Equipment Considerations in Sport Injuries

General Considerations

- Initial Assessment (ABC's, body position)
- Stabilize head and neck
- Medical personnel stabilizing the head should coordinate all other personnel when attempting to move the injured person.

Football

- Do Not remove helmet or shoulder pads
- Remove face mask with electric screwdriver, or by cutting the plastic clips
  - The face mask should be removed as quickly as possible any time a player is suspected of having a spinal injury, even if the player is still conscious.

Hockey

- Helmet removal depends on whether the helmet is properly fitted
  - What is the position of the head inside the helmet?
  - Is there space between the head and helmet?
- Do not remove shoulder pads

If helmet is fitted properly:

- Do not remove helmet
- Stabilize head and neck
- To access airway, retract the mask by cutting the plastic loops, or remove screws with electric screwdriver

How to remove the helmet properly:

- Medical personnel at the head should maintain stabilization
- Additional personnel should stabilize the head and neck from the front
- The person at the head then removes the helmet
- Apply a hard cervical collar and proceed with proper care

Lacrosse

- Remove helmet, cut chin strap
- Do Not remove shoulder pads
- Medical personnel at the head should maintain stabilization
- Additional personnel should stabilize the head and neck from the front
- The person at the head then removes the helmet
- Apply a hard cervical collar and proceed with proper care

In all cases, if there is an immediate need for an airway, and you are unable to remove the face mask, remove the helmet immediately.

-Sheri Almquist, LAT, Jolene Atkins, LAT
UW Health Sports Medicine

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Time is Myocardium *from page 2*

to the treating hospital for interpretation. All of the major monitor manufacturers have cell phone based telemetry systems. However, these systems are highly variable, transmit to manufacturer specific receiving sites, and have a high transmission failure rate. Most of these failures are related to cell phone signal interruption, or cell tower inability to transmit data (switch technology). There are several systems that are being developed in hopes of a more consistent transmission system, but currently transmission success rates in urban areas is <70% and much lower in rural areas.

Bottom Line

- **Time is myocardium: Minutes can mean the difference between life or death**
- **Minimize scene time: less then 10 minutes**
- **Paramedic services: a 12 lead ECG at patient's bedside with immediate hospital notification once STEMI is identified**
- **EMT-B/EMT-I: find out if a 12 lead ECG transmission is supported in your area. Before purchasing 12 lead capable monitors, ask vendor to test and prove transmission capability in your area**
- **EMT-B/EMT-I: Stay tuned – transmission alternatives are being developed/tested**
- **Rural EMS: establish protocols to reduce interfacility transport delays between hospitals**
- **Know the capabilities of your local hospitals. It may be better to bypass community hospitals and directly transport to a hospital capable of performing cardiac catheterization**

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LEVEL ONE

CASE STUDY

SUMMER 2007

Helmet saves a life!

A recent news story highlighted a Madison man whose head was run over by a truck after being thrown from his bicycle. The helmet was almost split in two, and he walked away with only a minor concussion. AMAZING!

Similar to the man above, BT, is a 17 year old male who was riding his bike, crossed a road and was hit by a car. He initially struck the windshield with his HELMETED head, and then when the car stopped, he was thrown to the ground.

He was unconscious immediately but was waking up upon EMS arrival, approximately 6 minutes post crash.

Amnesic to the event, he could only state his name, but didn't know where he was, how he got there or the date and time of day. He complained of pain in his neck, head, abdomen and right wrist.

EMS Primary Assessment: Airway: Patient able to vocalize, no obstruction noted. The bike helmet was intact but dented. EMS stabilized his spine, removed the helmet per protocol and applied a rigid collar. Breathing: Respiratory rate 16, non-labored. Circulation: Pulses strong bilaterally, BP 128/72. Disability: Glasgow Coma Score (GCS): Eye opening-spontaneous = 4, Verbal response-confused = 4, Motor response-follows commands = 6, total is GCS 14. Patient remains confused en route to the hospital.

On arrival to the Emergency Department, he is not as confused, but remains amnesic to the event. Primary survey does not change. Secondary survey reveals several areas of abrasions and contusions, but no gross deformities of any long bones.

Due to the loss of consciousness, a CT of his head was obtained that was NORMAL. He had C-spine tenderness but films were negative. He was maintained in a collar. His abdomen remained tender and a CT was obtained that showed a small spleen laceration. He remained hemodynamically stable. His right wrist had a non-displaced fracture that was casted. No other fractures were noted.

Both of these stories would have much different outcomes if not for the use of helmets. Abrasions, contusions, fractures and even spleen injuries can heal, but head injuries can cause permanent disabilities.

According to the National SAFE KIDS Campaign, 75% of bicycle related deaths among children could be prevented with a bike helmet. They recommend that the helmet bears a CPSC (U.S. Consumer Product Safety Commission) label. Helmets need to fit correctly: they should be snug, but not too tight and should not rock back and forth or side to side. The helmet needs to be centered on the top of the head. People who wear their helmets tipped back have a 52% greater risk of head injury.

Inside This Issue:

Use of all terrain vehicles (ATVs) in rural and recreational areas continues to rise. Emergency care providers need to play a role in injury prevention. Most ATV accidents can be prevented with proper education and training.

The Mechanism of Injury

The 2006 Wisconsin DNR Annual ATV Program Report identified the two leading causes of fatal ATV incidents to be rollovers and collisions with other vehicles. Other common mechanisms of injury result from lack of experience or losing control of the ATV and include: ejections, falls, and collision with fixed objects.

Life threatening injuries include significant head, facial, chest, spinal cord and orthopedic trauma. Sixty-one percent (61%) of reported fractures are classified as open or comminuted. Alcohol intoxication continues to be associated with the majority of fatalities. Data from the 2006 Wisconsin DNR Annual Report revealed alcohol use as a contributing factor in 56% of the fatal accidents and lack of helmet use in 77% of these incidents.

Prevention Efforts

The U.S. Consumer Product Safety Commission in conjunction with the 4-H Council, NASCAR Legend, Richard Petty and ATV Racing Champion, John Natalie have launched a major campaign to “Drive down deaths and serious injuries associated with all terrain vehicles.”

-Andrea L. Williams, PhD, RN
Trauma Program Manager,
UW Level One Trauma Center

It is important to educate your community on injury prevention DO’s and Do NOT’s:

DO wear a helmet

DO wear long-sleeved shirt/ jacket, long pants, and non-skid boots

DO take an ATV safety course

DO know the terrain

Do NOT allow a child to operate or ride on an adult size ATV

Do NOT ride tandem on a one-person ATV

Do NOT ride alone

Do NOT ride under the influence of drugs or alcohol

Time is Myocardium

You are called to the home of a 50 year old woman who is complaining of severe chest pain for 30 minutes. She is diaphoretic, ill appearing, and holding her chest. Her blood pressure is 100/40, heart rate is 120 and her oxygen saturation is 88%. You spend 15 minutes on scene taking a thorough history and physical exam. You have a 15 minute transport time to the emergency department and administer aspirin, nitroglycerin, and supplemental oxygen with no change in her condition. On arrival to the emergency department a 12 lead ECG is ordered. Ten minutes later the 12 lead ECG is completed and set at the patient’s bedside. Five minutes later the emergency physician picks up the 12 lead ECG and immediately recognizes ST-elevation (a marker for an acute heart attack). The interventional cardiology team is activated which takes 35 minutes to prepare cath lab. Once ready, the patient is transported to the cath lab (5 minutes) and 30 minutes later a balloon is inflated in the left coronary artery restoring blood flow to a large section of the starving myocardium. Her ED arrival to balloon inflation time is 85 minutes. She becomes very hypotensive in the lab and requires a balloon pump. Ultimately she suffers massive left ventricular damage and spends 3 weeks in the ICU before succumbing to multisystem organ failure. This patient died from an ST-Segment Elevation Myocardial Infarction (STEMI).

The same scenario is presented. This time a 12 lead ECG is performed in the field by the treating EMTs at the patient’s bedside. ST segment elevation is immediately identified and radio report is initiated two minutes into transport. “We are transporting a STEMI to you with a ten minute ETA.” Immediately the cardiac catheterization lab team is activated. 10 minutes later the patient arrives in the ED and is transferred emergently to the cardiac cath lab. The patient receives similar treatment but ultimately has a door to balloon time of 60 minutes. Echo reveals minimal left ventricular dysfunction and she is discharged on hospital day number three.

It’s only a few minutes

Minimizing reperfusion time is critical to improving survival and quality of life of heart attack patients. Minutes count! As demonstrated in the case above, minimizing scene time is critical, and scene time of less then ten minutes should be standard. Perform essential tasks during drive time and call report to the ED as early as possible.

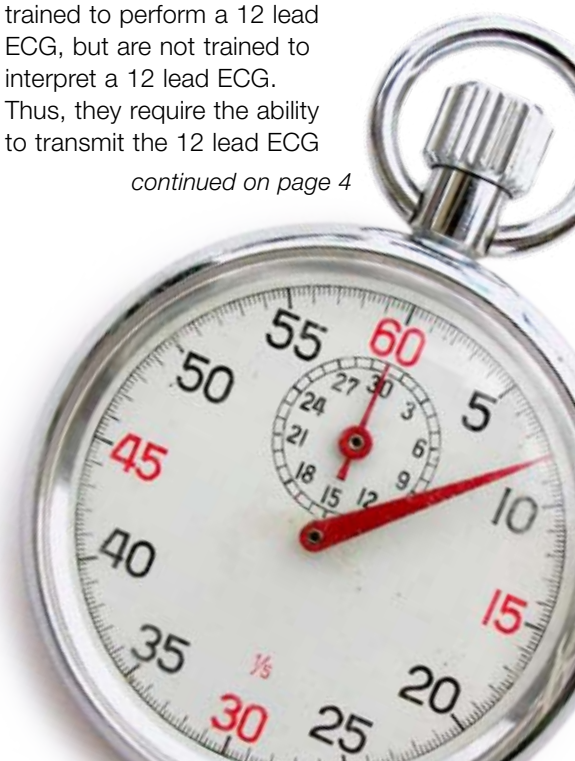
Paramedic Units

All paramedic EMS units should be trained to perform AND interpret field 12 lead ECGs. This requires interpretation skills to rapidly identify STEMI and the ability to differentiate this from other 12 lead ECG abnormalities (bundle branch blocks, early repolarization). Currently, all three Madison hospitals are activating their cardiology teams based upon paramedic interpretation of STEMI.

Non-Paramedic EMS

EMT-I and EMT-B providers can be trained to perform a 12 lead ECG, but are not trained to interpret a 12 lead ECG. Thus, they require the ability to transmit the 12 lead ECG

continued on page 4



Trauma Reports

You've been dispatched to the scene of a multiple vehicle collision with several victims. You arrive, perform your initial assessment and swiftly determine that one of your patients will need rapid transport to a Level One trauma center.

You arrive in the Trauma Bay, transfer your patient to the bed and as you get ready to give your report it seems as if everybody in the room is too busy to hear what you have to say.

Just as EMTs must perform their primary survey (ABCDE) at the scene, the physicians and nurses in the ED must also perform their primary assessment. This is what occurs during those first few minutes after you transfer care of your patient. After the primary assessment is completed, the team will then approach the pre-hospital providers for their report. The information you provide is a vital component of the patient's continuing care. Coming soon in the next issue of Level One….. WHAT to include in your trauma report.

-Ann Krainyk RN and Jan Beyer RN
UW EMS Liaisons

Hospital Site Reviews

All hospitals in the state are in the process of being designated a Level III or IV Trauma Center by the state of Wisconsin. Many hospitals in the SCRTAC region have completed their in-hospital trauma site reviews. So far, all have done really well, and have spoken very highly of the review process, the reviewers, and the constructive comments.

EMS

The SCRTAC continues to make trauma care education for EMS a priority. Trauma education topics are presented after each general RTAC meeting, and continuing EMS education units are available through the service medical directors. The General Meetings are held the fourth Tuesday of every ODD month (May, July, September, etc.) from 5:00 pm to 6:00 pm at the UW Clinic on the west side of Madison. Everyone is invited to attend all sessions.

Executive Committee Restructuring

At our last meeting, in an attempt to create new positive energy and to promote better meeting attendance, we voted to restructure our Executive Committee. The new Executive Committee will consist of 9 people, one person from each quadrant (four), two reps from Madison, one trauma surgeon, one Emergency Medicine physician, and the EMS Coordinator. The new 'streamlined' approach will give a more intimate and cohesive feel to the executive council, and will make tracking objectives and responsibilities more easy. Each will serve two years. If you are interested in participating, or would like more information, please contact Lynne Sears, SCRTAC Coordinator at **lsears@uwhealth.org** or Dan Williams, SCRTAC EMS Coordinator at **dan@scrtac.org**.

Level One Trauma and Now Burn

After passing a rigorous exam process, University of Wisconsin Hospital and Clinics has been re-verified as a "Level 1" trauma center for both pediatric and adult patients by the American College of Surgeons (ACS), the highest rating available for trauma facilities in the country.

The ACS also verified UW Hospital's burn service as a burn center, making it the only hospital in Wisconsin to carry all three of these distinguished designations.

A Level 1 facility is a regional resource trauma center capable of providing patients with the most advanced and comprehensive care available.

Rotor Blade Safety

Without exception, safety is UW Med Flights number one priority. The UW Med Flight program has long been recognized in air medical circles for its success in providing one of the safest air-medical transport services in the country. Every component of the program puts the safety of its patients, crews and workers at the very forefront. This successful track record is also a testament to the focus of EMS on not only preparing a safe landing zone, but operating around the aircraft in a safe manner.

In this issue, the UW Med Flight Program would like to cover the topic of "rotor blade safety". Following are key components to remember when operating around the aircrafts rotors:

- **When the aircraft is approaching, be aware of debris that may become airborne due to the powerful downwash of air from its rotors. Stones, dirt and any debris in the area can become a hazard, and it is recommended to stand at a safe distance, and not within the landing zone perimeter.**
- **When the aircraft has landed, do not approach the aircraft until you see the pilot gesture to you that it is safe to approach. This will be when the blades have come to a complete stop.**
- **It is also very important to be conscious of the rotors even when they are no longer rotating. This includes operating vehicles or equipment in close proximity. Even minor contact with a rotor blade may result in damage that can render the aircraft unsafe to fly by UW Med Flight standards.**
- **All traffic should be blocked whenever the aircraft's engine or rotors are in operation.**

With these simple safety tips we can ensure that all members of our team remain safe. If you would like more information on landing zone safety, please call the UW Med Flight program at 263-3258.