**SICKLE CELL DISORDER**

Under normal circumstances, red blood cells are smooth, round structures that carry oxygen throughout the body. In an individual with Sickle cell disorder, the red blood cells become hard and sticky. They lose their shape and become “sickled” and movement becomes difficult for them. The red blood cells can die, leading to a shortage of them. They can also cause a back up in blood flow by clogging arteries. Swelling and damage to most organs including the spleen, kidneys, and liver can also occur. There are many forms of sickle cell disorder, but 2 main disorders people have are Sickle Cell Anemia and Sickle-Hemoglobin C Disease

**PREVENTION**

You can’t prevent any sickle cell disorders because it is a hereditary disorder. You can only take steps to minimize and manage symptoms.

**TREATMENT**

Treatment hopefully begins after an early diagnosis, while the patient is still a newborn baby. Treatments includes: Penicillin Prophylaxis

Vaccination against pneumococcus bacteria and folic acid supplementation.

Antibiotics

Pain medications

Proper hydration

Intravenous Fluid

Blood transfusion and surgery all backed by psychosocial support

**SICKLE CELL TRAIT**

Sickle cell trait is an inherited condition. It is found most common in African American and Hispanic individuals. It occurs when an individual receives one gene for sickle hemoglobin and 1 for normal hemoglobin as opposed to two genes for normal hemoglobin. Individuals with Sickle cell trait show an increased risk for heat stroke and rhabdomyolysis when compared to normal individuals. Individuals can still participate in athletics, however precautions must be in place and an Emergency Action Plan must be available and known by all staff on site in the event of a sickling episode by an individual.

**PREVENTION**

1. Build up slowly in training with paced progressions, allowing longer periods of rest and recovery between repetitions.

2. Encourage participation in preseason strength and conditioning programs to enhance the preparedness of athletes for performance testing which should be sports-specific. Athletes with sickle cell trait should be excluded from participation in performance tests such as mile runs, serial sprints, etc., as several deaths have occurred from participation in this setting.

3. Cessation of activity with onset of symptoms [muscle 'cramping', pain, swelling, weakness, tenderness; inability to "catch breath", fatigue].

4. If sickle-trait athletes can set their own pace, they seem to do fine.

5. All athletes should participate in a year-round, periodized strength and conditioning program that is consistent with individual needs, goals, abilities and sport-specific demands. Athletes with sickle cell trait who perform repetitive high-speed sprints and/or interval training that induces high levels of lactic acid should be allowed extended recovery between repetitions since this type of conditioning poses special risk to these athletes.

6. Ambient heat stress, dehydration, asthma, illness, and altitude predispose the athlete with sickle trait to an onset of crisis in physical exertion.

A. Adjust work/rest cycles for environmental heat stress

B. Emphasize hydration

C. Control asthma

D. No workout if an athlete with sickle trait is ill

E. Watch closely the athlete with sickle cell trait who is new to altitude. Modify training and have supplemental oxygen available for competitions.

**TREATMENT**

1. Check vital signs.

2. Administer high-flow oxygen, 15 l pm (if available), with a non-rebreather face mask.

3. Cool the athlete, if necessary.

4. If the athlete is obtunded or as vital signs decline, call 911, attach an AED, start an IV, and get the athlete to the hospital fast.

5. Tell the doctors to expect explosive rhabdomyolysis and grave metabolic complications.

6. Proactively prepare by having an Emergency Action Plan and appropriate emergency equipment for all practices and competitions.