EMERGENCY PREPAREDNESS IN FOOTBALL

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- Smart Workshop!

EMERGENCY PREPAREDNESS IN FOOTBALL

PLAN THE PLAN
WORK THE PLAN
GENE CHIZIK 2009

EMERGENCY PREPAREDNESS IN FOOTBALL

IT'S NOT IF… IT'S WHEN AND HOW BAD !
UNKNOWN CAVEMAN

EMERGENCY PREPAREDNESS IN FOOTBALL

"Winning can be defined as the science of being totally prepared"
COACH GEORGE ALLEN

SIDELINE PREPAREDNESS DEFINITION

AMSSM CONSENSUS STATEMENT
SIDELINE PREPAREDNESS IS THE IDENTIFICATION OF AND PLANNING FOR MEDICAL SERVCES TO PROMOTE THE SAFETY OF THE ATHLETE, TO LIMIT INJURY, AND TO PROVIDE MEDICAL CARE AT THE SITE OF PRACTICE OR COMPETITION

GOALS OF PREPAREDNESS

AMSSM CONSENSUS STATEMENT

THE SAFETY AND ON-SITE MEDICAL CARE OF THE ATHLETE IS THE GOAL OF EMERGENCY PREPAREDNESS

GOALS OF PREPAREDNESS

AMSSM CONSENSUS STATEMENT

THE SPORTS MEDICINE TEAM SHOULD DEVELOP AN INTEGRATEDMEDICAL CARE SYSTEM THAT INCLUDES:

*PRE-SEASON PLANNING

*GAME DAY PLANNING

*POST SEASON EVALUATION

EMERGENCY ACTION PLANS

KLEINKNECHT VS. GETTSBURG COLLEGE 1993

*COLLEGE HAS LEGAL DUTY TO ATHLETES TO PROVIDE " PROMPT AND ADEQUATE EMERGENCY SERVICES WHILE ENGAGED IN A SCHOOL SPONSORED ACTIVITY"

*FAILURE TO HAVE AN EAP CAN BE CONSIDERED NEGLIGENCE

MEDICAL-LEGAL RESPONSIBILITY FOR EAP

ALL PERSONNEL INVOLVED WITH THE ORGANIZATION AND SPONSORSHIP OF ATHLETIC ACTIVITIES SHARE A LEGAL DUTY TO 1.) DEVELOP,IMPLEMENT, AND EVALUATE AN EMERGERCY PLAN FOR ALL SPONSORED ATHLETIC EVENTS, AND 2.) TO PROVIDE FOR THE EMERGENCY CARE OF AN INJURED PERSON

EMERGENCY PERSONNEL: ROLES

*IMMEDIATE CARE OF THE ATHLETE

*EMERGENCY EQUIPMENT RETRIEVAL

*ACTIVATION OF EMERGENCY MEDICAL SYSTEM

*DIRECTION OF EMS TO SCENE

*RETRIEVAL OF INSURANCE / ALLERGY / MEDICAL INFORMATION

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EMERGENCY PERSONNEL: PREDETERMINATION OF ROLES

- WHO IS IN CHARGE?
- WHO WILL BE GIVING COMMANDS?
- WHO WILL CONTROL THE HEAD IN A CERVICAL INJURY?
- WHAT ARE THE HAND SIGNALS?

EMERGENCY PERSONNEL: PREDETERMINATION OF ROLES

- *WHAT IF MORE THAN ONE ATHLETE / PERSON IS INJURED?
- *WHAT IS THE PLAN FOR GETTING PROPER PERSONNEL TO THE ER AND BACK? (WHO GOES?, WHO STAYS?, WHO IS LEFT BEHIND?)

EMERGENCY PERSONNEL: PREDETERMINATION OF ROLES

- WHO RETRIEVES INSURANCE /ALLERGY/MEDICAL/CONSENT TO TREAT INFORMATION PRIOR TO TRANSPORT?
- *WHO LOCATES / CONTACTS PARENTS? (AT STADIUM?, AT HOME? , CELL PHONE NUMBERS?)

EMERGENCY PERSONNEL: SPORTS MEDICINE STAFF

*DOCUMENTED SPECIALIZED IN-SERVICES TO PRACTICE EMERGENCY SKILLS (SPINE BOARDING, ATYPICAL SPINE BOARDING, FACE MASK REMOVAL)
*ADVANCED TRAINING ; CPR, EMT,ACLS, PROTOCOLS (IV,HEAT,CARDIAC ARREST)
*PERFECT PRACTICE MAKES PERFECT

GAME DAY PLANNING / EXECUTION

LOCATE EMS, MEDICAL STAFF, ADMINISTRATION, AND VISITING TEAM PRIOR TO GAME AND FAMILIARIZE EVERYONE WITH EMERGENCY PROTOCOLS, ANSWER QUESTIONS

EMERGENCY COMMUNICATION

PRIOR TO THE GAME ESTABLISH CLEAR METHOD OF COMMUNICATION BETWEEN EMS,MEDICAL STAFF, ADMINISTRATION, RECEIVING EMERGENCY CARE FACILITY AND VISITING TEAM (HAND SIGNALS,EMS ACTIVATION, AMBULANCE TRANSPORTATION)

Appropriate EAP activation begins with appropriate assessment and management of the injured athlete.

- After completion of the Primary Survey, determine if the athlete-patient is unstable and must be transported immediately or is stable and can be assessed further
- If spinal injury is suspected, ensure respiratory effort is adequate since high cervical spinal cord injuries will impact the phrenic nerve and may necessitate positive pressure ventilation

Patient assessment means conducting a problem-oriented evaluation of your patient and establishing priorities of care based on existing and potential threats to human life.

The initial assessment is designed to identify and immediately correct life-threatening patient conditions of the Airway, Breathing, and Circulation (ABCs).

The initial assessment should take less than one minute, unless you have to intervene with life-saving measures.

The Isolated-Injury Trauma Patient

- No significant mechanism of injury
- Shows no signs of systemic involvement
- Does not require an extensive history
- Does not require a comprehensive physical exam

Mechanism of Injury

- Mechanism of injury is the combined strength, direction, and nature of forces that injured your patient.

Initial Assessment Steps

- Form a general impression.
- Life Threats
- Stabilize the cervical spine.
- Assess the baseline mental status.
- AVPU
- Assess the airway.
- Assess breathing.
- Assess circulation.
- Determine priority.

The General Impression

- The general impression is the initial, intuitive evaluation of the patient to determine the general clinical status and priority for transport.
- Life Threats
- Arterial Bleeding, etc.

Mental Status

- Alert
- Are they orientated to date, time, place, surroundings
- Conscious confused
- A&O x 1,2,3,4
- Verbal
- Painful stimuli
- Unresponsive

Airway Assessment

- If the patient is responsive and can speak clearly, assume the airway is patent.
- If the patient is unconscious, the airway may be obstructed

Don't Forget the Jaw Thrust

- The jaw thrust maneuver was achieved by placing one hand on each side of the lower mandible wrapping the fingers around the angle of the mandible.
- To maintain an open mouth position, as the mandible was jutted forward the thumbs were used to slightly open the mouth.

Breathing

- Rate
- Quality – Depth
- Degree of Distress – Oxygen?
- Adequate –Yes – No, BVM.
- Presence of bilateral breath sounds

- Symmetry of chest movement
- Observe for accessory muscle use.
- Expose the chest wall and palpate for:
- Structural integrity
- Tenderness
- Crepitus

- The phrenic nerve is a nerve that originates in the neck (C3-C5) and passes down between the lung and heart to reach the diaphragm. It is important for breathing, as it passes motor Information to the diaphragm and receives sensory information from it.There are two phrenic nerves, a left and a right one.

Breathing Assessment

- Shortness of breath
- Retractions
- Asymmetric chest wall movement
- Accessory muscle use
- Cyanosis
- Audible sounds
- Abnormal rate or pattern
- Nasal flaring

Paralysis of the diaphragm

- Paralysis of the diaphragm produces a paradoxical movement.The affected side of the diaphragm moves upwards during inspiration, and downwards during expiration.
- A unilateral diaphragmatic paralysis is usually asymptomatic, and is most often an incidental finding on x-ray. If both sides are paralysed, the patient may experience poor exercise tolerance, orthopnoea and fatigue.

- Management of diaphragmatic paralysis is two-fold. Firstly, the underlying cause must be identified and treated (if possible).The second part of treatment deals with symptomatic relief.This is usually via non-invasive ventilation, such as a CPAP (continuous positive airway pressure) machine.
- If needed assist ventilations with BVM

Circulation Assessment

- The circulation assessment consists of evaluating the pulse
- and skin and controlling hemorrhage.
- Rate – Fast, Slow, Absent
- Rhythm – regular or irregular
- Character- strong, weak, thread

- Control any bleeding – direct pressure, tourniquets, hemostatic agents.

Assess the skin

CTM
- Color – Pale, Red, Blue
- Temperature – Cool, cold, warm, hot
- Moisture – dry, mosit

CRT

Capillary refill
- May provide information regarding patient's cardiovascular status.
- Refill time greater than 2 seconds is caused by shunting and capillary closure to peripheral capillary beds and suggests inadequate circulation and impaired cardiovascular function

Neurogenic Shock

- Temporary loss of autonomic function of the cord at the level of injury
- results from cervical or high thoracic injury
- Presentation
- Flaccid paralysis distal to injury site
- Loss of autonomic function
- hypotension
- vasodilatation
- loss of bladder and bowel control
- loss of thermoregulation
- warm, pink, dry below injury site
- bradycardia

Rapid Trauma Assessment

- Not a detailed physical exam
- Fast, systematic assessment for other life-threatening injuries
- DCAP = BTLS
- Deformity
- Contusion
- Abrasion
- Penetration
- Burns
- Tenderness
- Lacerations
- Swelling

Past Medical History

- General state of health
- Childhood and adult diseases
- Psychiatric illnesses
- Accidents and injuries
- Surgeries and hospitalizations

Baseline Vital Signs

- Blood pressure
- Pulse
- Respiration
- Temperature
- Pupils
- Orthostatic vitals
- (if possibly hypovolemic)
- Pulse oximetry
- Capnography
- Cardiac monitoring
- Blood glucose determination

Ongoing Assessment

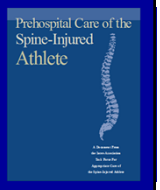
- Mental status
- Airway patency
- Breathing rate and quality
- Pulse rate and quality
- Skin condition
- On-going neurological
- Assessment
- Transport priorities
- Vital signs
- Focused assessment
- Effects of interventions
- Management plans

Summary

- Scene Size-up
- The Initial Assessment
- The Focused History and Physical Exam
- The Detailed Physical Exam
- The Ongoing Assessment

Appropriate Care of the Spine Injured Athlete

- Updated from 1998 document
- Traumatic spinal cord injury (SCI)
  - High rates of morbidity and mortality



Goal

Sports medicine team
- Delivery of the highest possible quality health care to the athlete

- Work together as an efficient unit in order to accomplish its goals

- Team concept even more critical
- Severe consequences
- Share information and train together

Appropriate Care of the Spine-Injured Athlete

- Athlete-patient with a suspected SCI
  - Presents challenges for medical providers
  - Equipment-intensive sports such as football, ice hockey and lacrosse
- Equipment worn for protective purposes creates a treatment barrier

In an emergency situation, the team concept is essential!

Appropriate Care of the Spine-Injured Athlete

Terminology

- Spinal immobilization???
- Spinal motion restriction (SMR)
  - Restrict motion of c-spine area
    - Cervical collars
    - Patient driven
    - Spine board and other devices
  - Premise of SMR is to prevent further harm to a spinal cord or column injury

Why Use SMR?

- Case reports of exacerbation of injuries from standard actions or procedures
  - Harrop et al. 2001
  - Powell et al. 1995
- Amount of motion and forces required to create secondary neurologic injury unknown

When to Use SMR

- NEXUS criteria or Canadian C-Spine rules
- Key factors for SMR
  - Blunt trauma or high energy MOI
  - Altered level of consciousness or any of the following
    - Drug or alcohol intoxication
    - Inability to communicate
    - Distracting injury
  - Mid-line spinal pain and/or tenderness
  - Focal neurologic signs and /or symptoms
    - Numbness and/or motor weakness
  - Anatomic deformity of the spine

National Association of EMS Physicians and American College of Surgeons Committee on Trauma. EMS Spinal Precautions and the Use of the Long Backboard. Prehosp Emerg Care.

Cervical Collars – Summary

- Cervical collars do not effectively reduce motion in an unstable cervical spine
  - Horodyski et al. J Emerg Med, 2011
  - Miller CP et al. Spine, 2010
  - Bearden et al. J Neurosurgery, 2007
  - Del Rossi et al. The Spine Journal, 2004

Ready to Move Athlete-Patient

- Who's rules?
- What technique?
- What equipment will be used?
- Where will the athlete- patient be transported?

SMR: What is the Evidence?

- Hand placement for stabilization
- Spine boarding techniques
  - Supine
  - Prone
- Centering on the spine board
- Other SMR devices
- Sports equipment removal

ATTENTION!!!

- Shift in prehospital care methods
  - Some locations in the US
  - No longer using spine boards for maintaining spinal precautions
  - EMS Management of Patients with Potential Spinal Injury

  Approved by the ACEP Board of Directors January 2015
- Too many patients are unnecessarily placed on spine boards for transportation to the appropriate medical facility
  - Systemic harm to patient

Harm to the Patient???

- "Immobilization" with the long spine board can contribute to negative outcomes to the patient
  - Pulmonary function
  - Occipital and sacral pressures
  - Intracranial pressures
  - Pain
  - Tissue breakdown

- Lerner et al, J Natl Assoc EMS Physicians. 1998
- Bauer et al, Ann Emerg Med. 1988
- Sheerin and de Frein, J Emerg Nurs
- Cordell et al, Ann Emerg Med. 1995

Supine Patient

- Options
  - Log roll (traditional)
  - Lift-and-slide (straddle lift or multi-person lift)
  - Mechanical device (Scoop stretcher, motorized spine board)
- Influencing factors
  - Patient size
  - Personnel

  Number

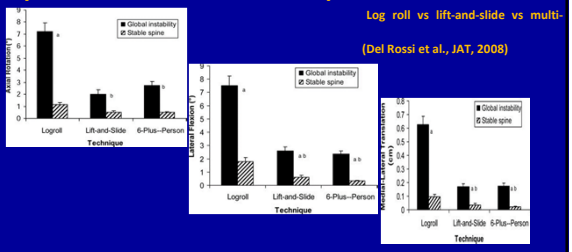
  Relative strength

  Preparedness (practice)

Supine Patient - Spine Board Transfer Techniques

Log roll vs lift-and-slide vs multi-

(Del Rossi et al., JAT, 2008)

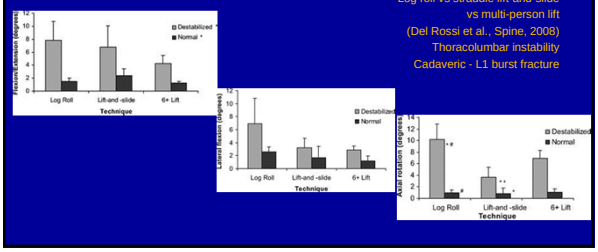


Supine Patient - Spine Board Transfer Techniques

- Mechanical Transfer Devices
- Log roll vs scoop stretcher
  - (Krell et al., Prehosp Emerg Care, 2006)
- 31 healthy subjects
- Electromagnetic sensors
  - Forehead, C3 (surface), T12 (surface)
- Results
- 6-8 degrees greater motion in all three planes during LR compared to SS

Supine Patient - Spine Board Transfer Techniques

Log roll vs straddle lift-and-slide vs multi-person lift
(Del Rossi et al., Spine, 2008)
Thoracolumbar instability
Cadaveric - L1 burst fracture



Eliminating the Log Roll

When using log roll techniques for transfers
Sum of the largest displacements during the total sequence
- 2 times for flexion/extension
- 2.6 times for axial rotation
- 2.8 times for lateral bending
  - Prasarn et al. 2012 Spine Journal

No log roll
Sum of the greatest displacements for the complete sequence was significantly decreased
Prasarn et al. 2012 Journal of Neurosurgery

Overall cumulative motion to the unstable spine can be reduced by approximately 50% if the log roll is avoided and alternative measures are employed
Conrad et al. 2012

Supine – Obese/Large Patient Spine Board Transfer Techniques

- Personnel or strength concerns
  - 2001 NATA Consensus Statement suggested adding more personnel to 8 person > 8
  - Log roll might be only other option
- Equipment concerns
  - Scoop stretchers might be too narrow or too short to accommodate large patients.

Supine Patient – Equipment-laden Spine Board Transfer Techniques

- NATA Position Statement
  - LS or multi-person lift with equipment on
  - Rolling over equipment may induce greater motion (2001)
- Equipment fit
  - Youth helmets may not fit securely as would be needed to be able to safely transfer patient
  - May need to consider removing helmet before transferring patient

Supine Patient – Summary

- Multi-person lift generates less motion than LR
- Scoop stretcher
  - As safe as LS
- Consider multi-person and scoop stretcher as alternative to LR (supine patient)

Supine Patient – Planning Ahead

- Using the Mulit-Person Spine Board Technique Still Recommended: Evaluating EMS Protocols
  » Horodyski et al, presented at NATA 2015
- Six SMR techniques
  - 2 person lift to gurney
  - Log roll onto spine board, lift to gurney, log roll off to gurney
  - Scoop stretcher, lift onto gurney, scoop stretcher off onto gurney

Supine Patient – Planning Ahead

- Using the Multi-Person Spine Board Technique Still Recommended: Evaluating EMS Protocols
  » Horodyski et al, presented at NATA 2015
- Six SMR techniques
  - Multi-person lift onto spine board, lift board to gurney, 8 person lift off board onto gurney
  - Multi-person lift, strap to spine board, lift and secure to gurney
  - Multi-person lift to gurney, secure to gurney

Prone Patient

- Options
- Log roll pull vs. log roll push
- Log roll 1x vs. log roll 2x

- Influencing factors
- History (convention)
- Personnel
  - Availability of spine board
  - Preparedness (practice)

Prone Patient – Spine Board Transfer Techniques

- Push vs Pull Cadaveric study
- Thoracolumbar instability
- – Conrad et al., J Spinal Cord Med, 2012

- If an athlete is prone and not breathing, you must log roll them to establish an airway
- With shoulder pads on, place their under arm at
- their side to roll
- Without shoulder pads, extend their under arm to
- support the head during the roll
- The appropriateness of repositioning the head into a spin-neutral position should be assessed on an individual basis with resistance and pain as a guide

Prone Patient – Equipment-laden

- Equipment fit
  - Hockey

  Mihalik et al. 2011

- Might this be a good time to initiate removal of equipment?
  - An opportunity to improve patient

Prone Patient – Summary

- LR – only option; but how many times should you move the patient?

- Decide in advance how the situation should be handled based on circumstances.

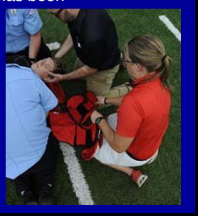
- With every transfer there is the potential or opportunity for motion to occur.

Vacuum Mattress

- Spinal motion restriction
  - Spine board is current gold-standard for prehospital spinal motion restriction
  - Full body vacuum mattress may provide good SMR
  - Pro and cons

Appropriate Care of the Spine Injured Athlete

A rigid cervical stabilization device should be applied to spine-injured athletes prior to transport with manual in-line stabilization until stabilization on a full-body immobilization device has been accomplished.



Effectiveness of Cervical Collars

- Application of a cervical collar caused increased separation at the injury site C1-C2 level

Ben-Galim et al. J Trauma, 2010

- Biomechanics of cervical restriction with collars

- Rigid collars create pivot points that shift the center of rotation lateral to the spine and contribute to the intervertebral motion

Lador et al. J Trauma, 2011

Cervical Collars – Summary

- Often cannot correctly apply cervical collars when the athlete is wearing equipment

- Time of application and impact to beginning critical life saving procedures

- "Why do we put cervical collars on conscious trauma patients?"

Benger J and Blackham J, Scand J Trauma Resuscitation Emerg Med, 2009

Appropriate Care of the Spine Injured Athlete

- Spine-injured athletes should be transferred to and transported on a rigid immobilization device

- Suspected spine injured athletes should be transported to the most appropriate medical facility

Guidelines for Appropriate Care of the Spine Injured Athlete

- *Any* athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists
- The athlete should not be moved unless absolutely essential to maintain airway, breathing and circulation
- If the athlete must be moved, they should be placed in a
- supine position while maintaining spinal immobilization
- When moving a suspected spine-injured athlete, the head
- and trunk should be moved as a unit

- Heightened suspicion of potentially catastrophic spine injury:
  - MOI
  - Unconscious or altered level of consciousness
  - Neurological complaints
  - and/or deficits
  - Significant midline spine pain
  - Obvious spinal column
  - deformity

Protective athletic equipment may be removed prior to transport to an emergency facility.
Equipment removal may be performed by at least 3 rescuers trained and experienced with equipment removal at the earliest possible time.
- if fewer than 3 people are present, equipment may be removed at the earliest possible time after enough trained individuals arrive

- FACILITATES:
  - Packing
  - Emergency
  - Department Physician Evaluation
  - Diagnostic Testing

- **On-Field Management of the Spine Injured**
- **Athlete**
  - Log Roll Technique
  - *-Person Lift (formally Lift and Slide Technique)
  - Helmet and Shoulder Pad removal

Nature of Illness

- To determine the nature of illness:
- Use bystanders, family members, or the patient.
- Use the scene to give clues to the patient's condition.
- Oxygen equipment in the home
- Medicine containers
- General appearance of environment
- Remember that the patient's illness may be very different from the chief complaint.