrillator to be used in case of cardiac arrest.
Training Defibrillators should not be removed from the resuscitation training unit to replace malfunctioning machines. Defibrillators are only suitable for cardiac monitoring in the peri-arrest situation and should not be used for routine monitoring. If prolonged cardiac monitoring is necessary, the patient should be transferred to a suitable area, where they can be observed by appropriately trained staff.

11.1 Pharmacy

Will ensure that all emergency drugs, intravenous fluids are available in all designated areas as risk assessed and replaced when used or due to expire when informed by nursing staff.
Will liaise with the directorates/clinical boards, ward manager, Resuscitation Service and RADAR on matters relating to emergency drugs for resuscitation as needed.

In an emergency, oxygen prescription is not needed. Oxygen should be given to ANY patient seen to be in respiratory distress, regardless of aetiology. It should be administered without delay and without a formal prescription but documented later electronic patient's record. All unwell, critically ill patients should be administered 15 LPM via a non-rebreather) whilst waiting immediate medical review.
Patients with Chronic Obstructive Airways disease (COPD) and other risk factors who develop critical illness should have the same first target saturations as other critically ill patients. The target saturation levels should be in the range of 88-92%. All patients who have a cardiac or respiratory arrest should have 100% oxygen provided along with resuscitation appropriate to the provider's skills and equipment provision.
Unwell patients with hypoxia should have emergency oxygen aimed at keeping an oxygen target of 94-98%. If no reliable oxygen saturation probe is available: administer high flow oxygen initially until saturation can be measured, then adjust to meet oxygen target. Written records must be made along with what oxygen therapy has been given to the patient in addition to recording all other emergency treatment.
Nebulised therapy and oxygen Nebulisers are usually given via oxygen or a nebuliser machine. All patients needing 35% or greater oxygen therapy should have their nebulised therapy by oxygen at a flow rate of >6 litres/minute.

Pregnancy Pregnant women (20 weeks) should be managed in the left lateral position to improve cardiac function. The same target saturation should be sought as for any other seriously ill users (94- 98%). Monitoring Check, the patient's colour, respiratory rate and heart rate, degree of respiratory distress and pulse oximetry. http://www.brit-thoracic.org.uk/clinical-information

11.2 Procurement

All resuscitation equipment purchased is subject to the organisation's standardisation strategy; therefore, the Resuscitation Service/Clinical Engineering/Procurement must sanction all resuscitation equipment prior to ordering.
During any future development of services/building redesign/relocation, early advice should be sought from Resuscitation Services about the procurement of additional/new resuscitation equipment.

11.3 Acute Hospital Resuscitation Equipment

- Pocket masks are no longer recommended throughout clinical areas, a bag, valve mask with a HME filter should be used.

- Adult and paediatric resuscitation equipment should follow the standardised equipment list, which has been based on current UK Resuscitation Council guidelines and ratified by the UHB's RADAR Committee.

- Trolleys should be on each ward or clinical area with additional portable oxygen and suction equipment distributed so that it is rapidly available to all other hospital areas.

- Portable oxygen and suction devices should always be available on or next to all resuscitation trolleys. Where piped or wall oxygen and suction are available, these should always be used in preference.

- Each ward or department should have access to a manual or automated external defibrillator, so those patients who require defibrillation do so within three minutes of collapse as recommended by RC (UK).

- All clinical areas should check their trolleys daily checking if the seal is intact, then once a month, remove the seal and have full check of the contents. I

- Portable suction devices, wall suction and defibrillators must be checked daily.
- Ideally, Resuscitation Trolleys should be sealed using a breakable security tag to ensure that the trolley is tamperproof. The Cardiff and Vale UHB recommended Make and Model of Resuscitation Trolley is the Agile Medical, LX Resus Trolley, LX34RES5

- If the Resuscitation trolley is wrapped with clingfilm, then a sticker with the earliest expiry date must be displayed on the trolley. A member of staff must still sign daily to confirm that the expiry dates have not been exceeded and that the cling film is still intact. Monthly, the cling film should be removed, all equipment thoroughly checked and then the trolley should be re-cling filmed with the expiry sticker as before.

- Once the trolley has been opened in response to a 2222 call, the trolley must undergo a full check, restocked and rewrapped. Before returning to the storage location and plugging in the defibrillator and portable suction.
  Checking of Resuscitation trolleys is now undertaken on AMaT (Audit Management and Training). Additional Annual audits are also undertaken by the Resuscitation Service.

11.4 Community Hospital Resuscitation Equipment

- Pocket masks are no longer recommended throughout clinical areas, a bag, valve mask with a HME filter should be used.

- Adult and paediatric resuscitation equipment should follow the standardised community hospital equipment list, which is based on current UK Resuscitation Council guidelines and ratified by the UHB's RADAR Committee.

- Equipment should be located on each ward or clinical area with additional portable oxygen and suction equipment distributed so that it is rapidly available to all other areas of the hospital.

- Portable oxygen and suction devices should always be available on or next to all resuscitation equipment. Where piped or wall oxygen and suction are available, these should always be used in preference.

- Community hospitals must check their resuscitation equipment, suction devices, wall suction and defibrillators daily or whenever the clinical area is occupied.

- Each community hospital should have an automated external defibrillator, so those patients who require defibrillation do so within three minutes of collapse. In larger community facilities more than one defibrillator may be needed. ERC *Quality Standards for cardiopulmonary resuscitation practice and training, 2020)*

- Once the trolley has been opened in response to 2222 / 999 calls, the trolley must undergo a full check, restocked and rewrapped. Before returning to the storage location and plugging in the defibrillator and portable suction.

Oxygen cylinders should be of sufficient size to be easily portable but also allow for adequate flow rates e.g., 15 litres per minute, until the arrival of an ambulance or the patient fully recovers. A full "CD" 460 litres of oxygen and should allow a flow rate of

15 litres per minute for approximately 30 minutes. Two such cylinders may be necessary to ensure the supply of oxygen does not fail when it is used in a medical emergency.

Recently published guidance from the British Thoracic Society on the use of high flow oxygen has caused some concern and confusion regarding its safety. It is emphatically clear that in any critically ill patient the initial administration of high flow oxygen (15 litres per minute) is the correct course of action. When oxygen saturation levels are within normal parameters (94-98% in most patients, 88-92% in those patients who are at risk of hypercapnic respiratory failure – as confirmed by Arterial Blood Gas sampling) oxygen concentration may be titrated accordingly.

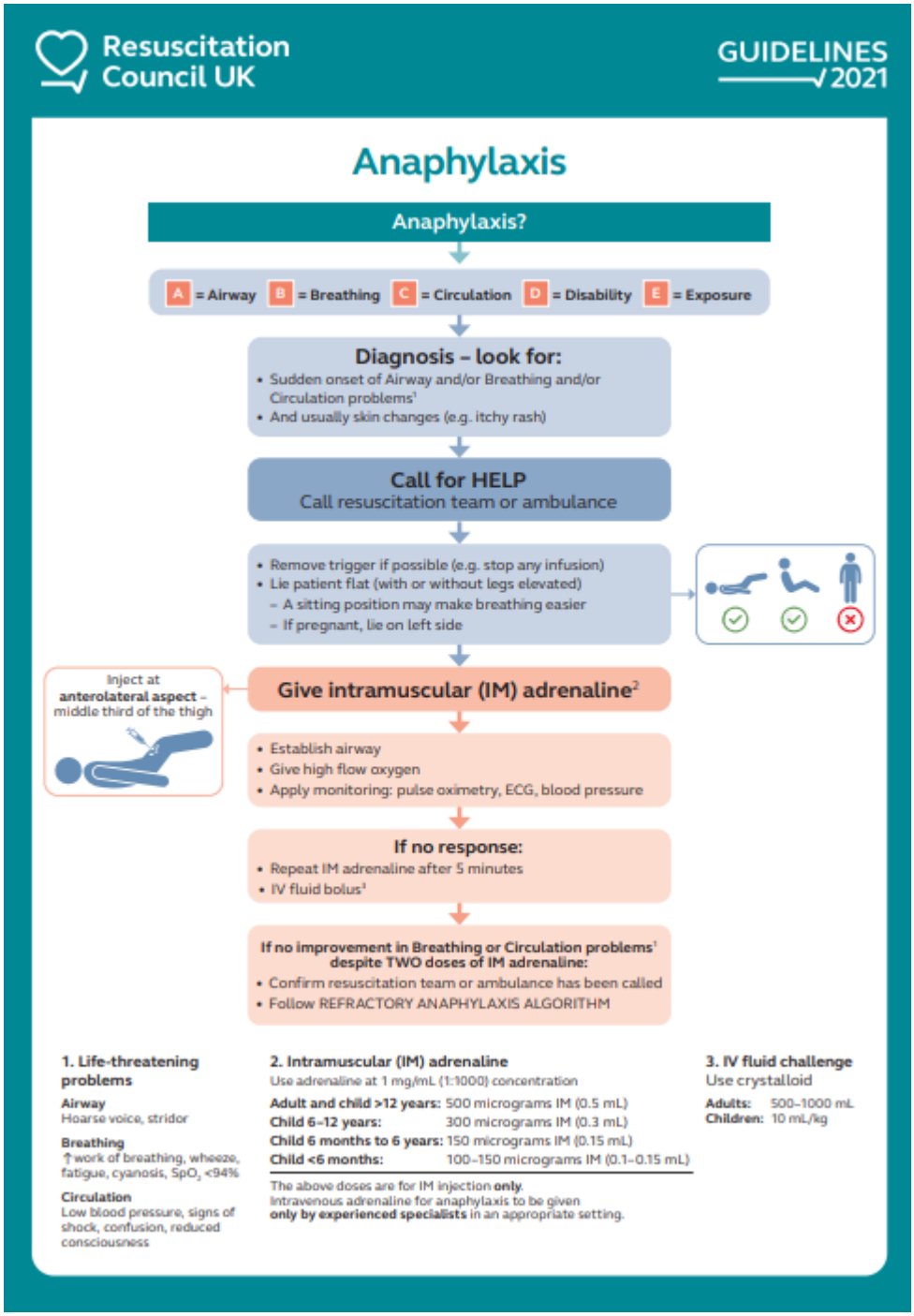
12 SPECIAL CIRCUMSTANCES IN RESUSCITATION

Eg Thrombolysis
Hyper/Hypo - electrolyte disorders

Refer to the UHB Medicines Management policy regarding Emergency boxes, anaphylaxis kits and hypo (hypoglycemia) boxes.
It is recommended that these medicines are provided to wards to provide immediate lifesaving treatment, so they should not be stored in locked cupboards but kept in a safe location in the clinical area to be available when needed. This must be balanced against the need for medical security, therefore, wherever possible they should be stored out of direct view of the public. Some areas will have alarmed trolleys for storage of emergency boxes. Each emergency box will have a tamper evident seal and expiry date, and once the seal is broken or the box expires it should be replaced via the pharmacy as soon as possible**.**

Anaphylaxis

The management of suspected anaphylaxis should be conducted following the current Resuscitation Council UK guidelines. The current guidelines are documented at: http://www.resus.org.uk/pages/reaction.pdf
All health care professionals administering medication must attend face to face mandatory basic life support and anaphylaxis training annually as a minimum standard.



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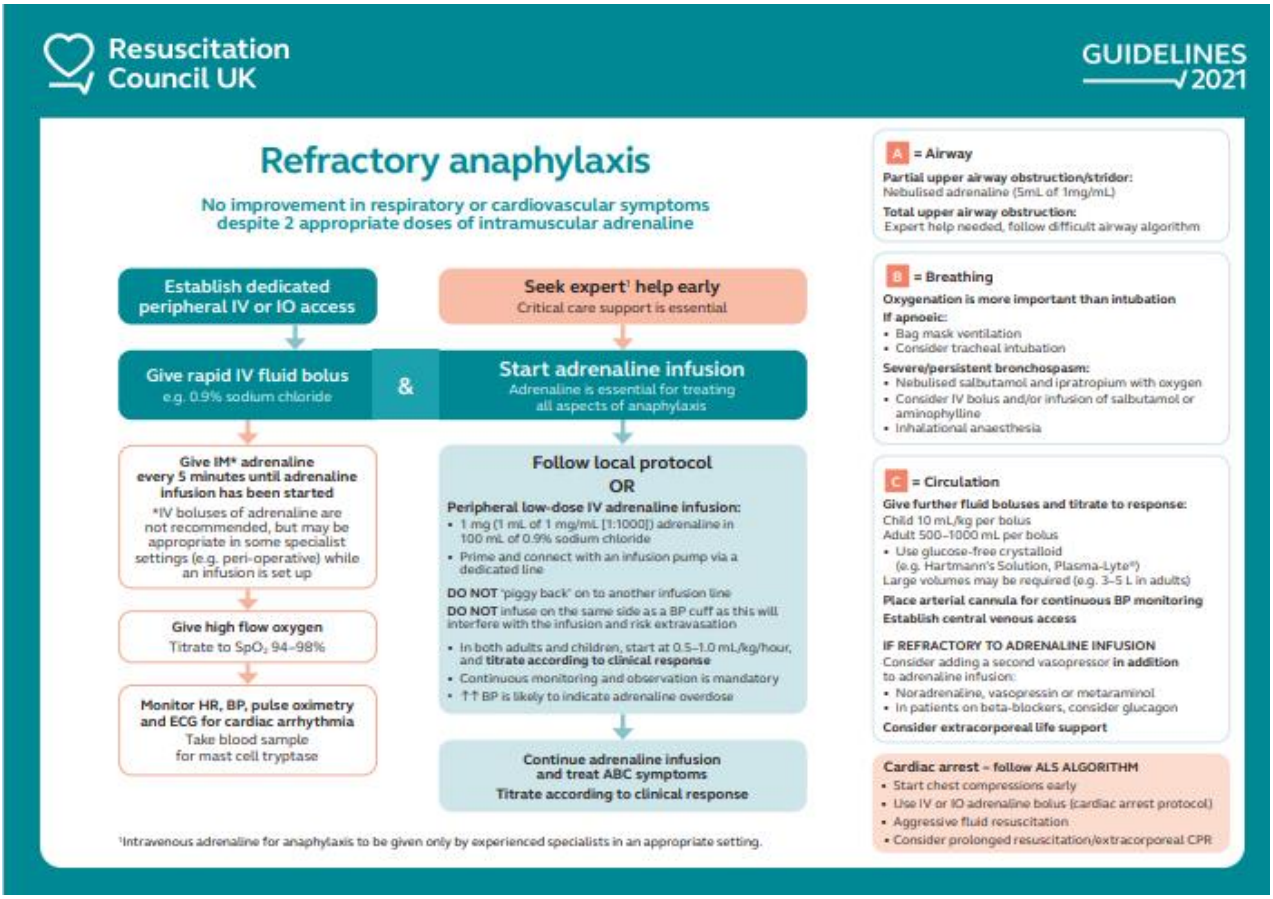

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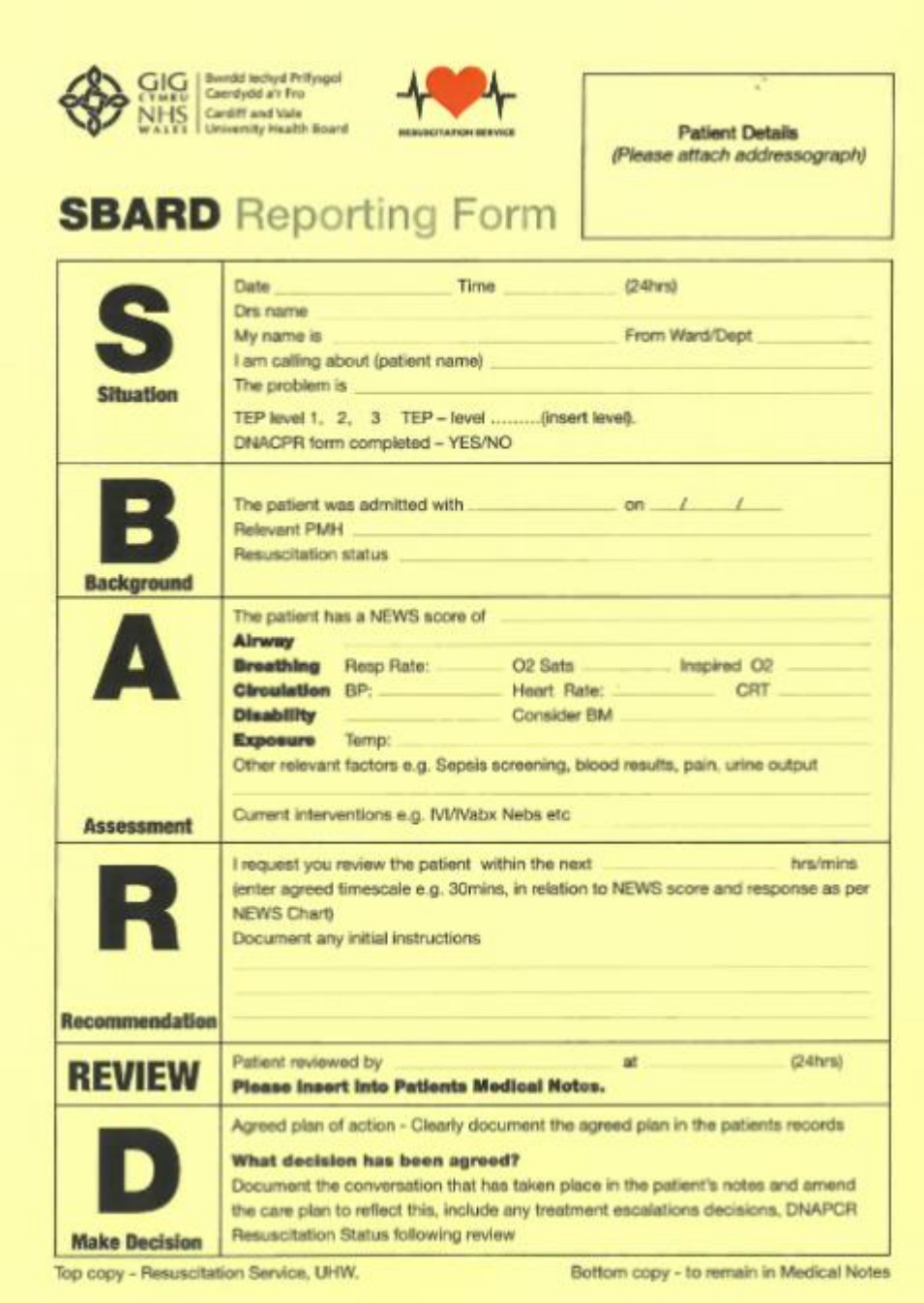
13.0 POST RESUSCITATION CARE

Post Resuscitation Care is started at once after sustained ROSC (Return of Spontaneous Circulation) regardless of location. Staff should refer to the current Post Resuscitation Care guidelines and algorithm published by the Resuscitation Council.

Staff responsible for the patient's care must ensure safe continuity of care and, where necessary, safe patient transfer.

Transfer should only take place after discussion with senior members of the admitting team. To ensure safe transfer it is essential to consider the following: stabilisation, continued monitoring, securing of all cannula, drains, tubes and catheters, and an SBARD handover ensuring clear communication to the receiving team members.



GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Caerdydd a'r Fro
Cardiff and Vale University Health Board

RESUSCITATION SERVICE

Patient Details
(Please attach addressograph)

SBARD Reporting Form

S — **Situation**

Date _____ Time _____ (24hrs)
Drs name _____
My name is _____ From Ward/Dept _____
I am calling about (patient name) _____
The problem is _____
TEP level 1, 2, 3 TEP – level .....(insert level).
DNACPR form completed – YES/NO

B — **Background**

The patient was admitted with _____ on __/__/__
Relevant PMH _____
Resuscitation status _____

A — **Assessment**

The patient has a NEWS score of _____
Airway _____
Breathing Resp Rate: _____ O2 Sats _____ Inspired O2 _____
Circulation BP: _____ Heart Rate: _____ CRT _____
Disability _____ Consider BM _____
Exposure Temp: _____
Other relevant factors e.g. Sepsis screening, blood results, pain, urine output
_____
Current interventions e.g. IVI/IVabx Nebs etc

R — **Recommendation**

I request you review the patient within the next _____ hrs/mins
(enter agreed timescale e.g. 30mins, in relation to NEWS score and response as per NEWS Chart)
Document any initial instructions
_____
_____
_____

REVIEW

Patient reviewed by _____ at _____ (24hrs)
Please insert into Patients Medical Notes.

D — **Make Decision**

Agreed plan of action - Clearly document the agreed plan in the patients records
What decision has been agreed?
Document the conversation that has taken place in the patient's notes and amend the care plan to reflect this, include any treatment escalations decisions, DNAPCR Resuscitation Status following review

Top copy - Resuscitation Service, UHW. Bottom copy - to remain in Medical Notes

The team must be able to respond to other emergencies, including cardiac arrest or later deterioration whilst moving the patient. A full reassessment MUST take place prior to transfer. Portable suction, oxygen and other essential equipment must go with the patient and the team undertaking the transfer.

It is the responsibility of the resuscitation team leader to ensure the transfer of care is coordinated and the receiving centre/department has access to all the necessary information and documentation pertaining to the patient's condition and treatment. Continuity of care during this period of resuscitation is vital. It is the responsibility of the team leader to ensure that the transfer of care from the emergency team to the responsible clinician is both appropriate and efficient.

The team must not leave the patient until they have delegated the care to another appropriate colleague

13.1 Post Event Procedure Including Debriefing and Support

All resuscitation events will be reported, recorded, and reviewed following the Health Boards Datix procedure.
A 2222 Call reporting form will be completed and sent to the Resuscitation Service, Jubilee Courtyard, UHW.
The Resuscitation Practitioner/Resuscitation Team Member will arrange for a debriefing as soon as possible after the event ensuring all staff are provided with support. This may include referral to Occupational Health Service or Employee Wellbeing. The Resuscitation Service uses the TALK debrief tool to facilitate debriefing.

Manual Handling

In situations where the collapsed patient/ client is on the floor, in a chair or in a restricted/ confined space, refer to the Health Board Moving and Handling Policy. The movement of patients/ clients must be followed to minimise the risks of manual handling and related injuries to both staff and patients/ clients.
For further information on moving and handling patients/ clients during a resuscitation event you can also refer to the to the Resuscitation Council UK's guidance for safer handling during resuscitation in healthcare settings: http://www.resus.org.uk/pages/safehand.pdf
Staff must ensure they are compliant with their Manual Handling Training.

Infection Control

Although the risk of infection transmission from patient to rescuer during direct mouth-to-mouth resuscitation is extremely rare, isolated cases have been reported. It is therefore advisable that direct mouth-to-mouth resuscitation should be avoided.

All clinical areas should have immediate access to airway devices so that mouth-to-mouth ventilation is not necessary. In situations where airway protective devices are not at once available, continuous chest compressions should be performed whilst awaiting an airway device. Staff must always adhere to current Health Board IPC Guidance.

DNACPR
Please refer to the All-Wales DNACPR Policy.

14.0 RESUSCITATION TRAINING GUIDELINES

Introduction

The provision of an effective Resuscitation Service must be an operational priority within every hospital. Health care institutions are obligated to provide an effective Resuscitation Service and ensure that their staff receive training and regular updates for maintaining competence appropriate to everyone's role. This requires equipment for resuscitation, training in resuscitation, managerial and secretarial support, financial planning, and continual reappraisal of standards and results. Failure to provide an effective service is a failure in duty of care which constitutes a clinical risk, contravenes the principles of clinical governance, and has implications for clinical negligence premiums.

14.1 Guideline Statement

Cardiff and Vale UHB are committed to implementing resuscitation training standards and recommendations made by the Resuscitation Council (RC) UK, whose aim is to improve patients' outcome after cardiac arrest both in and out of hospital. To achieve this, the RC (UK) has set standards for resuscitation training in both basic and advanced life support. The content of these guidelines will reflect that guidance.

Additionally, through the Resuscitation Service, the UHB will endeavour to incorporate the prevention of in-hospital emergencies, including cardiac arrest, into its training strategy.

14.2 Aims Of The Resuscitation Training Guideline

The aims of these guidelines are as follows: -

- To ensure patients receive safe, current, evidence-based, effective resuscitation
- To give staff guidance on the resuscitation courses
- To implement and develop prevention strategies to reduce the number of preventable cardiac arrests.
- To reduce cardiac arrest morbidity and mortality through education
- To ensure relevant staff are updated and adequately supported to deal with resuscitation situations.
- To promote practice based on current RC (UK) guidelines.
- Ensure staff and patient safety during resuscitation.
- Reduce clinical risks.
- Develop a systematic strategic approach to resuscitation training.
- To satisfy legal and professional requirements.
- To follow UHB requirements.

14.3 Implementation

All newly employed health-care professionals will be made aware during induction of the Organisation's Resuscitation Training Guidelines and their responsibilities under it.

Existing staff will be made aware of these guidelines through training and dissemination of this information to all Directorates Clinical Boards and Managers following the management of policies and procedures for Cardiff and Vale UHB.

14.4 Resources

There are no costs in disseminating this information. The guidelines will be distributed electronically and as part of the in-house training programme and on Doctor's induction days. Courses are also advertised on the Resuscitation Service Intranet Page, with an Online Booking System, accessed via the Resuscitation Service Intranet Page, enabling staff to book onto courses.

14.5 Audit

The compliance of these guidelines will be audited using databases currently held within the Resuscitation Service and attendance sheets (this cannot be attached with the document as it is an existing operational database).

15.0 RESPONSIBILITIES

15.1 The UHB Board Members

The UHB carries overall responsibility for the Organisation. It has delegated powers from the Welsh Government in respect of ownership and management of hospitals and other health facilities. The UHB is responsible for the performance of the Organisation.

15.2 RADAR Committee

The RADAR Committee, led by its chairperson, meets quarterly. Committee members should be conversant with current issues in relation to resuscitation practice. The RADAR Committee should be responsible for implementing operational policies and guidelines governing cardiopulmonary resuscitation, practice, and training. It should decide the level of resuscitation training required by individual staff members.

15.3 Resuscitation Service

Cardiff and Vale UHB have an established Resuscitation Service supported by the Resuscitation Committee in its Clinical Lead. It is responsible for implementing decisions made by the RADAR Committee, thereby promoting good practice through training and audit.

The Resuscitation Service is responsible for the assessment of those it teaches, ensuring they meet the standards required by the RC (UK). The Senior Nurse of the Resuscitation Service is responsible for maintaining, managing, and strategically developing the Service, within available resources, to meet the needs of the UHB.

The Resuscitation Service will provide advice to the UHB on all aspects of cardiopulmonary resuscitation including the appropriateness of training programmes for UHB staff based upon risk assessment.

15.4 Directorate and Line Managers

While the UHB has a responsibility for the provision of training through its Resuscitation Service, those who manage staff, particularly clinical staff, have a responsibility to monitor uptake and to ensure staff receive adequate time to deliver and attend training.

15.5 Individual Staff Members

Everyone has a responsibility to attend allocated training sessions, as well as for their own actions in respect of their limitations and scope of professional practice. Individual staff members with a professional and contractual requirement to teach resuscitation to their colleagues must agree according to the guidance provided by the Resuscitation Service.

15.6 Training Providers

All staff within Cardiff and Vale UHB who are being given study leave or financial assistance from within the Organisation towards resuscitation training courses, must access this training from the Resuscitation Service for Cardiff and Vale UHB. If the Manager of the Resuscitation Service states that the Service is unable to provide this training within a reasonable time or meet the demand for the training request, only then can external training instructors be asked to deliver this training.

If external training providers are required by a ward/department:

- The Resuscitation Service must be given the name of the instructor or company they wish to use to deliver the training.
- This must be provided prior to the training being undertaken.

- All external instructors providing adult resuscitation training must be UK Resuscitation Council accredited ALS instructors.

- All external instructors providing paediatric resuscitation training must be accredited Advanced Life Support Group APLS Instructors or UK Resuscitation Council accredited EPLS instructors.

- The Senior Nurse, Resuscitation Service, with the Chair of RADAR, will decide if the external training providers are appropriate and qualified to provide the required training.

16.0 TRAINING

The Resuscitation Service adheres to an Annual Training Schedule) which illustrates a cyclic model for the delivery of training on an annual and systematic basis. Depending on circumstances, the timescales and workload may be altered according to service needs or resource provision. However no substantive changes will occur without prior consultation with the RADAR Committee.

Annual Training Schedule

Activity	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**
Advice & Prevention												
Adult BLS cascade												
Paeds BLS cascade												
BLS set session 1 per month												
AED set session 1 per month												
Defibrillation Familiarisation (as needed)												
AED cascade												
Community staff cascade												
Community hospital training visit												
Programmed ward training (mock arrests/												

NEWS/ AED) – adult and paediatric												
Anaphylaxis												
ALS & ALS Recertification												
F1 ALSx3												
APLS												
IMPACT												
ATLS												
ETC												
PLS												
ILS and ILS Recertification												
NLS												
ALERT Monthly												
Dr's induction												
Audit												

All Resuscitation Service Training is booked via the Resuscitation Service designated online booking page, where managers approve/give authorisation for courses that there is a cost associated. No approval required for free/internal courses.
If due to illness or other personal reasons a new member of staff is unable to make the allocated date, the resuscitation service must be contacted to release the individual's place, and re-book at the next available opportunity.
Attendance at resuscitation training is registered and monitored; it is important that the Resuscitation Service is contacted to confirm why the staff member did not attend.
They must then be rebooked onto resuscitation training at the next available date.
If places are funded by ECOD (Education, Culture and Organisational Development) via the TNA, then the place is lost, and the ward/department is recharged.

Courses offered by Cardiff and Vale Resuscitation service:

- Basic Life Support- Adult (BLS)
- Paediatric Basic Life Support – (PBLS)
- Neonatal Basic Life Support

- Adult BLS Cascade Training
- Paediatric BLS Cascade Training
- Automated External Defibrillator (AED) Training
- AED Cascade Training
- Recognition and Treatment of Anaphylaxis
- Recognition of the Sick Patient for Health Care Support workers
- Paediatric emergency ward-based scenarios
- Ward based sick patient and mock-arrest scenarios (adult)
- Immediate Life Support (ILS)
- Advanced Life Support (ALS)
- Advanced Life Support Recertification
- Advanced Paediatric Life Support (APLS)
- Advanced Trauma Life Support (ATLS)
- Paediatric Life Support (PLS)
- Acute Life-threatening Events - Recognition and Treatment (ALERT)
- Bedside Emergency Assessment Course for Healthcare staff (BEACH)
- Ill Medical Patients, Acute Care and Treatment (IMPACT)
- Neonatal Life Support (NLS)
- Recognition of the Sick Patient for Qualified Nurses
- Recognition of the Sick Patient Cascade Training

16.1 In-House Training

Basic Life Support (Adult, Paediatric, Neonatal)

All UHB clinical staff, within acute and community settings, will be trained and updated yearly in basic life support skills following the RC (UK) guidelines. Although BLS is delivered mainly using the cascade training system, the Resuscitation Service delivers at least 12 one-hourly BLS sessions per year in the department to update those who cannot use it.

Training should include the management of choking.

It is recommended that non-clinical staff receive basic life support practical training, level 1 training is only online. BLS is a practical skill that staff need to be taught and practiced.

BLS Trainers/Competence Assessors

A cascade training system has been implemented to maximise the numbers of staff trained each year. Resuscitation Services will train and update link trainers for each clinical area annually and maintain responsibility for resuscitation standards. BLS Trainers/Competence Assessors will submit monthly training returns to the Resuscitation Service. Certificates will be issued on behalf of the Resuscitation Services by the cascade trainers and a central register kept. All BLS Trainers/Competence Assessors must attend an update session annually to continue training.

The cascade trainer will act as a direct link between the Resuscitation Service and clinical areas.

If this system is to succeed, the UHB must support this initiative to make this training mandatory. The Line Managers of BLS trainers are responsible for monitoring uptake and ensuring trainers receive enough time to deliver and attend training. All cascade trainers receive a contract on successful completion of training. This contract requires a signature from their manager and colleague to provide protected time to deliver training. This contract will be returned to the Resuscitation service.

AED Training

The UHB is committed to providing early defibrillation utilising a mixture of AEDs and manual defibrillators in line with RCUK (Resuscitation Council UK) recommendations. All staff will be permitted to perform this intervention after receiving training from Resuscitation Practitioners. Each candidate must possess a current BLS certificate. Candidates can nominate themselves or be nominated by their manager by contacting the Resuscitation Service's Course Administrator. After successful completion of training, they will be certified for one year. Each health care professional is responsible for arranging an annual up-date with the Resuscitation Service to maintain clinical competence and continue their ability to deliver a DC shock via an AED in case of a cardiac arrest. Re-certification will be undertaken by either attending an in-house refresher session or by attending an Immediate Life Support (ILS) course. Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice. AED training is provided as a follow-on part of every Adult BLS Session, so that AED compliance is improved throughout the UHB and shown in context with Adult BLS.

Defibrillator Familiarisation

As defibrillators are updated, new models may be introduced into clinical areas. As the technology may differ from that previously used, awareness training will ease the transition to the new machines. This training will be offered to all medical and nursing staff on wards where these machines will be sited.

AED Training/Familiarisation

AED Training Custom and practice within Cardiff and Vale UHB has been to ensure that staff are required to have training prior to using an Automatic External Defibrillator (AED). The stance from the Resuscitation Council (UK), is that no training is required to use an AED. Therefore, Cardiff and Vale UHB now adopts the Resuscitation Council (UK) stance. This should encourage anyone to use a Defibrillator in a collapsed, unresponsive patient without delay. Staff are therefore strongly encouraged to attach a Defibrillator to a collapsed, unresponsive patient without delay, whether they have received training in the use of a Defibrillator or not. It is acknowledged, however, that some staff will still be keen to undergo training in the use of a Defibrillator. This training will be provided in all Adult Basic Life Support sessions either directly with the Resuscitation Service, or via the Cascade Trainer system. All areas that have a

defibrillator in situ (either AED or Manual), will require their staff to be familiarised with the care of the defibrillator, to ensure its operational readiness. 80% of staff in an area must have familiarisation training prior to a defibrillator's deployment. This training can be accessed by contacting the Resuscitation Service on resuscitationservice.cardiff@wales.nhs.uk

Recognition and Treatment of Anaphylaxis

This training will take place at the request of departments, Directorates etc. when needed but is primarily delivered on the UHBs (University Health Board) Intravenous Additives study day. To maximise the numbers of staff able to receive this training, regular anaphylaxis lectures will be provided by the Resuscitation Service in the lecture theatres, individuals must book on these sessions and they will be advertised on the Resuscitation Service's Intranet page, via the Online Booking System, which can be accessed from the Resuscitation Service Intranet Page. Please see the Resuscitation Service's Anaphylaxis Guidelines for more information on delivery and provision of this training.

Recognition of the Sick Patient Awareness

This session is primarily delivered on the Health Care Support Worker (HCSW) Induction and Development days, as well as being an integral part of the Bodyworks course provided for surgery and T&O HCSWs. It is also provided as part of the 1000 lives campaign as a practical refresher to the ALERT, along with Qualified Nursing staff returning to acute clinical areas.

Recognition of the Sick Train the Trainer

A cascade training course has been implemented to maximise the number of staff trained each year. The Resuscitation Service will train and update cascade trainers yearly, to ensure a standardised approach to training and which will maintain resuscitation standards. Trainers will return monthly training records to the Resuscitation Service. Certificates will be issued on behalf of the Resuscitation Service by the trainer and a central register kept.

Paediatric Emergency Scenarios - Ward Based

'Mock' cardiac arrest scenarios are provided by the Resuscitation Service (Paediatric Link) in conjunction with a paediatric Consultant/Senior Doctor and utilise a SimBaby. They are provided to all Paediatric clinical areas with priority given to high-risk areas and are non-planned to improve realism. Scenarios often start with an acutely unwell baby or child and deteriorate into cardiac arrest. These calls often result in a paediatric 2222 call being put out which 'tests' the emergency response and when clinical areas move, ensures members of the Resuscitation team are aware of the new location. These scenarios also improve familiarity with the emergency equipment and highlight potential problems before a real situation occurs.

Ward based sick patient and mock-arrest scenarios (adult)

'Mock' cardiac arrest scenarios are provided by the Resuscitation Service to consolidate training learnt on the externally accredited courses (ILS and ALERT), as well as refreshing BLS and AED knowledge. By running these in the individual's own clinical area, the Resuscitation Service aims to add to the realism and test local responses and identify any potential issues prior to a cardiac arrest.

16.2 Externally Accredited Courses

The Resuscitation Service offers a variety of externally accredited courses which are certified by their respective governing bodies.

- Advanced Life Support (ALS)
- Advanced Life Support Recertification
- Advanced Paediatric Life Support (APLS)
- Advanced Trauma Life Support (ATLS)
- Paediatric Life Support (PLS)
- Immediate Life Support (ILS)
- Immediate Life Support Recertification
- Ill Medical Patients Acute Care and Treatment (IMPACT)
- Acute Life-threatening Events Recognition and Treatment (ALERT)
- Neonatal Life Support (NLS)
- Bedside Emergency Assessment Course for Healthcare staff (BEACH)

These will be run according to need and available resources within the Resuscitation Service. There will be fair and equal access to these courses based on clinical priority, please see Appendix 2 and 3 for course recommendations dependent on clinical role. Study leave and funding must be secured prior to entry on any course. Priority will be given to staff working within the Organisation.

It is a requirement of Core Skills Training Framework that all Bedside Nurses should attend an eILS/ILS course. This course certificate last for one year.

Immediate Life Support course/E-ILS (ILS)

This RC (UK) approved course will run throughout the year and it has been developed in order to standardise much of the in-hospital training undertaken already by Resuscitation Practitioners. Its aim is to train healthcare personnel to become Resuscitation Team members and develop skills in simple airway management, safe defibrillation (manual and/or AED) and the use of emergency drugs. This enables them to manage patients in cardiac arrest until the Resuscitation team arrives and to take

part as members. As part of optional targeted training Anaphylaxis and NEWS are also covered in ILS.

Each candidate must have a nomination from their manager with an authorised online application form unless they are self-funding. After successful completion of training, they will be certified for one year. Each practitioner is responsible for arranging an update with the Resuscitation Service. Each candidate must book themselves onto the course or via his or her manager, via the online booking system which is accessible on the Resuscitation Service UHB Intranet page. Approval from the candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice

Immediate life Support Recertification course

This 1/2-day course is to re-certify individuals who have previously completed a full ILS course and the certificate is either still in date or is within 1 year of expiry.
The course principles are the same as the full course, but there is greater emphasis on practical scenarios, rather than lectures and workshops. This course benefits individuals with a near expiring ILS certificate, who work within areas of higher acuity patients.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Acute Life-threatening Events - Recognition and Treatment course (ALERT)

This nationally recognised course is designed and run by Portsmouth Hospital's NHS Trust. This one-day course is offered to all nursing and midwifery staff throughout the UHB and is provided by the Resuscitation Service. The course is also offered to the pre-registration nurses and midwives during their consolidation period and to pre-registration FP1s. The course aims to focus on the recognition of sick patients and prevention of cardiac arrest. This course is based on the principle that early detection of disordered physiology and initiation of prompt simple actions reduces complications and saves lives.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

Bedside Emergency Assessment Course for Healthcare Staff (BEACH)

This nationally recognised course is designed and run by Portsmouth Hospital's NHS Trust. This ½ day course is offered to all Healthcare Support Workers throughout the UHB and is provided by the Resuscitation Service. The BEACH Course is based around a simple, illustrated manual that covers basic signs of clinical deterioration and what action for unregistered healthcare staff to take and when to ask for help.

Advanced Life Support/E-ALS (ALS)

The 2-day ALS course aims to teach the theory and practical skills to effectively manage cardiorespiratory arrest, peri-arrest situations, and special circumstances, and to prepare senior members of a multidisciplinary team to treat the patient until transfer to a critical care area is possible. This course is designed for healthcare professionals expected to apply the skills taught as part of their clinical duties or to teach them regularly. Appropriate participants include doctors and nurses working in critical care areas including A&E, CCU, ICU (Intensive Care Unit), HDU or members of the cardiac arrest. All team leaders on the Resuscitation team must have an in-date ALS certificate.

All applicants should hold a current clinical appointment and professional healthcare qualification. The current ALS certificate lasts for 4 years and practitioners are expected to ensure they are up-dated if their clinical position requires an in-date ALS certificate. It is advised that all Resuscitation Team members should have an in-date ALS certificate. Practitioners are also expected to familiarise themselves with any changes in the national resuscitation guidelines.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

ALS recertification course

This 1-day course is to re-certify individuals who have previously completed a full 2-day ALS course and are either still in date or their certificate is within 1 year of expiry.

The course principles are the same as the 2 days, but there is more emphasis on practical scenarios than lectures and workshops.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Advanced Paediatric Life Support (APLS)

The 2-day APLS course aims to teach the theory and practical skills to effectively manage paediatric cardiorespiratory arrest, peri-arrest situations, paediatric trauma management and special circumstances, and to prepare senior members of a multidisciplinary team to treat the patient until transfer to a paediatric critical care area is possible. Appropriate participants include doctors and experienced nurses working in paediatrics, anaesthetics or critical care areas. All applicants should hold a current clinical appointment and professional healthcare qualification. All team leaders on the Paediatric Resuscitation team must have an in-date APLS certificate.

The current APLS certificate lasts for 4 years and practitioners are expected to ensure they are up-dated if their clinical position requires an in-date APLS certificate. Practitioners are also expected to familiarise themselves with any changes in the national resuscitation guidelines.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

Advanced Trauma Life Support (ATLS)

The two-day ATLS course aims to teach a simple systematic approach to the management of trauma patients through interactive tutorials, skills teaching and simulated patient management scenarios. It teaches a safe, reliable method for immediate management of the injured trauma patient. It is recommended during the first or second year of specialist training and all candidates must be FP2 or above in surgery, orthopaedics, anaesthetics or emergency medicine. An ATLS certificate lasts for 4 years but practitioners are expected to update their knowledge during this period.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

Paediatric Life Support (PLS)

This one-day course has been developed to standardise much of the in-hospital training undertaken already by Resuscitation Practitioners. This course is suitable for medical or nursing staff who work within the field of paediatrics but do not require an APLS qualification. Its aim is to train healthcare personnel to develop skills in simple airway management of children and infants and to effectively manage a paediatric cardiac arrest and peri-arrest situations until the Paediatric Resuscitation Team arrives. Staff trained in PLS will then act effectively as a member of the arrest team. Successful completion of the course means that staff are certified for 4 years but all practitioners are responsible for ensuring their knowledge remains up to date during this period.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

Ill Medical Patients Acute Care and Treatment -IMPACT

Designed by the Federation of Royal Medical Colleges and the Royal College of Anaesthetists, this 2-day course introduces the principles and practice of acute general medical care and focuses on the recognition of the sick patient and prevention of cardiac arrest. This course enhances the skills needed for dealing with life-threatening medical emergencies. Currently, there is no need to update this certificate, but practitioners must ensure their medical practice and knowledge remains up to date.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

Newborn Life Support

The aim of this 1-day course is to give those responsible for initiating resuscitation at birth the background knowledge and skills to approach the management of a newborn infant during the first 10-20 minutes in a competent manner. The course concentrates on the importance of temperature control, practical airway management and ventilatory support. It is provided for nursing, midwifery staff and doctors working in a neonatal environment. Successful course completion means staff are certified for 4 years, but all practitioners are responsible for ensuring their knowledge stays up to date during this period.

Each candidate must book the course via their Line Manager, through the online booking system which is accessible on the Resuscitation Service Intranet Page. Approval from the Candidate's Line Manager, through the online booking system, must be sanctioned before the candidate is officially booked onto the course. Please see Appendix for reference guide on staff training.

Individuals are reminded that it is their responsibility to act within the guidelines they have been given by the Resuscitation Service as well as within their scope of practice.

17.0 TRAINING PROGRAMME FOR COMMUNITY HOSPITALS

To provide training for the community hospital staff, the Resuscitation Service undertakes annual visits to all the Community Hospitals within Cardiff & Vale UHB. This one-day visit will incorporate:

- BLS competency assessor training
- AED training
- AED competency assessor training
- Cardiac arrest trolley audit
- Troubleshooting any staff concerns relating to resuscitation

18.0 ACCESS TO TRAINING

The Resuscitation Service will give fair and equal access to all members of the UHB. Staff requesting training will be assessed individually according to the following risk categories.

18.1 High Risk

- Resuscitation team leaders
- Members of the Resuscitation team
- Clinical doctors working in the acute setting
- Critical care and emergency department nurses

18.2 Medium Risk

- Ward nurses
- Theatre Staff
- Ward nurses working in Community Hospitals
- Hospital based Mental Health Nurses
- Midwives
- Radiographers
- Dental staff
- Cardiac technicians
- Operating Department Practitioners
- Clinical Doctors working in the non-acute areas

18.3 Low Risk

Physiotherapists, Occupational Therapists, Outpatients staff.
Health care support workers
Community based mental health nurses
Community nursing and health visitors
Porters and ancillary staff with patient contact
Staff with no patient contact (Admin & clerical, works & estates, catering and general management etc.).

19.0 LEVELS OF TRAINING BY RISK CATEGORY

19.1 High Risk Staff

All members of the Resuscitation team will have a suitable and recognised in-date advanced resuscitation certificate e.g., ALS, APLS.

It is recommended that clinical doctors, particularly those in acute areas, also obtain ALS certification. All Resuscitation Team Leaders must have an in-date ALS certificate.

Senior nurses working within EU and Critical Care may wish to obtain ALS certification. However, all nurses working in these areas should keep an in-date ILS certificate.

ILS or BLS and AED may also be accessed by Cardiac Technicians and General Dental Practitioners.

Where resources permit, an ALS course would be relevant to all staff in the *high-risk* category.

Please see below for the Resuscitation Training Algorithm for medical and nursing staff working in the high-risk area to help guide the suitability of courses.

Course Recommendations for Doctors working in all Specialties at all Grades

Course	Acute Medicine and Special-ities	Emergency Medicine	Surgery	Anaes-thetics	T&O	Cardiology	Paediatrics	GP
BLS annually								
AED if applicable annually								
ILS Yearly Recert-ification								
ALS 4 Yearly Recert-ification			Not Essential		Not Essential			
PLS 4 yearly Recert-ification		Dependent on Grade					Dependent on Grade	
APLS 4 Yearly Recert-ification		Dependent on Grade		Dependent on Area of Practice			Dependent on Grade	
ALERT No Recert-ification Required								
IMPACT No Recert-ification Required								

ATLS 4 Yearly Recert-ification								

This table is intended as a guide only

19.2 Medium Risk Staff

All staff within this group must maintain an annual BLS certificate accessed either by their cascade trainers/competence assessors or via the Resuscitation Service. Staff within this category who have access to an AED should also receive annual certification; not all ward members need an AED certificate, but it is recommended that 2 members of staff per shift have an in-date AED certificate. An AED ILS and an ALERT course can also be accessed by these staff members.

Please see below the Resuscitation Training Algorithm for medical and nursing staff working in the medium risk area to help guide the suitability of courses.

Course Recommendations for Nursing Staff within the UHB

COURSE	Site Managers/ Nurse Practitioner	Ward Nurses Working in High-Risk Areas	Ward Nurses working in Medium Risk Areas	Ward Nurses working in Low-Risk Areas	Paed-iatric Nurses	Midwives	Hospital Based Mental Health Nurses	Comm-unity Nursing
BLS Yearly Update								
BLS Cascade Yearly Update								
AED Yearly Update								
ILS Yearly Update							Dependent on role	
PLS								

4 Yearly Update								
ALS 4 Yearly Update	(or ILS dependent on experience/ role)	Dependent on role/band						
APLS 4 Yearly Update	(Paeds Pracs)				Dependent on role/band			
ALERT No Recertification Required								

This table is intended as a guide only

Course Recommendations for Health Care Personnel Working within the UHB

COURSE	PAMS	Dental Nurses	Psychiatric Nurses	Health Care Support Workers	Non-Clinical Staff
BLS Yearly Update					
BLS Cascade Yearly Update					
AED Yearly Update				Managers Discretion	If there is an AED in the vicinity
ILS Yearly Update					
PLS 4 Yearly Update					
ALS 4 Yearly Update					
APLS 4 Yearly Update					

ALERT No Recertification Required					
BEACH No Recertification Required					

This table is intended as a guide only

19.3 Low Risk Staff

All staff within this group will attend a BLS update annually. Those staff working in areas with an AED should also receive annual instruction in its use. As a minimum, where there is an AED, it is recommended that at least one member per shift should have an in-date AED certificate.

Please see Appendix 4 for the Resuscitation Training Algorithm for staff working in the low-risk area to help guide the suitability of courses.

20.0 ADVERTISING COURSES

Courses run by the Resuscitation Services department will be advertised within the UHB training Prospectus and on the Resuscitation Service's intranet site. Booking of courses will be through the Resuscitation Service's Online Booking System on Cardiff and Vale UHB intranet site. Where training is targeted at special groups, there may be local advertising e.g., posters or mail shots.

21.0 TRAINING EQUIPMENT

The Resuscitation Service will be adequately equipped to carry out whatever training they are expected to deliver. That service will be responsible for delivering, maintaining, and securely storing this equipment accordingly. Within the acute hospitals, where equipment is stored, departments may borrow BLS equipment when it is not in use. Named individuals from within the clinical department borrowing equipment will be responsible for its collection, safekeeping and return to the Resuscitation Service.

22.0 TRAINING FACILITIES

The Resuscitation Service will endeavour to deliver training in the most effective and efficient way. Where possible, this training will be delivered at a time and place that is sensitive to clinical demands. However, where specialist training or some large group training is required, sessions will be delivered from a central location in either UHW's or UHL's Resuscitation Training room.

23.0 TRAINING ATTENDANCE

Adequate notice of planned training will be given to ensure the least possible inconvenience to clinical priorities. Wherever possible the Resuscitation Service will organise training sessions at times and dates that are conducive to clinical demands.
Staff who cannot attend planned training sessions for any reason should update the Online Booking System. The Resuscitation Services will inform the line manager of any staff member who does not attend planned training without giving prior notice. For courses where there is a fee associated, re-imbursement of these fees will depend on notice given of cancellation. The cancellation fees are documented on the application form to ensure all applicants are aware of this before applying for the course.

Resuscitation Training

Training shall be provided by an approved trainer with the Resuscitation Service.
Training must be provided in a suitable environment. Training shall be delivered in theoretical and practical sessions following the most recent updates from the Resuscitation Council UK and in line with the Resuscitation Service governance.
Resuscitation training equipment shall be maintained and replaced under the supervision and guidance of the Resuscitation Service. Training equipment should reflect equipment currently used within the Health Board
Training Records
ECOD are responsible for updating individual staff records of attendance at resuscitation training on ESR.
Individual staff members must inform the Resuscitation Service of all certified resuscitation training that has been successfully completed so the service can update locally held databases and forward to ECOD for uploading and recording training on ESR.

24.0 FAMILY WITNESSED RESUSCITATION

24.1.Introduction

Family Witnessed Resuscitation (FWR) allows relatives to remain present whilst their loved one is resuscitated. FWR is not a new concept, however it remains to be a controversial subject. This could be due to the divide amongst health care

professionals in their views regarding FWR. It is important that health care professionals understand the rationale for FWR and be able to manage these situations sensitively and effectively.

25.1 Purpose of Procedure

This guidance had been produced to support Health Care Workers (HCW) with Family Witnessed Resuscitation in their practice. The public are becoming increasingly aware and more knowledgeable about health care and the options that are available to them and in turn more relatives may ask to remain present during the resuscitation of a loved one. Input from media resources such as TV hospital dramas and factual television documentaries have exposed the public to the process of resuscitation which may also have contributed to this expectation.

25.2 Aims of Procedure

The aims are as follows

- To ensure that patients and relatives are treated with dignity and respect.
- To ensure their human rights are respected.
- To promote current practice based on, RCN, RCUK, ERC guidelines.
- To promote holistic care.
- To implement a consistent approach for relatives witnessing resuscitation.
- To provide guidance to all health care professionals at Cardiff and Vale UHB who may be involved in the resuscitation of patients with relatives requesting to remain present.

26.0 DEFINITIONS

26.1 FWR

Family Witnessed Resuscitation allows relatives to be present whilst their family member is being resuscitated (RCN 2002).

26.2 Resuscitation

Resuscitation is also used to cover a wide range of events in the acute area including fluid replacement, trauma, respiratory or cardiac problems (RCN 2002).

26.3 Family

The term family applies to the patient's next of kin (partner or parent) or a member of the immediate family. The presence of children during the resuscitation is usually inappropriate. Except in exceptional circumstances the number of relatives should not exceed two.

26.4 CPR

Cardiopulmonary resuscitation may include chest compressions, defibrillation, and artificial respiration to restart the heart.

26.5 DNACPR

Do Not Attempt Cardiopulmonary Resuscitation orders apply only to cardiopulmonary resuscitation. It should be made clear to the patient; people close to the patient and to the health care team that it does not imply "non treatment" and that all other treatment and care appropriate for the patient will be considered and offered. The All-Wales DNACPR policy (2015) should be adhered to. All DNACPR decisions should be documented on the All-Wales DNACPR form and placed in the front of the patient's notes.

26.6 PRUDIC

All Wales multi-agency **'Procedural Response to Unexpected Deaths in Childhood' (2010)**. The aim of PRUDiC is to ensure uniformity across Wales in the multi-agency response to unexpected child deaths in Wales. The PRUDiC procedure introduced a framework for all unexpected deaths of children from birth to 18 years.

27.0 THE BACKGROUND TO FAMILIES WITNESSING RESUSCITATION

The concept of FWR was initially developed in 1982 in Foote Hospital in Jackson, Michigan, USA. Traditionally family members were excluded from being present during resuscitation, due to the belief that resuscitation was too traumatic for family members to witness and that it would affect staff performance. Two separate incidents occurred where relatives demanded to remain present during the resuscitation. Following this Foote Hospital examined their policy and conducted a nine-year retrospective study where relatives were given the choice to remain present. The results highlighted FWR as a positive experience from the perspective of staff and relatives who were involved in the study. This led to the development of a formal FWR

policy. Following this initiative there have been further studies that have analysed FWR and its effects on family, staff, and the patient. All the studies highlighted one of the benefits as preserving the wholeness, dignity, and integrity of the family from birth to death.

In the United Kingdom, the Emergency Nurse Association became the first professional body to support FWR by making an official statement recommending the development of multidisciplinary guidelines for FWR. Many governing bodies responsible for providing resuscitation training and education support the importance of allowing relatives to witness with support resuscitation (RC UK1996, ALSG 2001).

28.0 RESPONSIBILITIES AND IMPLICATIONS ON CLINICAL PRACTICE

28.1 Rationale for allowing relatives to witness a resuscitation attempt

- Before attending the hospital, it is common for relatives to be present when their loved one has become unwell and in some circumstances, they may have initiated CPR. Therefore, not allowing the relative to remain present once in the hospital environment can be deemed as an unsupportive action from a health care professional.

- Allowing family presence can bring reality to the situation which in turn can prevent a prolonged period of denial during the grieving process.

- Can aid the grieving process as they are able to say goodbye and hold their loved one whilst they are still warm.

- Can allow the relative to say anything they need to this can prevent the feeling of guilt during the grieving process.

- The relative can also see that everything possible has been done to save their loved one.

- Can let relatives see the reality of resuscitation which can be less horrifying than they may imagine.

28.2 Ground Rules for FWR

- Relatives must be asked if they want to remain present and their wishes must be respected. Clear documentation of verbal consent should be written in the medical notes.

- There must be a suitable member of staff available to take responsibility for the care of the relatives. If no staff member is available, the relative should not be

allowed to still be present. The family members must never be left alone during the resuscitation.

- If FWR is not offered, the reasons are documented.

- If the relative is present during the resuscitation, this should also be clearly documented in the medical notes.

- If the relative does not speak English, an interpreter should be sought as soon as possible to help the health professional provide adequate support. However, this may take some time but must not interfere with the patient's care or delay treatment or resuscitation.

- If CPR is successful and the patients survive. The patient must be informed that their relative was present during the resuscitation.

- There is no reason to believe that the patient has already refused permission for relatives to be present if they need CPR or that if competent, they would refuse.

- The resuscitation team leader has overall responsibility to decide the best time for the relatives to enter and that they may be asked to leave depending on the patient's condition and procedures being undertaken (see 11.3).

28.3 When Relatives may be asked or not enter the Resuscitation Room

- If family members are unable to remain calm and disrupt the team's efforts, they may be asked to leave the resuscitation room. However, different cultures may have different emotional responses, which must be considered when assessing relative emotional responses.

- If relatives are extremely intoxicated and behaving inappropriately, they can be asked to leave the resuscitation room. However, if intoxicated relatives are behaving appropriately, they should be allowed into the resuscitation room.

- If there is no available health care worker to support the relative during and after the resuscitation.

- If the patient has injuries that could be deemed as too traumatic for relatives to witness, which could have a negative psychological impact on the relative.

- Family members try to become physically involved in the resuscitation of their loved ones.

28.4 Decision to Stop Resuscitation in the Presence of Relatives

- This decision should be made quietly in consultation with the rest of the resuscitation team and if possible, the relatives should be informed of the decision.

- If the patient survives initial resuscitation but a subsequent DNACPR order is made, the relatives should be informed of this decision. Even though relative's views have no legal status in terms of actual decision making, health professionals should respect the relative's family life, and the delivery of information is an important part of human rights considerations.

- Gradually staff should leave the area one by one, those who have no active involvement leaving first. The team leader and support nurse stay to support the relatives.

- Removal of equipment from the patient depends on local UHB policy and if the patient is a child the PRUDiC procedure needs to be followed.

- When relatives are ready the nurse should escort them out of the area and follow the UHB bereavement guidelines.

29.0 SUPPORTING THE RELATIVES

29.1 Preparation of the Relatives before entering the Resuscitation Area

- Prior discussion with the allocated nurse regarding what they may see and hear must take place outside the resuscitation area.
- It is important that relatives are informed about the patient's appearance, smells they may be exposed to, treatments being performed, and equipment being used on their loved one.
- Relatives must be informed when they can touch and hold their loved one.

29.2 Rules Relatives must be made aware of prior to entering the area

- At no time they will be left alone during or after the resuscitation
- At times, they may be asked to leave the resuscitation room, depending on the activities being undertaken.
- The number of relatives allowed will depend on the space available in the resuscitation area.
- Relatives may leave the resuscitation area at any time.

29.3 Designated Family Support Person (FSP)

- Must remain in contact with the relatives and not get involved with the patient's treatment.
- The FSP must talk to the relatives clearly, without euphemisms.
- The FSP must understand the resuscitation workings so they can pre-empt the team's actions to provide the relative with information.
- They should act on behalf of the family.
- The FSP should communicate with the team leader on the patient's prognosis.
- The FSP should remain with the family during and after the resuscitation.

30.0 POST RESUSCITATION CARE

- If the family were not present during the resuscitation, before entering it, they must inform them about how their relative will look and feel and if there is any remaining equipment in situ.
- Deaths relating to children, relatives need to be informed about the need for a multidisciplinary investigation (PRUDiC procedure).
- Professionals need to consider any religious and cultural beliefs which may impact post-resuscitation care.
- Information leaflets on bereavement should be given and available for relatives.
- Information on the role of the coroner may be required.
- Information will need to be provided about when and how they will be made aware of the postmortem results.
- Advice on how to go about making funeral arrangements may be required.
- Contact details and telephone numbers may be required by the relative to contact regarding any questions they may have.
- All professionals involved with post-resuscitation care will need to be aware of the law's requirements but sensitive to the family's distress.
- Health care workers must be aware of suspicious circumstances that the relative, parent or carer may be arrested to secure and preserve evidence for an effective investigation.

31.0 DEFIBRILLATION - GUIDELINES FOR HEALTHCARE PROFESSIONALS

31.1 Introduction

Health care institutions are obliged to provide an effective Resuscitation Service to ensure their staff receive training and regular updates for maintaining competence appropriate to everyone's employed role. These Defibrillation guidelines support the recommendations published – Quality Standards for Cardiopulmonary Resuscitation Practice and Training, 2020.

31.2 Guideline Statement

Cardiff and Vale UHB is committed to implementing resuscitation training standards and recommendations made by the Resuscitation Council (RC) UK, whose aim is to improve patients' outcome after cardiac arrest both in and out of hospital. To achieve this, the RC (UK) has set standards for resuscitation training in both basic and advanced life support. The content of these guidelines will reflect that guidance.

31.3 Aims Of The Defibrillation Guidelines

The aims of these guidelines are as follows: -

- To ensure patients receive safe, evidence based, effective defibrillation when appropriate.
- To give staff guidance on the resuscitation courses most appropriate to them depending on their clinical role/department, to achieve competence in performing defibrillation.
- To ensure relevant staff are updated and adequately supported to deal with resuscitation situations that require defibrillation.
- To promote practice based on RC (UK) guidelines.
- Ensure staff and patient safety during defibrillation.
- To satisfy legal and professional requirements.
- To minimise clinical risk and litigation.
- To follow UHB requirements for standardisation of guidelines.
- To maximise access to and uptake of training.

31.4 Implementation

All newly employed health-care professionals will be made aware during induction of the UHBs Defibrillation Guidelines and their responsibilities under it.

Existing staff will be made aware of these guidelines through training and dissemination of this information to all Directorates and Managers following the management of policies and procedures for Cardiff and Vale UHB.

31.5 Resources

There are no costs in disseminating this information. The guidelines will be distributed electronically and as part of the in-house training programme and on Doctor's induction days. Courses are also advertised on the Resuscitation Service intranet page.

31.6 Audit

The compliance of these guidelines will be audited using databases currently held within the Resuscitation Service and attendance sheets (this cannot be attached with the document as it is an existing operational database).

32 RESPONSIBILITIES

32.1 Cardiff and Vale University Health Board

The Board carries overall responsibility for the UHB. It has delegated powers from the Welsh Government in respect of ownership and management of hospitals and other health facilities. The Board is responsible for the performance of the UHB.

32.2 RADAR Committee

The UHB's RADAR Committee, led by its chairperson, meets quarterly. Group members should be conversant with current issues in relation to resuscitation practice. The RADAR Committee will be responsible for implementing operational policies and guidelines governing cardiopulmonary resuscitation, practice, and training. It will determine the level of resuscitation training required by individual staff members (see the Resuscitation Service's Resuscitation Training Guidelines).

32.3 Resuscitation Service

Cardiff and Vale UHB have an established Resuscitation Service supported by the RADAR Committee in its Clinical Lead. It is responsible for implementing decisions made by the Resuscitation Committee, thereby promoting good practice through training and audit. The Service is led by a Senior Nurse for Resuscitation.

The Resuscitation Service is responsible for the assessment of those it teaches, ensuring they meet the standards required by the RC (UK) at the time of their training. The Senior Nurse for the Resuscitation Service is

responsible for managing, maintaining, and strategically developing the service, within available resources, to meet the needs of the UHB.

The Resuscitation Service will provide advice to the UHB on all aspects of cardiopulmonary resuscitation, including the appropriateness of training programmes for UHB staff based upon risk analysis.

32.4 Directorate and Line Managers

While the UHB has a responsibility for the provision of training through its Resuscitation Service, those who manage staff, particularly clinical staff, have a responsibility to monitor uptake and to ensure staff receive adequate time to deliver and attend training.

32.5 Individual Staff Members

Everyone has a responsibility to attend training sessions, as well as for their own actions in respect of their limitations and scope of professional practice. Individual staff members with a professional and contractual requirement to teach their colleagues must agree according to the guidance provided by the Resuscitation Service and attend regular updates as required.

33.0 TRAINING

The Resuscitation Service adheres to an Annual Training Schedule (Appendix 1) which illustrates a cyclic model for the delivery of training on an annual and systematic basis. Depending on circumstances, the timescales and workload may be altered according to service needs or resource provision. However, no substantive changes will occur without prior consultation with the UHBs Resuscitation Committee. Further information about resuscitation training and candidate suitability is available in the UHBs *Guideline for Resuscitation Training for Healthcare Professionals.*

Once training in the use of the defibrillator has been received (AED or Manual), individuals are reminded that it is their responsibility to act within the current resuscitation guidelines, as well as within their scope of professional practice.

The Resuscitation Service will give fair and equal access to training to all members of the UHB. Staff requesting training will be assessed individually according to their clinical area. (Please refer to the UHBs Resuscitation Training Guidelines).

Courses that involve defibrillation offered by Cardiff and Vale Resuscitation Service include:

- Automated External Defibrillator (AED) Training
- AED Cascade Training
- Immediate Life Support (ILS)
- Advanced Life Support (ALS)

- Advanced Paediatric Life Support (APLS)
- Ward-based mock arrest scenarios

The Resuscitation Service for Cardiff & Vale UHB advocates that defibrillators must only be used by people specifically trained in their use and who have an in-date certificate.

Familiarisation training for staff provided by the Resuscitation Practitioners on the implementation of a new defibrillator into an area **does not** authorise an individual to defibrillate.

Within Cardiff and Vale UHB, the following defibrillators are in use: -
ZOLL – most defibrillators in the Health Board have now been replaced by ZOLL defibrillators

There are still some of the following defibrillators in situ until the defibrillator replacement programme has been completed.
Philips MRX Defibrillator
Philips XL Defibrillator Philips XL+ Defibrillator Heartstart FR2 Defibrillator

Phillips HS1/FRX FR3

Manual
Only Healthcare Professionals who have a valid UK Resuscitation Council Advanced Life Support (ALS) course, Immediate Life Support (ILS) course which has included Manual Defibrillation or Advanced Life Support Group (ALSG) Advanced Paediatric Life Support (APLS) course are allowed to manually defibrillate. The procedure for manual defibrillation can be found in Appendix 2.

AED
All defibrillators in the UHB can be used in an AED mode. Staff attending defibrillator familiarisation will be shown the functions and operations of the specific defibrillator within their clinical environment.

If staff wish to use an Automated External Defibrillator, they must have attended the ILS course or AED training sessions provided by the Resuscitation Service and have an in-date certificate signed by a Resuscitation Practitioner or a Resuscitation Service certified AED cascade trainer.

34.0 DEFIBRILLATOR MAINTENANCE AND OPERATIONAL CHECKS (TESTING)

Each ward/department is responsible for ensuring their defibrillator is working. This includes ensuring that the defibrillator is clean, has two sets of sealed, in date defibrillator pads and ECG paper. All defibrillators are to be checked in accordance with the manufacturer's instructions.

Managers within each department will ensure that procedures are in place to ensure the testing and checking of their defibrillator. (Note – that the FR2 Defibrillator does an automatic self-check. Staff should ensure that a daily check of the battery state is made and the 'flashing egg-timer' is in the indicator box). The operational checks will include ancillary equipment such as monitoring leads. It is advisable that the ECG printout for each daily test is left attached to the defibrillator; once the next check is made, the earlier printout can be disposed of. Daily checks should be clearly documented and signed.

In case of any equipment failure or defibrillator malfunction, either during the testing procedure or use of the defibrillator on a patient, report the fault immediately to the clinical engineering department and a clinical incident form should be completed. An incident form should also be completed should a defibrillator test fail.

In the case of full datacards, the Resuscitation Service needs to be contacted for the data to be downloaded.

35.0 DOCUMENTATION AND AUDIT

The UHB will follow the recommendations of the Resuscitation Council (UK) and audit the use of the defibrillator to find that the target time of collapse to shock is being achieved. This information will be extracted from the resuscitation audit form completed after all 2222 calls.

32.0 ADULT INTRAOSSEOUS CANNULATION PROTOCOL USING THE EZ-IO DEVICE FOR EMERGENCY INTRAVSACULAR ACCESS

32.1 Introduction

This protocol describes a standardised approach to emergency intraosseous (IO) cannulation for in-patients across Cardiff and Vale University Health Board. It will harmonise the education and clinical delivery of IO access. IO access has been included in Resuscitation Council (UK) 2021 adult Advanced Life Support (ALS) guidelines for cases in which intravenous access is difficult or unavailable.

Intraosseous cannulation is inserting a needle into a bone to allow intravenous (medication) therapy in emergencies. If intravenous access has failed, it is inadequate, unlikely to be achieved or would significantly delay the time of critical treatment. In the peri-arrest situation the intraosseous route should also be considered. The Resuscitation Council (UK) Guidelines 2021 recommend the intraosseous route if no other access has been established in the first two minutes of cardiac arrest.

This protocol was developed from procedure and protocol guidance provided by Teleflex, the manufacturers of EZ-IO, combined with input from the Resuscitation Service, Cardiff, and Vale University Health Board.

32.2 Purpose

- To ensure that the UHB maintains standards for insertion of EZ-IO access which includes maintenance and removal.

- To ensure that the Practitioner can competently undertake the insertion of EZIO to meet patient needs. The practitioner must relate theory to practice using knowledge and skill.

32.3 Scope

This protocol applies to all clinical staff who insert EZ-IO devices and/or who care for and maintain intraosseous cannulas for adult patients in Cardiff and Vale University Health Board. The procedure includes the responsibilities of staff involved in EZ-IO

insertion, on-going care and maintenance of intraosseous cannulas and the standards that should be adopted for each step in the process.

32.4 Definitions

Intravenous (IV) – situated within, occurring within, or administered by entering a vein.

Intraosseous (IO) – situated within, occurring within, or administered by entering a bone.

A Practitioner – One who is legally accountable or responsible for their practice. E.g., Healthcare professionals including Doctors, Nurses, Operating Department Practitioners, Radiographers, Midwives.

33 ROLES AND RESPONSIBILITIES

33.1 The Chief Executive

The Chief Executive, with support from the **Resuscitation Service** will ensure that this intraosseous protocol is in place, that staff are aware of its existence, and is accessible to those who need it, and that this protocol is subject to appropriate audit and monitoring arrangements.

33.2 RADAR Committee

RADAR maintains the overall responsibility for governance concerning the EZ-IO device.

33.3 The Clinical Board Management Teams

The Clinical Board Management Teams will ensure that the Clinical Board, for which they are responsible, complies with this protocol.

33.4 Managers

Managers will:

- Ensure that all staff who insert EZ-IO needles receive training and complete competence assessment in intraosseous cannulation (insertion).

- Maintain a record of all staff who have received training.

- Ensure that any staff who administer intraosseous therapy have adequate cover for hepatitis B. If staff do not have cover, they must be referred to Occupational Health.

- Ensure that the required notices that comply with UHB Sharps Injury Procedure are displayed in their areas to inform employees on procedures to be followed accidental/incident involving exposure to body fluids.

33.5 Individual staff who undertake intraosseous insertion, use intraosseous cannula, or remove intraosseous cannula

Individual staff who undertake intraosseous insertion, use intraosseous cannula, or remove intraosseous cannula must:

- Understand the uhb protocol on ez-io insertion. All staff are responsible for ensuring that the principles outlined in this document are universally applied.

- Receive training before practicing and attend refresher training as needed.

- Take responsibility for arranging further practice to maintain and increase competency within the workplace.

- Practice in accordance with their own professional duties.

- Practice universal precautions.

- Practice an aseptic non-touch technique.

- Follow the uhb sharps injury procedure.

- Delegate to a more experienced practitioner if they are not competent to insert, use or remove intraosseous cannula.

34.0 IO PROTOCOL

34.1 Principles for practice

Medications or Fluids via the Intraosseous route should only be administered by Healthcare Professional who have successfully achieved competence in administration of Intravenous products.

34.2 Knowledge and Understanding of IO

All staff that undertake intraosseous cannulation must:

• Have knowledge of local policies and procedures, specifically; Universal Precautions, Health and Safety issues and Infection Control issues.

• Understand their legal and professional responsibilities.

• Have knowledge of the anatomy and physiology of the various intraosseous cannulation sites.

• If unsure of their competency in the procedure, hand over the responsibility to a more expert practitioner. The Practitioner must ensure that the person delegated to perform the task is competent to do so.

• Only attempt intraosseous insertion twice and if unsuccessful ask for a more experienced practitioner to make further attempts.
.

34.3 Indications

6.2.1 EZ-IO devices should be considered where there is no or inadequate IV access and an immediate need for fluids and/or medication to treat or prevent cardiac arrest, peri-arrest, or emergency situations.

6.2.2 Other situations where there is no or inadequate IV access and IV access is difficult or has failed and there is an immediate or urgent need for fluids and/or medication.

34.4 Contra indications

6.3.1 The following are contra indications:

• If a patient with capacity refuses consent.
• If the practitioner is put at risk (e.g., lack of patient compliance).
• Existing proximal fracture of the tibia, femur, or humeral head.
• Previous orthopaedic surgery near the insertion site (caution titanium pates)
• Previous IO insertion or failed access within 48 hours in the target bone.
• Local Infection at the insertion site.
• Inability to identify or locate taught anatomical landmarks on the patient.

34.5 Complications

The following are potential complications, and the patient should be observed for:

• Extravasation
• Compartment syndrome
• Fracture of the target bone
• Infection
• Pain on insertion
• Skin necrosis
• Embolism

34.6 Equipment Required

An EZ-IO power driver and suitably sized EZ-IO needle based on patient size and weight. NB the weight range on EZ-IO needle sets is a guide only and not an absolute indication that the needle is appropriate for a particular weight. The most important check of correct needle length is that once the needle is inserted through skin, soft tissue and makes contact with the target bone, there must be at least one black mark on the needle still visible.

Needles are:

• Pink, 15mm, 3-39kg (typically used in infants and very small children)
• Blue, 25mm, 3kg or over (typically used in children and adults)
• Yellow, 45mm, 40kg or over (main needle of choice in all adults and for humeral insertion)

The recommendations for EZ IO are the use of 45mm needle for proximal humerus insertions.

5 mm mark or “black line”

15 mm/15g

25 mm/15g 45 mm/1

Equipment needed:

- EZ-Connect (extension set with needle free connector)
- Pre-filled syringe 0.9% saline flush
- Two empty 10ml syringe (if trying sample collection)
- Consider preservative free 2% Lidocaine for patients responding to pain
- Non-sterile non-latex gloves
- 2% chlorhexidine in 70% Isoprolol wipe. E.g., Clinelle skin wipe
- EZ IO stabiliser dressing
- Cannulation tray
- Sharps bin or the “needle vice” from the EZ-IO needle set packet

34.7 EZ-IO Procedure (Preparation)

- Wear personal protective equipment
- Obtain suitable help as needed
- Make a positive identification of the patient and check name, address, date of birth and identification number.
- Ascertain the need for IO insertion and if possible, obtain consent as per the UHB consent policy
- Choose sterile needle set and assemble equipment including a suitable receptacle for sharps
- Draw up 10mls normal saline 0.9% solution into a syringe
- Connect the syringe to the EZ-Connect lumen and prime with normal saline solution (NACL 0.9%) - leave syringe attached to EZ-Connect.
- If Patient is responsive, prime the EZ-Connect lumen with 2mls of 2% lidocaine.

EZ-IO Procedure (Assessment)

- Locate target site on selected limb and assess viability for needle insertion
- **EZ-IO 25mm needle:** (for 3kg and over)
  - **Proximal Tibia** – Insertion site is approximately 3 cm below the patella and approximately 2 cm (depending on patient anatomy) medial to the tibial tuberosity
  - **Distal Tibia - Insertion site is about 3 cm proximal to the most prominent aspect of the medial malleolus.** Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat centre aspect of the bone
  - **Proximal Humerus** – Insertion site is found directly on the most prominent aspect of the greater tubercle. Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted (close to the body). Alternatively, if the patient is in cardiac arrest and chest compressions are ongoing to place patient's hand, palm facing down under the buttocks. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site.
  - **Note that EZ-IO 45mm needle (yellow)** is recommended for the proximal humerus in patients with excessive tissue over the insertion site or when a black line is not visible after penetration into the tissue
- **EZ-IO 15mm needle (pink):** (commonly for 3-39 kg, consider tissue density over the landmark desired)
  - **Proximal Tibia: The insertion site is about 2cm medial to the tibial tuberosity along the flat aspect of the tibia.** Carefully feel for the "give" or "pop" showing penetration into the medullary space.
  - **Distal Tibia -** Place one finger directly over the medial malleolus; move approximately 2 cm (depending on patient anatomy) proximal and palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat centre aspect of the bone

  - **Proximal Humerus: The insertion is directly on the most prominent aspect of the greater tubercle.** Ensure that the patient's hand is resting on the abdomen and

that the elbow is adducted and positioned at the level of the spine or rotate the patient's hand, so the thumb is facing posteriorly and placed underneath the buttocks. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site. *The proximal humerus may be difficult or impossible to palpate in children less than 5 years of age as the greater tubercle has not yet developed. In these cases, the insertion will be a shaft insertion*

EZ-IO Procedure (Insertion)

- Prepare equipment needed
- Cleanse site using cleaning agent currently being used for IV cannulation
- Stabilise the limb of the selected target site
- Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface. Gently pierce the skin with the Needle Set until the needle set tip touches the bone
- Insert EZ-IO needle into the selected site. IMPORTANT: Keep hand and fingers away from Needle set
- Check to ensure that at least one black line is visible, and the needle is touching the bone. If no black line is visible, the patient may have excessive soft tissue over selected insertion site and needle set may not reach the medullary space. Consider an alternative site for insertion or a longer needle
- Penetrate the bone cortex by squeezing driver's trigger and applying gentle, consistent, steady, downward pressure (allow the driver to do the work). Use caution, and do not apply excessive pressure, as this may cause the driver to slow and/or stop
- Release the driver's trigger and stop the insertion process when:

1. On adult patients you will stop by releasing the trigger when the hub is almost flush with the skin or when you feel a decrease in resistance.
2. On paediatric patients when you feel a decrease in resistance, indicating the needle has entered the medullary space - release the trigger

- Remove EZ-IO Power Driver from Needle Set while stabilizing the catheter hub
- Remove stylet from catheter by turning counterclockwise and immediately dispose of stylet in a sharp's container
- Attach EZIO dressing supplied in packaging
- Connect primed EZ-Connect to exposed Luer-lock hub on EZ-IO needle
- Confirm placement by aspirating bone marrow into EZ-Connect
- Syringe bolus: flush the catheter with remaining NACL 0.9%
- Assess for post-insertion complications
- Disconnect 10 ml syringe from EZ-Connect extension set and provide therapy
- Attach pink band after completing the date, time, and signature of insertion onto the limb of which the IO has been inserted

- Any failed attempts at EZIO insertion will also require a pink ID band being placed on patient, stating date, time, and signature of failed attempt on the limb the IO was attempted on.

EZIO Pain Management

When inserting EZIO needle into a conscious patient pain management, ensure the patient experiences as little pain as possible during the procedure.
Adult

- Observe recommended cautions/contraindications to using 2% preservative and adrenaline free lidocaine (IV lidocaine)
- Confirm lidocaine dose as per UHB medicines administration policy
- Prime extension set with lidocaine. Note that the priming volume of the EZ-connect is approximately 1.0ml
- Slowly infuse lidocaine 40mg IO over 120 seconds
- Allow lidocaine to dwell in IO space for 60 seconds
- Flush with 5 to 10mls of Normal Saline 0.9%
- Slowly administer an additional 20mg of lidocaine IO over 60 seconds
- Assess pain if further pain relief requires administering a further 20mg of lidocaine over 60 seconds.
- Consider systemic pain control for patients not responding to lidocaine
- The use of any lidocaine or other medication is the responsibility of the treating physician and qualified prescriber working within their scope of practice within the UHB

Paediatric

- Observe recommended cautions/contraindications to using 2% preservative and adrenaline free lidocaine (IV lidocaine)
- Confirm lidocaine dose as per UHB medicines administration policy. Usually first dose is 0.5 mg/kg not to exceed 40mg
- Prime extension set with lidocaine. Note that the priming volume of the EZ-connect is approximately 1.0ml. For smaller doses of lidocaine, consider administering by carefully attaching syringe directly to catheter hub (prime extension set with Normal Saline 0.9%)
- Slowly infuse lidocaine over 120 seconds.
- Allow lidocaine to dwell in IO space for 60 seconds
- Flush with 2 to 5mls on Normal Saline 0.9%
- Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds.
- Repeat PRN
- Consider systemic pain control for patients not responding to lidocaine.
- The use of any lidocaine or other medication is the responsibility of the treating physician and qualified prescriber working within their scope of practice within the UHB

35.0 INTRAOSSEOUS CARE PATHWAY

IO Care Pathway timings updated as per Teleflex advice

Date of insertion: _ _ / _ _ / _ _ _ _

Time of insertion: Affix patient
Insertion site: sticker here

Inserted by (print):

Handover to Ward / Unit:24Hrs after insertion:48Hrs after insertion:

IO SecuredIO SecuredIO Secured
IO Flushing (8 hourly) IO Flushing (8 hourly) IO Flushing (8 hourly) Site looks healthy Site looks healthy Site looks healthy

Signature of Nurse:Signature of Nurse:Signature of Nurse:

Comments: Comments: Comments:

Removed TodayRemoved TodayRemoved Today
Date/time:Date/time:Date/time:

IO must be removed when IV access is obtained OR within 48 hours.

Flush with 10mls SalineTo Remove IO Needle **Avoid rocking!**

Alter pressure if patient experiences pain Only undertake this procedure once trained

Avoid rocking the needle

Assessment of Intraosseous Cannulation

Name	Grade or band	Area of work (ward/department)

Date assessed: / /

Competent to practice: Yes / No

Comments (if not competent to practice you must explain why):

Signature of assessor:

Name and grade of assessor:

Please return completed assessment form to:
Resuscitation Service, Upper ground Floor,
Jubilee Courtyard, UHW

36.0 EZ-IO PROCEDURE (AFTERCARE)

- Begin infusion utilising a pressure delivery system as needed

- Continue to watch for extremity for complications on a regular basis, especially pre and post infusion

- Apply pink EZ-IO wristband on the limb the IO has been inserted

- Document time, date, rationale, and any supporting information for EZ-IO insertion in medical notes

- Ensure multi-disciplinary staff are fully informed of the procedure

37.0 EZIO PROCEDURE (REMOVAL)

- Remove the extension set from the needle hub and dressing.
- Attach a 10 ml sterile syringe (with standard Luer-lock) to act as a handle and to cap the open IO port

- Grasp syringe and continuously rotate clockwise while gently pulling the needle out (maintain a 90-degree angle to the bone). DO NOT ROCK OR BEND DURING REMOVAL

- Dispose of IO needle into a receptacle for sharps

- Apply pressure to site as needed; apply adhesive dressing as indicated

- The needle should not remain in place for more than 48 hours, but not more than 12 for patients under 12

- Document time and date of removal in medical and nursing notes

- Pink EZIO band must remain on patient for 48hours post-removal to avoid another IO needle being inserted in the same site

38.0 EZIO MRI CONDITIONAL COMPATIBILITY

Non-clinical testing has shown Arrow™ EZ-IO™ Needles are MRI Conditional. A patient with this device inserted for intraosseous (IO) vascular access can be safely scanned in an MR system that meets the following conditions:

- Static magnetic field of 1.5-Tesla (1.5 T) or 3-Tesla (3 T)
- Maximum spatial field gradient of 4,000 G/cm (40 T/m)
- Maximum MR system reported, whole body averaged specific absorption rate (SAR) of 2.0 W/kg (Normal Operating Mode)

RF Heating

Under the scan conditions defined above, EZ-IO™ Needles are expected to produce a maximum temperature rise less than or equal to 5.1 ˚C after 15 minutes of continuous scanning.

MR Artifact

In non-clinical testing, the image artifact caused by EZ-IO™ Needles extends approximately 6.3 cm from the device when imaged with a spin-echo or gradient-echo pulse sequence in a 3 T MRI system.

A patient can be exposed in the MRI environment for no longer than 15-minute increments with a 9-minute cool down period between scans.

39.0 TRAINING IMPLICATIONS

- Intraosseous cannulation, use and removal require training prior to practice.

- Teleflex in conjunction with the Resuscitation Service will provide training on the insertion, use and removal of intraosseous cannula.

- Training will be targeted at registered healthcare staff that may need to use intraosseous cannulas in their clinical duties.

- Non-medical staff that have been trained in intraosseous insertion outside of UHB should be assessed locally either by an appropriately experienced

practitioner or by the Resuscitation Service (see appendix 4 for assessment form) and this will be recorded.

- Refresher training is not mandatory, but practitioners must be satisfied that they are meeting their professional requirements and seek training if there is any doubt about their competency. The Resuscitation Service recommends annual refresher training.

- Use of intraosseous cannula is like use of an intravenous cannula and staff that use intraosseous cannula must also undertake an intravenous course.

40.0 KEY POINTS FOR STAFF

- When the trigger is pressed, the LED will show either:
  SOLID GREEN = IO injector has sufficient battery power

  FLASHING RED = IO injector has less than 10% battery power REPLACE IO INJECTOR

- Whenever possible carry a backup device
- Life expectancy and approx. number of insertions will depend on multiple factors – actual usage, bone density, insertion time, storage conditions and frequency of driver testing

  Ensure resuscitation equipment checklist includes how to check the device and where to record that the indicator light shows the battery is working i.e., Green LED

41.0 MONITORING ARRANGEMENTS

Measurable Policy Objective	Monitoring / Audit Method	Frequency	Responsibility for performing monitoring	Where is monitoring reported and which groups / Groups will be responsible for progressing and reviewing action plans

Duration of insertion must be under 48 hours	IO Care Pathway inserted into patients notes	Each insertion		

42.0 TRAINING REQUIREMENTS FOR STAFF

The training requirements of all staff within the UHB are following the Resuscitation Service training guidelines.

43.0 BIBLIOGRAPHY AND REFERENCES

Standards for Clinical Practice and Training. *A Joint Statement from the Royal College of Anaesthetists, The Royal College of Physicians of London, Intensive Care Society and Resuscitation Council (UK) 2020.*

Davidoff J, Fowler R, Gordon D, et al. (2005) Clinical evaluation of a novel intraosseous device for adults: prospective, 250-patient, multi-centre trial. *JEMS*; 30(10): s20-
23.

DOH (2007), Saving Lives: High Impact Intervention 2 (NB whilst this document is aimed at IV access the principals apply to IO)

Fowler R, Gallagher JV, Isaacs SM, et al. (2007) The role of intraosseous vascular access in the out-of-hospital environment (resource document to NAEMSP position statement). *Prehospital Emergency Care*; 11(1):63-6.

Fowler RL, Pierce A, Nazeer S et al. 1,128 case series: Powered intraosseous insertion provides safe and effective vascular access for emergency patients. Manuscript in preparation for submission to *Annals of Emergency Medicine*

Frascone RJ, Jensen JP, Kaye K, Salzman JG. (2007) Consecutive field trials using two different intraosseous devices. *Prehospital Emergency Care*; 11:164-71.

Gillum L, Kovar J. (2005) Powered intraosseous access in the prehospital setting: MCHD EMS puts the EZ-IO to the test. *JEMS*; 30: s24-6.

Hixson R, Intraosseous Vascular Access and Lidocaine, http://www.pawz.net/index_htm_files/IO%20Lidocaine.pdf, May 2011

Miller L, Kramer GC, Bolleter S. (2005) Rescue access made easy. *JEMS*; 30(10): s8-18.

NMC 2015, The Code

NPSA guidelines 2007. Administration of injectable medicines.

Ong MEH, Chan YH, Oh JJ, Ngo AS-Y. (2009) An observational, prospective study comparing tibial and humeral intraosseous access using the EZ-IO. *American Journal of Emergency Medicine*; 27:8-15.

Paxton JH, Knuth TE, Klausner HA. *(*2008) Humeral head intraosseous insertion: The preferred emergency venous access. *Annals of Emergency Medicine*; 52(4): S58.

Philbeck TE, Miller LJ, Montez D. Pain Management during Intraosseous Infusion through the Proximal Humerus. Manuscript in preparation for submission to *Annals of Emergency Medicine*.

Resuscitation Guidelines 2021, Resuscitation Council (UK)

RCN 2010. Standards for Infusion Therapy (NB there is general guidance on IO that is particularly useful. However, this protocol (TCPnnn) takes precedence, and it should be noted that the RCN guidance on insertion sites DOES NOT APPLY TO EZ-IO).

Wayne MA. (2007) Intraosseous vascular access: devices, sites, and rationale for IO use.
JEMS; 32: s23-5.

Arrow® EZ-IO® Intraosseous Vascular Access System Procedure and Competency Validation Template EM_IOS_EZIO-Procedure-Competency-Template_MC-000270_rev2c.pdf (widen.net)

Advanced Life Support Course, Provider Manual, 8th Edition. UK Resuscitation Council. 2021

ERC Quality standards for cardiopulmonary resuscitation practice and training 2020

"Sharing and Involving" A Clinical Policy for Do Not Attempt Cardiopulmonary Resuscitation (DNACPR) for Adults in Wales, - iterative document updated as required. Last update Nov 2020

Resuscitation Council 2021 Resuscitation Guidelines. Resus.org.uk

A European survey of critical care nurse's attitudes and experiences of having family members present during cardiopulmonary resuscitation	Fulbrook P, Albarran J, Latour W International Journal of Nursing Studies 42 557-568	2005
All Wales Do Not Attempt Resuscitation DNACPR policy	NHS Wales	2015
Family presence at the bedside during invasive procedures and resuscitation	Emergency Nurses Association http:/www.ena.org/about/position/familypresence.asp	2001
Family presence during paediatric resuscitation: a focus on staff	McGahey P Critical Care Nurse 22(6)29-34	2002
Family presence in emergency department resuscitation: A proposed guideline for an Australian Hospital	Maurice H Australian Emergency Nursing Journal 5(3) 21-27	2001
Procedural Response to Unexpected Deaths in Childhood	Public Heath Wales	2010
Relatives in the resuscitation room: a review of benefits and risks (clinical)	Clift L Paediatric Nursing 18 (5) 14-18	2006
The New NHS: Modern, Dependable	Department of Health	1997
Witnessing Resuscitation: Guidance for Nursing Staff	Royal College of Nursing (RCN)	2002