CHBC Provincial Pediatric Asthma Sim – Mild/Moderate

Section 1: Case Summary

Scenario Title:	Mild/Moderate Pediatric Asthma
Keywords:	
Brief Description of Case:	This is a case of a child who presents to the emergency department or urgent care center with 2 days of worsening cough, congestion, and fever. The patient presented to hospital the previous winter with a runny nose, cough, and wheeze. The patient begins as a mild PRAM score but progresses to a moderate score. Depending on initial management, patient may remain moderate or improve to the mild category.

Goals and Objectives	
Educational Goal:	Demonstrate management of mild/moderate pediatric asthma using the Child Health BC Asthma Guideline initial management recommendations for mild/moderate PRAM score.
Objectives: (Medical and CRM)	Knowledge: 1. Discuss and demonstrate recognition of pediatric asthma illness severity. 2. Demonstrate understanding of engaging with specialist support and consideration of transfer to local emergency department if in urgent care setting. Technical Skills: 1. Recognition of asthma severity utilizing the Pediatric Respiratory Assessment Measure (PRAM) Scoring Table. 2. Demonstrate skills of basic management of asthma. Non-technical Skills: 1. Demonstrate use of the CHBC Provincial Pediatric Asthma Guideline 2. Demonstrate effective closed loop communication and defined role clarity. 3. Demonstrate 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*]
EPAs Assessed:	N/A

Learners, Setting and Personnel				
Target Learners:	☐ Junior Learners	☐ Senior Learners	☐ Staff	
	☒ Physicians	☒ Nurses	☒ RTs	☒ Inter-professional
	☐ Other Learners:			
Location:	☒ Sim Lab	☒ In Situ	☐ Other:	
Recommended Number of Facilitators:	Instructors: 2			
	Sim Actors: 1-2 (parents)			
	Sim Techs: 1			

Scenario Development	
Date of Development:	October 2024

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Last Revision Date:	
Revised By:	
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Facilitator Notes

BEFORE THE SIMULATION

1) **Pre-brief the group:**
   a. 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 Documents
      1. Child Health BC Provincial Pediatric Asthma Guideline
      2. Child Health BC Pediatric Respiratory Assessment Measure (PRAM) Scoring Table
      3. Initial Management of Pediatric Asthma Exacerbations Algorithm and Medication Reference
      4. PEWS ED Vital Sign Record 1 to 3 years
   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

Section 2A: Initial Patient Information

A. Patient Chart

Patient Name:			Age: 3 years	Gender:	Weight: 16kg
Presenting complaint: Cough/ Congestion (CTAS 3)					
Temp: 37.6	HR: 147	BP: 90/60	RR: 45	O_2 Sat: 93%	FiO_2: RA
Cap glucose: 5.5 mmol			GCS: 15 (E V M); Alert; PAT – Alert, Tachypneic, Pink		
Triage note: Parents state 2-day history of unwell with worsening cough, runny nose and fever. UTD on immunizations.					
Allergies: No known					

Past Medical History: Previous ED/urgent care visit for same – prescribed salbutamol MDI last winter, no refills.	Current Medications: None

Section 2B: Extra Patient Information

A. Further History	
Include any relevant history not included in triage note above. What information will only be given to learners if they ask? Who will provide this information (mannequin's voice, sim actors, SP, etc.)? No siblings. No one else in the house is sick. No known exposures. Does not go to daycare.	
B. Physical Exam	
List any pertinent positive and negative findings	
Cardio: Sinus Tachycardia	**Neuro:** Alert
Resp: Tachypnea, no visible increased work of breathing. Wheeze throughout on auscultation (inspiratory/expiratory). Good air entry.	**Head & Neck:** Unremarkable
Abdo: Unremarkable	**MSK/skin:** No rash noted. Peripheral/central cap refill 1 second
Other:	

Section 3: Technical Requirements/Room Vision

A. Patient
☒ Mannequin *(specify type and whether infant/child/adult)* Child
☐ Standardized Patient
☐ Task Trainer
☐ Hybrid

B. Special Equipment Required
• Cardiac monitoring, SpO_2, BP • CTAS scoring aid and CEDIS coding sheet • Age-appropriate PEWS documentation tools • Child Health BC Pediatric Asthma Management Guideline • Regional Pediatric Asthma Pre-Printed Orders or electronic order set if available • Broselow tape or scale • Personal protective equipment

C. Required Medications
• Medications (salbutamol MDI, ipratropium MDI, dexamethasone PO) • MDI spacer with mask

D. Moulage
None required

E. Monitors at Case Onset
☒ Patient on monitor with vitals displayed
☐ Patient not yet on monitor

F. Patient Reactions and Exam
Include any relevant physical exam findings that require mannequin programming or cues from patient (e.g. – abnormal breath sounds, moaning when RUQ palpated, etc.) May be helpful to frame in ABCDE format. Airway clear; good air entry, wheezes throughout; tachycardic, pink, capillary refill 1 sec; alert, cooperative; no rash, no injuries

Section 4: Sim Actor and Standardized Patients

Sim Actor and Standardized Patient Roles and Scripts	
Role	*Description of role, expected behavior, and key moments to intervene/prompt learners. Include any script required (including conveying patient information if patient is unable)*
Parent	Answers questions related to patient exam, as applicable. Cooperative with care. Prompts during PRAM if patient on O_2 – "Last time they checked, they removed the oxygen. Do you need to do the same?"

Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State		Facilitator Notes
1. Baseline State **Rhythm:** Sinus tachy **HR:** 165 **BP:** 85/58 **RR**: 55; wheeze t/o, insp & exp **O_2 sat:** 93% on room air **T:** 37.5 °C **Glucose:** 5.5 mmol **Wt**: 16 kg **PEWS**: 3 **CVS:** cap refill 1 sec **PAT:** Pink, Alert, Tachypneic	*Tachnypenic with no visible increased work of breathing.* *Sitting up in bed, appears comfortable.* *Frequent cough.*	Expected Learner Actions ☐ Calculate PRAM score = 3 *O_2 saturation (92-94%) – 1* *Inspiratory/expiratory wheezing - 2* ☐ Vital signs (including HR, RR & SpO_2 assessed) ☐ Inform most responsible physician of PRAM score ☐ Salbutamol 5 puffs via MDI with spacer and mask x1	**Triggers** *For progression to next state* - Salbutamol administered with spacer/mask > progress to stage 2 *OR* - 5 mins with ineffective management	Physicians Orders: • Salbutamol 500 mcg (5 puffs) per MDI with spacer and mask x1 • Reassess PRAM 20 minutes after dose and if PRAM greater than 3, call MRP • If participants ask for diagnostics (labs, CXR, etc.) facilitator can prompt: no diagnostics needed at this time ***Notes:*** Facilitator can verbally progress scenario to stage 2 once salbutamol given (20 min time lapse for reassessment) or if no salbutamol administered (deterioration of patient)
2. Reassessment of PRAM - Moderate **Rhythm**: Sinus tachy **HR**: 180 **BP:** 90/60 **RR**: 62; wheeze throughout, inspiratory & expiratory **O_2 sat:** 91% RA	*Increased work of breathing (suprasternal and intercostal retractions noted).* *Remains alert, tachypneic.*	Expected Learner Actions ☐ Reassess PRAM score = 6 *O_2 Saturation (<92%) – 2* *Inspiratory/Expiratory wheezing – 2* *Suprasternal retractions - 2* ☐ Administer O_2 @ 1L to maintain sats >92% ☐ Notify MRP of increased PRAM ☐ Consider RRT consult, if available	**Modifiers** *Changes to patient condition based on learner action* - O_2 applied > 95% SpO_2 (goes down to 91% when O_2 removed) - - **Triggers** - no MDI treatment > Stage 3 Moderate PRAM	Physicians Orders: • Salbutamol 500 mcg (5 puffs) via MDI with spacer & mask q20min x3 • Ipratropium 60 mcg (3 puffs) via MDI with spacer & mask q20 min x3 • Dexamethasone: 0.6 mg/kg/dose (max 16 mg/dose) PO

T: 37.6 °C **PEWS**: 5 **PAT**: Pink, Alert, Tachypnea with suprasternal retractions & intercostal indrawing		☐ Give medications as per physician orders ☐ Gives MDIs q20 mins x3 (after 1st round of medication – facilitator progresses to next stage)	- 1 round of appropriate medication administration (salbutamol, ipratropium, dexamethasone) > Stage 4 Mild Pram through facilitator prompt	• If participants ask for diagnostics (labs, CXR, etc.) facilitator can prompt: no diagnostics needed at this time ***Notes:*** Facilitator to advance simulation to 4th stage after 1st round of medication (1 dose – salbutamol, ipratropium & dexamethasone) administered: *"patient presentation has remained unchanged you have given an additional 2 doses of salbutamol and ipratropium MDI every 20 minutes, it is now 1 hour since you began the back-to-back MDIs"*
3. Reassessment of PRAM (Insufficient treatment) **Rhythm:** Sinus tachy **HR:** 189 **BP:** 90/60 **RR**: 70; wheeze throughout, inspiratory & expiratory **O_2 sat:** 90% RA **T:** 37.6 °C **PEWS:** 5 **PAT:** Pink, Alert, Tachypnea with	*No change – remain in this stage if managed insufficiently in previous stage.*	<u>Expected Learner Actions</u> ☐ Calculate PRAM Score = 6 *O_2 saturation -2* *Inspiratory/Expiratory wheezing – 2* *Suprasternal retractions - 2* ☐ Administer O_2 @ 1 L/min to maintain saturations >92% ☐ Inform MRP of updated PRAM score ☐ Consider RT consultation if available ☐ Salbutamol 5 puffs (can repeat q30-60 minutes) ☐ Consider consult pediatrician	<u>Modifiers</u> - SpO_2 decrease to 91% when O_2 removed for PRAM score - Improve SpO_2 to 95% when oxygen reapplied <u>Triggers</u> - Management insufficient > End Scenario - Management sufficient > progress to Stage 4 Mild PRAM	<u>Physician Orders:</u> • Salbutamol 500 mcg (5 puffs) via MDI with spacer & mask q20min x3 • Ipratropium 60 mcg (3 puffs) via MDI with spacer & mask q20 min x3 • Dexamethasone: 0.6 mg/kg/dose (max 16 mg/dose) PO • If participants ask for diagnostics (labs, CXR, etc.) facilitator can prompt: no diagnostics needed at this time

suprasternal retractions & intercostal indrawing				***Notes:*** Remain in stage 3 for a total of 3 rounds of MDI, no changes in VS during this time. Facilitator to verbally notify participants of 20 min time lapse after each MDI
4. Improved – Mild PRAM **Rhythm:** Sinus tachy **HR:** 165 **BP:** 90/60 **RR:** 55; wheeze throughout exp **O_2 sat:** 95% RA PEWS: 3 PAT: Pink, Alert, Tachypneic	*Appears to have made improvements, with normal work of breathing. Remains interactive and cooperative*	Expected Learner Actions ☐ Calculate PRAM score = 1 *Expiratory wheezing – 1* ☐ Inform MRP of PRAM ☐ Salbutamol 5 puffs MDI with spacer/mask	Modifiers - - - Triggers - Completes expected learner actions > End Scenario -	**Criteria for discharge:** (**1**. PRAM score <3, **2.** no signs of resp distress, **3.** good a/e with mild exp wheeze, **4**. O_2 sats >92% on RA, **5**. no expected need for bronchodilators more than q4h). Minimum 1 hour observation period.

Appendix A: Facilitator Cheat Sheet & Debriefing Tips

Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

Facilitator Debrief Guide: *Facilitate a conversation with the group following the BC Hot Debriefing Guide (Appendix C) which can be downloaded from the BC Simulation Network Simulation Resources Page*	
S	**Summarize the Case** Example Question: *"Can someone summarize the case in one or two sentences?"*
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 asthma and illness severity (PRAM scoring) • Demonstrate understanding of when to engage specialist support, and consideration of transfer to higher level of care Technical Skills: • Demonstrate basic management of asthma • Demonstrate use of PRAM Scoring Table • Demonstrate use of Initial Management of Pediatric Asthma Exacerbations Algorithm (Mild & Moderate PRAM) and Medication Reference • Demonstrate resuscitation skills Non-technical Skills: • Demonstrate effective closed loop communication and defined role clarity. • Demonstrate crisis resource management and critical thinking • Demonstrate use of the CHBC Provincial Pediatric Asthma Guideline
O	**Opportunities to Improve** Example Question: *"What would you change next time?"*
	KEY DEBRIEF POINTS: • Regardless of their PRAM score, children with decreased level of consciousness, agitation, cyanosis, decreased respiratory effort and/or confusion should be considered to have impending respiratory failure. • Beta-agonist treatment with MDI/spacer is clinically equivalent with fewer side effects and shorter ED length of stays compared with nebulization • Early administration of steroids alternated with initial beta-agonists in the first 60 minutes shortens respiratory distress and decreases hospitalization for those with a moderate PRAM score • Engage local pediatrician on-call through local operator/on call system; or CHARLiE via Zoom at charlie1@rccbc.ca or phone (236)305-5352 • Early consultation to discuss patient management and transport is advised when the patient has persistent/severe respiratory distress or impending respiratory failure. Contact a higher level of care referral center to consult with a pediatrician/pediatric intensivist via Patient Transfer Network (PTN) (1-866-233-2337) • Nursing & Respiratory Therapist Support from Provincial Pediatric Intensive Care Units (PICU)

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?"*

References

1. Canadian Pediatric Society (2021). *Managing an acute asthma exacerbation in children.* Canadian Pediatric Society Position Statement. https://cps.ca/documents/position/managing-an-acute-asthma-exacerbation

2. Translating Emergency Knowledge for Kids (TREKK). (2024). *Bottom line recommendations: Asthma.* https://cms.trekk.ca/wp-content/uploads/2023/11/2024_02_26_Asthma-BLR-v2.2_FINAL.pdf