New Zealand). In unimmunised individuals, transmission of hepatitis A is reduced by good hygiene. Intramuscular normal immunoglobulin is no longer recommended for prophylaxis in travellers.

Public Health England recommends the use of normal immunoglobulin in addition to hepatitis A vaccine for prevention of infection in close contacts (of confirmed cases of hepatitis A) who have chronic liver disease (including chronic hepatitis B or C infection), or HIV infection (with a CD4 count < 200 cells per microlitre), or who are immunosuppressed; normal immunoglobulin should be given as soon as possible, preferably within 14 days of exposure to the primary case. However, normal immunoglobulin can still be given to contacts with chronic liver disease up to 28 days after exposure to the primary case. Hepatitis A vaccine can be given at the same time, but it should be given at a separate injection site.

Measles

Intravenous or subcutaneous normal immunoglobulin may be given to prevent or attenuate an attack of measles in individuals who do not have adequate immunity. Children with compromised immunity who have come into contact with measles should receive intravenous or subcutaneous normal immunoglobulin as soon as possible after exposure. It is most effective if given within 72 hours but can be effective if given within 6 days.

Subcutaneous or intramuscular normal immunoglobulin should also be considered for the following individuals if they have been in contact with a confirmed case of measles or with a person associated with a local outbreak:

- non-immune pregnant women
- infants under 9 months

Further advice should be sought from the Centre for Infections, Public Health England (tel. (020) 8200 6868).

Individuals with normal immunity who are not in the above categories and who have not been fully immunised against measles, can be given measles, mumps and rubella vaccine, live p. 826 for prophylaxis following exposure to measles.

Rubella

Intramuscular immunoglobulin after exposure to rubella does **not** prevent infection in non-immune contacts and is **not** recommended for protection of pregnant women exposed to rubella. It may, however, reduce the likelihood of a clinical attack which may possibly reduce the risk to the fetus. Risk of intra-uterine transmission is greatest in the first 11 weeks of pregnancy, between 16 and 20 weeks there is minimal risk of deafness only, after 20 weeks there is no increased risk. Intramuscular normal immunoglobulin p. 796 should be used only if termination of pregnancy would be unacceptable to the pregnant woman—it should be given as soon as possible after exposure. Serological follow-up of recipients is essential to determine if the woman has become infected despite receiving immunoglobulin.

For routine prophylaxis against Rubella, see measles, mumps and rubella vaccine, live p. 826.

Disease-specific immunoglobulins

Specific immunoglobulins are prepared by pooling the plasma of selected human donors with high levels of the specific antibody required. For further information, see *Immunoglobulin Handbook* (www.gov.uk/phe).

There are no specific immunoglobulins for hepatitis A, measles, or rubella—normal immunoglobulin is used in certain circumstances. There is no specific immunoglobulin for mumps; neither normal immunoglobulin nor measles, mumps and rubella vaccine, live is effective as postexposure prophylaxis.

Hepatitis B immunoglobulin

Disease-specific hepatitis B immunoglobulin p. 796 ('HBIG') is available for use in association with hepatitis B vaccine p. 822 for the prevention of infection in infants born to mothers who have become infected with this virus in pregnancy or who are high-risk carriers (see hepatitis B vaccine). Hepatitis B immunoglobulin will not inhibit the antibody response when given at the same time as hepatitis B vaccine but should be given at different sites.

An intravenous and preparation of hepatitis B immunoglobulin is licensed for the prevention of hepatitis B recurrence in HBV-DNA negative patients who have undergone liver transplantation for liver failure caused by the virus.

Rabies immunoglobulin

Following exposure of an unimmunised individual to an animal in or from a country where the risk of rabies is high the site of the bite should be washed with soapy water and specific rabies immunoglobulin p. 798 of human origin administered. All of the dose should be injected around the site of the wound; if this is difficult or the wound has completely healed it can be given in the anterolateral thigh (remote from the site used for vaccination).

Rabies vaccine p. 827 should also be given intramuscularly at a different site (for details see rabies vaccine). If there is delay in giving the rabies immunoglobulin, it should be given within 7 days of starting the course of rabies vaccine.

Tetanus immunoglobulin

For the management of tetanus-prone wounds, tetanus immunoglobulin p. 798 should be used in addition to wound cleansing and, where appropriate, antibacterial prophylaxis and a tetanus-containing vaccine. Tetanus immunoglobulin, together with metronidazole p. 344 and wound cleansing, should also be used for the treatment of established cases of tetanus.

Varicella–zoster immunoglobulin

Varicella-zoster immunoglobulin p. 798 (VZIG) is recommended for individuals who are at increased risk of severe varicella (neonates, pregnant women, and immunosuppressed individuals with varicella-zoster virus immunoglobulin G antibody less than 150 mIU/mL) *and* who have no antibodies to varicella-zoster virus *and* who have significant exposure to chickenpox (varicella) or shingles (herpes zoster) during the infectious period.

Immunosuppressed children receiving regular intravenous immunoglobulin replacement therapy only require varicella-zoster immunoglobulin if the most recent dose was administered more than 3 weeks before exposure.

Immunosuppressed children on long term aciclovir p. 420 or valaciclovir prophylaxis p. 422 will require a temporary increase in their dose following exposure; for children within 12 months of a stem cell transplant, varicella-zoster immunoglobulin should also be considered.

Important: for full details consult *Guidance for issuing varicella-zoster immunoglobulin (VZIG)* and *Immunisation against infectious disease* from Public Health England (www.gov.uk).

Anti-D (Rh_0) immunoglobulin

INDICATIONS AND DOSE

To rhesus-negative woman for prevention of Rh_0(D) sensitisation, following birth of rhesus-positive infant

- BY DEEP INTRAMUSCULAR INJECTION
- Females of childbearing potential: 500 units, dose to be administered immediately or within 72 hours; for transplacental bleed of over 4 mL fetal red cells, extra 100–125 units per mL fetal red cells, subcutaneous route used for patients with bleeding disorders