



IRB Expert Paper

Hygiene, Infection Control and Prevention of Infection

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Educate, Vaccinate, Evaluate

Infectious diseases are spread directly or indirectly from an infected individual. Athletes interact closely with team-mates, opponents, and team staff. In addition they frequently share training and gym equipment, facilities-training rooms/grounds, accommodation, housing, towels, water bottles and supplies and commonly undertake both domestic and international travel.

Furthermore international travel exposes athletes to indigenous diseases for which they may have little or no natural immunity. Finally there is some information to suggest that athletes tend to be risk takers which may increase their risk for acquiring infections.

The categories of potential risk factors for spreading infection are:

- Sharing of equipment, training facilities
- Skin injury
- Close contact – on field of play, accomadation
- Off the field of play – travel, personal activities
- Diverse populations

Infections can be transmitted by person to person contact, by common source exposure or by vector-borne transmission.

The primary focus of attention should be on primary prevention by use of hygiene measures, use of immunisation (vaccinations) and use of interventions to prevent secondary spread of infection. Secondary prevention measures include prevention of recurrence and prevention of onward spread of infection from a source patient. Education of players in key aspects of infection is a key element of prevention.

1. Hygiene Measures

Standard Precautions

Standard precautions combine the major features of Universal Precautions and Body Substance Isolation. They are based on the principle that all blood, body fluids, secretions except sweat, non-intact skin, and mucous membranes may contain transmissible infectious agents. Standard precautions include a group of infection prevention practices that apply to all individuals regardless of suspected or confirmed infection status. Key features of standard precautions include:

- Wearing gloves when touching biohazardous material such as open skin, body fluids of mucus membranes.
- Washing hands with soap and hot water after contact with above even if gloves are used.

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- Cleaning surfaces thoroughly with diluted bleach (10% solution)
- Placing sharps in a biohazard puncture proof container
- Covering any wound before going to field of play

Disinfection of equipment

Equipment must be handled in a manner to prevent transmission of infectious agents including proper cleaning and sterilisation of reusable equipment.

Bacteria and viruses can exist on equipment. Methicillin resistant *Staphylococcus aureus* (MRSA) has been found on taping gel and whirlpool facilities in training facilities. Other bacteria especially *Pseudomonas spp.* have also been linked to infection outbreaks from use of whirlpools.

Guidelines for the proper disinfection and maintenance of whirlpools, saunas, ice machines and swimming pools are provided by the Occupational Safety and Health Administration (OSHA), USA. Use diluted bleach 10% solution (one part bleach in 9 parts water) to cleanse training areas and equipment.

Routine cleaning schedules for shared equipment should be established and recommended.

Equipment that has had contact with blood and body fluids should be washed with diluted bleach as above. Any towel or other material that is contaminated with blood should be laundered appropriately.

Personal Hygiene

Good personal hygiene helps reduce colonization of bacteria. Regular handwashing is key in preventing spread of infection. Handwashing with soap for 15-30 seconds, 30 seconds rinse with water followed by complete drying with a towel is necessary. The use of rinses and gels with concentrations of 50-95% alcohol take 15 seconds to use and are effective at killing organisms. Chlorhexidine soap has been useful for reducing transmission of MRSA infections. Educate players and staff on handwashing.

For prevention of transmission of other infections transmitted by droplet/aerosol, orofaecal route, see individuals infections section.

2. Specific Infections

(a) Skin and Soft Tissue Injury

Any athlete with a skin injury (abrasion, laceration etc.) should be removed from the field of play until the area of injury can be securely covered with occlusive dressings or

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bandages to prevent leakage of body fluid and to protect the lesion becoming infected. Careful attention should be paid to the wound care after play to avoid skin infection.

(i) Bacterial infections and their prevention.

The common causes of bacterial skin infections are Gram positive bacteria; *Staphylococcus aureus* and *Streptococcus spp.*. These infections can complicate abrasions or skin breakdown or chaffing. Common infections are wound infections, boils, abscesses and superficial infections such as impetigo.

Recreational or professional use of injecting drugs increases the risk of Staphylococcal carriage and breaches normal skin barriers resulting in increased infection risk. This group of infections usually respond to local wound care and topical or oral antibiotic therapy. Some outbreaks can originate from asymptomatic carriers identified by nasal cultures.

Impetigo is a superficial contagious skin infection usually caused by *Group A Streptococcus* or *Staphylococcus aureus*. It presents with sores or blisters and is spread by direct skin to skin contact. It is often mistaken for HSV-1 associated infections but its persistence for longer than a week and its honeycomb crusted appearance distinguishes it from this viral infection. Treatment is with topical mupirocin ointment and good hand hygiene.

Infection with methicillin-resistant *staphylococcus aureus* (MRSA), both healthcare associated (HA-MRSA) and community acquired (CA-MRSA), has been reported in contact sports such as American football and wrestling but also in minimal contact sports such as fencing. Consider infection with MRSA if there is poor response to standard antibiotics, diagnosis can be confirmed by swabbing the lesion.

MRSA infections that are acquired by persons who have not been recently (within the past year) hospitalised or have undergone a medical procedure (such as dialysis, surgery) are known as community acquired (CA) MRSA. CA-MRSA usually presents as skin and soft tissue infection such as boils and abscesses. Factors associated with spread of MRSA include abrasions or chaffing of the skin from clothing and hot environments, sharing of equipment and sports involving skin-to-skin contact. Depending on the source of the MRSA and the condition of the wound, MRSA skin infections may be treated by incision and drainage only, if necessary antibiotics are prescribed as determined by susceptibility patterns.

Team doctors should strongly encourage and educate team members about good overall and hand hygiene, the importance of covering of wounds, and the benefits in terms of infection transmission of limiting sharing of equipment. An ample supply of soap and alcohol based gels or hand rinses should be freely available. Athletes should be educated in recognising wounds that are potentially infected and in seeking medical attention for same.

(ii) Viral infections

Scrum-pox (Herpes Rugbeiorum)

This infection is caused by HSV-1 infection. In particular, forwards playing rugby are likely to develop facial lesions from face-to-face contact in scrums. This is commonly known as scrum-pox or prop-pox. It usually occurs in the head and neck region. A similar condition occurs in wrestlers called herpes gladiatorum.

Transmission occurs from an infected individual to a susceptible host by skin-to-skin contact. Most guidelines apply to the sport of wrestling and the recommendation is that the wrestler should be free of systemic symptoms of viral infection, have no new lesions for 72 hours and have no moist lesions. All lesions must be dried and surmounted by a firm, adherent crust. The player should have been on oral antiviral therapy for at least 120 hours. Treatment options are acyclovir 400mg twice daily (5days), Valaciclovir 2gm twice daily (1day) or Famciclovir 1500mg one dose only.

Prevention of transmission is facilitated by the screening of athletes for active lesions and removing affected individuals from competition.

Players who have a history of recurrent herpes labialis or scrum pox should be treated as above to decrease the risk of transmission. Players with frequent outbreaks should be considered for season-long prophylaxis or prophylaxis for the duration of a tournament, with appropriate antiviral medication. Treatment options are daily regimens of aciclovir 400mg twice daily, Valaciclovir 500mg once daily or Famciclovir 250mg twice daily for a duration estimated on the season or tournament. Seasonal prophylaxis is effective in significantly reducing the frequency and severity of outbreaks.

(iii) Fungal rashes and their prevention

Athlete's foot (*tinea pedis*) is a common condition. Prevention includes washing feet daily, drying between toes, wearing cotton socks, wearing bathing shoes in public showers, and sandals in warmer weather.

Jock itch (*tinea cruris*) which causes a red, itchy rash in the groin is best prevented by showering immediately after athletic activities and wearing cotton briefs. A good talc powder may be used as an additional preventative measure for both of these conditions. Ringworm (*tinea corporis*) is prevented by avoiding contact. Topical antifungals may also be of use.

(b) Sexually Transmitted Infections (STIs) and Prevention

Athletes may be at increased risk of exposure to STIs due to their age, travel and social life away from their usual existence. Regular contact with the team medical personnel affords the opportunity to address the issue of sexual health and the team doctor is often the only contact some athletes have with health services.

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The key areas for prevention are:

- Education about safer sexual practices
- Identification of asymptomatic individuals
- Diagnosis and treatment of infected individuals
- Identification and treatment of sexual partners
- Availability and use of pre-exposure vaccinations where applicable.

Preventive measures for STIs include appropriate education on sexual health maintenance, abstinence of sexual contact if an individual is actively infected or is undergoing treatment, pre-exposure vaccination against Hepatitis B and A and Human Papilloma (HPV) virus, and the use of condoms. Most condoms are made of latex and are effective in STI prevention. Male condoms significantly reduce the transmission of gonorrhoea, chlamydia, and trichomoniasis. The risk of HIV transmission is reduced by at least 80%. There is some protection against HSV-2 and a 70% reduction against HPV with condom usage. In the event that an individual is allergic to latex, certain polyurethane condoms are likely as effective although their breakage rate is higher. Use of spermicides and non-barrier contraception methods have no role in STI prevention. Partner notification is an important aspect of STI control and athletes who are infected should be encouraged to inform their partners to facilitate epidemiological treatment and opportunistic sexual health screening.

The optimum way to prevent transmission of STIs is to abstain from unprotected sexual contact and have a long-term mutually monogamous relationship with a partner known to have previously tested negative for all diagnosable STIs.

STI screening may be requested by an athlete. The infections routinely screened for are *Chlamydia trachomatis*, *n. gonorrhoea*, through swabs or urine testing (see below) and syphilis, Hepatitis B and HIV through blood testing. In general, clinical appearance is used for diagnosis of HPV and HSV infections. All STIs are treatable and most are curable.

(i) Urethritis/cervicitis/proctitis

Chlamydia trachomatis

Chlamydia is a common STI caused by a bacterium, *Chlamydia trachomatis*. Chlamydia is transmitted during vaginal, anal or oral sexual contact. The greater the number of sexual partners, the greater the risk of infection. Chlamydia is known as a “silent” disease because up to 75% of females and 50% of males have no symptoms. If symptoms do occur, they usually appear within 1-3 weeks.

Men with symptoms usually present with discharge from their penis or burning sensation when passing urine. Pain and swelling of the testicles can occur resulting from epididymitis and epididymo-orchitis.

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Females with symptoms usually complain of abnormal vaginal discharge or a burning sensation when passing urine. If the infection spreads to the fallopian tubes, the woman can complain of lower abdominal pain, fever and pain during intercourse.

Complications in men are epididymitis and Reiter's syndrome (arthritis, skin lesions and conjunctivitis). Presentation in a player of a non-traumatic large joint swelling should include work-up for Chlamydia infection.

Complications in females are pelvic inflammatory disease, ectopic pregnancy and infertility.

Diagnosis is made by history of unprotected sexual intercourse with laboratory confirmation of infection by performing a test on the urine or obtaining a specimen from a site ie tip of penis or cervix.

The test is very specific and sensitive.

Treatment for Chlamydia is straightforward and is curable with antibiotics.
Azithromycin 1gram (single dose) OR
Doxycycline 100mg twice daily (one week course)

Persons with chlamydia should abstain from sexual intercourse until they and their regular partners are treated, usually a period of 7-10 days following treatment
All sex partners should be evaluated, tested and treated.

Return to play - See below for **Gonorrhoea**

Gonorrhoea

Gonorrhoea is a sexually transmitted infection caused by a bacterium, *Neisseria gonorrhoeae*. Gonorrhoea is spread through contact with the penis, vagina, anus or mouth.

Some men have no symptoms of infection. However if symptoms occur they usually appear 2-5 days after exposure to the infection, much shorter than for Chlamydia. Male patients complain of burning passing urine, or a yellow or green discharge from the penis. Sometimes men develop painful or swollen testicles.

In women, the symptoms are usually absent or mild. Females can complain of burning passing urine, increased vaginal discharge or vaginal bleeding between periods. Rectal infection can occur in both sexes with symptoms of discharge, anal itching and soreness.

Throat infections may cause a sore throat but usually cause no symptoms.

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Untreated gonorrhoea can cause epididymitis, a painful condition of the ducts attached to the testicles that may lead to infertility if left untreated. In females complications include pelvic inflammatory disease and ectopic pregnancy.

Gonorrhoea can spread to the blood and joints in 1-3% of infected individuals. Joints most commonly involved are wrists, ankles, hands and feet.

Diagnosis is based on history of exposure in conjunction with laboratory tests. A swab is taken from the infected area (cervix, urethra, rectum, and throat). Chlamydia co-infection frequently occurs with gonorrhoea and empiric treatment for Chlamydia is recommended in those diagnosed with gonorrhoea.

Treatment is effective in eradicating the infection however antibiotic-resistant strains are an increasing problem in many parts of the world. It is important to know local, national and international antibiotic susceptibility surveillance data of gonorrhoea to ensure appropriate treatment is provided especially if therapy is given prior to formal culture-confirmed susceptibility data is available. Updates on drug resistant gonorrhoea are available on www.cdc.gov.

Recommended treatment: Cefixime 400mg one dose in addition to treatment for Chlamydia as above if this infection cannot be ruled out.

If the individual has epididymitis, treatment of choice is a single intramuscular injection of ceftriaxone 125mg and a 10 day course of oral doxycycline 100mg BD.

Persons with gonorrhoea should abstain from sexual intercourse until they and their regular partners are treated, usually a period of 7-10 days following treatment. All sex partners should be evaluated, tested and treated.

The ways of preventing transmission of STIs including gonorrhoea is to abstain from sexual contact, have a longterm mutually monogamous relationship with a partner known to have previously tested negative for all diagnosable STIs.

Consistent and correct use of latex condoms significantly reduces the risk of transmission of gonorrhoea and other STIs.

Return to play considerations for Chlamydia and gonorrhoea:

Simple and uncomplicated urethritis/cervicitis/proctitis requires minimal time off from practice and competition. Athletes with epididymo-orchitis, disseminated gonococcal disease or PID should refrain from sports until there is systemic improvement including resolution of fever and pain. If an infected joint complicates the infection more time is required for recovery and rehabilitation with physiotherapy. Performance of an arthroscopy for diagnosis or wash-out may further delay return to activity.

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Genital Herpes

Genital herpes is a sexually transmitted infection caused by herpes simplex viruses type 1 (HSV-1) or type 2 (HSV-2). Most Genital Herpes is caused by HSV-2 (70% of cases). A person can only get HSV-2 during sexual contact with someone who has a genital HSV-2 infection. Transmission can occur from an infected partner who has no visible sores and may not know that they are infected. HSV-1 usually causes “cold sores” or “fever blisters” but can cause genital infection following oral-genital contact (30% of cases). Genital HSV-1 outbreaks recur less frequently than genital HSV-2 outbreaks. Clinical presentation is variable. If symptoms are present, primary infection (first outbreak) causes painful genital ulcers, pain passing urine, tender swollen lymph nodes. Recurrent outbreaks tend to have milder symptoms with fewer ulcers and viral shedding only last 3 days. Lesions usually recur in the same positions.

Diagnosis is made by sending a swab for viral culture or PCR. Blood tests for serology are less helpful.

Treatment is with short courses of systemic antiviral agents. Use of episodic or suppressive therapy is guided by the individual’s history of recurrence.

Return to play considerations

Following primary infection with HSV, return to activity can occur when systemic symptoms have resolved. This can take from 2-6 weeks. Recurrent outbreaks of genital herpes usually resolve in a few days. Lesions should be healed before returning to play.

For scum pox see skin infection section.

(ii) Human papillomavirus (HPV) Infection

HPV causing genital infection is very common with up to 80% of females carrying the virus by the age of 50. Most infections with HPV are asymptomatic. Infectivity does not correlate with the presence of absence of visible lesions. Transmission only occurs by direct skin-to-skin contact. Incubation ranges from weeks to years depending on the immune status of the individual. The most common manifestation of genital HPV is external genital warts (EGW) (condylomata acuminata), usually caused by types 6 and 11. EGW can be single or multiple on the penis, scrotum, vulva, cervix or perianal area. Untreated EGW resolve spontaneously, remain unchanged, or increase in size and number. Treatment options depend on number, size and patient preference. Usually a course of treatment is required and options include cryotherapy with liquid nitrogen, or patient-applied therapies with podophyllin cream/solution or imiquimod cream.

Prevention

Use of condoms reduces but does not eliminate the risk of infection. Vaccination with the quadravalent HPV vaccine includes protection against types 6 and 11.

Return to play

There are no specific rules for return to play with HPV.

With **molloscum contagiosum**, a cutaneous viral infection, it is recommended to cover solitary and clustered lesions with Op-Site given the contagious nature of these lesions.

(c) Blood Borne Infections

Blood borne infections are transmitted by exposure to blood from bleeding gums, substance misuse, unprotected sexual contact, and travel to endemic areas. The risk of transmission of blood borne viruses in bleeding injuries varies with each virus. Transmission of HIV is estimated to be 1:43 million games based on the estimated prevalence of HIV infection amongst athletes, the risk of percutaneous HIV transmission in health care and the risk of a bleeding injury in American football. Individuals and sports medicine physicians should be aware of the principles of post exposure prophylaxis (PEP) for HIV infection.

Risk of transmission of Hepatitis B is 50-100 times higher, HBV is a vaccine-preventable infection. The theoretical risk of transmission of HBV in sport is between one transmission in every 850,000 to 4.25 million games and one transmission in 10,000-50,000 games. Based on risk it is now recommended that individual water containers be available for each player in contact sports. Athletes should use squeeze water bottles which they do not put in their mouth.

Education to include appropriate management of bleeding wounds, testing for BBVs (voluntary rather than mandatory) and hepatitis B vaccination are the principle interventions to avoid transmission and acquisition of BBV infections.

(d) Meningitis

In cases of meningococcal meningitis, chemoprophylaxis should be considered in household contacts and anyone directly exposed to the patient's oral secretions and should be administered within the first few days of the patient's illness. There is little benefit in administering chemoprophylactic antibiotics beyond 14 days from onset of illness in the source patient. Prevention measures include use of meningococcal vaccination per international immunisation guidelines.

Outbreaks of aseptic meningitis, commonly caused by enteroviral infection (echoviruses and coxsackie viruses) can occur and need to be differentiated from causes of bacterial meningitis, some of which may be prevented by immunisation.

(e) Common viral infections

Epstein Barr Virus EBV

Approximately 30-50% of US students commencing college are non-immune to EBV infection, 1-3% of the general population acquire infection each year. Resolution of clinical infection occurs within 4-8 weeks. Complications include prolonged fatigue (some data to suggest that it may take up to 3 months for patients to return to pre-illness levels of activity), Guillain Barre syndrome, meningitis, neuritis, DIC and aplastic anaemia. Splenic rupture is very rare estimated to complicate ~0.1-0.2% of cases but it remains the issue of concern in determining when an individual athlete should return to activity. Athletes are advised not to return to the field of play for one month after the infection.

Influenza

Influenza is a family of respiratory viruses.

Seasonal influenza typically starts in autumn and most individuals have some immunity to the virus. Vaccination for seasonal influenza is based on the circulating strains of the previous years and should be considered as a routine vaccine.

Strains causing pandemic influenza occur sporadically. The immunity in the population tends to be poor as the strain is new. In the event of a pandemic, players should be vaccinated once the vaccine has been made available by the drug-relating authorities of the country. Side effects from vaccination are uncommon.

Mumps

Mumps is a viral illness caused by paramyxovirus. The classic symptoms develop about 16-18 days following exposure. Parotitis occurs in about half those infected but non specific symptoms of fever, myalgia, anorexia, headache and malaise are common. Severe complications of mumps are rare. Orchitis occurs in 30-40% of post pubertal males but this rarely results in sterility.

Patients with mumps are considered to be infectious from 3 days before to 5 days after the development of symptoms. Any player with mumps needs to be isolated. Other players in contact with a case of mumps should be vaccinated with MMR unless they have a clear record of 2 doses of MMR.

Laboratory diagnosis is confirmed by isolation of the virus from a clinical specimen, positive mumps IgM or demonstration of a specific mumps antibody response in absence of recent vaccine such as a four-fold increase in IgG titre.

Prevention is by vaccination. Any player under 25 years with only one vaccination should have a second vaccine. If players are unsure or have no access to records, the player should get at least one dose of MMR. There is no effective treatment for MMR.

Varicella Zoster virus (Chickenpox)

Varicella zoster virus (VZV) causes chickenpox and herpes zoster (shingles). About 9 out of 10 people have had chickenpox by the age 15. The incubation period is 10-21 days following exposure and people are infectious for 2 days before the onset of lesions until they are crusted over. Individuals with chickenpox should be isolated and antiviral medication such as acyclovir can limit the severity of the infection.

If an individual is exposed to chickenpox and is unaware of their immune status, send an urgent serum VZV IgG. If negative and therefore non-immune, treatment with VZimmunoglobulin should be given preferably within 96 hours of exposure – are we suggesting that all non-immune individuals irrespective of medical history should receive VZIg. A vaccine is available in many countries either as a childhood vaccine or for those who are non-immune.

3. Immunisations

Immunization is an important aspect of prevention of infection for all individuals. The following are important issues to consider in assessing disease prevention in athletes:

- 1) routine health maintenance
- 2) catch up immunization for missed or failed primary immunization
- 3) travel related immunization (geographical variation for requirements)
- 4) recent exposure to infectious agents
- 5) immunization of high risk groups (eg splenectomy, immunocompromised etc)

Active immunization involves the administration of all or part of a microbe or a modified version such as an antigen to stimulate an immune response. Although most vaccines are 90% effective, they are not guaranteed to promote immune protection. Inactivated vaccines are killed virus or bacterial proteins that stimulate the immune system to develop antibodies against an infectious agent. Live attenuated vaccines are altered, less virulent forms of the offending microbe and although they are very effective are associated with more side effects such as pain at the site of injection.

Guidelines for immunization are outlined in the tables below. Requirement for routine childhood immunization varies between countries so that it is important to ensure a catch up is provided to any individual who has migrated from a healthcare environment that has not provided specific vaccinations for infections that may be more troublesome for athletes – eg annual influenza, MMR etc. Documentation of routine childhood and adult vaccinations can also vary but it is important to ensure every effort is made to confirm proof of receipt of primary immunisation schedule. Consideration should be given to confirm immunity to vaccine preventable diseases in athletes at high level eg varicella, hepatitis B and pre-participation physical examinations for entry to the sport at a professional level should include documentation of immunization history.

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There are numerous web sites that can be used as useful resource tools on issues pertaining to immunization

- www.immunisation.ie/childhoodimmunisation
- www.immunisation.nhs.uk
- www.immunise.health.gov.au

Travel-related immunisation requirements will be determined by the destination of travel. Players and staff should also be opportunistically advised of standard travel-related issues such as sun exposure, driving, jet-lag prevention, sexual health. Reputable travel sites which will provide up to date infection outbreak information should be used to guide immunisation recommendations

- www.cdc.gov/travel
- www.who.int/ith/en

General Issues Pertaining to Vaccination Process:

It should be noted that there are significant logistical issues to ensuring the safe and appropriate delivery of vaccines. These include an appropriate, safe medical infrastructure, with access to resuscitation equipment, the need to ensure adequate documentation of vaccine administration both for the individual and also in the event of a vaccine batch recall and the need to ensure that follow-up serological monitoring post vaccination is done where indicated.

Passive immunization is the administration of preformed antibodies (such as varicella zoster immunoglobulin) in order to provide temporary immunity. Human Immunoglobulin is the fraction of blood plasma that contains antibodies. Preparations of immunoglobulin belong to 2 categories:

(a) Human Normal Immunoglobulin

(b) Human specific immunoglobulin/Hyperimmune globulin (HBIG, VZIG). These are used following exposure to Hepatitis B virus and Varicella zoster virus respectively.

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	Time to Exposure	Management	Follow-up
Varicella	Within 72 hours of appearance of rash in the index case	Vaccinate if non-immune	
Influenza		Vaccinate all	
Hepatitis B		Vaccinate if non-immune HBIG if index known to be HBV infected	Monitor for serological response to vaccination
Mumps/Rubella	Exposed susceptible people are not necessarily protected by postexposure administration of live-virus vaccine. However, a common practice for people exposed to mumps or rubella is to administer vaccine to presumed susceptible people so that permanent immunity will be afforded by immunization if mumps or rubella does not result from the current exposure. Administration of live-virus vaccine is recommended for exposed adults born in the United States in 1957 or after who previously have not been immunized against or had mumps or rubella.	Vaccinate	
Measles	Within 72 hours of exposure (may be difficult to determine as measles can be spread from 4 days before to 4 days after onset of rash) Ig within 6 days of exposure may be considered for immuno-suppressed contacts	Vaccinate	
Meningococcal disease		Antibiotic chemoprophylaxis Consider vaccination in setting of outbreak	

Routine immunizations acquired during childhood – refer to guidelines for each country

Routine immunizations for adolescents/adults vary between countries depending on access to healthcare. Some countries recommend influenza, HPV, meningococcal conjugate vaccine, and booster of MMR. Pandemic influenza such as the recent H1N1 outbreak may result in additional recommendation.

Outbreak control and immunization

In the setting of an outbreak of certain vaccine-preventable infections amongst teamplayers there are international guidelines to guide the use of immunisations to reduce onward infection. Common infections are outlined below. Advice from an Infectious Diseases specialist and/or Public Health may be required.

4. Conclusion

Team doctors and managers should strongly encourage and educate team members about good overall hygiene measures and specifically hand hygiene, the importance of covering of wounds, and the benefits in terms of infection transmission of limiting sharing of equipment.

An ample supply of soap and alcohol based gels or hand rinses should be freely available. Athletes should be educated in recognising wounds that are potentially infected and in seeking medical attention for same.

A knowledge of commonly encountered infections is paramount to the recognition, management and development of prevention strategies. As described primary prevention of infection can be promoted through accurate immunizations, appropriate planned health maintenance, good hygiene practices and behavioural modification to minimise high risk activities. Secondary prevention is achieved through vigilant surveillance for reportable diseases, proper education and containment for reducing infection if an illness has occurred and timely prophylaxis with medications and immunisations where indicated.

Hence - Educate, vaccinate, evaluate