

Pediatric Case Studies

Why does this cause anxiety?



Possible causes...



- Anger because of lack of adult supervision? (i.e. near drowning, burns)
- Insecure due to lack of life experience?
- Relating to issue because of own family? (have kids that are in same age group)
- In small communities, you may know the kids.

Case Study #1

Scene:

Single family home, family had been having outdoor BBQ. Multiple adults at scene, extremely emotional. Medics having difficulty obtaining history. Patient is 3 y.o. Hispanic male appears in mild distress, crying but not speaking. Lots of adults yelling at scene, parents finally identified but give conflicting reports of whereabouts of child during onset of symptoms.

Case Study #1

History:

Mother reports child had eaten lunch approximately 1 hour prior to onset of symptoms. Child had consumed Doritos Chips and chicken wings. After eating, child was seen playing on swings and "running around" backyard area in no distress. (Father states child had just eaten chicken before onset of symptoms and started coughing immediately and then vomited). Child was found by Aunt, vomiting, crying and saying his "throat hurt".

Case Study #1

3 y.o. 16 kg male patient
No respiratory distress noted, well nourished, good eye contact.
Sitting in patio chair.

Assessment -

- | | |
|------------------------------|---------------------------|
| • PERRL | • CAP refill <3 |
| • RR 48, crying, lungs clear | • Pulses strong, regular |
| • BP 98/60 | • Abdomen soft |
| • HR 150 strong regular | • Skins – pink, warm, dry |

Case Study #1

During transport, patient remained stable, no change. Calmed down.

On arrival at hospital, patient vomited orange/red tinged products.

Chicken bone stuck? ED physician ordered STAT x-ray – medic invited to look at results.

Fact Stranger than Fiction

Patient swallowed a wood screw. The screw was tearing the esophagus. He was stabilized and transported via Mercy Air to Children's for surgical removal.



Case Study #2

Medics respond to private home for a 15 year old female found unresponsive by mother.

Unknown downtime. Mother states she came home from work approximately 3 hours after patient came home from school, found patient lying in bed, incontinent of urine, emesis found on pillow, eyes open to stimuli but no verbal response.

Mother reports patients only medical history is of juvenile diabetes, onset at age 9.

Case Study #2

•Assessment -

- HR 130
- BP 100/60
- RR 30, deep, labored, lungs clear, "fruity" breath noted
- Weight 42kg

- PERRL
- Skins pale, poor turgor, cool, clammy
- Cap Refill >3 seconds
- FSBG "high"

Patient was diagnosed with DKA, however she had underlying undiagnosed condition of anorexia. Mother reported that she didn't feel patient was "too thin". Patient was treated for DKA, then admitted for outpatient psychiatric care.

Did her diagnosis add to her problems with body image?

What about her mothers thoughts?

Did she want control over something in her life? DM vs. food?



DKA

- S/S?
- Polydipsia
- Polyphagia
- Polyuria

Case Study #3

There is a female paramedic on this call, who is suspicious. In the back of the rig, she further uncovers the patients abdomen.

Case Study #3

Medics respond to call of 14 year old Hispanic female, vomiting, diarrhea and abdominal pain. BLS dispatch. On arrival, patient is found in bathroom, complaining of severe abdominal pain and diarrhea. Patient weighs approximately 95 kg.

Case Study #3

Assessment –

- PERRL
- HR 100
- BP 112/60
- RR 24
- O2 saturation 100%
- Abdomen firm/tender
- Cap refill >3 seconds
- Lung Sounds Clear

Abdominal assessment reveals:

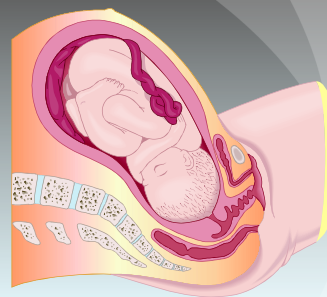


Linea nigra is noted

Patient denies being pregnant, can't remember last period saying she is under stress at school. Reports that she "drank a lot" of Milk of Magnesia because she was gaining weight. Patient finally allows medic to examine pelvic region, patient delivers in ambulance bay. Tells medic that her uncle has been sexually abusing her and that her parents are aware. Parents are outside ambulance, patient fearful and refusing to see them.

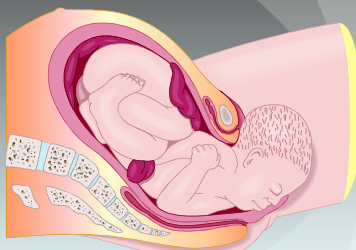
Three Stages of Labor

- First Stage: Begins with contractions



Three Stages of Labor

- Second Stage: Begins when the cervix is fully dilated and ends when infant is born



Three Stages of Labor

- Third Stage: Begins with birth of the infant and ends with the delivery of the placenta



Assessment of newborn

- Time of delivery
- Vital Signs
 - Respirations 30-60
 - Heart rate 100-180
 - Systolic BP 60-90 mmHg
 - Temp 36.7° - 37.8° C (98° - 100° F)

Assessment of the newborn

- Color
 - Central vs peripheral cyanosis
 - Mucosal membranes
- End organ perfusion
 - Central pulses vs peripheral pulses
 - Capillary refill

APGAR Scoring

	Score 0	Score 1	Score 2
Appearance			
Pulse	No pulse	<100/min.	>100/min.
Grimace			
Activity			
Respirations	No respirations	Weak, slow	Strong cry

APGAR

- 7 - 10
 - Normal Infant
 - Suction oropharynx
 - Keep warm

APGAR

- 4 - 6
 - Moderate asphyxia
 - Suction oropharynx
 - Keep warm
 - Oxygenate
 - If 5 minute score < 7, repeat every 5 minutes for 20 minutes

APGAR

- 0 - 3
 - Asphyxia neonatorum
 - Resuscitate aggressively

APGAR

- Scores can be misleading
 - Do not work well with pre-term infants
 - Primarily measure brainstem function

Treatment

- Control Temperature
 - All newborns have difficulty with cold
 - Dry infant
 - Wrap in warm, dry blanket
 - Aluminum foil wrap
 - Well - insulated warm water containers
 - Do NOT use chemical hot packs

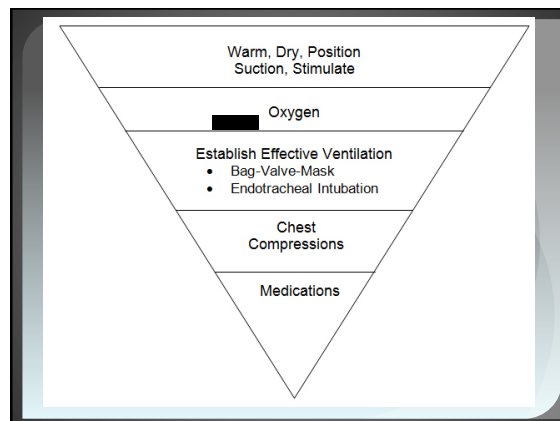
Treatment

- Position
 - On back - slight Trendelenburg
 - 1-inch thick towel under shoulders
 - Avoid neck under, overextension
 - If secretions heavy, place on left side

Treatment

- Tactile Stimulation (optional)
 - Flicking soles of feet
 - Stroking back

Neonatal resuscitation



Neonatal resuscitation

- Evaluate respirations
- If breathing without assistance but chest/abdomen have blue skin tones provide blow-by oxygen
- If spontaneous check HR

Neonatal resuscitation

- If none or minimal respirations, initiate PPV via BVM
- If depressed 2/2 drugs, give Narcan (0.2mg/kg IV, IO, IM, SQ, ET)
- Consider intubation

Neonatal resuscitation

- Evaluate HR
- If >100 move on in assessment
- If <100, initiate PPV via BVM
- After starting PPV via BVM
- If HR >100 and color pink, can stop and observe
- If HR 60-100, continue ventilation and intubate

Neonatal resuscitation

- PPV, chest compressions, HR below 80 after 30 seconds, need to initiate medications
- Epinephrine
- 0.01-0.03 mg/kg IV, IO or ET of 1:10,000
- If unsuccessful ET, can increase to 0.1mg/kg of 1:1,000 ET

- Scene safety
Patient rights
CPS

Medics radio to MICN, MD brought into rig. Security and social worker outside to get parents out of area. Police brought to ED. CPS notified. Patient d/c to foster family with healthy baby boy.

Case Study #4

Medic respond to private home 22 month old female, hot water burn. Patient's mother was working as a caregiver and was taking her 3 children with her while providing "care" to an elderly couple. Patient pulled boiling water with ravioli noodles down on her. Patient is found in moderate distress, screaming in pain.

Assessment:

PERRL

RR 36, lungs clear, screaming

Pulses 130, regular

Past medical history: Mother denies any health related issues.

Rapid transport to burn center, IO placed in route. Short ETA, medicated with MS for pain.

Case Study #4

Every year, hundreds of children suffer pull down burn injuries. What can we do to prevent these injuries? Who do we teach and when do we teach this information?

Children have delicate skin.

Hot Water Causes Third Degree Burns...

In 1 second at 156 degrees

In 2 seconds at 149 degrees

In 5 seconds at 140 degrees

In 15 seconds at 133 degrees

Water Boils at 212 degrees



Progressive Nature of a Burn Injury



Admission



24 hrs. later

Progressive Nature of a Burn Injury



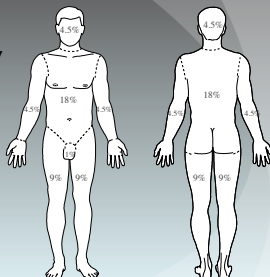
Admission



72 Hrs later

Calculate the Burn Size

- Rule of Nines
- For calculating percentage of body burned
- Universal & Quick
- Adjusted for the pediatric patient



Calculate the Burn Size

- Rule of Palm
- Patient's Palm
- = 1% TBSA



Case Study #5

Medics called to 6 year old female, choking.

On arrival, CPR in progress by patients father who is a physician. Mother reports patient was in church, had been chewing on her rosary beads which broke.

Patient was initially choking, then stopped choking. All attempts to dislodge bead were futile. Onset approximately 8 minutes.

Case Study #5

Assessment:

Pupils equal, round, sluggish
Unresponsive, apneic

HR: 28, sinus bradycardia

skins: pale, nails cyanotic

RSI, no air movement. Attempt to visualize object with forceps, nothing visualized. Scoop and haul, CPR continues. Patient worked in ED, Pediatric team on arrival, patient pronounced after 70 minute downtime.



How often do we see babies chewing on key rings? Do we stop and say anything to the parent? What about older siblings who have hazards in their rooms? Are we reaching out to kids in elementary and middle school warning them to be careful? What about the high risk kids in continuation schools who may be pregnant? This event was completely preventable and tragic.

Case Study #6

Medics respond to a private home to find a 3 year old male, who started vomiting while eating lunch.

Mother reports that he had been playing with his sister just prior and had no problems.

Onset of symptoms while he was eating, unable to keep anything down. Patient points to chest hurting, in mild distress. Speaking in short sentences.

Case Study #6

Assessment:

PERRL

weight: 17 kg

HR 110 sinus rhythm

BP 95/55

RR 22, lungs clear, saturations 100%

Medic downgraded to BLS level. Medic was going to let mother drive him but patient said it "hurt to swallow" making medic suspicious. Transport uneventful.

Discovered that patient already had "lunch". Older (4 year old) sister had "fed" him hot dog (plastic). Object was stuck near sternal notch so patient couldn't "swallow" anything else. Under conscious sedation, object removed by gastroenterologist. We need to make sure that all toys are age appropriate and if there are multiple ages, played with under adult supervision.



Case Study #7

Medics respond to Middle School dance to find 13 year old, pulseless, apneic. CPR not initiated. Downtime approximately 7 minutes before medic arrival/treatment.

Assessment:

Pupils, fixed, dilated

weight: 52kg

ECG – ventricular fibrillation

Pulseless, apneic

Skins – pale, warm

FSBG 90

Case Study #7

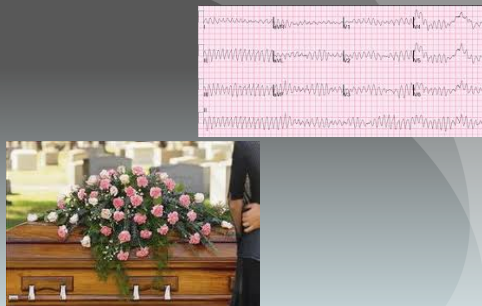
Parents contacted, deny any past medical history, no signs of alcohol or drug abuse. Patient flown to Children's Hospital, passing closest facility. No change in status during transportation.

Patient expired.

Toxicology reports were negative.

Autopsy negative.

Believed that patient had undiagnosed congenital cardiac disorder causing refractory lethal v-fib.



AED was at school, was not brought out. Could this have helped?

Case Study #8

Medics respond to private suburban home where 6 year old male has received multiple rattlesnake bites. Patient sat down in back yard, didn't see pair of rattlesnakes. Was struck on back, on arms when turned to get up and then on lower leg when standing. Patient c/o severe pain.

Assessment:

PERRL

weight: 23kg

HR 110, sinus

BP 100/70

RR 30, lungs clear, saturation 100%

Case Study #8

Rapid transport, wounds marked, IO started on unaffected leg.

Crofab given in ED. Back wound was dry bite, envenomation to both forearms, right leg.

Stabilized. Survived. No serum sickness. No skin grafting required. (Patient told doctor will not have reptiles as pets)



There's usually a story behind the bite.

Case Study #9

Medics respond to call of 11 year old male polydrug OD, suicide attempt.

Tylenol, alcohol, ativan, and Prozac.

Mother at scene. Patient states he took pills with alcohol approximately 45 minutes prior. Mother states she had just filled prescriptions.

Past Medical History: Mother states patient has been being bullied at school, he is short, stocky, wears glasses. This is first attempt. Has not said he wanted to die. No past medical history.

Case Study #9

Assessment:

PERRL, sluggish

weight: 40kg

HR 60
hot, dry

skins: dark pink,

BP 90/50
seconds

cap refill <3

RR 14, lungs clear, saturations 98%

•Rapid transport. IV initiated. O2 via NC.



Patient in critical condition. Bad combination of medications. Was given gastric lavage, mucomist, charcoal via NG tube. Placed on hemodialysis. Survived. Admitted to psychiatric care once healthy.

Case Study #10

Parents bring in 28 month old male to station with burns on bilateral hands and arms. Tell medics he "walked into a burning couch".

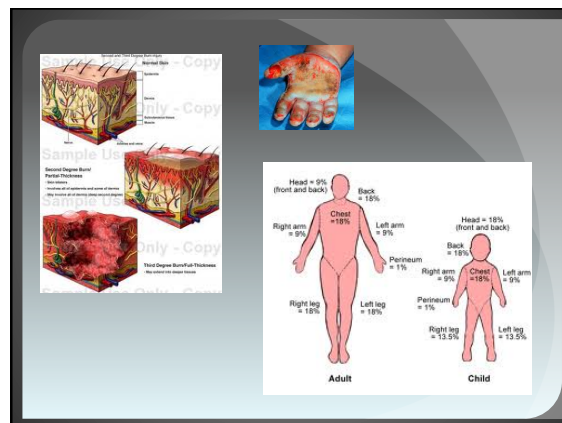
Parents report that they were burning trash on their property, including old furniture. Patient has suffered degloving injury. No evidence of burns in nares.

Receiving RN notes there is no evidence of soot in nares, has patient "blow" his nose, clear. His nylon shirt isn't burned or scorched.

Case Study #10

Assessment:

PERRL weight: 13kg
 HR 110, sinus
 RR 30, screaming lungs clear, saturations 100%
 IO placed, NS started in route. Morphine for pain. O2 via NC.
 Sheriff contacted. CPS contacted. Patient is transported via air to burn center.



Glasgow Coma Scale for Pediatric patients

How do I know if that 4 month old is oriented?

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

- **Adjustment to age**
- During the first 6 months
- The best verbal response is normally a cry, though some infants make vocal responses during this period. Normal verbal score expected is 2.
- The best motor response is usually flexion. Normal motor score expected is 3.

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

- **Adjustment to age**
- 6 to 12 months
- The normal infant makes noises : normal verbal score expected is 3.
- The infant will usually locate pain but not obeys commands : normal motor score expected is 4.

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

- **Adjustment to age**
- 12 months to 2 years
- Recognizable words are expected: Normal verbal score expected is 4.
- The infant will usually locate pain but not obeys commands : normal motor score expected is 4.

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

- **Adjustment to age**
- 2 years to 5 years
- Recognizable words are expected : normal verbal score expected is 4.
- The infant will usually obeys commands : normal motor score expected is 5.
- After 5 years
- Orientation is defined as awareness of being in hospital : normal verbal score expected is

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

Normal aggregate score

- 0-6 months: 9
- > 6 - 12 months:11
- > 1 - 2 years :12
- >2 - 5 years:13
- > 5 years: 14

GSC for peds Modified scales

- Best results for 2 and under
- Modified for pre-verbal patients by James 1985, and others
- Recently studied and validated by Holmes, Palchek, Mac Farlane and Kupperman, September 2005, in Academy of Emergency Medicine

GSC for peds: Modified scale

Eye Opening	Best Verbal	Best Motor Response
4-Spontaneous	5-Coos/Babbles	6-Spontaneous
3-To voice	4-Irritable cry	5-Localizes Pain
2-To pain	3-Cries to pain	4-Withdraws
1-None	2- Moans/grunts	3-Flexes
	1-None	2-Extends
		1-None

Verbal Scoring

Nonverbal Child	Verbal Child's Best Verbal Response	Score
smiles, oriented to sound, follows objects, interacts	oriented and converses	5
consolable when crying and interacts inappropriately	disoriented and converses	4
inconsistently consolable and moans; makes vocal sounds	inappropriate words	3
inconsolable, irritable and restless; cries	incomprehensible sounds	2
no response	no response	1

Problems adapting adult scale to Peds Adelaide Pediatric Coma Scale-1982

- **References**
- Simpson D, Reilly P. Paediatric Coma Scale. *Lancet* 1982;2:450.
- Reilly P, Simpson D and al. Assessing the conscious level in infants and young children : a paediatric version of the Glasgow Coma Scale. *Child's Nerv Syst* 1988;4:30-3.

Credits:

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Pediatric Emergency Medicine, 2nd edition: Strange, Ahrens,
Lelyveld, Schafermeyer. Pages 560-563

YouTube (kids video's)

Dr. Bush, Loma Linda University Medical Center