# Emergency Preparedness: Preparing for the Worst, Hoping for the Best!



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# Objectives

- Identify the knowledge and skills associated with the administrative and risk management aspects of planning for an emergent situation.
- Be able to design a basic emergency action plan and identify the time-sensitive intervals necessary when dealing with an emergent situation.
- Examine and discuss the appropriate trauma equipment needed on-site, or on-person, during an emergent situation.



You witness a football player at your high school gently collapse 2.5 hours into the 6<sup>th</sup> day of preseason in-between running plays.

Arriving on-scene, the athlete presents with dizziness, drowsiness, irrational behavior, confusion, irritability, emotional instability, rapid and thready pulse, and labored breathing.

You have established a patent airway, adequate breathing, and circulation.



As part of the differential diagnosis you decide you need to distinguish between-

- 1. Hyponatremia
- 2. Exertional heat stroke, and
- 3. Traumatic brain injury

#### Now What?





Athlete has now gone into respiratory arrest.





#### Athlete is now in cardiac arrest.







# Debrief

How would you have handled this situation?

# Are you prepared to a handle a situation of this magnitude?

Why not?



#### Why is event planning important?



 Most injuries occurring during athletics and physical activity are relatively minor; limb or life-threatening injuries can, and **DO**, occur without warning.





• Because of the relatively low incidence rate of catastrophic injuries, athletic and program personnel develop a false sense of security over time in the absence of such injuries.<sup>1-4</sup>





- However, injuries and illness can occur during any physical activity and at any level of participation.
- In fact, when catastrophic injuries and illnesses occur during sports and/or physical activity, it is considered a highly visible and emotionally charged event with substantial impact on the family, team, healthcare providers, and the community.<sup>5-8</sup>



# Who or what types of events are you/we planning for?



• Because emergencies, accidents, and even natural disasters are rarely predictable, having a rapid and controlled response will likely make the difference between an effective and an ineffective emergency response plan.<sup>9</sup>





# **Emergency Action Plan**

- Emergency response plans (ie., emergency action plans [EAPs]) are applicable to agencies of the government (eg., law enforcement, fire and rescue, and federal management teams).<sup>9</sup>
- However, EAPs are also directly applicable to sport and fitness activities due to the inherent possibility of an 'untoward event' that requires access to emergency medical services and first aid care.<sup>9</sup>



#### So why are EAPs important?



# **Importance of EAPs**

- EAPs provide organizations the ability to prevent, recognize, and provide intervention strategies such as-
  - Early defibrillation in the event of SCA.
  - Measurement of blood glucose during a diabetic emergency.
  - Assessment of core-body temperature and cold-water immersion in the event of exertional heat stroke.
  - Management of participants during a lightening storm.





# **Importance of EAPs**

The need for an EAP can be divided into two major categories-<sup>9</sup>
 (1) Professional need
 (2) Legal need





#### Importance of EAPs Professional Need





Governing bodies associated with athletic competition have stated that institutions and organizations must provide for access to emergency medical services if an emergency should occur during any aspect of athletic activity, including in-season and offseason activities.<sup>9</sup>



#### Importance of EAPs Professional Need

- The NCAA states- "Each scheduled practice or contest of an institution-sponsored intercollegiate athletics event, as well as out-of-season practices and skills sessions, should include an emergency plan."
- The National Federation of State High School Associations has recommended the same at the secondary school level.<sup>9</sup>



- It is well known that organizational medical personnel have a legal duty as reasonable and prudent professionals to ensure high-quality care of all participants.<sup>9</sup>
- At best, failure of medical personal to perform their duty will inevitably result in inefficient athlete care, whereas at worst, gross negligence and potential life-threatening ramifications for the injured athlete or organizational personnel are likely.



- Just as medical personal have standards of care, the EAP has been categorized as a written document that defines the standard of care required during an emergency situation.<sup>9</sup>
- One key indicator for the need for an emergency action plan is the concept of **foreseeability**.<sup>9</sup>





• The organization administrators and the members of the sports medicine team must question whether a particular emergency situation has a reasonable possibility of occurring during the sport(s) activity in question.<sup>9</sup>





• To provide appropriate care for athletes, one must be familiar with a large number of illnesses and conditions in order to properly guide the athlete, determine when emergency treatment is needed, and distinguish among similar signs and symptoms that may reflect a variety of potentially fatal circumstances.<sup>5</sup>





• For the patient to have the best possible outcome, correct and prompt emergency care is critical; delaying care until the ambulance arrives may result in permanent disability or death.<sup>5</sup>

– Video

• Therefore, organizations advocate training coaches in first aid, cardiopulmonary resuscitation (CPR), and automated external defibrillator (AED) use, so that they can provide treatment until a medical professional arrives.<sup>5</sup>



- Medicolegal interests can lead to questions about the qualifications of the personnel involved, the preparedness of the organization for handling these situations, and the actions taken by program personnel.<sup>9</sup>
- In the end, failure to have an emergency plan can be considered negligence.<sup>10</sup>



### Importance of EAPs Documentation

- EAPs also include the need for documentation including<sup>9</sup>-
  - Delineation of the person and/or group responsible for documenting the events of the emergency situation
  - Follow-up documentation on evaluation of response to emergency situation
  - Documentation of regular rehearsal of the emergency plan
  - Documentation of personnel training
  - Documentation of emergency equipment maintenance



#### Importance of EAPs Documentation

- It is prudent to invest organizational and institutional ownership in the emergency plan by involving administrators and sport coaches as well as sports medicine personnel in the planning and documentation process.<sup>9</sup>
- By documenting emergent events, if legal suits do occur there is specific accounts of what medical care was given, and also gives an organization room to improve patient outcomes by reviewing what was done correctly, and what could have been amended.



## So now that we know why we need an EAP, what details go into creating one?



- A sound emergency plan should be easily understood and establishes accountability for the management of emergencies (of all types).
- The following slides outline some of the features of emergency planning.



- 1. Every institution or organization that sponsors athletic activities (organized or recreational) should have a written and structured EAP.
  - The EAP should define the standard of care required during an emergency situation and should be approved by legal counsel.





2. The EAP should be developed and coordinated in consultation with local EMS personnel, school public safety officials, onsite emergency medical responders (eg., certified athletic trainers, nurses), school administrators, board members, and legal counsel.





- 3. The EAP should be specific to each individual athletic venue and encompass-
  - Emergency communication (activation of 9-1-1).
  - Personnel involved in carrying out the emergency care and associated training to provide said care.
  - Location of, access to, and appropriate training in the use of emergency equipment.
  - Transportation to appropriate emergency facilities
  - Notification of parents.



#### Sample Venue-Specific Emergency Protocol

\_University Sports Medicine Football Emergency Protocol

- 1. Call 911 or other emergency number consistent with organizational policies
- Instruct emergency medical services (EMS) personnel to "report to \_\_\_\_\_\_ and meet \_\_\_\_\_\_ at \_\_\_\_\_ as we have an injured student-athlete in need of emergency medical treatment."
   University Football Practice Complex: \_\_\_\_\_\_ Street entrance (gate across street from \_\_\_\_\_\_) cross street: \_\_\_\_\_ Street University Stadium: Gate \_\_\_\_\_\_ entrance off \_\_\_\_\_\_ Road
- 3. Provide necessary information to EMS personnel:
  - name, address, telephone number of caller
  - number of victims; condition of victims
  - first-aid treatment initiated
  - specific directions as needed to locate scene
  - other information as requested by dispatcher
- 4. Provide appropriate emergency care until arrival of EMS personnel: on arrival of EMS personnel, provide pertinent information (method of injury, vital signs, treatment rendered, medical history) and assist with emergency care as needed

#### Note:

- · sports medicine staff member should accompany student-athlete to hospital
- · notify other sports medicine staff immediately
- parents should be contacted by sports medicine staff
- inform coach(es) and administration
- obtain medical history and insurance information
- appropriate injury reports should be completed

#### Emergency Telephone Numbers

Hospital	
Emergency Department	
University Health Center	
Campus Police	

#### Emergency Signals

Physician: arm extended overhead with clenched first Paramedics: point to location in end zone by home locker room and wave onto field Spine board: arms held horizontally Stretcher: supinated hands in front of body or waist level Splints: hand to lower leg or thigh



4. The EAP should be reviewed and practiced at least annually with the emergency response team, while consulting physicians, coaches, school and institutional safety personnel, and administrators.





- 5. The EAP should incorporate the emergency care facilities to which the injured individual will be taken. Emergency receiving facilities should be notified in advance of scheduled events and contests.
- 6. Personnel from the emergency receiving facilities should be included in the development of the emergency plan for the institution or organization.



6. Targeted emergency medical responders or first aid providers should receive certified training in CPR, AED use, and basic first aid.







7. When planning for event such as sudden cardiac arrest (SCA), access to early defibrillation is essential and a target goal of less than 3-to-5 minutes from the time of collapse to the first shock is strongly recommended.





#### **Event Planning and Preparation** Time Sensitive Intervals During SCA

Events	Time Goals
Collapse to Activation of EMS	< 1 minute
Collapse to Initiation of CPR	< 1 minute
Collapse to Delivery of First AED shock	< 3 to 5 minutes
Collapse to Arrival of EMS Personnel	< 5 minutes*



# Why are SCA time sensitive intervals so important?



### **Event Planning and Preparation** Time Sensitive Intervals During SCA

- For most EMS systems, the interval between activating EMS-to-EMS arrival at the victim's side is usually MORE than 5 minutes (mean 6.1 minutes).
- In some areas, the interval from activating EMSto-EMS arrival may be 7-to-8 minutes or longer.



8. Review of equipment readiness by on-site event personnel for each athletic event is desirable.





- 9. The emergency plan should be reviewed and rehearsed annually, although more frequent review and rehearsal may be necessary.
- 10. The results of these reviews and rehearsals should be documented and should indicate whether the emergency plan was modified, with further documentation reflecting how the plan was changed.

#### Emergency Action Plan Checklist\*

Ι.

The following elements are recommended in the development of a comprehensive emergency action plan (EAP) for sudden cardiac arrest (SCA) in athletics. Actual requirements and implementation may vary depending on the location, school, or institution.

#### Development of an Emergency Action Plan

Establish a written EAP for each individual athletic venue.

- Coordinate the EAP with the local EMS agency, campus public safety officials, on-site first responders, administrators, athletic trainers, school nurses, and team and consulting physicians.
- Integrate the EAP into the local EMS response.
- Determine the venue-specific access to early defibrillation (<3 to 5 minutes from collapse to first shock recommended).</p>

#### II. Emergency Communication

- Establish an efficient communication system to activate EMS at each athletic venue.
- Establish a communication system to alert on-site responders to the emergency and its location.
- Post the EAP at every venue and near telephones, including the role of the first responder, a listing of emergency numbers, and street address and directions to guide the EMS personnel.

#### III. Emergency Personnel

- Designate an EAP coordinator.
- Identify who will be responsible and trained to respond to a SCA (likely first responders include athletic trainers, coaches, school nurses, and team physicians).
- Train targeted responders in CPR and AED use.
- Determine who is responsible for personnel training and establish a means of documentation.
- Identify the medical coordinator for on-site AED programs.

#### IV. Emergency Equipment

- Use on-site or centrally located AED(s) if the collapse-to-shock time interval for conventional EMS is estimated to be >5 minutes.
- Notify EMS dispatch centers and agencies of the specific type of AED and the exact location of the AED on school grounds.
- Acquire pocket mask or barrier-shield device for rescue breathing.
- Acquire AED supplies (scissors, razor, and towel), and consider an extra set of AED pads.
- Consider bag-valve masks, oxygen delivery systems, oral and nasopharyngeal airways, and advanced airways (eg, endotracheal tube, Combitube, or laryngeal mask airway).
- Consider emergency cardiac medications (eg, aspirin, nitroglycerin).
- Determine who is responsible for checking equipment readiness and how often and establish a means of documentation.



#### V. Emergency Transportation

- Determine transportation route for ambulances to enter and exit each venue.
- Facilitate access to SCA victim for arriving EMS personnel.
- Consider on-site ambulance coverage for high-risk events.
- Identify the receiving medical facility equipped in advanced cardiac care.
- Ensure that medical coverage is still provided at the athletic event if on-site medical staff accompany the athlete to the hospital.

#### VI. Practice and Review of Emergency Action Plan

- Rehearse the EAP at least annually with athletic trainers, athletic training students, team and consulting physicians, school nurses, coaches, campus public safety officials, and other targeted responders.
- Consider mock SCA scenarios.
- Establish an evaluation system for the EAP rehearsal, and modify the EAP if needed.

#### VII. Postevent Catastrophic Incident Guidelines

- Establish a contact list of individuals to be notified in case of a catastrophic event.
- Determine the procedures for release of information, aftercare services, and the postevent evaluation process.
- Identify local crisis services and counselors.
- Consider pre-established incident report forms to be completed by all responders and the method for system improvement.

\*EMS indicates emergency medical services; CPR, cardiopulmonary resuscitation; and AED, automated external defibrillator.





## So what supplies are needed for my first aid kit to be properly prepared for an emergency?



# First Aid Kit Design

• A properly-stocked first aid kit is an essential piece of equipment when an emergency situation arises whether at work, home, recreation, or during athletics<sup>14,15</sup> in order to provide care before the arrival of trained emergency medical personnel.





# First Aid Kit Design

• Commercial, prefabricated first aids kits offer quick and immediate access to a variety of supplies that are supposed to handle minor medical emergencies such as contusions, minor open wounds, minor musculoskeletal injuries (sprains and strains), and sudden illnesses.<sup>14-16</sup>





#### But is the construction of these first aid kits datadriven, or is it based on what a manufacturer wants you to buy?





### First Aid Kit Design Using the Evidence

 Identifying items to be placed in a first aid kit should be based on epidemiological evidence, but should also be modifiable based on the first aid kit's intended use and past experiences.





### First Aid Kit Design Epidemiological Data

- In the U.S., the most frequently diagnosed major disease categories based on emergency department physician's (ED) primary diagnosis are-<sup>17-20</sup>
  - Injuries and poisonings (25.2%)
  - Symptoms, signs, and ill-defined conditions (19.4%)
  - Diseases of the respiratory system (10.4%)



### First Aid Kit Design Epidemiological Data

- Conditions/pathologies/diagnoses falling under the major disease category of injuries and poisonings include-
  - Fractures
  - Sprains and strains
  - Intracranial (head) injury
  - Open wounds
  - Superficial injury
  - Contusions with intact skin surface
  - Foreign body
  - Burns
  - Trauma complications and unspecified injuries
  - Poisoning and toxic effects



### First Aid Kit Design Epidemiological Data

- The two most frequently reported primary diagnoses rendered by ED physicians were **contusions with intact skin** surface (4.25%) and **abdominal pain** (4.0%).<sup>18-19</sup>
- Also making the list of top 20 primary diagnoses rendered by ED physicians were-<sup>18-19</sup>
  - Fractures (excluding lower limbs) (2.2%)
  - Sprains and strains (excluding ankle and back) (2.2%)
  - Sprains and strains of the neck and back (2.1%)



## So all that data- now what?

 Once you begin to understand the different types of injuries and illnesses commonly encountered, you can now begin to construct a list of recommended items based on what would be required to provide minimal care in an emergency using the 2010 *International Consensus on First Aid Science with Treatment Recommendations*<sup>21</sup> and other scientific literature.



## So all that data- now what?

 General consensus finds that first aid kits do not need to contain every product used in an emergency, but rather should contain those that cannot be easily improvised (ie., sterile dressings), limit the spread of blood borne pathogen, or assist in stabilizing the patient until advanced medical care can be accessed.



### First Aid Kit Design Main Items Based on the Data

• Please see the attached document.



### First Aid Kit Design Other Items

- First aid kits-
  - May include items based on past personal experiences
  - Should be kept in a clean, waterproof container
  - Should be stored in logical place that is cool and dry<sup>14</sup>
  - May include health histories, list of allergies and current medication lists for the patients in your care
  - Should include emergency contact information



# Questions???



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