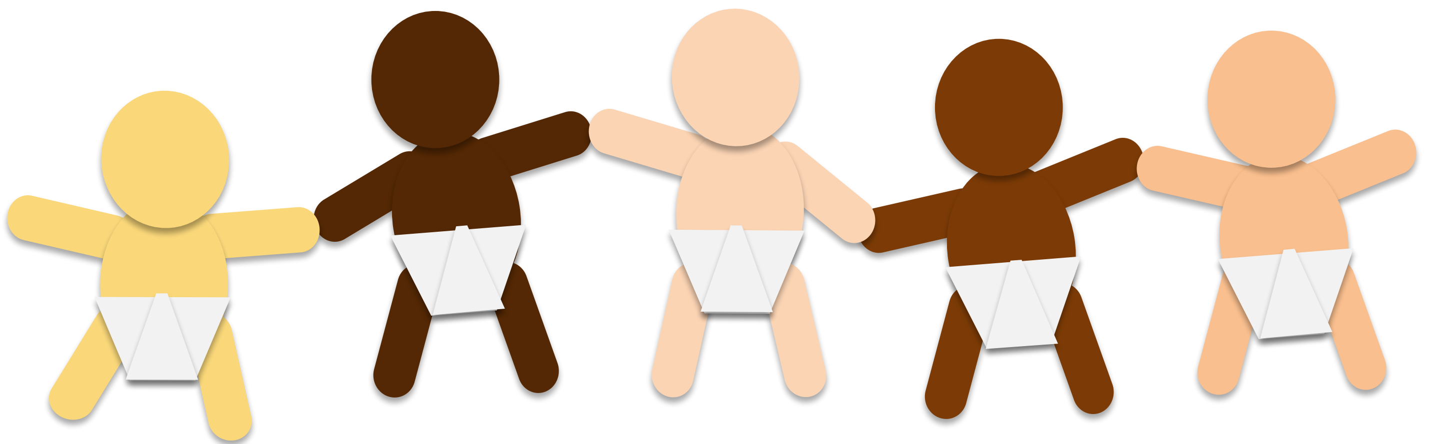
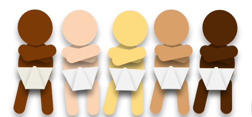
SimBox+
Tele SimBox

Non-Accidental Trauma



Emergency Department/Hospitalist/Resident



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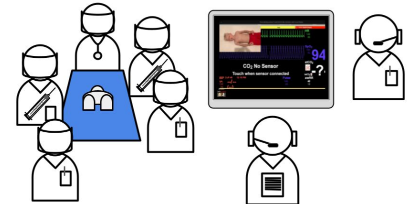
Thank you for your interest in SimBox low fidelity learning tools!

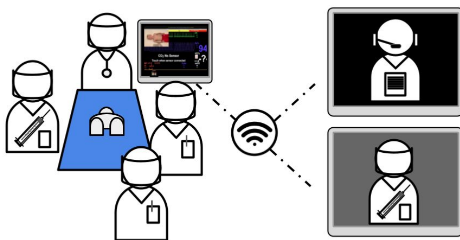
- ❑ Our low fidelity simulation series allows your team to engage in the first 5-10 minutes of an emergency scenario.
- ❑ Use your own equipment and resources in your own clinical environment, or in the convenience of a virtual environment to practice non technical skills.

SimBox Original Version

- ❑ Low-fidelity manikin.
- ❑ + video.
- ❑ + tablet-based resources (*in situ* or sim lab).



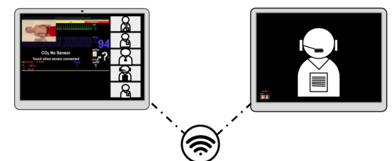
SimBox+ (SimBox Original + tele-facilitator)



- ❑ SimBox Original PLUS.
- ❑ Learners in remote or underserved areas +/- limited access to content or simulation experts.
- ❑ Remote facilitator.

Tele SimBox:

- ❑ Non-technical skills all remote version.
- ❑ Meets post-pandemic demands for virtual learning and continuous education for learners of all levels.



How to use these resources

SimBox or SimBox+

- Review this document + run a session in your ED with a doll/manikin/pillow.

Tele SimBox

- Reference: Tips / Tricks.
- Watch a sample recording of the telesimulation to see how it is run.

*If using this resource for EM / PEM trainees see Resource page at end of booklet with suggested case augmentation to meet Milestones.

**For additional questions or concerns, arrange a one-on-one tutorial with the project team.

Guide

This guide is for facilitators of all backgrounds in how best to use these didactic resources.

Novice Facilitator

- ❑ Review this entire guide and watch video *prior to* first session.
- ❑ Utilize the Prebriefing / Debriefing Scripts, Prompts and Resources.
- ❑ Review the Checklist.
- ❑ Encourage all participants to complete Survey.

Intermediate to Advanced Facilitators

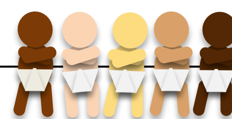
- ❑ Review the case summary and progression.
- ❑ Use the Prebrief / Debrief scripts or use your own.
- ❑ Review Educational Resources or use your own.
- ❑ Review this Checklist *or modify* to your specific learner group.

Tele Tips / Tricks

- ❑ Trial sharing the video *prior to* the session.
- ❑ Use *Gallery View*.
- ❑ Have participants *name themselves* with assigned *role.*
- ❑ Ask *observers to mute audio* and *turn off video* for simulation.
- ❑ Both participants and facilitators can use a *"Time Out"* whenever necessary to pause and regroup.
- ❑ An *embedded participant* can help move the scenario along.
- ❑ During the simulation, scroll through the monitor video based on the participants' actions.

  For example, if the participants quickly stabilize the patient, you can "skip through" to the part of the video where the vital signs have normalized.

  Conversely, if the necessary interventions, e.g. giving the patient oxygen, have not been performed, you can "scroll back" and spend more time in the part of the video where the vital signs are abnormal.



After this activity, the team will be able to manage a pediatric patient with concern for non-accidental trauma with emphasis on the following objectives:

1. Apply Crisis Resource Management and teamwork (with attention to role designation, directed orders, sharing mental model and closed loop communication with team and family members).
2. Prioritize treatment of potential etiologies to guide stabilization or escalation of care for an infant with vomiting.
3. Determine the appropriate destination for transfer.

Overall Scenario Schema

Link to Pre-briefing Script for SimBox/SimBox+

2 mins

Play video to team
Assign or Coach them to allocate roles

Team Leader	Resident/ MS	Bedside RN
Respiratory Tx	Medication RN	Technician

6-10 mins

Stem: You are called to assess a 7 month old baby with vomiting. On exam, you notice a bruise on the left ear and back.

Your team will focus on the management of an infant with possible non- accidental trauma.

Telesim Co-facilitator prompts are indicated in these boxes

15 mins

Link to Debriefing Script

10 mins

Option: re-run scenario

Scenario script:

"I will assign each of you roles, including team lead, bedside survey and airway provider and parent liaison. You will hear a brief EMS patch and then see a two minute countdown clock as you prepare for the arrival of the patient. You will now hear the EMS dispatch."

Link to ED Non-Accidental Trauma Video

Facilitator states: "ED, ED this is an ALS unit, coming in with a 7 month old infant with vomiting. We will be there in 2 minutes."

Time 0

- Team assembles and confirms roles
- Asks for equipment: monitor, temperature, oxygen, breathing (nasal cannula, bag-mask ventilation), access, Broselow tape/ app
- Asks for help

"The patient has arrived. You see a 7 month old baby who is crying and actively vomiting."

1

HR 150
BP 90/40
RR crying
Sat 99% RA

- Team places pulse oximeter, cardiac monitor, and BP cuff on the patient
- Uses Broselow tape/ app for weight and/ or asks parent
- Performs ABCDE

"Vomiting has stopped. The patient appears tired but is alert and looking around. Airway is patent, breath and heart sounds are normal, and CRT is 3 seconds."

2

HR 160
BP 92/51
RR 24
Sat 99% RA
CRT 3sec

- Team notes tachycardia and prolonged CRT
- Asks for POC glucose
- Asks for IV access
- Obtains SAMPLE history

" POC glucose is 120. Working on the IV."

SAMPLE history

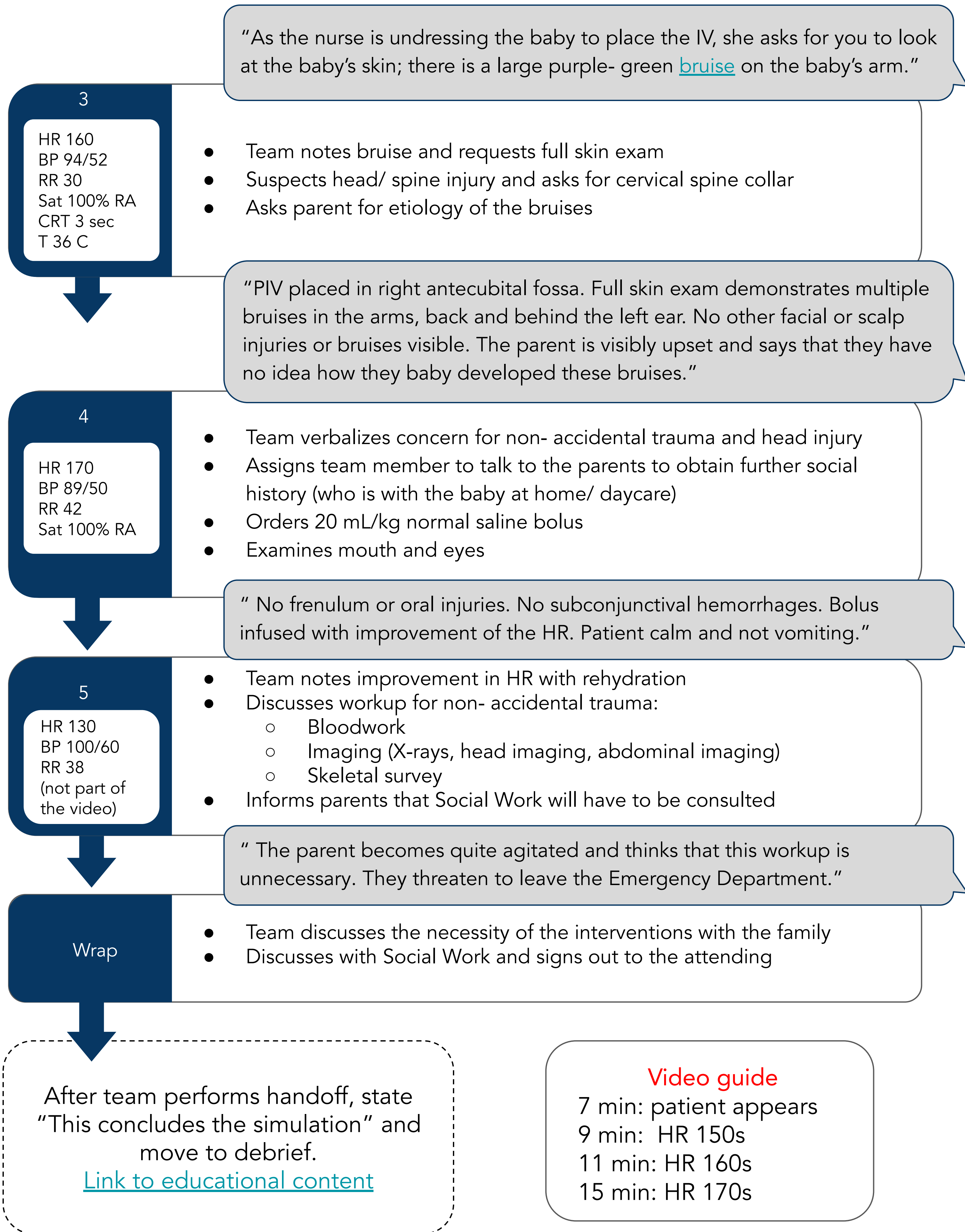
Signs/ symptoms: Fussy for the past few days. Today, he has been crying more and has vomited many times. No blood or green content in the vomit. Has not been able to keep anything down today. Only one wet diaper since he woke up this morning. No fevers.

Allergies/ Medications: None.

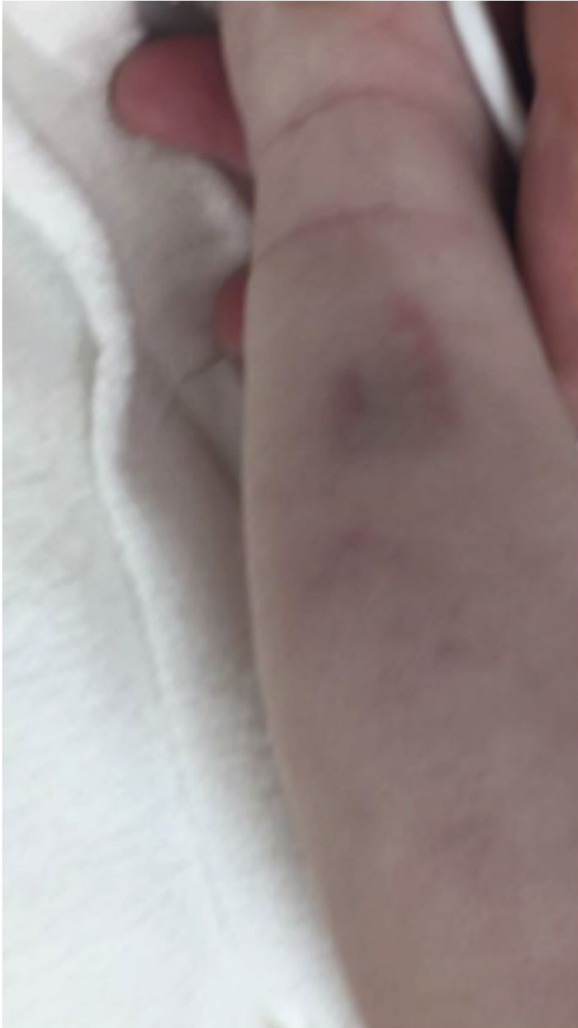
Past Medical History: Term delivery, no medical problems, up to date with immunizations.

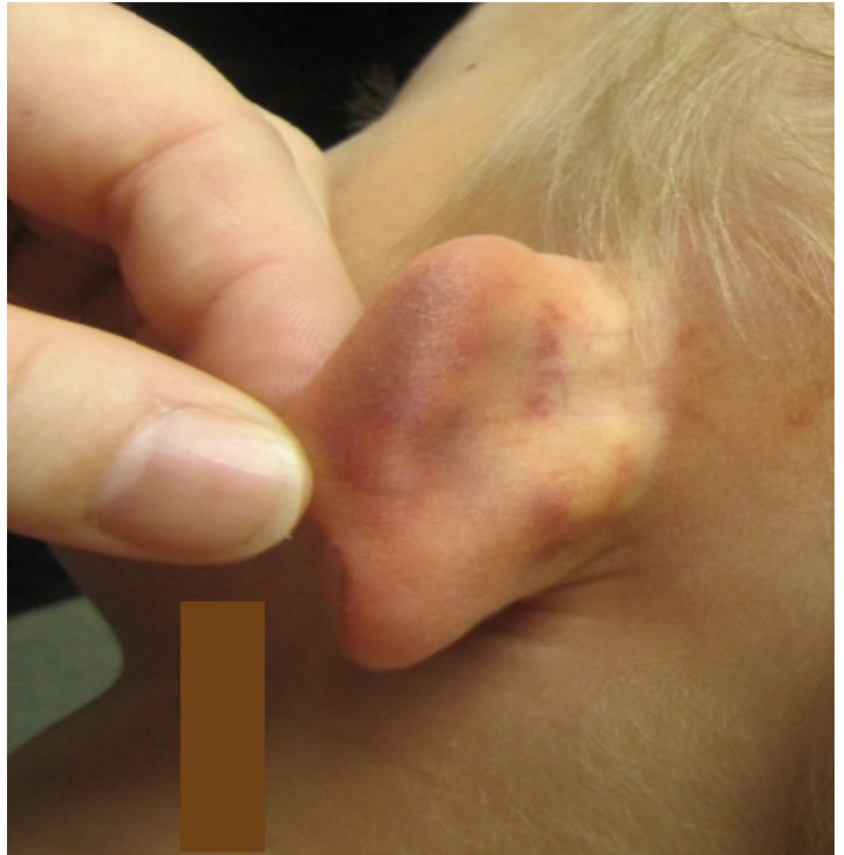
Last meal: One oz of formula, one hour prior.

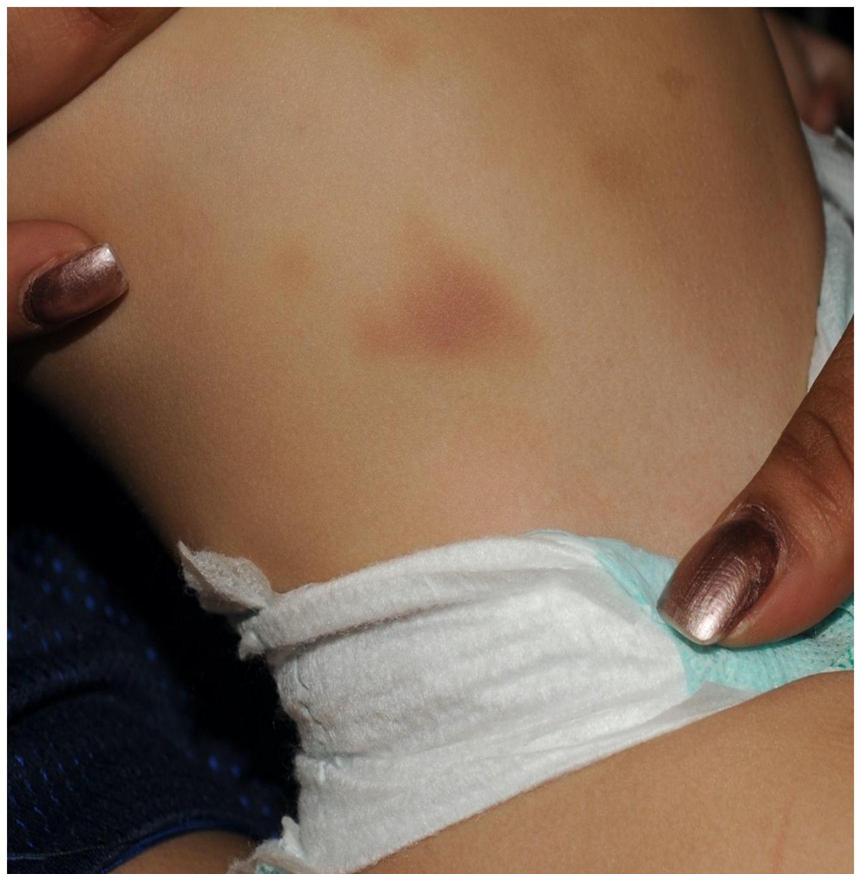
Events: No injuries, no sick contacts per parent.


"As the nurse is undressing the baby to place the IV, she asks for you to look at the baby's skin; there is a large purple- green bruise on the baby's arm."
3
HR 160
BP 94/52
RR 30
Sat 100% RA
CRT 3 sec
T 36 C
Team notes bruise and requests full skin exam
Suspects head/ spine injury and asks for cervical spine collar
Asks parent for etiology of the bruises
"PIV placed in right antecubital fossa. Full skin exam demonstrates multiple bruises in the arms, back and behind the left ear. No other facial or scalp injuries or bruises visible. The parent is visibly upset and says that they have no idea how they baby developed these bruises."
4
HR 170
BP 89/50
RR 42
Sat 100% RA
Team verbalizes concern for non- accidental trauma and head injury
Assigns team member to talk to the parents to obtain further social history (who is with the baby at home/ daycare)
Orders 20 mL/kg normal saline bolus
Examines mouth and eyes
" No frenulum or oral injuries. No subconjunctival hemorrhages. Bolus infused with improvement of the HR. Patient calm and not vomiting."
5
HR 130
BP 100/60
RR 38
(not part of the video)
Team notes improvement in HR with rehydration
Discusses workup for non- accidental trauma:
Bloodwork
Imaging (X-rays, head imaging, abdominal imaging)
Skeletal survey
Informs parents that Social Work will have to be consulted
" The parent becomes quite agitated and thinks that this workup is unnecessary. They threaten to leave the Emergency Department."
Wrap
Team discusses the necessity of the interventions with the family
Discusses with Social Work and signs out to the attending
After team performs handoff, state "This concludes the simulation" and move to debrief.
Link to educational content
Video guide
7 min: patient appears
9 min: HR 150s
11 min: HR 160s
15 min: HR 170s

Skin Exam Findings







Ref: www.identifychildabuse.org Denise Abdoo, PhD, CPNP and Kathleen Adelgais MD, University of Colorado School of Medicine, Children's Hospital Colorado, Kempe Center, Aurora, CO

TASK		DONE CORRECTLY	NOT DONE CORRECTLY	NOT DONE
Team-centered care	Team verbally assembles the necessary staff, equipment and resources to care for an infant with vomiting.			
	Demonstrates effective teamwork and communication (i.e. designate leader/roles, directed orders, closed-loop communication, sharing mental model).			
	Demonstrates appropriate PPE.			
	Calls for additional resources early (social work and/ or child abuse team consult).			
Family-centered care	Obtains an appropriate history from the family member (SAMPLE).			
	Addresses family concerns, updates on care (translates medical aspects of care in plain language).			
Medical knowledge	Formulates a broad differential for an infant presenting with vomiting.			
	Requests full skin exam.			
	Asks details about the injury from the parents.			
	Verbalizes that there is concern for non- accidental trauma.			
	Discusses workup for non- accidental trauma, including head imaging.			
	Diagnoses and manages dehydration secondary to vomiting.			
Communication	Discusses with the parents the reason for the medical workup.			
	Demonstrates handoff of care at the end of the case to SW and/ or Child Abuse Consult team.			

Best practices for establishing psychological safety in simulation.

Basic Assumption: "We believe that everyone participating in our activities is intelligent, capable, cares about doing their best and wants to improve."
Center for Medical Simulation, Boston MA

Prebrief

Welcome your team, make introductions:
"This simulated resuscitation is to practice our team's response to an emergency. We will spend about 15 minutes in simulation, then we will debrief for 20 to discuss what went well and what could be improved with input from the team. Even though it is not real, and the manikin can't be harmed, everyone will get the most out of this scenario if we take it as seriously as possible."

Describe

Describe simulator capabilities, equipment and how to participate:

"Act as you would within your role. You will not get monitor feedback unless your equipment is attached to the patient. Airway equipment should be attached to oxygen, etc. Try to make tasks realistic and timely using your equipment. Please ask for clarifications."

Demo

DEMO: Closed loop communication.
Know your role and task designation. Use closed loop communication to verify and complete.

Leader: Tech, we need an EKG.
Tech: OK going to get the machine.
Tech: OK, I've got the EKG machine here.

Disclose

If a safety concern arises during the simulation, I will state:

"Let's take a safety pause."

If a real event happens that is not part of the simulation, I will state:

"This is not a simulation."

Disclose if video recording, privacy and permission.

Components of a Debrief (Based on 3Ds + PEARLS)

"The purpose of this debrief is to discuss areas of great performance and discover areas for improvement. It is not a blame session- everyone is here to do their best."

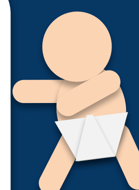
Defuse
1-2 min

Solicit emotions and reactions:
"Reactions?"; "Let's take a moment to gather our thoughts."

Discover
7-8 min

Clarify facts:
"Can a teammate share a short summary of the case?"
"Were there other thoughts?"

Explore Performance:
"What went well?"
"What could be improved?"



Use observations of **learner experiences** to highlight strengths of the team and individuals, while asking learners for their thoughts, observations and reflections.

Deepen
1-2 min

Identify patient care priorities. Then provide **focused feedback and** specific areas of opportunity for improvement. Elicit any other outstanding issues or concerns.

Summary
1-2 min

Identify take-home points to apply to future practice: Round the room reflections and thanks for participation.

This page provides possible questions to elicit teaching points during the debrief. We are tailoring content for each objective. These questions are not meant to replace your team's discussion, but can help to steer the debriefing session.

PERFORM A SYSTEMATIC ASSESSMENT OF AN ILL INFANT

How does your team perform a systematic assessment of an ill infant?

PAT Pediatric Assessment Triangle: Appearance/ Breathing/ Color.

- Appearance TICLS: tone, interactivity, consolability, look/gaze, speech/cry.
- Work of breathing: Important to undress visualize WOB.
- Circulation/capillary refill: Where and how is this assessed in the pediatric patient?

PERFORM A COMPLETE PHYSICAL EXAM

What are ways in which the physical exam of an infant is different than that of an older child or adult?

Inability to verbalize location of pain requires you to do a full head to toe skin exam with all clothing removed including the diaper, in any child <2 years of age.

WHAT MNEMONIC IS HELPFUL WHEN CONSIDERING A BROAD DIFFERENTIAL DIAGNOSIS?

VINDICATE: Vascular, Infection, Neoplasm, Degenerative, Iatrogenic/Intoxication, Congenital, Autoimmune/Allergic, Traumatic, Endocrine/Metabolic.

VITAMINS: Vascular, Infection, Trauma, Autoimmune, Metabolic, Iatrogenic, Neoplastic, Syndromes/Genetic.

DESCRIBE PHYSICAL EXAM FINDINGS CONCERNING FOR ABUSE

What physical exam findings are most concerning for possible child abuse or neglect?

- Mnemonic: TEN4-FACES. Bruising to TEN region (Torso, Ear, Neck) in a child <4 years of age or Face (specifically Frenulum, Angle of jaw, Cheek, Eyelid, Sclera). ANY bruising in infants ≤4 months of age is concerning.

*See local protocols for NAT workup or a sample pathway here: Physical Abuse Clinical Pathway — Emergency Department from CHOP

DISCUSS THE IMPORTANCE OF FAMILY CENTERED CARE INTERACTIONS

How does the team manage the reactions of parents/guardians when discussing possible abuse?

- As a mandatory reporter you are required by law to report any concern for possible child abuse or neglect. Remind the families that as a healthcare provider your first priority is the safety of their child.
- Setting expectations for the remainder of the ER visit prior to Social Work or Child Protection Team Consults is important so as not to surprise families when these providers introduce themselves.

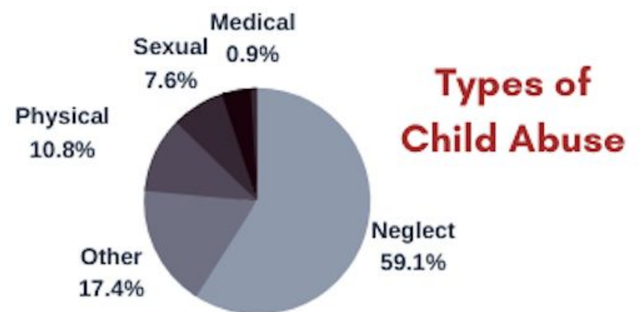
RECOGNIZING AND RESPONDING TO CHILD ABUSE

"Physical or mental injury, sexual abuse, negligent treatment, or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare."

INTRODUCTION

60 Seconds
Every minute another child will be a victim of abuse

3.6 Million
referrals for child abuse per year



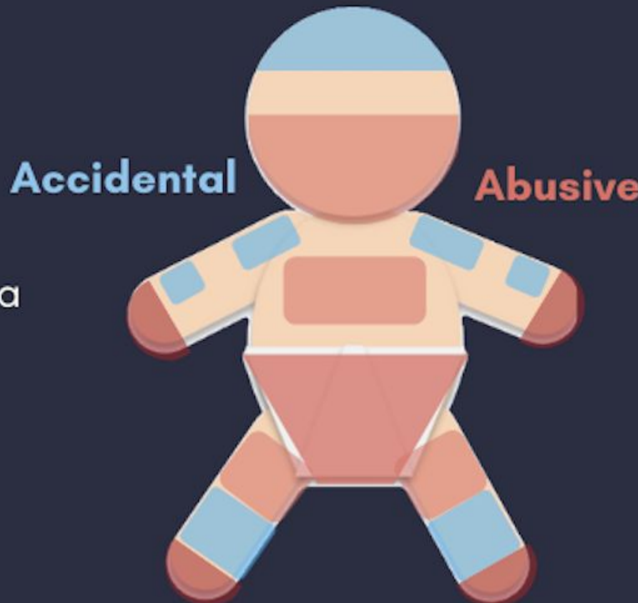
RECOGNIZING CHILD ABUSE

Injury Location

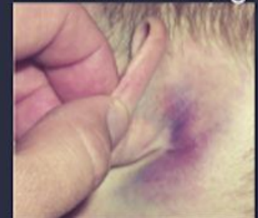
Torso
Ear
Neck
< **4** mo age
Frenulum
Auricular area
Cheek
Eyelid
Sclera

Patterns

Bruise Patterns



Auricular Bruising



Circumferential Burns

Patterned Injuries

Pierce MC, et al Bruising characteristics discriminating physical child abuse from accidental trauma. Pediatrics. 2010 Jan;125(1):67-74.

RECOGNIZING AND RESPONDING TO CHILD ABUSE

NAVIGATING THE VISIT

Be direct:

"I have concerns that someone might be hurting your child."

Validate:

"I know this must be difficult to hear.
You and I both have the same goal to keep your child safe.
By law we are required to report this. "

Set expectations:

Explain what happens next including labs (CBC, Comprehensive Metabolic Panel, Lipase) imaging, social work & child maltreatment specialty consults.

Allow parents/guardians time to process:
Give parents time to think about the news you just gave them and you will return in 15-20 minutes to answer any further questions.

DOCUMENTATION AND MANDATORY REPORTING

- Healthcare professionals are **required** to report when they know or suspect that child abuse is going on.
- Documentation using objective and specific descriptions of injuries including measurements are preferred. EHRs allow photographs to be placed in the chart with consent.

Find the guidelines and how to report in your state here :
https://www.childwelfare.gov/topics/systemwide/laws-policies/state/

SOURCES:
https://plasticsurgerykey.com/154-non-accidental-injury-physical-abuse/
http://koronfelsforensicmedicine.blogspot.com/2013/07/wounds-bruises-contusionsecchymoses.html
https://pediatrictraumasociety.org/meeting/multimedia/files/2019/Presentations/Friday/0330-Ziegfeld.pdf
https://litfl.com/battle-sign/

SimBox Educational Media 2020 by Shannon Flood MD, Kathleen Adelgais MD, Layout: Keyuree Satam MS4 @DrM_Kou

Articles:
- "The evaluation of suspected child physical abuse" Christian CW; Committee on Child Abuse and Neglect, American Academy of Pediatrics. Pediatrics. May 2015 May
- "Evaluating children with fractures for child physical abuse" Flaherty EG, Pediatrics. Feb 2014

Podcasts: Physical Abuse in Children

Injuries Suggestive of Abuse

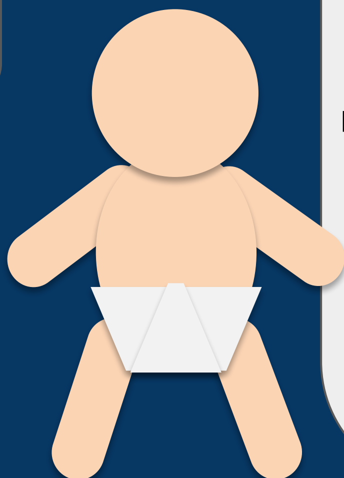
Bite marks
- ➔ Semi-circular/ oval patch +/- bruise

Head
- ➔ Subdural hematoma (+/- skull fracture)
- ➔ Unexplained Intracranial injury
- ➔ Subgaleal hematoma (due to hair pulling)

Low suspicion if isolated linear skull fracture with plausible mechanism in well appearing infant >6m

Eye
- ➔ Retinal hemorrhage
- ➔ Subconjunctival hemorrhage in infant (not birth injury)

Facial injury
- ➔ Unexplained torn frenulum in non-ambulating child
- ➔ Unexplained oral injury
- ➔ Unexplained ear injury
- ➔ Unexplained facial bruising in non-ambulating child



Fractures
High specificity for abuse, especially in infants:
- Metaphyseal
- Rib
- Scapular
- Spinous process
- Sternum

Moderate specificity for abuse:
- Multiple (especially bilateral)
- Different ages
- Epiphyseal separations
- Vertebral body fractures and subluxations
- Digital fractures
- Complex skull fractures
- Extremity fracture in infant <12 m/o

Low specificity
- Long bone shaft fractures in >12 m/o
- Specific long bone shaft fractures in ambulating infants >9 mo
  - Distal buckle fracture of radius/ ulna
  - Distal buckle fracture of tibia/ fibula
  - Toddler's fracture
- Clavicular fractures in newborns, ambulatory medicine
- Subperiosteal new bone formation

Bruising
- ➔ Any bruise in infants <6 months of age or non-ambulating infants
- ➔ Bruising in unusual location in any age child
- ➔ Patterned bruising (loopmarks, hand print, imprint of an object)

TEN-4-FACIES mnemonic for high risk for abuse:
TEN (torso, ear, neck) bruising in <4 years
Any bruising in <4 months

Burns
- ➔ Patterned contact burn with insufficient mechanism
- ➔ Cigarette burn
- ➔ Stocking, glove pattern
- ➔ Mirror image of burns in extremities
- ➔ Symmetric burns on buttocks
- ➔ Immersion burn
- ➔ Multiple burn sites

Source: https://www.chop.edu/clinical-pathway/abuse-physical-clinical-pathway

COMPONENTS OF EFFECTIVE TEAMS: TEAMSTEPPS IN A NUTSHELL

https://www.ahrq.gov/professionals/education/curriculum-tools/cusptoolkit/modules/implement/teamworknotes.html

COMMUNICATION	LEADERSHIP	SITUATION MONITORING	MUTUAL SUPPORT
SBAR Situation Background Assessment Recommendation	BRIEF Planning, setting the tone	STEP Status of pt Team Members Environment Progress toward goal	TASK ASSISTANCE Awareness of team work load
CALL OUT Sharing critical information with the team	HUDDLE Ad-hoc planning or updates	"I'M SAFE" *Tool for self evaluation* Illness Medication Stress Alcohol/Drugs Fatigue Eating + Elimination	FEEDBACK Providing information for purpose of team improvement
CHECK BACK Loop Closure**	DEBRIEF Exchange of information to inform team of performance and effectiveness		ADVOCACY & ASSERTION Advocating for patient in case of a disagreement with decision maker

HANDOFF
I PASS the BATON

Introduction

Patient
Assessment
Situation
Safety Concern

Background
Actions
Timing
Ownership
Next

Cognitive Aid @DrM_Kou

PERFORMANCE
Leadership
Communication
Situation Monitoring
Mutual Support
KNOWLEDGE
SKILLS
ATTITUDES
PATIENT CARE TEAM

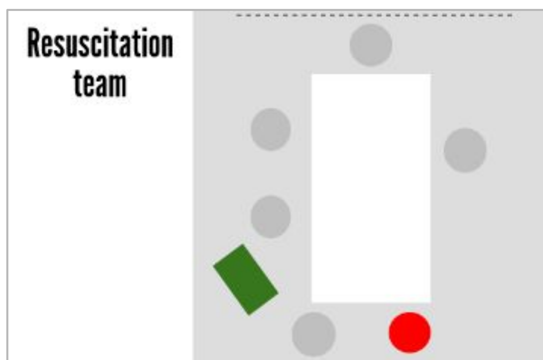
2 CHALLENGE RULE
Information conflict regarding patient safety

DESC Script
*Tool for personal conflict**
Describe situation
Express your concern
Suggest an alternative
Consensus statement

CUS STATEMENT
I'm concerned
I'm uncomfortable
This is a safety issue

COLLABORATION
Working toward a common mission

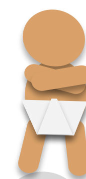
CRISIS RESOURCE MANAGEMENT: CRM and the Shared Mental Model:



CRM (established by the airline industry) is based upon team leadership and defining clear roles for team members.
Closed loop communication when used by all team members reduces errors and improves safety through:

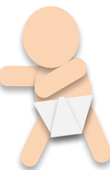
- Addressing team members by name when assigning tasks.
- Giving confirmation when tasks are acknowledged or completed.

A shared mental model allows a team to anticipate the plan for patient care and what equipment or medications might be needed.



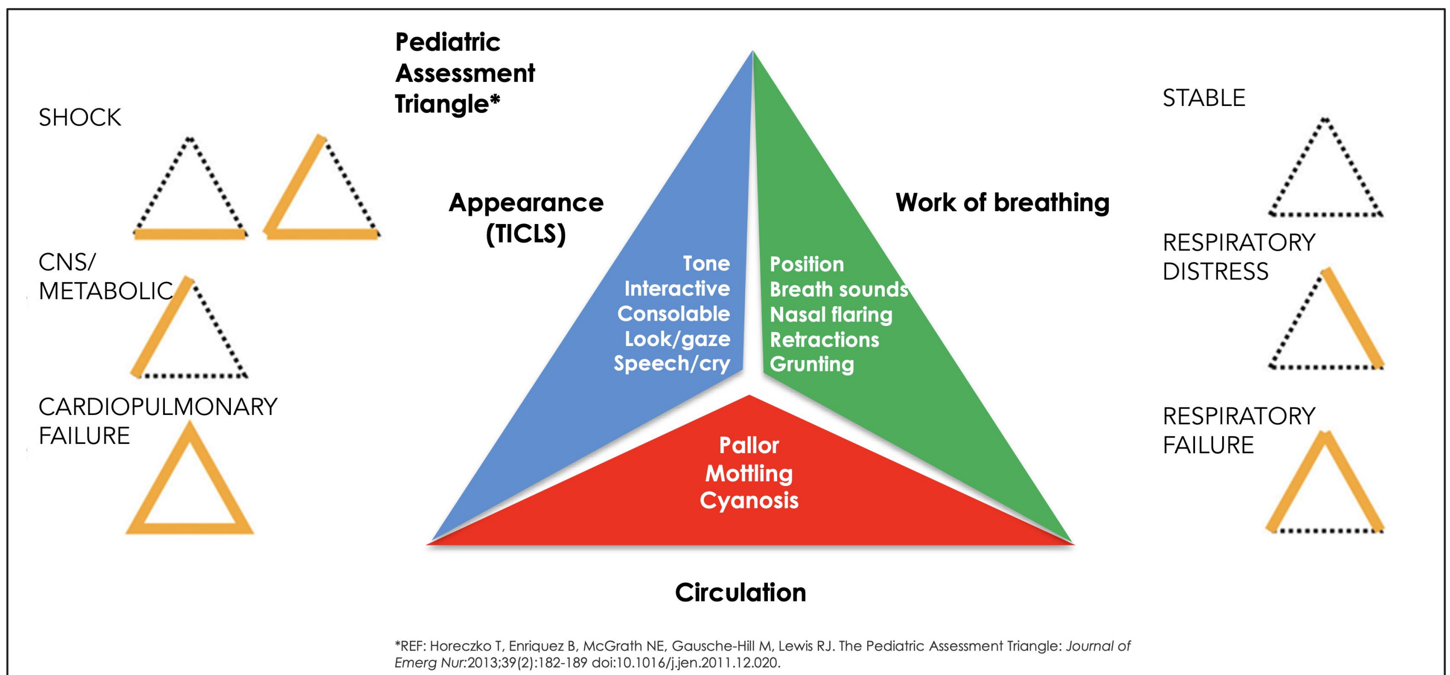
Pediatric Vital Signs/Weight by Age

Age	Weight (kg)	Pulse	Resp	Systolic BP*
Newborn	3	100-180	30-60	60-70
6 mos	7	100-160	30-60	70-80
1 yr	10	100-140	24-40	72-107
2	12	80-130	24-40	74-110
3	15	80-130	24-40	76-113
4	16	80-120	22-34	78-115
5	18	80-120	22-34	80-116
6	20	70-110	18-30	82-117
8	25	70-110	18-30	86-120
10	35	60-100	16-24	90-123
12-15+	40-55	60-100	16-24	90-135

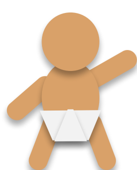


*BP in children is a late and unreliable indicator of shock

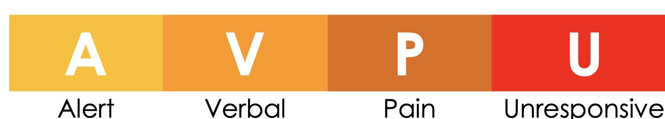
Using the Pediatric Assessment Triangle (PAT)



*REF: Horeczko T, Enriquez B, McGrath NE, Gausche-Hill M, Lewis RJ. The Pediatric Assessment Triangle: *Journal of Emerg Nur*.2013;39(2):182-189 doi:10.1016/j.jen.2011.12.020.



Pediatric Mental Status Assessment: response to stimuli



Family-centered care:

- Obtain appropriate history from family member (SAMPLE).
- Address family concerns and update on care.
- Manage the expectations of those who receive care in the ED and use communication methods that minimize the potential for stress, conflict, and misunderstanding [Assess via their communication to prep family for intubation and then for transfer, Patient Centered Communication (EM Milestone ICS1) Level 3:].

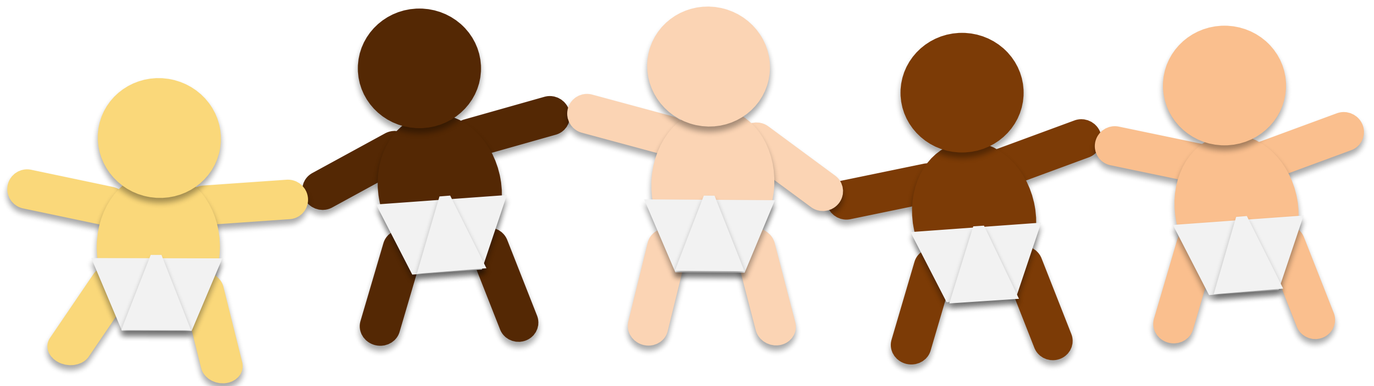
Medical knowledge:

- Verbalize the initial management of an acutely ill pediatric patient (ABC's).
- Verbalize first line diagnostic tests of child with suspected physical abuse.
- Demonstrate handoff of care at the end of the case .
- Integrate hospital support services into a management strategy for a problematic stabilization situation [Trainee should request transfer early, Emergency Stabilization (EM milestone PC1) Level 4], Performs rapid sequence intubation in patients using airway adjuncts Employs appropriate methods of mechanical ventilation based on specific patient physiology [Airway Management (EM milestone PC10) Level 3/Pediatric ACGME intubation procedure requirement].

Thank you for participating! We would love to hear your feedback:

Participant Survey:

Or simply click this link for the participant's survey.



Thank you for participating! We would love to hear your feedback!

We recommend printing the Participant Survey and completing the Facilitator Survey at the end of each session.

Facilitator Survey:

Or simply click this link for the facilitator's survey.

Posted: Dec 2021
Authors: Sofia Athanasopoulou, MD, Ilene Claudius MD, Maybelle Kou MD, Marc Auerbach MD, Amanda Price MD, Elizabeth Sanseau MD