Asthma

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention and Screening:

1. One Athletic Trainer will: Evaluate Pre-Participation Physical Examination: with specific physician reference to Asthma and suitability to participate in sport activities requiring cardiovascular stress. Medication recommendations will be determined.
2. One Athletic Trainer will: Read and Evaluate Medical History as provided by the individual and the family to determine history of Asthma.
3. Notify coach of Asthmatic athletes and provide basic awareness and management information to the coach.
4. Determine baseline peak expiratory flow (if applicable).
5. The prescribing physician should educate the athlete about the use of asthma medications, with a follow up by the athletic trainer.
6. Have athlete provide physician prescribed medication accessible to the athletic trainers and to the coach. (Store in Athletic Training Room or other easily accessed location)

Recognition:

1. The athletic trainer and medical staff should be aware of the major asthma signs and symptoms.
2. Provide the athlete with his physician prescribed medication to relieve symptoms.
3. Use Pulse Oximeter (if available) to determine oxygen saturation levels.
4. A moist heat pack can be placed on the athlete’s chest to assist with respiratory muscle relaxation.
5. Use verbal coaching of breathing and relaxation techniques to improve oxygen availability and to decrease anxiety. (Use paper bag, “breath in through the nose: out through pursed lips, etc.)
6. Remove athlete from environment with instigating factors (smoke, allergens).
7. Use Peak Flow meter to determine Forced Expiratory Volume (FEV). Values should be compared to baseline peak flows and must be at least 80% before return to activity.
8. If available, supplemental oxygen may be administered to the athlete.

Advancing Symptoms:

1. Activate EMS if there is increasing discomfort and respiratory distress in spite of administration of prescribed medication.

Catastrophic Brain Injuries

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention:

1. The athletic trainer will coordinate educational sessions with athletes, parents and coaches to teach recognition of concussion (specific signs and symptoms), the serious nature of traumatic brain injuries in sport, and the importance of reporting concussions and not participating while symptomatic.
2. The athletic trainer will conduct educational sessions with coaches and players before the season begins.
3. The athletic trainer will annually conduct training sessions for staff and team physicians to practice spine boarding and general EAP review.
4. Provide information for teachers and school administrators regarding concussion management and treatment.

Helmet sports (football, lacrosse, hockey, baseball, softball):

1. Recertify helmets annually with a sport specific certifying body.
2. The athletic trainer will assist with and/or verify the proper fitting of helmets.
3. Dispose of helmets after 10 years.

Baseline Testing:

1. Provide baseline testing for contact sport participants and other sports as determined by the athletic training staff based on historical concussion data.
2. Neurocognitive testing (ImPACT, SCAT2, SAC, etc.) should be included in the concussion management protocol to provide a baseline test.
3. Proprioceptive testing (BESS) is an additional tool that may be used to assist in determining return to play status following a concussion.
4. Middle School testing is recommended annually or should be completed during the 7th grade.
5. High school testing is recommended during grades 9 and 11.
6. College/University testing is recommended during the freshman year.

Treatment:

1. Establish consciousness.
2. Activate EMS immediately if unconscious or if athlete exhibits rapidly degrading symptoms.
3. Spine board if necessary and continue with EAP for cervical spine injury if applicable.
4. If the athlete is conscious, administer proprioceptive and neurocognitive tests for brain injury.
5. Give oral and written instructions for home care to a responsible adult (parent, grandparent, etc.) to monitor symptoms over the next 12 hours, but most importantly over the first 2 hours.
6. If symptoms degrade, refer to physician; preference is to a physician trained in concussion management.
7. If symptoms degrade seriously, activate EMS.

Return to Play:

1. Return to play based on written progression after athlete is asymptomatic.
2. Recommend the use of neurocognitive testing and other techniques (postural stability testing, SAC, SCAT2, etc.) to assist in the safe return to activity.
3. Monitor symptom checklist daily before and after progressive physical activity
4. Reeducate the athlete on catastrophic brain injury before returning to play.

Cervical Spine Injuries

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention:

1. Athletic trainers must be aware of the severe spinal risk to the spinal cord, especially to the cervical vertebrae.
2. Athletes should be educated about the potential risk of cervical spine injury.
3. Educational videos exhibiting correct technique may be used as part of a risk management meeting for parents and athletes.
4. Parents and athletes should watch video “Heads up: Reducing the Risk of Head and Neck Injuries in Football” or other
5. Athletes cannot use the facemask as the initial point of contact.
6. Coaches must teach, demonstrate and have athletes practice proper shoulder/chest technique throughout the season to all players.
	1. Correct technique on a daily basis
	2. Use film/video sessions to demonstrate proper technique.
7. The athletic director and head football coach must ensure that all football helmets are recertified annually with a sport specific certifying body.
8. Corrosion-resistant hardware must be used in all helmets.
9. Have athletes recheck helmet hardware on a weekly basis, to insure adequate fit and mechanical function.
10. Athletic Trainers along with team physicians will become familiar with proper athletic equipment removal and will annually train for proper injury management.

Potential Conditions:

1. Unconsciousness or altered level of consciousness
2. Bilateral neurologic findings or complaints
3. Significant midline spine pain with or without palpation
4. Obvious spinal column deformity

Treatment:

1. Evaluate athlete: airway, breathing, and circulation.
2. Manual stabilization of the cervical spine in neutral position.
3. Realign head in neutral position if no pain
4. Activate EMS if cervical pain or other neurologic dysfunction occurs with realignment.
5. Expose airway by removing facemask.
6. Begin rescue breathing if necessary, using the safest technique
7. Immobilization of head.
8. Do not remove helmet and shoulder pads until moved to emergency medical facility unless:
9. The helmet is not properly fitted to prevent movement of the head
10. The equipment prevents neutral realignment of the cervical spine
11. The equipment prevents airway or chest access.
12. Immobilize spine with long spine board or wait for EMS arrival.

Management:

1. Provide a copy of the Permission to Treat form to the EMS personnel and the emergency

 medical facility.

1. Determine in advance who will accompany the athlete to a medical facility in parents or legal guardian are not available.

Return to Play:

1. Highly variable dependent on radiographic determination
2. Must have full neurological recovery
3. Return to activity status dependent on physician following full recovery.

Diabetes

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention and Screening:

1. One Athletic Trainer will: Evaluate Pre-Participation Physical Examination: with specific physician reference to Diabetes and suitability to participate in sport activities. Medication recommendations will be recorded.
2. One Athletic Trainer will: Read and Evaluate Medical History as provided by the individual and the family to determine history of Diabetes.
3. Notify coach of Diabetic athletes and provide basic awareness and management information to the coach.
4. Obtain diabetic care plan from the athlete, parent or primary care physician (PCP)
5. Confirm the athlete’s available glucose testing paraphernalia and location.
6. Communicate and confirm care plan with athlete, parents, doctor, coaches and athletic trainer
7. Maintain inventory of glucose based items in field kit should athlete require it. (Glucose tablets, honey packets, etc.)
8. Maintain on file, all documentation of the diabetic treatment plan.

Recognition:

1. Write down, learn and distribute appropriate blood glucose levels for coaches, athletic trainers and administration.
2. Provide symptoms of hypoglycemia to coaches.
3. Be sure that athlete has been educated regarding signs and symptoms of hypo and hyperglycemia.

***Treatment Guidelines for Mild or Severe Hypoglycemia***

(Jimenez, J Athl Train. 2007;42(4);536-545)

Mild Hypoglycemia

1. Give 10-15 g of fast-acting carbohydrate. 4-8 glucose tablets or 2 Tbsp. honey.
2. Measure blood glucose level
3. Wait 15 minutes and re-measure blood glucose level.
4. If blood glucose level remains low, administer another 10-15 g of fast-acting carbohydrate
5. Recheck blood glucose level in 15 min.
6. If blood glucose level does not return to normal after second dose of carbohydrate, activate EMS.
7. Once blood glucose level normalizes, provide a snack (e.g. Sandwich, bagel).

Severe Hypoglycemia

1. Active EMS
2. If available and with the proper training from the athlete's physician or representative, prepare glucagon for injection, following direction in glucagon kit.
3. Once athlete is conscious and able to swallow, provide food.

Return to Play:

1. Requires Physician (PCP) approval.
2. Varies with each athlete.

Exertional Heat Stroke

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention

1. Pre-season screening should include questions regarding athlete's knowledge of heat illness risk factors
2. Include questions on the physical regarding history of heat illness
3. Administration must direct use of Rectal Thermometer (yes/no) Sample document included. Policy must be put in place for individual schools.
4. Athletic trainers provide heat illnes signs and symptoms list to coaches
	1. Core body temperature is elevated
	2. Central Nervous System dysfunction:
		1. Disorientation; confusion; confusion, dizziness
		2. Irrational behavior; aggressiveness, delirium
		3. Tachycardia, hyperventilation, vomiting
		4. Staggering, Loss of consciousness, coma
5. Educate athletes regarding fluid intake before, during and after practice
	1. 16-24 oz of fluid before activity
	2. 6-8 oz fluid every 20 min of exercise
	3. 8 oz fluid for each pound of body weight lost during practice
6. Provide chart to show urine colors to aid in hydration awareness (Place in bathrooms)
7. Coaches and Athletic Trainers develop an acclimatization plan (7-14 days) to adjust to heat.
8. Athletic Trainers prepare recommendations for fluid replacements and water breaks for coaches.
9. Athletic Trainers develop plan to cool athletes and train coaches and staff accordingly.
10. Athletic trainers utilize heat index or weather data to determine appropriate activity levels.
11. Provide fluids for rehydration during activity.
12. Provide cold-water immersion option for cooling in case of emergency.

Emergency Communication

1. Coaches may phone for AT and EMS if AT not on site at time of incident
2. AT use phone (cell or land line) to implement EMS protocol
3. Have AED available on site.
4. AT to coordinate EMS arrival unless Doctor is on hand.
5. Provide Emergency Medical treatment form for EMS and Hospital Staff.

Emergency Equipment

1. Use Wet Bulb or Sling Psychrometer (if available)
2. Use Pulse Oximeter to assess CV and Oxygen levels (if available)
3. Rectal thermometer (if administrative approval is documented)
4. Ice source available on site or in close proximity
5. AED available

Emergency Management

1. Evaluate athlete and treat based on symptom determination.
2. Remove athlete from field (athletic setting)
3. Cool core body temperature by cold-water immersion.
4. Activate EMS protocol per (EAP for specific site)
5. Provide EMS with copy of Permission to Treat Form (to go with athlete to Medical facility)
6. If parents are not available to ride in the medical transport, the Athletic Trainer, Coach, Athletic Director or designated school representative should accompany athlete.

Return to Play

1. A period of 7 days of inactivity is recommended.
2. No return to activity until asymptomatic, blood work is normal and the treating Physician clears the athlete.
3. Activity progression at low intensity in cool environment and slowly progress to high intensity under direct medical supervision.

Exertional Hyponatremia

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention:

1. The athletic trainer will educate athletes about proper fluid and sodium replacement during exercise.
2. Individualized hydration protocols should be determined based on exercise intensity, duration and individual preferences.
3. Athletes should consume adequate dietary sodium at meals when activity occurs in hot environments.
4. The individual athlete should monitor body weight changes particularly weight gain during exercise.
5. The individual athlete should monitor urine color and thirst to assist in rehydration following exercise.

Recognition:

1. Athletic trainers should recognize EH signs and symptoms during or after exercise including: overdrinking, nausea, muscular twitching, peripheral tingling or swelling, headache, disorientation, altered mental state, physical exhaustion, pulmonary edema, seizures and cerebral edema.
2. Severe cases: Altered CNS function, seizures and decreased level of consciousness.

Treatment:

1. Initiate EMS
2. Monitor vital signs – Pulse Oximeter (if available) blood pressure
3. Establish airway, breathing and circulation.
4. Transport to emergency medical facility.

Return to Activity:

1. Dependent on physician evaluation and clearance.
2. Establish individualized hydration plan with Physician guidance.

Exertional Sickling

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention and Screening:

1. Include a question in the pre-participation physical exam to determine if testing for Sickle Cell Trait has been conducted.
2. Determine status of Sickle Cell Trait test.
3. One Athletic Trainer will: Evaluate Pre-Participation Physical Examination: with specific physician reference to Sickle Cell Trait and suitability to participate in sport activities.
4. One Athletic Trainer will: Read and Evaluate Medical History as provided by the individual and the family to determine status of Sickle Cell Trait Test
5. Notify coach of Sickle cell positive athletes and provide basic awareness and management information to the coach.
6. Athlete with Sickle Cell Trait should be allowed:
	1. Longer periods of rest and adjust workouts based on environmental conditions
	2. Hydration should be emphasized.
	3. Asthma should be controlled.
	4. Athlete with SCT who is ill should not work out.
	5. Athlete with SCT who is new to a high-altitude environment should be monitored closely with training modification and supplemental oxygen available.
7. Have Oxygen available (if possible) with non-rebreathe mask.
8. Ice immersion or cooling capability available.

Recognition:

1. Identify at risk athletes
2. Screen for SCT for those who are at risk.
3. Know signs and symptoms of exertional sickling:
4. Muscle cramping
5. Pain
6. Weakness
7. Fatigue
8. Identify external factors: heat, dehydration, and asthma.

Treatment:

1. Immediate withdrawal from activity.
2. Check vital signs
3. Administer high-flow oxygen 15L/min (if available) with non-rebreathe mask.
4. Cool athlete if necessary.
5. If vitals decline, initiate EMS.
6. Inform EMS personnel and physician of athlete’s train status.

Return to Play:

1. Dependent on symptoms and resolution.
2. Physician must release athlete to return to activity.

Head Down Contact in Football

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Prevention:

1. Axial loading of the cervical spine is only possible when head-down contact is initiated.
2. Formal team education sessions should be held at least twice during the season; once before contact begins and again midway through the season.
3. Parents and athletes should watch video “Heads up: Reducing the Risk of Head and Neck Injuries in Football” or other educational videos as part of the risk management meeting held annually.
4. Athletes cannot use the facemask as the initial point of contact.
5. Coaches must teach, demonstrate and have athletes practice proper shoulder/chest technique throughout the season to all players.
	1. Correct technique on a daily basis
	2. Use film/video sessions to demonstrate proper technique.
6. The athletic director and head football coach must ensure that all football helmets are recertified annually with a sport specific certifying body.
7. Corrosion-resistant hardware must be used in all helmets.
8. Athletes recheck helmet hardware on a weekly basis, to insure adequate fit and mechanical function.
9. Athletic Trainers along with team physicians will become familiar with proper athletic equipment removal and will annually train for proper injury management.

Treatment:

1. Evaluate athlete: airway, breathing, and circulation.
2. Manual stabilization of the cervical spine in neutral position.
3. Initiate EMS if cervical pain or other pain with realignment.
4. Expose airway by removing facemask.
5. Begin rescue breathing if necessary, using the safest technique
6. Immobilization of head.
7. Do not remove helmet and shoulder pads until moved to emergency medical facility unless:
	* 1. The helmet is not properly fitted to prevent movement of the head
		2. The equipment prevents neutral realignment of the cervical spine
		3. The equipment prevents airway or chest access
8. Immobilize spine with long spine board or wait for EMS arrival.

Management:

1. Provide a copy of the Permission to Treat form to the EMS personnel and medical facility.
2. Determine in advance who will accompany the athlete to a medical facility in parents or legal guardian are not available.

Return to Play:

1. Highly variable dependent on radiographic determination
2. Must have full neurological recovery
3. Return to activity status dependent on physician following full recovery.

Lightning Safety

In the event of severe weather when threatening lightning conditions are probably, at least one of the following two indicators of lightning location will be used as the recognized method of determining dangerous lightning situations:

1. SkyScan Lightning detector:
2. Flash to Bang counting method:
	1. When lightning is noticed begin counting.
	2. Counting is stopped once the associated thunder (bang) is heard.
	3. Divide this count by 5 to determine the distance to the lightning flash (in miles).

 Ex: a flash to bang count of 30 seconds equates to a distance of 6 miles (9.66 km).

 ***Note: Lightning has been reported to strike 10 miles or more from where it originated.***

Safety Procedure:

Once lightning conditions are detected to be within 6 – 8 miles of the practice or event site, the following precautions will be taken:

1. Suspend activity and move all individials to the predetermined lightning safety shelter per the venue-specific emergency action plan
2. Individuals will remain in the designated lightning safety shelter until 30 minutes have passed following the last lightning flash sighted and last thunder heard

Lighting Shelter:

1. Designated lightning shelters must have 4 substantial walls, a solid roof, plumbing and electrical wiring --- a structure in which people may live or work.
2. Open shelters, dugouts, golf carts, and similar structures are not safe locations from lightning hazards.
3. In any structure during a lightning storm all electrical conducting materials that are exposed to lightning are potentially unsafe and should be avoided( i.e. plumbing fixtures and pipelines, land line telephones, and electrical appliances).

Lightning Safety Management for Practice,

1. The athletic trainer on site will inform the head coach of threatening lightning conditions.
2. If an athletic trainer is not on site the head coach will assume responsibility of monitoring threatening lightning conditions and immediately instructing the athletes to proceed to the closest lightningsafe shelter.

Lightning Safety Management for HomeGames:

1. League officials, referees and school officials shall discuss lightning management protocols prior to the season.
2. The athletic trainer will notify the athletic director in charge or the facility manager of threatening lightning conditions.
3. The Athletic Director or Facility Manager will then inform officials and coaches that play is to be suspended.
4. Coaches and game officials will be made aware of the lightning safety protocol by the Athletic Director or Facility Manager at the start of every outdoor athletic competition.

Basic Lightning Safety Body Position:

1. Individuals who feel their hair stand on end or skin tingle or hear crackling noises should assume the lightning–safe position (i.e., crouched on the ground, weight on the balls of the feet, feet together, head lowered, and ears covered).
2. Do not lie flat on the ground.

Recommendation: The purchase of a SkyScan system is recommended.

Sudden Cardiac Arrest

The following recommendations should be combined with the Venue-Specific Emergency Action Plan when dealing with medical emergencies that could result in Sudden Death. Specific logistical adjustments should be included in this document to address facility variability.

Recommendations:

Prevention:

1. One Athletic Trainer will: Evaluate Pre-Participation Physical Examination: with specific physician reference to cardiac health and suitability to participate in sport activities requiring cardiovascular stress.
2. One Athletic Trainer will: Read and evaluate Medical History as provided by the individual and the family using the guidelines as recommended in the 12-Element AHA cardic screening for athletic preparticipation. (noted below).
3. Any questions arising from document evaluation should be discussed with the patient and the parents (if patient is under 18) with subsequent permission to speak to the family physician or evaluating physician for further clarification.

Equipment:

1. All standard equipment (AED, etc.) noted in the venue EAP would be available and readily accessible.

Action/Communication:

1. Assess Airway, Breathing, Circulation
2. If compromised, ACTIVATE EMS
3. Implement venue specific EAP.
4. Initiate CPR. Apply AED when available
5. Maintain CPR/AED until relieved by EMS personnel.

**The 12-Element AHA Recommendations for Pre-participation Cardiovascular Screening of Competitive Athletes**

**(Maron et.al, Circulation 2007:115(12)1643-1655.)**

Medical History

*Personal history*

1. Exertional chest pain/discomfort.
2. Unexplained syncope/near-syncope.
3. Excessive exertional and unexplained dyspnea/fatigue, associated with exercise.
4. Prior recognition of a heart murmur.
5. Elevated systemic blood pressure.

*Family History*

1. Premature death (sudden and unexpected, or otherwise) before age 50 due to heart disease in > 1 relative.
2. Disability from heart disease in a close relative <50 years of age
3. Specific knowledge of certain cardiac conditions in family members: hypertrophic or dilated cardiomyopathy, long-QT syndrome or other ion channelopathies, Marfan Syndrome or clinically import arrhythmias.

*Physical Examination*

1. Heart Murmur
2. Femoral pulses to exclude aortic coarctation
3. Physical stigmata of Marfan syndrome
4. Brachial artery blood pressure (sitting position)