On-Field Emergency Care For Athletic Trainers

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Objective

- Review Emergency Action Plans (EAP)
- Discuss current trends in spinal immobilization
- Identify injuries with high risk of mortality and morbidity
  - Cardiac
  - Respiratory
  - Fractures and dislocations
- And anything else you want!

NATA Position Statements

- Emergency Action Plans 2002
- Lightning Safety 2013
- Sudden Death 2012
- Type I Diabetes 2007
- Cervical Spine Injured Athletes 2009
  - Update due 2015
- Exertional Heat Illness 2002

NATA Position Statements

- These should be your “go to” resources
- Evidence based when there is literature
- Best practice when there is consensus

Emergency Action Plans

Not like this!

Have a Family EAP Also
Emergency Action Plans

- Cover all venues
- Review and practice at least yearly
- Include local EMS in planning and practice
- Make sure school administration and legal are part of the process
- Review and debrief every activation
  - What went right or wrong?
  - What could we do better?

We Do This in the OR

- Should be a part of every pregame warm up
- Get the athletic training staffs and EMS together
  - If visitors don’t have an AT, include a coach
  - If EMS not on site, how will they be called and access
- Introduce yourselves and describe capabilities and expectations
- Decide how EMS will be summoned to the field
  - Closest hospital

Get Control of the Scene

- Use the officials and coaches to move players away from the injured
- Keep extraneous people off the field
  - Good Samaritans are a problem
- Find the parents if they are on site and the player is a minor
- Make sure EMS has access and knows your location
Don't just assume you can do things

You want everything to go smoothly

How Do You Interact with EMS?
- This will be the difference between a good and bad outcome
- It starts with YOU
- Try to have the same crew at scheduled events
  - Establish a relationship with a “Go To” person at the EMS agency
  - It needs to be somebody that has some clout
- Emergencies by definition are unscheduled
  - It may be a crap shoot on who shows up

Levels of Evidence
- All of our interventions should be based upon scholarly work
- We must recognize the limitations involved
- There are different ways to measure the evidence
- We also must realize that there may be a lack of evidence

Evidence Based Practice
- Class I
  - Always good
- Class IIa
  - Probably good
- Class IIb
  - May be good
- Class III
  - You did what? You poor dumb b________

Evidence Based Practice
- Level A
  - Significant amount of evidence
- Level B
  - Some evidence
- Level C
  - No real evidence but general consensus
  - Much of what we talk about today falls in this category
Spinal Immobilization

- Where have we been?
- Where are we now?
- Where are we going?

Immobilization Past

- Athletic Training
  - Leave all equipment on
  - Little pre-planning
  - Little interaction with EMS
  - Focus was on the helmet
  - Facemask removal
  - BOLT CUTTERS!

- EMS
  - Take the helmet off
  - All helmets are the same
  - No understanding of AT
  - EMS was having its own growing pains

Immobilization Past

- Nobody thought about the helmet and shoulder pads as a whole
- Nobody thought about what happens once the player arrives at the hospital
- Nobody thought to work together and there were significant conflicts

Immobilization Present

- Athletic Training
  - NATA position statement
  - Remove the facemask
  - Remove all equipment in a few cases
    - Facemask stuck
    - Helmet broken or ill-fitting
  - Work together with EMS

- EMS
  - Greater recognition of AT
  - Helmets are different
  - Mostly concerned with airway management and CPR
  - Sports is not a high priority for many services
Immobilization Present
• We have made improvements based on evidence
• We have gone from never removing equipment to always removing the facemask
• We recognize there are some cases where all equipment should be removed
• We still haven’t addressed the issue that the equipment must come off sooner or later
• Who is best equipped to remove everything?

A new conflict
• Position statement from National Assoc. of EMS Physicians and ACS Comm. on Trauma 2013
• LSB commonly used but efficacy unproven
• LSB’s cause pain and pressure point injury
• Use of LSB should be judicious: Benefits must outweigh the risks

The New Conflict
• Appropriate patients for LSB immobilization
  • Blunt trauma and ALOC
  • Spine pain or tenderness
  • Neurologic complaints
  • Anatomic deformity of spine
  • High energy mechanism of injury with:
    • Intoxication
    • Inability to communicate
    • Distracting injury

The New Conflict
• Cervical collar and careful movement may be appropriate in other cases
• Call for improved education for medics
• Once in the DEM, get the patient off the LSB ASAP

So What’s the Problem?
• EMS in the past has immobilized patients based upon mechanism of injury alone
• Medics receive little education on neurologic exams related to trauma
• EMS has long been frustrated with having to immobilize patients that just fell down
• Many agencies have now discarded their LSB’s completely and will use a collar only
• This is not what the position statement said
Immobilization Future

- NATA has formed a new task force to update the spine injury position statement
- First meeting is in January 2015
- There is a growing sentiment that we should remove all equipment prior to transport
- This creates problems for the sole practitioner
- If you have concerns or input send me an e-mail
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What was good and bad about that video?

- It was short: 2011
- It was done in conjunction with EMS
- The facemask was already removed
- Technology has surpassed this
  - Quick release facemask clips
  - Rip Kord shoulder pads.

So Where Are We?

- The decision to immobilize must be made based upon symptoms and examination
- You have to reach an understanding with local EMS how you will handle these injuries
- Get team physicians and EMS medical directors involved and talking to each other
- Think about what you will do about the equipment
- Plan ahead—Poor Planning = Piss Poor Performance

Fractures and Dislocations

- These are much more common than spinal injuries
- Splinting fractures should be second nature to AT's
- Vacuum splints are probably the best method
- Make sure distal extremity is warm and has a pulse
- Pain management is very important
  - This means giving an opioid

Fractures and Dislocations

- Do we straighten angulated fractures or do we immobilize as found?
  - Anatomical position is always the best
  - Pain meds before reduction helps
- Do we reduce dislocations or splint and transport?
  - Early reduction reduces pain and loss of function
  - Requires approval of team physician
  - Never reduce an elbow or hip
  - Pain meds can help but if you are quick, it may not be necessary
Medical Conditions
- Diabetes
- Asthma
- Pre-existing cardiac conditions
- Absence of a paired organ
- Death due to trauma

Medical Conditions
- We don’t think of these things on a regular basis
- Conditions that ruled out athletics previously are now considered routine
  - Exercise and athletics are now considered a plus
- Diabetes and asthma are probably the most common

Medical Conditions
- 1971 Player killed in an MVC
- 1983 GM killed in an MVC
- 1991 Coach died from brain cancer
- 1993 Player with Non-Hodgkin’s Lymphoma
- 2011 Player missed most of season with concussion
- 2013 Player with thyroid cancer
- 2014 Player has a stroke
- 2014 Player out for the year with pulmonary embolus

Medical Conditions
- Type I Diabetes
  - Insulin dependent, body does not produce insulin
  - Diagnosed early
  - Management requires education
- Type II Diabetes
  - Later in life, most common
  - Body does not produce enough insulin or it doesn’t react to the insulin produced
  - Often related to obesity

So You Have an Athlete with Diabetes?
- Work closely with the athlete, parents, and MD
- Biggest problem is getting the athlete to accept and adapt to the disease
  - Management is rocky early in the disease
  - Education and experience are needed
- You must be able to help check glucose levels
- Know what to do if glucose is to high or low

Asthma
- Narrowing of bronchial airways from inflammation
- Can be induced by outside allergens or exercise
- Produces wheezing sound upon auscultation
  - Listen to lung sounds and know how to recognize a problem
- Be educated on the athletes meds and have them available
  - Be able to assist with inhalers
Oxygen

- Different size tanks
  - E and D are the most portable
- Different methods of administration
  - Nasal cannula
  - Simple face mask
  - Bag mask ventilation
- Clinical situation dictates availability
  - Dyspnea, cardiac, low saturations

Oxygen Tanks

- D tank
  - 360 liters at 2000 psi
  - 10 l/min will exhaust the tank in 36 minutes
  - If less than 2000, divide by 0.2
- E tank
  - 625 liters at 2000 psi
  - 10 l/min will exhaust the tank in 62.5 minutes
  - If less than 2000, divide by 0.3

Difficulty Breathing

- Respiratory effort is inadequate
  - Look at the chest
  - Good expansion versus rocking of the sternum
- These require a conduit to the lungs
  - Either a mask or airway device
- Pocket mask FiO2 16-40%
  - FiO2 about 50% with oxygen
- Bag valve mask 8-15l/min FiO2 80-100%
- Endotracheal tube-- FiO2 set on ventilator

Airway Adjuncts

- Needed when active airway devices are used
- Oropharyngeal airway
  - No gag reflex
  - Measure from ear to corner of mouth
- Nasopharyngeal airway
  - Measure from ear to nares
  - Diameter related to size of small finger
  - Use lubrication

Nasal Airway
**Airway Devices**
- Endotracheal intubation
- Gold standard for securing an airway
- Needs extensive practice but not training
  - A monkey can be trained to intubate but will fail without practice
  - You can’t teach the monkey WHEN to intubate

**Airway Management**
- Managing an airway means recognizing a problem exists and then fixing it
- It does not necessarily mean putting in an endotracheal tube
- There are many ways to manage an airway
  - ETI
  - Supraglottic airways
    - King and LMA
  - BVM

**Endotracheal Intubation**
- Gold standard in the hospital
- EMS has been under fire for poor results
  - Mostly related to frequency
- There are other ways to insure your patient is ventilated and oxygenated
- BVM and alternative airways are always the fall back methods

**Airway Management**
- Oxygenation (Saturation)
  - Measured by pulse oximetry
  - Measure of HGB that is saturated

- Ventilation
  - Measure of gas exchange in the lungs
  - Electronic wave form capnography
  - Beyond the scope of AT

**Pulse Oximetry**
Pulse Oximetry
- Gives you a measure of saturation
- Gives you a pulse rate
- Indirect measure of perfusion
  - Poor reading may indicate low BP
- Negative impact by cold fingers and perhaps nail polish
- If I can have only one monitor, it would be POX

Sudden Cardiac Arrest
- Usually related to unrecognized structural problem
  - Idiopathic cardiomyopathy
  - Idiopathic hypertrophic sub aortic stenosis
- Best means for prevention is a thorough physical exam and history
- Retrospective exam usually finds episodes of unreported near syncope or dizziness

Sudden Cardiac Arrest
- The best defense is good offense
  - Gen. Claire Chennault
- Quality CPR
  - Rate > 100 and sufficient depth
- Early Defibrillation
  - AED

Lightning
- There are many apps for bad weather
- You must have procedures in place for sudden weather problems and rapid evacuation
- Remember to use reverse triage for lightning strikes
  - Start CPR

Heat Stroke
- Cold immersion for 20 minutes recommended
- This can delay EMS transport so make sure they know how important this is
Active Shooter

- We must recognize this even though we would probably rather ignore it
- Take an active role in the institutions plan and drills
- This is a problem we can not ignore
- Columbine, Sandy Hook, VA Tech, et. Al
- First reported shooting was in West Chester 1850

Escape
- Run like hell
- Have a rally point for your people
- Come out with your hands up

Evade
- Lock the doors
- Be quiet

Engage
- Fight
- Last resort

The police are not interested in helping the wounded
- They will make entry and find the shooter
- The goal is elimination of the threat
- Columbine was an awakening

Tactical medics will only concern themselves with the police
- Care of the wounded will only occur when the scene is declared safe
- The AT is a first responder that could start triage

No venue is safe
- Hospitals are also targets
- Western Psych Hospital in Pittsburgh
- Police response was text book
- Shooter committed "suicide by cop"
Summary

- Review your EAP tomorrow
- Emergency care sets athletic trainers apart from other rehab professions
- Athletic trainers are skilled at multi-tasking
- This makes you very valuable
- Visualize your plan in action in order to find a weakness

Summary

- Always have a back up plan
  - Have a back up to the back up
- Failing to plan is the worst thing we can do
  - Emergencies can happen in front of many people
  - You have to perform well
- You don’t want to be on the evening news

Questions?

"Is this a training? Buck ing? Antenna? It's hopeless! We're never... Oh, thank God. Here comes an athletic trainer!"