

Preparing for Retrieval in Medical Emergencies

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Optimus **PRIME** Instructor's Manual



Optimus

PRIME

Preparing for Retrieval In Medical Emergencies

Optimus PRIME: Instructor's Manual

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An electronic version of this document is available at <https://www.childrens.health.qld.gov.au/chq/health-professionals/qld-paediatric-emergency-care/education/optimus-prime/>

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Section 1 : Overview & Preparation



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Overview

What is Optimus PRIME?

PRIME is a course aimed at responders who will be called upon to resuscitate any unwell child pending the arrival of a Paediatric Intensive Care Unit or retrieval team.

Educational Goals:

PRIME builds upon the foundations of [Optimus CORE](#) to cover:

- Advanced airway management
- Mechanical ventilation
- Inotrope preparation
- Status epilepticus management
- The role of communication and human factors in paediatric resuscitation

In order to create a shared mental model & team-based approach to these issues the course uses a blend of:

- [eLearning](#)
- Case-based discussion
- Practical skills stations
- Scenario based learning

PRIME is informed by multiple educational learning principles including Knowles experiential learning theory, cognitive load theory, William G Perry's scheme of intellectual and ethical development and mastery learning concepts such as the 'Learn, See, Practice, Prove, Do, Maintain' framework.

Each module helps participants from a variety of experience levels by:

- Discussing each concept as a group
- Rehearsing essential components of a complex task in skill stations
- Contextualising that task within clinical practice by rehearsing in a team-based, simulated environment

Quality and Safety Goals:

This updated version of PRIME aims to support a hospital's ability to identify latent safety strengths, threats and opportunities for performance improvement through the framework of 'Self, Team, Environment and System'.

The course is designed to utilise the conversations and simulations throughout the day to uncover actionable systems concerns and identify pathways for escalation and empower teams to embed a culture of continuous performance improvement within their service.

Faculty:

- We trust that local hospitals will be able to determine their own faculty
- In isolated rural areas, the faculty to candidate ratio may be quite low
- When possible, for your resources we recommend that:
 - Faculty be a mix of medical and nursing staff
 - Some staff have experience in simulation and debriefing

Participants:

- All health staff who might attend a paediatric emergency.

What is OPTIMUS?

OPTIMUS is a suite of courses designed to create a complete paediatric life support training package.

It has been developed to address Queensland's training needs in paediatric critical care in line with the recommendations of NSQHS Standard - Recognising and responding to acute deterioration.

- **CORE** is a course for first responders to a paediatric emergency and teaches recognition of the deteriorating patient, Children's Early Warning Tools, and resuscitation competencies
- **PRIME** is a course for mid-phase responders who look after unwell patients while awaiting retrieval or escalation to an Intensive Care setting. It aims at contextualising seizure management, endotracheal intubation and inotrope administration.
- **PULSE** is a CPR refresher designed around the principles of Rapid Cycle Deliberate Practice
- **BONUS** is a standalone simulation with supportive educational material. It is one solution to skill and knowledge decay after courses are run.

The Optimus Curriculum is a spiral curriculum where the learning objectives for effective paediatric resuscitation are taught throughout our courses while providing opportunities for spaced practice, clinical contextualisation and quality improvement moments.

Who is STORK?

In 2014, Children's Health Queensland funded the 'Simulation Training Optimising Resuscitation for Kids' service. STORK is a paediatric education team focused on improving healthcare outcomes for children throughout the state.

If you would like to know more information about STORK or acquire copies of our resources, please contact us at stork@health.qld.gov.au.

Course Timetable

OPTIMUS Prime

Location:

Time and Date:

0800-0820	20	Registration & Introduction
0820 - 0920	60	Human Factors in Paediatric Emergencies
0920 - 0935	15	Seizure management plenary
0935 – 1000	25	Anti-epileptic infusion skills station
1000 – 1015	15	Morning Tea
1015 - 1030	15	Team Familiarisation with the Simulated Environment
1030 - 1115	45	Simulation 1: Status Epilepticus
1115 – 1145	30	Paediatric Intubation discussion
1145 – 1230	45	Airway skills
1230 - 1300	30	Paediatric Basic Ventilation discussion
1300 – 1330	30	Lunch
1330 – 1415	45	Simulation 2
1415 – 1440	25	Shock discussion
1440 – 1500	20	Inotrope and Fluid Bolus Skills Station
1500 – 1515	15	Afternoon Tea
1515 – 1615	60	Simulation 3
1615 – 1630	15	Wrap-up & Evaluation

Online Resources for Faculty

This manual contains information on every station and simulation on the course.

For the most up to date version of our slides, completion certificates, printable resources and manual versions, please visit the [Queensland Paediatric Emergency Care Education](#) website.

In addition to our most up to date resources, you will also find a wide variety of links to:

- [Resuscitation tools and checklists](#)
- [Queensland paediatric emergency guidelines](#)
- [An online resuscitation calculator](#) for emergency drugs (the CREDD book)
- [State-wide escalation pathways](#)
- [Online training videos](#) for procedural skills (such as NG insertion, IV insertion, etc)

In the month before your course, we recommend you send a link to the Optimus PRIME website for all faculty and participants:

<https://www.childrens.health.qld.gov.au/chq/health-professionals/qld-paediatric-emergency-care/education/optimus-prime/>

This will direct participants to the eLearning and faculty to the instructor's manual.

eLearning

The PRIME eLearning modules are a critical component of the course.

There are 4 modules covering assessment and management of 4 critically unwell patients. The cases include status epilepticus and sepsis.

It is important to give your candidates enough time to complete the eLearning prior to the course, so we recommend sending out a link to the eLearning 1 month before the course.

- The eLearning is hosted on Queensland Health's [iLearn platform](#).
- Users should search for Optimus PRIME within iLearn.
- iLearn can be accessed from home via the internet but does require users to sign up for an account.
- Completion certificates for the eLearning can take 48 hrs to be created after completion of the course.
- Candidates should print out a copy of their eLearning completion and bring it to the face-to-face course.

Equipment Checklist

Tabletop Simulation		
Physical Equipment:	Hospital paperwork / files:	Printed resources from PRIME:
Table	CEWT: 1-4 years	Team Briefing Checklist
Whiteboard and fine markers	Sepsis Pathway	Laminated cut out images from the tabletop simulation pack
Post It Notes	Drug/Infusion order chart	Blank laminated page for notes
PC with access to QPEC	CREDD Book	CHQRS Retrieval Checklist
Role label stickers e.g. team leader/circulation etc		DKA Emergency + Ongoing Management Guide
Infusion Stations Seizures & Inotropes	Quantities for 1 station – DOUBLE/TRIPLE for parallel stations	
3 x 50mL syringes	8 x drug labels (or roll)	2 x Phenytoin 250mg / 5ml
30mL syringe	4 x chlorhexidine wipes	3 x Levetiracetam 500mg / 5ml
2 x 10mL syringes	Drug Infusion pump	Adrenaline 1mg / 10mL
2 x 3mL syringes	Rapid infusion IV giving set	Adrenaline 1mg / 1mL
2 x 1mL syringes	3-way tap with extension	Fluid Prescription Chart
15 x NaCl amps (Or 1L NaCl)	2 x 3-way taps (no extension)	Drug Prescription Chart
1L 0.9% NaCl	Phenytoin filter (0.22 micron)	CHQ Seizure guideline
2 x 19g sharp needles	IV extension lines for pump	Paediatric Sepsis pathway
2 x 19g blunt needle	Bag spike	CREDD
Sharps container	Box of gloves	Calculators
Absorbent Sheets e.g. Blueys		
Airway Station	Quantities for 1 station – DOUBLE/TRIPLE for parallel stations	
Silver Trolley (or table)	Infant ETCO ₂ capnography	Supraglottic Airway (LMA / i-gel ®): 1 / 1.5 / 2.0
Infant intubation head (Or infant ALS Manikin)	Adult ETCO ₂ capnography	Microcuff ETT: 3.0 / 3.5 / 4.0
Baby wraps (or small towels)	Masks: 0 / 1 / 2	Brown leucoplast 1" tape
Infant O ₂ nasal prongs	Paed BVM	Comfeel
Paed O ₂ mask with reservoir	Magill forceps	Skin prep
HNFC prongs 25L/m (green) +/- 20L/m (purple)	Tongue depressor	Tape measure
NPA: 2.5 / 3.0 / 3.5	Stylet	Scissors
Oropharyngeal airway: 0/1/2	8fr bougie	Pressure manometer
Yankauer Adult + Paed	2 x 5mL syringes	Laryngoscope handles
Size 6 suction catheter	Stethoscope	Miller (straight) blade 0 / 1

Size 6 nasogastric tube		Mac (curved blades) 1 / 2
Box of gloves	<u>Mothership medication syringes:</u> 20mL syringe labelled: <ul style="list-style-type: none"> • Ketamine 10mg / mL 10mL syringes labelled: <ul style="list-style-type: none"> • Rocuronium 10mg / mL • Adrenaline push dose pressor 10microg / mL • Adrenaline arrest dose 100microg / mL <u>Patient Dose Syringes:</u> 4x 3mL syringe 4x two-way connector (or 3-way taps) 4 x NAD	Optional Equipment dependent on setting/expectations: Video Laryngoscope Anaesthetic Circuit (C-Circuit) T-Piece Pedi-Cap™ (for people / places that might use this)
Simulation		
Manikins etc.	Specific equipment requirements:	Simulated Medications:
Infant sized manikin (e.g. ALS baby, SimBaby, NewB)	Paediatric saturations probe	6 x Phenytoin 250mg / 5mL
+/- simulated monitoring	Infant BP cuff	6 x Levetiracetam 500mg / 5mL
2 x IV Drainage circuit	Thermometer	2 x Suxamethonium 100mg / 2mL
CEWT Chart 0-1yr + 1-4yr	Cardiac leads	2 x Rocuronium 50mg / 5mL
Sepsis Pathway	Medication atomiser	4 x Fentanyl 100mcg / 2mL
Computer access to QPEC	Box 0.9% NaCl 10 mL amps	4 x Ketamine 200mg / 2mL
Telephone call capabilities	6 x Drawing up needle	4 x Morphine 5mg
Drug Chart	10 x 3-way or 2-way tap	10 x Midazolam 5mg
Fluid Prescription Chart	4 x 50mL syringes	3 x Adrenaline 1mg / 10mL (1:10000)
Drug labels	1 x 30mL syringe	3 x Adrenaline 1mg / 1mL (1:1000)
Paed resuscitation trolley – Set up as per local check list is ideal (Sims will req: Basic airway Management; adv airway incl. intubation; IV cannula)	10 x 10mL syringes	2 x Cefotaxime 1gram
	10 x 5mL syringes	2 x Ceftriaxone 1gram
	10 x 2mL syringes	2 x Lincomycin 600mg / 2ml



Module 1 : Teamwork & System



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Module 1. Teamwork and System

Learning Goals

- Establish psychological safety for participants
- Outline the course
- Explore complex versus complicated systems
- Establish course as one aspect of a continuous performance improvement cycle
- Set ground rules for course
- Identify opportunities to 'close the loop' on latent safety threats identified throughout the day

Overview:

This session is designed as an icebreaker / warm up for participants.

It contains opportunities to:

- Introduce faculty and participants
- Explore the curriculum and timetable of the course
- Start exploring 'how things work' in your local hospital
- Introduce performance improvement frameworks
- Embed state-wide guidelines and resources into local practice
- Start participants becoming a team through an introductory simulation

Module 1 is an introductory lecture followed by a tabletop simulation.

Each section is demonstrated and outlined below.

1.1 Introductory Lecture

Learning Goals

- Establish psychological safety for participants
- Outline the course
- Prompt reflection on the realities of complex versus complicated systems
- Frame course as one aspect of a continuous performance improvement cycle
- Establish ground rules for course
- Identify opportunities to 'close the loop' on latent safety threats identified throughout the day

The introductory slides and table-top simulation for PRIME are designed to frame the course within a long-term performance improvement framework.

Demonstration Video:



Equipment: PowerPoint Slides + Tabletop Simulation Pack + Post It Notes / Whiteboard markers

Preparation:

- Arrange participant chairs in a semi-circle to ensure adequate view of slides
- Arrange the contents of the Tabletop Simulation Pack on a table to the side. You do not have to sort out the contents of the pack as teams will do that as part of the simulation.

Time Allocated: 1hr 20 minutes (including tabletop simulation)

Session Overview:

- Use the PowerPoint slides provided to facilitate discussion and establish the tone of the day.
- Once at the 'Tabletop Simulation' slide, use the scripts provided in the next section to facilitate the simulation.

Closure:

- After the simulation, return participants to their seats to discuss Module 2: Status Epilepticus.

1.2 Tabletop Simulation

Learning Goals & Objectives

Educational Goal:	<ul style="list-style-type: none">• Familiarise participants with each other and explore their different experiences / roles within the organisation• Establish learner-centred philosophy and psychological safety• Understand the framework of Self, Team, Environment and System to explore team performance• Reflect on CRM principles and elements of effective team communication
Skills Rehearsal:	<ul style="list-style-type: none">• Rehearse a structured pre-brief prior to patient arrival• Structured assessment of the severely unwell child• Management of a child with severe diabetic ketoacidosis
Systems Assessment:	<ul style="list-style-type: none">• Help services with paediatric readiness and identify areas for service improvement• Identify actionable quality/safety interventions to improve local paediatric critical care• Identify barriers to access of paediatric clinical guidelines appropriate to service

Case Summary: Brief Summary of Case Progression and Major Events

A 4-year-old girl arrives via ambulance with severe diabetic ketoacidosis (DKA).

Her symptoms include vomiting and abdominal pain for 48 hrs, polydipsia and increased nocturia.

Parents found her difficult to wake. She has an altered level of consciousness and Kussmaul breathing. Ambulance personnel attempted to insert an IV on route but were unsuccessful.

She has an unremarkable prior medical history and vaccinations are up to date.

This case is designed to explore preparation of the team, the environment, and systems to receive and manage a critically unwell child through diagnosis of DKA to stabilisation and retrieval.

This is a group exercise whereby participants talk through and role play conversations and tasks in a simulation with low physical realism.

Demonstration Video:



Tips for Facilitators

Acknowledge that the makeup of the team on the course may not reflect the “normal” team (i.e. participants from ED, Ward, ICU may not normally work together). This scenario is an opportunity for the team to start building relationships and experience some initial feedback in a low stakes setting. We suggest utilising the scenario and debrief to celebrate their knowledge and, as such, recommend against increasing the scenario’s complexity beyond what is written here.

The key goals are to role model a supportive learning environment through a relatively non-threatening simulation and establish a culture of curiosity and mutual respect.

It can be tempting to stop the simulation and start talking for extended periods of time. While some of this is beneficial, try to keep re-engaging participants in the simulation headspace after pausing to discuss a topic or ask a question.

With a tabletop simulation you may need to help the team “buy into” the fiction contract. It is useful to proactively give them details that they would see if the patient was there.

Scenario Cast

Patient:	Laminated child
Actors:	1 or 2 facilitators according to preference

Required Equipment

Physical Equipment:	Hospital paperwork / files:	Printed resources from PRIME:
Table	CEWT: 1-4 years	Team Briefing Checklist
Whiteboard and fine markers	Sepsis Pathway	Laminated cut out images from the tabletop simulation pack
Post It Notes	Drug/ Infusion order chart	Blank laminated page for notes
PC with access to QPEC	CREDD Book	CHQRS Retrieval Checklist
Role label stickers e.g. team leader/ circulation, etc.		DKA Emergency + Ongoing Management Guide

Timing

Prebrief: 5 mins		Pause and discuss moments
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Orientation from Facilitator

“Welcome to our first simulation for the day!”

Invite the group to gather around the ‘patient and equipment’ on the table.

“Over the next 40 mins we will run a tabletop exercise. There are 3 main goals for this exercise:

- 1) This may be an unusual team makeup so this is an opportunity for you to get to know each other and how we are going to work today
- 2) Explore elements of the Self, Team, Environment, System framework
- 3) Explore managing an unwell child in your service.”

Orientate the participants to the laminates of the patient, equipment and other resources laid out on the table.

“There’s a sick kid coming into your department and we’d like you to manage them as if you were in your own clinical environment. So rather than standing around and listing what you’d do, we really want you to jump in and use the equipment provided, write down your medications and infusions, and communicate with each other as if you were at the bedside. We will try to fill in the details you would see, what the patient looks like, their observations when monitoring is applied and other important details like procedural success/failure or responses to interventions. Along the way we’ll pause to discuss and highlight some key moments as they occur.”

Set the scene: “It is a busy day and there is lots of diarrhoea and vomiting going around. Shortly you’ll get a call from your local paramedic en route to your department.”



Scenario Progression: Tabletop simulation

Phase 1 – TEAM: Pre-arrival

Identify a participant who would answer the ambulance service phone as part of their usual role.

Provide this participant with the paramedic information **separately** from the rest of the group.



Hello this is from the paramedic service.

We're on our way with a 4-year-old female with vomiting and abdominal pain. She has rapid breathing, is pale and lethargic.

Obs: SaO2 98%; RR 42, no recession, deep breathing; HR 150, CRT 4, BP 75/50; GCS 11; BGL HI; Temp 36.6, No rashes, looks pale.

We are attempting cannulation to administer a fluid bolus. ETA 5 minutes.

Patient State	Patient Status	Learner Actions	Facilitator Tips
Pre-arrival	Pre-arrival	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Allocate roles <input checked="" type="checkbox"/> Facilitate a pre-brief <input checked="" type="checkbox"/> Start preparing for arrival 	<p>“Ok, so you have assembled your team, you have 5 mins before the patient arrives – this is useful time for mental and physical preparation, have a go at getting ready for this patient”</p>

Pause after a few minutes to either highlight the presence or absence of an effective pre-brief



“I'd like to pause us here and just offer some feedback.

One of the key components of an effective resuscitation team is clear role allocation, shared knowledge and shared goals.”

(Highlight either a successful pre-brief or suggest that the team's preparation time could be optimised)

We have a pre-brief checklist here that can be helpful to provide some structure to those first few minutes prior to patient arrival. Would it be okay if we rewind the scenario a bit and gave you the chance to try it out?

(Handover the checklist and allow the team to rewind and re-rehearse the pre-brief)

Phase 2 – Handover and primary survey

Patient arrives with Paramedic



This is Kirra. She is a 4-year-old who weighs 16 Kgs.
 Airway is patent; B RR 42, no recession, deep breathing, Sats 98%; C HR 150, CRT 5, BP 65/45; D AVPU, BGL HI; E: Temp 36.6, No rashes, looks pale & shocked.
 History: Has been unwell for last 24-48 hours with sore abdomen, in the middle. Started vomiting this morning. Seems sleepier. Her breathing has got faster.
 I've attempted cannulation, but she is peripherally shut down and I was unsuccessful.
 Other history if asked:
 a. Lost weight, getting up in the night for wees over the last 2 weeks
 b. Nil medical history
 • Nil allergies, Immunisations up to date

Patient State	Patient Status	Learner Actions	Facilitator Tips
Rhythm: Sinus HR: 150 BP: 65/45 Cap refill 5s RR: 48, deep O₂ SAT: 97% T: 36.6 AVPU - Pain BGL – Hi Ketones: 6.9 Pupils: reactive	Quiet and lethargic. Looks unwell and shocked. Airway: Patent Breathing: no recession, deep – Kussmaul Circulation: Pale, cool peripheries, pulses present No rashes	<input checked="" type="checkbox"/> Receive handover <input checked="" type="checkbox"/> Facilitate primary survey <input checked="" type="checkbox"/> Obtain IV or IO access <input checked="" type="checkbox"/> Ensure venous gas, blood cultures taken	Allow team to facilitate ABCDE assessment. Observe for (and highlight) examples of: <ul style="list-style-type: none"> • Closed-loop communication • Shared vision / mental models • Effective recaps • Active followership

Pause to explore ENVIRONMENT



“Can we pause for one moment and talk about your real environment? Where would you usually assess a child as sick as Kirra? Are there things about the space that make looking after sick kids easy? Are there things that could be changed?”
(Examples might include drugs bench/area, is it separate or in the same vicinity? Adv/risk with this? Access to telehealth? Access to computers, orientation of room? Highlight good things or changes – here is an opportunity to start using the Post It notes if suggestion come up)

Scenario Progression: Tabletop simulation

Phase 3: Resuscitation and diagnosis

Provide results of venous gas or bedside glucose.

If this has not been requested, advise that 'a bedside glucose has been done, and the result is high'

Patient State	Patient Status	Learner Actions	Facilitator Tips
Rhythm: Sinus HR: 150 BP: 65/45 Cap refill 5s RR: 48, deep O₂ SAT: 97% T: 36.6 AVPU - Pain BGL – Hi Ketones: 6.9 Pupils: reactive	Remains shocked with deep breathing Airway: Patent Breathing: Intercostal recession, Kussmaul breathing, equal AE Circulation: Pale, cool peripheries, pulses present Provide VBG - Glucose 36, Ketones 6.9	<input checked="" type="checkbox"/> Identify DKA <input checked="" type="checkbox"/> Support airway <input checked="" type="checkbox"/> Circulation: <ul style="list-style-type: none"> • Fluid bolus • Reassessment <input checked="" type="checkbox"/> Consider differential diagnosis – e.g. sepsis +/- Antibiotic	Observe for identification of correct diagnosis and consideration of differentials / complications. Listen for a recap or diagnostic clarification with the whole team. Observe for safe practice in managing DKA including: <ul style="list-style-type: none"> • Appropriate treatment of shock without excessive fluid administration • Continuous reassessment

Pause simulation to discuss cognitive bias in paediatrics



“Can we pause here because the team is at an important ‘pivot point’ in a resuscitation: a change in diagnosis!”

Introduce cognitive bias and ways that help avoid errors in cognition, to highlight flaws in the way we sometimes think.

“Cognitive biases can impact our clinical judgement. With lots of gastroenteritis around at the moment, it would have been easy to assume she just has bad gastro and keep giving her fluid. Does anyone have strategies they use to make sure we keep our differentials open and help our teams adapt to new information?”

Facilitate discussion of strategies to prevent diagnostic bias e.g.:

- Update team with recaps that include the diagnosis and current goals
- Inviting suggestions and asking the team: “What are we missing? What else could this be? What’s our differential diagnosis?”
- Listening to patients, caregiver and clinician concerns
- Making sure to make suggestions and sharing our observations
- Follow-up response to interventions with an open mind

“Can we jump back into the simulation and have a practice at doing a recap that includes some thoughts about differentials and complications?”

Scenario Progression: Tabletop simulation

Phase 4: Assess response to initial resuscitation and access guidelines

Prompt the team to recap and then reassess patient's response to initial treatment

Patient State	Patient Status	Learner Actions	Facilitator Tips
Rhythm: Sinus HR: 140 BP: 80/55 Cap refill 3s RR: 40 O₂ SAT: 98% on O ₂ T: 37.0 AVPU - voice BGL Hi Pupils: Reactive	Less shocked, GCS improving in response to fluids Airway: Patent Breathing improving mildly Circulation: improved with fluid	<input checked="" type="checkbox"/> Share mental model <input checked="" type="checkbox"/> Consider differentials <input checked="" type="checkbox"/> Reassess patient <input checked="" type="checkbox"/> Identify DKA pathway and fluid calculator <input checked="" type="checkbox"/> Follow DKA guideline for management – insulin, ongoing fluid replacement over 48hrs (0.9%NaCl, Glucose 10%, KCL 40%) <input checked="" type="checkbox"/> Make a plan to commence insulin in 1hr	Observe for identification of an appropriate paediatric DKA guideline or pathway. Observe for consideration of complications of DKA including cerebral oedema, aspiration pneumonia.

Pause to highlight access to paediatric critical care guidelines



“So, we’ve recognised severe DKA which can be tricky to manage. Having reliable systems for advice can really help us deliver quality care. How does your team access guidelines about managing DKA in children?”

Explore how the team stores and accesses paediatric clinical guidelines, i.e. QPEC, Sharepoint, Paper guidelines etc.

- *QPEC – DKA guideline / Fluid calculator*
- *CREDD*
- *Advice from local experts / retrieval services*

Allow 2 mins for the team to review the DKA guideline and discuss treatment needs. Ensure team aware of fluid calculator.

Optional summary: “So we’ve explored how there are some statewide SYSTEMS such as electronic resources that can help us manage sick kids. Let’s jump back into the sim, and explore where to go from here.”

Scenario Progression: Tabletop simulation

Phase 5: Preparing for retrieval

Prompt team to consider disposition: "Where would this patient go once they've been stabilised?"

Patient State	Patient Status	Learner Actions	Facilitator Tips
Rhythm: Sinus HR: 140 BP: 80/55 Cap refill 3s RR: 40 O₂ SAT: 98% on O ₂ T: 37.0 AVPU - voice BGL Hi Pupils: Reactive	Less shocked, GCS improving. Airway: Patent Breathing improving mildly Circulation: improved with fluid	<input checked="" type="checkbox"/> Follow DKA guideline for management – insulin, ongoing fluid replacement over 48hrs (0.9%NaCl, Glucose 10%, KCL 40%) <input checked="" type="checkbox"/> Make a plan to commence insulin <input checked="" type="checkbox"/> Escalate care / identify disposition plan	Prompt team to consider disposition Role-play a phone call to retrieval services / ICU as appropriate for service (see script below)



Hello, I'm from the Retrieval service. How can I help?
 (Listen to phone call and provide supportive, considerate advice)

"I will activate a retrieval team and call you back to confirm our estimated time of arrival. Is there any specific advice you'd like right now?"

Advise to:

- Cautiously optimise the patient's haemodynamics, being mindful of cerebral oedema
- Access guideline to management of DKA on the QPEC site
- Access retrieval checklist on QPEC to optimise patient for transport
- If asked about intubation, explore reasons to intubate but steer them away from emergency intubation at this stage since patient is improving
- If asked about 3% NaCl or mannitol, advise to prepare to use if GCS worsens
- Patient to sit head up at least 20° to help prevent aspiration.

Scenario Progression: Tabletop simulation

Phase 6: Implement retrieval checklist

Prompt the team to access retrieval checklist and contextualise to patient

Patient State	Patient Status	Learner Actions	Facilitator Tips
Rhythm: Sinus HR: 140 BP: 80/55 Cap refill 3s RR: 38 O ₂ SAT: 98% on O ₂ T: 36.9 AVPU - voice BGL Pupils: Reactive	Less shocked, pale Airway: Patent Breathing: improved, remains deep Circulation: improved	<input checked="" type="checkbox"/> Recap and work through ongoing management for DKA <input checked="" type="checkbox"/> Work through retrieval checklist <input checked="" type="checkbox"/> Consider interventions to optimise care of patient	Encourage facilitation of retrieval checklist post call with intensivist Consider pausing and exploring key components of checklist with whole team Optional question: “When would you choose to have a visual vs phone conversation with RSQ? What are the challenges encountered? (e.g. audio / team leadership)?” Optional, only if time allows: Another resus patient has arrived in need of the resus bed, where can child be moved to with close monitoring? What else needs to be considered for safe transfer and ongoing care (e.g. system escalation processes, staffing).

Close the scenario and recap key points



“Thank you for participating in the sim! The retrieval team have called back to confirm they’re on their way!
To recap the key points, I noticed that as a TEAM we reflected on.....
We discussed that our ENVIRONMENT might need to be changed by.....
We explored the SYSTEMS that can help us such as
We will continue to call back to the themes as we work through the rest of the day. Are there any issues that we need to write up on our Post It notes so far?”

Patient's Blood Gas Result

	Results	Units	Normal Range
pH	6.98		7.32 – 7.42
pCO2	13	mmHg	41 - 51
pO2	29	mmHg	25 - 40
O2 Saturations	55	%	40 - 70
Bicarb	3	mmol/L	22 - 33
BE	-26	mmol/L	-3 - +3
HCT	0.55		0.3 - 0.42
Hb	160	g/L	105 - 135
Na+	128	mmol/L	135 - 145
K+	5.4	mmol/L	3.2 - 4.5
Ca++ (ionised)	1.4	mmol/L	1.15 – 1.35
Glucose	36	mmol/L	3.0 – 7.8
Lactate	3.5	mmol/L	0.7 – 2.5



Module 2 : Paediatric Status Epilepticus



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Module 2. Paediatric Status Epilepticus

The Status Epilepticus module prepares participants to manage the seizing child by:

- Providing foundational knowledge on the status epilepticus algorithm via the eLearning
- Refreshing and deepening that knowledge in the case vignette
- Linking participants to statewide resources on status epilepticus
- Rehearsing the safe and efficient prescription, preparation and administration of second line agents (Levetiracetam or Phenytoin)
- Simulating and debriefing the management of a child in status epilepticus within a clinical environment (ideally In Situ)

The module starts by establishing a shared conceptual understanding of a structured approach to status, then breaks down a core skill (preparation and administration of a second line agent) and finally brings all these skills and concepts together within a team-based simulation in the clinical environment.

Learning Objectives:

Seizure Management Concepts	Seizure Management Skills
<ul style="list-style-type: none">• Understand paediatric status epilepticus guideline relevant to local service• Structured ABCDE approach to the seizing patient• Choice of first- and second-line antiepileptic drugs• Timing and indications for intubation• Evidence base for antiepileptic drugs• Side effects of common antiepileptic drugs	<ul style="list-style-type: none">• Utilise an appropriate paediatric drug calculation manual to prescribe, prepare and administer second line anti-epileptic drugs (e.g. Levetiracetam or Phenytoin)• Rehearse prescription, preparation and administration of anti-epileptic drugs in clinical setting• Identify and utilise appropriate safety equipment for safe administration of anti-epileptics (e.g. Filter in phenytoin, safe use of smart pump software)

Systems Assessment:

The status epilepticus module is designed to capture data on the following:

- QPEC access or local seizure guideline available?
- Levetiracetam 60mg/kg over 5 minutes in pump software?
- Phenytoin 20mg/kg over 20 minutes in pump software?
- CREDD access
- Appropriate filter for phenytoin infusion available in service?
- Drug availability: Levetiracetam, Phenytoin, Phenobarbitone, Valproate

2.1 Paediatric Seizure Management: Case Vignette

Seizure Management Concepts

- Understand paediatric status epilepticus guideline relevant to local service
- Structured ABCDE approach to the seizing patient
- Choice of first- and second-line antiepileptic drugs
- Timing and indications for intubation
- Evidence base for antiepileptic drugs
- Side effects of common antiepileptic drugs

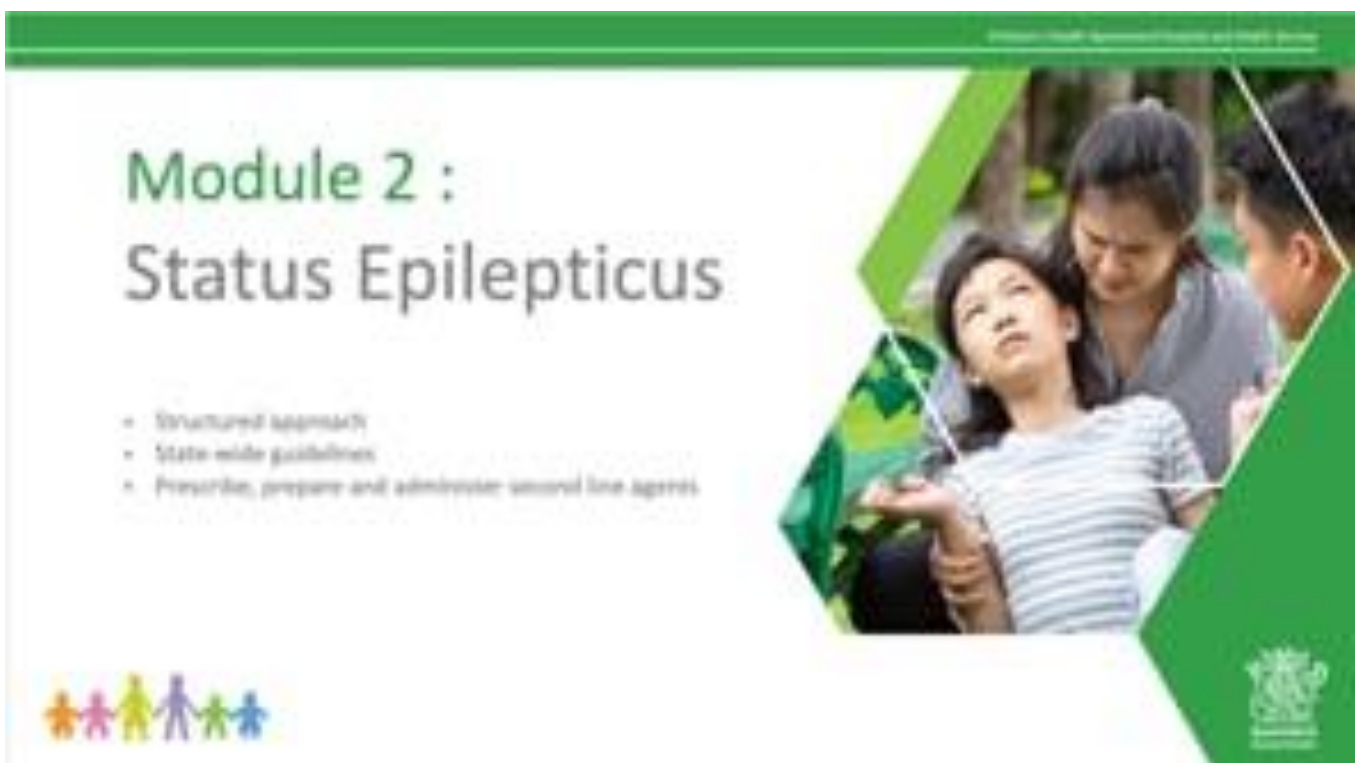
Equipment: PowerPoint Slides

Time Allocated: 15 minutes approx

Session Overview:

- Using the PowerPoint slides provided, introduce the case of a 4-year-old girl who is having her first generalised tonic-clonic seizure.
 - She has had 2 doses of Midazolam 0.15mg/kg without response.
- Ask the team to outline their basic approach to assessment, investigation and management.
- Facilitate discussion as per the slide notes.

Demonstration Video:



Closure:

- After discussion move groups to the Seizure Skill Station to learn how to prescribe, prepare and administer Levetiracetam and/or Phenytoin infusions.

2.2 Paediatric Seizure Management: Infusion Skill Station

Aim:

- Using medication infusion guides prescribe, prepare and administer an anti-epileptic (phenytoin or levetiracetam)
- The skills learned here will be repeated in a clinical context in the simulation

Time: 15 minutes

Participants: max 6 per station, mix of medical and nursing with varying experience

Learning Objectives:

- Safe medication prescription and preparation using your local guidelines
- Teamwork – double checking (6 rights)
- Familiarity with medication pump and drug library (form consensus on which tool to use)
- Flag risks and embed local medication safety practices

Equipment and Layout: (This station is reused for Inotropes later)

Medication	Equipment	Visual Aids	Miscellaneous
4 x Phenytoin 250mg in 5mL	2 x 50mL syringe	CREDD	Sharps Container
6 x Levetiracetam 500mg in 5mL	2 x 30mL syringe	CHQ Seizure guideline	White board markers
2 x Adrenaline 1mg in 10 mL(1:10,000)	2 x 10mL syringe	Paediatric Sepsis Pathway	Bluey x 2
2 x Adrenaline 1mg in 1mL (1:1000)	2 x 3mL syringe		Drug labels
30 x NaCl ampoules	2 x 1mL syringe		Calculator
OR 1L NaCl x 2	Rapid Infuser Set		Medication ordering sheet
2 x 1L 0.9% NaCl	3 –way tap with extension		
	2 x Chlorhexidine Wipes		
	2 x 19g blunt needles		
	2 x 19g sharp needles		
	2 x rapid infusion IV giving set		
	2 x 3-way or 2-way tap with extension		
	2 x Bag spike		
	2 x drug Infusion syringe driver		

Demonstration Video:

SKILLS STATION

Cho needs her second line agent.
Choose a drug and :

Prepare Prescribe Administer

Facilitation:

Using the patient information from the previous case discussion ask the group to prescribe and then prepare the medication chosen.

Invite medical staff to teach nursing staff how to prescribe an anti-epileptic using local hospital's drug prescription resource i.e. CREDD.

Invite nursing staff to teach medical staff how to prepare that anti-epileptic and administer it using local hospital's pump software.

Commence the infusion using the appropriate the drug library in the infusion pump.

Identify and discuss challenges.

Document latent safety threats / pump issues.



2.3 Orientation to the Simulated Environment

Aim:

- To orientate staff to the Simulated Environment that they will use for their scenarios
- To clarify expected behaviour in the scenarios
- To allow time for staff to explore and feel familiar enough with their surroundings that they can perform well in the scenarios
- To continue to reinforce psychological safety

Time: 15 minutes

Participants: All learners

Facilitation:

- It is an expectation that the faculty has experience in setting and maintaining a safe simulation environment.
- It can be tempting to 'rush' this part of the day in order to get everyone to morning tea, but a good orientation and prebrief can offset a lot of problems later in the day. While some participants will be comfortable in the simulated environment, others will be very uncomfortable. It can be hard to detect who is in what headspace.
- Introduce participants to the simulation space including: orientating to environment, manikin capabilities and local simulation processes, such as how to obtain help. Explain that they will be role playing themselves rather than any other characters in the hospital.
- Avoid overloading participants with detailed breakdown of equipment in the space that isn't actually going to be used in the course (e.g. defibrillator).
- Explain that the scenarios are designed to contextualise the knowledge they have established in the skills stations and case discussions, there are no traps or tricks. Allow participants time to explore what is in the draws, where different bits of kit are, how the drug bench is set up, etc. Give them permission to change it to suit them.
- Inform participants that there will be a debrief after each scenario to discuss how events unfolded, extrapolating any process improvements to the real-world setting. The focus of the debrief is to explore the team's approach and how to facilitate a shared mental model in caring for a critically unwell child.
- You may wish to reinforce the 'basic assumption': "We believe that everyone participating in the scenarios today is intelligent, capable, cares about doing their best and wants to improve."

Further Reading:

- [Rudolph, J., Raemer, D. and Simon, R. \(2014\). Establishing a Safe Container for Learning in Simulation. Simulation in Healthcare: Journal of the Society for Simulation in Healthcare, 9\(6\), pp.339-349.](#)
- [Podcast on Psychological Safety with Jenny Rudolph](#)

2.4 Simulation: Status Epilepticus Part 1

Learning Goals & Objectives

Educational Goal	<ul style="list-style-type: none">Contextualise knowledge from status epilepticus eLearning, case discussion and skills station
Skills Rehearsal	<ul style="list-style-type: none">Structured, team-based approach to assessing and resuscitating a seizing childSafe application of a paediatric status epilepticus algorithm within a clinical context
Systems Assessment	<ul style="list-style-type: none">Departmental access to a paediatric status epilepticus algorithmDepartmental pump software capable of administering Levetiracetam 60mg/kg over 5 minutes, Phenytoin 20mg/kg over 20 minutes.Appropriate filter for Phenytoin administration IV.

Case Summary: Brief Summary of Case Progression and Major Events

- 14-month-old presenting to Emergency via paramedic service with ongoing seizure activity. Patient has had one dose of buccal midazolam en route and is due a second dose on arrival.
- Seizure activity will continue throughout the scenario and the team's job is to consider the causes and consequences of the seizure as well as treating status epilepticus as per protocol.

Participants role play the treating team in an emergency department setting with a 5-minute pre-alert.

Management involves:

- Using pre-brief and set up time wisely
- Airway: Support with opening manoeuvres and airway adjuncts
- Breathing: Application of oxygen via face mask
- Circulation: IV medication administration
- Drugs: Safe prescription, preparation and administration of first- and second-line antiepileptic agents and an appropriate antibiotic for coverage of sepsis.
- Escalation of care as seizure is ongoing.

Scenario Cast

Patient: Manikin suitable for 14-month-old boy

Required Equipment

<input type="checkbox"/> Airway equipment	<input type="checkbox"/> Circulation equipment	<input type="checkbox"/> CEWT chart
<input type="checkbox"/> NPAs	<input type="checkbox"/> IV Cannula x2, Drainage bag for fluids	<input type="checkbox"/> Drugs: Midazolam, Levetiracetam, Phenytoin
<input type="checkbox"/> LMAs	<input type="checkbox"/>	<input type="checkbox"/> Antibiotics (e.g. Cefotaxime)
<input type="checkbox"/> Bag Valve Mask	<input type="checkbox"/> Syringes	<input type="checkbox"/> IV Fluid (e.g. Normal Saline 0.9%)
<input type="checkbox"/> O2 masks	<input type="checkbox"/> Drug calculation book, e.g. CREDD	<input type="checkbox"/> Adrenaline
	<input type="checkbox"/> Glucometer	

Moulage

Nil

Timing

Prebrief: 5 mins	Scenario: 30	Debriefing: 25
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Scripts for actors

Simulation Orientation from Facilitator

Welcome to the first simulation of the day! The goal of the scenario is to rehearse the emergency management of status epilepticus and to see if we can find any opportunities to improve ourselves, our team, our environment or our systems along the way.

The following simulation is set in your emergency department. You will be playing the role of an emergency team after you receive a phone call from your paramedic service.

Does anyone have any questions?



Scenario Starts: Handover from paramedic service



Hi, we're calling about a patient in status epilepticus who will arrive in 5 minutes.

His name is Jake, he's a 14-month-old boy who has been having a generalised tonic clonic convulsion for 10 minutes total now. He's got no history of epilepsy and he has a temperature at the moment of 40 degrees.

We're just drawing up 1 dose of Midazolam now, with a working weight of 12kg. His sats are 92% at present, HR 190, Temp 40 and BP 90/60. We're trying to get IV access currently.

State 2: Handover from paramedic service



Hi this is Jake, a 14-month-old boy who has been seizing for 15 minutes.

He's got no history of epilepsy and he has a temperature at the moment of 40 degrees.

He's having a generalised tonic-clonic convulsion despite 0.3mg/kg of buccal midazolam 5 minutes ago.

We're working on a weight of 12 kg.

His sats are 92% at present, HR 190, Temp 40 and BP 90/60. I've got an IV line in and he's due his second dose of midazolam.

I'm having trouble with his airway due to trismus.

Scenario State 1: Pre-arrival Phone Call, Team Brief and Preparation

State 1: Alert team of incoming patient



Hi we're calling about a patient with a convulsive seizure ongoing. Our ETA is 5 minutes.

His name is Jake, he's a 14-month-old boy who has been having a generalised tonic-clonic convulsion for 10 minutes total now. He's got no history of epilepsy and he has a temperature at the moment of 40 degrees.

We're just drawing up 1 dose of midazolam now, with a working weight of 12kg. His sats are 92% at present, HR 190, Temp 40 and BP 90/60. We're trying to get IV access currently.

Patient State	Patient Status	Learner Actions
Pre arrival	Pre arrival	<input checked="" type="checkbox"/> Allocate roles <input checked="" type="checkbox"/> Facilitate team brief <input checked="" type="checkbox"/> Start preparing equipment / drugs

Scenario State 2: Patient arrives

State 1: Arrival of patient and primary survey

Treating paramedic provides handover to the Medical Emergency Team



Hi this is Jake, a 14-month-old boy who has been seizing for 15 minutes.

He's got no history of epilepsy and he has a temperature at the moment of 40 degrees.
He's having a generalised tonic-clonic convulsion despite 0.3mg/kg of buccal midazolam 5 minutes ago.
We're working on a weight of 12 kg.

His sats are 92% at present, HR 190, Temp 40 and BP 90/60. I've got an IV line in and he's due his second dose of midazolam.

I'm having trouble with his airway due to trismus.

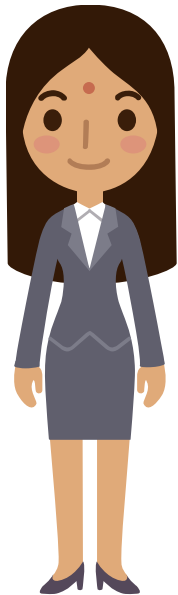
Patient State	Patient Status	Learner Actions
Rhythm: Sinus HR: 150 BP: 115/70 Cap refill 3.5s RR: 18 but poor chest rise and fall due to trismus O₂ SAT: 94% (without O ₂) T: 39.5 AVPU = U BGL 6 (if requested) Pupils: Deviated to left, size 4	Generalised Tonic-clonic Seizure Airway obstruction secondary to trismus (unless NPA inserted) Peripherally poor circulation / shut down.	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Primary assessment <input checked="" type="checkbox"/> Airway: NPA <input checked="" type="checkbox"/> Breathing: Bag Valve Mask <input checked="" type="checkbox"/> Circulation: <ul style="list-style-type: none"> - Appropriate Blood tests including BGL (6) - Consider second line <input checked="" type="checkbox"/> Disability: <ul style="list-style-type: none"> - Identify and locate seizure algorithm

Seizure Scenario State 3

State 3: Team proceeds through Seizure Management Algorithm

Patient State	Patient Status	Learner Actions	
<p>Rhythm: Sinus HR: 150 BP: 115/70 Cap refill 3.5s RR: 18 O₂ SAT: 94% (without O₂) T: 39.5 AVPU = U BGL 6 (if requested) Pupils: Deviated to left, size 4</p>	<p>Generalised Tonic-clonic Seizure</p> <p>Airway obstruction secondary to trismus (unless NPA inserted)</p> <p>Peripherally poor circulation / shut down.</p>	<p><input checked="" type="checkbox"/> Circulation:</p> <ul style="list-style-type: none"> - IV attempts successful - Appropriate Blood tests - Consider fluid bolus - Administer antibiotics (status epilepticus + fever) <p><input checked="" type="checkbox"/> Disability:</p> <ul style="list-style-type: none"> - Follow seizure algorithm <ul style="list-style-type: none"> o Midazolam o Midazolam o Levetiracetam / Phenytoin 	<p>Triggers:</p> <ul style="list-style-type: none"> - Seizure continues throughout entire scenario - BGL is 6 if glucometer reading done - Continue scenario until second line agent (phenytoin or levetiracetam) has begun infusion - Prompt team to consider where patient's ongoing resuscitation will continue, ie. Emergency / Ward environment, activation of ICU

End Scenario by requesting handover to receiving team or retrieval services (as appropriate for your service)



Hello, I'm Dr

Thanks for calling us to help with managing Jake's seizures.

How can we help?

Jake's Blood Gas Result

	Results	Units	Normal Range
pH	7.30		7.32 – 7.42
pCO2	58	mmHg	41 - 51
pO2	42	mmHg	25 - 40
O2 Saturations		%	40 - 70
Bicarb	26	mmol/L	22 - 33
BE	-2	mmol/L	-3 - +3
HCT	0.35		0.3 - 0.42
Hb	119	g/L	105 - 135
Na+	141	mmol/L	135 - 145
K+	4.3	mmol/L	3.2 - 4.5
Ca++ (ionised)	1.21	mmol/L	1.15 – 1.35
Glucose	6.1	mmol/L	3.0 – 7.8
Lactate	3	mmol/L	0.7 – 2.5

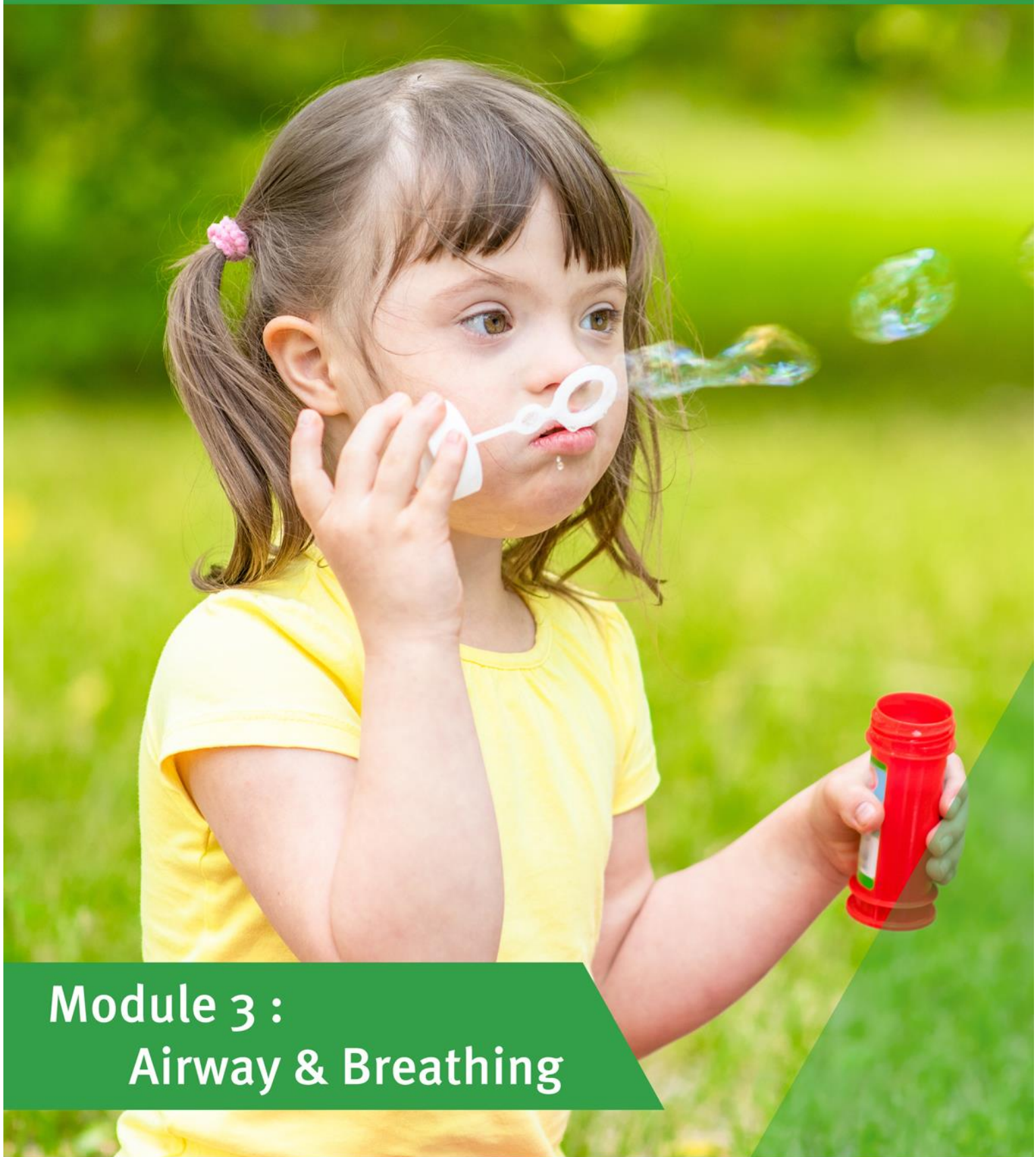
Objectives	
Educational Goal	<ul style="list-style-type: none"> Contextualise knowledge from status epilepticus eLearning, case discussion and skills station
Skills Rehearsal	<ul style="list-style-type: none"> Structured, team-based approach to assessing and resuscitating a seizing child Safe application of a paediatric status epilepticus algorithm within a clinical context
Systems Assessment	<ul style="list-style-type: none"> Departmental access to a paediatric status epilepticus algorithm Departmental pump software capable of administering Levetiracetam 60mg/kg over 5 minutes, Phenytoin 20mg/kg over 20 minutes. Appropriate filter for phenytoin administration IV.

Sample Questions for Post Scenario Debriefing



This was a case of a 14-month-old boy who went into febrile status epilepticus

- I'm interested in your perspectives: what went well, what didn't go so well?
- Is there anything you wanted to dig deeper into?
- I'd like to make a couple observations I made of the team's performance...
- Are there ways we can change our environment or systems to ensure we can resuscitate a seizing child more effectively in our service?
- How easy was it to access the seizure algorithm?
- Can we explore the team's thoughts about antibiotics for this kid?



Module 3 : Airway & Breathing



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Module 3. Airway & Breathing

The PRIME Airway module is designed to address the following learning objectives:

Intubation Concepts	Intubation Skills
<ul style="list-style-type: none"> • Understand the importance of a team-based approach to paediatric intubation in an emergency setting. <ul style="list-style-type: none"> ○ Common complications ○ Patient optimisation pre-intubation ○ Strategies for apnoeic oxygenation ○ Drug choices for rapid sequence induction ○ Airway checklists and briefs ○ Paediatric Airway equipment ○ Confirming airway placement • Post intubation cares: <ul style="list-style-type: none"> ○ Appropriate taping of ETT ○ Suctioning ETT ○ HME 	<ul style="list-style-type: none"> • Mentally rehearse the safe preparation and intubation of a paediatric patient utilising an appropriate airway checklist • Rehearse the safe preparation and intubation of a paediatric patient utilising an appropriate airway checklist in a simulated clinical setting
Ventilation Concepts	Ventilation Skills
<ul style="list-style-type: none"> • Develop a basic framework for approaching SIMV based ventilation in children for: <ul style="list-style-type: none"> ○ Normal lungs ○ Abnormal lungs ○ Raised Intracranial Pressure • Contextualise pre-existing knowledge around adult ventilation and how it can be adapted to demystify paediatric ventilation settings 	<ul style="list-style-type: none"> • Mentally rehearse adjusting the ventilator used in local service in response to: <ul style="list-style-type: none"> ○ Hypoxia ○ Hypercapnia ○ Pressure alarm ○ Air trapping

The Airway Module structure involves:

- A 30-minute plenary on paediatric intubation strategies
- A 45-minute team-based intubation workshop
- A 30-minute breathing skills workshop, which the Course Director can decide is either:
 - a workshop on ventilator settings
 - a Skill Station on HFNP O2 set up and delivery
 - OR run both simultaneously if you're running a large course
- A 45-minute simulation involving the intubation of the patient from the previous scenario

3.1 Airway Lecture

The airway lecture has the primary goal of reframing intubation as a team-based intervention where everyone can optimise the chance of a successful first pass intubation.

We aim to de-emphasise intubation as a 'cure all' and instead argue that heavily optimising a patient prior to intubation will lead to safer outcomes for children who do need airway protection.

Learning Objectives:

Intubation Concepts

- Understand the importance of a team-based approach to paediatric intubation in an emergency setting.
 - Indications for intubation
 - Common complications
 - Patient optimisation pre-intubation
 - Strategies for apnoeic oxygenation
 - Drug choices for rapid sequence induction
 - Airway dropsheets, checklists and briefs
 - Shared mental models

Systems Assessment:

- Existence of a departmental airway checklist
- Appropriate airway equipment for intubating children available

Overview:

The plenary runs for 30 minutes and runs through a wide variety of concepts related to the decision to intubate, optimisation of the patient and environment prior to intubation, and the importance of having shared mental models regarding intubation.

Demonstration Video:



3.2 Team Based Intubation Workshop

Aim:

- Practice Using Airway management/Team Resus Brief
- Practice setting up equipment utilising equipment drop-sheet cognitive aid
- Practice Final Checklist and Mechanical Skills during and post paediatric intubation.

Key messages:

- Emergency airway management is a team activity
- The algorithm provides a structure and shared mental model for the team
- Positioning of patient, equipment, and staff
- Post intubation care and ongoing sedation

Participants: max 6 per station, mix of medical and nursing with varying experience.

Time: 1 hour

Demonstration Video:



Layout:

- 1 – 2 stations.
- Check that all equipment is in working order and similar to that used in your local clinical environment.
- Airway check list & drop sheet / cognitive aid - **feel free to substitute these with your own airway cognitive aids.**
- Paralyzing and sedating drug constitution guide, medications (i.e. Rocuronium and Ketamine)
- Use patient trolley where available to enable elevation of head of bed; if not available a table can be used. Allow sufficient space for the participants to stand and move freely around the space.

Equipment:

2 x Patient Trolleys or Tables		
2 x ALS infant OR Infant Airway Head	1 x adult ETCO ₂ capnography	2 x paed non-rebreather masks
2 x mask size 0/1	1 x infant ETCO ₂ capnography	2 x size 6 suction catheter
2 x mask size 2	2 x Pedi-Cap (optional)	2 x infant nasal prongs
2 x paed BVM	2 x tongue depressors	2 x Brown leucoplast 1" tape
1 x 1L Anaesthetic t-piece + O ₂ Cylinder or Wall Outlet for T-Piece (optional)	2 x scissors	2 x Comfeel
2 x pressure manometer	2 x Hi-flow nasal prongs size 25L/min (green) & 20L/min (purple)	2 x skin prep
2 x Subglottic airway size 1.5, 2.0	2 x stethoscope	2 x tape measure
2 x micro cuff ETT size 3.0, 3.5, 4.0	2 x 5mL syringes	2 x oropharyngeal airways size 0, 1, 2
2 x Magill forceps	2 x adult Yankauer	2 x laryngoscope handles
2 x nasopharyngeal tube size 2.5, 3.0, 3.5	2 x paed Yankauer	X 2 laryngoscope handles
2 x Nasogastric tube size 6	2 x small introducers	2 x Laryngoscope blades size miller (straight) 0,1 mac (curved) 1, 2
2 x baby wraps (or small towels)	2 x 8fr bougie	
<u>Mothership medication syringes</u>		
2 x 20mL syringe (Ketamine 10mg/mL)		
6 x 10mL syringe (Rocuronium 10mg/mL; Adrenaline push dose pressor 10microg/mL; Adrenaline arrest dose 100microg/mL)		
8 x 3mL syringe		
8 x 3-way tap or two-way connector		
8 x NAD		

3. Choreograph the Challenge-Response Checklist process and intubate the manikin

- Final check for overlooked items to focus the teams collective attention
- Nominated team leader runs through the Team Resus Brief and manikin is intubated
- Demonstrate ETT taping
- Discuss post intubation care



Demonstration Video:



3.3 Option 1- Paediatric Ventilation

Aim: To provide a brief overview of paediatric ventilation strategies.

Key messages:

- Set safe ventilation setting starting point targets (back to basics)
- Utilise simple strategies to meet targets based on underlying pathology
- Call for help early
- Basic trouble shooting including how to access further support

Participants:

Tailor session to meet experience level of the participants. Those with experience get re-enforcement of what they thought is right, with opportunity to correct misunderstandings. Those with less experience get worked examples explained. Utilise the experience within the room to explain concepts to those with less experience and knowledge.

- Assume prior knowledge of local ventilator set up and pre-use check.
- Some just in time training on ventilator set up basics may be useful prior to course
- Participants will have received pre-reading material

Equipment:

- Whiteboard

Session Outline:

1. Start by identifying participants experience with the ventilated child / or ventilation in general.
2. Identify different modes of ventilation: Describe the preferred ventilation mode in your hospital (SIMV or Pressure support) e.g. Explain SIMV – Synchronised Intermittent Mechanical Ventilation - good for both paralysed and not paralysed children.
3. Identify set targets: Identify and discuss ventilator settings for a variety of paediatric cases (listed in the table next page)
 - Tidal Volume, Rate, PEEP, Peak Pressure Limit, Oxygen (FiO₂).
 - What Oxygen Saturations to expect for each case.
 - What ETCO₂/pCO₂ to expect aim for
4. Refer to local departmental procedure / policy where relevant.
5. Once the cases are covered, cover the 'troubleshooting' section including the DOPES acronym.

VENTILATION CASES

CASE 1	VENTILATOR SETTINGS	DISCUSSION POINTS
<p>20 kg</p> <p>5-year-old boy who has been admitted after drinking his mum's methadone.</p> <p>He was intubated at the scene by paramedics due to GCS 8, very drowsy. Respiratory rate 5-12, O₂ saturations 85-93%</p>	<ul style="list-style-type: none"> • MODE- SIMV Volume Control • Tidal Vol – 6-8ml/kg (120-160ml) • Rate – 20 - 25 breaths per min • FiO₂ – aiming <0.3 • PEEP – 5cm • Peak Pressure Limit (pMax) – 35cm • O₂ Sats target – greater than 95% • ETCO₂/paCO₂ target 35-45mmHg <p style="color: #92d050;">Pressure mode = PIP 18 – 20cm</p>	<ul style="list-style-type: none"> • This child was previously fit and well and has normal lungs, therefore minimal ventilation settings will be required. His issue is altered level of consciousness due to Opioid overdose-therefore needs ventilatory support until he becomes more responsive and able to maintain own airway/breathing. • Reduce the FiO₂ if saturations 100% • Check Blood gases or watch End Tidal CO₂ to ensure adequate Oxygenation/ventilation whilst recovering.
CASE 2	VENTILATOR SETTINGS	DISCUSSION POINTS
<p>37 kg</p> <p>9-year-old who has been intubated following a severe head injury.</p>	<ul style="list-style-type: none"> • MODE- SIMV Volume Control • Tidal Vol – 6-8ml/kg (220-300ml) • Rate – 20 – 25 breaths per min • FiO₂ – aiming <0.3 • PEEP – 5cm • Peak Pressure Limit (pMax) – 35cm • O₂ Sats Target 96-98% (emphasising tight O₂ control) • ETCO₂/paCO₂ target: 35-40mmHg <p style="color: #92d050;">Pressure mode = PIP 18 - 20cm</p>	<ul style="list-style-type: none"> • Lungs should be normal therefore minimal settings. Must be neuro protective • Need to maintain normal range of CO₂ 35-40 max. CO₂ elevation will increase cerebral blood flow. As other autoregulation mechanisms are affected to much blood flow will increase ICP • Lowering CO₂ <35 will risk ischaemia • Elevate head of bed 30 deg • Monitor Blood gases if facility is able. • Use adequate sedation to decrease ICP and maintain ventilation synchrony.

CASE 3	VENTILATOR SETTINGS	DISCUSSION POINTS
<p>9 kg 11-month-old infant brought into Emergency Department with Bronchiolitis type symptoms.</p> <p>Intubated for increasing lethargy from severe work of breathing, decreasing Oxygen saturations and Venous Blood Gas CO₂ = 98.</p>	<ul style="list-style-type: none"> • MODE- SIMV Volume Control • Tidal Vol – 6ml/kg (54ml) • Rate –30 breaths per min • FiO₂ – 0.4-0.6 • PEEP – 5cm • Peak Pressure Limit (pMax) – 35cm • Acceptable O₂ Saturations – greater than 90% • ETCO₂/paCO₂ target: 60-80mmHg – more important than the number is the pH <p>Pressure mode = PIP 25 - 30cm (may need higher pressure as sick lungs/secretions. Need to monitor pressure alarms carefully.</p>	<ul style="list-style-type: none"> • Bronchiolitis/asthma picture - hyperinflated alveoli need to have longer expiration to avoid gas trapping • Will tolerate high CO₂ “permissive hypercapnia” if pH is not worsening • PEEP may need altered if oxygenation is poor but get help/advice is the key here • Proning the patient may help • Discuss breath stacking and how this is displayed on the ventilator. Longer expiratory times may be needed • ASTHMA- older child, can use bronchodilators given via vent circuit through nebuliser on an Anaesthetic T-Piece

Once these cases are completed, move on to trouble shooting:

- Revisit Case 3: High pressure alarms. What strategies do the participants use to troubleshoot?
- How would you manage a rapidly falling oxygen saturation level?
 - Disconnect and bag – assess patient, assess circuit.

Trouble shooting: Utilising the DOPES acronym

DOPES Discussion	
D	<p>DISLODGEMENT</p> <p>Endo Tracheal Tube (ETT) may become dislodged</p> <ul style="list-style-type: none"> • During movement of patient - always ensure someone is holding the tube when moving. • If patient is coughing – sedate patient and ensure continuation of sedation – quick discussion about sedation • Ensure adequate taping of ETT
O	<p>OBSTRUCTION</p> <p>ETT may become Obstructed</p> <ul style="list-style-type: none"> • Thick secretions particularly in children with Lung pathology such as asthma, pneumonia. • Small size ETT block easily with secretions-suction ETT • Suction catheter size is twice the size of ETT size i.e. 8 french suction catheter will fit into a size 4.0mm ETT • Small size ETT can bend/kink causing obstruction - good ETT Taping and observation of ETT. Allocate a nurse to stay by the head end to watch the tube. • Use humidification to prevent secretions drying out in ETT tube.
P	<p>PNEUMOTHORAX</p> <p>May occur if pressure or volume is too high on ventilator - Be aware of the alarming PEAK Pressure alarm (DO NOT turn it up to combat the problem!!) trouble shoot the high-pressure problem first.</p> <p>May occur because of over-zealous hand bagging technique. Use a manometer if possible and keep pressure in the 'Green' zone.</p>
E	<p>EQUIPMENT – CRM-KNOW YOUR EQUIPMENT!</p> <ul style="list-style-type: none"> • Loss of power? is the ventilator charged or do you have spare batteries prior to transport. • Loss of Oxygen supply? do you have adequate Oxygen cylinders • Do you have correct size suction catheters and does the suction equipment work? • Check tubing- Is it the correct size for the patient- HAMILTON = Neonatal circuit and flow sensor for under 8kg • Oxylog 3000 = blue paediatric circuit for 50ml -250ml tidal volumes otherwise white adult circuit over approx 10kg. • Know how to connect ETCO₂ monitoring – it is possible on both Hamilton and Oxylog 3000 plus.
S	<p>STACKING</p> <p>This is where a breath is delivered but before that breath is fully expired another inspiratory breath occurs resulting in gas being further trapped in alveoli.</p> <p>This can occur in presentation such as ASTHMA. Use a longer expiratory phase-can change the I:E ratio or slow rate and shorten the inspiration time.</p>

3.4 Simulation: Status Epilepticus Part 2

Learning Goals & Objectives

Educational Goal	<ul style="list-style-type: none">• Understanding the team-based approach to paediatric intubation
Skills Rehearsal	<ul style="list-style-type: none">• Patient optimisation prior to intubation• Facilitation of a paediatric intubation checklist• Prescription, preparation and administration of drugs for rapid sequence induction (RSI)
Systems Assessment	<ul style="list-style-type: none">• Departmental availability of equipment required for paediatric intubation• Presence of an intubation checklist appropriate for paediatric patients• Departmental availability of retrieval checklist

Case Summary: Brief Summary of Case Progression and Major Events

This scenario is designed to continue from the first: a 14-month-old in status epilepticus.

In part 1 a second-line agent was commenced.

The scenario continues in part 2:

- Remains in emergency due to ongoing seizure.
- Patient continues to seize requiring intubation and referral to critical care / tertiary centre.
- The scenario concludes following securing of ETT and consideration of sedating therapy & ventilation strategy; +/- advice from RSQ.

Tips for Facilitators

The big goal with this simulation is to provide the team with a chance to rehearse a paediatric intubation checklist within a more clinically realistic context.

Scenario Cast

Patient:	Manikin with intubation and ventilation functionality
Actors	Advice available via phone

Required Equipment

Oxygen and Suction	Drugs:	Paperwork:
ED Resuscitation Trolley IV/IO access Intubation equipment Airway adjuncts	Rocuronium 50mg in 5ml x 2 Fentanyl 100mcg in 2ml x 4 Ketamine 200mg in 2ml x 4	Sepsis Pathway
Syringe infusion pump	Morphine 5mg x 5 Midazolam 5mg x 10 Propofol 20ml x 1	Drug/Infusion order chart
Patient Monitor + equip	Adrenaline 1mg in 10mL x 5 Adrenaline 1mg in 1mL x 10	CEWT 1-4 year
Airvo & Ventilator	Normal Saline	

Moulage

1 x IV access prehospital connected to drainage bag
 1 x IV access with NO IV sticker connected to drainage bag
 NRBM insitu

Timing

Prebrief: 5 mins		Scenario: 20		Debriefing: 20
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Scripts

Simulation Orientation from Facilitator

Welcome to our second simulation.
 We are going to continue scenario 1.
 Jake has been given 2 x doses of midazolam and a second line agent, but has continued to seize in the department. Their third line agent is now running.
 Your goal over the next 20 minutes is to protect his airway and arrange escalation / retrieval.



Scenario Progression: Status Epilepticus Part 2

Scenario State 1: Ongoing status epilepticus

Patient continues to seize, requires reassessment and intubation

Patient State	Patient Status	Learner Actions
Rhythm: Sinus HR: 155 BP: 120/75 Cap refill 2 RR: 10 O₂ SAT: 100% T: 38.5 AVPU - seizing BGL 4 Pupils: Size 2, deviated L	Continues to seize Third line anti-epileptic has been given	<input checked="" type="checkbox"/> Repeat structured assessment <input checked="" type="checkbox"/> Optimise patient: <ul style="list-style-type: none"> • Positioning • Oxygenation • Haemodynamics <input checked="" type="checkbox"/> Optimise team: <ul style="list-style-type: none"> • Roles • Equipment • Plan / Recap / Goals <input checked="" type="checkbox"/> Commence preparation for intubation

If staff call retrievals or ICU for advice:



Hello, this is..... How can I help?

[If advice is requested]

Since you have already given levetiracetam AND phenytoin, I agree it is time to proceed to intubation.

I suggest rocuronium and ketamine for your RSI.

Have a push dose pressor dose of adrenaline available [1 microg/kg].

You can refer to your CREDD book if you need advice about equipment sizing.

We will activate a team to come pick up your patient, I will call back in 15 minutes to let you know how far away they are. In the meantime, please proceed with intubation if you are comfortable your team can do that safely.

Scenario State 2: Airway Checklist and Intubation

Team facilitates airway checklist and safe intubation

Patient State	Patient Status	Learner Actions
Rhythm: Sinus HR: 155 BP: 120/75 Cap refill 2 RR: 10 O₂ SAT: 100% T: 38.5 AVPU - seizing BGL 4 Pupils: Size 2, deviated L	Seizes until paralytic administered	<input checked="" type="checkbox"/> Facilitate airway checklist <input checked="" type="checkbox"/> Administer Rapid Sequence Induction <input checked="" type="checkbox"/> Confirm ETT placement <input checked="" type="checkbox"/> Secure ETT <input checked="" type="checkbox"/> Identify need for ongoing sedation <input checked="" type="checkbox"/> Prepare patient for retrieval

Call back from ICU post intubation (optional – consider calling if team need help to optimise or use checklists):



Hello, this is..... Just calling with an update regarding retrieval.
 We have activated a team and they will arrive in approximately..... [advise realistic time for your service].
 How are things going on your end?
 Do you need any further advice?
 Are you able to access our retrieval checklist and start working through that?

Patient's Blood Gas Result

	Results	Units	Normal Range
pH	7.2		7.32 – 7.42
pCO2	65	mmHg	41 - 51
pO2	42	mmHg	25 - 40
O2 Saturations	26	%	40 - 70
Bicarb		mmol/L	22 - 33
BE	-2	mmol/L	-3 - +3
HCT	0.35		0.3 - 0.42
Hb	11	g/L	105 - 135
Na+	141	mmol/L	135 - 145
K+	4.3	mmol/L	3.2 - 4.5
Ca++ (ionised)	1.21	mmol/L	1.15 – 1.35
Glucose	6.1	mmol/L	3.0 – 7.8
Lactate	4	mmol/L	0.7 – 2.5

Objectives

Educational Goal	<ul style="list-style-type: none"> • Understanding the team-based approach to paediatric intubation
Skills Rehearsal	<ul style="list-style-type: none"> • Patient optimisation prior to intubation • Facilitation of a paediatric intubation checklist • Prescription, preparation and administration of drugs for Rapid Sequence Induction
Systems Assessment	<ul style="list-style-type: none"> • Departmental availability of equipment required for paediatric intubation • Presence of an intubation checklist appropriate for paediatric patients • Departmental availability of retrieval checklist

Sample Questions for Post Scenario Debriefing



This scenario was designed for rehearsal of your departments airway checklist and processes.

How are you all feeling?

What went well?

What do you think could be improved?

Can we focus for a minute on the airway checklist itself:

- How did it work for you as a team?
- Is there anything you'd do differently when facilitating an airway checklist next time?
- What do you think an optimal run through of the checklist 'looks like'?

Were there any issues with the environment, equipment or systems that we need to flag?



Module 4 : Shock



Optimus
PRIME



Module 4. Shock

The shock module prepares participants to manage the shocked child by:

- Providing foundational knowledge on the sepsis and shock via eLearning
- Refreshing and deepening that knowledge in the plenary
- Linking participants to statewide resources on shock and adrenaline administration
- Rehearsing the safe and efficient prescription, preparation and administration of adrenaline infusions and push-dose pressor doses
- Simulating and debriefing the management of a child in septic shock

The module starts by establishing a shared conceptual understanding of a structured approach to shock using the mental model of “Pump, Squeeze, Unblock, Fill”. A deliberately simplified exploration of inotropes is provided with the aim to demystify inotropes and emphasise that choosing adrenaline as the initial paediatric inotrope of choice in most situations is practical and as evidence based as current limited evidence justifies.

The core skill (preparation and administration of adrenaline) is rehearsed in the skills station, and then finally all concepts from the module are contextualised together within a team-based simulation in the clinical environment.

Learning Objectives:

Shock and Sepsis Concepts	Shock and Sepsis Skills
<ul style="list-style-type: none">• Develop a structured approach to paediatric shock utilising the framework of:<ul style="list-style-type: none">○ Pump○ Squeeze○ Unblock○ Fill• Develop an understanding of the indications and contraindications for adrenaline as first dose pressor in paediatric shock• Develop an awareness of the basic pharmacology of common inotropes in the paediatric emergency setting utilising a pump/squeeze analogy• Understand that adrenaline can be given safely via a peripheral line for at least 4 hours• Understand there can be benefits from early inotrope administration in shock• Reinforce learning from Optimus CORE on the paediatric sepsis pathway• Develop an understanding of the paediatric sepsis pathway as a guide to both recognition and treatment of paediatric sepsis	<ul style="list-style-type: none">• Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock including:<ul style="list-style-type: none">○ Individual push dose pressor doses○ Continuous infusion• Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock within a clinical simulated setting as part of a larger resuscitation.• Identify equipment and environmental barriers to safe administration of adrenaline to a child in local resuscitation setting• Rehearse use of the paediatric sepsis pathway in the simulated care of a septic child• Rehearse the administration of a fluid bolus using a 3 way tap and ‘push/pull’ method

Systems Assessment:

The shock module is designed to capture data on the following:

- Adrenaline 1mcg/kg dose available in drug calculation book?
- Adrenaline infusion in predictable location in drug pump software?
 - Consistency with mcg/kg dosage vs mL/hr data entry?
- Location and availability of Prostaglandin
- CREDD access
- Sepsis pathway

4.1 Paediatric Shock: Plenary

Learning Objectives

- Develop a structured approach to paediatric shock utilising the framework of:
 - Fill
 - Pump
 - Squeeze
 - Unblock
- Identify fluids available in hospital for resuscitation of shock [i.e. Normal Saline 0.9%, Albumin 4%, Blood]
- Demystify common inotropes in the paediatric emergency setting utilising a pump/squeeze analogy
 - Develop an understanding of the indications and contraindications for adrenaline as first dose pressor in paediatric shock
 - Understand that adrenaline can be given safely via a peripheral line for at least 4 hours
 - Understand there can be benefits from early inotrope administration in shock
- Identify Prostaglandin as an intervention for duct dependent congenital cardiac lesions

Equipment: PowerPoint Slides

Time Allocated: 30 minutes

Session Overview:

- Using the PowerPoint slides provided facilitate a discussion around shock
- The slides are designed to take participants through 'Fill', 'Pump / Squeeze' and 'Unblock' sequentially with questions to help prompt discussion
- Demystify inotropes using the mental model of Fill/Pump/Squeeze/Unblock and avoid deep dives into pharmacology
 - Notes on the pharmacology of the drugs are provided for faculty reference in the event of higher level questions from the group

Demonstration Video:



4.2 Shock Skills Station

Aim:

- Rehearse how to prescribe, prepare and administer:
 - Normal Saline [bolus]
 - Adrenaline [push dose pressor and infusion]
- The skills learned here will be repeated in a clinical context in the simulation

Time: 15 minutes

Participants: max 6 per station, mix of medical and nursing with varying experience

Learning Objectives:

Shock and Sepsis Skills

- Rehearse use of the paediatric sepsis pathway in the simulated care of a septic child
- Rehearse administration of fluid bolus in a child using the 'push/pull technique' with a 3-way tap
- Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock including:
 - Individual push dose pressor doses
 - Continuous infusion
- Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock within a clinical simulated setting as part of a larger resuscitation.
- Identify equipment and environmental barriers to safe administration of adrenaline to a child in local resuscitation setting

Equipment and Layout: : (Reuse the seizures skills station equipment)

Medication	Equipment	Visual Aids	Miscellaneous
4 x Phenytoin 250mg in 5mL	2 x 50mL syringe	CREDD	Sharps Container
6 x Levetiracetam 500mg in 5mL	2 x 30mL syringe	CHQ Seizure guideline	White board markers
2 x Adrenaline 1mg in 10 mL(1:10000)	2 x 10mL syringe	Paediatric Sepsis Pathway	Bluey x 2
2 x Adrenaline 1mg in 1mL (1:1000)	2 x 3mL syringe		Drug labels
30 x NaCl ampoules	2 x 1mL syringe		Calculator
OR 1L NaCl x 2	Rapid Infuser Set		Medication ordering sheet
2 x 1L 0.9% NaCl	3 –way tap with extension		Fluid/Infusion order chart
	2 x Chlorhexidine Wipes		
	2 x 19g blunt needles		
	2 x 19g sharp needles		
	2 x rapid infusion IV giving set		
	2 x 3-way or 2 way tap with extension		
	2 x Bag spike		
	2 x drug Infusion syringe driver		

Demonstration Video:



Shock Skills Station Run Sheet:

Introduction (2 mins):



Welcome to the shock skill station.

In this station we will be working together to treat a child's shock by rehearsing:

- How to prescribe, prepare and administer fluid boluses and inotropes
- Closed Loop Communication during drug prep

To help us along our way we'll be using:

- The sepsis pathway
- Your CREDD book

Allocate roles:

- Someone to prescribe, draw-up meds, run the pump, navigate CREDD/Sepsis Pathway

Introduce case:

- *"Anna is a 6-year-old girl with septic shock. She weighs 20kg."*
- Identify sepsis tool as a cognitive aid for management of sepsis
- Explore the tool and identify different components

Skill 1: Fluid Bolus

- *"Anna has a borderline blood pressure and her central capillary refill is 4 seconds. Our first intervention will be a bolus of fluid."*
- Discuss calculating dose (Sepsis pathway/CREDD can assist)
 - Depending on shock and cause, dose may range between 5mL/kg to 20mL/kg
- Discuss priming the line
- Demonstrate using closed circuit using a push/pull method

Skill 2: Push Dose Pressor Adrenaline

- “Anna remains shocked after her initial bolus of fluid. A decision is made to give a push-dose pressor (1microg/kg) dose of adrenaline.”
- Prescribe dose, discuss adrenaline concentration using local drug pump calculation aids (ie CREDD)
- Discuss mothership concept
- Rehearse the prescription, preparation and administration of a 1microg/kg dose of adrenaline

Skill 3: Adrenaline Infusion

- “Anna responds temporarily to 1mcgkg of adrenaline. To keep her stable while awaiting retrieval we need to start an adrenaline infusion.”
- Rehearse prescription, preparation and administration of an adrenaline infusion using the Infusion section of the CREDD book
- Identify any software or administration issues and workarounds that staff are using to locate and program an adrenaline infusion

Skill 4: Only for sites without adrenaline infusion available in safety software

For isolated regional sites without adrenaline infusion available in safety software, facilitators can take staff through manual calculation of a mL/hr prescription.

In order to calculate adrenaline infusion rates we can use the CREDD book.



Adrenaline administration is a very common form of prescription and administration error.

Because this hospital has [pick which one is relevant]:

- No safety profile for paediatric adrenaline infusions
- Adrenaline infusion dosage only enterable in mL/hr

We are going to explore how to calculate that safely.

The safest way to start with is to utilise the CREDD book and identify the mL/hr in the adrenaline infusion section. Retrieval services can also do this calculation for you or check it when you call them.

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	0.05 to 1 microg/kg/min	Dilute 1 mL (1 mg) to 50 mL	20 microg/mL	3 to 60 mL/hr	IV

Using the CREDD we can see that 0.05 microg/kg/min equals 3ml/hr for a 20kg child.
 So, 0.1 microg/kg/min equals 6ml/hr
 And 0.15microg/kg/min equals 9ml/hr

4.3 Simulation: Pneumosepsis

Learning Goals & Objectives

Educational Goal	<ul style="list-style-type: none">• Integrating converging teams into a resuscitation• Recognition and management of septic shock<ul style="list-style-type: none">○ Inotrope selection○ Fluid resuscitation• Optimisation of the shocked patient prior to intubation
Skills Rehearsal	<ul style="list-style-type: none">• Use of the sepsis pathway to guide management of a child in septic shock• Optimising patients in septic shock prior to intubation• Team based approach to intubation of an unstable patient
Systems Assessment	<ul style="list-style-type: none">• Access to paediatric sepsis pathway• Access to paediatric retrieval checklist• Appropriate smart pump software installed

Case Summary: Brief Summary of Case Progression and Major Events

An 11-month-old girl is being treated on the ward for Pneumonia.

She has developed bacteraemia and septic shock secondary to her pneumonia and she requires antibiotics, fluid, inotropes and consideration of intubation.

She has had URTI symptoms for 1 week managed at home by parents and was improving until the 3 days ago when she developed new fevers, grunt and increased work of breathing. She has been on the ward for 6 hours, but has been clinically deteriorating.

She has an unremarkable prior medical history and vaccinations are up to date.

Tips for Facilitators

This scenario is an opportunity for the team to contextualise much of the learning from PRIME.

We suggest utilising the scenario and debrief to celebrate their progress and as such recommend against increasing the scenario's complexity beyond what is written here.

Scenario Cast

Patient:	Manikin suitable for 11-month-old baby with capacity for intubation and ventilation
Actors	1 x Ward/short stay nurse

Required Equipment

Oxygen and Suction	Drugs:	<input type="checkbox"/> Drugs:
ED Resuscitation Trolley IV/IO access Intubation equipment Airway adjuncts	<input type="checkbox"/> Rocuronium 50mg in 5ml x 2 Fentanyl 100mcg in 2ml x 4 Ketamine 200mg in 2ml x 4 Morphine 5mg x 5 Midazolam 5mg x 10 Propofol 20ml x 1 Adrenaline 1:10000 x 5 Adrenaline 1:1000 x 10 Cefotaxime 1gm x 2 Ceftriaxone 1gm x2 Lincomycin 600mg/2ml x2	<input type="checkbox"/>
Syringe infusion pump	<input type="checkbox"/> Sepsis Pathway	<input type="checkbox"/>
Patient monitor + equipment	<input type="checkbox"/> Drug/Infusion order chart	<input type="checkbox"/>
CEWT <1year	<input type="checkbox"/>	<input type="checkbox"/>
Airvo & Ventilator	<input type="checkbox"/>	

Moulage

1 x IV access prehospital connected to drainage bag
 1 x IV access with NO IV sticker connected to drainage bag
 Non-rebreather mask in situ

Timing

Prebrief: 5 mins		Scenario: 20		Debriefing: 20
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Scripts

Simulation Orientation from Facilitator

Welcome to our last simulation for the day!
This scenario is set within your paediatrics ward (or short stay), where you are the responding medical emergency team. You will receive handover from a treating nurse who has called for help.

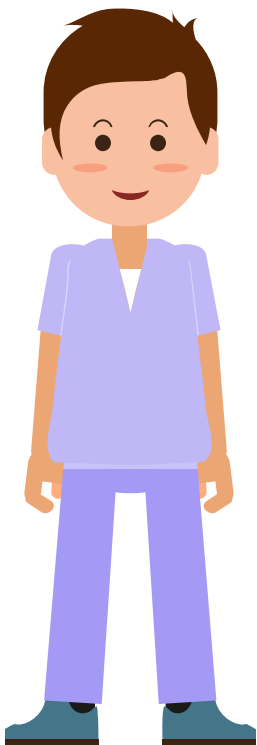
This scenario will be a chance to bring together all of the skills we've worked on today.

We are specifically considering a deterioration on the ward because how we organise a team progressively arriving to an emergency is important and different to our ED pre-alert setting.



Script for handover at start of simulation

Start participants inside room and receive handover from patient's treating nurse.



Hello, I'm, Stephy's treating nurse.

S: I called the emergency response because I'm worried Stephy is septic.

B: She's an 11-month-old female being treated for pneumonia with IV Benzylpenicillin. She was admitted 6 hours ago. She's had a 20ml/kg fluid bolus of 0.9% sodium chloride in emergency and 1 dose of IV Benzylpenicillin. She is an otherwise well infant, immunised with no allergies.

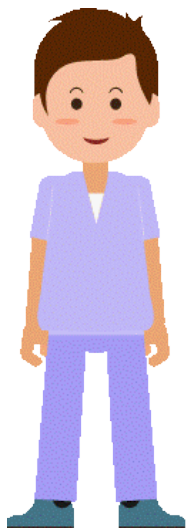
A: Her resp rate has gone up to 70 and her sats are low – reading 85% on a non-rebreather
Her central cap refill is 5 seconds. And her HR has increased. She seems less responsive.

R: Can you please review her urgently, as I think she needs resuscitation and escalation of care. I'm activating our sepsis pathway.

No other relevant history if asked

Scenario State 1: Handover and Primary Survey

State 1: Patient on the ward and sim faculty have called for MET response



Hello, I'm, Stephy's treating nurse.

S: I called the emergency response because I'm worried Stephy is septic.

B: She's an 11-month-old female being treated for lower resp tract infection with IV Benzylpenicillin as she was vomiting. She was admitted 6 hours ago. She's had a 20ml/kg fluid bolus of 0.9% sodium chloride and 1 dose of IV Benzylpenicillin. She is an otherwise well infant, immunised with no allergies

A: Her resp rate has gone up to 70 and her sats are low – reading 85% on a non re-breather
Her central cap refill is 5 seconds. And her HR has increased. She seems less responsive.

R: Can you please review her urgently, as I think she needs resuscitation and escalation of care. I'm activating our sepsis pathway.

Patient State	Patient Status	Learner Actions
Rhythm: Sinus HR: 180 BP: 60/40 Cap refill 5s RR: 65, grunting O₂ SAT: 85% on O ₂ T: 38.8 AVPU - voice BGL 5 Pupils: reactive	Appears shocked with severe work of breathing: Airway: Patent Breathing: Intercostal recession, tracheal tug and head bob, poor A/E, grunt ++ Circulation: Pale, cool peripheries, pulses present	<input checked="" type="checkbox"/> Allocate roles <input checked="" type="checkbox"/> Receive handover <input checked="" type="checkbox"/> Facilitate primary assessment

Pneumosepsis Scenario State 2

State 2: Optimise haemodynamics and prepare for intubation

Patient State	Patient Status	Learner Actions	
<p>Rhythm: Sinus HR: 180 BP: 60/40 Cap refill 5s RR: 65, grunting O₂ SAT: 85% on O₂ T: 38.8 AVPU - voice BGL 5 Pupils: Reactive</p>	<p>Remains shocked with severe work of breathing:</p> <p>Airway: Patent</p> <p>Breathing: Intercostal recession, tracheal tug and head bob, poor A/E, grunt ++</p> <p>Circulation: Pale, cool peripheries, pulses present</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Obtain second IV or IO access <input checked="" type="checkbox"/> Ensure venous gas, blood cultures taken <input checked="" type="checkbox"/> Consider Chest X-Ray <input checked="" type="checkbox"/> Optimise airway and breathing: <ul style="list-style-type: none"> • Manoeuvres & Adjuncts • Nasogastric insertion • Oxygen • PEEP <input checked="" type="checkbox"/> Optimise circulation: <ul style="list-style-type: none"> • Fluid bolus • Antibiotic • Push dose pressor • Adrenaline infusion • Reassessment 	<p>Tips for facilitators:</p> <ul style="list-style-type: none"> - Slowly improve numbers to values in State 3 as appropriate to participant actions - The patient should remain sick enough that they continue to require intubation - If advice sought from retrieval service, provide calm and supportive advice (see below)

Advice from retrieval service or ICU (if called for)



Hello, I'm from the Retrieval service. How can I help?

[once story provided]

I will activate a retrieval team and call you back to confirm our estimated time of arrival.

In the meantime please optimise the patient prior to intubation, as giving RSI in a child this hypotensive could lead to a cardiac arrest. There is a useful guide to management of septic shock in the sepsis pathway if you have it in your department?

Is there any specific advice you'd like right now?

[Suggest any interventions that the team has not implemented yet, e.g. push dose pressor adrenaline, NG insertion, Humidified High Flow at 2L/kg]

Pneumosepsis Scenario State 3

State 3: Airway Checklist and Rapid Sequence Induction

Patient State	Patient Status	Learner Actions	
<p>Rhythm: Sinus HR: 160 BP: 80/55 Cap refill 3s RR: 65, grunting O₂ SAT: 89% on O₂ T: 38.8 AVPU - voice BGL 5 Pupils: Reactive</p>	<p>Less shocked but remains hypoxic with severe work of breathing.</p> <p>Airway: Patent</p> <p>Breathing improves mildly if on high flow</p> <p>Circulation: improved with fluid and inotropes</p>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reassess patient and identify improvement <input checked="" type="checkbox"/> Proceed with airway checklist <input checked="" type="checkbox"/> Facilitate RSI and Intubation <input checked="" type="checkbox"/> Secure ETT <input checked="" type="checkbox"/> Identify retrieval checklist <input checked="" type="checkbox"/> Recap and consider further patient optimisation 	<p>Tips for facilitators:</p> <ul style="list-style-type: none"> - Avoid adding extra complications for teams that have optimised patient with fluids and inotropes

Advice from retrieval service or ICU (if called for)



Hello, I'm from the Retrieval service. Our expected arrival time is

How is the patient? **[Listen to story and provide appropriate advice]**

Can I suggest you work through the retrieval checklist while we are on our way? Let me know if there's any further advice you need while awaiting our arrival.

Patient's Blood Gas Result

	Results	Units	Normal Range
pH	7.05		7.32 – 7.42
pCO2	80	mmHg	41 - 51
pO2	55	mmHg	25 - 40
O2 Saturations	50	%	40 - 70
Bicarb	18	mmol/L	22 - 33
BE	-8	mmol/L	-3 - +3
HCT	0.35		0.3 - 0.42
Hb	119	g/L	105 - 135
Na+	130	mmol/L	135 - 145
K+	4.8	mmol/L	3.2 - 4.5
Ca++ (ionised)	1.15	mmol/L	1.15 – 1.35
Glucose	5	mmol/L	3.0 – 7.8
Lactate	6	mmol/L	0.7 – 2.5

Stephy Peters' CXR



Image 1 source: Jones J, Right upper lobe pneumonia (pediatric). Case study, Radiopaedia.org (Accessed on 02 Dec 2022)
<https://doi.org/10.53347/rID-24130>

Objectives	
Educational Goal:	<ul style="list-style-type: none"> • Recognition and management of septic shock <ul style="list-style-type: none"> ○ Inotrope selection ○ Fluid resuscitation • Optimisation of the shocked patient prior to intubation
Skills Rehearsal:	<ul style="list-style-type: none"> • Use of the sepsis pathway to guide management of a child in septic shock • Optimising patients in septic shock prior to intubation • Team based approach to intubation of an unstable patient
Systems Assessment	<ul style="list-style-type: none"> • Access to paediatric sepsis pathway • Access to paediatric retrieval checklist • Appropriate smart pump software installed

Sample Questions for Post Scenario Debriefing



That was the last scenario of the day! How is everyone feeling?

Is there anything you'd like to talk about in particular?

What went well, what could be improved?

I'd like to highlight some of the things that went really well. I noticed that the team

How has your approach to resuscitation changed over the course of today?

Were there any issues within our environment or system that we need to flag?

Course Closure

After scenario three there are a few slides in the PowerPoint slide set designed to facilitate closing the course.

The slides are designed to:

- Prompt reflection from participants around their learning over the day
- Provide QR codes for participant feedback via mobile phone
- Prompt the team to look at the Post It Notes generated over the course of the day and identify:
 - Any actionable quality and safety concerns (e.g. pump software compatibility, equipment unavailable)
 - Identify who the issue should be escalated to
 - Identify who will escalate the issue
- Link PRIME to the other Optimus courses and identify opportunities for spaced repetition through accessing the BONUS simulations for ward/ED staff.

Printable resources



Optimus
PRIME



Section 2: Printable Resources

This section contains printable resources for Optimus PRIME that we recommend printing in colour.

We recommend printing the whole manual prior to this section in black and white.

Consider laminating the sections below for repeated use.

Team Brief Checklist

Introductions



What we know



What we expect



What might change



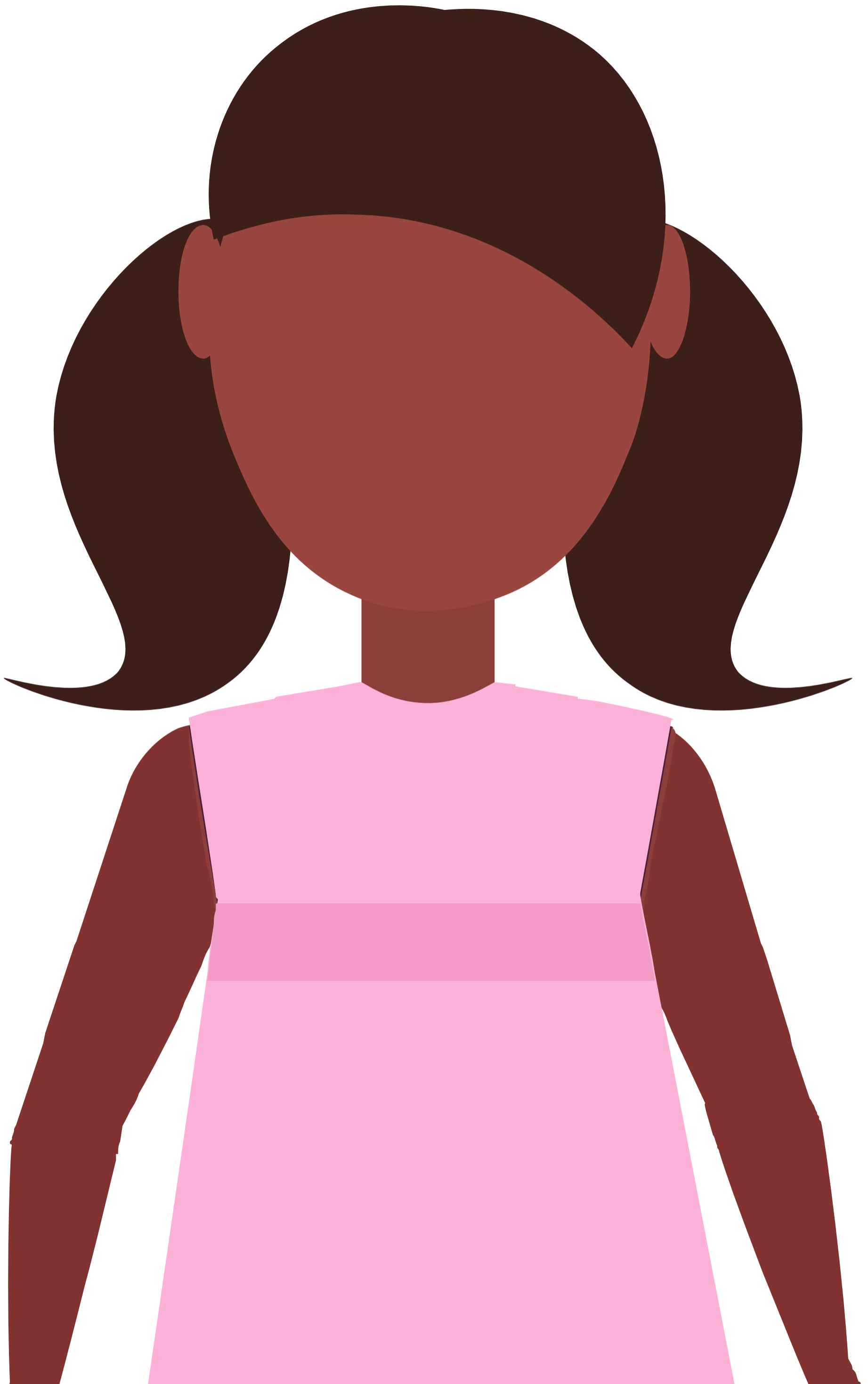
Roles optimised?

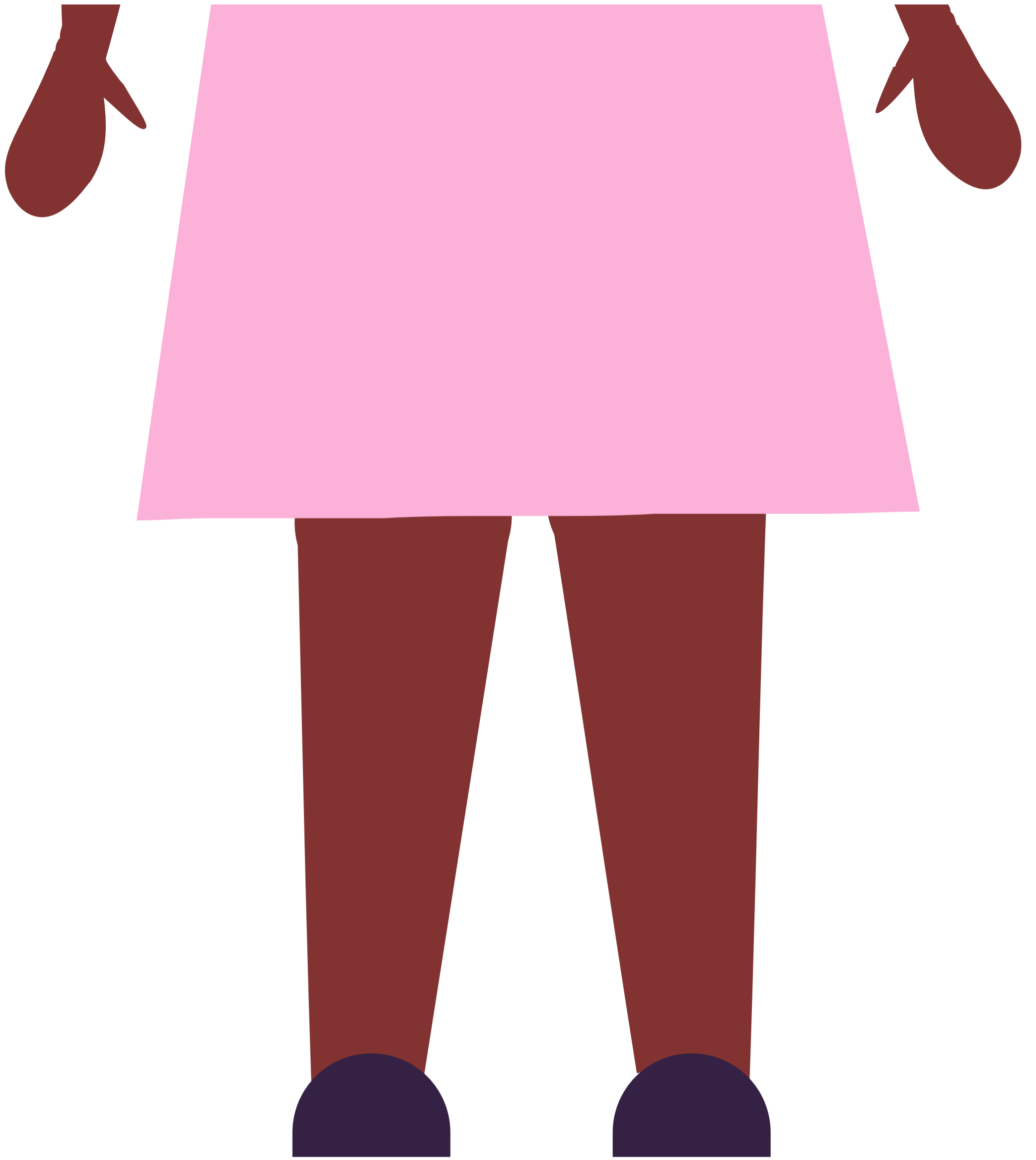


Suggestions

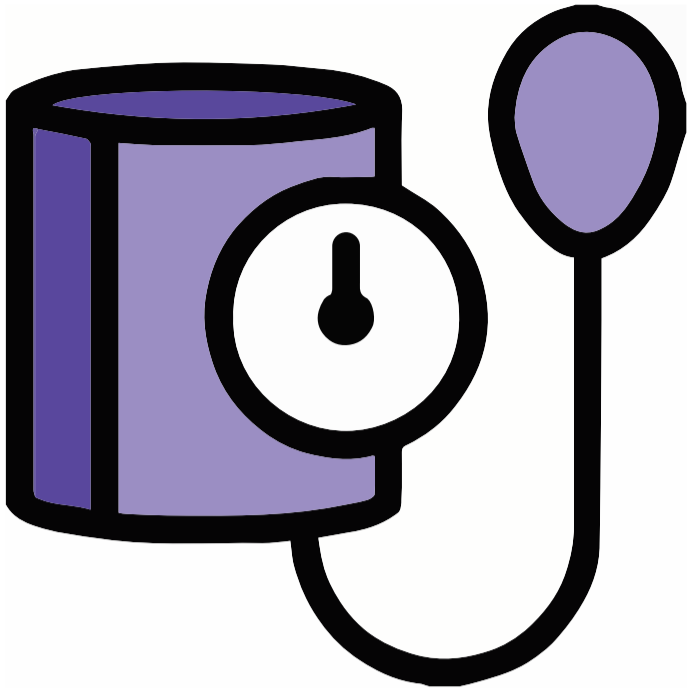


Reference: Purdy E, Alexander C, Shaw R, Brazil V. The team briefing: setting up relational coordination for your resuscitation. Clin Exp Emerg Med. 2020 Mar;7(1):1-4.

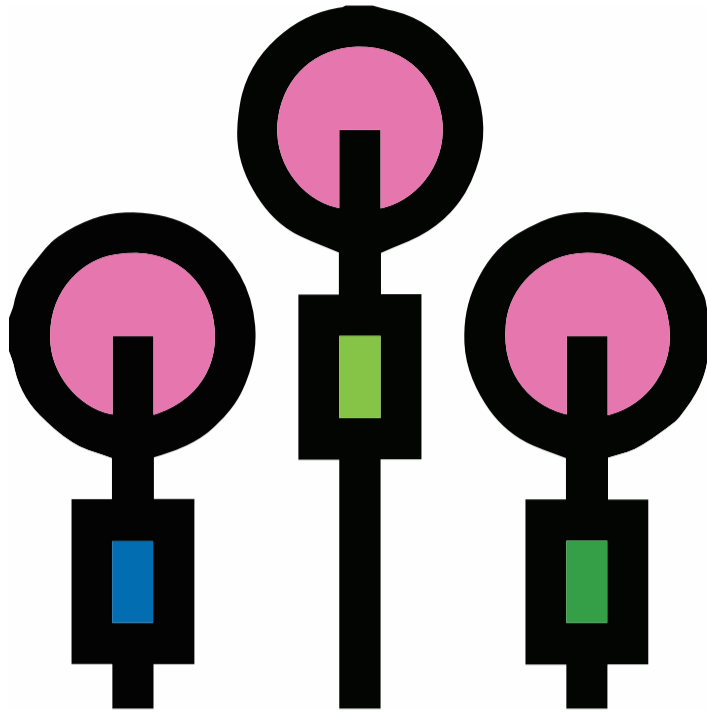




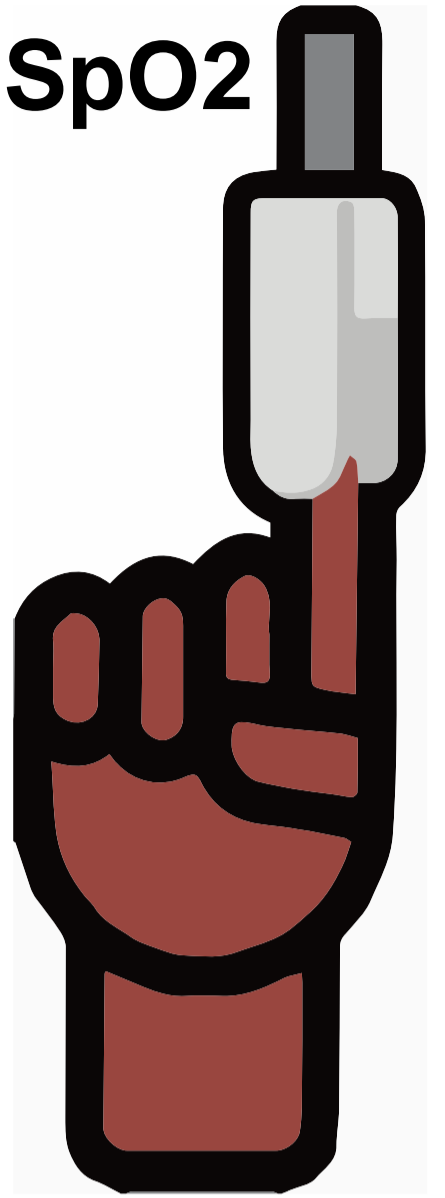
BP



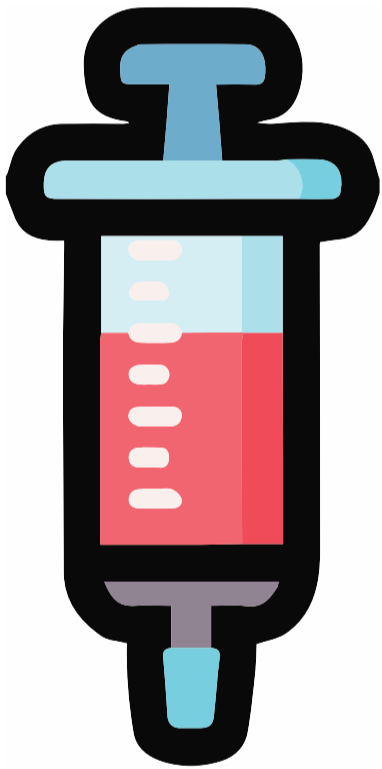
ECG



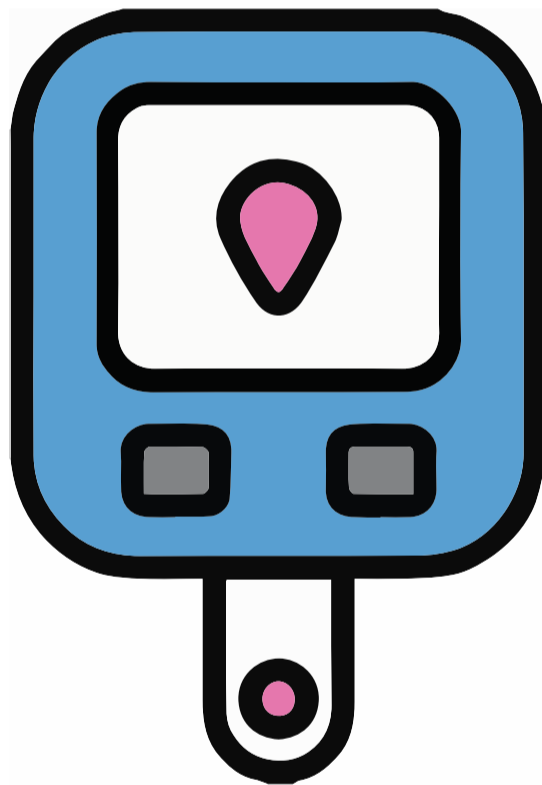
SpO2



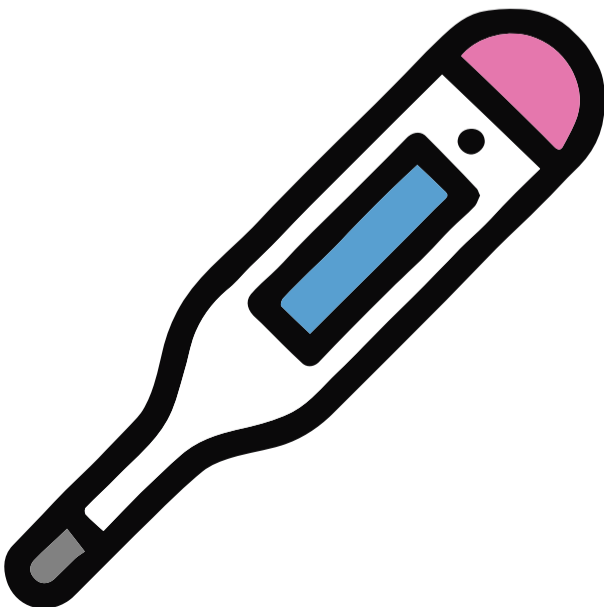
Blood Gas



Glucometer

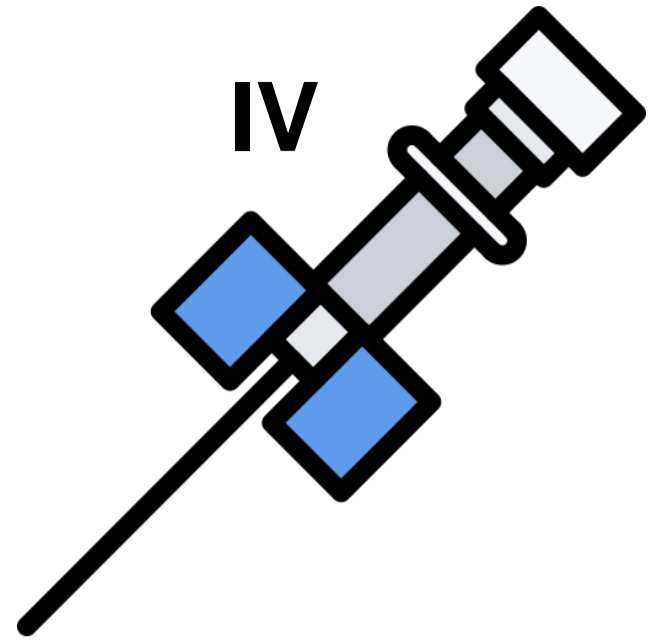
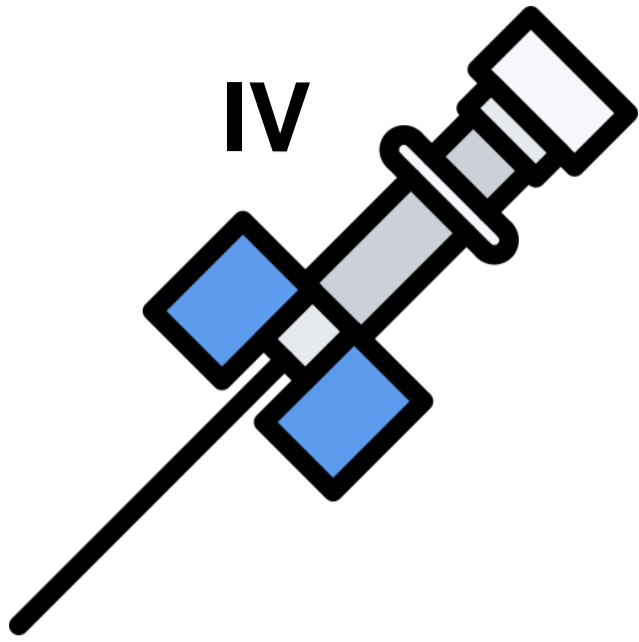


Temp



Urinalysis

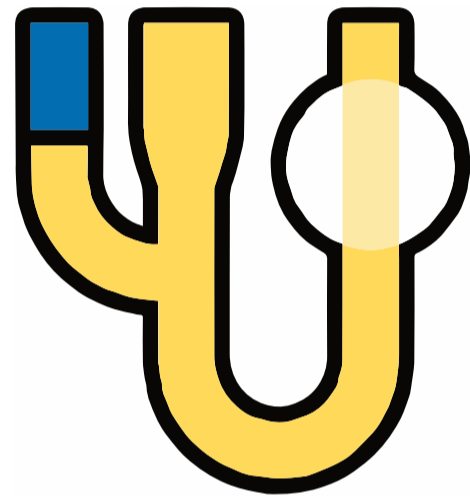




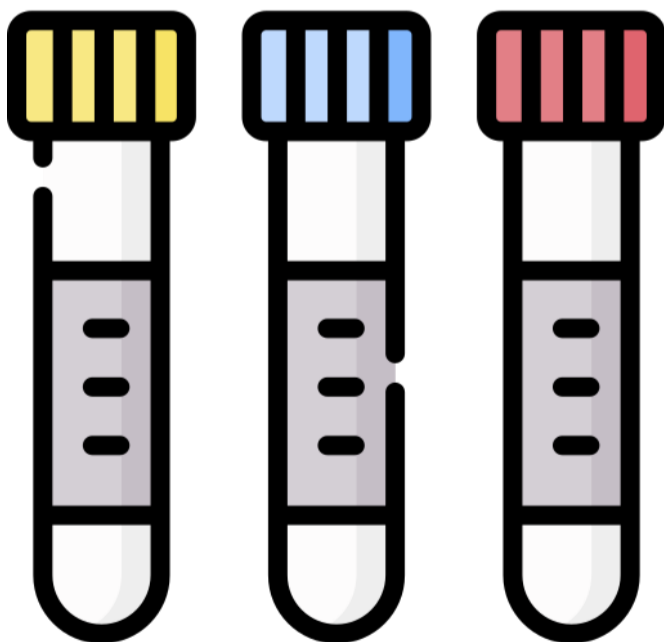
IO

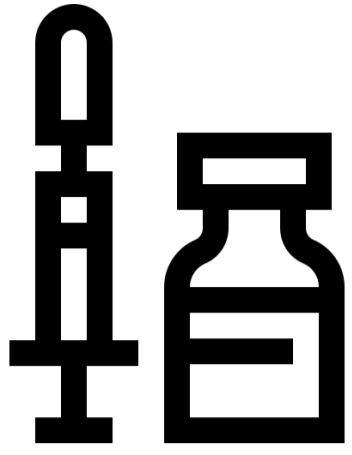


Urinary Catheter

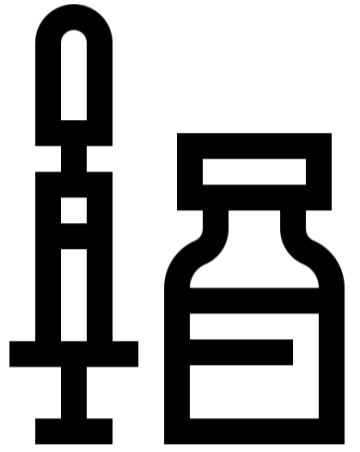
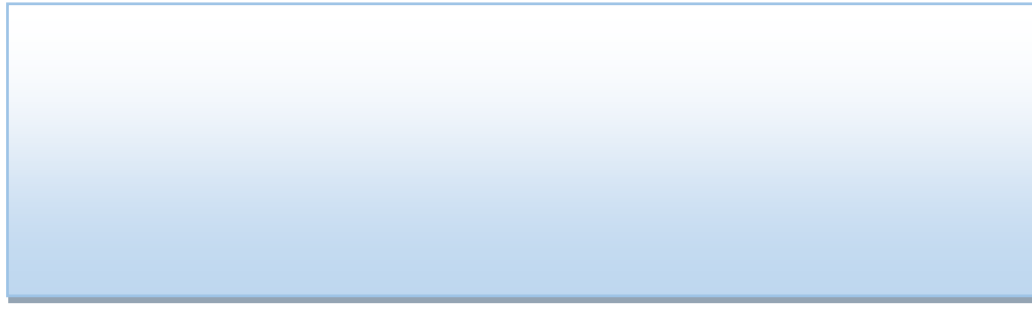


Blood Tests

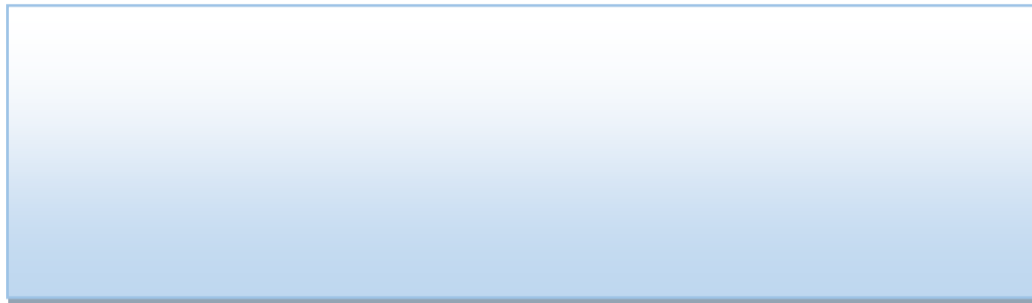




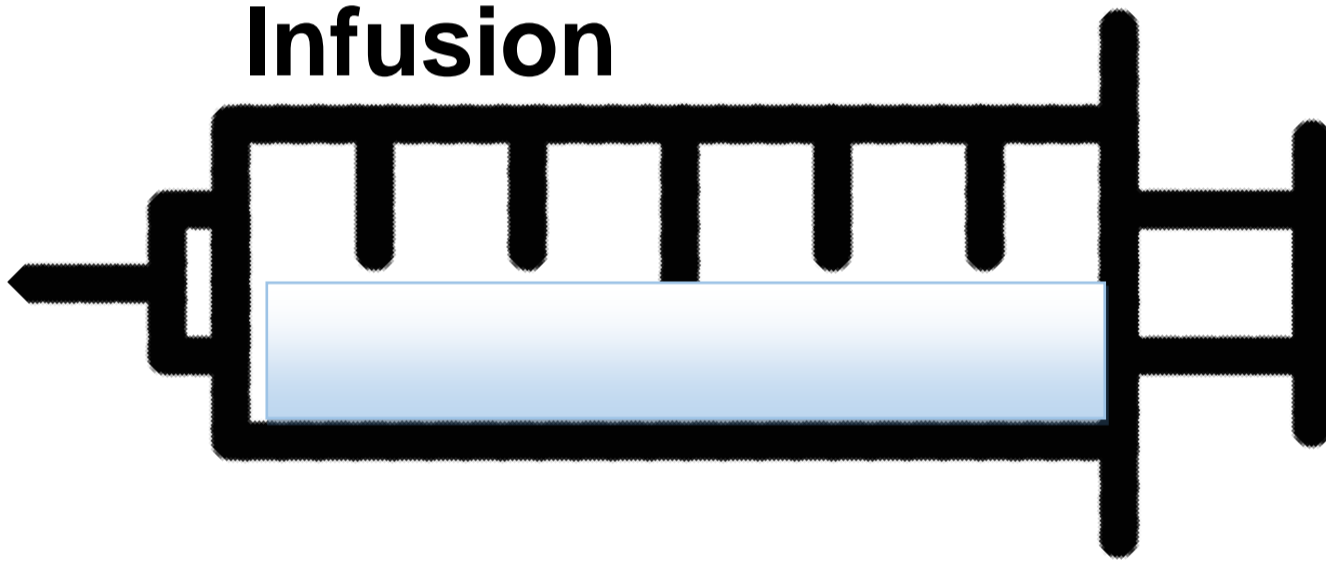
Medication



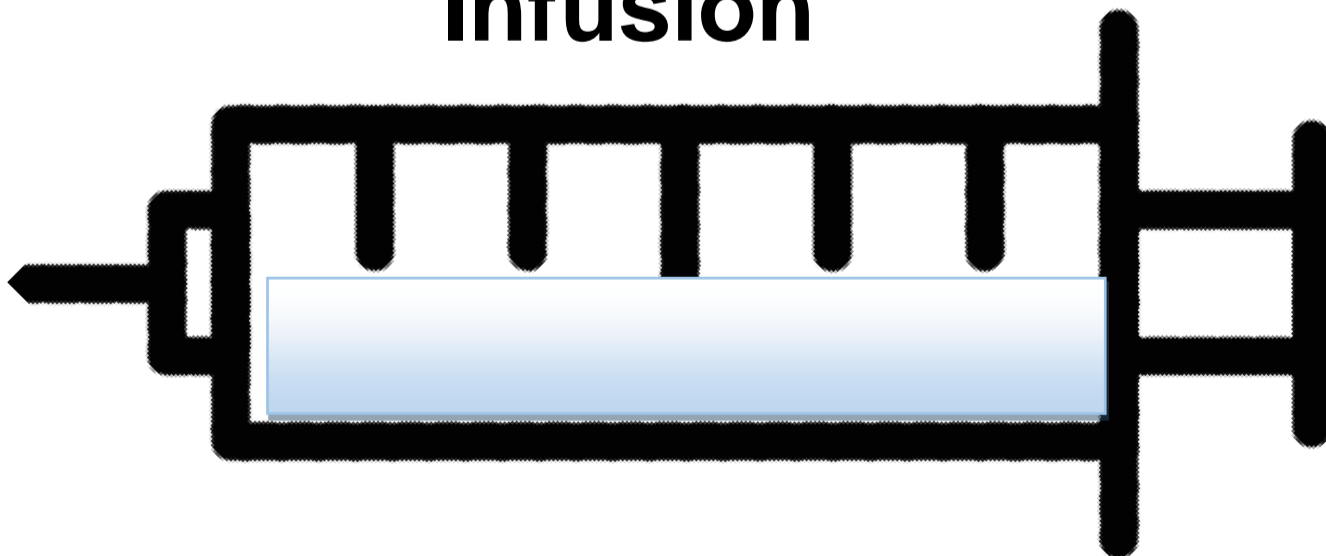
Medication

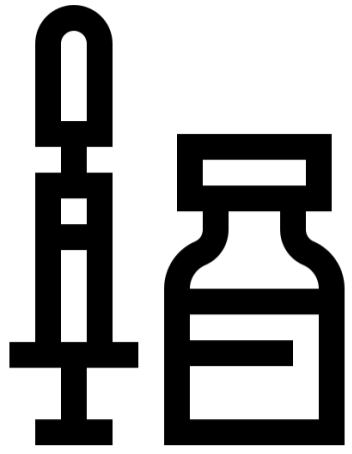


Infusion

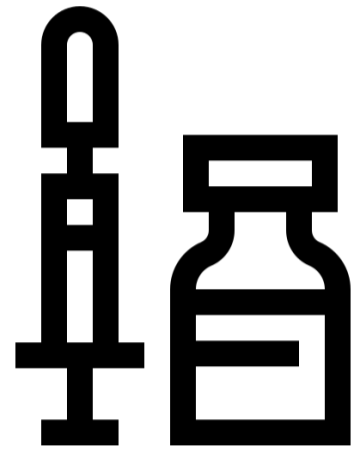
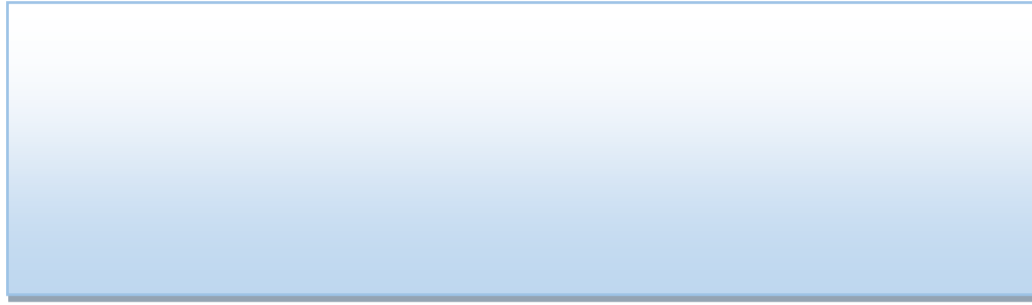


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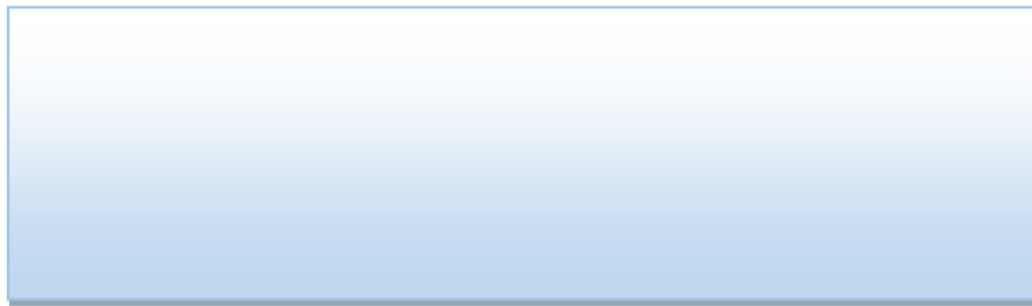




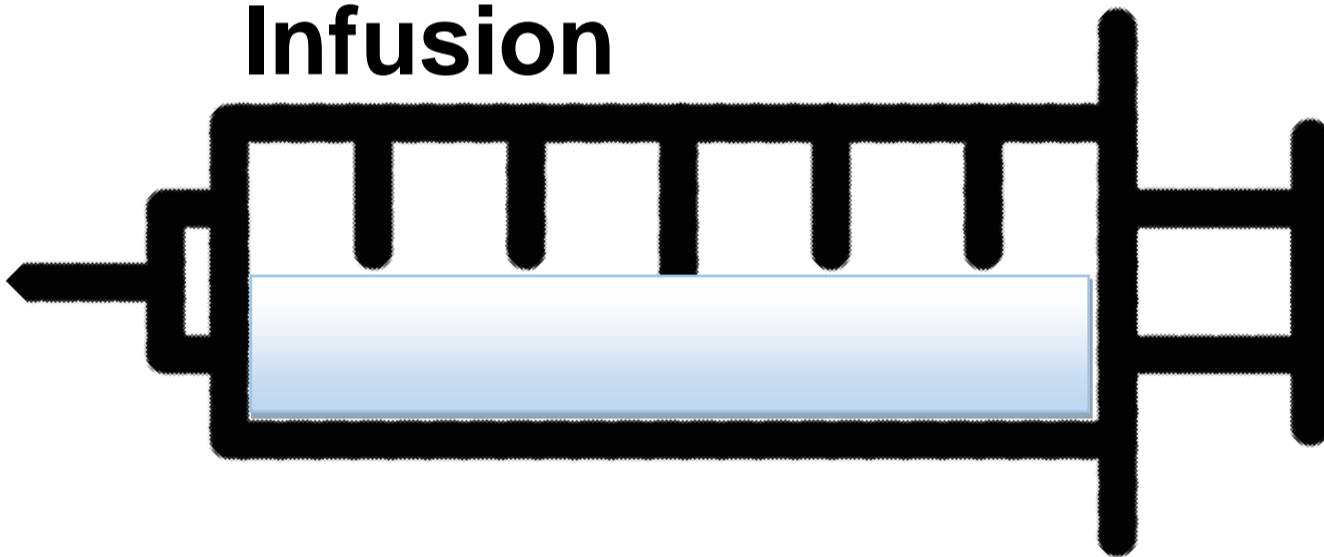
Medication



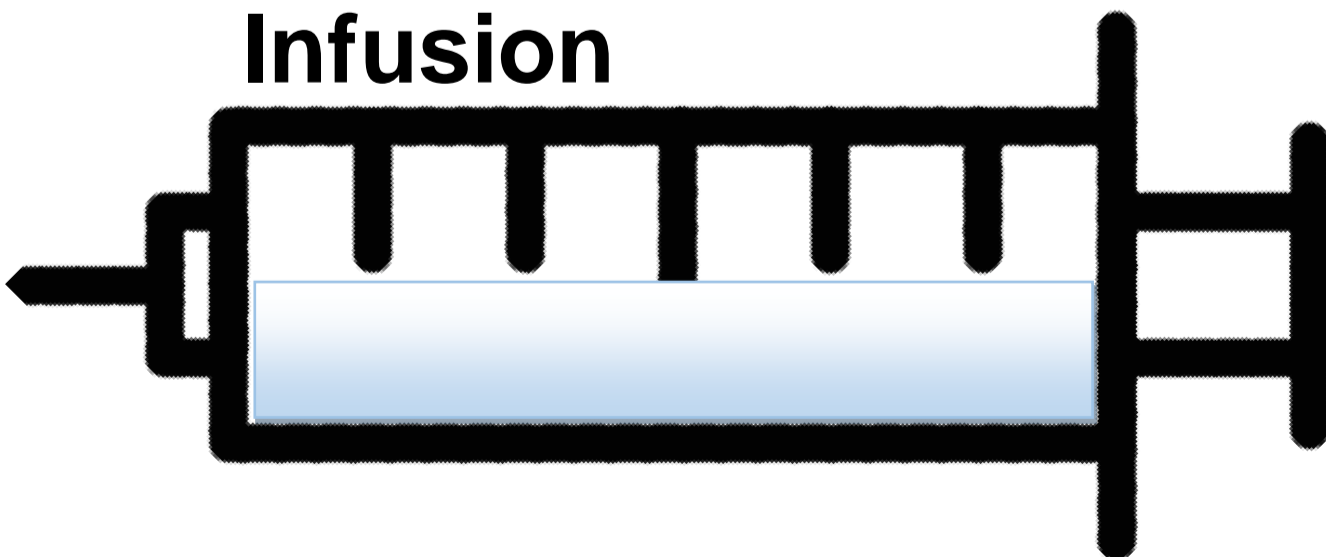
Medication



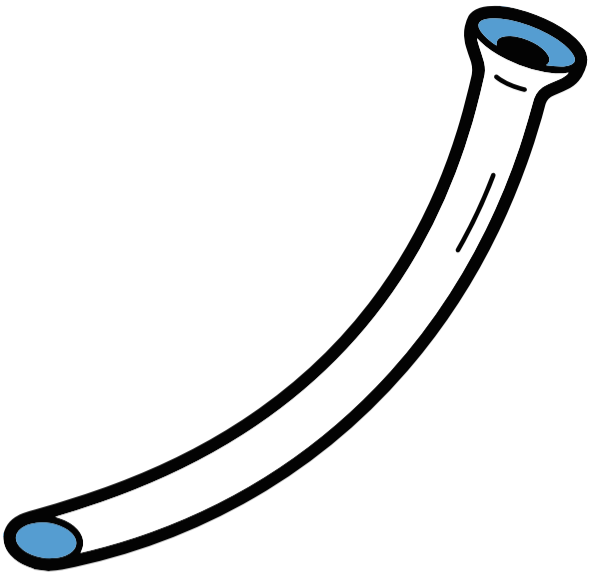
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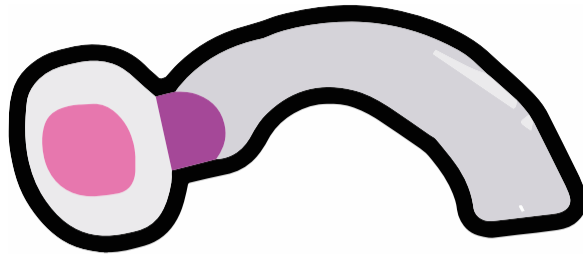
Infusion



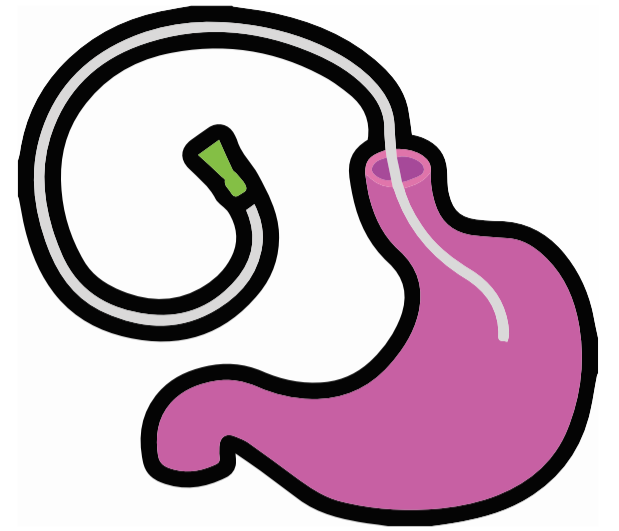
NPA



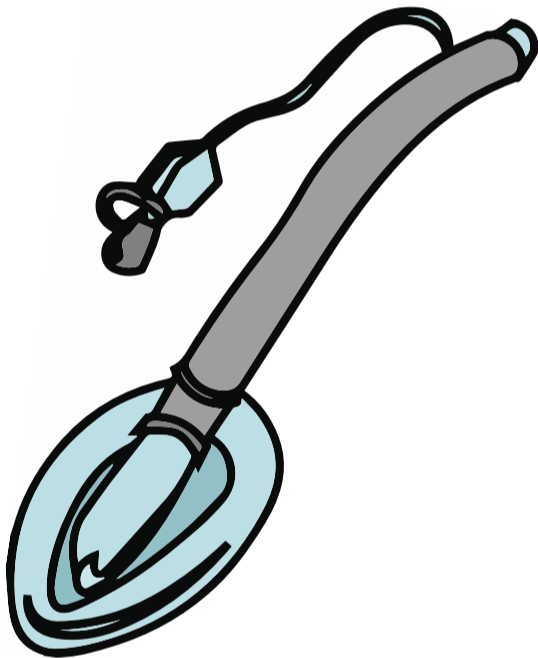
OPA



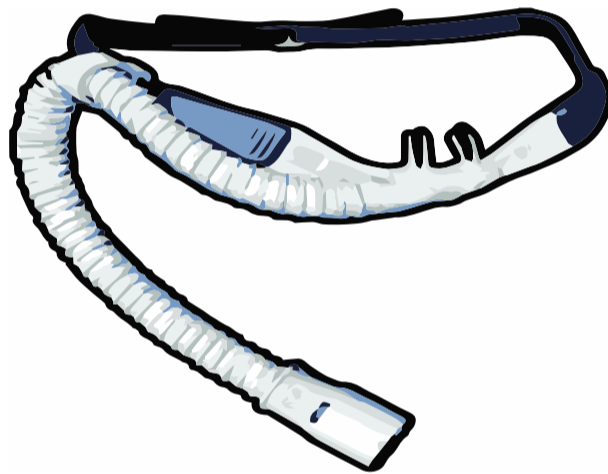
Nasogastric



LMA



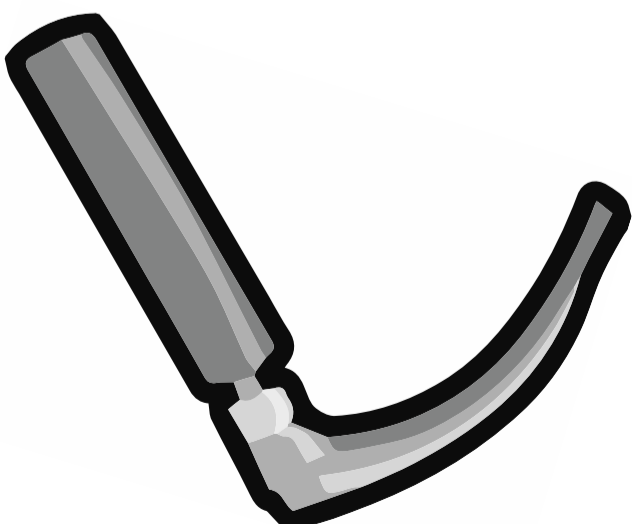
High Flow



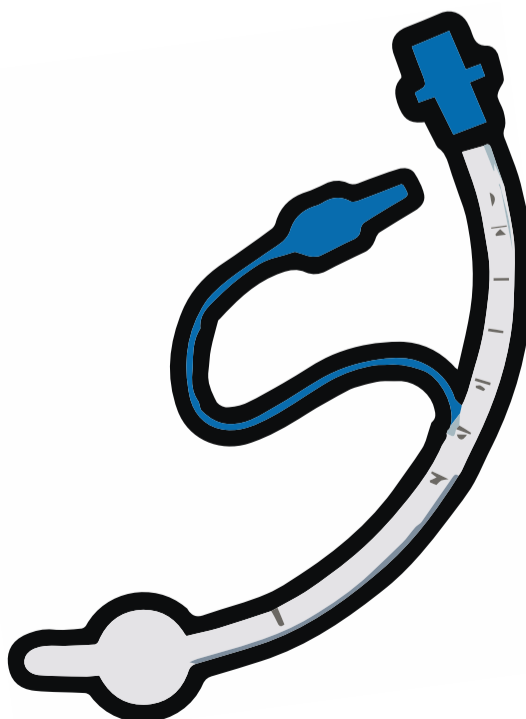
Oxygen Mask



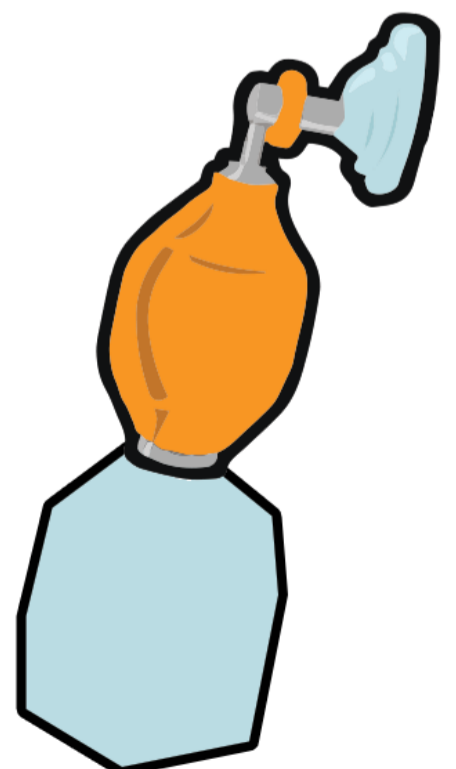
Laryngoscope



ETT



Bag Valve Mask



Trouble shooting: Utilising the DOPES acronym

DOPES Discussion	
D	<p>DISLODGE</p> <p>Endo Tracheal Tube (ETT) may become dislodged</p> <ul style="list-style-type: none"> • During movement of patient - always ensure someone is holding the tube when moving. • If patient is coughing – sedate patient and ensure continuation of sedation – quick discussion about sedation • Ensure adequate taping of ETT
O	<p>OBSTRUCTION</p> <p>ETT may become Obstructed</p> <ul style="list-style-type: none"> • Thick secretions particularly in children with Lung pathology such as asthma, pneumonia. • Small size ETT block easily with secretions-suction ETT • Suction catheter size is twice the size of ETT size i.e. 8 french suction catheter will fit into a size 4.0mm ETT • Small size ETT can bend/kink causing obstruction - good ETT Taping and observation of ETT. Allocate a nurse to stay by the head end to watch the tube. • Use Humidification to prevent secretions drying out in ETT tube.
P	<p>PNEUMOTHORAX</p> <p>May occur if pressure or volume is too high on ventilator - Be aware of the alarming PEAK Pressure alarm (DO NOT turn it up to combat the problem!!) trouble shoot the high-pressure problem first.</p> <p>May occur because of over-zealous hand bagging technique. Use a manometer if possible and keep pressure in the 'Green' zone.</p>
E	<p>EQUIPMENT – CRM-KNOW YOUR EQUIPMENT!</p> <ul style="list-style-type: none"> • Loss of power? is the ventilator charged or do you have spare batteries prior to transport. • Loss of Oxygen supply? do you have adequate Oxygen cylinders • Do you have correct size suction catheters and does the suction equipment work? • Check tubing- Is it the correct size for the patient- HAMILTON = Neonatal circuit and flow sensor for under 8kg • Oxylog 3000 = blue paediatric circuit for 50ml -250ml tidal volumes otherwise white adult circuit over approx 10kg. • Know how to connect ETCO₂ monitoring – it is possible on both Hamilton and Oxylog 3000 plus.
S	<p>STACKING</p> <p>This is where a breath is delivered but before that breath is fully expired another inspiratory breath occurs resulting in gas being further trapped in alveoli.</p> <p>This can occur in presentation such as ASTHMA. Use a longer expiratory phase-can change the I:E ratio or slow rate and shorten the inspiration time.</p>

Resus Team Brief and Airway Checklist

Identify team members

- | | | | |
|--|---|---------------------------------|--------------------------|
| <input type="checkbox"/> Nursing team leader | <input type="checkbox"/> Airway assistant | <input type="checkbox"/> Runner | <input type="checkbox"/> |
| <input type="checkbox"/> Medical team leader | <input type="checkbox"/> Second intubator | <input type="checkbox"/> Scribe | |
| <input type="checkbox"/> First intubator | <input type="checkbox"/> Drugs | | |

Has comprehensive monitoring been applied and working?

- | | | |
|--------------------------------|------------------------------------|--------------------------|
| - SpO ₂ | - Blood pressure (1 minute cycles) | <input type="checkbox"/> |
| - In-circuit ETCO ₂ | - ECG | |

Is the patient's position optimal?

- | | |
|---------------------------------------|--------------------------|
| - Is c-spine immobilisation required? | <input type="checkbox"/> |
| - Optimise bed height for intubation | |

Is the patient's preoxygenation optimal?

- | | |
|-----------------------------------|--------------------------|
| - Apnoeic O ₂ ? | <input type="checkbox"/> |
| - High-flow oxygen? | |
| - Non-invasive ventilation (NIV)? | |

Confirm patency of appropriate IV / IO access

Is the patient's haemodynamics optimal?

- | | |
|--|--------------------------|
| - Consider fluids / inotropes / pressors | <input type="checkbox"/> |
|--|--------------------------|

Is airway equipment available, sized and checked (go through list)?

- | | | |
|--|---|---|
| <input type="checkbox"/> Suction | <input type="checkbox"/> Laryngoscope x 2 | Adjuncts: |
| <input type="checkbox"/> BVM (self inflating bag with PEEP valve and/or T-piece bag) | <input type="checkbox"/> ETT x 2 | |
| <input type="checkbox"/> Difficult airway equipment | <input type="checkbox"/> Bougie and/or stylet | <input type="checkbox"/> Oropharyngeal Airway x 2 |
| | <input type="checkbox"/> Tube tapes / ties | |
| | <input type="checkbox"/> LMA x 2 | |

Have the intubation drugs and doses been confirmed?

- | | |
|---|--------------------------|
| - Drugs (induction / paralytic / pressors / others) and doses | <input type="checkbox"/> |
| - Sedative infusion | |

Team leader to verbalise airway management plans

- | | |
|--|--------------------------|
| - Include difficult airway plan | <input type="checkbox"/> |
| - Verbalise specific anticipated complications | |

Resus team brief complete - proceed to intubation



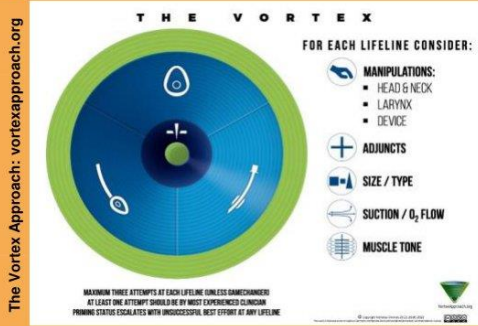
Queensland Paediatric Emergency Care
Skill Sheets

Queensland Paediatric Airway Management Algorithm

Guides					
Age	Cuffed ETT Size	ETT Depth	LMA	Laryngoscope	NGT size
0	3 3.5	10 12		0	6-8
1			1	1	8
2	4	13			
3					
4	4.5	14			10
5			2	2	
6	5	15			10-12
7					
8	5.5	16			
9			3		12
10	6	18		3	
11					
12			4		
13	6.5	19		4	12-14
14	Adult Sizes				
15					
16					

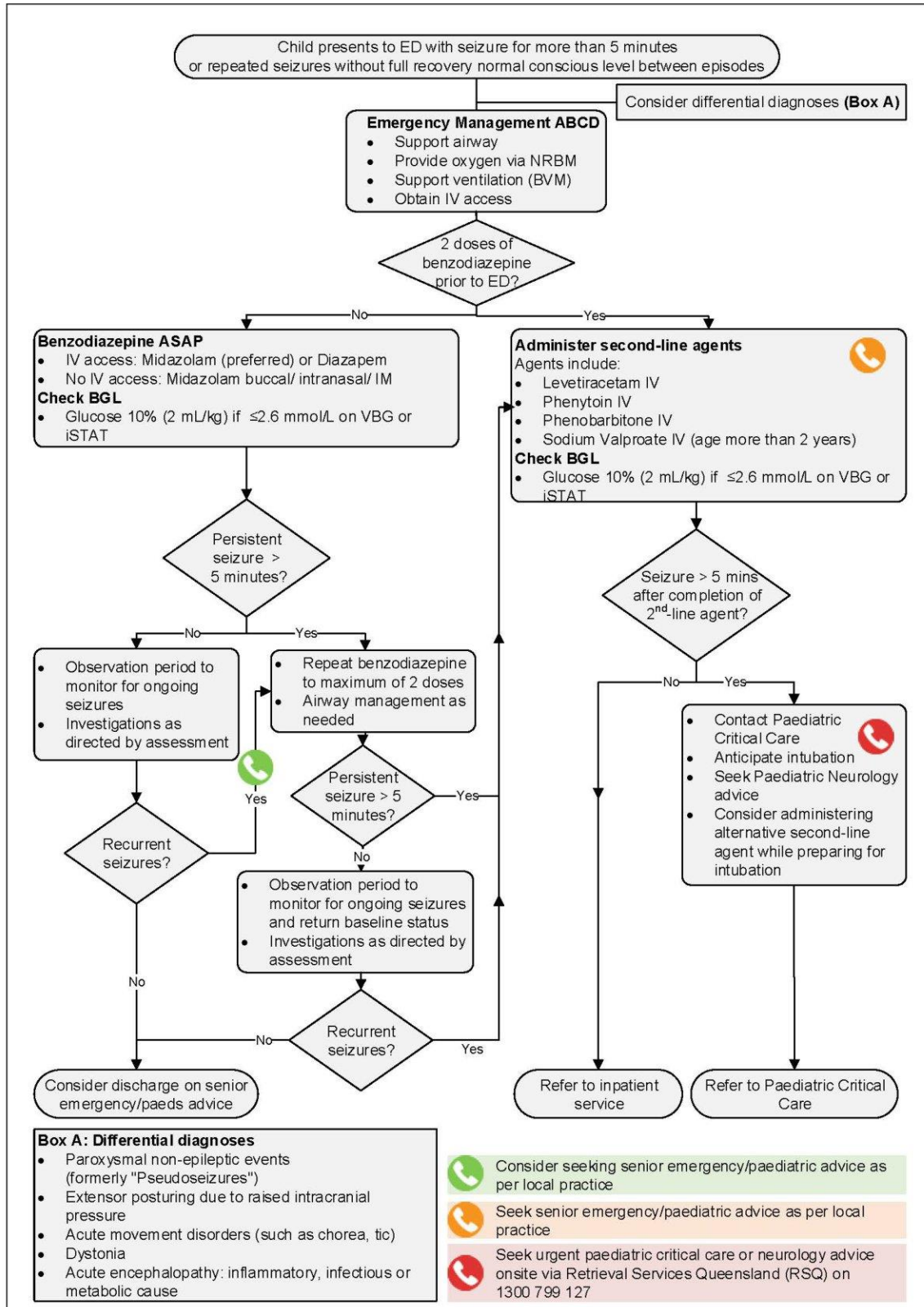
1 Optimise:	
<ul style="list-style-type: none"> Patient Location 	<ul style="list-style-type: none"> - Resus, OT - Call for help - ED Consultant / anaesthetics / critical care
<ul style="list-style-type: none"> Respiratory function 	<ul style="list-style-type: none"> - Airway open, head up 20 degrees, consider NGT - High flow nasal cannulae
<ul style="list-style-type: none"> Patient position 	<ul style="list-style-type: none"> - Ear-sternal notch, face parallel to ceiling, midline, bed height
<ul style="list-style-type: none"> Pre-oxygenation 	<ul style="list-style-type: none"> - As appropriate: non-rebreather mask (NRBM) / high flow nasal therapy (HFNT) / Neopuff™ / non-invasive ventilation / bag valve mask (BVM) / T-piece
<ul style="list-style-type: none"> Haemodynamics 	<ul style="list-style-type: none"> - Beware hypotension, consider fluid / Adrenaline
<ul style="list-style-type: none"> Is difficult intubation expected? 	<ul style="list-style-type: none"> - Anatomy - Pathology (eg. burns, anaphylaxis, epiglottitis) - Physiology (eg. critical illness)

2 Designate and Identify:			
PEOPLE	EQUIPMENT & MONITORING		DRUGS (DEFAULT)
<input type="checkbox"/> Intubator <input type="checkbox"/> Second Intubator <input type="checkbox"/> Airway Nurse <input type="checkbox"/> Drugs <input type="checkbox"/> Scribe <input type="checkbox"/> C-spine (PRN)	<input type="checkbox"/> Self inflating bag (BVM) <input type="checkbox"/> Suction <input type="checkbox"/> NPA/OPA <input type="checkbox"/> ETT & alternative sizes <input type="checkbox"/> Laryngoscope x 2 <input type="checkbox"/> Stylet and/or Bougie <input type="checkbox"/> LMA <input type="checkbox"/> Difficult Airway Kit	<input type="checkbox"/> Tapes or ties <input type="checkbox"/> Syringe <input type="checkbox"/> Magill's Forceps <input type="checkbox"/> Capnography (ETCO ₂) <input type="checkbox"/> SpO ₂ <input type="checkbox"/> ECG <input type="checkbox"/> BP	<input type="checkbox"/> Induction - Ketamine <input type="checkbox"/> Paralysis - Rocuronium <input type="checkbox"/> Prepare: Fluid bolus , Adrenaline (resus dose & push dose pressor) Atropine Refer to CREDD for doses

3 Run resus brief and confirm plans:	
	<p>If unable to ventilate, progress to "Can't Ventilate, Can't Oxygenate" (CICO) processes.</p>
<p>Give induction drug and continue nasal O2 (2 L/kg/minute or 15 L/minute)</p>	<ul style="list-style-type: none"> - Confirm ability to BVM prior to paralysis
<p>Give paralytic agent</p>	
<p>Secure and confirm airway</p>	<ul style="list-style-type: none"> - Capnography, auscultate, fogging, chest movement
<p>Post intubation cares</p>	<ul style="list-style-type: none"> - Sedation, check cuff, NGT, CXR, VBG, optimise haemodynamics and ventilation, documentation



Status epilepticus – Emergency management in children – Flowchart



OPTIMUS Course Participant Feedback Form



OPTIMUS Course Faculty Feedback Form

Please complete online form within 1 week of course completion





Section 6
Curriculum, Acknowledgements & References



Optimus
PRIME



Section 3. Curriculum, Acknowledgements & References

Curriculum

Concepts	Skills
<p>Teamwork and Communication</p> <p>Understand and Contextualise the Principles of Crisis Resource Management:</p> <ul style="list-style-type: none"> • Know Your Environment • Anticipate and Plan • Call for help early • Use all available resources • Take a leadership role • Communicate effectively • Allocate attention <p>Reflect upon the handover process within the context of a paediatric resuscitation utilising an SBAR format</p>	<p>Teamwork and Communication</p> <p>Analyse opportunities for team improvement through the framework of:</p> <ul style="list-style-type: none"> • Self • Team • Environment • System
<p>Quality Improvement Concepts</p> <ul style="list-style-type: none"> • Understand the importance of iterative cycles of performance improvement in healthcare • Contextualise the use of checklists and protocols as 'scaffolds' to cognitively offload team members and allow further adaptation to individual patient requirements 	<p>Quality Improvement Skills</p> <ul style="list-style-type: none"> • Identify actionable quality and safety interventions to improve local paediatric resuscitation within local service
<p>Seizure Management Concepts</p> <ul style="list-style-type: none"> • Understand paediatric status epilepticus guideline relevant to local service <ul style="list-style-type: none"> ○ Structured ABCDE approach to the seizing patient ○ Choice of first- and second-line antiepileptic drugs ○ Timing and indications for intubation ○ Evidence base for antiepileptic drugs ○ Side effects of common antiepileptic drugs 	<p>Seizure Management Skills</p> <ul style="list-style-type: none"> • Utilise an appropriate paediatric drug calculation manual to prescribe, prepare and administer second line anti-epileptic drugs (e.g. Levetiracetam or Phenytoin) • Rehearse prescription, preparation and administration of anti-epileptic drugs in clinical setting • Identify and utilise appropriate safety equipment for safe administration of anti-epileptics (e.g. Filter in phenytoin, safe use of smart pump software)
<p>Intubation Concepts</p> <ul style="list-style-type: none"> • Understand the importance of a team-based approach to paediatric intubation in an emergency setting. <ul style="list-style-type: none"> ○ Common complications ○ Patient optimisation pre-intubation ○ Strategies for apnoeic oxygenation ○ Drug choices for rapid sequence induction 	<p>Intubation Skills</p> <ul style="list-style-type: none"> • Mentally rehearse the safe preparation and intubation of a paediatric patient utilising an appropriate airway checklist • Rehearse the safe preparation and intubation of a paediatric patient utilising an appropriate airway checklist in a simulated clinical setting

<ul style="list-style-type: none"> ○ Airway checklists and briefs ○ Paediatric Airway equipment ● Post intubation cares: <ul style="list-style-type: none"> ○ Appropriate taping of ETT ○ Suctioning ETT 	
Ventilation Concepts	Ventilation Skills
<ul style="list-style-type: none"> ● Develop a basic framework for approaching SIMV based ventilation in children for: <ul style="list-style-type: none"> ○ Normal lungs ○ Abnormal lungs ○ Raised Intracranial Pressure ● Contextualise pre-existing knowledge around adult ventilation and how it can be adapted to demystify paediatric ventilation settings 	<ul style="list-style-type: none"> ● Mentally rehearse adjusting the ventilator used in local service in response to: <ul style="list-style-type: none"> ○ Hypoxia ○ Hypercapnia ○ Pressure alarm ○ Air trapping
Shock and Sepsis Concepts	Shock and Sepsis Skills
<ul style="list-style-type: none"> ● Develop a structured approach to paediatric shock utilising the framework of: <ul style="list-style-type: none"> ○ Pump ○ Squeeze ○ Unblock ○ Fill ● Develop an understanding of the indications and contraindications for adrenaline as first dose pressor in paediatric shock ● Develop an awareness of the basic pharmacology of common inotropes in the paediatric emergency setting utilising a pump/squeeze analogy ● Understand that adrenaline can be given safely via a peripheral line for at least 4 hours ● Understand there can be benefits from early inotrope administration in shock ● Reinforce learning from Optimus CORE on the paediatric sepsis pathway ● Develop an understanding of the paediatric sepsis pathway as a guide to both recognition and treatment of paediatric sepsis 	<ul style="list-style-type: none"> ● Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock including: <ul style="list-style-type: none"> ○ Individual push dose pressor doses ○ Continuous infusion ● Rehearse the prescription, preparation and administration of adrenaline to treat paediatric shock within a clinical simulated setting as part of a larger resuscitation. ● Identify equipment and environmental barriers to safe administration of adrenaline to a child in local resuscitation setting ● Rehearse use of the paediatric sepsis pathway in the simulated care of a septic child
Retrieval Concepts	Retrieval Skills
<ul style="list-style-type: none"> ● Develop an awareness of hospital's escalation pathway for critically ill paediatric patients including access to high dependency and intensive care 	<ul style="list-style-type: none"> ● Rehearse activating hospital's escalation pathway for critically ill paediatric patients to obtain intensive care level support ● Rehearse utilising the retrieval team checklist in the simulated clinical setting

- Develop an understanding of local hospital's designated retrieval service can provide assistance with:
 - Advice
 - Virtual or phone review
 - Virtual team leadership
 - Physical retrieval
- Develop an awareness steps that can be taken to aid retrieval team before and upon their arrival including the retrieval team checklist
- Reinforce positive relationships between existing retrieval / ICU service and local site
- Develop empathy for the perspective of a parent during retrieval and understand the centrality of the parent/child dyad within the healthcare team

This course is designed to offer your **department** a systems level check regarding:


Access to paediatric resources on:



- **Queensland Paediatric Emergency Care Website**
- **Children's Early Warning Tool**
- **CREDD book**
- **Queensland Paediatric Sepsis Pathway**


If you would like any assistance obtaining access or advice for any of the above issues, please contact stork@health.qld.gov.au


NSQHS Standards

This course is designed to assist your hospital address or reinforce the following NSQHS standards:

NSQHS Standard	Relevant course section
 <p>Clinical Governance Standard</p> <p><i>“Leaders of a health service organisation have a responsibility to the community for continuous improvement of the safety and quality of their services, and ensuring that they are person centred, safe and effective.”</i></p> <p>PRIME embeds a philosophy of continuous performance improvement within healthcare teams by actively empowering teams to identify safety threats and opportunities for improvement through the framework of ‘Self, Team, Environment, System’.</p> <p>Teams are engaged in active problem solving and consideration of ‘work as done’ versus ‘work as imagined’, with follow up plans identified at the end of the day to ensure issues are escalated appropriately within the service.</p>	
Governance, Leadership and Culture	
<p>1.1 The governing body:</p> <ol style="list-style-type: none"> Provides leadership to develop a culture of safety and quality improvement, and satisfies itself that this culture exists within the organisation Sets priorities and strategic directions for safe and high-quality clinical care, and ensures that these are communicated effectively to the workforce and the community Monitors the action taken as a result of analyses of clinical incidents Reviews reports and monitors the organisation’s progress on safety and quality performance <p>1.6 Clinical leaders support clinicians to:</p> <ol style="list-style-type: none"> Understand and perform their delegated safety and quality roles and responsibilities Operate within the clinical governance framework to improve the safety and quality of health care for patients 	<ul style="list-style-type: none"> Active documentation of latent safety threats identified through simulation testing throughout the course Performance feedback forms provided to departmental leadership with actionable items and recommendations
Patient Safety and Quality Systems	
<p>1.7 The health service organisation uses a risk management approach to:</p> <ol style="list-style-type: none"> Set out, review, and maintain the currency and effectiveness of, policies, procedures and protocols Monitor and take action to improve adherence to policies, procedures and protocols <p>1.8 The health service organisation uses organisation-wide quality improvement systems that:</p> <ol style="list-style-type: none"> Identify safety and quality measures, and monitor and report performance and outcomes Identify areas for improvement in safety and quality Implement and monitor safety and quality improvement strategies Involve consumers and the workforce in the review of safety and quality performance and systems <p>1.10 The health service organisation:</p> <ol style="list-style-type: none"> Identifies and documents organisational risks Uses clinical and other data collections to support risk assessments Acts to reduce risks Reports on risks to the workforce and consumers Plans for, and manages, internal and external emergencies and disasters 	<ul style="list-style-type: none"> Simulations are designed to link and test access and awareness of Children’s Health Queensland’s resuscitation guidelines and resources via QPEC Active documentation of latent safety threats identified through simulation testing throughout the course Performance feedback forms provided to departmental leadership with actionable items and recommendations

Clinical performance and effectiveness	
<p>1.27 The health service organisation has processes that:</p> <ol style="list-style-type: none"> Provide clinicians with ready access to best-practice guidelines, integrated care pathways, clinical pathways and decision support tools relevant to their clinical practice Support clinicians to use the best available evidence 	<ul style="list-style-type: none"> PRIME is informed by evidence based guidelines and deliberately links to CHQ clinical pathways and decision support tools relevant to paediatric resuscitation
Safe environment for the delivery of care	
<p>1.29 The health service organisation maximises safety and quality of care:</p> <ol style="list-style-type: none"> Through the design of the environment By maintaining buildings, plant, equipment, utilities, devices and other infrastructure that are fit for purpose <p>1.30 The health service organisation:</p> <ol style="list-style-type: none"> Identifies service areas that have a high risk of unpredictable behaviours and develops strategies to minimise the risks of harm for patients, carers, families, consumers and the workforce Provides access to a calm and quiet environment when it is clinically required 	<ul style="list-style-type: none"> PRIME is designed to prompt reflection on the environment and equipment available for paediatric resuscitation. Simulations are designed to identify latent safety threats and identify performance improvement opportunities through facilitated debriefing.
 <h3>Medication Safety Standard</h3> <p><i>“Leaders of a health service organisation describe, implement and monitor systems to reduce the occurrence of medication incidents, and improve the safety and quality of medication use. The workforce uses these systems.”</i></p> <p>PRIME contains specific checkpoints to test access to paediatric resuscitative medication guides (i.e. CREDD), safe drug administration equipment and software.</p>	
Medication Management Processes	
<p>4.13 The health service organisation ensures that information and decision support tools for medicines are available to clinicians</p>	<ul style="list-style-type: none"> Access to CREDD, Sepsis pathway and QPEC are embedded within the skills stations and simulations
 <h3>Comprehensive Care Standard</h3> <p><i>“Leaders of a health service organisation set up and maintain systems and processes to support clinicians to deliver comprehensive care. They also set up and maintain systems to prevent and manage specific risks of harm to patients during the delivery of health care. The workforce uses the systems to deliver comprehensive care and manage risk.”</i></p> <p>Optimus PRIME is designed to nurture relationships between hospital sub-teams through its multidisciplinary design and its opportunities for disparate teams to learn more about each other through shared participation in learning and simulation.</p>	
<p>5.2 The health service organisation applies the quality improvement system from the Clinical Governance Standard when:</p> <ol style="list-style-type: none"> Monitoring the delivery of comprehensive care Implementing strategies to improve the outcomes from comprehensive care and associated processes Reporting on delivery of comprehensive care 	<p>Participants are taught a quality improvement framework during PRIME and actively encouraged to reflect on their team and systems throughout the day.</p>
<p>5.5 The health service organisation has processes to support</p> <ol style="list-style-type: none"> multidisciplinary collaboration and teamwork Define the roles and responsibilities of each clinician working in a team 	<p>Multidisciplinary design Simulations</p>
<p>5.6 Clinicians work collaboratively to plan and deliver comprehensive care</p>	

NSQHS Standard	Relevant Course Section
 <p>Communicating for Safety</p> <p><i>“Leaders of a health service organisation set up and maintain systems and processes to support effective communication with patients, carers and families; between multidisciplinary teams and clinicians; and across health service organisations. The workforce uses these systems to effectively communicate to ensure safety”</i></p> <p>Optimus PRIME contains multiple references to the importance of safe communication (particularly handover) within both the eLearning and the case study.</p> <p>The course reinforces the importance of safe clinical handover and provides opportunity to rehearse referrals via phone call and handover during time critical resuscitations.</p>	
<p>Action 6.02: Implementing strategies to improve clinical communication and associated processes</p>	<ul style="list-style-type: none"> • Tabletop simulation • eLearning • Simulations
<p>Action 6.03 Clinicians use organisational processes ... to effectively communicate with patients, carers and families during high-risk situations to:</p> <ol style="list-style-type: none"> a) Actively involve patients in their own care b) Meet the patient’s information needs c) Share decision-making 	<ul style="list-style-type: none"> • Simulations
<p>Action 6.04: Clinical communications processes to support effective communication when:</p> <ol style="list-style-type: none"> a) All or part of a patient’s care is transferred within the organisation, between multidisciplinary teams, between clinicians or between organisations; and on discharge b) Critical information about a patient’s care, including information on risks, emerges or changes 	<ul style="list-style-type: none"> • Tabletop Simulation • Simulations
<p>Action 6.08: Clinicians use structured clinical handover processes that include:</p> <ul style="list-style-type: none"> ○ Preparing and scheduling clinical handover ○ Having the relevant information at clinical handover ○ Organising relevant clinicians and others to participate in clinical handover ○ Being aware of the patient’s goals and preferences ○ Supporting patients, carers and families to be involved in clinical handover, in accordance with the wishes of the patient ○ Ensuring that clinical handover results in the transfer of responsibility and accountability for care 	<p>The tabletop simulation introduces a published ‘pre-brief’ script for use in emergency situations to prepare teams for the arrival and handover of a critically unwell child.</p>
<ul style="list-style-type: none"> • Action 6.10: There are communication processes for patients, carers and families to directly communicate critical information and risks about care to clinicians 	<ul style="list-style-type: none"> • eLearning

NSQHS Standard	Relevant Course Section
 <h2 data-bbox="194 320 997 358">Recognising and Responding to Acute Deterioration</h2> <p data-bbox="89 427 1385 488">Optimus PRIME was designed to improve healthcare team performance in active resuscitation in the event of deterioration.</p> <p data-bbox="89 504 448 533">This is done at multiple levels:</p> <ul data-bbox="140 551 1477 853" style="list-style-type: none"> • The eLearning provides clinical examples of patient deterioration and guides staff through expected initial responses, including escalation • The lectures / plenaries build skills in safe, evidence-based management of status epilepticus, intubation and the use of inotropes in children • The simulations provide opportunities to rehearse the first 20 minutes of a response to a medical emergency • The skills stations provide training on critical resuscitation skills needed to stabilise a critically unwell child • The third simulation incorporates use of the Queensland Paediatric Sepsis Tool 	
<p data-bbox="89 891 738 920">Action 8.01: Implementing policies and procedures for:</p> <ol data-bbox="140 943 1046 1133" style="list-style-type: none"> a) Recognising and responding to acute deterioration b) Managing risks associated with recognising and responding to acute deterioration c) Identifying training requirements for recognising and responding to acute deterioration 	<ul data-bbox="1129 898 1318 972" style="list-style-type: none"> • eLearning • Simulations
<p data-bbox="89 1178 1086 1207">Action 8.02b: Implementing strategies to improve recognition and response systems</p>	<ul data-bbox="1129 1178 1318 1252" style="list-style-type: none"> • eLearning • Simulations
<p data-bbox="89 1294 1046 1355">Action 8.03: Clinicians use organisational processes from the Partnering with Consumers Standard when recognising and responding to acute deterioration to:</p> <ol data-bbox="140 1355 676 1451" style="list-style-type: none"> a) Actively involve patients in their own care b) Meet the patient's information needs c) Share decision-making 	<ul data-bbox="1129 1294 1302 1323" style="list-style-type: none"> • eLearning
<p data-bbox="89 1491 1062 1552">Action 8.04: The health service organisation has processes for clinicians to detect acute physiological deterioration that require clinicians to:</p> <ol data-bbox="140 1574 1062 1733" style="list-style-type: none"> a) Document individualised vital sign monitoring plans b) Monitor patients as required by their individualised monitoring plan c) Graphically document and track changes in agreed observations to detect acute deterioration over time, as appropriate for the patient 	<ul data-bbox="1129 1491 1318 1568" style="list-style-type: none"> • eLearning • Simulations
<p data-bbox="89 1778 1086 1839">Action 8.08: The health service organisation provide the workforce with mechanisms to escalate care and call for emergency assistance</p>	<ul data-bbox="1129 1778 1318 1852" style="list-style-type: none"> • eLearning • Simulations
<p data-bbox="89 1895 1062 1955">Action 8.09: The workforce uses the recognition and response systems to escalate care</p>	<ul data-bbox="1129 1895 1318 1971" style="list-style-type: none"> • eLearning • Simulations

Action 8.10: The health service organisation has processes that support timely response by clinicians with the skills required to manage episodes of acute deterioration	<ul style="list-style-type: none"> • eLearning • Case Study
Action 8.11: The health service organisation has processes to ensure rapid access at all times to at least one clinician, either on site or in close proximity, who can deliver advanced life support	<ul style="list-style-type: none"> • eLearning • Simulations
Action 8.12: The health service organisation has processes for rapid referral to services that can provide definitive management of acute physical deterioration	<ul style="list-style-type: none"> • eLearning • Simulations

Australasian College of Emergency Medicine Certificate, Diploma & Advanced Diploma Curriculum

This course is designed to assist you in meeting the following components of the ACEM certificate, diploma or advanced diploma curricula:

Learning goal	Specific objective	EMC	EMD	EMAD
Identifying deterioration in a paediatric patient	<ul style="list-style-type: none"> Understand use of PEWS Understand reasons for paediatric cardiac arrest Identify red flags 	2.11.1 2.11.2 2.11.3 2.11.4 2.11.7 2.11.8 2.11.9 2.11.13 2.11.21	2.6.15 2.6.17 2.6.18a	
Provide basic circulatory support	<ul style="list-style-type: none"> Calculate, prescribe and administer fluid boluses 	1.5.39 2.11.10a	2.3.7a	
Establish vascular access	<ul style="list-style-type: none"> Obtain and secure intravenous and intraosseous access 	1.5.38a,b 1.5.50a,b 2.5.6a 2.11.11c,d 2.11.24c,d	2.6.22e	
Understand the differential diagnosis of breathing difficulty in children	<ul style="list-style-type: none"> Identify the clinical features of croup, bronchiolitis, pneumonia, asthma, metabolic disease and inhaled foreign bodies 	2.5.3a,b,f,g 2.11.14 2.11.15 2.11.16 2.11.17 2.11.20	1.1.24a 1.1.27a,e 2.6.18b	
Provide basic respiratory support	<ul style="list-style-type: none"> Understand and utilise standard devices for oxygen delivery. Perform airway opening techniques Perform bag-valve mask ventilation. Size and insert oropharyngeal, nasopharyngeal and laryngeal mask airways. Size and insert a nasogastric tube 	1.5.7 1.5.10 1.5.14a,b,d,e,f 1.5.21 1.5.24b 1.5.49 1.5.50c 2.5.5a 2.11.18 2.11.20a 2.11.24e	1.1.33 2.6.22a	
Understand an evidence-based approach to assessment of the febrile child	<ul style="list-style-type: none"> Develop differential diagnoses for poor interaction, limp, muscle pain, decreased tone, rash 	2.11.4 2.11.7 2.11.8 2.11.9 2.11.10a,b,c 2.11.12	2.6.18f	
Understand the differential diagnosis of a child with vomiting	<ul style="list-style-type: none"> Identify red flags in a child with vomiting Identify the distinguishing features of major causes of vomiting in childhood Select appropriate rehydration regimens 	2.11.21 2.11.22 2.11.23 2.11.26		
Safely perform endotracheal intubation in a child	<ul style="list-style-type: none"> Identify and use appropriate cognitive aids Perform common techniques for optimising oxygenation Perform common techniques for optimising haemodynamic status 		1.1.13 1.1.15 1.1.16 1.1.33 2.6.16 2.6.22b	1.1.1 1.1.2 1.1.4 1.1.20

Safely prescribe and administer common resuscitation medications	<ul style="list-style-type: none"> Identify and use appropriate resources to guide drug choice and dose Make up an infusion and deliver through a pump 	2.11.10		
Provide advanced respiratory support	<ul style="list-style-type: none"> Set up a ventilator for a child 		1.1.31b 1.1.32 2.6.21	

References

This educational package has been reviewed by content experts on behalf of Children's Health Queensland.

On Life Support standards and PBL and PALS training strategies:

- All content within this course is designed to be in accordance with ANZCOR guidelines on Paediatric Life Support: <https://resus.org.au/guidelines/>
- Cheng, A., Nadkarni, V., Mancini, M., Hunt, E., Sinz, E., Merchant, R., Donoghue, A., Duff, J., Eppich, W., Auerbach, M., Bigham, B., Blewer, A., Chan, P. and Bhanji, F., 2018. Resuscitation Education Science: Educational Strategies to Improve Outcomes From Cardiac Arrest: A Scientific Statement From the American Heart Association. *Circulation*, 138(6).

Visual Resources:

- The Simulation Template used in this course has been adapted from the template from emsimcases.com, available at: <https://emsimcases.com/template/>
- Pre-brief template is based on the publication:
 - Purdy E, Alexander C, Shaw R, Brazil V. The team briefing: setting up relational coordination for your resuscitation. *Clin Exp Emerg Med*. 2020 Mar;7(1):1-4. doi: [10.15441/ceem.19.021](https://doi.org/10.15441/ceem.19.021). Epub 2020 Mar 31. PMID: 32252127; PMCID: PMC7141984.

Teamwork and Systems:

- Hicks, C. and Petrosoniak, A. (2018) "The human factor," *Emergency Medicine Clinics of North America*, 36(1), pp. 1–17. Available at: <https://doi.org/10.1016/j.emc.2017.08.003>.
- Purdy E, Alexander C, Shaw R, Brazil V. The team briefing: setting up relational coordination for your resuscitation. *Clin Exp Emerg Med*. 2020 Mar;7(1):1-4. doi: [10.15441/ceem.19.021](https://doi.org/10.15441/ceem.19.021). Epub 2020 Mar 31. PMID: 32252127; PMCID: PMC7141984.
- Reid C, Brindley P, Hicks C, Carley S, Richmond C, Lauria M, Weingart S. Zero point survey: a multidisciplinary idea to STEP UP resuscitation effectiveness. *Clin Exp Emerg Med*. 2018 Sep;5(3):139-143. doi: [10.15441/ceem.17.269](https://doi.org/10.15441/ceem.17.269). Epub 2018 Sep 30. PMID: 30269449; PMCID: PMC6166036.

Status Epilepticus Management:

- Matthews, R. and Young, A. (2019) "Levetiracetam versus phenytoin for second-line treatment of convulsive status epilepticus in children (concept): An open-label, multicentre, randomised controlled trial," *The Journal of Emergency Medicine*, 57(2), pp. 274–275. Available at: <https://doi.org/10.1016/j.jemermed.2019.07.006>.
- Lyttle, M.D. et al. (2019) "Levetiracetam versus phenytoin for second-line treatment of paediatric convulsive status epilepticus (Eclipse): A Multicentre, open-label, Randomised Trial," *The Lancet*, 393(10186), pp. 2125–2134. Available at: [https://doi.org/10.1016/s0140-6736\(19\)30724-x](https://doi.org/10.1016/s0140-6736(19)30724-x).
- Dalby, B. and Jones, J. (2020) "Efficacy of levetiracetam, fosphenytoin, and valproate for established status epilepticus by age group (ESETT): A double-blind, responsive-adaptive, randomized controlled trial," *The Journal of Emergency Medicine*, 59(2), p. 333. Available at: <https://doi.org/10.1016/j.jemermed.2020.07.041>.
- Qiao, M.-Y. et al. (2021) "Efficacy and safety of Levetiracetam vs. phenobarbital for neonatal seizures: A systematic review and meta-analysis," *Frontiers in Neurology*, 12. Available at: <https://doi.org/10.3389/fneur.2021.747745>.

Airway Management:

- Ghedina, N., Alkhouri, H., Badge, H., Fogg, T. and McCarthy, S. (2020), Paediatric intubation in Australasian emergency departments: A report from the ANZEDAR. *Emergency Medicine Australasia*, 32: 401-408. <https://doi.org/10.1111/1742-6723.13416>
- Images in PowerPoint on airway positioning used with permission from Dr Aman Kalra's website <https://www.maskinduction.com/positioning-infants-and-children-for-airway-management.html> (c) 2017

- Jain, D., Goel, N., Mehta, S. et al. Comparison of three techniques of face mask ventilation in children less than two years of age—a randomized crossover study. *Can J Anesth/J Can Anesth* 66, 999–1000 (2019). <https://doi.org/10.1007/s12630-019-01394-9>
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Shock:

- Ramaswamy KN, Singhi S, Jayashree M, Bansal A, Nallasamy K. Double-Blind Randomized Clinical Trial Comparing Dopamine and Epinephrine in Pediatric Fluid-Refractory Hypotensive Septic Shock. *Pediatr Crit Care Med*. 2016 Nov;17(11):e502-e512. doi: 10.1097/PCC.0000000000000954. PMID: 27673385.
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PRIME 2022 Development Team:



Ms Louise Dodson
BHlthSc, GradCertClinSim

Louise has been a Simulation Leader since establishing the Simulation Program for the Royal Children's Hospital in Brisbane over 15 years ago. She co-created the original OPTIMUS CORE course in 2013 to improve paediatric resuscitation training throughout Queensland.

The course has been delivered to more than 5000 health care professionals throughout Queensland since that time. Louise has a background in paediatric emergency nursing and tries to keep her left foot in clinically. She has also completed a graduate cert in simulation and clinical education.



Dr Dan Hufton
@danhufton
MRCPCH, MBBS (Hons)
Paediatrician and STORK Simulation Fellow, Queensland Children's Hospital

Dan is a husband, father to 3 children and a Paediatrician with a keen interest in Simulation-Based education (SBE) and translational simulation. He has an interest in human factors and how we can use SBE to improve system performance and staff wellbeing. Currently working as simulation fellow with the STORK team based at QCH to deliver, design, and innovate SBE that improves paediatric critical illness and resuscitation training in healthcare settings across Queensland.



Dr Carolina Ardila: eLearning and Multimedia
@caroelearning
MBBS, MPH(TH), GradDipHlthMgt

Dr Ardila is a medical doctor from Colombia with an award-winning skill set in eLearning development. Carolina has been working on eLearning for the last 6 years at the Royal Brisbane and Women's Hospital and Children's Health Queensland. She has extensive knowledge in designing, developing, and implementing engaging courses and launching award winning paediatric eLearning. She has a special interest in emergency and neonatology and in her spare time loves making videos and improving her animation and drawing skills.



A/Prof Ben Lawton
@paedsem

Ben (B1) is a Paediatric Emergency Physician at Queensland Children's Hospital and Logan Hospital. He is a Deputy Director (Paediatrics) in Logan and a member of the Queensland Paediatric Quality Council.

Ben is a co-founder of the #FOAMed blog site '[Don't Forget the Bubbles](#)', one of the world's most prominent paediatric open access education websites & conferences. He teaches on APLS and Paeds BASIC in addition to his work with STORK. Before completing his medical degree B1 served drinks at 38,000ft as a flight attendant with Virgin Atlantic.



Dr Ben Symon

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RACP PEM, MBBS, BAnim

Simulation Consultant and Paediatric Emergency Physician

Queensland Children's Hospital and The Prince Charles Hospital

Dr Symon is a PEM Physician and Simulation enthusiast with a passion for translating clinical and educational research to front line health care workers. He is co-producer of the podcast '[Simulcast](#),' Clinical Director of Simulation at Mater Hospital, faculty for the [Bond University Translational Simulation Collaborative](#) and international faculty for [the Debriefing Academy](#). His original degree in Animation has proved surprisingly useful in his career in medical education.



Mr Stefan Pietsch

Stefan Pietsch is a Simulation Co-ordinator with the STORK Team with a background in Paediatric Neurosurgery, Orthopaedics, Operating Theatres and Emergency.

Stefan has completed a post graduate certificate in sick children's Nursing in the UK.

He is passionate about sharing his experience, knowledge and skills he gained in England, Germany and Australia which is home now since 2008. He believes that a good sense of humour goes a long way.



Ms Tina Haffenden

RGN, RSCN grad dip UK

Simulation Co-Ordinator STORK, Specialist Paediatric Retrieval Nurse (CHQRS), RN in Paediatric Intensive Care.

Tina originally trained as a Registered General Nurse in the UK back in 1992. After a short period, Tina realised big people were not her thing so decided to move into the world of paediatrics. She has gained much experience in general, emergency, high dependency and critical care paediatrics around the world. Tina is passionate about ensuring the patient and family journey through emergency and critical care services are as smooth as possible and believes that maximising staff education will help to achieve this goal.



Professor Jason Acworth: Director of STORK

MBBS(Hons), FRACP(PEM), GradCertHlthcareSimultrn

Jason Acworth is a Paediatric Emergency Physician at Queensland Children's Hospital, is medical lead of the CHQ Rapid Response (MET) System and is the current Director of STORK. He is a self-confessed zealot when it comes to paediatric resuscitation and using simulation for education in paediatric resuscitation and medical emergency systems.

Jason has been an APLS instructor for >20 years, has been facilitating regular in situ simulation in emergency settings since last millennium, and proudly created the STORK statewide simulation service in 2012. Outside of work, he is the National Chair of APLS Australia, is the paediatric representative on the Australian Resuscitation Council, and is a member of the ILCOR Paediatric Life Support Taskforce that publishes the evidence-based guidelines for resuscitation around the world. Together with Louise Dodson he co-created the original version of Optimus CORE. He is also renowned as a Star Wars tragic and purveyor of the finest of 'Dad jokes.'



Mrs Myfanwy (Myf) Williams
BaNursing, GradCert Emergency Medicine; Master of Advanced Nursing Practice (Clinical Education)

Myf is a Simulation Educator with STORK at QCH. Her background is in Paediatric Emergency nursing, but she has always had a passion for clinical teaching to improve patient care. She believes that simulation as a learning platform is a great way to develop skills, improve teamwork and communication.

Myf is thankful for the privilege of working with STORK and the opportunity to travel and meet nursing and medical staff throughout the state, sharing some of her knowledge, but also learning a lot along the way.

About STORK

In 2014, Children's Health Queensland funded the 'Simulation Training Optimising Resuscitation for Kids' service. STORK is a paediatric education team focused on improving healthcare outcomes for children throughout the state.

STORK has developed a number of courses aimed at different phases of paediatric critical care:

- **CORE** is a course for first responders to a paediatric emergency, and teaches recognition of the deteriorating patient, Children's Early Warning Tools, and resuscitation competencies.
- **PRIME** is a course for mid-phase responders who look after unwell patients while awaiting for retrieval or escalation to an Intensive Care. It aims at contextualising Seizure Management, Intubation, and Inotrope Administration within host hospital's real clinical environments in order for healthcare teams to generate their own practice improvement strategies as well as link peripheral hospitals with high quality resources.
- **PULSE** is a CPR refresher course designed around the principles of Rapid Cycle Deliberate Practice.
- **BONUS** is a collection of downloadable simulation packages for local educators to use at their discretion. They are designed to reinforce and extend the skills and knowledge initially gained from previous Optimus courses.

If you would like to know more information about STORK or acquire copies of our resources, please contact us at stork@health.qld.gov.au.