

ImPACTS Outpatient Study Protocol

Background

Children with potentially life-threatening illnesses are sometimes taken to primary care offices, which often serve as the child's medical home. Estimates of how often emergently ill children are taken to primary care offices vary widely, with numbers ranging from 1-2 a year to up to multiple patients seen weekly¹⁻³. While the frequency of these events remains somewhat in question, it is well established that pediatric primary care offices are ill prepared to care for emergencies, with multiple studies reporting wide variation in the available equipment, supplies, and level of preparedness for these patients despite the existence of established recommendations from the American Academy of Pediatrics (AAP)²⁻⁵.

Academic Medical Centers (AMCs) with specialized pediatric providers are committed to ensuring optimal health outcomes for all children in the US. To this end, it is critical that AMCs expand their influence beyond their own institutions to support community practices and provide a continuum of care, starting with patients' entry points to medical care.

ImPACTS (Improving Pediatric Acute Care through Simulation) is a research and education network that aims to improve pediatric readiness and structure of care in the United States. They have established an effective educational model in community emergency departments with AMCs serving as "HUBS" and community hospitals as "SPOKES." We seek to adapt this study design and methodology with community pediatric primary care practices serving as "SPOKES." Each primary care practice will designate a champion to facilitate participation in the ImPACTS program. These champions will lead their emergency readiness improvement efforts over the duration of the study, with support from the HUB and ImPACTS coordinating center.

The intervention begins with an emergency readiness assessment. This assessment involves a survey of the primary care practice (see below in methods) as well as a simulation-based assessment of the quality of care delivered to a set of simulated patients in either the patient rooms or waiting room of the practice. A performance report and gap analysis will be generated from the survey and simulation data by the ImPACTS team. This report will provide each spoke with a quantitative emergency readiness performance report as well as a comparison of their readiness to other pediatric primary care practices. This readiness performance report will be reviewed by the participating spoke and HUB through a “report out” within two weeks of the readiness assessment day. The “report out” meeting will involve presentation of data to the spoke champion and/or leadership team. After this presentation, the group will select two high priority “ImPACTS action items for improvement.” Action items will be specific, measurable, realistic, and time sensitive. Each of the action items will be linked to an “ImPACTS action plan” that includes resources and an explicit, realistic timeline for completion of the individual action item. Every month the spoke and HUB teams will interact to review the progress of the action items. These interactions will address any of the issues impacting the successful completion of the action items and the emergency readiness scores. When an item is completed, the team will select a new high priority “ImPACTS action item” from the initial list. At the end of a six month period, a follow-up emergency readiness assessment day will be completed. The ImPACTS core team will create an updated report out including an updated gap analysis as well as a summary of the action items completed. The participating HUB and spoke sites will engage in discussions related to the future directions for the collaborative during this report out phase. The ImPACTS core will provide administrative support for participating HUB and spoke sites. The goal of this collaborative is for each of the participating spokes to complete the action items and improve the practice’s emergency readiness score by 10%.

Examples of action item/plan for improvement:

	Action Item	Action Plan
Priority example 1	No infant-sized BVM equipment available	Obtain appropriate size BVM equipment for infants (250ml)
Priority example 2	No pre-determined plan/protocol for office response to an emergency.	Create plan for office emergency response including defined rolls and tasks.

Specific Aims:

Aim 1: To evaluate the impact of our intervention on the emergency preparedness of participating pediatric primary care practices as measured by percent adherence to an emergency readiness checklist based on existing AAP guidelines.

Hypothesis 1: An improvement in readiness, measured by scoring on validated checklists regarding equipment/supply availability and provider performance, will be noted between the first and follow-up assessment.

Aim 2: To evaluate the impact of our intervention on the structure and process of care provided to simulated emergently ill patients in pediatric outpatient offices.

Hypothesis 2: Practice performance in simulated pediatric emergencies will improve after initial evaluation and participation in this project

Optional/Exploratory Aim:

To identify common themes/trends regarding barriers to providing high quality care to emergently ill pediatric patients in pediatric primary care offices. AMCs participating in this aim will record and review structured debriefings after simulated emergencies, as well as self-reported reports of practice performance in actual emergencies of participating practices for common issues or themes.

Inclusion/Exclusion Criteria:

Inclusion Criteria:

- “HUB” Academic Medical Centers will be recruited to participate and include a hospital with pediatric emergency and/or intensive care specialties. Sites will be required to complete a train-the-trainer session if they have not already completed one during a prior ImPACTS study and submit a letter of commitment to enroll at least two primary care offices within one year.
- “Spoke” Pediatric primary care offices/subspecialty offices not physically attached to hospitals or emergency departments will be chosen for this study. Offices with an EMS response time of <15 min are to be considered in an urban/suburban setting. If EMS response time is > 15 min, offices are to be considered in a rural setting. Additional commitment letters from each office will be submitted to the “HUB” after scheduling the assessment and follow-ups. Offices that host medical trainees are available for enrollment, but trainees should not participate in the simulations in order to limit confounding levels of exposure to acutely ill patients.

Enrollment:

Spoke and HUB sites will voluntarily join ImPACTS through a set of collaborative agreement letters (between hub and “ImPACTS core” as well as spokes with hubs). The ImPACTS core will provide a standardized protocol (turnkey approach) for spokes to collaborate with hubs. Participating spokes will have access to quality improvement and educational content that can be shared by the HUB with each participating community site. The goal of this is to have all the needed resources, guidelines and policies readily available in a centralized folder that can be accessed by HUBs and spokes at any time. If certain resources are needed but not available, the ImPACTS core will help obtaining them and coordinate with the HUB site accordingly. This project will not involve randomization.

HUBs recruitment, collaboration and standardization:

Participating HUBs will join ImPACTS through a formal collaboration agreement. The HUB will complete training with the “ImPACTS core” using “Train-the-Trainer” approach to ensure standardization in the structure and process of this intervention. If the HUB has been previously trained there is no need to be retrained. HUB team should include health care providers with a solid background in health care education using simulation. The team may include but is not limited to: pediatric emergency physicians, pediatric critical care physicians, nurses, respiratory therapists and nurse practitioners. Each HUB will be provided a turnkey approach to collaborating with spokes including QI/PI/clinical practice/education. Each HUB will identify at least two spokes that will participate on a voluntary basis and commit to participating in all required elements of the program. The spoke, in order to liaise with the HUB team, will identify a practice champion(s). This individual will coordinate the in-person emergency readiness survey assessment, the simulations, and all follow-up interactions with the HUB upon the initial agreement.

Spoke recruitment:

The HUB sites collaboration with spokes will involve discussions about the program vision and mission and set the expectations from each spoke site in addition to having the commitment letter signed upon agreement. Initial agreement will be performed between the HUB Liaison and the spoke leadership. Subsequently, after an individual has been identified at the spoke as a “champion,” they will serve as the site contact. The ImPACTS model involves the academic medical center team working with that individual to arrange for site visits and subsequent communications. ImPACTS core will provide support to all HUB sites throughout the recruitment process and consultation with the core experts regarding the initial recruitment.

Study Phases:

1 – Baseline Emergency Readiness and Quality Assessment

This initial site visit involves the HUB team conducting at each participating spoke site either in person or remotely via videoconferencing software:

- I. *Pediatric Outpatient Readiness Survey (PORS)*: The liaison from the HUB will use the PORS to document an emergency readiness score (Appendix 1). All items on the checklists will be examined with the spoke “champion” either in person or via videoconferencing software. If the “champion” is unsure or unable to identify an item, it will count as non-existent. This checklist will also include basic practice information and demographics regarding providers and patients.
- II. *In situ simulations*: The HUB team will conduct two simulations: respiratory distress (represented by asthma) and seizure (Appendix 2). These simulations will involve inter-professional team members using the local usual practices, policies, procedures, equipment, and resources. Spokes will be expected to provide their own supplies and equipment (medications, respiratory support equipment, etc.), but the simulation team will have all necessary equipment and supplies available to replace the spoke’s supplies prior to use in order to prevent them from incurring costs due to this study. Given the nature of these scenarios, these supplies will be minimal and reusable for subsequent simulation sessions. If conducted in person, the HUB team will supply and set up simulation equipment and video equipment in either an examination room or office waiting room based on the simulation scenario. If virtually facilitated, the practice “champion” will set up simulation and video equipment in an exam room, and simulations will be facilitated by the HUB team via videoconferencing software. The scenarios will be followed by a constructive, structured, and standardized debriefing session. The collaborative team will answer any questions about emergency readiness related to the scenarios and provide education materials to participants. Prior to the simulations, demographic data and consent for video recording from participating team members will be collected. A list of this

demographic data is included (Appendix 3). Teams of providers will be comprised of the normal distribution of individuals participating in patient care during most operating days of the facility.

Data Collection: The HUB team will score each spoke using checklists for each case completed during direct observation and a subset of cases will demonstrate inter-rater reliability/generalizability of the checklist through application by a blinded video reviewer. The simulation-based performance checklists will be collected on paper forms by the HUB teams and entered into a centralized data collection form in addition to the emergency readiness scores within 48 hours of completing the initial visit using the following links:

Simulation Checklists: https://iu.co1.qualtrics.com/jfe/form/SV_0PtAW71GaFW4IXI

Readiness Checklist: https://iu.co1.qualtrics.com/jfe/form/SV_6in5UFRPCwh2pQa

2- Gap analysis, action items, and action plans

This phase will consist of:

- I. *Report outs with action items:* After the simulations at the spoke site, each HUB will complete electronic data forms that will go to the ImpACTS core for data analysis within 48 hours of the sim session. The ImpACTS core team will transform that content into a standardized “ImpACTS report out” to be sent out to the HUB. Additionally, ImpACTS will support the HUB team as they interact with the spoke site lead to review the report out score and select two action items to complete for the first two months following the call. One initial action item will be selected from the equipment portion of the readiness checklist, and one will be selected from the protocols/policies/guidelines portion of the readiness checklist if possible. As these items are completed additional items will be added from the data set.

Each HUB will schedule a conference call or in person visit with the spoke site within two weeks of the initial site visit. During this meeting with the spoke site champion (and leadership), the HUB team will review the compiled data including clinical performance, safety threats, readiness scores, and discuss opportunities for improvement that came up either during the simulation, debriefing, or PORS survey. The site will receive a copy of the report, which will include their emergency readiness score, simulation performance data, and action items.

Action items will be prioritized to be completed within the 6 months time frame following the call. These action items will be SMART (specific, measurable, actionable, realistic and timely). After each action item is complete a new item will be added from the initial list. The action items will include a detailed plan for improvement. The item will only be considered complete after the measurable evidence as described in the protocol has been provided to the HUB.

Access the ImPACTS library; an online resource of peer-reviewed articles related to pediatric emergencies and readiness will be available for spoke sites.

- II. *Outgoing interaction (Hub to spoke):* The HUB site will be supported by ImPACTS core as they work to follow-up with spoke sites. Additional outgoing communications (from HUB to spoke) will be scheduled monthly using a conference call or on-site visit. The discussions will include updates on implementation of action items, any difficulties encountered, or educational needs identified. The HUB will be responsible to collect evidence of completion of action items per the protocol (as described for each item) and submit this to the ImPACTS core. After each item is completed the HUB will provide the site with an additional item from the list. Incoming interactions (from spoke to HUB) will be encouraged and will happen based on the need of each spoke site for further

assistance or input from the HUB. These interactions will be tracked and logged using the same log to document all interactions.

Please log all interactions here: https://iu.co1.qualtrics.com/jfe/form/SV_6fIMOpOjnd2kDX0

III. Repeated follow-up in-person visit: A follow up assessment of the spoke sites will be conducted by the same methods as described above approximately six months after the initial simulation to provide re-assessments of the PORS and simulation-based performance at the end of the study period.

Project Facilities:

ImPACTS leadership will establish a steering committee that will oversee the process of this project throughout the whole study period. This steering committee will have representatives from ImPACTS Core HUBs in addition to the project manager, community representative and the committee chair.

The key to ImPACTS' success is buy-in from regional Academic Medical Center HUBs that will serve as primary contacts to local sites in their regions/states. Academic Medical Centers interested in becoming "HUBs" will participate in a conference call with the ImPACTS leadership team on a regular basis. This ongoing communication between the ImPACTS Core and all HUBs will guarantee a standard approach to the project and maintain a line of mutual feedback and ongoing support for all regional centers. These HUBs will interact with at least two spoke sites in a year to assess their readiness for pediatric emergencies and conduct in-situ simulations.

HUB ImPACTS Team:

The team will be recruited from participating academic medical centers in each region/state and aims to include providers from different medical backgrounds (EM, ICU, and critical care transport) and professions (RN, MD, DO, APRN, PA, RT). A minimum of one physician and one non-physician provider are required to participate as a HUB. All faculty will have training in the use of high-fidelity simulation mannequins, simulation scenario design, and structured debriefing methods. Additionally, all HUBs will have completed “train-the-trainer” either during a prior ImPACTS project or prior to beginning this study to understand the ImPACTS model.

Participant Team:

Each team will consist of the usual staff present at participating pediatric primary care office including but not limited to: pediatricians, nurses, nursing assistants, respiratory therapists, and front office staff.

Simulation Session:

A champion will serve as a liaison for the spoke site to ensure all the logistics of the simulation day are in order. Staff expected to participate in the simulation should mimic the site’s normal activity and staffing pattern. This will vary depending on the make-up of individual clinic staffing, but should include at minimum a pediatrician and/or nurse practitioner and nursing. Additionally, location of the in-situ simulation needs to be in an examination room or clinic waiting room, depending on the specific scenario. This ensures more realism and mimics the location where a pediatric emergency would present. Duration of the day will be approximately 2 hours maximum, including pre-simulation readiness assessment, set-up, simulation (2 scenarios), and debrief. Permission to use all the location’s available equipment will be required, with the understanding that the simulation team will replace any necessary equipment to the scenario with their own equipment to prevent participating clinics from incurring costs due to participation in this study. If the assessment is being conducted virtually, the readiness assessment (PORS) may

be conducted on a day prior to the in-situ simulation in order to facilitate customization of the supply kit sent to the practice “champion” to better mimic the available supplies at that spoke site.

Simulators:

We will use a 16 kg child simulator for this project based on each center’s available equipment. The simulator may be either high or low fidelity based on each center’s available equipment and if the simulations are conducted in person or remotely.

Video:

All simulation sessions will be videotaped using B-Line Medical “SimCapture” or a similar video program. All videos will be stored in the central memory of B-Line or uploaded to this system if a HUB uses another method to record video. A random sample of 10% of the cases will be reviewed by a blinded individual to compare the scores to each HUB’s score for the case.

Audio:

Audio recordings of the structured debriefing sessions will be recorded and stored in the central memory of B-Line, or uploaded to this system if a HUB uses another method to record audio. These recordings will be transcribed and reviewed for common themes/trends regarding barriers to providing ideal care in emergencies.

Continuing Education Credits:

Centers may incentivize participation of primary care providers and nursing/respiratory therapists by offering continuing education credits for the participants. Physicians will be offered continuing medical education (CME) credits. Nurses and respiratory therapists will be offered continuing education units (CEU) as well from each region/state HUB. Each HUB will be responsible for managing CME/CEU credits for their own site.

1. Yuknis ML, Weinstein E, Maxey H, et al. Frequency of Pediatric Emergencies in Ambulatory Practices. *Pediatrics*. 2018;142(2).
2. Fuchs S. Pediatric office emergencies. *Pediatric clinics of North America*. 2013;60(5):1153-1161.
3. Frush K. Preparation for emergencies in the offices of pediatricians and pediatric primary care providers. *Pediatrics*. 2007;120(1):200-212.
4. Fuchs S, Jaffe DM, Christoffel KK. Pediatric emergencies in office practices: prevalence and office preparedness. *Pediatrics*. 1989;83(6):931-939.
5. Toback SL, Fiedor M, Kilpela B, Reis EC. Impact of a pediatric primary care office-based mock code program on physician and staff confidence to perform life-saving skills. *Pediatr Emerg Care*. 2006;22(6):415-422.

Appendix 1

Essential Equipment/Drugs for Pediatric Office Emergencies

Equipment	Available	Easy Access*	Non-Expired	Comments
1- Oxygen Source				
2- Oxygen Flowmeter				
3- Nasal Cannula Pediatric Adult				
4- Oxygen Masks Infant Pediatric Adult				
5- Oral Airways (sizes 00-5)				
6- BVM Infant (250ml) Child (450ml) Adult (1000ml)				
7- Suction Device				
8- Nebulizer (or MDI)				
9- Pulse Oximeter				
10- BP cuffs				
11- Cardiac Arrest Board				
12- Splints				
13- Sterile Dressings				
14- Albuterol				
15- Epinephrine (1:1000)				
16- Color Coded tape or Preprinted Drug doses				

* Considered easy access if clinic staff does not require assistance to find/access supplies

Additional Equipment/Drugs for Pediatric Office Emergencies

Equipment	Available	Easy Access	Non-Expired	Comments
1- Nasopharyngeal Airways (Size 12-30F)				
2- Magill Forceps (Pediatric, Adult)				
3- Suction Catheters (size 5-16F)				
4- Yankauer suction tip				
5- Nasogastric tubes (size 6-14F)				
6- Laryngoscope handle (batteries and bulb) Pediatric Adult				
7- Laryngoscope Blades (0-2 straight, 2-3 curved)				
8- ETT (uncuffed 2.5-5.5, cuffed 6.0-8.0)				
9- Stylets (pediatric, adult)				
10- ETCO2 or esophageal intubation detector				
11- Butterfly needles				
12- IV catheter				
13- Arm boards, tape, tourniquet				
14- IO needles				
15- IV tubing and microdrip				
16- AED				
17- Glucometer				
18- Stiff neck collars				
19- Heating source (overhead warmer/infrared lamp)				
20- Activated charcoal				
21- Antibiotics				
22- Anticonvulsants (diazepam, lorazepam, diastat)				
23- Corticosteroids (oral/parenteral)				
24- Dextrose (25%)				
25- Diphenhydramine (parenteral, 50mg/ml)				
26- Epinephrine (1:10,000)				
27- Atropine (0.1mg/ml)				
28- Naloxone (0.4mg/ml)				
29- Sodium bicarbonate (4.2%)				
3- NS or LR				
31- D5 ½ NS				

* Considered easy access if clinic staff does not require assistance to find/access supplies

Protocol/Policies/Guidelines for Pediatric Office Emergencies

Item	Yes	No	Comments
1- Regular self-assessment of the office (at least yearly)			
2- Presence of plans for emergency response			
3- Maintain emergency equipment including process and checklist for checking that items are working, not expired, and available			
4- Maintain emergency medications including process and checklist for checking that items are working, not expired, and available			
5- Identified individual/individuals who maintain equipment and medications			
6- Conduct regular emergency drills/practice (at least yearly)			
7- Standardized process of contacting EMS and providing essential information about patient and location			
8- Standardized process of contacting local ED and providing essential information about transferred patient			
9- Written protocols for emergency response			

FACILITATOR SUMMARY

ASTHMA SCENARIO

CURRICULUM GOALS

The educational goal for this simulation is for teams to apply a structured approach to assess and manage deteriorating patients and use existing algorithms to escalate care.

The systems goals for this simulation are to assess and improve policies, procedures and guidelines related to office preparedness for emergent situations.

LEARNING OBJECTIVES

Please use the orientation, scenario, debriefing, and follow up to focus on the four learning objectives below.

After this session, the participants will be able to:

- (1) Recognize a deteriorating patient using a structured approach (ABCDE, SAMPLE History)
- (2) Implement initial management of respiratory distress (to include use of office equipment, resources, and policies and procedures)
- (3) Escalate management of worsening status asthmaticus (to include accessing Emergency Medical Services (EMS))
- (4) Apply communication strategies to ensure safety in a high risk situation (SBAR, closed loop communication)

SCENARIO OVERVIEW

A 3 year old boy presents to your clinic for a visit today. Upon routine nursing assessment, the nurse discovers the patient is in respiratory distress. The nurse is expected to assess the patient, call the provider and provide a situational briefing. The provider is expected to apply a structured method for initial data gathering (eg: SAMPLE History and ABCDE Physical).

The nurse and provider are expected to deliver initial care for general respiratory distress (oxygen via facemask/nasal cannula, check emergency equipment) and worsening status asthmaticus (back to back albuterol).

When escalating to second line therapies, the team is expected to call 911. Upon arrival of EMS, the provider or nurse will provide them with a situational briefing in SBAR format.

SCENARIO LOGISTICS

Initial information to provide:

- ✓ The nurse and nurse observers will begin the scenario outside the patient room.
- ✓ The provider/provider observers will begin the scenario outside of the patient room.
- ✓ **In person variant:** The simulation team will be in the patient room with the manikin sitting on/laying on the exam table. One member of the simulation team is to serve as an embedded participant (EP) and play the part of the parent.
- ✓ **Virtual variant:** The clinic champion/designated representative will be in the patient room with the manikin sitting on/laying on the exam table. They will serve as the EP and play the part of the parent. A laptop/tablet/smartphone will be set up to view the simulation room and the simulation team will facilitate the simulation virtually.

Start/End of scenario:

The scenario begins in the exam room with the nurse assessing the patient. The scenario ends when the team calls EMS and they arrive at bedside.

Timing:

5 min Orientation

10 min Asthma Scenario

15 min Debriefing

10 min Seizure Scenario

15 min Debriefing

5 min Evaluations

Please Note: During the 7-10 minute scenario, EMS will **NOT** arrive if/when called until the end of scenario.

ESSENTIAL ORIENTATION COMPONENTS

The following are essential elements of orientation:

1. **Learning climate**
 - a. **Safe environment** – this is the place to make mistakes and try out ways of doing things
 - b. **“Mistakes” expected**
 - c. **Confidentiality**

- d. **No judgement**, no grading, no notes, no scores. This is for you to practice.
- e. **Basic Assumptions** – We are all well trained with good intentions. We are all good clinicians.

2. Learning Goals/ Expectations

Please share **educational and system goals** noted above. Do not share objectives until the debriefing.

3. Immersion and participation

- a. **Fiction contract/ suspend disbelief** - Particularly important to remind participants that the only thing simulated in this scenario is the manikin. They are in their home environment so nothing else is “pretend”.
- b. **Identify resources** – staff portray their everyday role and follow protocol to call whomever would normally be called.
- c. **Receive information** (including physical exam) only by doing what you normally would to obtain that information.
- d. **Clarify roles** – no one should “play” any role. They all are their own role. Additional participants can be provided observer roles (i.e. What did you observe about the initial assessment? Communication– closed loop, SBAR, repeat back? Etc.)
- e. **Link to real life.** Why is this scenario/ curriculum important? Link to real life. These scenarios were taken from events that routinely occur in primary care outpatient clinics. Providers, medical assistants, nurses and frontline clinical staff are expected to lead the initial assessments and implement initial management while using their resources.

SCENARIO PROGRESSION

All information provided by facilitator only if participants perform the actions required to obtain it in real life

SEGMENT/ TIMING	MANIKIN	PARTICIPANT ACTIONS
<p>INITIAL ASSESSMENT</p> <p>4 MINUTES</p>	<p><u>VITAL SIGNS</u></p> <p>T 37.2</p> <p>HR 140</p> <p>RR 30</p> <p>BP 96/60</p> <p>SpO2 90% RA</p> <p><u>PHYSICAL EXAM</u></p> <p>“It’s hard to breathe”</p> <p>Speaking in 1-2 word sentences</p> <p>Poor air entry bilaterally</p> <p>Biphasic wheezing diffusely</p> <p>Prolonged expiratory phase</p> <p>Subcostal, intercostal retractions</p> <p>Capillary refill 2 seconds</p> <p>Nasal congestion</p>	<p><u>ASSESSMENT</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Check consciousness/ breathing/ color (PALS) or pediatric assessment triangle <input type="checkbox"/> Patient weight: 16kg or 35lbs <input type="checkbox"/> Primary assessment (ABCDE): See PE <input type="checkbox"/> Obtain SAMPLE History: <ul style="list-style-type: none"> -SIGNS/SX: increasing work of breathing, last Albuterol 2 puffs with spacer 1 hour ago -ALLERGIES: NKDA -Flovent 110 mcg -PMH: Mild persistent asthma poorly controlled -LAST MEAL: Ate breakfast -EVENTS: Increasingly more difficult to breathe <input type="checkbox"/> Secondary assessment/ head-to-toe exam <input type="checkbox"/> Respiratory exam after each intervention <p><u>INTERVENTIONS:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Obtain Vital Signs <input type="checkbox"/> Oxygen applied and administered <input type="checkbox"/> RN or MA calls MD and conveys concerns <input type="checkbox"/> Escalation: Calls second provider & MA or RN <input type="checkbox"/> Back to back Albuterol 5 2.5 mg then 2.5 mg <input type="checkbox"/> NPO <input type="checkbox"/> Recognizes worsening clinical status despite interventions and calls 911
<p>WORSENING RESPIRATORY DISTRESS</p> <p>6 MINUTES</p>	<p><u>VITAL SIGNS:</u></p> <p>T 37.5</p> <p>HR 160</p> <p>RR 44</p> <p>BP 90/56</p> <p>O2 Sat 85% RA (with 20% cyanosis)if no intervention, 90% on nebulizer, 96% if nebulizer with oxygen</p> <p><u>PHYSICAL EXAM:</u></p> <p>Poor air entry</p> <p>Minimal wheeze (due to poor air entry)</p>	<p><u>CLINICAL REASONING</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Differential diagnosis of worsening hypoxia in status asthmaticus <input type="checkbox"/> Escalate treatment by calling EMS <p><u>COMMUNICATION STRATEGIES</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> SBAR handoff concerning patient’s condition between Office staff and EMS

SEGMENT/ TIMING	MANIKIN	PARTICIPANT ACTIONS
	Intercostal and subcostal retractions noted Prolonged expiratory phase <u>EMS ARRIVAL:</u> (if available)	

FACILITATOR DEBRIEFING GUIDE

DEBRIEFING ORIENTATION

1. Learning Climate
 - Confidential
 - We're seeking opportunities to learn. Things that went well and things we wish went differently- those are opportunities.
 - Basic Assumptions – We are all well trained with good intentions. We are all good clinicians.
 - Safety – Must voice concerns and praise. Must voice them respectfully. Brings forth systems improvement.
2. Expectations
 - Everyone's contributions are what make this a useful experience
 - My role is to facilitate, not lecture.
3. Learning Objectives - Share the specific objectives for this scenario.

ICE BREAKER

How do you feel?

Engage participants to share their feelings about the scenario

DIRECT DISCUSSION TO LEARNING OBJECTIVES

LEARNING OBJECTIVE#1: Assess a deteriorating patient using a structured approach (ABCDE, SAMPLE History)

What was your initial impression of the patient?

Airway:	Phonating, maintainable
Breathing:	Poor air entry bilaterally, retractions, speaking in 1-2 word sentences
Circulation:	Tachycardia for age, initial wide pulse pressure then hypotensive
Disability:	Normal mental status, normal dextrose
Exposure:	Febrile, No rash

Describe how you would obtain a focused history on a decompensating patient if you had none: (SAMPLE)

- Signs and symptoms
- Allergies
- Medication

Past medical history

Last meal

Events leading up to deterioration (ED events/ previous treatments given)

LEARNING OBJECTIVE #2: Implement initial management of respiratory distress (to include use of office equipment, resources, and policies and procedures)

When you discovered that this patient had respiratory distress, what were your initial interventions?

What were your goals of therapy for this patient? How did you accomplish them?

Common management strategies:

Airway: Comfortable position to open airway, nasal/ oral airway, look for foreign body (no blind finger sweep. Suction.

Breathing: Oxygen face mask, airway meds

Circulation: Capillary refill and blood pressure

What do you think helps implement your plan?

What interventions would you want to deliver based on your initial assessment?

What challenges did you feel you faced?

What barriers did you have to accomplishing your goal?/What prevented you from doing XX?

What were the most difficult parts of implementing your plan?

What else may impact implementing your plan? (ie staffing on different days)

LEARNING OBJECTIVE# 3: Management of continuing respiratory distress

We know that his respiratory distress was worsening due to status asthmaticus. What alternate etiologies did you consider?

- Refractory asthma
- Pneumothorax
- Pneumonia

- Foreign body
- Anaphylaxis

What other ways can you think of to manage a patient in continuing or worsening respiratory distress? Engage observer by asking to review their impression of interventions undertaken.

IMPROVE VENTILATION

Short acting beta agonist

Consider EpiPen administration (if available).

Transport patient to a higher level of care

LEARNING OBJECTIVE #4: Use communication strategies to ensure safety in high risk situations (SBAR, closed loop communication, validate and verify)

What would you tell the EMS/ED provider about this patient?/How would you handoff this patient?

In general, what information do you feel is important to relay during handoff?

Situational Briefing for Escalation to EMS

- € Situation – Including any abnormality in Airway, Breathing, Circulation, Disability (Neuro exam)
- € Background – Includes key elements of “SAMPLE” history
- € Assessment – Includes stability, differential diagnosis for problem, and leading diagnosis for current problem
- € Recommendation – Includes disposition to stabilize in the office or call 911

Setting/Environment

- ED
- Inpatient floor
- PICU
- NICU
- OR/ PACU
- Outpatient clinic
- Atrium/ lobby
- Other:

Simulator Manikin/s Needed:

- Low fidelity 3 year old manikin
- Tracheostomy
- Other:

Props:**Equipment attached to manikin:**

- IV fluids
- IV medications
- Oxygen. Route: NC/FM
- Monitor
- ID band
- Tube feeding
- Central line
- PIV attached with collection bag
- Peripheral IV

Equipment available in room

- Fluids – Normal Saline
- IV start kit
- IV tubing, 20cc syringe, single stop cock

 Monitor available IV pump Oxygen delivery device (nasal cannula, face mask) suction (yankauer available but tubing not connected) bulb suction other: Neb set up**Medications and Fluids** IV fluids @ Oral meds: Oral steroid if clinic has available IV meds: Magnesium sulfate, NS bolus, methylprednisolone IM/ SC meds: IM Epinephrine, SC Terbutaine**Diagnostics Available**

Labs

 x-rays (images) CXR from this morning - normal

12 lead EKG

 Other:**Documentation** Sign Out – nursing and physician

H&P

Orders

VS flow sheet

I/O flow sheet

 Other:**Recommended Mode for Simulation (i.e. manual, programmed, etc.)**

Asthma Scenario Data Collection Form

Site: _____ **Date:** _____

Facilitators: _____

Clinical assessment/management	No	Yes	Comments
1. staff member verbalizes concern and calls for help (<1min)			
2. Staff member activates office based code/emergency response			
3. Airway and breathing assessed by inspection and auscultation with stethoscope (<2min)			
4. Documentation of event initiated			
5. Able to bring in and appropriately use all equipment <ul style="list-style-type: none"> • pulse ox monitor, • neb/MDI, • oxygen equipment. 			
6. Circulation assessed by checking pulses and/or cap refill or requested (<5min)			
7. Oxygen started for hypoxemia (NC, facemask)			
8. Inhaled albuterol started (either MDI or neb, 2.5 or 5mg albuterol +/- ipratropium) (<5min)			
9. Second assessment of airway/breathing after initial interventions			
10. Staff member designated to activate EMS			
11. EMS activation includes: Patient age and chief complaint/issue, and location of clinic			

Appendix 3

FACILITATOR SUMMARY

SEIZURE SCENARIO

CURRICULUM GOALS

The educational goal for this simulation is for teams to apply a structured approach to assess and manage deteriorating patients and use existing algorithms to escalate care.

The systems goals for this simulation are to assess and improve policies, procedures and guidelines related to office preparedness for emergent situations.

LEARNING OBJECTIVES

After this session, the participants will be able to:

- (1) Assess a deteriorating patient using a structured approach (ABCDE, SAMPLE History)
- (2) Implement initial management of a pediatric patient experiencing a seizure (to include use of office equipment, resources, and policies and procedures)
- (3) Implement escalation measures for a pediatric patient experiencing a prolonged seizure (to include accessing Emergency Medical Services (EMS))
- (4) Apply communication strategies to ensure safety in a high risk situation (SBAR, Closed loop communication)

SCENARIO OVERVIEW

A 3yo boy presents with his caregiver to the clinic for a sick visit. While waiting in the exam room the child begins to seize and the caregiver calls out for assistance. Office staff calls for help, and it is determined that the patient is having a generalized tonic/clonic seizure. The role of the nurse includes: assessing the patient, to call for the provider, give a situational briefing, and ensure the patient's safety. The provider will then apply a structured method for initial data gathering (eg: SAMPLE History and ABCDE Physical) and initiate treatment.

After delivering initial care to the seizing patient, to include positioning, oxygen via NC, facemask or NRB, pulse ox, and suction, the team will escalate to second line therapies (medications if available), and call 911. Upon arrival of EMS a situational briefing in SBAR format by the provider or nurse will ensue.

SCENARIO LOGISTICS

Initial information to provide:

- ✓ The nurse and nurse observers will begin the scenario outside the exam room.
- ✓ The provider/provider observers will begin the scenario outside of the exam room.
- ✓ **In person variant:** The simulation team will be in the exam room with the manikin sitting in a chair. One member of the simulation team is to serve as an embedded participant (EP) and play the part of the parent.
- ✓ **Virtual variant:** The clinic champion/designated representative will be in the exam room with the manikin sitting in a chair. They will serve as the EP and play the part of the parent. A laptop/tablet/smartphone will be set up to view the simulation room and the simulation team will facilitate the simulation virtually.

Start/End of scenario:

The scenario begins with the child and caregiver in the exam room when the caregiver asks for assistance and ends with the arrival of EMS transport.

Timing:

5 min Orientation

10 min Asthma Scenario

15 min Debriefing

10 min Seizure Scenario

15 min Debriefing

5 min Evaluations

Please Note: During the 7-10 minute scenario, EMS will **NOT** arrive if/when called until end of scenario.

ESSENTIAL ORIENTATION COMPONENTS

The following are always essential elements of orientations:

4. Learning climate

- a. **Safe environment** – this is the place to make mistakes and try out ways of doing things
- b. **“Mistakes” expected**
- c. **Confidential**
- d. **No judgement**, no grading, no notes, no scores. This is for you to practice.
- e. **Basic Assumptions** – We are all well trained with good intentions. We are all good clinicians.

5. Learning Goals/ Expectations

Please share **educational and system goals** noted above. Do not share objectives until the debriefing.

6. Immersion and participation

- a. **Fiction contract/ suspend disbelief** - Particularly important to remind participants that the only thing simulated in this scenario is the manikin. They are in their home environment so nothing else is “pretend”.
- b. **Identify resources** – Participants to follow protocol to call whomever would normally be called
- c. **Receive information** (including physical exam) only by doing what you normally would to obtain that information.
- d. **Clarify roles** – no one should “play” any role. They all are their own role. Additional participants can be provided observer roles (i.e. What did you observe about their initial assessment? Communication– closed loop, SBAR, repeat back? Etc.)
- e. **Link to real life.** Why is this scenario/ curriculum important? Link to real life. These scenarios were taken from events that routinely occur in primary care outpatient clinics. Providers, medical assistants, nurses and frontline clinical staff are expected to lead the initial assessments and implement initial management while using their resources.

SCENARIO PROGRESSION

All information provided by facilitator only if participants perform the actions required to obtain it in real life

SEGMENT/ TIMING	Manikin	PARTICIPANT ACTIONS
<p>INITIAL ASSESSMENT</p> <p style="text-align: center;">5 MINUTES</p>	<p><u>VITAL SIGNS</u></p> <p>T 37.2</p> <p>HR 120</p> <p>RR 16</p> <p>BP 98/62</p> <p>SpO2 97% RA</p> <p><u>PHYSICAL EXAM</u></p> <p>Patient unresponsive, pupils reactive</p> <p>Tonic/clonic movement of all extremities noted</p> <p>Clear and equal breath sounds</p> <p>Capillary refill 2 seconds</p> <p>Mucus membranes pink, warm and dry</p>	<p><u>ASSESSMENT</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Check consciousness/ breathing/ color (PALS) or pediatric assessment triangle <input type="checkbox"/> Patient weight: 16kg or 35lbs <input type="checkbox"/> Primary assessment (ABCDE): See PE <input type="checkbox"/> Provide safe environment <input type="checkbox"/> Obtain SAMPLE History: <ul style="list-style-type: none"> -SIGNS/SX: c/o not feeling well, tired, no appetite -ALLERGIES: NKDA -Meds: none -PMH: Not feeling well last night and this am, not acting himself -LAST MEAL: Ate very little breakfast -EVENTS: Patient not feeling well last night, and again this am, general malaise, kept home from daycare. <input type="checkbox"/> Secondary assessment/ head-to-toe exam <p><u>INTERVENTIONS:</u></p>
<p>SEIZURE CONTINUES</p> <p style="text-align: center;">5 MINUTES</p>	<p><u>VITAL SIGNS:</u></p> <p>T 37.5</p> <p>HR 140</p> <p>RR 18</p> <p>BP 88/50</p> <p>O2 Sat 88% RA (with 30% cyanosis), 96% on oxygen</p> <p><u>PHYSICAL EXAM:</u></p> <p>Patient unresponsive</p>	<ul style="list-style-type: none"> <input type="checkbox"/> RN or MA calls MD and conveys concerns <input type="checkbox"/> Provide safe environment for patient <input type="checkbox"/> Oxygen adjunct applied <input type="checkbox"/> Suction brought to bedside <input type="checkbox"/> NPO <input type="checkbox"/> Escalation: Calls second provider or RN <input type="checkbox"/> Obtains Vital Signs (pulse ox, HR, RR) <input type="checkbox"/> Administer medication interventions if available and calls 911 <p><u>CLINICAL REASONING</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Seizure with unknown etiology

SEGMENT/ TIMING	Manikin	PARTICIPANT ACTIONS
	Tonic/clonic movement of all extremities continues Skin and mucus membranes pale Cap refill 2 seconds RR shallow <u>EMS ARRIVAL:</u> (if available)	<u>COMMUNICATION STRATEGIES</u> <input type="checkbox"/> SBAR handoff concerning patient's condition between Office staff and EMS

FACILITATOR DEBRIEFING GUIDE

DEBRIEFING ORIENTATION

4. Learning Climate
 - Confidential
 - We're seeking opportunities to learn. Things that went well and things we wish went differently- those are opportunities.
 - Basic Assumptions – We are all well trained with good intentions. We are all good clinicians.
5. Safety – Must voice concerns and praise in a respectful manner.
6. Expectations
 - Everyone's contributions are what make this a useful experience
 - My role is to facilitate, not lecture.
7. Learning Objectives - Share the specific objectives for this scenario.

ICE BREAKER

How do you feel?

Engage participants to share their feelings about the scenario

DIRECT DISCUSSION TO LEARNING OBJECTIVES

LEARNING OBJECTIVE #1: Assess a deteriorating patient using a structured approach (ABCDE, SAMPLE History)

What was your initial impression of the patient?

Airway: open with potential for compromise
Breathing: Slow
Circulation: Tachycardia for age
Disability: unresponsive
Exposure: afebrile

Describe how you would obtain a focused history on a decompensating patient if you had none: (SAMPLE)

Signs and symptoms
Allergies
Medication
Past medical history
Last meal
Events leading up to deterioration (ED events/ previous treatments given)

LEARNING OBJECTIVE #2: Implement initial management of a pediatric patient experiencing a seizure (to include use of office equipment, resources, and policies and procedures)

When you discovered that this patient was having a seizure, what were your initial interventions?

What were your goals of therapy for this patient? How did you accomplish them?

Common management strategies:

Airway: Suction at the bedside
Breathing: Oxygen (NC, Mask, NRB)
Circulation: Capillary refill

Position patient to ensure patient safety

What do you think helps implement your plan?

What interventions would you want to deliver based on your initial assessment?

What challenges did you feel you faced?

What barriers did you have to accomplishing your goal?/What prevented you from doing XX?

What were the most difficult parts of implementing your plan?

What else may impact implementing your plan? (ie staffing on different days)

LEARNING OBJECTIVE# 3: Implement escalation measures for a pediatric patient experiencing a prolonged seizure (to include accessing Emergency management systems (EMS))

When you realized he was continuing to seize, what were your goals for the patient? *Engage observer by asking to review their impression of the interventions undertaken*

Monitor length of seizure

Provide safe environment

Administer oxygen to ensure adequate oxygenation

Consider medication interventions

Transport patient to a higher level of care

LEARNING OBJECTIVE #4: Apply communication strategies to ensure safety in a high risk situation (SBAR, closed-loop communication)

What would you tell the EMS/ED provider about this patient?/How would you handoff this patient?

In general, what information do you feel is important to relay during handoff?

Situational Briefing for Escalation to EMS

€ Situation – Including any abnormality in Airway, Breathing, Circulation, Disability (Neuro exam)

- € Background – Include key elements of “SAMPLE” history
- € Assessment – Includes stability, differential diagnosis for problem, and leading diagnosis for current problem
- Recommendation – Includes disposition to stabilize in the office or c

Seizure Scenario Data Collection Form

Site: _____ Date: _____

Facilitators: _____

Clinical assessment/management	No	Yes	Comments
1. staff member verbalizes concern and calls for help (<1min)			
2. Staff member activates office based code/emergency response			
3- Patient moved to a safe position (floor, table with rails, etc.) (<2min)			
4- Documentation of events initiated			
5- Airway and breathing assessed by inspection and auscultation with stethoscope (<2min)			
6- effort to position the patient appropriately to help open airway (jaw thrust/chin lift, placing in sniffing position, or nasopharyngeal airway)			
7- Able to bring in and appropriately use all equipment <ul style="list-style-type: none"> • pulse ox monitor, • neb/MDI, oxygen equipment.			
8 - Circulation assessed by checking pulses and/or cap refill or requested (<5min)			
9 - Oxygen started if hypoxemia (NC, facemask)			
10- Medications administered appropriately (dose/route) if available (benzodiazepine)			
11- Second assessment of airway/breathing after initial interventions			
12- Staff member designated to activate EMS			
13- EMS activation includes: Patient age and chief complaint/issue and location of clinic			

Appendix 4

Spoke Specific Demographic Data:

Provider Data:

- Number of physicians
- Number of advance practice providers (NPs, PAs)
- Number of nurses
- Number of nursing assistants
- Number of front office staff
- Learners present regularly (med students, residents, nursing students, etc.?)
- Is the practice affiliated with an academic center?
- Is the practice part of a larger group or independent?

Practice Data:

- Approximate practice size (number of patients)
- Do you take care of technology dependent patients?
- Zip Code
- Approximate EMS response time (min)
- Nearest ED (miles)