EMS Medicine Live

Welcome

April 2016
EMS Medicine Live

• Vision
  – Community & Academic
    EMS Physician Education
      • Information Sharing
      • Board Preparation
  – Group involvement
    • Meet and see our peers
    • Involve your unique experiences and skills
EMS Medicine Live

• Zoom
  – During presentation
    • Everyone will be muted
    • Chat questions to EMS Medicine Live to be answered either during or at the end of the presentation
    • Raise hand virtually in chat window
EMS Medicine Live

- **Zoom**
  - Recording

- Questions at the end
  - Unmute yourself to ask a question or
  - Message Knutsen if you have a question and I’ll ask for questions in order.
EMS Medicine Live

Today’s Speaker
Daniel O’Donnell, MD
• Wayne State Medical School
• Emergency Medicine, Indiana University
• EMS Fellowship, Indiana University

• Division Chief and EMS Fellowship Director
• Chief Medical Director
  Indianapolis EMS, Fire, and SWAT
• Medical Specialist, Indiana Task Force 1
Pediatric MCIs
“Little Kids with and the adults with problems?

Dan O’Donnell, MD
Fellowship Director
IUSOM EMS Fellowship
Associate Clinical Professor of Emergency Medicine

INDIANA UNIVERSITY
School of Medicine
Department of Emergency Medicine
Lets set the stage

- Dispatched for MVA with entrapment
- First arriving units note multiple critical victims
- 4 Critical pediatric patients
  - 1 child in arrest
  - 1 child in periarrest
  - 2 with severe multisystem trauma
Objectives

• Give a gross overview of Pediatric Mass Casualty Incidents
• Discuss guidelines on triage of pediatric MCIs
• Point out limitations/challenges in handling pediatric MCIs
  – Prehospital
  – In hospital
• Discuss some “local” solutions to these problems
Continue the case

- First arriving transporting unit immediately given critical pediatric patient
  - Immediately transported
- 2nd arriving unit given a child in traumatic arrest
  - Triaged black
    - Police officer continued care in the back of the ambulance
  - Transported another critical child in the ambulance
- Final 2 patients transported from the scene
The hospital

• 1 Pediatric Level One Trauma Center
• Happened at 0700
  – ED relatively slow
  – ORs just preparing for cases
  – All surgeons/anesthesiologist, residents, RNs, scrub techs in house
• Handled well
When does that ever happen?
MCI/Pediatric mci

- Mass Casualty = When the number of patients exceeds the capacity of the available resources for the given scenario
- Pediatric MCIs
  - Rare events
  - Primary pediatric patients
  - Mix of adults and children
Doesn’t take much

• We have trauma centers everywhere
  – Level 1
  – Level 2
  – Level 3
  – ALL READY TO HANDLE ANY (ADULT) THAT COMES THROUGH THE DOOR

• Pediatric Level 1s are limited
  – How many Pediatric surgeons are in your community?
  – How many Peds ICU beds do you have?
Pediatrics is tough

- Children require significantly different resources during a large-scale event
- The way we triage children is just a little different
- Children are more susceptible to environmental or biological hazards
- Only 11.3% of EMS agencies reported having pediatric-specific MCI plans.
- **We have to have something ready**
Pediatric triage

- JumpSTART
- SALT
JumpSTART Pediatric MCI Triage®

Able to walk?
- YES: MINOR → Secondary Triage*
- NO:
  - Breathing?
    - NO: Position upper airway → BREATHING → IMMEDIATE
    - YES: Palpable pulse?
      - NO: DECEASED
      - YES: 5 rescue breaths
        - APNEIC: DECEASED
        - BREATHING: IMMEDIATE
  - Respiratory Rate
    - <15 OR >45: IMMEDIATE
    - 15-45:
      - Palpable Pulse?
        - NO: IMMEDIATE
        - YES: AVPU
          - P: IMMEDIATE
          - A, V, O, or P: DELAYED
Breathing

- **Breathing?**
  - If NO, go to Position upper airway.
  - If YES, go to 5 rescue breaths.

- **Position upper airway**
  - If NO, go to APNEIC.
  - If YES, go to BREATHING and IMMEDIATE.

- **APNEIC**
  - If NO, go to DECEASED.
  - If YES, go to Palpable pulse?

- **Palpable pulse?**
  - If NO, go to DECEASED.
  - If YES, go to 5 rescue breaths.

- **5 rescue breaths**
  - If APNEIC, go to DECEASED.
  - If BREATHING, go to IMMEDIATE.

- **IMMEDIATE**
Respiratory Rate

![Diagram of Respiratory Rate with values 15-45 and conditions <15 OR >45 leading to an immediate action.]
Mental status exam
JumpStart

- Can still be done
- Must give rescue breaths
- Look at normal RR for kids
- Must realize difference in checking mental status
  - Not just “follow commands”
SALT mass casualty triage

Step 1 – Sort: Global sorting
- Walk
  - Assess 3rd
- Wave/Purposeful movement
  - Assess 2nd
- Still/Obvious life Threat
  - Assess 1st

Step 2 – Assess: Individual assessment

LSI:
- Control major hemorrhage
- Open airway (if child consider 2 rescue breaths)
- Chest decompression
- Auto injector antidotes

Breathing
- Yes
- No
  - Dead

Likely to survive given current resources
- Yes
  - Immediate
- No
  - Expectant

Obey commands or makes purposeful movements?
- Has peripheral pulse?
- Not in respiratory distress?
- Major hemorrhage is controlled?

All
- Yes
  - Minor injuries only?
    - Yes
      - Minimal
    - No
      - Delayed
- No
  - Any No
    - Immediate
SALT

- No distinction between pediatrics and adults
- A little more area for “interpretation”
  - “likely to survive current injuries?”
  - CAN THAT BE APPLIED TO CHILDREN?
JumpStart vs. SALT

- Jones and colleagues
- Randomized medics to SALT vs. JumpSTART for a virtual MCI
- Groups similar:
  - In accuracy (66%)
  - Overtriage rate (22-23%)
  - Undertriage rate (10-11%)
  - JUMP START faster (by 10 sec)
- Conclusion: About equal
So What Now

• Systems are about equal
• These were paramedics who underwent simulated scenario
• How well is your system trained in either of these two triage modalities?
• Is there a magic bullet?
Wait a minute

DEVELOPMENT OF A PEDIATRIC MASS CASUALTY TRIAGE ALGORITHM VALIDATION TOOL

J. Joelle Donofrio, DO, Amy H. Kaji, MD, PhD, Ilene A. Claudius, MD, Todd P. Chang, MD, MAcM, Genevieve Santillanes, Mark X. Cicero, MD, Saranya Srinivasan, MD, Alexis Perez-Rogers, BS, Marianne Gausche-Hill, MD
COT

- Criteria Outcomes Tool (COT)
- Validation tool for testing pediatric MCI algorithms
  - Specifically looks at outcomes and resource management for the red, yellow, green triage categories
- Look for validation in the future
Now that we have triage figured out

- Other limitations
- Provider limitations
  - Knowledge
  - Equipment
  - Attitudes
- Hospital limitations
  - Equipment
  - Attitudes
Provider issues

- Knowledge
  - Rarely “drill” standard MCI triage programs
  - Even more rare to train on Peds MCI

- Koziel and colleges (PEC 2015)
  - Simulated peds MCI
  - Lack of familiarity with peds
  - Challenges with triaging peds patients with special needs
  - Emotions play a part
Providers

• Equipment
  – Peds MCI trailer?
  – Peds equipment on trucks
    ▪ Tourniquets
    ▪ IV starts
    ▪ Medications
  – Tagging system
    ▪ Are these a bunch of toys out there
    ▪ Do they fit
Attitudes

• Highly stressful environment
• Tendency to overtriage
  – Just because “they were kids”
• Difficulty with triaging a child black
• Huge impact on your system
  – Emotionally
  – PTSD
How to address these issues

• Evaluate/Assess
  – Start with a gauge of your system's’ readiness?
    ▪ PEDS MCI Scenario

• Take lessons to your command structure
  ▪ EMS leadership
  ▪ Fire leadership
  ▪ Training chief
  ▪ Logistics chief
    ➢ Supplies

• Train
  – Lessons learned
  – Quick trainings

• Have a planned support system in place for the providers
  – Can be partners, managers, act…
Hospital issues

- What is the typical response from a hospital?
  - 1. We can take everybody (Children’s hospital)
  - 2. We don’t want anybody (Non Children’s hospital)
The “we take everybody approach”

- Can quickly overwhelm the pediatric center
- Pediatric surgeons are a finite resource
- Pediatric EDs are generally smaller
- Pediatric ICU beds are scarce
  - What if this happens during a bad RSV season?
“The don’t send anybody approach”

• Most Emergency Departments are staffed with EMERGENCY PHYSICIANS
• ED Docs are trained to care for pediatric patients
• May not have the “upstairs” resources but have the 1st floor resources
  – Or should
So what’s a medical director to do?

• You have to be the mediator

• Your Public Safety system looks to you for guidance
  – EMS leadership
  – Command leadership
  – EMS providers

• Your hospitals look to you for guidance
  – You are the “EMS guy/girl”
  – They don’t know how the streets operate
    ▪ NIMS???
Start the conversation

- With local hospital partners
- With EMS/Fire agency
- With both
Pediatric Hospital Conversation

• Pediatric trauma center(s) must have a REALISTIC idea of their capabilities
  – “Just send them all” Not good enough

• Engage everyone
  – ED leadership
  – Trauma surgery
  – Executive suite
  – Lawyers
Non pediatric hospitals

• What are their capabilities?
• What do they prefer
• Engage everyone
  – ED
  – Trauma surgery/General surgery
  – Pediatrics
    ▪ Peds ICU
• Have the discussion about stabilization and potential transfer
Non Trauma Centers

• Can they take the “walking” wounded
• Non life threatening pediatric patients
• Can hold for potential transfer
EMS conversation

• Ensure training on Pediatric MCI triage is up to date
  – Probably need table top
  – Remember there is a tendency to OVERTRIAGE

• Make those who will be in charge of transportation aware of hospital capabilities
  – Often will fall to the default → Send kids to children’s hospital
Bring them together

- This is a great time to link up EMS and Hospital systems
- Neutral site
- The Medical Director should be the one leading the conversation
  - Speak for the patients not the hospital system
- Chance to get everyone on the same page
- Review with regularity
  - Quick debrief after incident
What happened in Indy?

- Our Pediatric Level One Trauma facility set parameters
  - Vetted by all levels
  - Preferentially transport the most severely injured to the children’s hospital
  - Preferentially transport younger children to children’s hospital
- Hospital partners developed policy/procedure
  - Determined number of patients they can accept
  - Working on transfer procedures
- Push information to EMS agencies
  - Waiting on the “tabletop”.

IU Department of Emergency Medicine
Summary

- Pediatric MCIs happen more than we think
- Unique challenges/differences in Pediatric MCI management
  - Triage
  - Provider knowledge/comfort
- “Send them to the pediatric hospital” not the best answer
- EMS med directors should take the lead in development of a system that works for you
Questions?

:40 Notes: CHILD HAS TONGUE STUCK ON POLE JUST LIKE CHRISTMAS STORY
EMS Medicine Live

2016 EML Schedule

May
Darren Braude, U New Mexico,
Extraglottic Airway or Medication assistant airway management

June
Mary Mercer, UCSF-SFHG, Mass Gathering Medicine

July
Open

August
Craig Cooley, UT San Antonio, Board Review Topic

September
Chad Nesbit, Penn State, Mechanical CPR Devices

November
Jeff Lubin, Penn State, Prehospital Hemostasis

December
Open

Last Tuesday of the month at 1 PM Eastern with flexibility for presenter