

paediatric Rapid Evaluation and ReSuscitation  
of the Unwell Simulated Patient

paediatric **R**apid **E**valuation and Re**S**uscitation  
of the **U**nwell **S**imulated Patient

Dr Fiona Hignett | pRESUS Course | 2015

## Table of Contents

The pRESUS Handbook .....	1
Background .....	1
Aims and Objectives of pRESUS .....	2
Simulation in Healthcare .....	2
Near-Peer Education.....	2
Course Design .....	2
<i>SET</i> .....	3
<i>Equipment Needed to Run the Interactive Lecture</i> .....	3
<i>Interactive Lecture</i> .....	3
<i>SIM</i> .....	4
<i>Equipment Needed to Run Simulation Sessions</i> .....	5
<i>Simulation Scenarios</i> .....	5
<i>Debriefing Simulation Scenarios</i> .....	6
<i>TEACH</i> .....	6
Appendix 1: pRESUS Interactive Lecture Handout .....	7
Appendix 2 - Pre and Post Interactive Lecture Feedback Forms .....	12
Appendix 3 - Post Simulation Session Feedback Form .....	15
References .....	17

## The pRESUS Handbook

This handbook outlines the background, aims and objectives of the pRESUS course. It also includes all the resources required to run the programme including presentation, feedback and simulation resources. The handbook and other resources for trainers and students can be found on the pRESUS website: [www.pRESUS.weebly.com](http://www.pRESUS.weebly.com)<sup>1</sup>.

## Background

The pRESUS course was developed by Paediatric trainees in the Wessex Deanery, who saw a gap in the curriculum to develop a paediatric simulation-based course for medical students. The course adopts the near-peer approach by utilising Paediatric trainees to teach students in a nurturing and safe environment. The course is now offered, where possible, to both medical and nursing students together to foster interdisciplinary team working at an early stage of career development. From its beginnings in Southampton Children's Hospital, the course has now expanded and is being run regularly across the region. This has been achieved with the help of Wessex STRIPES (Speciality Trainers Involved in Paediatric Education & Simulation). The group was created to allow collaboration, development of education programmes and dissemination of innovation throughout Wessex. It is a group that welcomes **anyone** with an interest in developing skills in delivering paediatric education and simulation, regardless of previous experience. Further information can be found at [www.wessexstripes.com](http://www.wessexstripes.com)<sup>2</sup>.



Health Education Wessex is partnered with the University of Southampton undergraduate medical student programme. Currently, medical students have a 4 week paediatric placement in their 3<sup>rd</sup> year, and a 4 week paediatric placement in their final year. (NB: the curriculum is soon changing to an 8 week block of paediatrics in 4<sup>th</sup> year). <http://www.southampton.ac.uk/medicine/index.page>



## Aims and Objectives of pRESUS

1. To ensure students develop a robust system for assessing an acutely unwell child throughout their medical student training & on day 1 as an F1
2. Utilise simulation to give students experience of assessing, diagnosing and treating acute and emergency paediatric conditions
3. Ensure students recognise when and how to call for help
4. Revise and practice basic life support
5. Encourage and nurture interdisciplinary team working by running the course with medical and nursing students together

## Simulation in Healthcare

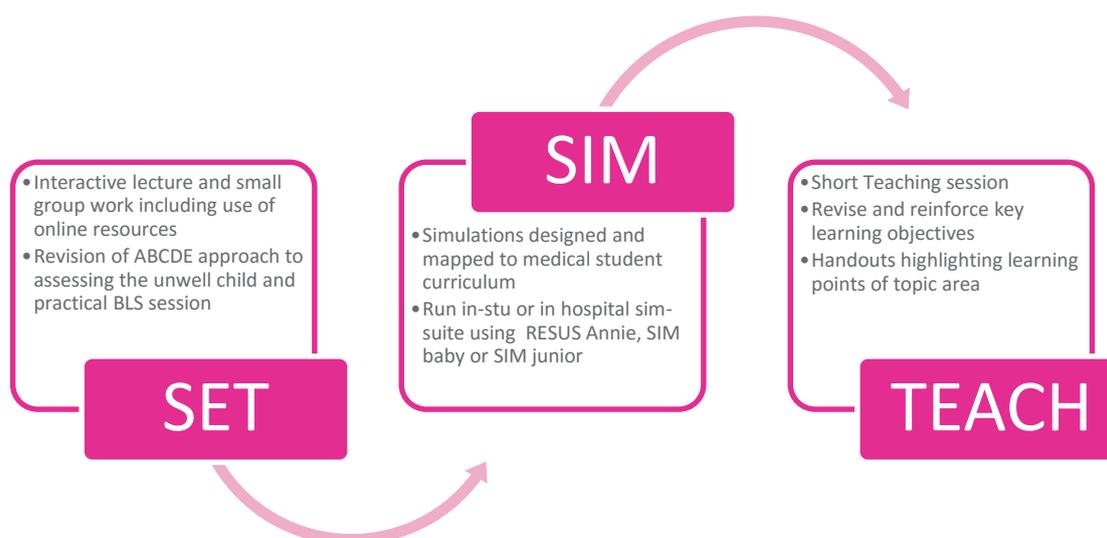
High-fidelity simulation is a growing area of under-graduate medical education<sup>3</sup>. However, despite children accounting for 40% of patients seen in primary care<sup>4</sup> and 22% of ED attendances<sup>5</sup>, undergraduate simulation programmes usually focus on adult patients. The pRESUS course was developed to address this issue and aims to improve patient safety by '*ensuring students develop a robust system for assessing acutely unwell children throughout medical school and on day one as a qualified health care professional*'.

## Near-Peer Education

The course operates on the principles of near peer education, to minimise potential hierarchical barriers to learning. Students are taught predominantly by paediatric trainees and nurses. This has been found to be a valuable source of education for both teachers and learners.<sup>6</sup>

## Course Design

When the program was 1<sup>st</sup> designed, it became apparent that jumping straight into simulation without any initial revision or training was unconstructive and unhelpful. Instead the following 3 staged approach was



adopted:

## SET

This initial pRESUS session should be delivered in the 1<sup>st</sup> week of the medical student's 4 week final year placement. . Where possible, it is encouraged to also involve paediatric nursing students. The session 'sets the stage' for the pRESUS course and allows students to revise the ABCDE approach to an unwell child and practice basic life support.

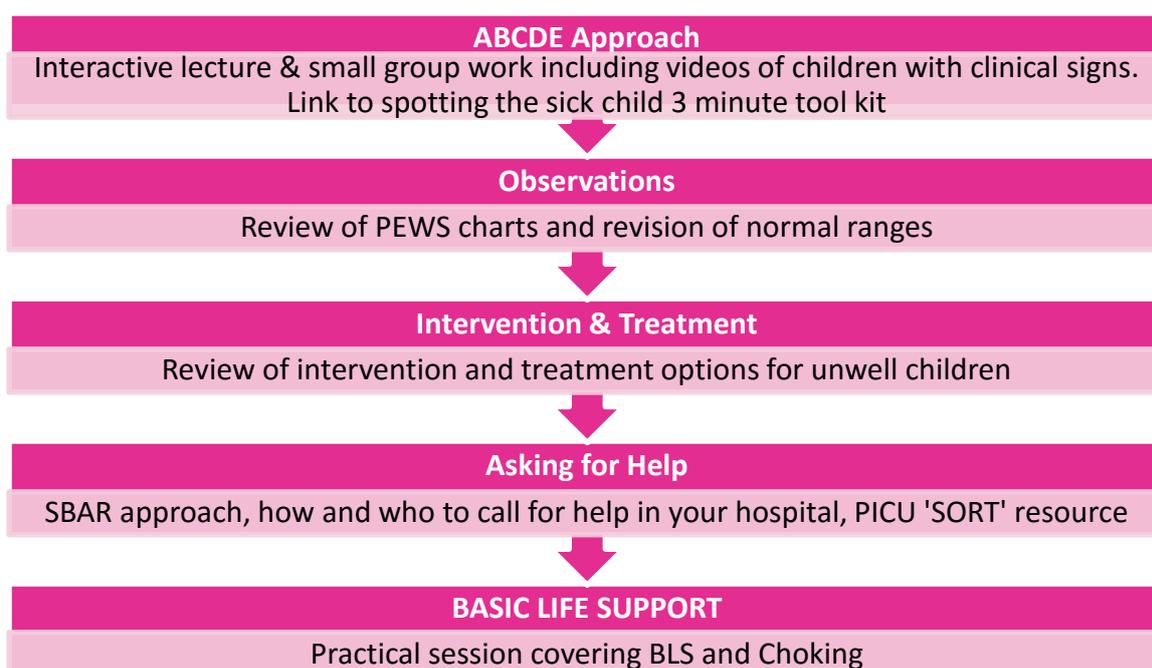
## Equipment Needed to Run the Interactive Lecture

To run this session you will need:

- Small seminar or teaching room
- Computer or laptop with internet access, connected to a projector
- Flip chart or white board
- pRESUS Interactive PowerPoint lecture
- Resuscitation dolls: infant and child
- Appropriately sized Bag Valve Masks (BVMs)
- pRESUS Interactive Lecture Handout
- pRESUS evaluation/ feedback forms

## Interactive Lecture

The interactive PowerPoint lecture takes approximately 2 hours to cover. Although the session revolves around the PowerPoint presentation, it should also incorporate small group work, online videos and practical elements. **Please note, slide 19 'Calling for Help' should be amended to include local trust contact numbers and bleeps.** A summary handout is available to give to students at the end of the session (appendix 1). To ensure continued development and improvement of the programme getting feedback from students is vital, feedback forms attached as appendix 2. The structure of the interactive lecture is highlighted below:

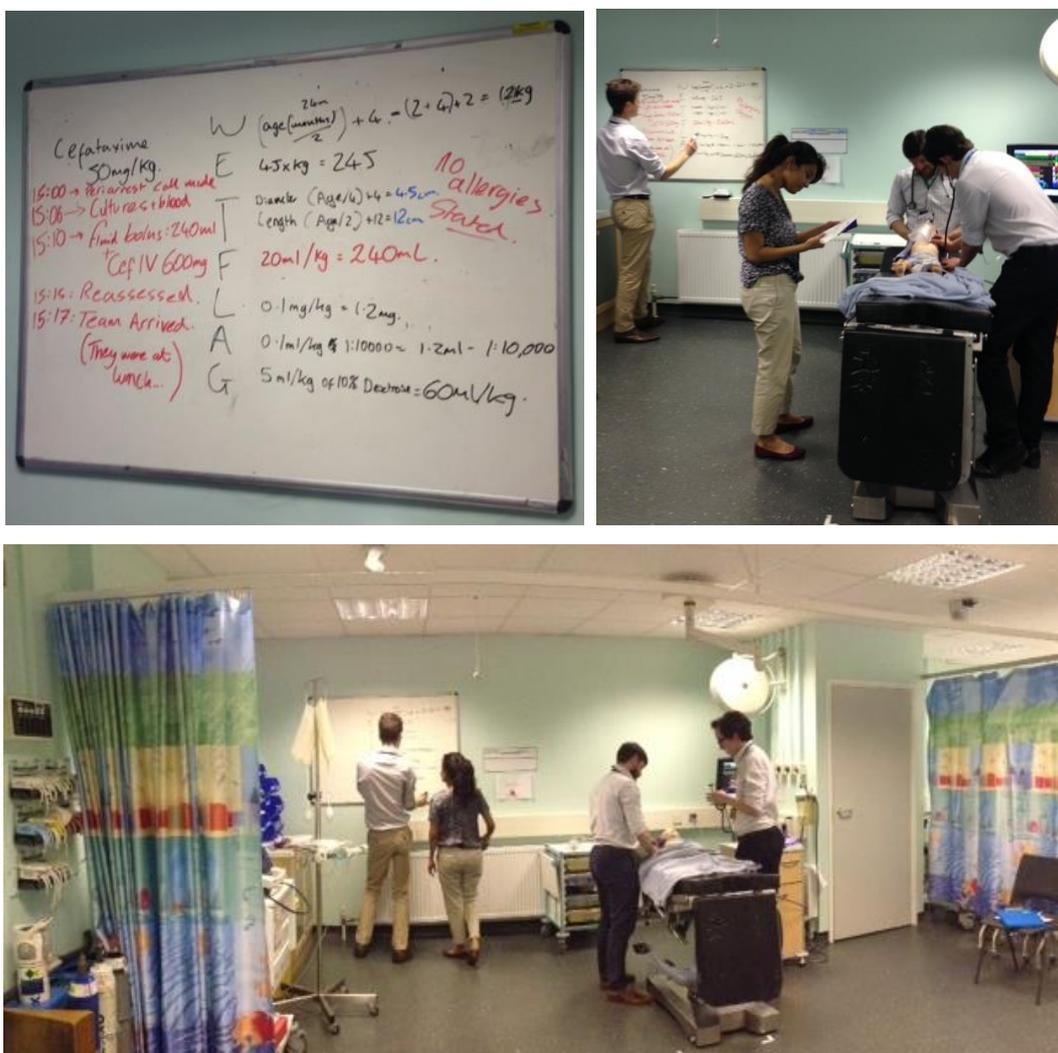


## SIM

Simulation sessions are run in the 3<sup>rd</sup> or 4<sup>th</sup> week of the medical students 4 week placement. The sessions can take place in either a designated simulation suite or 'in-situ' in the ward environment. It is helpful to befriend your local simulation technician or nurse to help organise equipment and facilitate the sessions

Scenarios of 15-20 minutes duration are designed and mapped to the medical student curriculum. It is helpful to encourage the students to 'suspend reality', as buying in to the simulation process often makes it a better learning experience. The aim is that each medical student will have the opportunity to lead at least 1 simulation, with the remaining students in the group acting as team members. It is also encouraged to try to have a mix of medical and nursing students in each scenario to increase realism and help nurture interdisciplinary team working at an early stage of career development.

The simulations are largely 'high signal and low noise', and have clear learning objectives. Students are not expected to run simulations without help or assistance, indeed recognising an acutely unwell child and knowing when to call for help is a vital component of the pRESUS course. The students will need guidance and facilitation from the faculty leading the simulation, as such it is often helpful to be in the room with the students. Example simulations can be found at [www.presus.weebly.com](http://www.presus.weebly.com).



## Equipment Needed to Run Simulation Sessions

- Help from your local sim technician or nurse!
- 2 faculty members – 1 to run the computer and 1 to facilitate the simulation
- An environment to run simulation: sim-suite or 'in-situ' on the ward
- Medium to high fidelity manikins attached to monitoring (Laerdal Sim Baby and Sim Junior are the most commonly used in the Wessex region)
- Paediatric resuscitation equipment – it is helpful to use as much real equipment as possible, ideally a simulated paediatric emergency/crash trolley, which most simulation departments will have. Simple things such as choosing the right face mask and attaching it to oxygen supply or setting up a nebuliser can be valuable learning experiences
- pRESUS simulation scenarios for each faculty member – attached in appendices
- Area to debrief following simulation, including flip-chart or whiteboard for teaching
- pRESUS simulation handouts
- pRESUS evaluation/ feedback forms

## Simulation Scenarios

A variety of simulation topics have been designed for the pRESUS course with each scenario having specific learning objectives. Topics chosen encompass common paediatric presentations and paediatric emergencies.

### Airway

- Choking
- Croup
- Anaphylaxis

### Breathing

- Acute Asthma
- Bronchiolitis
- LRTI/Pneumonia

### Circulation

- Meningococcal Sepsis
- Gastroenteritis & Dehydration
- SVT

### Disability

- Status Epilepticus
- Head injury

### Exposure

- UTI with fever
- Appendicitis
- Intussusception
- Accidental Paracetamol overdose

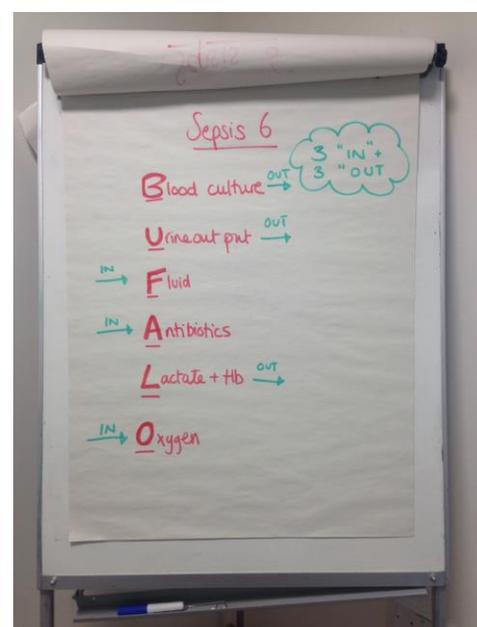
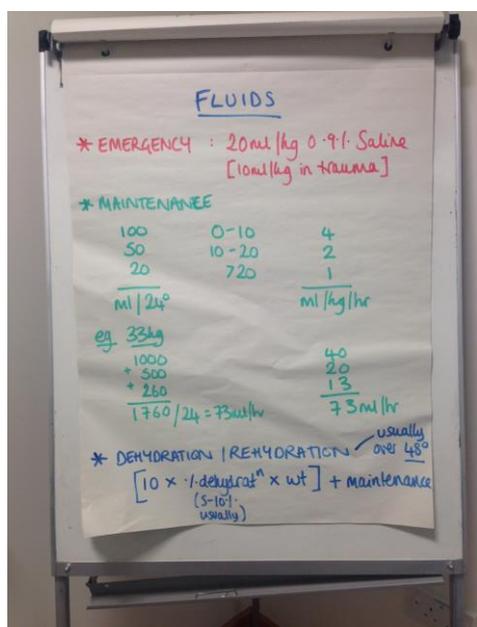
## Debriefing Simulation Scenarios

A comprehensive debrief should follow each simulation scenario, followed by a short teaching session. Debrief is the most important learning part of the simulation sessions and allows the students to explore their actions and thought processes in the hope that their performance in a real situations will improve. The scenarios are largely high signal and as such will be there will be high facilitator involvement to cover practical aspects and basic medical knowledge. That being said, it is also encouraged allow students to debrief themselves in the form of a 'learning conversation'.<sup>7</sup>

Although not essential, it is recommended that paediatric trainees facilitating simulation sessions should have some formal training facilitating and debriefing simulations. Locally, The Southampton Neonatal and Paediatric Simulation Group (SNAPs), run a 2 day 'Train the Trainer' faculty development course which is highly recommended. Alternatively Generic Instructor Training (GIC) for APLS or NLS would also be of benefit. This is to ensure that debrief sessions are constructive and of the highest quality.

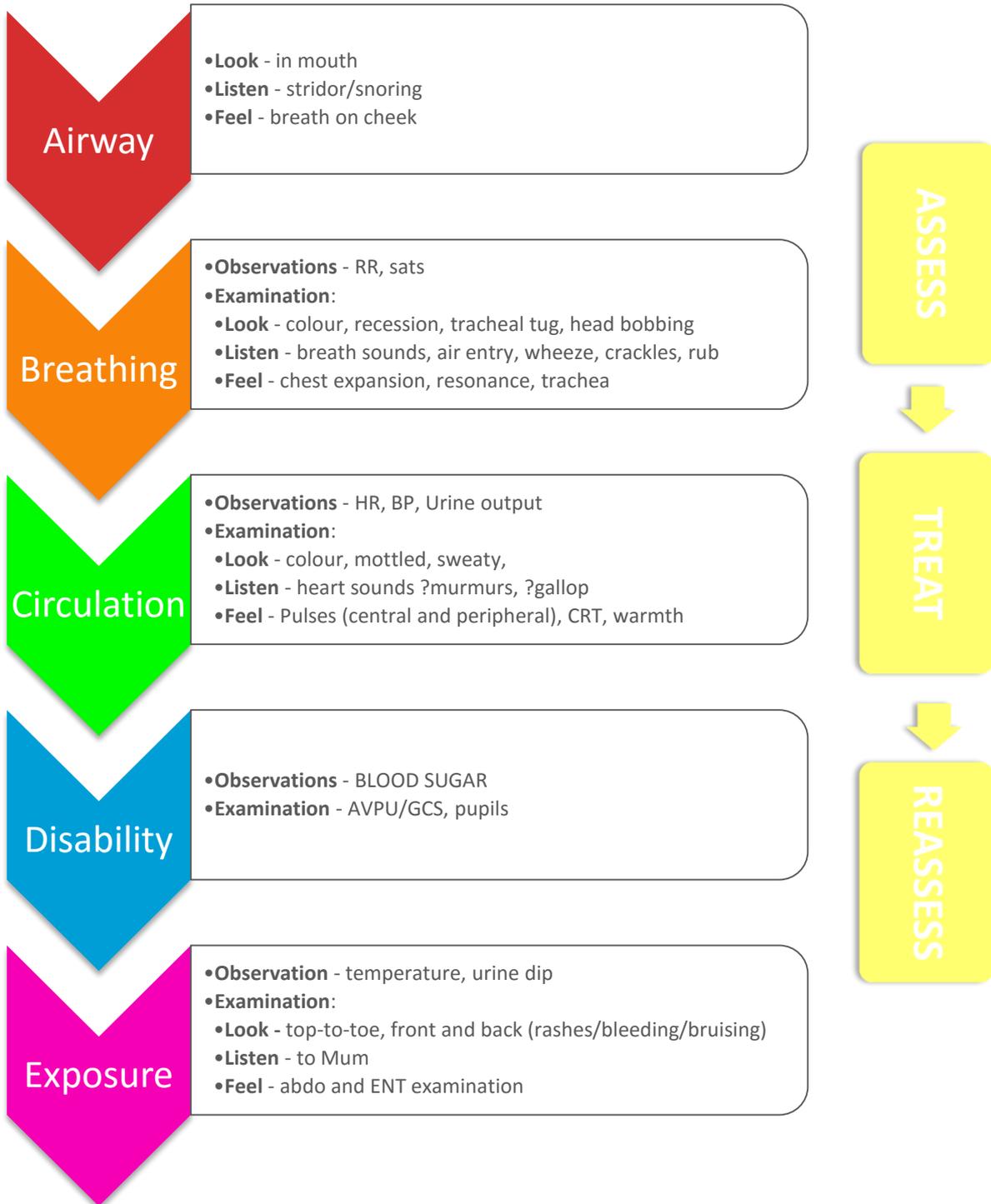
## TEACH

A teaching session is integrated into each simulation debrief, to highlight the key learning points of the simulation topic. The teaching topics can be prepared in advance but may be issues raised by the simulation. Hand-outs of scenario summaries and key learning points from each simulation have been created and can be given to each student at the end of each simulation session. Again, gaining feedback from students is key to ensure continued course development – a post simulation feedback form is attached as appendix 3.



## Appendix 1: pRESUS Interactive Lecture Handout

## The ABCDE Approach



**IF IN DOUBT CALL FOR HELP!!**

## Observations & WET FLAG

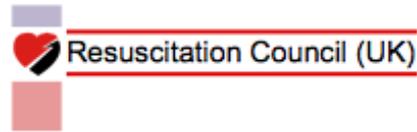
AGE (years)	HR (min)	RR (min)	Systolic BP (mm/Hg)
<1	110 - 160	30 - 40	70 - 90
1-2	100 - 150	25 - 35	80 - 95
2-5	95 - 140	25 - 30	80 - 100
5-12	80 - 120	20 - 25	90 - 110
>12	60 - 100	15 - 20	100 - 120

WET FLAG	Calculation
W – Weight	0-12 months – (age x 0.5) + 4 1-5 years – (age x 2) + 4 6-12 years – (age x 3) + 7 (age +4) x 2
E – Energy	4J/Kg
T – Tube	Diameter: (age/4) +4 Length: (age/2) +12
FL - Fluid	20ml/kg of 0.9% Saline
A – Adrenaline	0.1ml/Kg of 1:10,000 Adrenaline
G - Glucose	2ml/Kg of 10% Dextrose

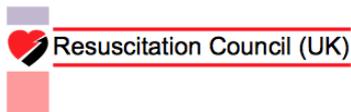
## Possible Intervention & Treatment

System	Intervention	Treatment
<b>A – Airway</b>	Airway Adjuncts NIV I&V	Oxygen Nebulised Adrenaline Nebulised Steroids
<b>B - Breathing</b>	Blood Gas CXR	Salbutamol Hypertonic Saline PO/IV Steroids
<b>C - Circulation</b>	Access Bloods, Cultures Lactate Catheter	Fluid Bolus 0.9% Saline 10-20ml/Kg IM Adrenaline 10mcg/kg or 0.1ml/kg of 1:1000
<b>D - Disability</b>	Airway Positioning Immobilisation Recovery Position	10% Dextrose Bolus 2ml/Kg Anti-epileptics Naloxone
<b>E - Exposure</b>	Remove Clothing - Look Top to Toe & Front to Back	Antibiotics Antipyretics

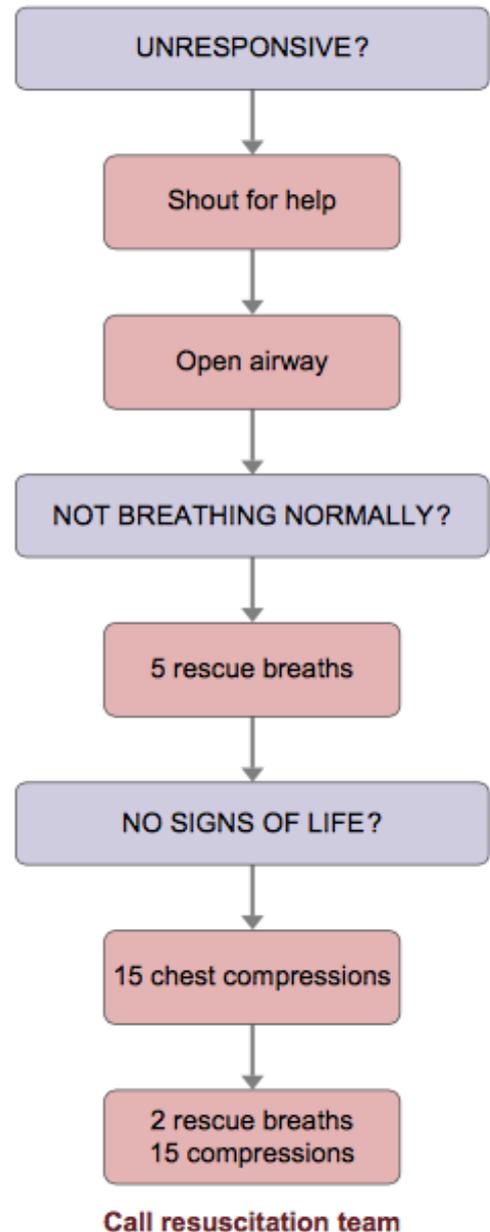
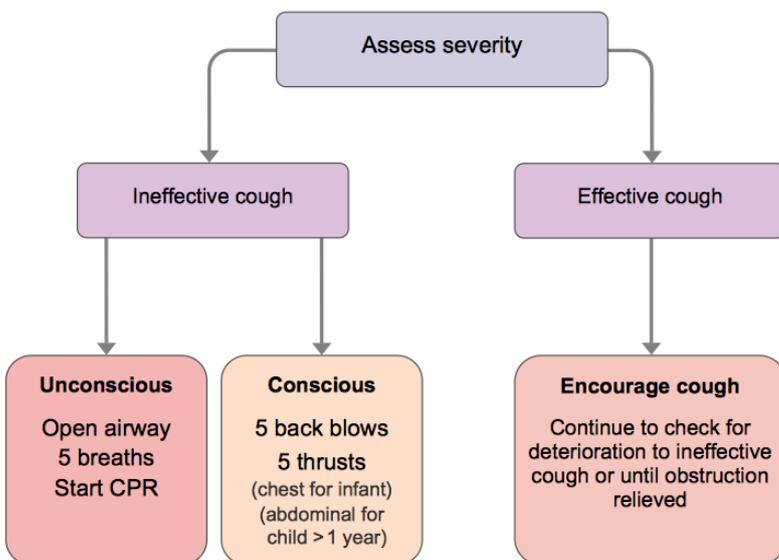
# BLS & Chocking Algorithms



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



## Paediatric Choking Treatment Algorithm



## Helpful Resources

Resource	Website	Description
Spotting the Sick Child 	<a href="http://www.spottingthesickchild.com">www.spottingthesickchild.com</a>	Interactive teaching resource on the assessment of the unwell child
SORT 	<a href="http://www.sort.nhs.uk">www.sort.nhs.uk</a>	<ul style="list-style-type: none"> <li>• Advice &amp; referral to PICU</li> <li>• Drug Calculator</li> <li>• Guidelines</li> <li>• Formulary</li> </ul>
RESUS Council 	<a href="http://www.resus.org.uk">www.resus.org.uk</a>	Resuscitation guidelines and algorithms
BNFc 	<a href="http://www.bnf.org">www.bnf.org</a>	Medication dosing
pRESUS team 	Email: <a href="mailto:pRESUScourse@gmail.com">pRESUScourse@gmail.com</a> <a href="mailto:fionahignett@gmail.com">fionahignett@gmail.com</a>	For advice about the pRESUS course, pursuing a career in paediatrics or any paediatric related queries!

## Appendix 2 - Pre and Post Interactive Lecture Feedback Forms

## pRESUS Interactive Lecture Feedback (pre)

We are constantly trying to improve our teaching sessions so your feedback is invaluable.

Thank you!

**Date of Teaching:** \_\_\_\_/\_\_\_\_/20\_\_\_\_

**Location/hospital:** Dorchester Poole Salisbury Southampton Winchester  
Portsmouth Basingstoke

**Have you ever had exposure to paediatric simulation training?** Yes / No

**Have you ever had exposure to adult simulation training?** Yes / No

**Have you ever had formal paediatric BLS training?** Yes / No

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am confident in recognising an unwell child					
I am confident in utilising the ABCDE approach with children					
I am confident in performing paediatric BLS					
I know who and how to call for help in this trust					

## pRESUS Interactive Lecture Feedback (post)

We are constantly trying to improve our teaching sessions so your feedback is invaluable.

Thank you!

**Date of Teaching:** \_\_\_\_/\_\_\_\_/20\_\_\_\_

**Location/hospital:**   Dorchester   Poole   Salisbury   Southampton   Winchester  
   Portsmouth   Basingstoke

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I found this session useful					
The material covered was at the correct level for my training					

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am confident in recognising an unwell child					
I am confident in utilising the ABCDE approach with children					
I am confident in performing paediatric BLS					
I know who and how to call for help in this trust					

Please write down one thing you have learned today that you will use in clinical practice.

.....

How could this session be improved for future participants?

.....

Any other comments/suggestions?

.....

## Appendix 3 - Post Simulation Session Feedback Form

## pRESUS Simulation Session Feedback

Date of Teaching: \_\_\_\_/\_\_\_\_/20\_\_\_\_

Location/hospital:   Dorchester   Poole   Salisbury   Southampton   Winchester  
   Portsmouth   Basingstoke

Simulation Topic(s):  
 .....

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I found the scenario(s) useful					
I understand more about the subject of the scenario(s)					
I have more confidence to deal with this subject/these subjects					
The material covered was relevant to me					

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am confident in recognising an unwell child					
I am confident in utilising the ABCDE approach with children					
I am confident in performing paediatric BLS					
I know who and how to call for help in this trust					

Please write down one thing you have learned today that you will use in clinical practice.

.....

How could this session be improved for future participants?

.....

Any other comments/suggestions?

.....

## References

1. [www.pRESUS.weebly.com](http://www.pRESUS.weebly.com)
2. [www.wessexstripes.com](http://www.wessexstripes.com)
3. Issenberg SB, McGaghie WC, Petrusa ER, Lee Gordon D, Scalese RJ. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Medical Teacher*. 2005 27(1): 10-28.
4. Walker V, Wall DW, Goodyear HM. Paediatric training for GP VTS trainees: are we meeting the requirement? *Educ Prim Care* 2009 20(1): 28–33(6).
5. Urgent and Emergency Care Review Team. High quality care for all, now and for future generation. Transforming urgent and emergency care services in England. The Evidence Base from the Urgent and Emergency Care. NHS England. June 2013.
6. Ten Cate O, Durning S. Peer teaching in medical education: twelve reasons to move from theory to practice. *Medical Teacher*. 2007 29(6): 591-599.
7. <https://mobilesim.files.wordpress.com/2011/03/debrief-as-a-learning-conversation.pdf>