Clinical Guideline

Management of out of hospital cardiac arrest

SETTING BRI Adult Emergency Department
FOR STAFF All ED medical and nursing staff; All Out of Hospital Cardiac Arrest (OHCA) team staff
PATIENTS Patients presenting after OHCA with a return of spontaneous circulation (ROSC) or where ongoing resuscitation efforts are expected to be appropriate

Pre-Alert:
Use OHCA handover protocol and crib sheet

Prepare Resus:

- Widened resus bay
- Oxylog 3000 ventilator with hosing attached (on/checked)
- Full oxygen cylinders on resus bed (turned on)
- Arterial lines, cannulas and dressings on side
- Hung on resus bed drip stand:
  - Arterial line transducer, run through
  - 1% Propofol infusion (50mls) in a pump
  - Consider Adrenaline infusion (4mg made up to 50mls with 0.9% saline) prepared and in a pump
- 12 lead ECG and Echo machine beside bay, switched on
- OHCA Integrated Care Pathway (ICP) paperwork

Prepare Team:

** Dial 2222 and request the "
Out of Hospital Cardiac Arrest team to ED Resus, ETA xx minutes" **
(Cardiology, ICU and Anaesthetic ST3 or above will attend)

- From ED, at least 1x ED ST3 or above, 1x resus nurse, plus 1x ED SHO or HCA
- For suggested team member roles, please see back of this protocol sheet
- Dispense name / role stickers

PATIENT ARRIVAL AND ASSESSMENT - Follow OHCA ICP "1st hr : Stabilisation"

MDT joint decision making based on history, arrest rhythm, examination, ECG, Echo and ABG

Patient requires urgent cardiac catheterisation

****ALERT Cath Lab staff early****
Potential 30 min delay OOH

Are any of the following present?
- STEMI on ECG
- Adrenaline dependent circulation from likely cardiogenic shock
- Persistent or recurrent VF / VT

Yes

Is there a significant external head injury?

Yes

No

Do ***NOT*** go to CT – proceed straight to cath lab
(CT to occur post cath lab)

No

CT Imaging
Head
(Neck / CTPA / Aortogram based on Hx)

Cardiac Catheterisation
+/- PCI in cath labs

Patient does not require urgent cardiac catheterisation

Is ongoing resuscitation in the patients best interests?

Yes

Admit to ICU via CT imaging

ICU admission

No

Refer to and admit under medics.

Remain in ED until ward bed available

Clearly document DNAR/TEP decisions.

OHCA Team - suggested roles:

- **ED ST3+ / Consultant:**
  - Team Leader
- **Anaesthetist :**
  - Airway / Ventilation
  - Transfer patient to CT / Cath lab
- **Intensivist:**
  - Arterial line insertion and ABG
  - CV support
- **Cardiologist:**
  - Focused Transthoracic echocardiogram
  - Liaison with cath lab staff to urgently activate cath lab if required (radiopage out of hours)
- **ED Nurse:**
  - Preparation of resus bay prior to patient arrival
  - 12 lead ECG
- **ED HCA / ED SHO:**
  - Scribe / Runner
  - Liaison with CT Radiographers

1st hour stabilisation, factors to aim for:

In all patients:

- Full monitoring at all times:
  - SpO2
  - 3 lead ECG / Defib pads
  - EtCO2
  - Blood Pressure – Intra-arterial monitoring with minimum hourly ABGs, unless completely CV stable – avoid the R radial (used for cardiac catheterisation access)
- Target temperature 32 - 36ºC strictly at at all times

If patient is going to the cath lab:

- < 60 minutes from ED resus arrival to cath lab procedure start time
- Minimal procedures need to be performed prior to cath lab:
  - There is rarely an indication for CVC, urinary catheter or NG tube insertion prior to cath lab case completion

If there is any concern that there may be an ischaemic cardiac cause of arrest, give aspirin 300mg PR. You do ***NOT*** need a CT head prior to giving aspirin.

Further antiplatelets can then be given IV or NG in the cath lab if required

Standard Operating Procedure

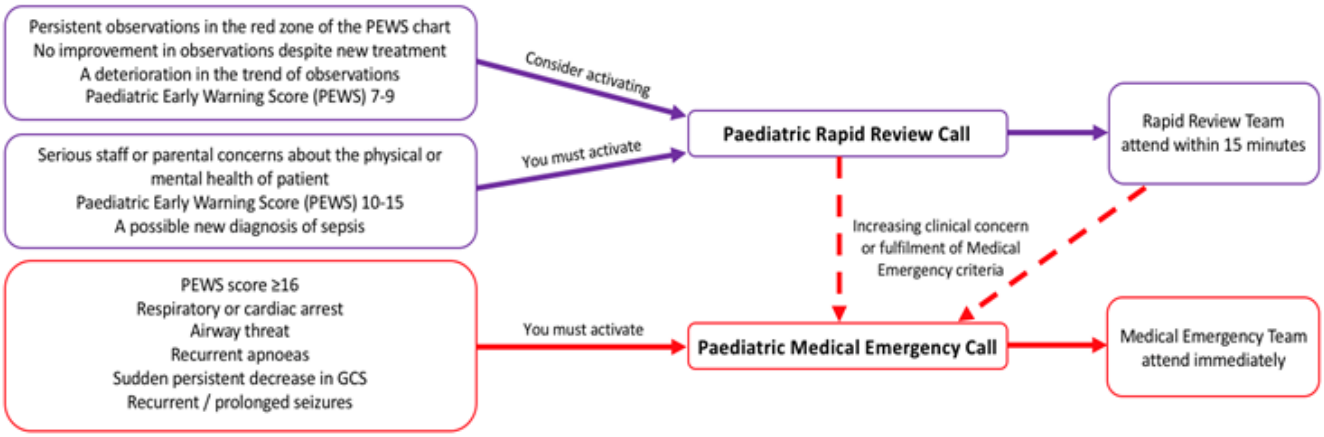
PAEDIATRIC MEDICAL EMERGENCY CALLS

SETTING	Bristol Royal Hospital for Children, Bristol Royal Infirmary, Bristol Dental Hospital, Bristol Eye Hospital, Bristol Haematology and Oncology Centre, St Michael's Hospital
FOR STAFF	Clinical, portering, and switchboard staff
PATIENTS	Paediatric patients attending the above Hospitals

"Paediatric Medical Emergency Calls" include cardiac arrests, respiratory arrests and any other medical or surgical emergency leading to a 2222 call being made to switchboard for a child, excluding Paediatric Rapid Review Calls, Paediatric Major Trauma calls, and neonatal emergencies as noted below. 2222 calls made to switchboard should state "Paediatric Medical Emergency" and the Switchboard Operator should be informed of the patient's bed-space, ward, location code and hospital. Switchboard will send an automated bleep to the Paediatric Medical Emergency Team members stating the type of call (Paediatric Medical Emergency Call) and the location of the patient.

Paediatric Medical Emergency Calls form part of the escalation approach to the deteriorating child (see Figure 1, and Appendix 1: Deteriorating child: Escalation of care in BRHC).

Fig. 1. Decision-making process regarding 2222 Paediatric Emergency Calls



The Paediatric Medical Emergency Team attends all "Paediatric Medical Emergency Calls" for children in the main precinct of the trust (Bristol Royal Hospital for Children, Bristol Royal Infirmary, Bristol Dental Hospital, Bristol Eye Hospital, Bristol Haematology and Oncology Centre).

Calls for children (*not neonates in NICU or post-natal wards, i.e. neonatal emergencies*) at St. Michael's Hospital will be attended by the Emergency Neonatal Team and adult resuscitation team for that hospital (see Appendix 2).

A Paediatric Medical Emergency Call should be activated for the following situations:

- Airway threat
- Recurrent apnoeas
- Respiratory Arrest
- Cardiac Arrest
- Sudden persistent decrease in GCS (including need for urgent return to theatre)
- Recurrent / prolonged seizures
- PEWS score ≥16
- Possible new diagnosis of sepsis & second 20ml/kg fluid bolus to be given

For Paediatric Rapid Review calls, please refer to "Paediatric Rapid Review Calls" Standard Operating Policy.

For Paediatric Major Trauma calls, please refer to the "Paediatric Major Trauma Call Response" clinical guideline.

For Neonatal emergencies, please refer to "Local guidance for provision of newborn life support".

1. ***Attendance at Paediatric Medical Emergency Calls in the main UH Bristol precinct.***

"Paediatric Medical Emergency Team" members:

Post	Bleep(s)	Minimum Resuscitation Training Requirement
Paediatric HDU Registrar / Team 1 Registrar (ST6-8)	2289	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) course completed and in date.
General Paediatrics / Team 2 Registrar (ST6-8)	2943	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) course completed and in date.
Paediatric Anaesthesia trainee	2937	Paediatric Life Support (PLS) completed and in date.
PICU trainee	2940	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) course completed and in date.
General Paediatrics Trainee (F2 / ST1-3)	2939	Paediatric Life Support (PLS) completed and in date.
PICU Senior Nurse / Nurse-in-charge	2941	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) course completed and in date.
Paediatric Outreach Nurse and Clinical Site Team Nurse	2968 6892 3217	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) course completed and in date.
Porter	2944 3040	Paediatric Basic Life Support completed and in date.
Paediatric Resuscitation Officer (not available out-of-hours)	2183 6609	Advanced Paediatric Life Support (APLS) or European Life Support (EPALS) Instructor
Paediatric Duty Matron (not available at night)	1221	Paediatric Immediate Life Support (PILS) completed and in date.

Other Paediatric Emergency Call bleep holders who are not required to attend Paediatric Medical Emergency Calls:

- Paediatric Emergency Department Nurse-in-charge (Bleep 6675)

2. ***Paediatric Medical Emergency Team Huddle***

The Paediatric Medical Emergency Team will meet twice daily in the Paediatric Medical Emergency Team "Huddle". The aim of the Huddle is to facilitate introductions, allocate roles for Medical Emergency Call to the wards and to discuss high-risk patients and safety risks within the Bristol Royal Hospital for Children, or even elsewhere in the trust as appropriate. The Huddle is held at 10:00 and 22:30 in the PICU Store Room, Level 4, BRHC. The Huddle process should occur in a standard fashion as per Appendix 3. It should start on time and last for a maximum of 10 minutes duration.

All Paediatric Medical Emergency Team bleep holders should attend the Huddle, unless there is an emergency that prevents them from doing so. If a team member is unable to attend the Huddle, they should bleep the Critical Care Outreach Nurse on 2968 at the earliest opportunity, because a role will have been allocated in their absence, according to their expected skill level.

The Huddle script on the Huddle Proforma (Appendix 4) should be followed by the Huddle Leader who is usually a member of the Children's Critical Care Outreach Team or Clinical Site Team, but the role can be filled by anybody who feels able to do so. The script will lead the team through the Huddle and ensure that all of the objectives are met. The script should be completed and filed in the Clinical Site Team office in the Huddle Folder for audit purposes.

Medical Emergency Team role allocation should be on a mutually agreed basis between the Huddle Leader and the Clinician and should allow for the different skill mixes of individuals on the team. Once roles are allocated, a Medical Emergency Team identifier for the correct role will be provided for the team member to wear when attending a medical emergency on the wards.

3. ***Roles & Responsibilities:***

All team members to announce their name and role upon arrival at the emergency.

All team members to use "closed-loop" communication within the team, so as to clearly identify tasks undertaken and completed.

Roles:

- ***Team Leader*** (Minimum requirement: APLS or EPALS provider)

To assume responsibility for leading the resuscitation team, unless or until someone more senior or experienced in paediatric resuscitation is in attendance at the bedside.

To ensure they have a scribe to assist who should use the Medical Emergency 2222 Scribe Sheet.

To coordinate the team assessment and management of the patient using ASPIRE model:

- **A**ssessment – engage team to implement
- **S**hare interpretation of assessment with team – seek agreement
- **P**roject treatment plan – Articulate clear goals
- **I**nitiate (allocate) tasks
    - Plan, prioritise and coordinate tasks
    - Manage workload and reallocate roles to match needs and progress.
    - Maintain standards by giving feedback on performance
- **R**eview and summarise progress of management
- **E**ncourage team member input/suggestions

To communicate situation as soon as possible with appropriate Paediatric Consultant using SBAR Communication Tool (see Appendix 5).

To be involved in arranging any subsequent debriefing of staff related to the Medical Emergency call.

- ***Scribe / Assistant Team Leader*** (Minimum requirement: PLS provider)

To ensure that a Paediatric Medical Emergency 2222 Scribe Sheet (Appendix 6) is used as a prompt for the Team Leader in running the emergency.

To provide iPod for timings, using "Stopwatch" facility on Clock App.

To ensure that the Scribe sheet is completed, including the signing of drug doses and filed in the patient notes.

To ensure that a Datix form has been appropriately completed for the event.

- ***Airway/Breathing Lead*** (Minimum requirement: PLS provider)

To provide support in terms of airway and breathing management and use appropriate anaesthetic agents for a rapid sequence induction as required.

To liaise with the airway assistant to prepare for escalation of respiratory support as required and complete the Emergency Induction Checklist if intubation is planned.

- ***Airway/Breathing Assistant*** (Minimum requirement: PLS provider)

To provide support to the Airway/Ventilation Lead and assist in escalating respiratory support as required.

To assist in preparation for intubation as required and ensure appropriate use of the Emergency Induction checklist.

- ***Cardiovascular Team (at least 2 people)*** (Minimum requirement: PLS provider; BLS provider for chest compressions only)

To work as a team to perform a cardiovascular status assessment and ensure application of cardiac monitoring and/or defibrillation pads as appropriate.

To obtain intravascular or intraosseous access as required.

To assist in providing chest compressions if indicated, and provide verbal feedback to each other in order to optimise compressions. The feedback should focus on:

- Minimising interruptions in the compressions
- Performing compressions at the correct rate (100-120/minute)
- Performing compressions at the correct depth (at least 1/3 depth of chest / 3-5cm)
- Allowing full chest recoil between compressions
- Swapping regularly the person delivering the chest compressions every 1-2 minutes

To undertake safe defibrillation, if required.

- ***Drugs & Fluids Team (at least 2 people)***

To liaise with the Team Leader and Scribe to plan ahead and assist in drawing up and administering emergency medications and fluids.

- ***Family liaison***

To provide information and appropriate support to family.

Specific responsibilities:

- ***PICU trainee***

To bring PICU Resuscitation "Grab Bag" to the bedside (for contents, see Appendix 7).

- ***PICU Senior Nurse / Nurse-in-charge***

To bring the second-line paediatric resuscitation drug box to the bedside (see Appendix 8).

- ***Paediatric Resuscitation Officer***

To provide appropriate practical support to the resuscitation team and ward staff. In very exceptional circumstances may take responsibility for running the arrest team, if the most senior and experienced in paediatric resuscitation in attendance at the bedside.

To be involved in supporting any subsequent debriefing of staff related to the Paediatric Medical Emergency call.

- ***Paediatric Duty Matron***

To ensure that timely liaison and communication occurs with family members and appropriate support provided, either at the bedside or in a suitable location nearby should they not wish to attend during the emergency call.

To contact the relevant matron for the particular clinical area from where the call has been made.

To provide support to the nurse-in-charge of the clinical area, particularly in regards to nursing staff arrangements and the requirements of other patients in that clinical area.

- ***Porter***

To ensure a defibrillator is taken to the location of the emergency call.

To provide appropriate practical support to the arrest team e.g. transporting equipment, samples etc.

- ***Staff in attendance – Nursing***

To initiate resuscitation & ensure that an appropriate and timely paediatric medical emergency call has been made to Switchboard via 2222. To inform Nurse-in-charge of ward/area of call.

To provide emergency access and directions to members of the Paediatric Medical Emergency Team.

To communicate with medical team caring for child using SBAR format as necessary.

To ensure the resuscitation trolley & monitoring equipment is taken to the location of the child. This includes identification and use of the pink “Resuscitation Folder” containing all the resuscitation algorithms, calculations and paperwork.

In the absence of the Paediatric Duty Matron, it is the responsibility of the nurse-in-charge of the clinical area to ensure that timely liaison and communication occurs with family members and that appropriate support is provided.

It is ultimately the responsibility of the nurse-in-charge of the clinical area to ensure that the Paediatric Medical Emergency 2222 Scribe Sheet is completed, signed and included in the patient’s notes, plus ensure that the event is reported appropriately on Datix.

The nurse-in-charge may also supply an iPod for timings, using “Stopwatch” facility on Clock App.

Minimum Resuscitation Training Requirement: Paediatric Immediate Life Support (PILS) completed and in date; for nurse-in-charge of ward in BRHC: PLS completed and in date.

- ***Staff in attendance – Medical***

To initiate resuscitation & ensure that an appropriate and timely paediatric medical emergency call has been made to Switchboard via 2222.

To assume responsibility for leading the resuscitation team, unless or until someone more senior or experienced in paediatric resuscitation is in attendance at the bedside.

To communicate situation with appropriate Paediatric Consultant using SBAR Communication Tool (see Appendix 5).

Minimum Resuscitation Training Requirement: PLS completed and in date.

4. ***Clinical Management of Paediatric Medical Emergency Calls:***

Clinical management of children for whom a Paediatric Medical Emergency Call has been made, should follow the “ABCDE” order as noted in the “Assessment” portion of the SBAR communication tool (Appendix 5), i.e. Airway, Breathing, Circulation, Disability, Exposure.

The algorithms for Paediatric Basic Life Support (Appendix 9) and Paediatric Advanced Life Support (Appendix 10) should be followed for acute resuscitation, including consideration of the “4Hs” (Hypoxia, Hypovolaemia, Hypo/Hyperkalaemia, Hypothermia) and the “4Ts” (Tension pneumothorax, cardiac Tamponade, Toxic substances, Thrombo-embolic event). Accurate documentation of the event should be made using the appropriate paperwork. It is recommended that accurate timings are obtained using the “Stopwatch” facility on Clock App on the iPods, and all documentation is completed on a Paediatric Medical Emergency 2222 Scribe Sheet (Appendix 6). This should be signed and filed in the patient notes. It will be filed in Evolve under the tab: Paediatric Medical Emergency 2222 Scribe Sheet in the Clinical Notes section for future ease of access.

Any paediatric cardiac arrest resuscitation event within the trust requiring chest compressions +/- adrenaline bolus or defibrillation (Appendix 10) should lead to Paediatric Intensive Care admission, unless there is a Personal Resuscitation Plan / Wishes Document already in place for the child that specifies otherwise. Further management on PICU, should follow the “Post Cardiac Arrest Management in Children” Guideline.

For any paediatric respiratory arrest within the trust, the minimum response will be admission to Paediatric High Dependency for on-going respiratory management and support, whilst those requiring invasive ventilation will be admitted to the Paediatric Intensive Care Unit.

After any resuscitation event in a child requiring a Paediatric Medical Emergency Call, the Critical Care (PICU and/or HDU) consultant should be immediately informed and involved. Similarly the consultant under whose care the child has been admitted should also be informed as soon as possible.

5. ***Family Attendance at Paediatric Medical Emergency Calls***

Parents and other family members may attend Paediatric Medical Emergency Calls for their child should they wish to do so, and they should always be offered that opportunity. It is the responsibility of the nurse-in-charge of the clinical area to ensure that timely liaison and communication occurs with family members and that appropriate support is provided at the bedside if family members are present during the emergency call.

If family members do not wish to be present during a Paediatric Medical Emergency Call for their child, they should be offered an appropriate space to sit and wait, and it is the responsibility of the nurse-in-charge of the clinical area to ensure that a suitable member of nursing staff stays with the family during the Paediatric Medical Emergency Call to provide appropriate support for them, and to ensure with the Duty Matron that timely liaison and communication occurs with them.

6. ***Reporting of Paediatric Medical Emergency Calls***

All Paediatric Medical Emergency Calls must be reported on the Datix Safeguard Risk Management System as an “Incident affecting Patient Safety” incident under the grouping “Resuscitation Event” and stratify according to whether or not a 2222 call was made, and whether it was a “cardiac arrest”, “respiratory arrest”, or “other”. It is ultimately the responsibility of the nurse-in-charge of the clinical area involved to ensure this reporting is completed. If there are other clinical or non-clinical issues relating to the events surrounding the initiation of a Paediatric Medical Emergency Call, these should also be reported via the Datix Safeguard Risk Management System, and appropriately scored to allow for potential further investigation.

7. ***Debriefing and Review of Paediatric Medical Emergency Calls***

Debriefs are an extremely valuable tool for reviewing a stressful event and should be offered to staff following every event where possible.

Hot Debriefs

Hot debriefs are debriefs which occur immediately after an event. The plan to hold a Debrief can be made by any member of the team. Ideally it should occur as soon as possible after the emergency and should involve as many of the team members as possible.

An appropriate location should be arranged such as a ward office or meeting room, away from the patient bedside. Staff attendance should be encouraged but is not compulsory. One of the team members should become the 'debrief lead' (this would usually, but not always, be the Team Leader from the clinical emergency).

Resuscitation Reviews

All "in-hospital" cardiac arrests occurring within Bristol Royal Hospital for Children outside of PICU (this does not include "out-of-hospital" cardiac arrests brought to the Children's Emergency Department) will be subject to a "Resuscitation Review" to check practice against this Standard Operating Procedure. The review meeting with staff involved in the resuscitation should take place within 2 weeks of the event and at most 4 weeks from the event. A report will then be produced in conjunction with the Divisional Patient Safety Team.

The Paediatric Resuscitation Group will review all reported Paediatric Medical Emergency Calls on a quarterly basis, and link to the Trust Resuscitation Group and the relevant Divisional Clinical Governance/Patient Safety team.

All confirmed paediatric "in-hospital" cardiac arrests will be reported to the National Cardiac Arrest Audit as part of the wider trust reporting.

RELATED DOCUMENTS

Paediatric Major Trauma Call Response
DMS address http://nww.avon.nhs.uk/dms/Download.aspx?r=1&did=17080&f=PaediatricMajorTraumaCallResponse-1.pdf

Local guidance for provision of newborn life support
DMS address http://nww.avon.nhs.uk/dms/download.aspx?did=15613

Post Cardiac Arrest Management in Children
DMS address http://nww.avon.nhs.uk/dms/download.aspx?did=21996

SOP Paediatric Rapid Review Calls
DMS Address

Status Epilepticus
DMS address http://nww.avon.nhs.uk/dms/Download.aspx?r=1&did=13077&f=StatusEpilepticusTreatment-1_1.pdf

Rapid Escalation of Care for Daisy Ward Patients Likely to Require Immediate Return to Theatre
DMS address
http://nww.avon.nhs.uk/dms/Download.aspx?r=1&did=22164&f=RapidEscalationOfCareForDaisyWardPatientsLikelyToR-2.pdf

Paediatric Sepsis Pathway Age 4 to 11 months
DMS Address http://nww.avon.nhs.uk/dms/download.aspx?did=21995

Paediatric Sepsis Pathway Age 1 to 4 years
DMS Address http://nww.avon.nhs.uk/dms/download.aspx?did=20862

Paediatric Sepsis Pathway Age 5 to 11 years
DMS Address http://nww.avon.nhs.uk/dms/download.aspx?did=20863

Paediatric Sepsis Pathway Age over 12 years
DMS Address http://nww.avon.nhs.uk/dms/download.aspx?did=20864

SAFETY

QUERIES

Contact Dr Peter Davis (Ext 27509) on behalf of the Paediatric Resuscitation Group.

Appendix 1. Deteriorating child: Escalation of care in BRHC

DETERIORATING CHILD: Escalation of care in BRHC

PERSISTENT OBSERVATIONS IN THE RED ZONE ON THE OBSERVATION CHART
NO IMPROVEMENT IN OBSERVATIONS DESPITE NEW TREATMENT
DETERIORATION IN TREND OF OBSERVATIONS
PAEDIATRIC EARLY WARNING SCORE 7-9

- Liaise with the Nurse-in-Charge & discuss an escalated management plan:
  - Increase frequency of observations & repeat within 30 minutes
  - SBAR report PEWS to the Outreach Nurse (bleep 2968) requesting a patient review within 30 minutes
  - Inform the patient's own primary medical team / registrar

CONSIDER ACTIVATING A PAEDIATRIC RAPID REVIEW CALL

OR **CONSIDER A PAEDIATRIC MEDICAL EMERGENCY CALL AT ANY TIME**

SERIOUS STAFF OR PARENTAL CONCERNS ABOUT PHYSICAL OR MENTAL HEALTH OF PATIENT
PAEDIATRIC EARLY WARNING SCORE 10-15
POSSIBLE NEW SEPSIS

- SBAR report the situation to the Nurse-in-Charge & confirm escalated management plan including Rapid Review call
- Provide appropriate care whilst awaiting the team:
  Bring Emergency Trolley to bedside, start Rapid Review Call paperwork, optimise bedside environment & anticipate potential management with Nurse-in-Charge, e.g. locate equipment (e.g. Optiflow), consider IV access

YOU MUST ACTIVATE A PAEDIATRIC RAPID REVIEW CALL
unless a Consultant is at the bedside who will take responsibility for managing the patient

OR **CONSIDER A PAEDIATRIC MEDICAL EMERGENCY CALL AT ANY TIME**

PAEDIATRIC RAPID REVIEW

Child must be STABLE enough to wait for a medical review by the Rapid Review team within 15 minutes

1. Call 2222
2. Request 'PAEDIATRIC RAPID REVIEW TEAM'
3. State patient location (bed, ward, level, hospital)
4. Optimise patient care, retrieve emergency trolley & start Rapid Review paperwork

ESCALATE TO PAEDIATRIC MEDICAL EMERGENCY CALL VIA 2222 IF ANY DETERIORATION OR DELAY IN REVIEW

PAEDIATRIC MEDICAL EMERGENCY

A Medical Emergency Call is mandatory for:

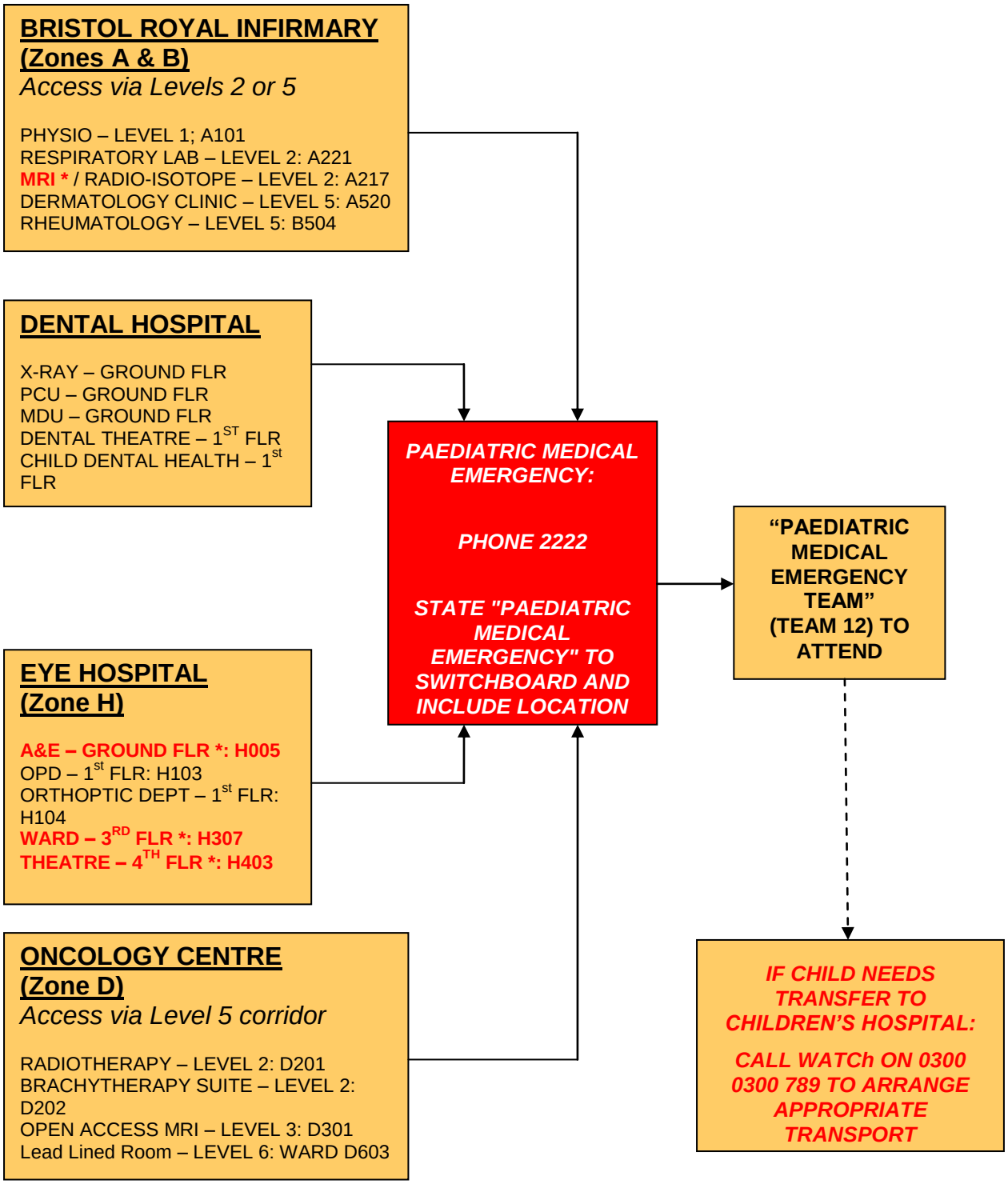
- PEWS ≥ 16
- Respiratory or cardiac arrest
- Airway threat
- Recurrent apnoeas
- Sudden persistent decrease in GCS
- Recurrent / prolonged convulsion

1. Pull emergency buzzer
2. Call 2222
3. Request 'PAEDIATRIC MEDICAL EMERGENCY TEAM'
4. State patient location (ward, level, hospital)
5. Continue life-sustaining treatment

CALL THE PAEDIATRIC MEDICAL EMERGENCY TEAM AT ANY TIME FOR IMMEDIATE REVIEW

Appendix 2. Cover for Paediatric Medical Emergency Calls outside Children's Hospital (see Map for locations)

** Sites where children may be situated out-of-hours*



Cover for Paediatric Medical Emergency Calls at St Michael's Hospital

** Sites where children may be situated out-of-hours*

ST. MICHAEL'S

CRIC – LEVEL B *
ENT OPD – LEVEL C
CHILDREN'S HEARING CENTRE – LEVEL D
NEONATAL FOLLOW-UP CLINIC – Extension – LEVEL 1

PAEDIATRIC MEDICAL EMERGENCY:

PHONE 2222

STATE "ST. MICHAEL'S PAEDIATRIC MEDICAL EMERGENCY" TO SWITCHBOARD AND INCLUDE LOCATION

EMERGENCY NEONATAL TEAM (TEAM 15) AND ADULT OBSTETRIC ANAESTHESIA SENIOR REGISTRAR AT ST. MICHAEL'S TO ATTEND

IF CARDIOPULMONARY RESUSCITATION REQUIRED:

PHONE 2222

STATE "PAEDIATRIC MEDICAL EMERGENCY" TO SWITCHBOARD AND INCLUDE LOCATION

"PAEDIATRIC MEDICAL EMERGENCY TEAM" (TEAM 12) TO ATTEND

IF CHILD NEEDS MEDICAL TRANSFER TO CHILDREN'S HOSPITAL:

CALL WATCh ON 0300 0300 789 TO ARRANGE APPROPRIATE TRANSPORT

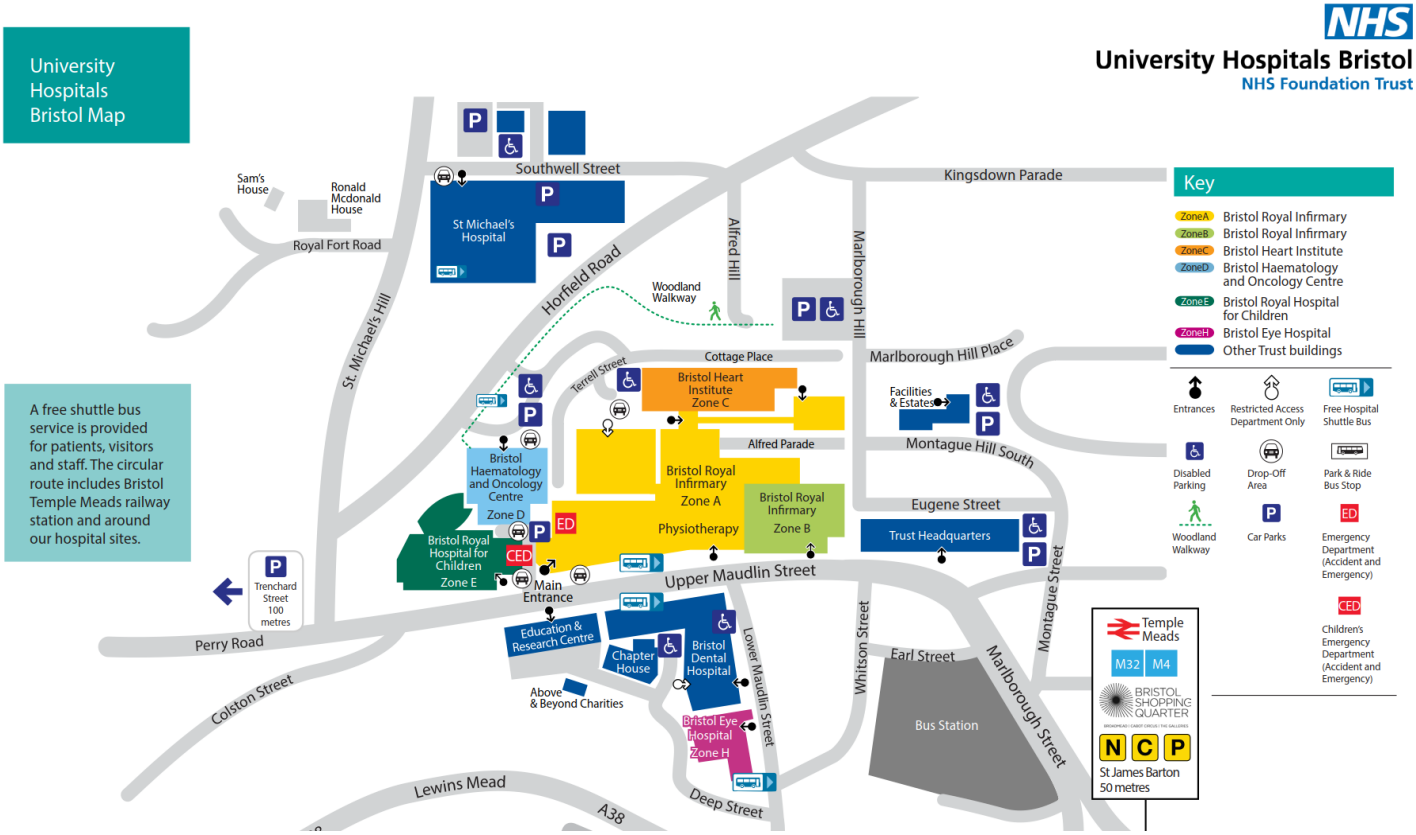
IF CHILD NEEDS TRANSFER TO CHILDREN'S HOSPITAL ED FOR ON-GOING CARE & ASSESSMENT:

CALL 999 FOR PARAMEDIC AMBULANCE TRANSFER

The Consultant Neonatologist on-call for NICU is available on site 08.00 – 17.00 hrs to assist with any emergency via Switchboard by dialling 2222.

Out-of-hours (17.00 – 08.00 hrs) the Consultant Neonatologist on-call is available within a 30 minute response time via switchboard on 2222.

University Hospitals Bristol Map



Bristol Royal Hospital for Children wards and departments

Area Code	Ward/Department	Speciality	Previous Ward Name/Number
E301	Carousel Outpatients	Multi-Speciality	Level 3 Outpatients
E307	The Observatory	Observation	39
E308	Children's Emergency Department	Emergency Medicine	Children's Emergency Department
E400	Seahorse Paediatric Intensive Care Unit	Intensive Care	Paediatric Intensive Care Unit
E402	Coastguard Theatres	Surgery	Level 4 Theatres
E406	Lighthouse Ward	Renal and Urology	37
E500	Bluebell Ward	Neurosciences	38a
E501	Sunflower Ward	Neurosciences	38b
E510	Caterpillar Ward	General Medicine	30
E512	Daisy Ward	Burns and High Dependency	33
E514	Rainforest Outpatients	Burns and Plastics	Level 5 Outpatients
E518	Puzzle Wood	Clinical Investigations	Clinical Investigations Unit
E519	Meadow Ward	Day Surgery	36
E520	Horizon Theatres	Surgery	Level 5 Theatres
E600	Dolphin Ward	Cardiac	32
E602	Penguin Ward	Surgical	31
E608	Ocean Unit	Oncology Day Patients	Oncology Day Beds
E700	Starlight Ward	Oncology and BMT	34
E702	Apollo 35 Ward	Adolescent	35

Appendix 3. Paediatric Medical Emergency Team Huddle Process

0950 & 2220: Switchboard put out a call to all Paediatric Medical Emergency Team bleep holders stating:
"Paediatric Medical Emergency Team to attend Huddle or respond to switch on 21916"

0955 & 2225: Proceed to PICU store room to **lead Huddle**

1000 & 2230: Start Huddle (do not delay start time) and read the script overleaf. Ask an assistant to write whilst you speak

1010 & 2240: Finish Huddle and ensure you have checked who received their Huddle test bleeps

1010 & 2240: Leader or allocated person to call Switchboard on **21916** to let them know who received their test bleep;
Switchboard will test any bleeps which were not received again

Absent Huddle team members should bleep the Outreach Nurse on 2968 who can let them know of their agreed role, high-risk patients they should be aware of and environmental issues

File this form in the green Huddle folder in the Outreach / CST office

Appendix 4. Paediatric Medical Emergency Team Huddle Proforma

Bristol Royal Hospital For Children

Medical Emergency Team Huddle Proforma – please complete

University Hospitals Bristol NHS Foundation Trust

Please file in the Huddle Folder in the CST Office for audit purposes

Switch Board informed **21916**? ☐

Date: **Time:** **Duration of Huddle** (mins):

Please record attendees & check Huddle bleep received:

- ☐ 2937 - Anaesthetic Reg .....
- ☐ 2939 - General Paeds Trainee.....
- ☐ 2940 - PICU Fellow .....
- ☐ 2941 - PICU Nurse .....
- ☐ 2289 - HDU/Team 1 Reg.....
- ☐ 2943 - General/Team 2 Reg.....
- ☐ 2968/6892 - Outreach .....
- ☐ 3217 - Site Team Nurse .....
- ☐ 2944 - Porter(s) .....

When available:

- ☐ 2183/6609 - Resus Officer .....
- ☐ 1221 - Duty Matron .....

Huddle script (Huddle leader to read):

"Hello, my name is .....(Insert name)..... I will be leading the Huddle. Did you all receive a Huddle test bleep? First, can we introduce ourselves by **name** & **job title**."

Introductions

"Now we need to **allocate roles** in case we are called to a ward emergency. This does *not* include emergencies in ED. Please make sure you are happy to carry out your role. We must support the ward staff when we arrive and the Team Leader will reallocate if required."

Assign Roles → Refer to table

"Now we should identify any **high-risk patients** who are causing concern." *(See poster for prompts, SBAR format should be used)*

Discuss high-risk patients → Refer to prompts

"Are there any **environmental or safety factors** to consider?"

Environmental or safety factors? → Complete box or N/A

"As we finish, please can we check our **agreed roles** *(check with each person).* I will let **switchboard know if our bleeps were received** *(or ask for a volunteer if you will be busy).* Absent team members will contact Outreach. Thank you."

Staff number	Assigned Roles	Name (one role for each except back-up team leader)
2	**Team leader** (should be on a long day)	
		Back-up:
2	**Airway / Ventilation Team**	
1	**Airway / Ventilation Assistant**	
2	**Cardiovascular Team lead** (Support ward team in CPR, defibrillator & IV / IO access)	
1	**Expert assistant to ward team** (Assisting with drugs & allocating scribe and runner)	
1	**Matron** (liaise with ward Matron & family)	
1	**Porter** (including bringing defibrillator)	

Brief verbal identification of high-risk children on wards (excl. PICU)

Patients discussed and their location:

Environmental or safety factors

Huddle process described overleaf

V 3.1 2019 Paed Resus Group

Appendix 5. SBAR Communication Tool

S **Situation**	The patient's name Your name and designation The ward/department you are calling from		
B **Background**	Brief medical history Background admission diagnosis Teatment to date Have drug chart at hand Fluid balance		
A **Assesment**	**AIRWAY**	Patient talking Noises (gurgling, wheeze snoring) Visible foreign body	
	BREATHING	Difficulty breathing Respiratory rate Accessory muscles used	Sp02 Respiratory noises
	CIRCULATION	Pulse Skin Colour	Capillary Refill Time Blood Pressure
	DISABILITY	Alert / Voice / Pain / Unresponsive (AVPU) Pupils (equal / reacting) Blood Glucose	
	EXPOSURE	Swelling Bleeding (wounds/drains)	Rash Temperature
R **Recommendation / Readback**	What have you done for the patient? State if you think the patient needs: • Treatment review (within 1 to 2 hours) • Urgent review (within 15 minutes) • Emergency (within 5 minutes) Ask the clinician what (s)he would like you to do before arrival e.g: bloods & ECG review		

Appendix 6. Paediatric Medical Emergency 2222 Scribe Sheet (Pages 1-4)

Paediatric Medical Emergency 2222 Scribe Sheet

Date: .....

Time '2222' call put out: .....

Time 'Major Haemorrhage' call put out: .....

Location: .....

Named Consultant: .....

Speciality: .....

Affix label or complete details

Surname: .....

Forename: .....

DOB: .....

Hospital No.: .....

This scribe sheet should be completed for all 2222 calls and all emergencies, cardiac arrests or respiratory arrests

Staff Present:	**Name(s):**
Clinical Site Team	
Children's Critical Care Outreach Nurse	
PICU Nurse	
PICU Doctor	
PICU Consultant	
Anaesthetic Registrar	
General Paediatric Registrar	
Speciality 1 Registrar	
Speciality 2 Registrar	
Nurse in charge (ward/department)	
Child's named nurse	
Nurse	
Nurse	
Porter	
Other	
Other	

Name of person completing form	
Signature	
Designation	

Please file this form in the patient's medical notes

Type of emergency situation/arrest: □ Cardiac Arrest: □ Respiratory arrest: □ Other medical emergency:	**Rapid Debrief?** □ Yes □ No	**Family present?** □ Yes □ No ....
Outcome: □ **Alive:** No cardiac arrest □ **Alive:** ROSC sustained ≥20 min □ **Alive:** ROSC sustained ≤20 min □ **Died:** No ROSC □ **Died:** Futile ≥20 min □ **Died:** DNAR identified	**Transferred to:** □ PICU □ HDU □ Theatre □ Remained on the ward □ Other.....	**Datix clinical incident form completed for all 2222 calls:** Date completed: ..... Completed by: ....

Patient Name: ..... Hospital Number: ..... Page 2

Weight: Kg **Start time:**

Medical Emergency

AIRWAY & BREATHING

Airway management e.g. O_2, Suction, airway manoeuvers, BVM ventilation, guedel / NP airway, Optiflow

Time	Comments

CIRCULATION (consider 'Sepsis Pathway')

IV/IO Access- Location / Time

Time	Site

Fluids / Drugs – Type, name, volume, dose

Time	Drug / fluid	Dose

Colour, perfusion, capillary refill time, other

Time	Comments

DISABILITY (Neurology)

AVPU, Pupils, Glucose (BM <3mmols give 2mls/kg of 10% glucose), other

Time	Comments

EXPOSURE

Temperature, rash, wound, swelling, bruising, other

Time	Comments

Drs Name	Signature	Position	GMC / Bleep / Stamp

Patient Name: ..... Hospital Number: ..... Page 3

Weight: Kg **Start time:**

Asystole or Pulseless Electrical Activity (PEA)

(Non-Shockable)

INTUBATED	
Time	
Oral/Nasal	
Size	
Length	

IV/IO ACCESS OBTAINED	
Time	Site

ADRENALINE IV/IO	
Time	Dose

Ensure help has been called
Assess ABC, commence CPR
5 rescue breaths, then 15:2

↓

Attach monitor & assess rhythm

↓

Non shockable Asystole/PEA

↓

Continue CPR & ventilate with high concentration oxygen

↓

Intubate & gain IV/IO access

↓

Maintain continuous CPR once intubated

↓

Adrenaline 1 in 10,000
10 micrograms/kg = 0.1ml/kg-
Give Adrenaline every 4 min

CPR 2 min → Pause CPR check monitor & pulse

CPR 2 min → Return of spontaneous circulation (ROSC)
Time: .....
Transfer patient
Time: .....

OTHER DRUGS/FLUIDS		
Time	Drug/fluid	Dose

Drs Name	Signature	Position	GMC / Bleep / Stamp

During CPR consider and treat:

Time Discussed: _____

Hypoxia	Tension Pneumothorax
Hypovolaemia	Toxic substances
Hypothermia	Tamponade (cardiac)
Hyper/hypokalaemia	Thromboembolism

Patient Name: ..... Hospital Number: ..... Page 4

Weight: Kg **Start time:**

Ventricular Fibrillation (VF)/ Pulseless Ventricular Tachycardia (VT) – Shockable

INTUBATED	
Time	
Oral/Nasal	
Size	
Length	

IV/IO ACCESS OBTAINED	
Time	Site

DC SHOCKS	
Time	Energy (Joules)

Ensure help has been called
Ensure CPR commenced
5 rescue breaths, then 15:2

↓

Attach monitor & assess rhythm

↓

Shockable VF/VT Pulseless

↓

DC Shock 4 Joules/kg

↓

2 min CPR, then check monitor & pulse

↓

DC Shock 4 Joules/kg

↓

2 min CPR, then check monitor & pulse

Intubate & gain IV/IO Access

Maintain continuous CPR once intubated

↓

DC Shock 4 Joules/kg
Then Adrenaline 1 in 10,000.
10 micrograms/kg = 0.1 mls/kg
Then
Amiodarone 5 milligrams/kg

↓

2 min CPR, then check monitor & pulse

↓

DC Shock 4 Joules/kg

↓

2 min CPR, then check monitor & pulse

↓

DC Shock 4 Joules/kg
Then Adrenaline 1 in 10,000.
10 micrograms/kg = 0.1ml/kg
Then
Amiodarone 5 milligrams/kg

↓

2 min CPR, then check monitor & pulse

↓

DC Shock 4 Joules/ kg ← CPR 2 min

↓

2 min CPR, then check monitor & pulse

↓

DC shock 4 Joules/kg
Then, Adrenaline 1 in 10,000
10 micrograms/kg = 0.1ml/kg

→

Return of spontaneous circulation (ROSC)
Time: .....
Transfer patient
Time: .....

OTHER DRUGS/FLUIDS		
Time	Drug/fluid	Dose

ADRENALINE IV/IO	
Time	Dose

During CPR consider and treat:

Time Discussed: _____

Hypoxia	Tension Pneumothorax
Hypovolaemia	Toxic substances
Hypothermia	Tamponade (cardiac)
Hyper/hypokalaemia	Thromboembolism

Drs Name	Signature	Position	GMC / Bleep / Stamp

Appendix 7. Paediatric Resuscitation PICU Grab Bag Contents

Paediatric Resuscitation RED Grab Bag Contents

Back Section: Airway and Breathing	
Small Laryngoscope Handle (BCH Compatible-green)	1
Large Laryngoscope Handle (BCH Compatible-green)	1
Mac 4 Blade (BCH Compatible-green)	1
6fg Blue Bougie	1
10fg Blue Bougie	1
Size 3.0mm Micro Cuff Endotracheal Tube	1
Size 3.5mm Micro Cuff Endotracheal Tube	1
Size 4.0mm Micro Cuff Endotracheal Tube	1
Size 4.5mm Micro Cuff Endotracheal Tube	1
EMMA Capnography	1
AAA Batteries	2
Infant EMMA Capnography Connection ***(Replacements found on top of monitor equipment trolley under the CD cupboard)***	1
Adult EMMA Capnography Connection ***(Replacements found on top of monitor equipment trolley under the CD cupboard)***	1
Nebuliser Circuit	1

Front Section: Circulation	
EZIO Driver	1
15mm 15g Needle (Pink)	1
25mm 15g Needle (Blue)	2
45mm 15g Needle (Yellow)	1
EZIO Stabiliser Dressing	1
LIFEPAK 20 Paediatric Defibrillation Pads	1
LIFEPAK 20 Adult Defibrillation Pads	1

Middle Front Pocket	
Portable Saturation Monitor (MEMO Number 057048)	1
Saturation Probe	1

Bottom Front Pocket	
Swipe Card	1
Green Tags	
Scissors	1
White Tracheostomy tape	Small roll

Appendix 8. Paediatric Emergency Drug Box Contents

Bristol Royal Hospital for Children

Emergency Drug Box Record Sheet – 1st Line

BOX NUMBER: _____

DRUG	Date of Assembly							
Amiodarone Injection 150mg in 3ml		L R		L R		L R		L R
2x 3ml		E		E		E		E
Adrenaline (Epinephrine) Injection 1 in 10,000		L R		L R		L R		L R
5x 10ml		E		E		E		E
Calcium Gluconate 10% Injection		L R		L R		L R		L R
2x 10ml		E		E		E		E
Sodium Bicarbonate 8.4% Injection		L R		L R		L R		L R
2x 10ml		E		E		E		E
Sodium Chloride 0.9% Injection		L R		L R		L R		L R
5x 10ml		E		E		E		E
Water For Injection		L R		L R		L R		L R
4x 10ml		E		E		E		E
Assembled by:								
Checked by:								
Expiry Date of Box:								
Issued to:								
Date of Issue:								
Date of Return:								

L = Left in Box, R = Replaced, E=Expired – Please circle action taken

Bristol Royal Hospital for Children

Emergency Drug Box Record Sheet – 2nd Line

BOX NUMBER: _____

DRUG (2 ampoules of each)	Date of Assembly							
Adenosine 6mg in 2ml		R E		R E		R E		R E
Atropine Sulphate 600 micrograms in 1ml		R E		R E		R E		R E
Chlorphenamine 10mg in 1ml		R E		R E		R E		R E
Dopamine 200mg in 5ml		R E		R E		R E		R E
Furosemide (frusemide) 20mg in 2ml		R E		R E		R E		R E
Hydrocortisone Phosphate 100mg in 1ml		R E		R E		R E		R E
Magnesium Sulphate 50% 2.5g in 5ml		R E		R E		R E		R E
Naloxone 400micrograms in 1ml		R E		R E		R E		R E
Phenylephrine 10mg/ml		R E		R E		R E		R E
Phenytoin 250mg in 5ml		R E		R E		R E		R E
Rocuronium 50mg in 5ml		R E		R E		R E		R E
Salbutamol 5mg in 5ml		R E		R E		R E		R E
Suxamethonium 100mg in 2ml		R E		R E		R E		R E
Vasopressin 20units/ml		R E		R E		R E		R E
Assembled by:								
Checked by:								
Expiry Date of Box:								
Issued to:								
Date of Issue:								
Date of Return:								

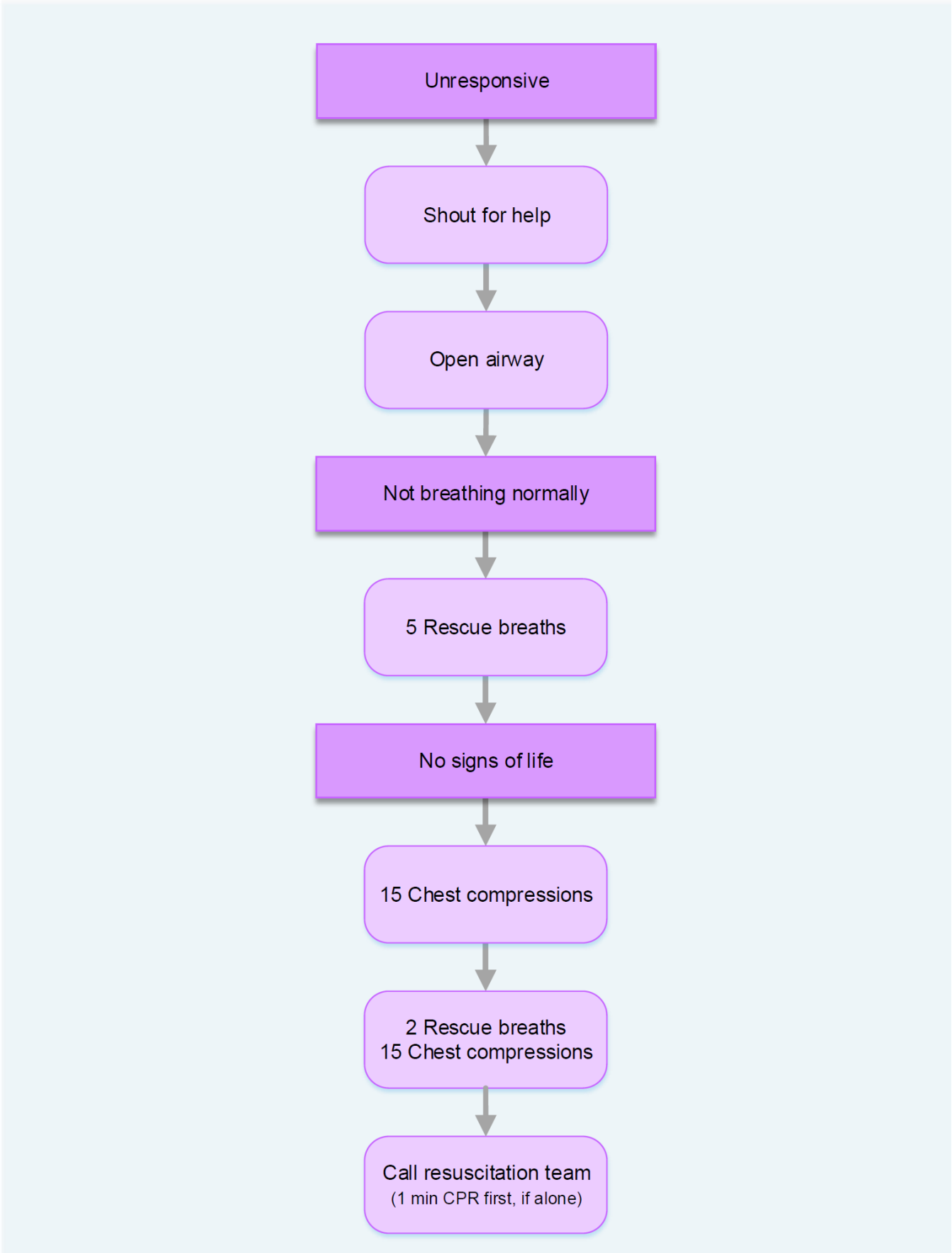
1) Use a new column headed with the date each time ampoules are replaced
2) Only the batch number & expiry dates of ampoules replaced need to be recorded
3) Circle whether the ampoules have been **R**eplaced or **E**xpired
4) The expiry date of the box is the expiry of the shortest dated ampoule.

BRHC Emergency Drug Box Record Sheet – 2nd Line; Version 3, November 2018

Appendix 9. Paediatric Basic Life Support Algorithm

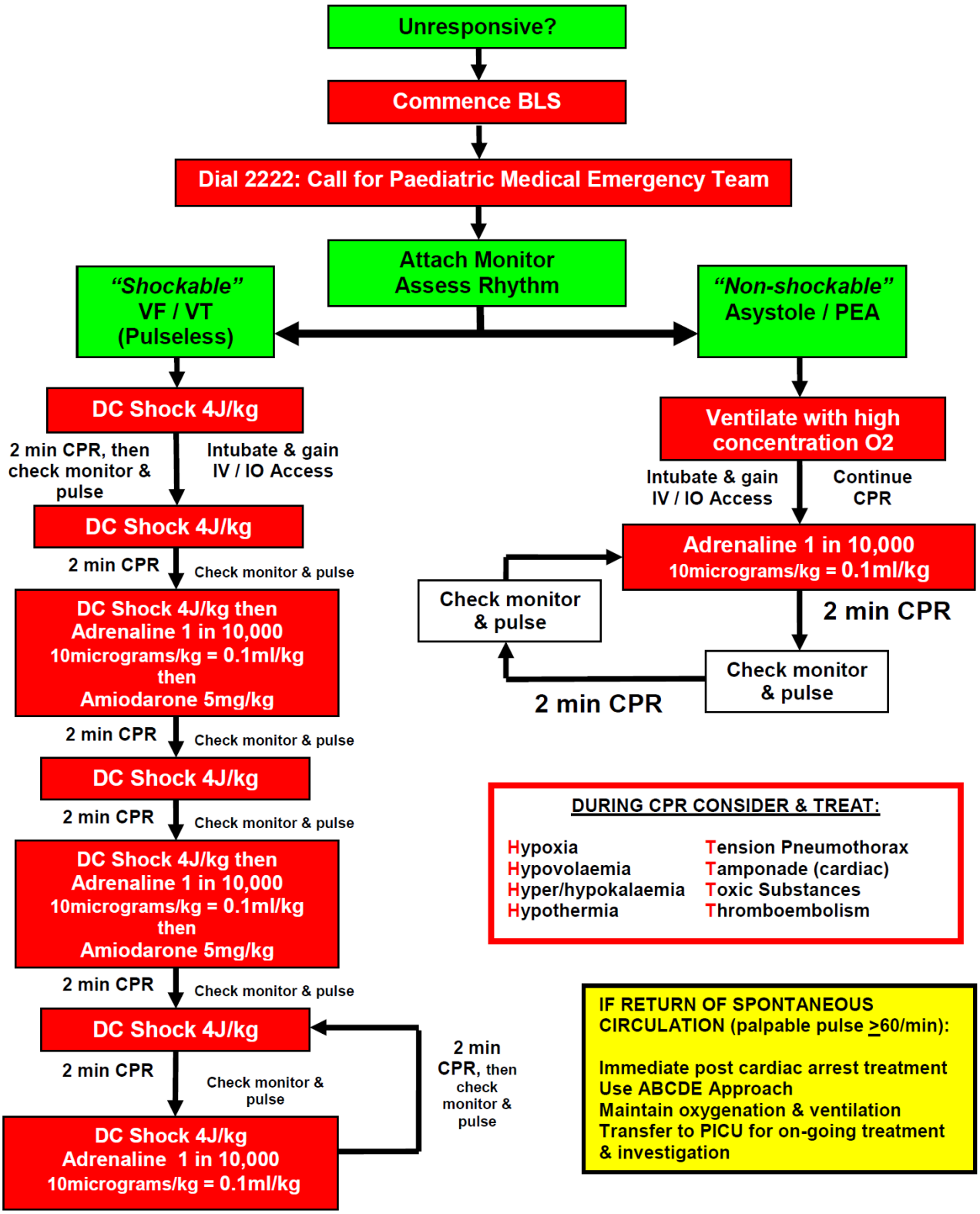
Resuscitation Council (UK) GUIDELINES 2015

Paediatric Basic Life Support
(Healthcare professionals with a duty to respond)



Appendix 10. Paediatric Advanced Life Support Algorithm

Paediatric Advanced Life Support Management



PD Dec 2016 - Paediatric Resuscitation Group
Taken from Resus Council and ALSG guidelines 2015