NCIRS National Centre for Immunisation Research and Surveillance Australia

Vaccination for Our Mob

Summary report of vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander people, Australia 2011-2015

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Acknowledgements

Ms Natasha Larter, a proud Yuin woman, made significant contributions to both the Vaccine Preventable Diseases and Vaccination Coverage in Aboriginal and Torres Strait Islander People, Australia, 2011–2015 report and this community version of the report as part of her NSW Aboriginal Population Health Training Initiative placement at NCIRS. NCIRS would particularly like to thank Natasha for all her hard work, commitment and dedication to both reports.

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Artwork

The Aboriginal artwork on the front cover of this report was produced by Samantha Williams, a proud Wiradjuri woman from Narrandera, NSW. More information about the artwork design can be found on the inside back cover of this report.

Summary

This report is based on the NCIRS report on vaccine preventable diseases (VPDs) and vaccination coverage in Aboriginal and Torres Strait Islander people 2011–2015, published in the journal Communicable Diseases Intelligence in 2019 and available at https://doi.org/10.33321/cdi.2019.43.36.

The report highlights each disease in Australia that can be prevented by a vaccine available on the National Immunisation Program (NIP), describing how the disease is spread, signs and symptoms, who is most affected, how common the disease is and what proportion of people are vaccinated for the disease. It also includes how many notifications are reported and how many people are hospitalised or die due to the disease. The report also highlights the positive impacts that immunisation programs have had on the health of Aboriginal and Torres Strait Islander people, as well as some continuing challenges.

Acknowledging the feedback received, this Vaccination for Our Mob report has been redesigned and is significantly shorter than the two previous publications. We hope that this report will be useful in encouraging ongoing development for Aboriginal and Torres Strait Islander professionals who work within the immunisation space. For an in-depth review of all the diseases and further reading on specific VPDs in Aboriginal and Torres Strait Islander people, please refer to the full report (Vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander people 2011–2015).

Achievements

Since the introduction of the ***Haemophilus influenzae* type b (Hib)** vaccine in 1993, invasive Hib disease notification rates have decreased by more than 95% in Aboriginal and Torres Strait Islander children aged <5 years.

Following the introduction of the hepatitis A immunisation program in 2005 targeted at Aboriginal and Torres Strait Islander children aged 12–24 months in Western Australia, South Australia, the Northern Territory and Queensland (the four jurisdictions with the highest rate of disease), hepatitis A disease notification rates in Aboriginal and Torres Strait Islander people declined sharply and have remained lower than those in other Australians since 2007.

Low rates of **acute hepatitis B** notifications and hospitalisations in both Aboriginal and Torres Strait Islander people and other Australians aged <15 years reflect the success of the universal infant hepatitis B immunisation program.

Since the introduction of the **HPV vaccination program** in 2007 in Australia, remarkable reductions in HPV infection, genital warts and cervical pre-cancers have been recorded. Available information suggests that Aboriginal and Torres Strait Islander people are benefiting to a similar extent as other Australians.

Estimates of **'fully immunised' vaccination coverage** for Aboriginal and Torres Strait Islander children improved between 2011 and 2015. By the end of 2015 coverage was almost three percentage points higher at 60 months of age in Aboriginal and Torres Strait Islander children than in other children.

Challenges

While rates of **Hib disease** are now very low, rates in Aboriginal and Torres Strait Islander children aged <5 years remain around 10 times higher than those in other children.

Meningococcal B disease rates remain several times higher in Aboriginal and Torres Strait people than that in other Australians. Environmental and social disadvantage factors, including household crowding and high smoking rates, are the most likely causes for this continuing disparity in both Hib and meningococcal disease rates. Subsequent to the period covered by this report, meningococcal W and Y disease also emerged with similarly higher rates in Aboriginal and Torres Strait Islander people.

Acute hepatitis B notification and hospitalisation rates are several times higher in Aboriginal and Torres Strait Islander people aged 15–49 years than in other Australians of the same age. While current Australian guidelines recommend hepatitis B vaccination be offered to all Aboriginal and Torres Strait Islander people, vaccination for Aboriginal and Torres Strait Islander adults is not currently funded under the NIP.

Influenza hospitalisation rates remain significantly higher across all age groups in Aboriginal and Torres Strait Islander people than in other Australians. It is important that **influenza vaccination for all Aboriginal and Torres Strait Islander people aged 6 months and older**, now funded through the NIP for all age groups, is promoted.

Next steps

Ongoing monitoring of VPD burden and vaccination coverage in Aboriginal and Torres Strait Islander people is important to document further achievements and to inform policy and program measures to address existing and emerging disparities. The expanded 'whole of life' Australian Immunisation Register (AIR) should help with monitoring of coverage in Aboriginal and Torres Strait Islander adults.

Improving vaccination coverage and timeliness is important to reduce the burden of VPDs in Aboriginal and Torres Strait Islander people. However, we also need concerted efforts to improve living conditions; to address the effects of other social determinants of health; and to improve access to effective and culturally appropriate health care for Aboriginal and Torres Strait Islander people.

2.1 *Haemophilus influenzae* type b disease

The disease

Haemophilus influenzae type b (Hib) is a bacterium that can cause a number of serious infections, mainly in children under 5 years of age.

Before the Hib vaccine became available, Hib was the most common serious bacterial infection in young children in Australia. Aboriginal and Torres Strait Islander children had a particularly high incidence of Hib meningitis, among the highest in the world, and with a significantly younger age of onset.

Hib meningitis is the most common form of Hib infection – it affects the lining of the brain and spinal cord and can result in serious complications such as brain damage, deafness or death.

Other less common types of infections that are caused by Hib involve the lungs (pneumonia), blood (septicaemia), joints (septic arthritis) and skin (cellulitis). Epiglottitis (severe inflammation at the back of the throat that can block breathing) used to commonly occur in children between 2 and 6 years of age; however, following the introduction of the vaccination program it is now rare.

Vaccination recommendations

Since 1993 Hib vaccine has been funded under the National Immunisation Program.

All children are recommended to receive it in a combination vaccine at 2, 4 and 6 months of age, followed by a booster dose at 18 months of age (moved from 12 months of age in 2018). All four doses are needed to ensure full protection, and timeliness of vaccination is important.

Transmission

Hib is usually spread from person to person through droplets from the nose or throat e.g. via coughing or sneezing. Hib is sometimes found in the nose or throat of healthy people, so it is important to remember that a person doesn't have to have symptoms to spread the bacteria.

Signs and symptoms

As Hib can affect various parts of the body, symptoms will vary:

- Meningitis – high fever, headache, stiff neck, nausea, vomiting, drowsiness, poor feeding
- Septicaemia – high fever, chills, drowsiness, confusion
- Pneumonia – shortness of breath, fever, chest pain, cough
- Epiglottitis – difficulty breathing and swallowing, drooling, pale colour, fever
- Septic arthritis – swelling and pain in the affected joint

Who is most affected?

Hib disease is most common in unimmunised children under 5 years of age. Rates in Aboriginal and Torres Strait Islander children under 5 years of age remain around 10 times higher than in other children. Household crowding and environmental tobacco smoke exposure due to high smoking rates contribute to this increased risk.

Deaths/hospitalisations

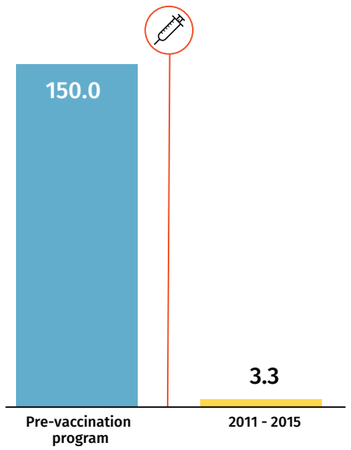
No deaths were recorded with *Haemophilus* meningitis as the underlying cause for the period 2011 to 2015. Information on hospitalisations and deaths from Hib disease is not available as there are no specific codes to separate those caused by Hib and other types of *Haemophilus*.

How common is it?

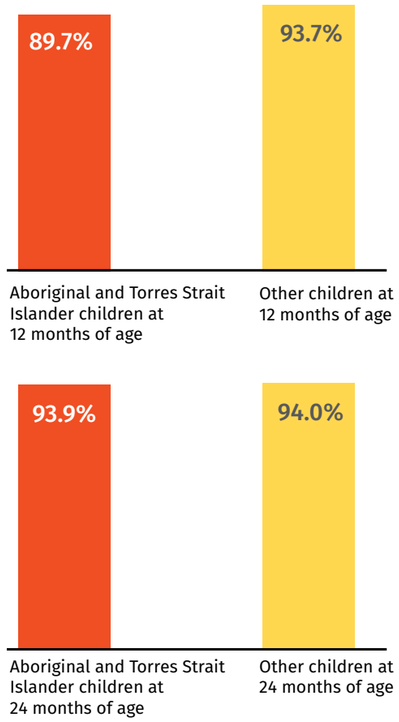
95% reduction in Hib notification rates in Aboriginal and Torres Strait Islander children since the introduction of the Hib vaccine in 1993.

x10 Hib notification rates in Aboriginal and Torres Strait Islander children remain 10 times higher than in other children.

Hib notification rates (per 100,000) in Aboriginal and Torres Strait Islander children aged under 5 years before and after the introduction of the Hib vaccine in 1993



2015 Hib vaccination coverage rates



COMMENT

Dramatic decreases in Hib disease in Aboriginal and Torres Strait Islander children are the result of a successful vaccination program for all children. As rates are still higher in Aboriginal and Torres Strait Islander children, it is important that they are vaccinated on time to reduce the risk of disease. However it is also important to address the social disadvantage factors such as household crowding and high smoking rates, which contribute to these higher Hib disease rates.

2.2 Hepatitis A

The disease

Hepatitis A is a highly contagious liver infection caused by the hepatitis A virus. Hepatitis A causes inflammation that affects the liver's ability to function. It does not lead to long-term infection.

Vaccination recommendations

Aboriginal and Torres Strait Islander children in the Northern Territory, Queensland, South Australia and Western Australia are recommended, and funded on the National Immunisation Program, to receive 2 doses of hepatitis A vaccine, at 12 and 18 months of age.

Transmission

Hepatitis A is transmitted mainly by the faecal–oral route. This can occur through eating food that is contaminated (either when it is produced or if it is handled by someone who is infectious), drinking contaminated water or through faecal material transferred directly from an infectious person's hands or during sexual activity.

Signs and symptoms

Children under 5 years of age can have mild to no symptoms.

In adults, common symptoms include:

- fever
- weight loss
- tiredness and nausea

followed by:

- dark urine
- pale stools and
- jaundice (yellowing of the eyeballs and skin)

Illness usually lasts at least a month, generally followed by complete recovery.

Who is most affected?

People of any age can be affected.

Deaths/hospitalisations

There has been a sharp decrease in the hepatitis A hospitalisation rate among Aboriginal and Torres Strait Islander people since vaccine introduction in 2005. Between 2011 and 2015, there were 1,157 hospitalisations, with 44 (3.9%) of these in Aboriginal and Torres Strait Islander people.

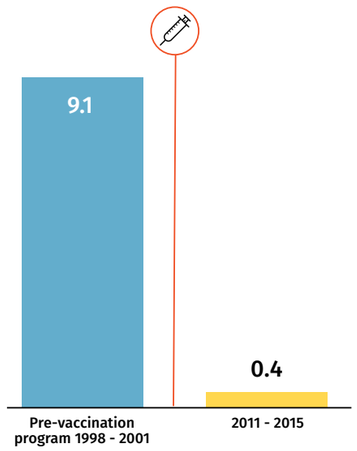
During the period 2011–2015, 4 deaths were reported in Aboriginal and Torres Strait Islander people with hepatitis A as the underlying or associated cause of death, and 16 in other Australians.

How common is it?

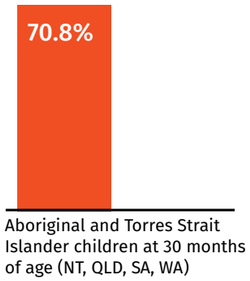
Prior to the introduction of the hepatitis A vaccination program in 2005, the rate of disease was at least five times higher in Aboriginal and Torres Strait Islander people than in other Australians, but now it is lower. During the period 2011–2015, 911 cases of hepatitis A were notified, with only 13 (1.4%) of these reported in Aboriginal and Torres Strait Islander people.

Hepatitis A has become a rare disease in Aboriginal and Torres Strait Islander people.

Hepatitis A notification rates (per 100,000) in Aboriginal and Torres Strait Islander people of all ages before and after the introduction of the hepatitis A vaccine in 2005



2015 hepatitis A vaccination coverage rate



COMMENT

Following the introduction of the hepatitis A immunisation program in 2005, specifically for Aboriginal and Torres Strait Islander children, hepatitis A disease notification rates in Aboriginal and Torres Strait Islander people declined sharply and have remained lower than those in other Australians since 2007.

2.3 Hepatitis B

The disease

Hepatitis B is a serious liver infection caused by the hepatitis B virus. Once infected, those with the infection will either get rid of the virus and have no further problems, or develop chronic hepatitis B which is usually infectious for life. Chronic hepatitis B can cause many serious health complications, including cirrhosis (permanent scaring of the liver), liver failure and liver cancer. Approximately 90% of infected children less than 12 months of age will develop chronic infection compared with 30% of children infected between 1 and 4 years of age and less than 5% of those infected as adults.

Vaccination recommendations

Under the National Immunisation Program all infants are funded to receive a dose of hepatitis B vaccine at birth, followed by three more doses of hepatitis B in a combination vaccine at 2, 4 and 6 months of age.

Transmission

Infection can occur through contact with an infected person's blood and body fluids (e.g. semen or vaginal secretions). This can happen through sharing razors, needles, injecting drug equipment, toothbrushes and earrings, or sex without a condom. Mothers with hepatitis B can infect their babies during birth. In the healthcare setting, hepatitis B can be spread through needle-stick injuries or inadequately sterilised instruments.

Signs and symptoms

Symptoms of hepatitis B include:

- fever
- nausea and vomiting
- tiredness
- joint pain
- abdominal pain
- loss of appetite
- jaundice (yellowing of the eyeballs and skin)
- pale stools and dark urine

However, infection can also be present with no symptoms.

Who is most affected?

Hepatitis B is most common in young adults born before the introduction of the hepatitis B vaccination program for infants in 2000.

Deaths/hospitalisations

There were 583 acute hepatitis B hospitalisations recorded during the period 2011–2015, with 42 (7.2%) of these in Aboriginal and Torres Strait Islander people. The hospitalisation rate in Aboriginal and Torres Strait Islander people for all ages combined has halved from 1998 to 2015, but remains double that in other people.

Over the period 2011–2015 there were 618 deaths for which hepatitis B was reported as either the underlying or associated cause. Of these, 64 (10.3%) were in Aboriginal and Torres Strait Islander people, with none being in children under 15 years of age.

How common is it?

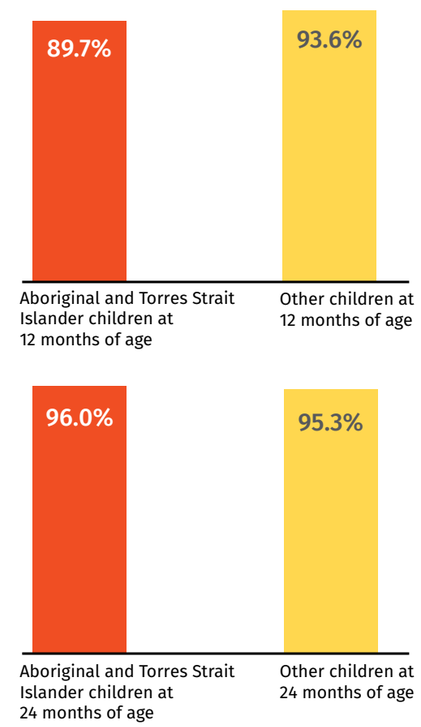
There were 865 notifications of acute hepatitis B during the period 2011–2015, with 76 (8.8%) of these reported in Aboriginal and Torres Strait Islander people.

Threefold reduction in hepatitis B notification rates in Aboriginal and Torres Strait Islander people of all ages since vaccine introduction.

x3 Hepatitis B notification rates remain three times higher than in other people.

In the 2011–2015 period notification rates in Aboriginal and Torres Strait Islander people were highest in those aged 25–49 years (3.9 per 100,000 per year) and 15–24 years (3.6 per 100,000).

2015 hepatitis B vaccination coverage rates



COMMENT

Low rates of acute hepatitis B notification and hospitalisation in Australians aged under 15 years reflect the success of the hepatitis B immunisation program for infants. However, new cases still occur, predominantly in unvaccinated adults, particularly young adults. Aboriginal and Torres Strait Islander people aged 15–24 years experience significantly higher notification and hospitalisation rates than other Australians of the same age. This may be due to lower vaccination coverage through previous adolescent school-based vaccination programs.

2.4 Human papillomavirus

The disease

Human papillomavirus (HPV) has more than 100 different types which can affect different parts of the body. Some types of HPV can infect the anal, genital or throat areas; others can cause common warts on the hands or plantar warts on the feet. Infection with certain high-risk HPV types can cause cancer of the cervix, vulva, vagina, penis, anus or throat.

Vaccination recommendations

The National Immunisation Program provides 2 free doses of HPV vaccine, 6 months apart, for adolescents aged 12–14 years of both sexes, mainly through school-based vaccination programs.

A 3-dose schedule is recommended for anyone aged 15 years and older, with doses at 1 to 2 months and then 6 months after the first dose.

Vaccination does not prevent infection with all HPV types, so HPV cervical screening also remains an important preventive strategy for cervical cancer in women.

Transmission

Anal and genital HPV is spread through sexual contact (vaginal or anal sex). HPV infections of the throat are spread through oral sex. While condoms offer some protection against sexually transmitted infections, they give incomplete protection against HPV as they do not cover all of the genital skin. Anyone who has had sexual contact could have HPV. The greater the number of sexual partners a person has, the more likely they are to get a genital HPV infection, and having sex with someone who has had many sexual partners increases the risk of HPV. Even if someone doesn't have any symptoms, they can still spread the virus to someone else.

Signs and symptoms

HPV infections can often go undetected with no symptoms. Certain types of HPV can cause genital warts and other types can cause cancers such as cervical, anal and penile cancer.

Who is most affected?

HPV infection commonly occurs close to the time of first sexual experience. Aboriginal and Torres Strait Islander women have double the rate of cervical cancer, and four times the mortality rate from cervical cancer, compared with non-Indigenous Australian women.

Deaths/hospitalisations

There has been a 76% decrease in hospitalisations with genital warts in Aboriginal and Torres Strait Islander women aged 15–24 years since HPV vaccination was introduced.

How common is it?

Up to 90% of people will be infected with genital HPV at some time in their life.

93% decrease of infection with vaccine preventable HPV types in Aboriginal and Torres Strait Islander women aged 18–26 years since HPV vaccination was introduced.

The detection rate of high-grade cervical lesions (which can develop into cervical cancer) has decreased among Aboriginal and Torres Strait Islander women aged under 20 and 20–24 years by 69% and 41%, respectively.

2015 HPV vaccination coverage rates

HPV vaccination coverage rates had only been published at the time of this report for 12–17-year old Aboriginal and Torres Strait Islander girls in the Northern Territory (NT) and Queensland eligible for the catch-up program in 2007–2009.

Vaccination coverage was lower in Aboriginal and Torres Strait Islander girls than in non-Indigenous girls in both the NT (64% versus 73%) and Queensland (54% versus 70%).

COMMENT

Since the introduction of the HPV vaccination program Australia has observed remarkable reductions in HPV infection, genital warts and cervical pre-cancers. Available data suggest that Aboriginal and Torres Strait Islander people are benefitting as much as other Australians from the program.

VACCINATION DOES NOT PREVENT INFECTION WITH ALL HPV TYPES, SO HPV CERVICAL SCREENING ALSO REMAINS AN IMPORTANT PREVENTIVE STRATEGY FOR CERVICAL CANCER IN WOMEN

2.5 Seasonal influenza

The disease

Influenza (the 'flu') is a respiratory illness caused by infection with influenza viruses. Epidemics occur each year, usually over winter. Annual vaccination is required as new strains of influenza viruses are continually evolving. Pandemics (epidemics across many countries) can also occur when major changes in the virus occur.

Vaccination recommendations

Seasonal influenza vaccine is now funded under the National Immunisation Program for all Aboriginal and Torres Strait Islander people aged 6 months and older.

In 2015, recorded coverage of influenza vaccine in Aboriginal and Torres Strait Islander children was 12.1% nationally, with coverage ranging from 2.7% in Victoria to 54.3% in the Northern Territory. For other children, coverage was substantially lower at 2.9% nationally.

Transmission

Influenza is highly contagious and is spread through droplets sent through the air from coughing and sneezing. The virus can also land on tables and other surfaces, making it possible for people to transfer the virus to their mouth or nose. Young children are infectious for longer and so are more likely to spread infection to other children and adults.

Signs and symptoms

Symptoms vary and can come on very fast.

Common symptoms of influenza include:

- fever
- cough
- sore muscles and joints
- tiredness
- headache

The most common complication of influenza is pneumonia (infection of the lungs).

Who is most affected?

Anyone can get influenza, but the risk of developing serious complications or dying is higher among Elders, young children and in people of any age with medical conditions such as lung disease, heart disease and diabetes.

Deaths/hospitalisations

During the period 2011–2015, there were 60,749 hospitalisations for influenza, with 3,503 (5.7%) of these in Aboriginal and Torres Strait Islander people.

Hospitalisation rates were significantly higher for Aboriginal and Torres Strait Islander people across all age groups, and highest among those aged 25–49 years.

Between 2011 and 2015, there were 1,138 deaths recorded with influenza as the underlying or associated cause, with 30 (3%) of these recorded in Aboriginal and Torres Strait Islander people.

How common is it?

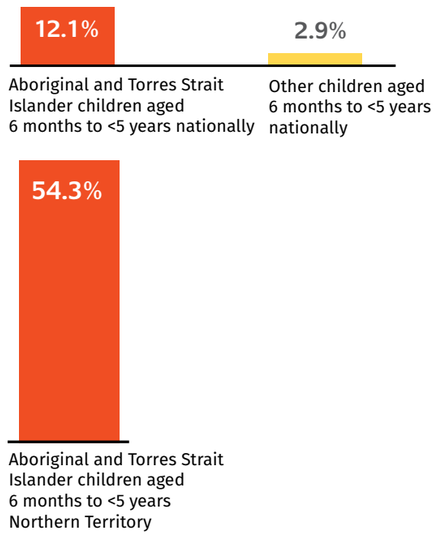
During the period 2011–2015 there were 66,292 notifications of laboratory-confirmed influenza in South Australia, Western Australia and the Northern Territory (the three jurisdictions with adequate completeness of Aboriginal and Torres Strait Islander status). Of these, 3,832 (5.8%) were in Aboriginal and Torres Strait Islander people.

Notification rates in Aboriginal and Torres Strait Islander children aged 0–4 years and adults aged 25–49 years were 1.4 times higher than in other people of the same age.

Notification data are thought to substantially underestimate the true level of influenza infection, as many people do not see a doctor or get tested.

IT IS IMPORTANT THAT INFLUENZA VACCINATION IS PROMOTED AMONG ALL ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE AGED 6 MONTHS AND OLDER

2015 influenza vaccination coverage rates



COMMENT

Influenza vaccination coverage is lower in Aboriginal and Torres Strait Islander children and adults aged under 65 years compared with Elders. However, given the high risk of severe influenza in Aboriginal and Torres Strait Islander people of all ages, it is important that influenza vaccination is promoted among all people aged 6 months and older. Higher vaccination uptake will also help reduce the spread of influenza to others at risk in communities.

2.6 Measles

The disease

Measles is a highly contagious airborne disease that used to be very common in childhood before vaccination was introduced. Measles epidemics occurred in Australia in the 1970s and 1980s, with a number of deaths occurring in Aboriginal and Torres Strait Islander children in Central Australia.

Vaccination recommendations

Two doses of the vaccine containing measles, mumps and rubella (MMR) are funded under the National Immunisation Program for children at 12 and 18 months of age. The 18-month dose also includes varicella (MMRV). It is recommended that everyone born from 1966 onwards should have had two doses of measles-containing vaccine.

Transmission

Measles can be caught just by being in the same room as an infected person. Measles virus is spread when people breathe in tiny droplets sprayed into the air through an infected person coughing or sneezing.

Signs and symptoms

Typical symptoms of measles are:

- fever
- cough
- sore throat
- runny nose
- conjunctivitis (inflamed red eyes)
- followed by a red, blotchy skin rash all over the body

Complications include otitis media (middle ear infection), diarrhoea, pneumonia and encephalitis (brain inflammation), which can result in brain damage and sometimes death.

Who is most affected?

Measles is more common in young adults, who are more likely to not have received 2 doses of MMR vaccine (older adults mostly caught measles when they were children), and babies too young to be vaccinated. Complications from measles are more common and more severe in people who are chronically ill, children under 5 years of age and adults.

Deaths/hospitalisations

Between 2011 and 2015 there were 387 hospitalisations for measles, with 19 (5.2%) of these reported in Aboriginal and Torres Strait Islander people. Hospitalisation rates in Aboriginal and Torres Strait Islander people were similar to those in other people across all age groups. Measles hospitalisation rates in the total Australian population have decreased by about 20-fold from 1993 to 2015.

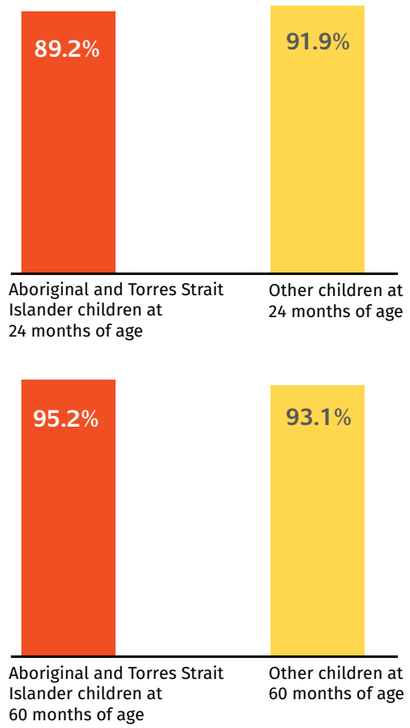
There were very few deaths from measles reported for the period 2011 to 2015, with none in Aboriginal and Torres Strait Islander people.

How common is it?

Between 2011 and 2015, there were 964 notifications of measles in Australia, with 40 (4.1%) of these reported in Aboriginal and Torres Strait Islander people. Notification rates in Aboriginal and Torres Strait Islander people were similar to those in other people across all age groups. Measles notification rates in the total Australian population have decreased by about 30-fold from 1993 to 2015.

TO KEEP MEASLES UNDER CONTROL, IT IS IMPORTANT TO CONTINUE TO MAINTAIN HIGH VACCINATION COVERAGE RATES

2015 measles vaccination coverage rates



COMMENT

Aboriginal and Torres Strait Islander people now experience relatively lower rates of measles than other Australians do. Most measles outbreaks in Australia are linked to people who have been infected overseas. In 2014, local measles transmission in Australia was verified to have been eliminated. To keep measles under control, it is important to continue to maintain high vaccination coverage rates.

2.7 Meningococcal disease

The disease

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*, also known as meningococcus. There are 13 types of meningococcus, of which the most common in Australia are B, W, Y and C.

Meningococcal disease is rare but serious. It usually presents as meningitis (inflammation of the membranes covering the brain and spinal cord) or septicaemia (infection in the bloodstream). Death occurs in 5-10% of cases.

Transmission

Meningococci are common bacteria and around 10% of people carry them at the back of the nose and throat without any signs or symptoms. Spread generally requires prolonged close contact. It is not clear why some people get sick but others don't, but it is important to remember that a person doesn't have to have symptoms to spread the bacteria.

Vaccination recommendations

Meningococcal ACWY (MenACWY) vaccine is funded under the National Immunisation Program for all children at 12 months of age and for adolescents at 14–16 years of age through school-based vaccination programs.

Because of the higher risk of disease, both MenACWY and meningococcal B vaccines are recommended for all Aboriginal and Torres Strait Islander people aged 2 months to 19 years.

Signs and symptoms

People with meningococcal disease can become very sick within a few hours.

Symptoms may include:

- sudden fever
- headache
- neck stiffness
- joint pain
- a typical rash of red-purple spots
- dislike of bright lights
- nausea and vomiting

Young children and infants can have:

- fever
- irritability
- drowsiness or difficulty waking up
- high-pitched crying
- lack of appetite

Who is most affected?

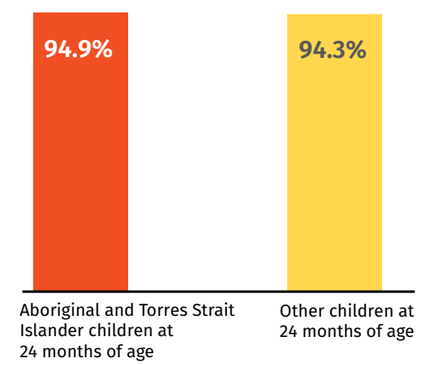
Meningococcal disease can occur at any age, but it is more common in children under 5 years of age and adolescents.

Deaths/hospitalisations

There are known issues with accuracy of hospitalisation data for meningococcal disease. Notification data are generally accepted as a more accurate measure of disease, with virtually all cases being hospitalised.

There were 53 deaths reported during the period 2011–2015 with meningococcal disease recorded as the underlying or associated cause of death, with 6 (11%) of these occurring in Aboriginal and Torres Strait Islander people.

2015 meningococcal vaccination coverage rates



How common is it?

Between 2011 and 2015, there were 966 notifications of meningococcal disease, with 101 (10%) of these reported in Aboriginal and Torres Strait Islander people.

Notification rates in Aboriginal and Torres Strait Islander people, compared with other people, were 2.4 times higher overall, 4.3 times higher for children aged less than 5 years, and 5.5 times higher for children aged 5–14 years.

Meningococcal B disease remained the most common type during the 2011–2015 period, with rates in Aboriginal and Torres Strait Islander people several times higher than those in other people.

COMMENT

Routine meningococcal C vaccination in children at 12 months since 2003 has resulted in the near elimination of meningococcal C disease in Australia. However, meningococcal B disease rates remain several times higher among Aboriginal and Torres Strait Islander people than in other people. Factors such as household overcrowding and cigarette smoke exposure likely contribute to these higher rates.

Subsequent to the period covered by this report, meningococcal W and Y strains also emerged as a cause of disease, with higher rates in Aboriginal and Torres Strait Islander people, and MenACWY vaccine was added to the National Immunisation Program in 2018.

2.8 Mumps

The disease

Mumps is a contagious viral infection that used to be very common in childhood before vaccination was introduced.

Vaccination recommendations

Two doses of the vaccine containing measles, mumps and rubella (MMR) are funded under the National Immunisation Program for children at 12 and 18 months of age. The 18-month dose also includes varicella (MMRV). It is recommended that everyone born from 1966 onwards should have had 2 doses of mumps-containing vaccine.

Transmission

Mumps is spread by infectious droplets sprayed into the air by coughing or sneezing, or through saliva.

Signs and symptoms

About a third of people with mumps do not show any symptoms. Common symptoms include:

- fever
- loss of appetite
- headaches
- tiredness
- followed by swelling and tenderness of the salivary glands around the jaw

Complications are uncommon, but can include encephalitis (inflammation of the brain) and meningitis (inflammation of the lining of the brain and spinal cord).

Who is most affected?

Mumps can occur at any age. There have been outbreaks in Australia since 2015 that have mainly affected Aboriginal adolescents and young adults living in remote communities.

Deaths/hospitalisations

Between 2011 and 2015 there were 445 hospitalisations for mumps, with 24 (5.3%) of these reported in Aboriginal and Torres Strait Islander people.

There were no reported deaths due to mumps during the 2011–2015 period.

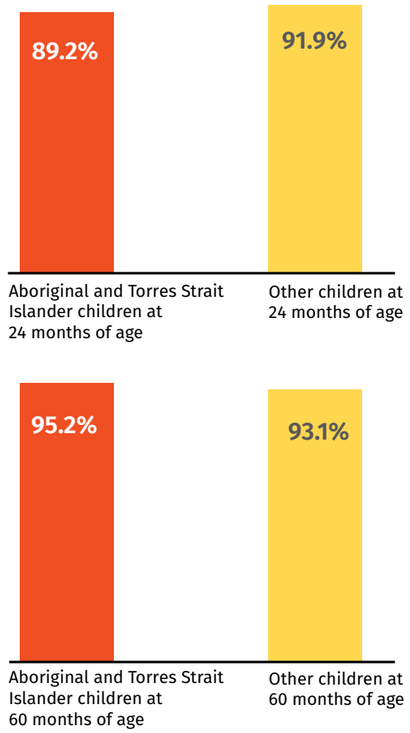
How common is it?

During the period 2011–2015, mumps notification rates in Aboriginal Torres Strait Islander people were significantly higher across all age groups.

Of 1,404 notifications, 417 (30%) were reported in Aboriginal and Torres Strait Islander people, with most of these cases occurring in 2015. The highest notification rate for Aboriginal and Torres Strait Islander people was seen in the 15–24 years age group, with a rate of 20 per 100,000 per year.

THERE HAVE BEEN MUMPS OUTBREAKS IN AUSTRALIA SINCE 2015 THAT HAVE MAINLY AFFECTED ABORIGINAL ADOLESCENTS AND YOUNG ADULTS LIVING IN REMOTE COMMUNITIES

2015 mumps vaccination coverage rates



COMMENT

Before the introduction of vaccination mumps was mainly a disease of childhood; however, there have been outbreaks in adolescents and young adults in remote Aboriginal communities in recent years. The immunity from mumps vaccination is known to not last as long as the other components of the MMR vaccine, and the risk of infection appears higher in close contact communities.

2.9 Pertussis (whooping cough)

The disease

Pertussis, also known as whooping cough, is a highly contagious respiratory disease caused by *Bordetella pertussis* bacteria. It can be very serious, particularly in very young babies.

Transmission

Whooping cough is spread from person to person through infectious droplets that are coughed or sneezed into the air.

Vaccination recommendations

Under the National Immunisation Program, doses of combination diphtheria-tetanus-acellular pertussis (DTPa) vaccine are funded for children at 2, 4 and 6 months of age.

The first dose of DTPa vaccine can be given as early as 6 weeks of age, and this is generally recommended to provide earlier protection from pertussis.

Booster doses are also funded at 18 months, 4 years and then in school-based vaccination programs at 12–13 years of age using the adolescent/adult formulation of vaccine (dTpa), which has lower amounts of the diphtheria and pertussis components.

A booster dose of dTpa is funded under the National Immunisation Program for all pregnant women in each pregnancy.

A booster dose is also recommended for adults who are aged 65 years and older, living with or caring for young babies, or working in healthcare or early childhood education/care.

Signs and symptoms

Pertussis usually starts with a runny nose and tiredness, and sometimes a mild fever. Unvaccinated children can develop the typical uncontrollable cough with characteristic 'whooping' sound when breathing in. Vomiting after coughing is common.

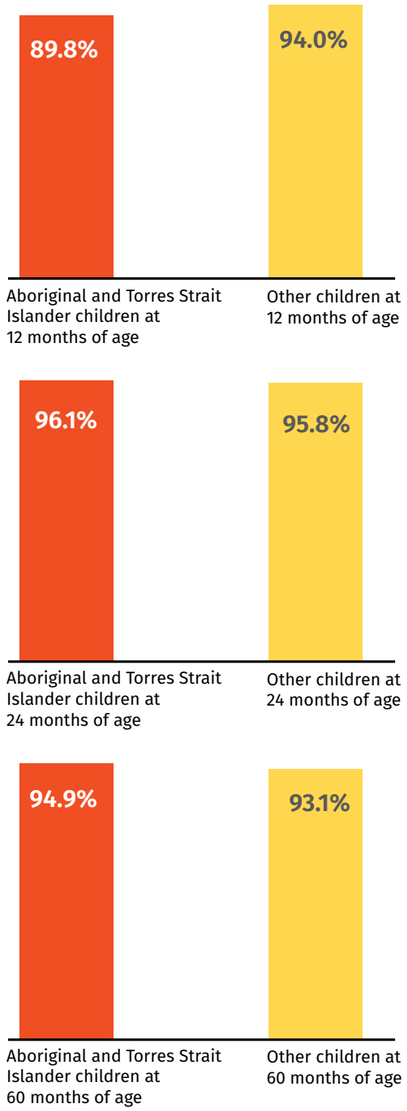
In young babies the coughing fits can be severe and a lack of oxygen can cause them to turn blue, and occasionally die.

In older children, teenagers and adults, pertussis is generally not as severe but can go on for weeks or months and interfere with daily activities and sleep.

Who is most affected?

While pertussis is common in all age groups, unvaccinated children aged <1 year, particularly those under 6 months of age, are most at risk of severe disease. Aboriginal and Torres Strait Islander infants <1 year are 1.6 times more likely to become infected with pertussis. Immunisation is the best way to prevent whooping cough.

2015 pertussis vaccination coverage rates



Deaths/hospitalisations

Between 2011 and 2015, there were a total of 4,548 hospitalisations for pertussis, 307 (6.8%) of which were reported in Aboriginal and Torres Strait Islander people. Of these, almost 80% were infants under 1 year of age.

The hospitalisation rate in Aboriginal and Torres Strait Islander infants aged <1 year was 2.3 times higher than in other infants.

There were 22 deaths reported with pertussis as the underlying or associated cause of death during the 2011–2015 period. Six deaths were in infants aged <1 year. None of these deaths were recorded as Aboriginal and Torres Strait Islander.

How common is it?

Between 2011 and 2015, there were 13,509 notifications of pertussis in children aged <5 years, with 796 (6.0%) of these reported in Aboriginal and Torres Strait Islander children.

The highest notification rate was in Aboriginal and Torres Strait Islander infants aged <1 year, at 325 per 100,000 per year, compared with 198 per 100,000 in other infants of the same age.

Notifications of pertussis have increased over time, partly because of better laboratory testing methods that more easily identify milder cases.

COMMENT

Efforts to reduce the burden of pertussis in Aboriginal and Torres Strait Islander people should focus on improving protection of vulnerable infants. This can be done through improved timeliness of infant vaccine doses, particularly the first two doses which offer significant protection, and through maternal pertussis immunisation during pregnancy.

2.10 Pneumococcal disease

The disease

Pneumococcal disease is caused by the bacterium *Streptococcus pneumoniae*, also known as pneumococcus. It causes 'invasive' disease, including meningitis (infection of the membranes covering the brain and spinal cord), septicaemia (blood infection), pneumonia (infection of the lungs), along with non-invasive conditions such as otitis media (middle ear infection).

Transmission

Pneumococcal disease is usually spread through small droplets from the nose or throat containing the bacteria e.g. via coughing or sneezing. The bacteria are sometimes found in the nose or throat of healthy people, so a person doesn't have to have symptoms to spread the bacteria.

Vaccination recommendations

Routine pneumococcal vaccination is funded under the National Immunisation Program for all Australian children at 2, 4 and 12 months of age.

Aboriginal and Torres Strait Islander children living in the Northern Territory, Queensland, South Australia and Western Australia, along with any children with chronic medical conditions, should receive an extra dose at 6 months of age. Children with chronic medical conditions should then receive a booster dose of a different (polysaccharide) vaccine at 4 to 5 years of age.

Aboriginal and Torres Strait Islander adults aged 50 years and older, and adults of any age with chronic medical conditions, are recommended and funded to receive 2–3 booster doses of the polysaccharide vaccine, depending on age and medical conditions.

Signs and symptoms

Symptoms depend on where the infection is in the body. Symptoms of pneumonia include cough, fever, shortness of breath and chest pain. Symptoms of meningitis include fever, headache and drowsiness (excessive sleepiness) or confusion.

Who is most affected?

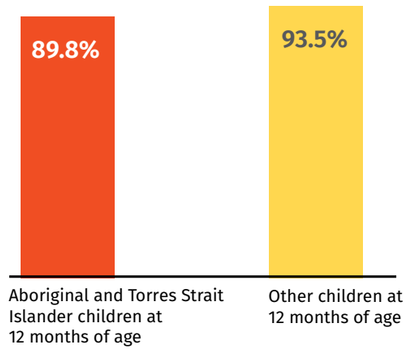
The risk of invasive pneumococcal disease (IPD) is greatest in young children and older adults. **Rates of IPD are 6–7 times higher in Aboriginal and Torres Strait Islander people.**

Deaths/hospitalisations

Because of difficulties in identifying cases of IPD using discharge diagnosis codes in hospitalisation data, figures for hospitalisations are not as accurate as for notifications.

There were 223 deaths reported in Australia for the period 2011–2015 with IPD recorded as the underlying or associated cause of death, of which 26 (12%) were reported in Aboriginal and Torres Strait Islander people.

2015 pneumococcal vaccination coverage rates



How common is it?

Between 2011 and 2015, there were 8,316 cases of IPD notified in Australia, with 1,152 (13.9%) of these reported in Aboriginal and Torres Strait Islander people.

The highest notification rate was in Aboriginal and Torres Strait Islander adults aged 50 years and older (63 cases per 100,000 per year), followed by children aged <5 years (42 cases per 100,000) and adults aged 20–49 years (41 per 100,000).

THE BURDEN OF PNEUMOCOCCAL DISEASE REMAINS HIGH IN ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE, DESPITE LONGSTANDING VACCINATION PROGRAMS

COMMENT

The burden of pneumococcal disease remains high in Aboriginal and Torres Strait Islander people, despite longstanding vaccination programs. While improving vaccination coverage and timeliness can help reduce rates, we also need to address household overcrowding, cigarette smoke exposure and other factors that substantially increase the risk of pneumococcal disease transmission in Aboriginal and Torres Strait Islander communities.

2.11 Rotavirus

The disease

Rotavirus is a common cause of gastroenteritis (diarrhoea) in babies and young children. Most disease is mild, but about 1 in 75 children will develop severe disease with dehydration. Illness is more likely to be severe in children under 2 years of age.

Transmission

Rotavirus is spread when virus from the faeces of one person is swallowed by another person (called faecal–oral transmission). This can occur through touching contaminated surfaces or changing nappies and then not washing hands.

Vaccination recommendations

Rotavirus vaccine has been funded under the National Immunisation Program since 2006, with doses recommended at 2 and 4 months of age. Immunisation of older children and adults is not recommended.

Signs and symptoms

Children with rotavirus infection may have no or few symptoms, or watery diarrhoea with vomiting and fever and stomach pain. More severe infections can lead to dehydration which, if not treated, can cause death (though death is rare in Australia).

Who is most affected?

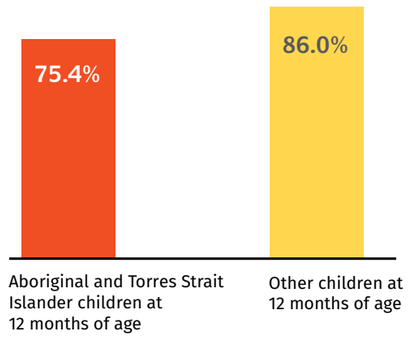
Rotavirus infections are most common in children aged 6–24 months, although disease rates peak at an earlier age in Aboriginal and Torres Strait Islander children, particularly those in the Northern Territory.

Deaths/hospitalisations

There were 5,504 hospitalisations recorded during the period 2011–2015, with 822 (15%) of these recorded in Aboriginal and Torres Strait Islander people. **Between 2006 and 2015, the hospitalisation rate in Aboriginal and Torres Strait Islander children under 5 years of age decreased by approximately 60%, but remained 4–5 times higher than in other children of the same age.**

Between 2011 and 2015 there were six deaths recorded in Australia with rotavirus reported as the underlying or associated cause of death, none of which were in Aboriginal and Torres Strait Islander people.

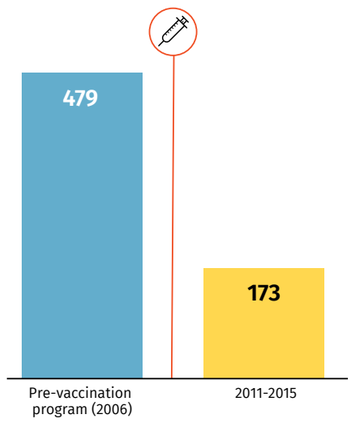
2015 rotavirus vaccination coverage rates



How common is it?

Rotavirus infection is thought to be relatively common; however, there aren't good figures on actual numbers of cases. Hospitalisation data are more accurate but represent more severe disease.

Rotavirus hospitalisation rate (per 100,000) in Aboriginal and Torres Strait Islander children aged under 5 years before and after the introduction of the rotavirus vaccine in 2007.



COMMENT

Rotavirus vaccination has substantially reduced the amount of severe disease caused by rotavirus in Aboriginal and Torres Strait Islander children. Because of the strict upper age limits for giving rotavirus vaccine, it is very important to vaccinate on time.

BECAUSE OF THE STRICT UPPER AGE LIMITS FOR GIVING ROTAVIRUS VACCINE, IT IS VERY IMPORTANT TO VACCINATE ON TIME

2.12 Varicella-zoster virus infection (chickenpox and shingles)

The disease

The varicella-zoster virus causes two diseases, varicella (chickenpox) and herpes zoster (shingles). After having chickenpox, the virus then stays in nerve cells of the body and can reactivate as shingles, most commonly in elderly people.

Transmission

Chickenpox is very contagious and can be spread by droplets coughed or sneezed into the air, or touching the skin of an infected person.

Vaccination recommendations

Chickenpox vaccine has been included on the National Immunisation Program since 2006. Chickenpox is included with measles, mumps and rubella in a combination vaccine (MMRV) that is recommended at 18 months of age.

A single dose of shingles vaccine is funded for adults at 70 years of age.

Signs and symptoms

Symptoms of chickenpox include fever and a typical rash that starts as red spots which then become blister-like and then crust over to form scabs. Blisters may also appear inside the nose and throat. Complications can include pneumonia, encephalitis (brain infection) or even death.

Shingles is a painful rash that develops in a localised area on one side of the face or body. The rash consists of blisters that typically scab over in 7 to 10 days. Shingles on the face can affect the eye and cause loss of vision.

Who is most affected?

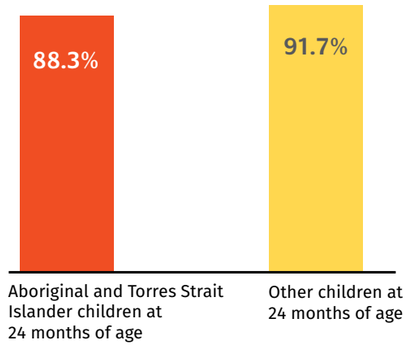
Before a vaccine was available, almost everyone got chickenpox in childhood. The risk of severe disease and complications is greater in adults and people with a suppressed immune system. Shingles is most common in older adults.

Deaths/hospitalisations

Between 2011 and 2015 there were 55 deaths recorded in Australia with chickenpox reported as the underlying or associated cause of death, with less than 4 in Aboriginal and Torres Strait Islander people (actual number unable to be provided because of confidentiality requirements).

There were 34,817 hospitalisations due to shingles recorded during the period 2011– 2015, with 562 (16%) of these recorded in Aboriginal and Torres Strait Islander people.

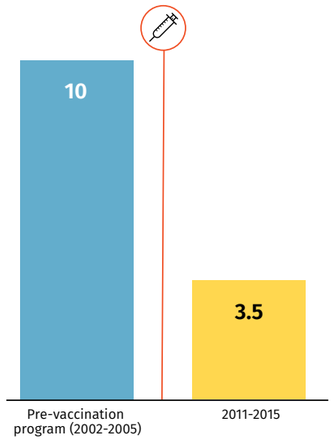
2015 varicella vaccination coverage rates



How common is it?

There aren't good figures on actual numbers of chickenpox and shingles cases. Hospitalisation data for chickenpox are more accurate but represent more severe disease.

Chickenpox hospitalisation rate (per 100,000) in Aboriginal and Torres Strait Islander people of all ages before and after the introduction of the chickenpox vaccine in 2005.



COMMENT

Hospitalisation rates for chickenpox have decreased considerably since the introduction of the vaccine on the National Immunisation Program in 2005. However, the hospitalisation rate in Aboriginal and Torres Strait Islander children aged <15 years remains approximately twice as high as the rate in other children, highlighting the importance of timely vaccination.

2.13 Rare diseases

Diphtheria

Diphtheria is a highly contagious and potentially life-threatening bacterial infection. It can cause severe swelling of the throat that can make it impossible to breathe and swallow (respiratory diphtheria) and can also affect the skin. The skin infection form is less severe, but the bacteria can still be spread from person to person and cause the more severe respiratory form.

Diphtheria is spread following close contact with an infected person by breathing in droplets when the infected person coughs or sneezes, or by direct contact with infected skin sores.

Symptoms of respiratory diphtheria start with a sore throat, fever and chills, while the skin infection form starts as a sore or ulcer.

Diphtheria has become rare in Australia since the introduction of the diphtheria-tetanus-pertussis vaccine in the 1950s, but cases still occur occasionally in unvaccinated people. Diphtheria is included in combination vaccines funded on the National Immunisation Program at 2, 4, 6 months and 4 years of age, and then at 12–13 years. Booster vaccine doses are recommended at 50 and 65 years of age for people who have not had a diphtheria-containing vaccine in the previous 10 years.

In 2015, the diphtheria vaccination coverage rate for diphtheria for Aboriginal and Torres Strait Islander children at 12 months of age was lower than that for other children (89.8% versus 94.0%) but slightly higher at 24 and 60 months (96.1% versus 95.8%, and 94.9% versus 93.1%)

Tetanus

Tetanus is a disease caused by bacteria that live in soil. The infection can be contracted through wounds that are contaminated with dirt. Tetanus can't be passed from person to person.

The symptoms of tetanus include stiffness of the jaw muscles (lockjaw), difficulty in swallowing, stiffness or pain in the neck, shoulder and back with severe painful spasms and difficulty breathing.

Tetanus has become rare in Australia since diphtheria-tetanus-pertussis vaccination was introduced in the 1950s. Cases nowadays are mainly seen in older people who aren't fully vaccinated. Tetanus is included in combination vaccines funded on the National Immunisation Program at 2, 4, 6 months and 4 years of age, and then at 12–13 years of age. Booster vaccine doses are recommended at 50 and 65 years of age for people who have not had a tetanus-containing vaccine in the previous 10 years or after injuries where the skin is broken and potentially contaminated.

In 2015, the tetanus vaccination coverage rate for Aboriginal and Torres Strait Islander children at 12 months of age was lower than that for other children (89.8% versus 94.0%) but higher at 24 and 60 months (96.1% versus 95.8%, and 94.9% versus 93.1%).

Poliomyelitis

Poliomyelitis (polio) is a highly contagious viral infection which can cause paralysis of various parts of the body. Infection occurs through faecal–oral transmission, mainly through person-to-person contact. People infected can have no symptoms or mild fever, headache, tiredness, nausea and vomiting. A small proportion of infected people develop paralysis.

Epidemics of paralytic polio occurred in Australia as late as the 1960s. Australia was declared polio-free in 2000; however, until the disease is globally eradicated there is still a risk of the virus being reintroduced. The most recent Australian case of polio was in 2007 in an overseas-born student who acquired it during a visit to a country with known ongoing polio transmission. Polio is included in combination vaccines funded on the National Immunisation Program at 2, 4 and 6 months and 4 years of age.

In 2015, the polio vaccination coverage rate for Aboriginal and Torres Strait Islander children at 12 and 24 months of age was lower than that for other children (89.8% versus 94.0% and 95.1% versus 95.8%) but higher at 60 months (94.9% versus 93.1%).

Rubella

Rubella (also known as German measles) is a viral disease which usually causes a mild fever, rash and swollen lymph glands. It is highly infectious and usually spreads by breathing in small droplets produced through coughing or sneezing.

Rubella is of particular importance when infection occurs in the first trimester of pregnancy, because it is associated with miscarriages and abnormalities in surviving babies described as congenital rubella syndrome (CRS), which include cataracts, deafness, heart problems and intellectual disability. Before a vaccine was introduced, almost every child caught rubella. The small number of rubella cases reported now are mainly in unvaccinated young adults aged 25 years and older. There were 153 notifications of rubella and 4 of CRS in Australia between 2011 and 2015. This underlines the importance of vaccinating young adults (especially women of child-bearing age) who have not been vaccinated in the past to reduce the risk of infection in pregnant women.

In 2015, the rubella vaccination coverage rate for Aboriginal and Torres Strait Islander children at 24 months was lower than that for other children (89.2% versus 91.9%) but higher at 60 months (95.2% versus 93.1%).

2.14 References

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Cover artwork

The Aboriginal artwork on the front cover of this report was produced by Samantha Williams, a proud Wiradjuri woman from Narrandera, NSW.

This work was commissioned in 2018 as part of NCIRS's rebranding, with the theme 'Protect your Mob – Get vaccinated'. The artwork adorns a range of NCIRS communications materials, including printed and web-based media.

The artwork's design represents our communities in the centre, from our home to the wider community. The symbols around the circle represent the people, both men and women; this could be anyone from mothers, fathers and grandparents to young men and women. It is our responsibility to keep our mob healthy. We need to educate our younger generation and communities about the importance of immunisations and how they keep us protected.

The lines going out from the circle represent our journeys, jobs, relocation and impacts we have made along the way. Many Aboriginal and Torres Strait Islander families may relocate from one community to another. We have mob all over, but no matter where we go the story is the same – we need to protect our mob – so the smaller circles represent herd immunity across our communities, and the people that this has an impact on – our elders, our babies and our people who cannot be immunised.

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