FACTSHEET

Immunisation- information on the diseases covered

Today, we have vaccines which protect children against many diseases. These diseases include the following:

- Pertussis (Whooping cough)
- Diphtheria
- Tetanus
- Measles
- Rubella (German measles)
- Mumps
- *Haemophilus influenzae* type b (Hib)
- Hepatitis B
- Hepatitis A
- Poliomyelitis
- Influenza
- Varicella (Chickenpox)
- Pneumococcal disease (some types)
- Meningococcal disease (some types)
- Rotavirus
- Human papillomavirus (some types)

These diseases that can be prevented by routine childhood immunisation are included in the National Immunisation Program (NIP) Schedule. The current NSW immunisation schedule can be viewed on the NSW Health website.

http://www.health.nsw.gov.au/immunisation/Publications/nsw-immunisation-schedule.pdf

The diseases covered on the immunisation table

Pertussis (whooping cough)

Young babies who suffer from pertussis typically cough in persistent bouts, with the illness lasting for up to three months. When they gasp for air at the end of the cough, a sound like a "whoop" is sometimes made. This is how the disease got its common name. Vomiting is also common with this disease, and pneumonia, seizures (fits) and brain damage may occur. When babies get pertussis, they may spend a long time in hospital and some need to be in intensive care; some of these babies die. In countries where the numbers of babies who are completely immunised have gone down, more babies are now getting pertussis. Even in countries like Australia where childhood immunisation rates are high, babies are still at risk because teenagers and adults are getting pertussis and may pass it on to children who are too young to receive all their pertussis vaccine doses. This is because, unlike for many other diseases, protection against pertussis wears off several years after vaccination. There is a pertussis vaccine formulation available for teenagers and adults, and it is recommended that all adolescents, people planning a pregnancy, pregnant or who have just had a baby, other carers of infants such as dads and grandparents, adults who work with young children and healthcare workers, should be vaccinated against this serious disease.

the children's hospital at Westmead
The Sydney children's Hospitals Network

SYDNEY CHILDREN'S HOSPITAL RANDWICK
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Diphtheria

Diphtheria most commonly affects the nose and throat and can cause severe inflammation that may block the windpipe. The toxin it produces may also affect the heart and some nerves. The vaccine against diphtheria is very effective so it is now very rarely seen in Australia. However, diphtheria still occurs overseas and people who are not adequately vaccinated can acquire it overseas, or it may be brought into Australia from an overseas traveller and may infect young babies or those who are unimmunised.

Tetanus (lockjaw)

Tetanus (lockjaw) is caused by toxins produced by a bacteria found in soil that can contaminate cuts and wounds, especially wounds containing foreign objects (like wood splinters) or wounds following burns, animal bites, trauma or fractures. Superficial injuries such as a scratch or a prick from a thorn contaminated by soil, dust or manure can also lead to tetanus. Tetanus may cause widespread muscle stiffness, muscle spasms and difficulties in breathing. Various complications and even death may occur. Unfortunately, the bacteria responsible for tetanus are everywhere, so any person who is not adequately immunised can get tetanus. It is even possible to get tetanus twice, as natural infection does not always result in immunity.

Poliomyelitis (polio)

Poliomyelitis is caused by a highly infectious virus, which may be caught when the virus is introduced into the mouth, usually through contaminated water or food. Many infected people have no symptoms, but excrete the virus in their faeces and pass it on to others. The virus destroys nerves and can leave people permanently paralysed. If the disease affects the breathing muscles then the person may die unless their breathing is helped by medical equipment. The Salk vaccine (injectable polio) was the first polio vaccine introduced and it effectively stopped epidemics in developed countries. Later, many countries used the oral Sabin vaccine because it provides protection in the gut where the polio virus multiplies. Polio is close to being wiped out world-wide, with cases only reported in three countries in 2016, but some other countries are still at high risk, and all countries must continue to immunise due to the risk of the virus being imported due to travel. Like other many developed countries, Australia has moved back to using a modern form of the injectable polio vaccine because there is an extremely low risk of vaccine-related polio following vaccination with the oral vaccine but no risk of polio from the injected vaccine which contains no live virus.

Measles

Measles is a highly infectious disease spread by respiratory droplets. It is characterised by fever, cough, conjunctivitis and a rash. Measles is a more serious illness than many people realise and is often complicated by middle ear infections and pneumonia. One in every 1000 children with measles can get brain inflammation which can result in serious permanent brain damage and in some instances death. The very young and those with chronic illness are most at risk of these complications. Measles has become rare in Australia since the national measles control campaign in 1998 for primary schoolchildren and a national campaign for young adults in the early 2000s. Cases now occurring in Australia are brought in from overseas or are in unimmunised people who have contacted those overseas cases. It is important to make sure that two doses of measles vaccine (MMR) have been given, particularly to young adults, who may have missed being vaccinated as infants (when coverage was low), or were growing up when a second dose was not yet recommended and disease exposure was decreasing. Resurgence in measles has been reported in a number of developed countries in recent years, such as the UK, because of a decline in the number of people receiving the vaccine which protects against measles.

Mumps

Mumps is caused by a virus and typically infects the salivary glands causing swelling of the face, but it can also cause meningitis. After puberty mumps can cause inflammation of the testes in men, the ovaries in women, the pancreas and other organs. Mumps virus can affect the inner ear and cause deafness at any age.

The vaccine which provides protection against mumps is the combination vaccine, MMR, which also provides protection against measles and rubella. So, with just one needle, the vaccination against three diseases is delivered.

Rubella (German measles)

Rubella is usually a mild illness in children but can be more severe in older people; its symptoms include rash, swelling of the lymph glands, and joint problems. If a woman catches rubella in early pregnancy, the major concern is that her baby may be born with multiple problems such as deafness, blindness, heart defects and/or intellectual disability (this is known as the “congenital rubella syndrome”). It is important that everyone, but particularly women prior to pregnancy, is protected against rubella by having received two doses of MMR vaccine at least one month apart. Immunity to rubella can be determined in women planning pregnancy or in early pregnancy with a blood test, and they can be

vaccinated if needed prior to pregnancy or as soon as possible after delivery. It is important to remember that MMR vaccine should not be given during pregnancy or 28 days prior to falling pregnant as it is a live vaccine. Rubella has become rare in Australia for much the same reason as measles. However, cases of congenital rubella can still occur when a pregnant woman who is not adequately immunised is exposed to an infected person. Women born in some overseas countries, as well as indigenous women living in rural and remote regions, who may not have received rubella vaccine are at particular risk.

Haemophilus influenzae type b (Hib)

Haemophilus influenzae type b (Hib) is a type of bacteria which can cause severe diseases like pneumonia, meningitis (inflammation of the lining around the brain) and other life-threatening illnesses like epiglottitis, which blocks the upper airway. Since Hib vaccine was introduced in 1993, these diseases caused by Hib have gone from over 500 cases a year to becoming very rare. All children should have three doses of Hib vaccine in their first year of life, starting at 2 months of age, as well as a booster when they turn one year of age.

Hepatitis B

Hepatitis B is a virus that infects the liver. The common ways it is transmitted included vertical transmission (mother to baby around time of birth), sexual contact or from exposure of skin wounds/mucosal surfaces to blood or bodily fluids of an infected persons. Many people who get hepatitis B, especially babies, have no symptoms or only mild symptoms at the time of infection. When symptoms are present they included fever, jaundice, nausea and not feeling well in general. In a proportion of people who are infected with hepatitis B, the virus stays active for long periods of time, often for life, and this is referred to as a "chronic infection'. This more often occurs in infants who are infected with the virus. Individuals with chronic infections can still pass on the virus to others, even though they don't have symptoms. More than 25% of people with chronic hepatitis B infections go on to develop serious complications such as chronic liver disease, liver cancer or liver failure later in life. The hepatitis B vaccine prevents infection with hepatitis B – the first dose is now given at birth to maximise the protection against catching hepatitis B from any source. For later doses, starting at 2 months, the hepatitis B vaccine is given in combination with other vaccines as a single injection.

Varicella (Chickenpox)

Varicella, commonly referred to as chickenpox, is a viral illness which is highly contagious. It is usually a mild and short lived, though unpleasant illness in otherwise healthy children, but can cause complications in around 1 in every 100 cases. In Australia, a small proportion of people who suffer from chickenpox complications, such as secondary infections from bacteria, pneumonia and neurologic (brain and nerve) problems will need hospitalisation. However, as almost everyone contracts chickenpox sooner or later if they are not immunised, this small percentage translates to about 1500 Australians hospitalised each year with chickenpox. Chickenpox is particularly likely to be severe in older children and adults, or children who also have other medical problems such as immune compromise. Vaccination against chickenpox is available under the National Immunisation Program at 18 months of age. It is given using the combination vaccine, MMRV, which also protects against measles, mumps and rubella. Children require one dose only of chickenpox vaccine, but individuals aged 14 years or over who are do not already have immunity to chickenpox require two doses, to be taken about one to two months apart.

Invasive Pneumococcal Disease (IPD)

The term invasive pneumococcal disease (IPD) refers to the most serious types of infection caused by the bacterium *Streptococcus pneumoniae* (pneumococcus). Pneumococcus can invade the bloodstream causing septicaemia (or "blood poisoning), invade the lining of the brain to cause meningitis, or cause chest infections (pneumonia).

Since 2005, all children aged less than 2 years have been eligible to receive pneumococcal vaccine free of charge under the National Immunisation Program. Three doses of vaccine are given to otherwise healthy children before they turn two years of age, however additional doses may be needed for children who are at increased risk of pneumococcal disease such as Indigenous children living in some states and territories, as well as children with certain medical conditions.

Meningococcal disease

Meningococcal disease is a bacterial infection that can cause septicaemia ("blood poisoning") and meningitis (inflammation of the lining of the brain). There are several common types of meningococcal bacteria in Australia, with three of these (types B, W and Y) being the most frequent causes of current meningococcal disease. A meningococcal vaccine against types A,C, W and Y has replaced the meningococcal C vaccine for use in all children at 12 months of age since July 2018. This vaccine is also given to adolescents in Year 10 to decrease the spread of meningococcal bacteria.

Meningococcal ACWY vaccine is effective in all age groups including infants.

A vaccine against the other common strain, meningococcal type B, is now available but it is not currently on the Australian childhood immunisation schedule. Thus, currently, there is still some risk in the community of meningococcal infections with type B strains till the vaccine becomes widely available. It can be purchased privately at the current time. Talk to your doctor who will give you a prescription as you will need to buy the vaccine from the pharmacy. Detailed information about this vaccine, known as Bexsero is available on the Department of Health Immunise Australia website: www.immunise.health.gov.au

Rotavirus gastroenteritis

Rotavirus is the most common cause of severe gastroenteritis in infants and young children in Australia and worldwide. The disease symptoms may range from minor diarrhoea to severe diarrhoea with vomiting and fever. It can sometimes lead to severe dehydration, shock and death. Compared with other causes of diarrhoea in young children, rotavirus infections are often more severe, and are more likely to result in dehydration and require hospital. Prior to the introduction of the vaccine, rotavirus infections in children were common in Australia – almost every child will have suffered from it at least once by the age of 3 years, with about 10,000 hospital admissions and one death due to rotavirus infection in young children every year in Australia.

In early 2007, Rotavirus vaccine was funded under the National Immunisation Program for all Australian infants. In NSW the Rotavirus vaccine is given by mouth in a two dose course at 2 and 4 months. It is not recommended for older babies, and the first dose should be started around 2 months of age to be able to commence the vaccine course. The rotavirus vaccines are very effective at preventing severe diarrhoea and vomiting caused by the rotavirus. Since rotavirus vaccination was introduced in 2007, there has been a marked decline in hospitalisations due to rotavirus in Australia. This vaccine will not prevent diarrhoea and vomiting caused by other infectious agents.

Human papillomavirus (HPV) disease

Human papillomaviruses (HPV) can cause cancers such as cervical cancer, anal cancer and head and neck cancers, affecting both women and men. They can also cause genital warts and skin warts. The HPV types that infect the genitals can be spread by direct contact during sexual activity with a person who has the virus. HPV infection is very common, with 4 in 5 persons infected in their lifetime before the vaccine was introduced. However most people infected don't have symptoms and the viruses often disappear on their own. Sometimes, however, they don't disappear but go on to cause cancer. It usually takes more than 10 years for cancers to develop.

There are many different types of HPV virus, with only certain types causing certain diseases. Two HPV vaccines are available in Australia; one of the vaccines prevents infection with nine types of HPV (two which are responsible for the majority of HPV related cancers and two types that cause about 90% of genital warts). The other HPV vaccine only protects against the two HPV which are responsible for HPV related cancers. HPV vaccination is only effective if it is given before exposure to the virus occurs (through sexual activity), so it is recommended for young adolescent girls and boys. The HPV vaccine which protects against nine HPV types is currently funded under the National Immunisation Program and is delivered through school-based immunisation programs across Australia. Because the vaccines do not protect against all the types of HPV that cause cervical cancer it is very important that all women continue to have regular cervical screening ("Pap" smears) to prevent the development of cervical cancer.

Remember:

- The benefits of immunisation far outweigh the risks.
- Side-effects from vaccines are generally mild.
- Local doctors (GPs), local councils, hospitals or community centres may provide immunisations. There are also several school-based vaccination programs in NSW.

For further information:

NSW Immunisation Specialist Service (NSWISS)
www.nswiss.org.au

The National Centre for Immunisation Research and Surveillance (NCIRS)
www.ncirs.edu.au

NSW Health
http://www.health.nsw.gov.au/immunisation/pages/default.aspx

Immunise Australia

www.immunise.health.gov.au has additional information about the vaccines, their benefits and side-effects, as well as answers to frequently asked questions.

Immunise Australia Information Line

1800 671 811.

(8:30am – 5pm Eastern Standard Time)

Hunter New England Health region:

Child and Family Health Nursing immunisation clinic locations and times available on the Kaleidoscope

Website www.kaleidoscope.org.au/site/immunisation