

## On-Field Emergency Care For Athletic Trainers

Francis Feld MS, MEd, CRNA, LAT, ATC, NRP  
 Staff CRNA UPMC Passavant Hospital  
 Adjunct Faculty Pitt Dept. of Nurse Anesthesia  
 Prehospital RN Ross West View and Penn State EMS  
 Supervisory Nurse Specialist PA-1 DMAT  
 Supervisor, Allegheny County Hazmat Medical Team

## 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?

## Emergency Action Plans Include a Time Out



## We Do This in the OR



## Time Out

- 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



## Scene Control

- 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



## 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



## 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?

## Immobilization Present

- YOU ARE!



## Immobilization Present 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
  - francis.feld@verizon.net

## 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



## 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 The Penguin's Perspective

- 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

- 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

## Diabetes

- 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 too 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 athlete's 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 D Tank



## Oxygen Tanks

- D tank
  - 360 liters at 2000 psi
  - 10 l/m will exhaust the tank in 36 minutes
  - If less than 2000, divide by 0.2
- E tank
  - 625 liters at 2000 psi
  - 10 l/m 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 FiO<sub>2</sub> 16-40%
  - FiO<sub>2</sub> about 50% with oxygen
- Bag valve mask 8-15l/m FiO<sub>2</sub> 80-100%
- Endotracheal tube-- FiO<sub>2</sub> 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



## BVM E and C Finger Placement



## 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



## 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

## Active Shooter

- 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

## Active Shooter



## Active Shooter

- 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

## Police are Serious



## Active Shooter

- 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?

