Hepatitis B and C in Athletes
See also Acute Viral Hepatitis
See also Chronic Viral hepatitis

Background
1. General information
   - American Academy of Pediatrics - Committee on Sports Medicine and Fitness
     - Human Immunodeficiency Virus and Other Blood-borne Viral Pathogens in the Athletic Setting:
       - Vol.104 No.6 December 1999
       - http://aappolicy.aappublications.org/cgi/reprint/pediatrics;104/6/1400.pdf
   - Information for Parents
     - When Infected Kids Play Sports:

Pathophysiology
1. Hepatitis B Virus (HBV)
   - Hepadnavirus (DNA)
   - Symptoms vary from asymptomatic to fulminant hepatitis
2. Hepatitis C Virus (HCV)
   - RNA virus
   - Acute infection is rarely symptomatic
3. Increased risk for athletes:
   - Contact sports
   - Travel to endemic regions
   - IV drug users
4. HBV incidence in children (<19 yo)
   - 1991 in US-universal HBV vaccination implemented
     - Incidence has decreased significantly since
   - In 2005 acute HBV infection in children in US
     - 0.03 cases/100,000 population
   - New HBV infections in children in US:
     - Immigrants
     - Have immigrant parents
     - Are exposed through household contacts
5. Worldwide HBV-significant public health problem
   - Estimated >350 million carriers
6. HCV incidence in children (<19 years old)
   - Significant number in US
   - Antibodies present in:
     - 0.2% of children 6-12 yo
     - 0.4% of children 12-19 yo
   - Most common source of HCV-perinatal transmission
7. Overall prevalence of antibodies to HCV in US is 1.6%
   - Approx. 19,000 new cases in US each year
Transmission

1. HBV and HCV transmission
   - Parenteral exposure to blood and blood products
   - Contamination of open wounds/ mucus membranes with infected blood
   - Sexual contact
   - Perinatal transmission

2. Sharing of needles by athletes during use of injectable anabolic steroid use has been reported in HIV transmission
   - May also increase risk of HBV/HCV infection

3. HBV transmission in sports is rare
   - 2 reported cases of HBV transmission during sports
     - High school sumo wrestler in Japan with chronic HBV transmitted infection to teammate
     - Outdoor orienteering team in Sweden-shared water cup to clean wounds, transmitted HBV

4. Transmission of HCV during sports participation has not been documented

5. Overall risk of transmitting HBV and HCV in sports:
   - Not 0% but so rare risk has not been quantifiable

Prevention

1. All sports medicine personnel and ancillary staff should follow Universal Precautions
   - Avoid direct exposure to open wounds
   - Adequately cover own healing wounds/ dermatitis to prevent transmission to or from athlete

2. Protective equipment should be available to all sports medicine personnel
   - Vinyl gloves
   - Disinfectant
   - Bleach (1:10 dilution with tap water)
   - Antiseptic
   - Designated receptacles for soiled uniforms
   - Bandages/ dressings
   - Biohazard container for needles, syringes, scalpels

3. Sports medicine providers/ athletes should avoid exposure to blood during athletic competition
   - Athletes should be required to leave competition if they are bleeding
   - Abrasions, cuts, oozing wounds should be cleaned with soap & water or antiseptic
     - Cover with occlusive dressing that will stay on during competition
   - When bleeding is controlled/wound covered, athlete may return to competition

4. Minor cuts/abrasions do not require interruption of play or removal from competition

5. Small amounts of blood on a uniform do not require removal from competition or/change in uniform
6. Athletes should be instructed
   o Report all wounds right away
   o Wear appropriate equipment

7. Equipment or areas soiled w/blood should be disinfected with 1:10 solution of bleach and water and wiped down

8. All bloodstained uniforms/towels should be washed in hot water and bleach

9. Consider HBV immunization for members of sports medicine team

10. No recommendation for universal HBV immunizations for athletes

11. No mandatory HBV or HCV testing for athletes
   o Testing currently not supported by medical evidence

12. Athletes who engage in "high-risk" behavior should be encouraged to undergo HBV and HCV testing
   o Multiple sex partners
   o Injectable drug use
   o Sexual contact w/injected individual

**Post Exposure Prophylaxis and Testing**
1. See also CDC Recommendations for Exposure to HBV, HCV, HIV
   o [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5011a1.htm)

2. Treatment of exposure site:
   o Wounds or skin sites that have been in contact with blood or body fluid should be washed with soap and water
   o Mucus membranes should be flushed with water

3. Consider tetanus update

4. Potential HBV exposure
   o Consider Hepatitis B immune globulin (HBIG) and/or hepatitis B vaccine
   o CDC information-Postexposure Prophylaxis to Prevent Hepatitis B infection:
     [http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5516a3.htm?s_cid=rr5516a3_e](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5516a3.htm?s_cid=rr5516a3_e)

5. Immune globulin and antiviral agents not recommended for HCV exposure

6. Diagnostic testing for potential exposure:
   o Hepatitis B surface and core antibody
   o Hepatitis B surface and core antigen
   o Hepatitis C antibody

7. Laboratory evaluation of donor individual should be done if possible
   o Hepatitis B antibody and surface antigen
   o Hepatitis C antibody

8. Consider testing for Hepatitis A, RPR, HIV

**Guidelines for Play and Return to Play**
1. Risk of transmission of HBV and HCV through sports appears to be minimal
   o Presence of infection alone is not a reason to exclude participation from any sport

2. Asymptomatic individuals may participate in sports under guidance and ongoing monitoring of physician

3. Clinical signs and symptoms should be evaluated by a physician in relation to demands of the sport
4. Changes in affected individual’s health status mandates reevaluation of participation level
5. Confidentiality of individual must be maintained
   - Health care providers should not inform coaches, teammates, or opponents of patient's HBV or HCV status

References
1. CDC Guidelines:

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