PEDIATRIC SIMULATION EDUCATION RESOURCE

Case Title	Child Health BC Provincial Inpatient Pediatric Sepsis Recognition and Management Simulation
Scenario Name	Pediatric Sepsis

Learning Objectives
Knowledge: 1. Discuss and demonstrate recognition of pediatric sepsis and illness severity 2. Demonstrate understanding of when to engage specialist support, and consideration of transfer to higher level of care
Technical Skills: 1. Recognition of sepsis and illness severity utilizing BC PEWS (Pediatric Early Warning System) 2. Demonstrate basic management of sepsis 3. Demonstrate use of the Child Health BC Provincial Pediatric Sepsis Screening and Management Guideline 4. Demonstrate resuscitation skills (including correct use of Broselow tape, IO insertion, fluid bolus using IV pump and 3 way stop cock, and starting an epinephrine infusion)
Non-technical Skills: 1. Demonstrate team skills 2. Demonstrate crisis resource management and critical thinking **NOTE:** *The BC Simulation Network's Crisis Resource Management Reference (CRM model v9) in Appendix A outlines the components of effective CRM and can also be downloaded from the BC Simulation Network Simulation Resources Page* 3. Demonstrate seeking timely support from regional and provincial resources

Scenario Environment	
Location	Community hospital inpatient peds unit
Monitors	Cardiorespiratory Monitor
Props/Equipment	Supply list: ☐ Age appropriate PEWS documentation tools, ☐ Child Health BC Pediatric Sepsis Screening and Management Guideline, Screening Tool and Algorithm, ☐ Airway intervention equipment, ☐ Broselow tape, ☐ Pediatric resuscitation cart, ☐ Personal protective Equipment, ☐ Medications,

	☐ IV Pump, Syringe Pump with appropriate drug library loaded, ☐ Normal saline, ☐ IV line, 3-way stop cock, ☐ syringes, ☐ pressure bag, ☐ IO equipment and IO trainers, ☐ smart phone, ☐ child sized manikin
Makeup/Moulage/Image	Purpura/Petechiae
Confederates/Actors	Parent(s)/Caregiver(s)

Facilitator Notes

CASE SUMMARY: This is a case of an otherwise well child who presents with nausea, vomiting and lethargy and is admitted for observation. Case results in septic shock due to meningococcemia infection. Patient declines despite fluid resuscitation, and then develops respiratory evidence of fluid overload. Patient ultimately requires epinephrine infusion. In the final stage of the case, this can either end with epinephrine infusion management or progression to intubation depending on learner's level of training and/or learning needs.

BEFORE THE SIMULATION

NOTE: *The BC Children's and Women's Simulation Pre-brief Checklist can be found in Appendix B of this document; and can also be downloaded from the BC Simulation Network Simulation Resources Page*

1) **Pre-brief the group:**
   a. Introduction – Welcome, introductions, sign-in
   b. Review overall format including approximate time for simulation and debrief. Remind that debrief often takes longer than scenario, but is the most important part
   c. Confidentiality – Review the steps taken to ensure the psychological safety of participants.
   d. Engagement – Recognize this is a simulated environment but try to buy-in, the more you put into it and the more you'll get out of it
2) **Provide Orientation** (failing to give proper orientation may set participants up for failure):
   a. Manikin, monitors, code cart, meds & fluids, diagnostics, calling for help
   b. Child Health BC Provincial Pediatric Sepsis Documents
      i. Child Health BC Provincial Pediatric Sepsis Recognition and Management Guideline
      ii. Child Health BC Provincial Pediatric Sepsis Screening Tool
      iii. Child Health BC Pediatric Sepsis Clinical Care Algorithm
   c. Equipment/Procedures in the case as needed – do a needs assessment (i.e. How to use Broselow tape and cart, IO insertion, pediatric fluid bolus etc.)
3) **Scenario briefing:**
   a. Review learning objectives with participants (knowledge/technical and non-technical skills)
   b. Roles – discuss roles, assign as needed

Simulation Design Notes

- Case has been written for 5 year old sized manikin. If simulation site does not have access to this type of a child sized manikin, an alternate can be used.
  - Ensure to Broselow the manikin, and change the weight of the child (28 days – 16.99 years old) in the case to be consistent with the manikin
  - Update the vital signs to reflect shock using the BC PEWS Vital Signs Reference Card as a guide (Appendix C)

NOTE: *This scenario is not appropriate for infants less than 28 days old.*

Case Introduction	
Parents present to a community hospital with their 5 year old who has been unwell for 48 hours with concerns of fever, decreased intake and vomiting. After triage, assessment and a failed oral rehydration attempt, the child was admitted overnight for observation. Parent at the bedside, rings for the nurse as child is difficult to rouse this morning, the peripheral IV site appears puffy, and the child now has a rash.	
History	
History of Presenting Complaint	48 hours unwell
Signs and Symptoms	Alert yesterday with decreased intake. Fever x 48 hours. Vomiting but no diarrhea.
Diet/Output	Decreased intake. Last meal – drank small amount of juice this morning. Vomiting x 4 in past 18 hrs., failed an attempt at oral rehydration. Peripheral IV was initiated on admission, but went interstitial overnight while the child was sleeping and was not restarted. Decreased voiding, no voids past 6hrs. Last bowel movement last night.
Exposure	Goes to kindergarten and after-school care, two siblings. Lives with both parents.
Past Medical History	Normally healthy
Medications	Acetaminophen administered orally 3 hours prior to arrival
Allergies	No known allergies
Immunizations	Immunizations not up-to-date

STAGE 1: RECOGNITION

Patient Parameters	**Management**	**Facilitator Notes**
Condition: looks unwell, difficult to rouse for assessment. **Admission assessment:** • Weight = 17.3kg • Pediatric Assessment Triangle (PAT): lethargic; moving chest equally, laboured breathing; pale. • Capillary refill: 3 seconds (central & peripheral) • RR: 28 /min	**Expected Management:** ☐ Identify PEWS score 6 ☐ Recognize the need to screen for sepsis and use the CHBC Provincial Pediatric Sepsis Screening Tool. ☐ Identify [+] sepsis screen and urgency of escalating care: ☐ Droplet and Contact or Airborne and Contact precautions should be initiated. ☐ Cardio-respiratory monitor connected.	Each pediatric patient should be screened for sepsis at initial assessment/transfer between care areas/ reassessment using the CHBC Provincial Pediatric Sepsis Screening Tool or equivalent electronic health record and BC Pediatric Early Warning System (BC PEWS) if utilized at facility[1] When assessed and screened appropriately; the learner(s) should identify need to rule out sepsis based on: • Parental/caregiver concern • Critical heart rate of 140 bpm

Patient Parameters	Management	Facilitator Notes
• O2: 94% on room air • HR 140 bpm • BP: 92/56, MAP 68 mm Hg • Temp: 38.4°C, temporal • Glucose: 4.5 mmol/L • Parents concerned about child's behavior change.	☐ MRP called to assess the child.	• Temperature of 38.4°C is beyond the 38.0°C threshold • Child looks unwell and is lethargic When the learner suspects the child has sepsis or septic shock, they immediately notify the Most Responsible Practitioner (MRP) to assess patient and initiates treatment following the CHBC Provincial Pediatric Sepsis Clinical Care Algorithm **Consequences of ineffective management:** If the learner doesn't recognize need to rule out sepsis, child declines significantly. *Advance to Stage 3.*

STAGE 2: INITIAL MANAGEMENT, FIRST 60 MINUTES

Patient Parameters	Management	Facilitator Notes

Condition: Looks unwell, somnolent.
 	
Assessment:
• Cardiorespiratory Monitor: Sinus tachycardia
• **HR:** 150 bpm
• **BP:** 85/50 (62)
• **RR:** 30
• **SPO_2:** 93% on room air
• **T:** 39.7°C, temporal
• **CNS:** Irritable when handled; Drowsy when left alone. GCS 14 (Eyes-4, Verbal-4, Motor-6). Pupils 3mm, equal and reactive.
	Expected Management:
	☐ Take a focused history while resuscitating - See History above
	☐ Monitor vitals signs q 15 minutes, before and after boluses; PEWS score with each vital signs
	☐ Isolation – Directs team to apply PPE Droplet and Contact or Airborne and Contact precautions (if not already done in recognition)
	☐ Identifies sepsis
	
	Airway
	☐ Ensure airway patency
	☐ Ensure ability to protect airway (i.e. assess LOC)
		Vital sign deterioration can be an acute indicator for the progression to septic shock; indicates need for urgent intervention[2]
		
		Identifies sepsis (suspected meningitis)
		• Critical HR: 5 year old with HR of >140 bpm
		• Temperature: Fever >38°C
		• Respiratory: Resp distress
		• Gastrointestinal: vomiting, reduced intake
		• Genitourinary: reduced urine output
		• Integumentary: rash
		• Situational Awareness Factors: Caregiver concern, child's immunizations not up to date
		• Further signs of septic shock:
		  ○ Cap refill time >2 secs
		  ○ Mottled skin, weak pulses

Patient Parameters	Management	Facilitator Notes
• **CVS:** central cap refill 3-4 seconds, peripheral cap refill 4-5 sec, pulses weak peripherally, mottled • **Resp:** laboured breathing, mild intercostal retractions, equal air entry, chest clear • **PEWS score:** 7 • **Glucose:** 3.4 mmol/L • **Integumentary:** Petechial rash noted on torso and legs • **Weight:** 17.3 kg	<u>Breathing</u> ☐ Continuous SpO2 monitoring ☐ Apply oxygen by 10-15L via non-rebreather facemask ☐ Auscultate chest <u>Circulation</u> ☐ Continuous cardiorespiratory monitoring ☐ Check pulses, capillary refill (central and peripheral), and BP ☐ Identify lower limit of acceptable BP targets (5^{th} percentile SBP = 70 + (2 x age in yrs.) or 5^{th} percentile MAP = 40 + (1.5 x age in yrs.)) <u>Vascular access</u> ☐ attempts to re-insert peripheral IV x 2 unsuccessful ☐ Inserts IO ☐ NS bolus 10-20 mL/kg over 5-30mins if delayed drop BP <u>Disability</u> ☐ Determine GCS and examine pupils. ☐ POCT glucometer 3.4- initiates maintenance fluids with dextrose <u>Exposure</u> ☐ Identify fever and treat with antipyretic ☐ Identify rash	○ Decreased urine output ○ Metal status changes **STAT Lab work** (per Child Health BC Provincial Pediatric Sepsis Recognition and Management Guideline): • Blood cultures – prioritize! • Venous Blood Gas (including Na, K, CO2, Cl, glucose & lactate) • CRP, Cr, Urea, Mg2, PO4, • Ionized or Total calcium • CBC and differential • Urinalysis, urine culture and sensitivity via in and out catheter **Second Line Lab work** (per Child Health BC Provincial Pediatric Sepsis Recognition and Management Guideline): • Blood group and screen • total bilirubin, AST, ALT • INR, PTT, fibrinogen • Cerebrospinal Fluid (CSF) Screening (including CSF panel, fluid C&S, Virus panel-herpes/VSV/EV) – *if patient stable* • Nasopharyngeal Flocked Swab; Respiratory Nucleic Acid Testing (NAT) panel **Antibiotics:** do not delay antibiotics if you cannot obtain blood work • CefTRIAXone (50mg/kg/dose Max 2g) IV/IO q12h **OR** • Cefotaxime (75mg/kg/dose Max 2g) IV/IO q6h **if cefTRIAXone not available* **AND**

Patient Parameters	Management	Facilitator Notes
	Additional Management: ☐ Consult local pediatrician on-call; or if rural/remote contact CHARLiE via Zoom/phone; or higher level of care via PTN ☐ Orders lab work STAT (see notes column) ☐ Evaluate need for urgent lumbar puncture – consider risks/benefits ☐ Order antibiotics (see notes column) ☐ Portable Chest X-Ray ☐ Electrocardiogram 12 Lead ☐ Echocardiogram ☐ Consider urinary catheter ☐ Start D5NS IV/IO maintenance fluids (4,2,1 rule)	• Vancomycin (15mg/kg/dose, Max 1500mg) IV/IO q6h **AND** • Acyclovir (10mg/kg/dose) IV/IO q8h **Maintenance IV Fluids:** If glucose is less than or equal to 2.6 mmol/L, give D10NS 5mL/kg rapid IV intermittent bolus (ideally over 5 minutes via syringe/bag) and recheck glucose in five minutes. Initiate maintenance fluids D10NS for infants less than 10kg and D5NS for children greater than 10kg. Recheck glucose in an hour[2] **Consequences of ineffective management:** O_2 saturations drop if no oxygen. BP drops if bolus is missed or delayed.

STAGE 3: DETERIORATION - ***worsening of septic shock; no response to fluids, no evidence of fluid overload***

Patient Parameters	Management	Facilitator Notes
Time representation 20-30 minutes – may move quicker in simulation **Condition:** Drowsy and difficult to rouse for assessment. • **HR:** 156, sinus tachycardia • **BP:** 72/35 • **RR:** 42 • **SPO_2:** 95% with oxygen	**Patient Reassessment** Airway ☐ Recognize the potential need to protect airway given declining LOC ☐ Assign someone to attend to the airway ☐ Prepare airway adjuncts ☐ Has suction nearby	Consult PICU via PTN when child not responding to 40ml/kg bolus **NOTE:** *If acting as PICU consultant in scenario, do the following:* ▪ *Ask for status of child* ▪ *Indicate need to give 3rd bolus* ▪ *Advise to prepare Epinephrine infusion (to start at 0.05 mcg/kg/min; titrate up by 0.02 mcg/kg/min, MAX 1mcg/kg/min) IV/IO*

Patient Parameters	Management	Facilitator Notes
• **T:** 39.7ºC • **CNS:** drowsy, difficult to rouse, GCS 13 (Eyes-4, Verbal-4, Motor-5), is protecting airway • **CVS:** central cap refill 4 secs, peripheral cap refill 5 secs, pulses weak • **Resp:** less laboured breathing, chest clear • **GI:** liver not enlarged • **PEWS score:** 8 • **Glucose:** 3.4 mmol/L • **Integ:** Rash unchanged • Rest of exam normal	<u>Breathing</u> ☐ Reassess SPO_2 and RR and effectiveness of respirations ☐ Auscultate chest for signs of crackles from bolus ☐ Prepare bag mask ventilation <u>Circulation</u> ☐ Reassess HR, BP, Cap refill ☐ Identify hypotension and shock ☐ Assess for hepatomegaly from bolus ☐ NS fluid bolus 10-20 mL/kg over 5-30 minutes (bolus # __) ☐ Starts D5NS IV/IO maintenance fluids (4,2,1 rule) <u>Disability</u> ☐ Reassess GCS **Additional Management** ☐ Follow health authority protocols for escalation of care and engage site resources as necessary (I.e. Code Blue) ☐ Call PTN for transport and ask to speak with the PICU consultant ☐ Obtain further fluid resuscitation and inotrope strategy from physician or consultation	▪ *Advise if symptoms of shock remain after 3rd bolus to start Epi infusion* **<u>Consequences of ineffective management:</u>** Continue to drop blood pressure if no further fluid bolus and/or escalation for further advice.

Stage 4: CONTINUED DETERIORATION - ***further worsening of septic shock; still no response to fluids, evidence of fluid overload***

Patient Parameters	Management	Facilitator Notes
Time representation 30-40 minutes – may move quicker in simulation **Condition:** Drowsy and difficult to rouse for assessment • **HR:** 158, sinus tachycardia • **BP:** 71/33 • **RR:** 40 • **SP02:** 95% with oxygen • **CNS:** drowsy difficult to rouse, GCS 12 (Eyes-3, Verbal-4, Motor-5) • **CVS:** central cap refill 4 secs, peripheral cap refill 5 secs, pulses weak • **Resp:** coarse crackles at bases • **GI:** liver not enlarged • **PEWS Score:** 8 • **Glucose:** 5.5 • **Integ:** Rash unchanged • Rest of exam normal	**Patient Reassessment** Airway ☐ Maintain the airway, has suction nearby ☐ Airway adjuncts prepared if not yet done Breathing ☐ Reassess SPO_2 and RR and effectiveness of respirations ☐ Auscultate chest for signs of crackles from boluses ☐ Identify fluid-overload ☐ Bag mask ventilation ready Circulation ☐ Reassess HR, BP, Cap refill ☐ Identify hypotension and shock ☐ Assess for hepatomegaly from boluses ☐ Recognize fluid boluses no longer indicated, start inotrope **Additional Management** ☐ Follow health authority protocols for escalation of care and engage site resources as necessary (I.e. Code Blue) ☐ Obtain further fluid resuscitation and inotrope strategy from physician or consultation ☐ Prepares for Epinephrine infusion (see notes column)	**Epinephrine Infusion** is indicated at this stage given ongoing hypotension and evidence of fluid overload: Epinephrine 0.05mcg/kg/min IV/IO (Can titrate up by 0.02mcg/kg/min MAX 1mcg/kg/min) Fluid should be titrated to clinical response while continually monitoring for signs of fluid overload. A **max** of 60ml/kg within the first hour can be provided if no signs of fluid overload. **Consequences of ineffective management:** If epinephrine not started, continued decline in BP and progressive respiratory distress (from fluid overload). If proceed to intubation without epinephrine infusion started, patient goes into cardiac arrest with induction.

STAGE 5: IMPROVING CONDITION ***with Epinephrine Infusion (final stage)***

Case ends either: A) once learners recognize need to titrate epinephrine to effect OR B) intubates patient (choice dependent on team's learning needs)

Patient Parameters	Management	Facilitator Notes
Time representation 10-15 minutes – may move quicker in simulation **Condition:** Drowsy but able to arouse ▪ **HR:** 158, sinus tachycardia ▪ **BP:** 80/31 (47) ▪ **RR:** 35 ▪ **SP02:** 95% with oxygen ▪ **CNS:** drowsy but able to arouse, GCS 12 (Eyes-3, Verbal-4, Motor-5) ▪ **CVS:** central cap refill 4 secs, peripheral cap refill 4 secs, pulses stronger than previous ▪ **Resp:** chest clear ▪ **PEWS Score:** 6 ▪ **Glucose:** 6.0 ▪ Rest of exam normal	**A)** ☐ Recognize improvement in shock, but not resolved. ☐ Establish BP targets (SBP or MAP) ☐ Titrates epinephrine by 0.02mcg/kg/min to goal **B)** ☐ Establish BP targets (SBP or MAP) ☐ Titrates epinephrine by 0.02mcg/kg/min to goal ☐ Recognize improvement in shock, but not resolved. ☐ Consider role of intubation and ventilation the management of shock ☐ Discusses with Intensivist considerations of: • Intubation • Addition of second inotrope • Use of steroid (refractory hypotension for select populations) ☐ Prepare for intubation ☐ Intubate patient with appropriately sized ETT ☐ Establish ventilation targets ☐ Transfer to higher level of care	**Epinephrine Infusion** Epinephrine starts 0.05mcg/kg/min IV/IO, titrate up by 0.02mcg/kg/min q5-10min to MAX 1mcg/kg/min **Intubation:** Recommend use/establish institution specific pre-intubation checklist. Induction agents: Ketamine 0.5mg/kg + Rocuronium 1mg/kg. Use cuffed ETT. **Steroid recommendation:** Hydrocortisone 50mg IV

Facilitator Debrief Guide: *Facilitate a conversation with the group following the BC Hot Debriefing Guide (Appendix D) which can be downloaded from the BC Simulation Network Simulation Resources Page*	
S	**Summarize the Case** Example Question: *"Can someone summarize the case?"*
T	**Things that went well** Example Question: *"What did you think you did well?"*
	Review: Did we accomplish the Learning Objectives? Knowledge: ☐ Discuss and demonstrate recognition of pediatric sepsis and illness severity ☐ Demonstrate understanding of when to engage specialist support, and consideration of transfer to higher level of care Technical Skills: ☐ Recognition of sepsis and illness severity utilizing BC PEWS (Pediatric Early Warning System) ☐ Demonstrate basic management of sepsis ☐ Demonstrate use of Child Health BC Provincial Pediatric Sepsis Screening and Management Guideline ☐ Demonstrate resuscitation skills Non-technical Skills: ☐ Demonstrate team skills ☐ Demonstrate crisis resource management and critical thinking ☐ Demonstrate seeking timely support from regional and provincial resources
O	**Opportunities to Improve** Example Question: *"What would you change next time?"*

	KEY DEBRIEF POINTS:
	• Early identification and initial management of pediatric sepsis is crucial
	  ○ If sepsis is not recognized early and managed promptly, it can lead to septic shock, sepsis associated organ dysfunction and death[3]
	  ○ Rapid delivery of basic interventions (i.e. first hour antibiotics and IV fluids) increases survival rates by up to 50%
	• Follow health authority protocols for escalation of care and engage site resources as necessary (I.e. Code Blue)
	• Engage local pediatrician on-call through local operator/on call system; or rural/remote sites may contact CHARLiE via Zoom at charlie1@rccbc.ca or phone (236)305-5352 early[2]
	• Early escalation to pediatric critical care onsite or via contacting Patient Transfer Network (PTN) by phone 1(866)233-2337 is essential[2,4]

	• In children with sepsis or septic shock intervention should not be delayed DESPITE blood pressure being within normal range. Hypotension is a late sign of sepsis in a child and indicates that compensatory mechanisms such as tachycardia and vasoconstriction have failed[2]
	• Do not delay antimicrobials. Antimicrobials are the primary medical therapy that directly targets the underlying cause of sepsis. There is strong biologic rationale for rapid intervention with administration of antimicrobials, ideally within 60 minutes of presentation, in pediatric patients with sepsis[5]
	• It is ideal to obtain blood samples before antimicrobial administration, but antimicrobials must not be delayed due to difficulties obtaining venous access (IV); intraosseous (IO) or intramuscular (IM) administration should be considered if access is delayed
	• Excessive fluid resuscitation can be harmful. **NOTE:** *This is a change from previous fluid management guidance for pediatric sepsis*
	  ○ Reassessment after each fluid bolus is key. Fluid should be titrated to clinical response while continually monitoring for signs of fluid overload (i.e., increased work of breathing, crackles on auscultation, hepatomegaly)[3,6]
	  ○ Normalization of vital signs include: cap refill <2 secs, normalized peripheral pulse strength, warm extremities, urine output >1 mL/kg/h, normal mental status, normal BP for age, and normal glucose concentration
	• Lack of response to 40mg/kg bolus and consideration of Inotrope infusion should be discussed with PICU via PTN
	• Maintenance fluids should have dextrose
	  ○ Children >28 days should have 5% dextrose solution at maintenance IV rate to prevent hypoglycemia

P	**Points of Action** Example Question: *"What additional support or resources do you need to be able to incorporate what you have learned today into your practice?"*

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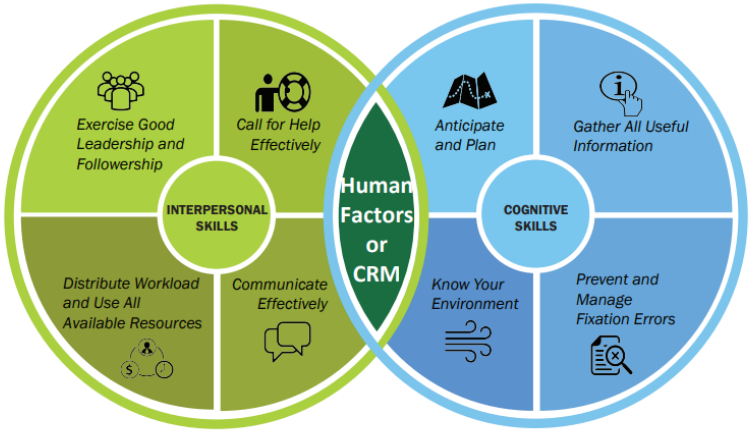
Appendix A: *BC Simulation Network's Crisis Resource Management Reference (CRM model v9)*

Crisis Resource Management (CRM)

Human Factors also called non-technical skills or Crisis Resource Management (CRM) refers to the cognitive and interpersonal skills required for effective teamwork and optimal use of all available resources in a routine or crisis situation.

- **Cognitive skills** are defined as the mental processes used for gaining and maintaining situational awareness, problem solving and decision making.
- **Interpersonal skills** are the behavioural activities associated with teamwork such as communication and team functioning.

A number of CRM skills critical to the effective and efficient team have been described and these can be improved by study and practice. The CRM Key Principles model (see below) is one such example. It must be emphasized that no one key principle sits in isolation from the others but rather they are all interrelated and there are overlaps.



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Crisis Resource Management (CRM)

Example characteristics of each CRM key principle are shown below:

Interpersonal Skills

Call for Help Effectively
- Develop and use predefined criteria for asking for help
- Be aware of barriers to asking for help e.g concern about criticism
- Request extra support personnel and/or equipment when appropriate
- Request specific knowledge or skills when appropriate
- Use structured communication
- Call early

Exercise Good Leadership and Followership
- Make decisions, clarify rationale
- Steps back (when possible) to monitor environment and coordinate activities
- Establish shared mental model and common goal with the team
- Prioritize and distribute tasks
- Establish performance expectations
- Listens to/requests input from the team
- Be assertive, not aggressive or submissive
- Re-evaluate regularly and keep team informed with periodic briefings

Distribute Workload and Use All Available Resources
- Prioritize requests
- Assign and/or reallocate tasks according to the capabilities of the team
- Ensure role clarity with any role changes announced to the team
- Limit requests to those that are essential
- Uses all available team members
- Clarify what your are doing
- Clarify any uncertainty
- Be aware of self-limitations
- Keeping team informed and share ideas

Communicate Effectively
- Closed loop communication - avoid "thin air" statement
- Speaks loudly/clearly
- Listen actively and provide information when asked
- Use structured communication techniques, e.g. Briefings, SBAR
- Use standard terminology when communicating information
- Request and provide clarification when needed
- Eliminate or reduce distractions
- Address people directly – make eye contact and use names +/- designation
- Inform the appropriate individuals and all team members when plans change
- Pay attention to and use nonverbal communication appropriately

Cognitive Skills

Anticipate and Plan
- Think ahead: Identify options and set goals
- Share plan/mental model
- Incorporates knowledge into specific preparation
- Considers risks/prepares options for failure: Plan A, Plan B, Plan C
- Allows buffer e.g. time, resources, staff
- Adapts priority to account for changing conditions

Know Your Environment
- Ask/seek information
- Know where equipment is and how it works
- Aware of barriers in the area
- Knows team members and their skills/Role clarification: encourage introductions
- Optimises environment relevant to the situation
- Knows where cognitive aids are kept

Gather all Useful Information
- Use cognitive aids e.g. check list
- Request input/share information
- Pay attention to alarms/monitors
- Regular re-evaluation of patient and situation
- Review responses to treatment and reassess decisions

Prevent and Manage Fixation Errors
- Shares mental model
- Avoid task fixation
- Deliberately change perspective (physical or mental)
- Looks for contradictions
- Asks team members for input
- Summarize often

Taken from e-module: Principles of Crisis Resource Management accessed at:
- https://learninghub.phsa.ca/Courses/16361/crisis-resource-management
- https://bcsimulation.ca/resources/curriculum/

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Appendix B: *BC Children's and Women's Simulation Pre-brief Checklist*

Simulation Pre-brief Checklist

Simulation aims to prepare HCP to provide the best quality care for patient safety by practicing in an interprofessional and safe learning environment with a focus on human factors and team performance.

BC WOMEN'S HOSPITAL+ HEALTH CENTRE
Provincial Health Services Authority

BC Children's Hospital
Provincial Health Services Authority

Welcome and Introductions

Basic Assumption Statement: We believe that everyone participating in activities at BCCH and BCWH is intelligent, capable, cares about doing their best and wants to improve. ©

Psychological Safety

- Confidentiality agreement: share lessons learned not individual performances
- Do not leave questions unanswered
- Mistakes are a puzzle to be solved
- Recognize it can be stressful

Objectives

- Clarification of learning objectives
- Clarify formative/ summative assessment
- Address the expected difficulty in relation to learners level of expertise
- Process or systems vs skills and knowledge

Role of participants Role of Facilitator

- Assume the roles that you would in real situations
- Perform task in real time time
- Participate in debief
- Facilitate discussion
- Promote self reflection
- Foster skill development, clinical judgement
- Close performance gaps and meet case objectives

Suspension of disbelief

- Appreciate there will be gaps in physical, conceptional and emotional fidelity
- Understand simulation has limitations and there are things the mannequin can not simulate.
- Treat the mannequin as you would a real patient

Orientation to learning environment

- Describe limitations of the mannequin
- Pulse points and breath sounds auscultation
- Defibrillation and cardioversion. Cardiac, BP and Spo2 monitor
- IV /IO sites
- Head wall/code cart
- How and who to call for help
- Medication administration

Updated 2019 - J.Allen, J. Skinner

Appendix C: *CHBC BC PEWS Vital Signs Reference Card*

BC PEWS Vital Signs Reference Card

Age	Heart Rate Beats per minute	Respiratory Rate Breaths per minute	Systolic / Diastolic BP	MAP mmHg
0 – 28 days*	104 – 162	31 – 60	60 – 80 / 30 – 53	40 or higher
1 – 3 months*	104 – 162	31 – 60	73 – 105 / 36 – 68	48 or higher
4 – 11 months*	109 – 159	29 – 53	82 – 105 / 46 – 68	58 – 80
1 – 3 years†	89 – 139	25 – 39	85 – 109 / 37 – 67	53 – 81
4 – 6 years†	71 – 128	17 – 31	91 – 114 / 50 – 74	63 – 87
7 – 11 years†	60 – 114	15 – 28	96 – 121 / 57 – 80	70 – 94
12 plus years†	50 – 104	12 – 25	105 – 136 / 62 – 87	76 – 103
Temperature °C	**Oral:** 35.5 – 37.5, **Axilla:** 36.5 – 37.5, **Rectal:** 36.6 – 38.0, **Temporal:** 36.3 – 37.8			

HR and RR ranges: CTAS 2013
Temperature ranges: CPS 2015
BP ranges: *Modified from American Heart Association (2012). *Pediatric emergency assessment, recognition, and stabilization (PEARS) provider manual.*† National Heart, Lung and Blood Pressure Institute (2004). The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. *Pediatrics, 114(2)*, 555-556.

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Appendix D: *BC Simulation Network Hot Debriefing Guide*

HOT DEBRIEFING GUIDE

This guide provides a standardized approach to post-event clinical debriefing.
These conversations are to be facilitated as soon as possible after an event with a target duration of 10 to 15 minutes.
These conversations are not to assess or evaluate personal performance and they do not replace other processes associated with critical events such as PSLS reporting, accessing employee assistance programs, or formal critical incident stress debriefings.

"Thank you for taking the time to gather and discuss this event.
We believe this team is capable, has done their best, and is seeking to improve.
We have not gathered to assess or evaluate personal performance.
As points of action items are raised, lets be sure to note them.
For this debriefing, we will use the STOP format."

S	T	O	P
Summarize The Case	Things That Went Well	Opportunities To Improve	Points Of Action

"Before we end this debriefing if anyone has any last remarks please share them.
As appropriate and with respect and confidentiality, these findings will be shared with our leadership team.
We will follow up on these items.
Thank you again for joining us. Please continue to take care of yourselves and each other.
Thank you for the work that you do."

Created by CICSL and members of BC Simulation Network and BC Emergency Medicine Network.
Available for download at:

For feedback contact cicsl@islandhealth.ca

HOT DEBRIEFING GUIDE

Recent literature supports performance-focused post event clinical debriefings facilitated by healthcare professionals familiar with established debriefing processes.
Like other aspects in health care, bringing hot debriefing to clinical settings invites careful implementation considerations.

Considerations for Introduction :

- Consider introducing this guide in advance of initial debriefings.
- Orientate your debriefers and your teams.
- Appreciate the impact of local culture and psychological safety.

Considerations for During:

- Affirm that participation is voluntary and not compulsory.
- Embrace a growth mindset, and a commitment to improvement.
- Learn from success and minimize hindsight bias.

Considerations for After:

- Assign findings to individuals for meaningful clinical improvement.
- Provide debriefers with ways to improve their facilitation skills.
- Provide resources for those who may benefit from further psychological support.

Further supports can be obtained through Health Authority Employee & Family Assistance Programs:

- Northern Health: 1-844-880-9142
- Interior Health: 1-844-751-2133
- Fraser Health: 1 844 880 9142
- Vancouver Coastal: 1-800-505-4929
- Island Health: 1-800-663-1142
- Providence: 1-800-663-1142
- Provincial [PHSA] : 1-800-663-1142
- First Nations: 1-855-242-3310

Physician Health Program 1-800-663-6729
Contact your manager/site leader to request a formal critical incident debriefing.