What is it?
“Second impact syndrome” is a rare but life threatening condition that can occur when an athlete suffers a second head injury prior to healing from an initial head injury, such as a concussion. Trauma from the initial head injury is believed to put the athlete at risk of life-threatening swelling of the brain if they receive a second head injury while still recovering from the initial injury. Second impact syndrome can lead to severe brain damage, neurological problems and even death. It is also closely related to other life threatening sports injuries such as brain bleeds following head trauma.

Symptoms/Risks
Young male athletes participating in American Football appear to be at the highest risk for second impact syndrome, especially in the first 7-10 days following an initial concussion. They may be at risk for several weeks, however, if they return to sport before full recovery. Symptoms may include headache, confusion, nausea, sensitivity to light or sound, poor concentration, visual problems, drowsiness or any other differences from normal. Symptoms of post-concussion syndrome can often be vague and non-specific, so it is important to be examined by a qualified physician, such as a sports medicine doctor, prior to return to play. Returning to sport too early following concussion leaves an athlete at risk to develop second impact syndrome should they receive a second head injury. This is a medical emergency and requires urgent medical attention at the nearest emergency room. Worrisome findings include loss of consciousness or coma, seizures, non-moving pupils, vomiting and headache.

Sports Medicine Evaluation & Treatment
First and foremost, any athlete showing signs of a concussion following head trauma should be removed from play and evaluated by a qualified physician, trainer or other medical personnel. An athlete with a suspected concussion should never return to play the same day unless cleared by a physician or qualified medical personnel. Athletes should be closely watched for several minutes following the injury to make sure they do not experience a decline in mental status. If an athlete develops worsening mental status, vision changes or loss of consciousness they may need to have imaging, like a CT scan or MRI, to evaluate for bleeding or swelling of the brain. Unfortunately, treatment for second impact syndrome is limited and requires hospitalization with neurosurgical management. Identification of head injuries and utilization of proper return-to-play protocol is the best way to promote a safe return to sport.
AMSSM SPORTS MEDICINE TOPICS
SECOND IMPACT SYNDROME

Injury Prevention
If a concussion is identified, an athlete should be kept from participation in their sport until free from post-concussion symptoms at rest. Once symptom-free, a custom-made “return to play” protocol may be started, beginning with light cardio exercise. A slow increase in intensity should follow until the athlete is able to participate in full-contact practice without symptoms. If any post-concussive symptoms return during gradual return to play, the athlete should reduce the intensity of their workouts.

Return to Play
Return to play following concussion should be individualized for every athlete, and state laws and rules should be followed. Once free from concussion symptoms while at rest, a gradual increase of level of effort should be performed under the guidance of a qualified medical professional. The athlete should also have a normal neurological exam including balance, coordination and concentration during return to sport process.

References