7 Indications and Contraindications

It is every child's right to be protected against infectious diseases. No child should be denied immunisation without serious thought as to the consequences, both for the individual child and for the community. Where there is any doubt, advice should be sought from a Consultant Paediatrician, Consultant in Communicable Disease Control or District (Health Board) Immunisation Co-ordinator.

7.1 Special risk groups

7.1.1 Some conditions increase the risk of complications from infectious diseases and children and adults with such conditions should be immunised **as a matter of priority**. These conditions include the following: asthma, chronic lung and congenital heart diseases, Down's syndrome, Human Immunodeficiency Virus (HIV) infection (see 7.4), small for dates babies and those born prematurely. This last group should be immunised according to the recommended schedule from two months after birth, irrespective of the extent of prematurity. Studies have shown that antibody responses and adverse events are not significantly different in pre-term and term infants immunised 2, 3 and 4 months after birth.

7.1.2 When babies are immunised in Special Care Units, or children are immunised opportunistically in Accident and Emergency Units or in-patient facilities, it is most important that a record of the immunisation is sent to the Health Authority, NHS Trust or Health Board by return of an 'unscheduled immunisation' form.

7.1.3 **Unimmunised children and others with unknown immunisation histories**

Some children, for a variety of reasons, may not have been immunised or their immunisation history may be unknown. If children coming to the UK are not known to have been completely immunised, they should be assumed to be unimmunised and a full course of immunisations should be planned. For children under 10 years of age, this should be the full UK primary immunisation schedule of 3 doses of diphtheria, tetanus, pertussis and oral polio vaccine (Hib only up to 4 years, 3 doses for children under 1 year, only one dose for children aged 1 to 4 years) with boosting for diphtheria, tetanus and polio, 5 and 10 years thereafter. Children of all ages above 12 months should receive two doses of MMR, separated by at least 3 months. For children over 10 years of age,

Td should be used along with MMR and OPV. Boosting with Td and OPV should be given 5 and 10 years later. In the event of a severe adverse reaction, blood should be taken for tetanus antibody titres as these may provide a marker for previous immunisation. No further diphtheria, tetanus and pertussis immunisations are needed in children where there is evidence of previous immunisation including booster doses; immunisation should be completed with OPV and Hib if appropriate.

■ 7.1.4 Children coming to the United Kingdom, part way through their immunisation schedule, should be transferred onto the standard UK schedule, as appropriate for their age.

■ 7.1.5 Children and adults with no spleen, or who have functional hyposplenism, are at increased risk from bacterial infections, most commonly caused by encapsulated organisms. Such infection is most common in the first two years after splenectomy; the risk is greatest amongst children but persists into adult life. The following vaccines are recommended in addition to those in the routine schedule: pneumococcal vaccine (over two years of age, see Chapter 25), Hib vaccine (irrespective of age, see Chapter 16), influenza (Chapter 20), meningococcal A and C vaccine (see Chapter 23). Where possible, immunisation should be given two weeks before splenectomy together with advice about the increased risk of infection.

■ 7.1.6 Adults and children who receive haemodialysis are at increased risk of hepatitis B and hepatitis C although these risks have declined. Haemodialysis patients should be screened for serological evidence of hepatitis B immunity and antibody negative individuals should have three doses of hepatitis B vaccine, ideally before dialysis commences or as soon as possible thereafter. In haemodialysis patients, protection only lasts as long as anti-HBs antibodies remain over 10miu/ml. Patients on haemodialysis should be monitored annually for anti-HBs antibodies and re-immunised if antibodies fall below this level. Recipients of renal transplants and individuals with chronic renal disease are at increased risk of infection and should be considered for annual influenza immunisation, Hib and pneumococcal immunisation.

■ 7.2 General Contraindications

■ 7.2.1 If an individual is suffering from an acute illness, immunisation should be postponed until recovery has occurred. Minor infections without fever or systemic upset are not reasons to postpone

immunisation. Antibody responses and incidence of adverse reactions were the same in children with or without acute mild illness, when given MMR vaccine. The acute illnesses were upper respiratory tract infection, diarrhoea or otitis media.

■ 7.2.2 Immunisation should not be carried out in individuals who have a definite history of a severe local or general reaction to a preceding dose. Detailed enquiry may reveal that the reported reaction does not match the specifications below and immunisation can proceed. Appropriate specialist advice should be sought if there is doubt. The following reactions should be regarded as severe:

Local: an extensive area of redness and swelling which becomes indurated and involves most of the antero-lateral surface of the thigh or a major part of the circumference of the upper arm.

General: fever equal to or more than 39.5°C within 48 hours of vaccine; anaphylaxis; bronchospasm; laryngeal oedema; generalised collapse. Prolonged unresponsiveness; prolonged inconsolable or high-pitched screaming for more than 4 hours; convulsions or encephalopathy occurring within 72 hours.

■ 7.2.3 Although there is evidence to suggest that rubella and polio vaccines are not teratogenic (see Chapter 28), live vaccines should not be administered to pregnant women because of the theoretical possibility of harm to the fetus. Where there is a significant risk of exposure to the disease, for example to poliomyelitis or yellow fever, the need for immunisation outweighs any possible risk to the fetus.

■ 7.3 Live Vaccines - special risk groups

■ 7.3.1 There are some individuals for whom there may be risks if they are given live vaccines. Inactivated vaccines are not dangerous to these recipients but may be ineffective. These individuals may not be able to make a normal immune response to live vaccines and could suffer from severe manifestations such as disseminated infection with BCG or paralytic poliomyelitis from vaccine virus. These individuals include:

■ 7.3.2 (a) All patients currently being treated for malignant disease with chemotherapy or generalised radiotherapy, or within 6 months of terminating such treatment.

(b) All patients who have received an organ transplant and are currently on immunosuppressive treatment.

■ 7.3.3 Patients who within the previous six months have received a bone marrow transplant. Such individuals, irrespective of age, should have their immunity to diphtheria, tetanus, polio, measles, mumps, rubella and Hib checked six months after transplantation and be immunised appropriately. Such tests are difficult to interpret if performed within three months after the receipt of any blood product, including HNIG.

■ 7.3.4 Children who receive prednisolone, orally or rectally, at a daily dose (or its equivalent) of 2 mg/kg/day for at least one week, or 1 mg/kg/day for one month. For adults, an equivalent dose is harder to define but immunosuppression should be considered in those who receive 40 mg prednisolone per day for more than one week. Corticosteroids, administered by other routes, such as aerosols, topically or intra-articularly, are not immunosuppressive. Administration of live vaccines should be postponed for at least three months after immunosuppressive treatment has stopped, or three months after levels have been reached that are not associated with immunosuppression.

■ 7.3.5 Lower doses of steroids, given in combination with cytotoxic drugs (including anti thymocyte globulin or other immunosuppressants) should be considered to cause immunosuppression. The advice of the physician in charge or immunologist should be sought.

■ 7.3.6 Occasionally, there may be individuals on lower doses of steroids or other immunosuppressants for prolonged periods, or who because of their underlying disease, may be immunosuppressed, and are at increased risk of infection. The clinician should ideally discuss their management with a consultant in infectious disease, microbiology, paediatrics or relevant specialist physician.

■ 7.3.7 Patients with evidence of impaired **cell mediated immunity**, for example HIV infection with current symptoms, Severe Combined Immunodeficiency Syndrome, Di George Syndrome and other combined immunodeficiency syndromes. Patients with minor **deficiencies of antibodies** are not at risk; those with major antibody deficiencies will be receiving antibodies in their immunoglobulin treatment preparations and hence are not at risk from receipt of live vaccines. Because the patient is receiving immunoglobulin preparations, live vaccines are likely to be ineffective, apart from yellow fever vaccine as it is most unlikely that there are significant amounts of anti-yellow fever antibodies in immunoglobulin.

■ 7.3.8 For HIV positive individuals, see 7.4

■ 7.3.9 After exposure to measles or chickenpox (see Chapters 22 and 34), individuals who fulfil the above criteria, and are susceptible to measles or chickenpox on the grounds of history or antibody titres, should be given an injection of the appropriate preparation of immunoglobulin as soon as possible.

■ 7.4 Immunisation of individuals with antibody to the Human Immunodeficiency Virus (HIV positive)

■ 7.4.1 HIV positive individuals **with or without symptoms** should receive the following as appropriate:

Live vaccines: **measles; mumps; rubella; and polio**.

Inactivated vaccines: **pertussis; diphtheria; tetanus; polio; typhoid; cholera; hepatitis B; and Hib**.

■ 7.4.2 For HIV positive symptomatic individuals, inactivated polio vaccine (IPV) may be used instead of OPV, at the discretion of the clinician.

■ 7.4.3 HIV positive individuals should **not** receive **BCG** vaccine; there have been reports of dissemination of BCG in HIV positive individuals.

■ 7.4.4 Yellow fever vaccine should not be given to either symptomatic or asymptomatic HIV positive individuals since there is as yet insufficient evidence as to the safety of its use. Travellers should be told of this uncertainty and advised not to be immunised unless there are compelling reasons. If such travellers still intend to visit countries where a yellow fever certificate is required for entry, then they should obtain a letter of exemption from a medical practitioner.

■ 7.4.5 No harmful effects have been reported following live attenuated vaccines for **measles, mumps, rubella and polio** in HIV positive individuals who are at increased risk from these diseases. Immunisation of known measles seronegative HIV positive individuals is advised; a measurable antibody response may occur in only some vaccinees. It should be noted that in HIV positive individuals, polio virus may be excreted for longer periods than in other people. Contacts of a

recently immunised HIV positive individual should be warned of this, and of the need for washing their hands after changing an immunised infant's nappies. For HIV positive contacts of an immunised individual (whether that individual is HIV positive or not) the potential risk of infection is greater than that in non-HIV individuals.

■ 7.4.6 Vaccine efficacy may be reduced in HIV positive individuals. Consideration should be given to the use of normal immunoglobulin for HIV positive individuals after exposure to measles (see 22.9).

■ 7.4.7 For HIV positive individuals exposed to **chickenpox or zoster**, see 34.5

■ 7.4.8 HIV positive individuals may also receive: pneumococcal, rabies, hepatitis A and meningococcal A+C vaccines.

NB. **Some of the above advice differs from that for other immunocompromised patients (7.3).**

Specific contraindications to individual vaccines are given in the relevant chapters and must be observed.

■ 7.5 Immunisation intervals

■ 7.5.1 Live virus vaccines, with the exception of yellow fever vaccine, should not be given during the three months following injection of immunoglobulin because the immune response may be inhibited. Human normal immunoglobulin obtained from UK residents is unlikely to contain antibody to yellow fever virus which would inactivate the vaccine. In travellers, when time is short and there is a significant risk of exposure to polio, vaccine **should** be given even if immunoglobulin has been given at any time in the previous three months.

■ 7.5.2 If it is necessary to administer more than one live vaccine at the same time, they should either be given simultaneously in different sites (unless a combined preparation is used) or in theory be separated by a period of at least three weeks. There are no current data using presently available vaccines to support this recommendation which came from earlier observations about 'take rates' of smallpox vaccination; these may have been reduced if another live vaccine had been given shortly before smallpox vaccination. It probably has little

relevance for intervals between oral polio vaccine and other presently used live virus vaccines. It is recommended that a three week interval should be allowed between the administration of live virus vaccines especially measles vaccine, and tuberculin testing; there is experience that shows that measles infection or immunisation can give false negative results in tuberculin positive individuals. No interval needs to be observed between the administration of live and inactivated vaccines.

7.6 The following conditions are NOT contraindications to immunisation:

a. Family history of any adverse reactions following immunisation.

b. Previous history of pertussis, measles, rubella or mumps infection.

c. Prematurity: immunisation should not be postponed.

d. Stable neurological conditions such as cerebral palsy and Down's syndrome.

e. Contact with an infectious disease.

f. Asthma, eczema, hay fever or 'snuffles'.

g. Treatment with antibiotics or locally-acting (eg topical or inhaled) steroids.

h. Child's mother is pregnant.

i. Child being breast fed.

j. History of jaundice after birth.

k. Under a certain weight.

l. Over the age recommended in immunisation schedule.

m. 'Replacement' corticosteroids.

7.7 Other contraindication issues

7.7.1 A history of allergy is **not** a contraindication. Hypersensitivity to egg contraindicates influenza vaccine; previous **anaphylactic** reaction to egg contraindicates influenza and yellow fever vaccines. There is increasing evidence that MMR vaccine can be safely given even to children with a history of previous anaphylaxis after egg ingestion (see 22.7).

7.7.2 A personal or family history of inflammatory bowel disease (Crohn's or ulcerative colitis) does not contraindicate measles or MMR immunisation. Evidence for an association between measles vaccine and inflammatory bowel disease is not convincing.

7.7.3 Family history of convulsions (see 24.4.8). Where there is a close family history (parents or sibling) of febrile convulsions, there is an increased chance that a febrile convulsion could follow a fever in a vaccine recipient. Immunisation should be carried out after advice on the prevention of pyrexia has been given (see 24.5.2).

7.7.4 Siblings and close contacts of immunosuppressed children **should** be immunised against measles, mumps and rubella. There is no risk of transmission of virus following immunisation.

7.7.5 Oral poliomyelitis vaccine (OPV) should **not** be given to immunosuppressed children, their siblings or other household contacts. Inactivated poliomyelitis vaccine should be given instead; this should also be given to immunosuppressed adults and their contacts (see 26.6.1 and 26.6.3).

7.7.6 Recently immunised children may be taken swimming, even if they have been given OPV. Similarly, there is no risk of an unimmunised child contracting vaccine associated poliomyelitis from a recently immunised child if they are taken swimming. In such public places, care must be taken to dispose of soiled napkins without contaminating facilities that others might use.

7.7.7 Surgery is not a contraindication to immunisation, nor is recent immunisation a contraindication to anaesthesia or surgery. Recent receipt of OPV does not contraindicate tonsillectomy. In the United States, where recent OPV administration has never been considered a contraindication for tonsillectomy, there has been no recorded case of vaccine associated poliomyelitis following this procedure.

■ 7.7.8 Homoeopathy: the Council of the Faculty of Homoeopathy strongly supports the immunisation programme and has stated that immunisation should be carried out in the normal way using the conventional tested and approved vaccines, in the absence of medical contraindications.

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