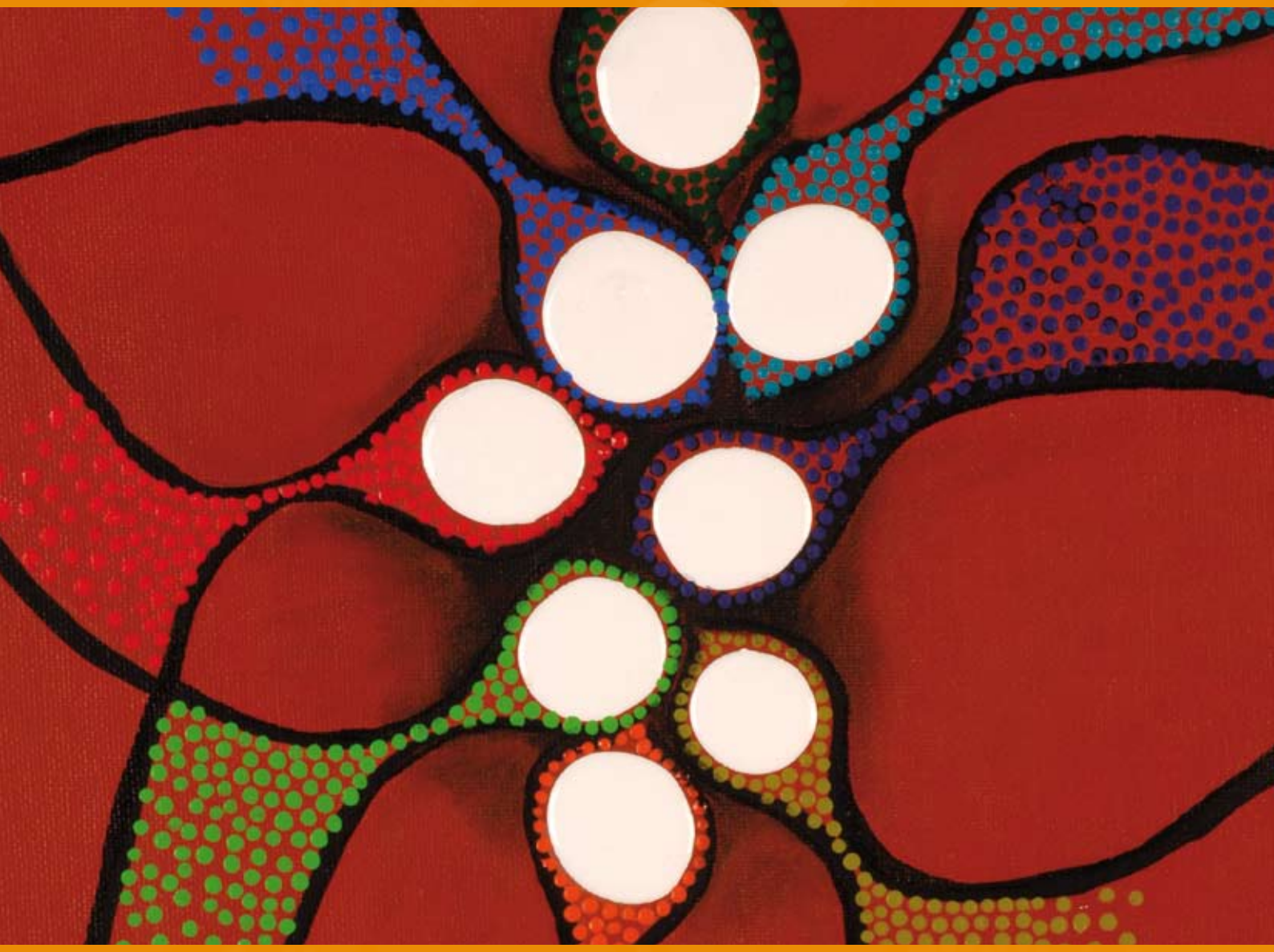
Australian Government
Department of Health and Ageing

The University of Sydney
NCIRS
National Centre for Immunisation Research and Surveillance
of vaccine preventable diseases

Vaccination for our Mob



2006

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Artwork

The artwork in this report was painted by Mr Maurice Shipp. Maurice is a Wiradjuri man from Dubbo, with most of his growing up occurring between Canberra and Sydney. Maurice has worked in both the Government and Community Controlled sectors of Aboriginal health addressing issues such as sexual health, maternal and child health and health service management over the last 18 years. Maurice is now working in the education sector as the Director of Tranby. The artwork was commissioned by NCIRS for use in this report. The background is representative of the land (ochre), which symbolises connectedness for Aboriginal people. The black lines represent the people. The white circles represent healthy cells. The coloured dots represent the vaccines that work towards protecting cells from diseases and illness.

FOREWORD

"How can we hope to go forward as friends and equals when our children's hands cannot touch…"

Sir William Deane

And we shall stand apart so long as disparities in health and social standards continue between our non-Indigenous population and Aboriginal and Torres Strait Islander peoples.

The spectrum of vaccine preventable diseases provides a significant opportunity for public health intervention whereby we may impact upon morbidity and mortality by offering almost immediate protection and long term benefits. Improving vaccines and immunisation coverage not only saves lives, it contributes to a stronger future, by promoting health and wellbeing in infants and our youth and helps to protect our Elders – our vessels for cultural knowledge, language and practice.

The cost benefits of vaccination programs are enormous, such that for a few dollars investment we can contribute to increasing the health and productivity of an entire population. Yet at the end of the day, what cost the preservation of life and culture? There are wonderful examples of innovative work being undertaken in the disciplines associated with vaccine preventable diseases, for example pneumococcal disease and influenza. In some communities we exceed the national average for immunisation coverage. However, other public and private jurisdictions must also take up the challenge, as we cannot vaccinate against poverty, discrimination or barriers to access of services.

WHO and the Global Health Council report immunisation programs amongst the interventions with the greatest potential for impact, and "do not require the development of elaborate or expensive new technologies. Rather they can – and have been – successfully implemented even in some of the poorest countries."

There is significant power in knowing we can prevent disease. Could there be anything more disturbing, then, than knowing that despite our intellectual capacity, a solid health system and national financial resources, sectors of our community suffer disproportionately from poor health, suboptimal development and premature mortality?

Through vaccination initiatives we have a simple, timely, effective and affordable means by which to impact upon Aboriginal and Torres Strait Islander health, and a pathway via which we can support significant positive outcomes for mums, infants, youth and Elders. Immunisation against preventable diseases is one important aspect in the complex of health, social and environmental factors that can contribute to the preservation of Australia's Aboriginal and Torres Strait Islander peoples and our culture.

We thank and commend our friends, colleagues, Countrymen and Countrywomen for their commitment to our progress and survival.

Dr Ngaire Brown
Dr Alex Brown

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INTRODUCTION

This is a condensed version of the *Vaccine Preventable Diseases and Vaccination Coverage in Aboriginal and Torres Strait Islander People, Australia, 1999 to 2002* report that was published in 2004 in *Communicable Diseases Intelligence,* with some updated information.

This is the first time that a national picture has been put together of vaccine coverage and vaccine preventable disease in the Aboriginal and Torres Strait Islander people. The original report was supported and endorsed by the National Aboriginal Community Controlled Health Organisation (NACCHO).

Wellness improves when access to good diet, housing and services are available. Aboriginal and Torres Strait Islander people are often disadvantaged in these areas compared to other Australians. High levels of overcrowding in Indigenous households can contribute to the easy spread of communicable diseases. Along with improvements in environmental living conditions, vaccination is another way of reducing the disparity in health between Indigenous and non-Indigenous people.

This report aims to better inform Indigenous communities, Indigenous healthcare workers and planners of immunisation services of the current status and future needs for vaccine prevention in Indigenous people.

Information regarding each specific disease has been presented as a ”fact sheet” showing:

- description of the signs and symptoms of the disease
- most common way disease is transmitted
- when vaccinations are due
- vaccine name(s)
- disease patterns outlining who is most affected by the disease and the mortality and morbidity of the disease (graphs are sometimes used to show age distribution of mortality and morbidity)
- comment on the data presented

This report uses routinely collected data to describe the current status of vaccine preventable diseases and vaccination coverage in Aboriginal and Torres Strait Islander people in Australia. The vaccine preventable diseases that are featured in this report are those that data has been routinely collected for, and are, or in the recent past have been, particularly important causes of disease in Indigenous people. It is important to remember that the actual disease rates in Indigenous people may be greater than reported here, because Indigenous status is not always recorded in health statistics. This underlines the importance of providing information in Indigenous status sections on all health-related forms. Better quality information will better help to identify areas where there are health problems, and better target the solutions.

HAEMOPHILUS INFLUENZAE TYPE B DISEASE

The Disease

Haemophilus influenzae is a bacterium that commonly lives in the respiratory tract without causing disease. One type of this bacterium, type b (Hib), can cause a number of serious infections in children.

Signs and symptoms

Prior to the development of a Hib vaccine, the most common Hib infection that occurred in Aboriginal and Torres Strait Islander children was meningitis, an infection of part of the brain and spinal cord with symptoms of drowsiness, poor feeding and high fever. Hib meningitis resulted in permanent problems, such as brain damage, deafness or death, in around 40% of affected children.

Other less common types of Hib involve the lungs (pneumonia), blood (septicaemia), joints (septic arthritis), and under the skin (cellulitis). Epiglottitis, an infection of the airway covering, was rare in Indigenous children but more common in non-Indigenous children.

Transmission

Haemophilus influenzae is commonly found in the nose and throat of healthy people, and most people have the disease-causing type b in their throats at some stage. Normally the bacteria are spread from person to person by contact with other people's saliva or mucus such as through coughing, sneezing or kissing. Transmission happens more often in crowded living conditions. Sometimes bacteria in the throat cross over into the blood or brain and cause disease, and it is not clear why this happens in some cases but not others.

Who is most affected

Hib disease is most common in children under 6 years of age, with Aboriginal and Torres Strait Islander children affected at a younger age (most cases before 18 months of age).

Before vaccination was introduced, Indigenous children had a particularly high risk of getting bacterial meningitis, with Indigenous children from Central Australia having a higher rate of infection than anywhere else in the world.

Notified cases

Since vaccination was introduced, the number of cases has decreased by almost 98%. There were 47 cases notified from 2000 to 2002, 13 of those in Aboriginal and Torres Strait Islander people (Table 1). Even though the number of cases is much lower now, Indigenous people are affected nearly 10 times more than non-Indigenous people, 15 times more for children under 5 years of age.

Death/Hospitalisation

Deaths and hospitalisations were not analysed as there are no codes to tell the difference between Hib and other *Haemophilus* types.

Table 1: *Haemophilus influenzae* type b notifications by Indigenous status, selected Australian States, 2000 to 2002*

Age group (years)	Indigenous status	Notifications (2000–2002)		
		No.	Rate†	Rate ratio‡
0–4	Indigenous	11	10.0	**14.7**
	Other	*13*	*0.7*	
5 and over	Indigenous	2	0.3	**3.6**
	Other	*21*	*0.1*	
All ages§	Indigenous	13	1.2	**9.7**
	Other	*34*	*0.1*	

* NSW, NT, SA and WA only, where the date of onset was between 1 January 2000 and 31 December 2002.

† Average annual age-specific rate per 100 000 population.

‡ Rate ratio is the rate in Indigenous / rate in other, eg a ratio of 14.7 means that the Indigenous population rate is 14.7 times the non-Indigenous population rate.

§ Rates for all ages combined are age standardised to the Australian Bureau of Statistics Australian population estimates for 2001.

Vaccination

Hib vaccine was introduced into the Australian Standard Vaccination Schedule in 1993.

The Hib vaccines called "PRP-OMP" (*PedvaxHIB® or in combination with Hepatitis B vaccine, COMVAX®*) provide significant protection after the first dose, at 2 months, and are recommended at least for Aboriginal and Torres Strait Islander babies in the Northern Territory (NT), Queensland, South Australia (SA) and Western Australia (WA), because disease occurs at a younger age in these children. In some cases, they are also available to non-Indigenous babies or Indigenous babies in other states or territories.

PRP-OMP containing vaccines (*PedvaxHIB®* or *COMVAX®*) should be given at 2 and 4 months, followed by a booster at 12 months.

Other Hib vaccines should be given at 2, 4, and 6 months, followed by a booster at 12 months. These vaccines do not provide significant protection until after the second dose at 4 months and require four doses in total.

The vaccination schedules differ between states and territories. You will need to check with your state or territory health department.

Comment

Although vaccination has been very successful, making Hib meningitis and other diseases now rare, cases are still occurring at a higher rate in Aboriginal and Torres Strait Islander babies compared to others in the NT, Queensland and WA. These are the same areas where Hib disease was commonest in Indigenous babies before the vaccine was introduced. The persistent higher rates are probably because they are infected at a very young age, before the vaccine can be fully effective. It is therefore very important that Indigenous babies are vaccinated on time, and that the vaccine recommended in your state or territory is used.

HEPATITIS A

The Disease

Hepatitis A is a common and extremely contagious virus which infects the liver, causing hepatitis.

Signs and symptoms

In adults, infection with hepatitis A virus (HAV) causes fever, weight loss, tiredness, nausea and jaundice. Liver failure and death can occur, but are uncommon. Illness usually lasts at least a month. Young children usually have no symptoms or have a very mild illness; they rarely get a severe illness like adults. Once infected, a person will be immune to HAV for the rest of their life.

Transmission

The virus is found in large numbers in the faeces of infected people, and infection happens by accidentally ingesting just a small number of virus particles (called "faecal-oral transmission"). It is transmitted easily by children, but also by adults, through person-to-person contact like playing together or shaking hands. It can also be spread during sexual contact or by drinking contaminated water or eating contaminated food. Adults often catch hepatitis A from their children, and childcare is a common situation where the virus can be passed around.

Who is most affected

Living conditions play a big role in HAV infection. People in communities where homes are overcrowded, or who don't have enough water for washing, tend to be infected with HAV at an earlier age. Communities with better living conditions have less chance of HAV infection, with most never being infected or being infected late in life. Since Indigenous people often have poorer living conditions than non-Indigenous people, hepatitis A is more common in Indigenous children under 5 years of age, while in non-Indigenous people, adults are more commonly infected either through sexual contact or travel overseas.

Notified cases

There were 1012 cases notified from 2000 to 2002, 113 of them in Aboriginal and Torres Strait Islander people. This number of cases in Indigenous people of all ages makes them almost three times more likely to have HAV diagnosed than non-Indigenous people. Sickness from HAV is uncommon in Aboriginal and Torres Strait Islander adults, mainly because people are already immune after infection as a child and children do not tend to get as sick as adults. Indigenous children under 5 years of age were identified as having sickness from HAV 22 times more often than non-Indigenous children. Notification rates were highest for Indigenous children under 5 years of age and went down as the age went up. Most of the cases of HAV identified in Aboriginal and Torres Strait Islander people were in Queensland, Western Australia, South Australia and the Northern Territory.

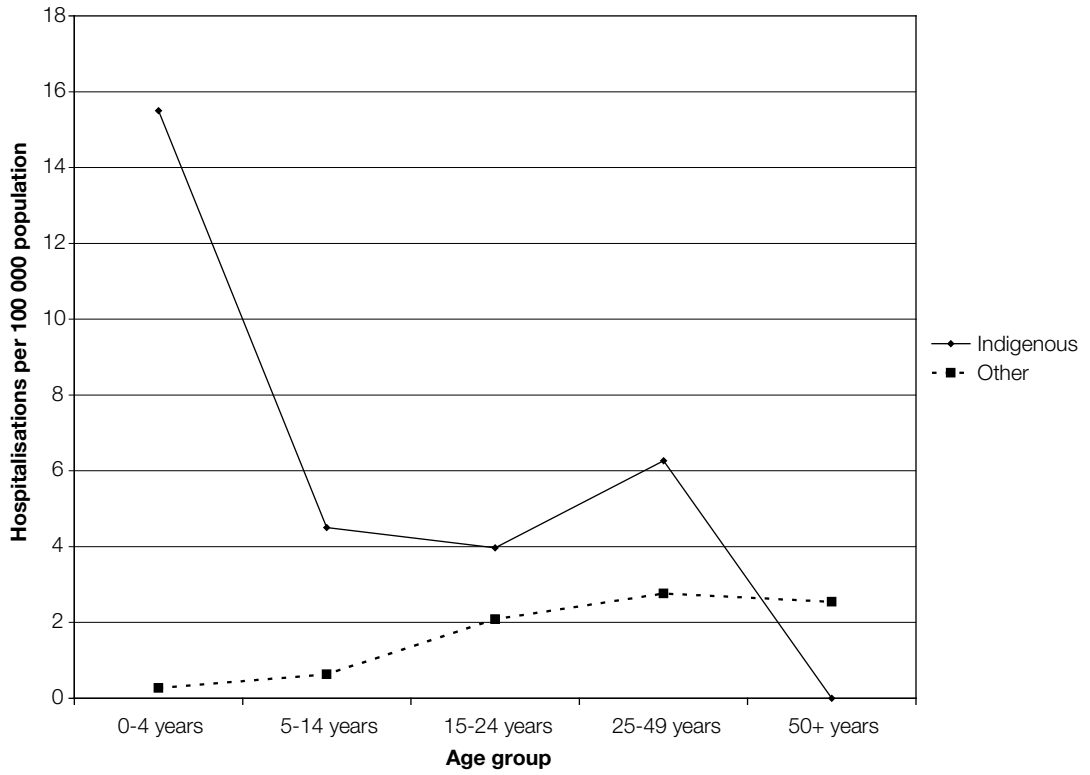
Hospitalisations

There were 1309 hospitalisations for hepatitis A recorded from July 1999 to June 2002, 82 in Aboriginal and Torres Strait Islander people. Indigenous people of all ages were hospitalised twice as often as non-Indigenous people. Indigenous children under 5 years of age were hospitalised for hepatitis A more than 50 times more often than non-Indigenous children.

Deaths

There were only two deaths reported between 2000 and 2002, one of whom was an Aboriginal and Torres Strait Islander child.

Figure 1: Hepatitis A hospitalisation rate, Australia, 1999 to 2002,* by age group and Indigenous status



* Hospitalisations where the date of separation was between 1 July 1999 and 30 June 2002.

Vaccination

Since late 2005, Aboriginal and Torres Strait Islander children in Queensland, the Northern Territory, South Australia and Western Australia have had two doses of hepatitis A vaccine added to the routine vaccination schedule. In the NT and WA these are given at 12 and 18 months of age, and in Queensland and SA they are given at 18 and 24 months. There may also be catch-up vaccination for older children; check with your State or Territory Health Department.

Comment

The north Queensland vaccination program for Aboriginal and Torres Strait Islander children started in 1999 and has been very successful, with big decreases in numbers of cases. This is similar to the success of hepatitis A vaccination programs in Native American communities in the United States. It is expected that the new vaccination program introduced in three states and the NT will be just as successful.

HEPATITIS B (ACUTE)

The Disease

The hepatitis B virus (HBV) infects the liver and can stick around (ie becomes chronic).

Signs and symptoms

Around half of adults and 90% of babies have no symptoms of infection. For those who do get symptoms, they are fever, nausea and vomiting, loss of appetite, jaundice (whites of eyes and skin turn yellow) and dark urine. More serious than these symptoms, though, is that even if they don't get sick at first, up to 90% of babies, 50% of young children, and 10% of adults develop an infection that hangs around (becomes chronic). In a chronic infection, the body cannot get rid of the virus, and infection continues for years. People with chronic hepatitis B infection may not feel sick, but many get scarring of the liver (cirrhosis) or even liver failure or liver cancer later in life.

Transmission

Infection occurs from contact with infected blood or body fluids. This happens when there is blood to blood contact (eg from sharing razors, toothbrushes and earrings), unprotected sex, sharing of infected needles, and also from an infected woman to her baby during birth and between young children.

Who is most affected

Hepatitis B immunisation programs were introduced for Aboriginal and Torres Strait Islander children born in all parts of Australia between the late 1980s and the early 1990s. As a result, the Indigenous age group most affected by HBV now is adolescents and young adults, who were born before these immunisation programs started. People of all ages in prison are at high risk.

Notified cases

Of 526 acute cases notified from 2000–2002, 57 were Aboriginal and Torres Strait Islander people. About 90% of Indigenous cases were aged 15–49 years. Indigenous people were notified more than four times more often than non-Indigenous people.

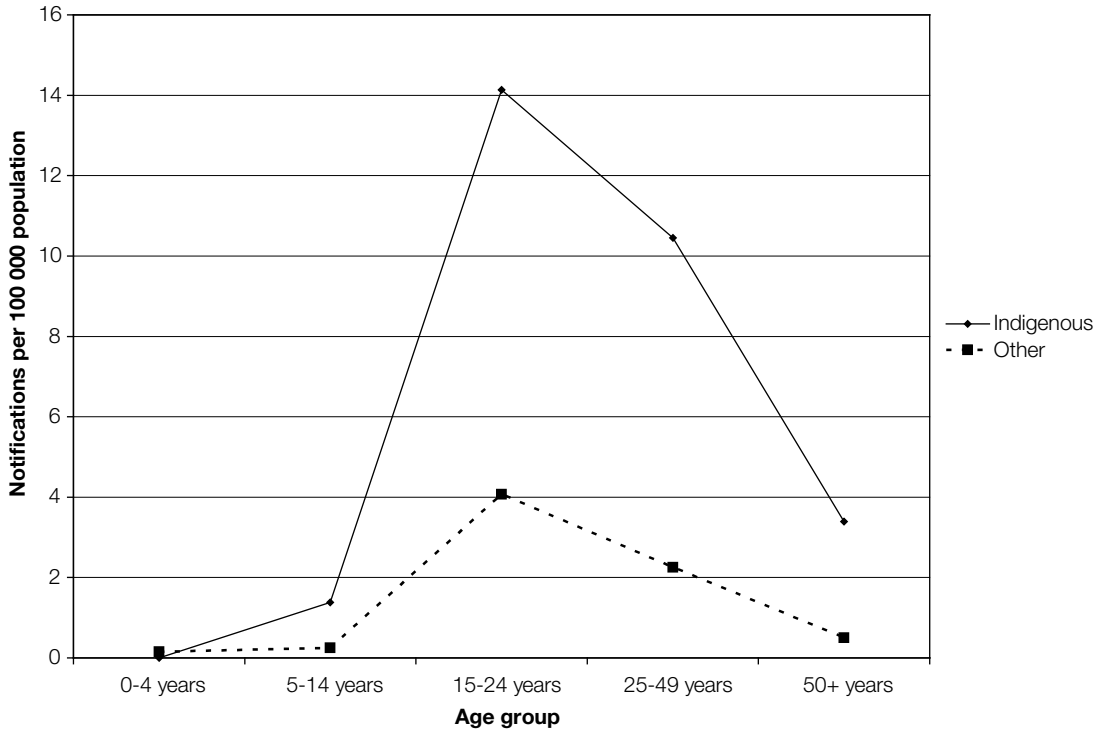
Hospitalisations

There were 463 hospitalisations from July 1999 to June 2002, 30 in Aboriginal and Torres Strait Islander people. Most (73%) were aged 25–49 years. Indigenous people were hospitalised almost four times more often than non-Indigenous people.

Deaths

From 2000 to 2002, there were eight reported deaths due to hepatitis B, two in Indigenous people.

Figure 2: Acute hepatitis B notification rate, selected Australian States,* 2000 to 2002,† by age group and Indigenous status



* New South Wales, South Australia, Western Australia and the Northern Territory.

† Notifications where the date of onset was between 1 January 2000 and 31 December 2002.

Vaccination

All infants should receive a "hepatitis B only" vaccine at birth, plus three more doses of combination vaccines that include hepatitis B. The timing of the other three doses depends on the type of combination vaccine used, and is either at 2, 4 and 12 months or 2, 4 and 6 months. Unvaccinated older children (10–13 years) should receive two or three doses of a hepatitis B only vaccine, depending on which vaccine is used. Check with your State or Territory Health Department to find out the vaccines and schedule that are used in your jurisdiction.

Comment

The universal infant vaccination program has been very successful for both Indigenous and non-Indigenous children. There are now very few notifications or hospitalisations in young children, and none reported in young Indigenous children. However, new cases still occur in unvaccinated, young Indigenous and non-Indigenous adults.

INFLUENZA

The Disease

Influenza is an acute respiratory illness caused by influenza type A or B viruses. Epidemics normally occur each year. The virus often changes, so people can be infected several times during their lives, and immunity from the vaccine wears off. A new vaccine must be made each year and vaccination every year is necessary to protect against influenza.

Signs and symptoms

People often call any illness with a runny nose or cough "the flu", but most are actually caused by other viruses, not influenza. Real influenza is a serious illness. The symptoms can come on very fast with one or more of the following: fever, cough, sore muscles/joints, tiredness and headache. The most common complication of influenza is pneumonia.

Transmission

The influenza virus is very contagious from droplets sent into the air from coughing, sneezing or talking by an infected person. The virus can also land on surfaces such as tabletops or door handles, making it easy for people to pick up the virus and transfer it to their mouth or nose. Children often pass the virus to adults.

Who is most affected

Young children are most likely to get sick from influenza. Elders and those chronically sick, especially with lung or heart disease, at any age, are more likely to get severely ill or die than healthy older children, teenagers and young adults.

Notified cases

Influenza notifications are not included in this report because there is not enough information on whether cases were in Indigenous or non-Indigenous people .

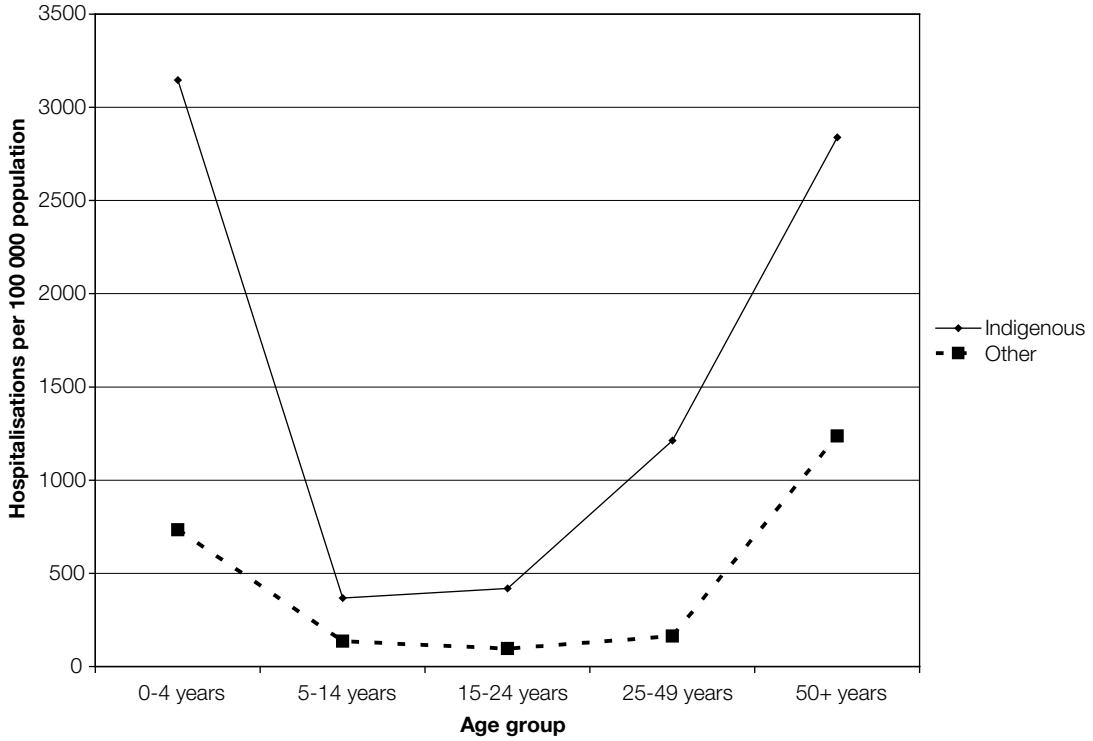
Hospitalisations

Of the 10 313 hospitalisations recorded as due to influenza from July 1999 to June 2002, 594 were in Aboriginal and Torres Strait Islander people. This is an underestimate as many cases of pneumonia start off as influenza, especially in winter, but are not tested for influenza or not recorded as such. If you add together all the hospitalisations from pneumonia (not all of which is due to influenza) and influenza, there were about 300 000 in the same 3 year period, more than 17 000 in Indigenous people. Indigenous people were hospitalised for influenza and pneumonia about three times more often than non-Indigenous people. Rates were higher in Indigenous people in all age groups, but the greatest difference was in adults (25–49 years), where the hospitalisation rate was more than seven times higher in Indigenous people compared with non-Indigenous people.

Deaths

The death rates for influenza or pneumonia in 2000–2002 were higher in Indigenous people than in non-Indigenous people; 17 times higher for children under 5 years of age, 28 times higher for young adults and nearly three times higher for the elderly.

Figure 3: Hospitalisation rate for influenza and all pneumonia combined, Australia, 1999 to 2002,* by age group and Indigenous status



* Hospitalisations where the date of separation was between 1 July 1999 and 30 June 2002.

Vaccination

Annual vaccination is recommended for all people over 65 years or who have chronic heart, lung or kidney diseases or other health problems with a weakened immune system. For Aboriginal and Torres Strait Islander people, vaccine is provided free for everyone 50 years of age or over, and for people 15 years of age or over with health problems like diabetes, heavy drinking, heart, lung or kidney disease. For non-Indigenous people, free vaccine is provided for everyone aged 65 years or over.

Comment

The high levels of serious disease from influenza and other related conditions in Indigenous elders (50 years of age or over) led to a special program (the National Indigenous Pneumococcal and Influenza Immunisation program) to provide free pneumococcal and influenza vaccine at 50 years of age, instead of the 65 years of age in the mainstream population. Free vaccine is also available for those Indigenous adults 15–49 years of age who have one of the underlying diseases mentioned above. Vaccination is very important for them, because they also have a much greater risk of serious lung and heart complications from influenza.

Young children also experience a high disease burden and it has been well documented that children are able to pass influenza on to their parents and grandparents, especially when there is overcrowding in homes.

Influenza vaccine is one important way to reduce pneumonia, which is a very common cause of serious illness and death in Aboriginal and Torres Strait Islander people, particularly Elders. Around 50% of Indigenous adults who should be vaccinated are actually vaccinated every year (see vaccination coverage section). This needs to improve to get the most benefit from this vaccine.

MEASLES

The Disease

Before immunisation was introduced, almost every child suffered from measles, as it is a very infectious disease. Serious epidemics of measles occurred in the 1970s and 1980s among Aboriginal children in Central Australia, with a significant number of deaths.

Signs and symptoms

The typical symptoms are fever, cough, runny nose and conjunctivitis (red eyes), followed by a rash all over the body. It can take 10–12 days for a person to show any signs of infection or feel unwell after they have become infected. While most children completely recover, some will be affected by complications. There are various complications ranging from otitis media (middle ear infection) to more serious problems like pneumonia or encephalitis (brain infection) which can lead to death or brain damage.

Transmission

The measles virus lives in the throat and nose of infected people. Droplets can be released during coughing and sneezing. These droplets can live in the air and on surfaces for up to 2 hours. Measles is so contagious that just being in the same room as someone who has it can result in infection. A person with measles can be infectious for up to 5 days *before* they have a fever or runny nose and for up to 4 days *after* the full-blown rash develops.

Who is most affected

All ages that have not been immunised are at risk of measles, but most cases these days are in young adults who were not vaccinated as children, and babies too young to be vaccinated.

Notified cases

Notification rates are very low these days (due to immunisation). From 2000 to 2002, there were 113 cases notified, three in Aboriginal and Torres Strait Islander people, which is no higher than the rate in non-Indigenous people.

Hospitalisations

Before immunisation, hospitalisation occurred due to measles complications such as pneumonia, encephalitis and otitis media. From July 1999 to June 2002, there were 172 hospitalisations recorded for measles, two in Aboriginal and Torres Strait Islander people.

Deaths

Death was a common occurrence during measles outbreaks before immunisation was introduced. The death rate was as high as one in 1000 cases. Death was generally a result of complications such as pneumonia or encephalitis. From 2000 to 2002, no deaths due to measles were reported in Australia.

Table 2: Measles notifications, hospitalisations and deaths by age group and Indigenous status, Australia, 1999 to 2002*

Age group	Indigenous status	Notifications (2000–2002)			Hospitalisations (July 1999–June 2002)			Deaths (2000–2002)
(years)		No.	Rate†	Rate ratio‡	No.	Rate†	Rate ratio‡	No.
All ages§	Indigenous	3	0.2	**0.6**	2	0.1	**0.4**	0
	Other	*110*	*0.4*		*170*	*0.3*		*0*

* Notifications (NSW, NT, SA and WA only) where the date of onset was between 1January 2000 and 31 December 2002; hospitalisations (all States) where the date of separation was between 1 July 1999 and 30 June 2002; deaths (QLD, NT, SA and WA) where the date of death was recorded between 1 January 2000 and 31 December 2002.

† Average annual rate per 100 000 population.

‡ Rate ratio is the rate in Indigenous / rate in other, eg a ratio of 0.6 means that the Indigenous population rate is 0.6 times the non- Indigenous population rate.

§ Includes cases with unknown ages. Rates are age standardised to the Australian Bureau of Statistics Australian population estimates for 2001.

Vaccination

Two doses are given routinely to children at 12 months and 4 years of age. To ensure older people are protected against measles, it is important for everyone born after 1970 to have two doses of measles–mumps-rubella (MMR) vaccine. In some states and territories, free vaccine may be available for people over 4 years of age. Check with your State or Territory Health Department.

Comment

Illness from measles among Aboriginal and Torres Strait Islander children was very common in the past, particularly in the Northern Territory, where, as a result, Indigenous babies were vaccinated at 9 months instead of 12 months, followed by a booster, until 1998. Also in 1998, through the national Measles Control Campaign, children aged 5–12 years were vaccinated in school and the age of the second dose was brought forward from 12 years to 4 years. Since then, measles has been very well controlled in Indigenous and non-Indigenous people. The small number of cases has largely been limited to children too young to be vaccinated and unvaccinated young adults. This shows how effective a universal immunisation program that results in a very high proportion of the population being immunised can be in controlling even a highly infectious disease like measles in both Indigenous and non-Indigenous people.

MENINGOCOCCAL DISEASE

The Disease

Meningococcal disease is caused by infection with the *Neisseria meningitidis* bacterium. It is a very dangerous disease that can get serious very quickly, sometimes leading to death in less than a day if not treated in time. There are two types of meningococcal disease – meningitis and septicaemia. Early symptoms, like fever and sore throat, can occur without the typical rash and be similar to many other diseases, making it hard to diagnose in the early stages.

Signs and symptoms

Meningitis

Meningitis is an infection of part of the brain and spinal cord. It often results in serious problems such as brain damage (creating memory loss, learning difficulties and speech problems) and hearing loss. The most common symptoms are fever, headache and stiff neck.

Septicaemia

This is the most dangerous form of the two, an infection of the blood. The most common symptoms are fever, limpness, vomiting, cold hands and feet, the shakes, and a rash. The rash is caused by the bacteria making blood vessels break, which causes blood to leak into the skin. The rash can go from small dots to big blotches covering most of the body very rapidly. Septicaemia can cause loss of arms or legs, or death.

Transmission

Neisseria meningitidis is commonly found in the nose and throat of healthy humans. Bacteria are spread by coughing, sneezing or kissing between people in close contact such as family members, young children playing together, or boyfriends and girlfriends. Sometimes bacteria in the throat cross over into the blood or brain and cause disease. This can happen when a person comes into contact with meningococcal bacteria that they are not used to and that they do not have any natural protection against, or if a person is already sick or their immune system is not working well.

Who is most affected

Meningococcal disease is spread in environments where there is a lot of close contact between people, such as crowded homes, childcare centres (children under 5 years of age) and shared accommodation or night clubs (17–20 year olds).

The three most common strains of meningococcal disease are serogroups A, B and C. In Australia, serogroup A used to cause epidemics in Aboriginal and Torres Strait Islander communities, but there have not been any cases for more than 10 years. The most common serogroups causing infection recently have been B and C.

Serogroup B is also a serious problem for Maori and Pacific Islander children under 5 years of age in New Zealand but is of a particular strain of B which is much less common in Australia.

Notified cases

There were 1087 cases notified from 2000 to 2002, 92 in Aboriginal and Torres Strait Islander people. Indigenous people were notified twice as often as non-Indigenous people, and this was more pronounced in children 0–4 years of age (3½ times) and elders 50 years of age or over (four times).

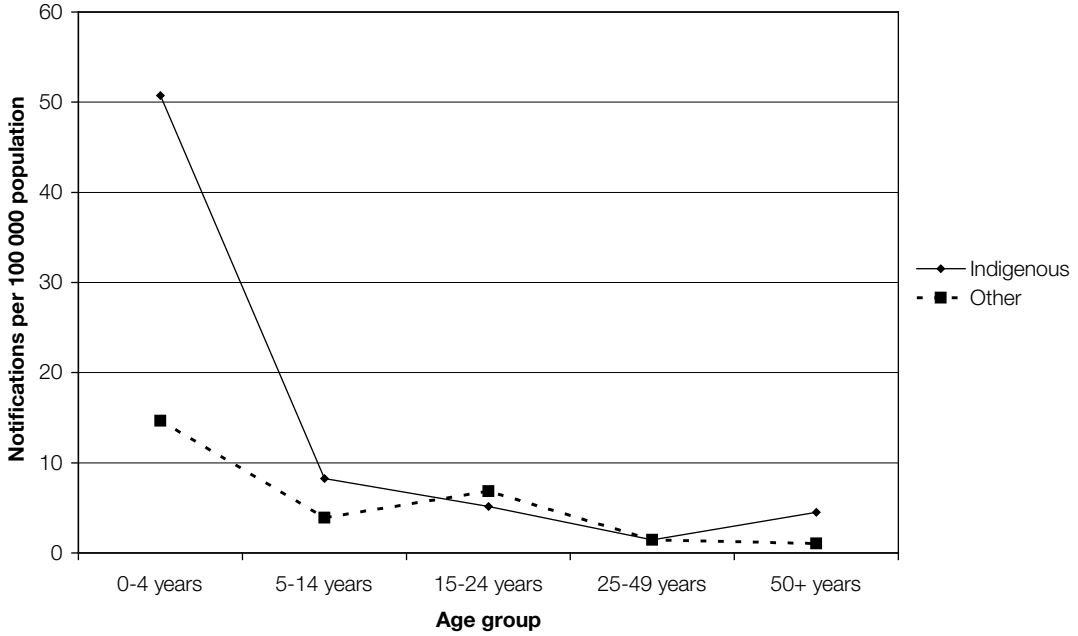
Hospitalisations

There were 2562 hospitalisations from July 1999 to June 2002, 121 in Aboriginal and Torres Strait Islander people. Indigenous people were hospitalised slightly more frequently than non-Indigenous people (1.3 times), and this was more pronounced in children 0–4 years of age (2.1 times) and Elders 50 years of age or over (1.9 times).

Deaths

Of the 38 deaths reported from 2000 to 2002, five were in Aboriginal and Torres Strait Islander people, four of whom were children 0–4 years of age.

Figure 4: Meningococcal disease notification rate, selected Australian States,* 2000 to 2002,† by age group and Indigenous status



* New South Wales, South Australia, Western Australia and the Northern Territory.

† Notifications where the date of onset was between 1 January 2000 and 31 December 2002.

Vaccination

The vaccine in the national vaccination schedule only protects against serogroup C. There is another vaccine that gives relatively short-term protection against serogroups A, C, W and Y that is usually given to people travelling to countries that have a lot of serogroup A disease, such as sub-Saharan Africa and the Indian subcontinent.

One dose of meningococcal C vaccine (*MENINGITEC®*, *MENJUGATE®SYRINGE or NeisVac-C®*) should be given at 12 months of age. A national campaign to vaccinate all children and adolescents aged 1–19 years was conducted during 2003–2004, which included school-based programs and other vaccination service providers.

Comment

Only about one third of meningococcal disease in Australia can be prevented by the vaccine (serogroup C). Therefore, if meningococcal disease is suspected in a patient, it is important to get them to a doctor quickly.

PERTUSSIS

The Disease

Also known as ”whooping cough”, pertussis is a very infectious coughing illness which is especially dangerous in young babies. It is caused by the *Bordetella pertussis* bacterium.

Signs and symptoms

Pertussis normally starts like an average cold; runny nose, tiredness and usually no or only a mild fever. These symptoms are followed by an irritating cough. In babies and small children the coughing fits can be severe and end with a strange whooping noise when the child tries to get their breath. Babies and small children can turn blue from lack of oxygen during these coughing fits and sometimes die. In older children, teenagers and adults, whooping cough uncommonly causes hospitalisation or death but can go on for weeks or months and interfere with work and sleep.

Transmission

The *Bordetella pertussis* bacterium is spread from person to person during coughing and sneezing. An infected person can transmit the bacteria for up to 3 weeks but are most infectious at the beginning of their cough.

Who is most affected

Most cases these days are in older children and young adults. The disease is most severe in unimmunised babies less than 6 months of age.

Notified cases

From 2000 to 2002, there were almost 14 000 cases notified in Australia, more than 400 in Aboriginal or Torres Strait Islander people. Overall, pertussis seems to be recognised about as commonly in Aboriginal and Torres Strait Islander people as in non-Indigenous people.

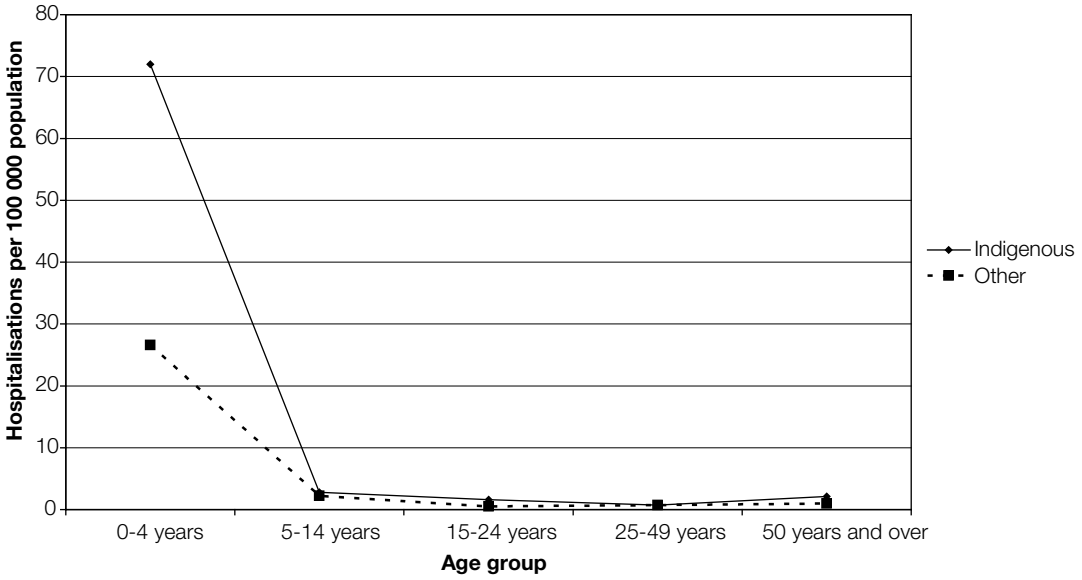
Hospitalisation

There were more than 1500 hospitalisations for pertussis from 2000 to 2002, more than 150 in Aboriginal and Torres Strait Islander people. Most hospitalisations (two thirds) were in babies or young children. Indigenous babies and young children were hospitalised almost three times more often than non-Indigenous babies and young children.

Death

There were seven deaths from pertussis in Australia from 2000 to 2002, five in young children and two in adults, none reported as Aboriginal or Torres Strait Islander.

Figure 5: Pertussis hospitalisation rate, Australia, 1999 to 2002,* by age group and Indigenous status



* Hospitalisations where the date of separation was between 1 July 1999 and 30 June 2002.

Vaccination

Five doses of combination diphtheria-tetanus-acellular pertussis vaccine are given at 2, 4, 6 months, 4 years and 15–17 years of age. The exact combination vaccine used for the first four doses varies between states and territories. The vaccine given to adolescents at around 15 years of age should be the adolescent/adult formulation, which has lower amounts of the diphtheria and acellular pertussis components.

Comment

Pertussis is still a very common disease in both Indigenous and non-Indigenous people, because the immunity provided by the vaccine wears off. Transmission from older children and adults to babies is common. The disease is most severe in young babies, in whom it can cause death, and Indigenous babies are hospitalised almost three times as frequently as non-Indigenous babies. Babies can be best protected by ensuring that vaccination is done on time, and that adults in contact with babies are vaccinated. This especially includes healthcare and childcare workers who work with young babies, as well as parents and grandparents, but any other adult who was vaccinated as a child can also have one booster.

PNEUMOCOCCAL DISEASE

The Disease

Streptococcus pneumoniae, also called pneumococcus, is a bacterium that causes a range of diseases such as meningitis (disease of part of the brain and spinal cord), bacteraemia (blood infection), pneumonia (lung disease) and otitis media (middle ear disease). Pneumococcal pneumonia is one of the most common diseases affecting children and adults around the world.

Signs and symptoms

Pneumococcal meningitis causes high fever, tiredness, stiff neck and sometimes loss of consciousness. Pneumococcal pneumonia can come on very quickly with shakes and chills. Other symptoms include fever, shortness of breath and rapid breathing, chest pain, cough, sneezing and headache.

Transmission

The pneumococcus can live in the nose and throat of healthy people and they can transmit it to other people by coughing, sneezing or talking. Sometimes pneumococci can be inhaled or get into the bloodstream from the throat, and cause infection in the bloodstream, lung, brain or middle ear. Recently, it has been shown that children have been linked to passing the bacterium on to adults.

Who is most affected

Disease most commonly occurs in young children and older adults, and those with chronic infections or weakened immune systems. Bacteraemia and meningitis are most common in young children, and pneumonia is most common in adults.

Notified cases

Infections of body fluids such as blood and cerebrospinal fluid are notified to health authorities, but pneumococcal pneumonia without bacteraemia is not. There were 2140 notified cases of invasive pneumococcal disease from 2000–2002, with 214 identified as being in Aboriginal and Torres Strait Islander people. Indigenous people were notified more than four times more frequently than non-Indigenous people, and in the 25–49 year age group, they were nearly 12 times more likely to be notified.

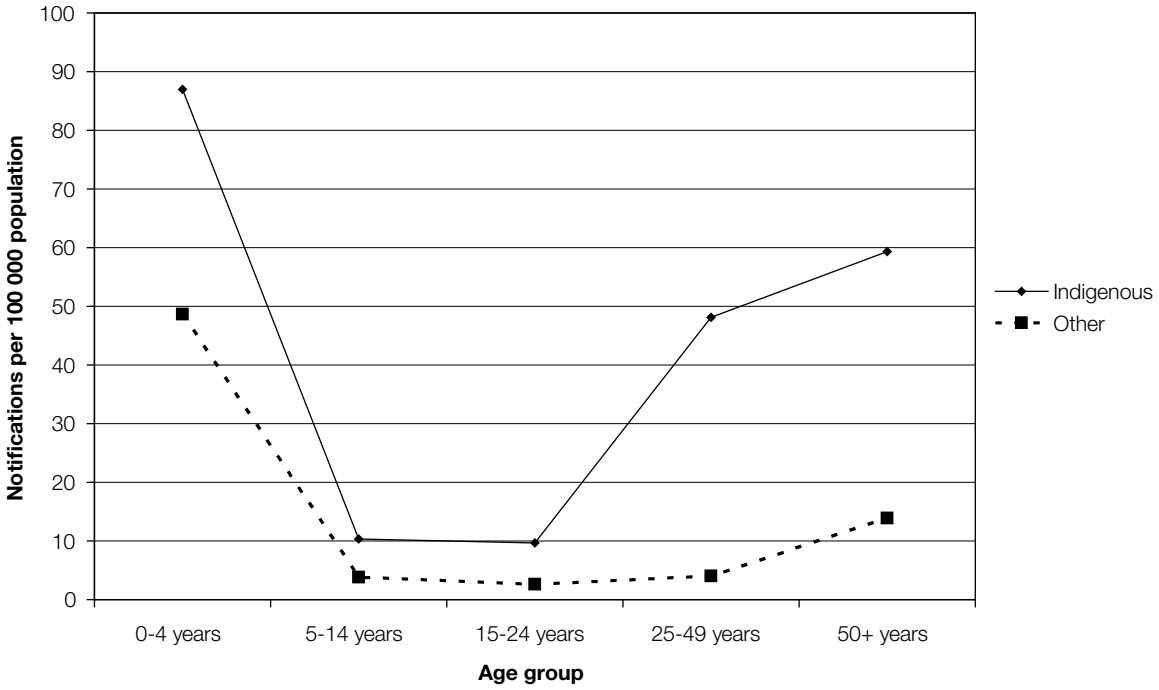
Hospitalisations

There were 3075 hospitalisations for pneumococcal meningitis, bacteraemia or pneumonia from July 1999 to June 2002, 268 of them in Aboriginal or Torres Strait Islander people. As with notifications, Indigenous people were more than four times more likely to be hospitalised than non-Indigenous people, and the 25–49 year age group were over 13 times more likely to be hospitalised.

Deaths

Between 2000 and 2002, there were five deaths from pneumococcal meningitis or bacteraemia recorded in Aboriginal and Torres Strait Islander people and 16 deaths in non-Indigenous people. Many more people die from pneumococcal pneumonia, particularly the elderly, but the exact numbers aren't known.

Figure 6: Invasive pneumococcal disease notification rate, selected Australian States,* 2001 to 2002,† by age group and Indigenous status



* New South Wales, South Australia, Western Australia and the Northern Territory.

† Notifications where the date of onset was between 1 January 2001 and 31 December 2002.

Vaccination

There are two types of pneumococcal vaccine; 7-valent conjugate (*Prevenar®)* and 23-valent polysaccharide (*PNEUMOVAX® 23). Prevenar®* is the only pneumococcal vaccine which works in young children but covers only the 7 types of pneumococcus most common in them, the reason it is called 7-valent. *PNEUMOVAX® 23* can be given as the first vaccine to adults and children over 5 years, and to younger children as a booster after Prevenar has been given. It covers 23 types (23-valent).

There is a standard schedule recommended for all children and adults, and extra doses for people at higher risk of disease, as explained below.

All children should receive three doses of *Prevenar®*; at 2, 4 and 6 months of age.

Children who have any of a number of underlying diseases affecting their immunity or problems with the heart or lungs should receive an extra dose of *Prevenar®* at 12 months of age.

PNEUMOVAX® 23 should be given to:

Children:

- Children with underlying conditions who receive an extra dose of *Prevenar®* at 12 months should also receive a *PNEUMOVAX® 23* booster at 4 years
- All Aboriginal and Torres Strait Islander children in NT, SA, WA and Queensland should receive a *PNEUMOVAX® 23* booster at 18–24 months of age

Adults:

- Indigenous adults 50 years of age or over, and non-Indigenous adults 65 years of age or over; one dose and one booster 5 years later.

- Other Indigenous people with chronic disease or with weaker immune systems; one dose, then revaccination 5 years later and once more 10 years later or at age 50.
- All Indigenous adults in the Northern Territory; vaccinate and give two booster doses as for those with chronic disease.

Comment

Pneumococcal disease is well known to affect Indigenous children and adults worldwide. Before vaccination was introduced, rates in Aboriginal and Torres Strait Islander people in Northern and Central Australia were amongst the highest in the world. This underlines the importance of pneumococcal vaccination in both Indigenous children and adults.

OTHER VACCINE PREVENTABLE DISEASES

The other diseases which have vaccines on the National Immunisation Program are diphtheria, mumps, polio, rubella, tetanus and varicella (chickenpox). Numbers of reported cases, hospitalisations and deaths in Indigenous and non-Indigenous people for each of these are in the table in Appendix 1. These diseases all have vaccines recommended for all children in Australia, and the data show similar rates of infection in Indigenous and non-Indigenous children.

Diphtheria is a bacterial infection, usually a serious throat infection that can cause difficulty breathing, and death in 5% to 10% of cases. Less serious infections can occur in other areas such as the skin. It is transmitted by person-to-person contact with infected people or carriers. Diphtheria used to be very common in Australia, but it is now very effectively controlled by vaccination and there was only one (non-Indigenous) case of skin infection reported from 2000 to 2002. In children, diphtheria is included in the combination DTPa vaccine given at 2, 4, 6 months and 4 years. When given to older children and adults, dTpa vaccine, with reduced amounts of diphtheria and pertussis, is used and given routinely around 15 years of age. Boosters of either dTpa or dT (reduced dose diphtheria and tetanus) are recommended at 50 years. Check the schedule and vaccines used with your State or Territory Health Department.

Mumps is a viral infection usually causing painful swelling of the salivary glands. The highly infectious virus is transmitted through the air or in droplets by coughing or other contact with saliva. Before vaccination was introduced, almost all children suffered from mumps at some stage. The disease is much less common since vaccination was introduced. Cases and hospitalisations are still reported, but these are mainly in unvaccinated young adults. Mumps vaccine is found in combination in MMR vaccine which should be given at 12 months and 4 years of age.

Poliomyelitis is a viral illness which can cause paralysis in various parts of the body. Infection occurs through “faecal-oral” transmission, mainly through person-to-person contact. It causes a gastrointestinal infection and, in some cases, then spreads to the nerves to cause paralysis. Epidemics of paralytic polio occurred in Australia as late as the 1950s and 1960s. There have been no cases in Australia for at least 30 years as a result of childhood vaccination. The oral vaccine has recently been replaced in Australia by an injectable vaccine (IPV), usually in combination with other vaccines, which should be given at 2, 4, 6 months and 4 years.

Rubella (also known as german measles) is a viral disease usually causing mild fever and rash. It is highly infectious through coughing or sneezing or direct contact with saliva of infected people. The main reason that rubella is important is that infection in a pregnant women can result in the baby having severe problems, including blindness, deafness and brain damage. This is called congenital rubella syndrome. Before vaccine was introduced, almost every child had rubella. Pregnant women who were not fully immune could easily be infected by children. The vaccine is now included in MMR which should be given at 12 months and 4 years of age. The smaller number of cases reported are now mainly in unvaccinated young adults. There were two cases of congenital rubella syndrome in Australia in 2002. This underlines the importance of vaccinating young adults who have not been vaccinated in the past, to stop the virus circulating and possibly infecting pregnant women.

Tetanus is a bacterial infection causing severe muscle spasms, and breathing problems that can result in death even with intensive treatment. The bacterium lives in soil, dust or other outside environments and causes infection after a wound to the skin which may not always be noticeable. Few cases occur in Australia since vaccination was introduced, and these are mainly in older people who have not been recently vaccinated. Tetanus vaccine is included in DTPa childhood vaccine given at 2, 4, 6 months and

4 years and the dTpa vaccine, given at 15–17 years. Boosters may be needed for adults at 50 years of age or after some injuries; check with your State or Territory Health Department for details.

Varicella, or chickenpox, is a viral illness usually with mild fever and a rash. The rash starts with a number of bumps topped with fluid-filled bubbles which later crust over. Although usually a mild disease in children, some cases can be severe with serious complications such as pneumonia, encephalitis (brain infection) or even death. The large number of hospitalisations for varicella can be seen in the table in Appendix 1. Before vaccine was available, almost everyone was infected in childhood. After infection the virus then lives in nerve cells of the body and can reactivate as herpes zoster (shingles), most commonly in the elderly. Shingles usually appears as a series of lines, with fluid-filled bubbles like chickenpox, which can be very painful and stay around for days, weeks or longer. All children should be vaccinated at 18 months of age, as well as any 10–13 year-olds who have not already had the chicken pox disease.

VACCINATION COVERAGE

Vaccinations for Aboriginal and Torres Strait Islander people

The vaccines funded by the National Immunisation Program from 1 November 2005 are shown in the table in Appendix 2. The vaccine names and schedules differ between states and territories, so please check with your local Department of Health.

There are several differences between the vaccines recommended for Indigenous and non-Indigenous Australians, mainly due to differences in disease incidence. The differences for adults are in influenza and pneumococcal vaccines for the whole country. For children, there are differences in some states and territories in hepatitis A, Hib, pneumococcal and tuberculosis vaccines.

Influenza and 23-valent pneumococcal polysaccharide vaccines are recommended for Aboriginal and Torres Strait Islander people 50 years of age or over and those 15–49 years of age who have a high risk condition such as heart disease or smoking. In the Northern Territory, pneumococcal vaccination is recommended for all Indigenous people 15 years of age and over. For non-Indigenous people, vaccination is funded only for those 65 years of age or over.

Hepatitis A vaccine is funded for Aboriginal and Torres Strait Islander children in Queensland, the Northern Territory, South Australia and Western Australia. The recommended ages differ between states and territories, please check with your Department of Health.

While **Hib** vaccine is funded for all Australian children, a specific type of Hib vaccine should be given to Indigenous children in Queensland, the Northern Territory, South Australia and Western Australia. In addition, this vaccine is also provided for some other Indigenous and non-Indigenous children (see Hib chapter). Check with your State or Territory Health Department.

Aboriginal and Torres Strait Islander children in Queensland, the Northern Territory, South Australia and Western Australia should receive a dose of **polysaccharide pneumococcal vaccine at 18–24 months of age**. Check with your State or Territory Health Department for exact age and other details.

Vaccination against tuberculosis (**BCG**) is funded for Indigenous children in the NT, northern WA and northern Queensland. Check with your State or Territory Health Department for more details.

Vaccination for **Japanese encephalitis** is recommended for people who live in the Torres Strait outer islands or plan to visit for 30 days or more during the wet season.

Vaccination coverage of Aboriginal and Torres Strait Islander people

Vaccination coverage for children is measured by the Australian Childhood Immunisation Register. The Register records vaccinations for each child when they are reported by doctors and other service providers. Coverage figures for the total child population from the ACIR under-estimate true coverage by about 2–3% because of unreported vaccinations. Coverage for Aboriginal and Torres Strait Islander children is probably less accurate than that, because not all Indigenous children are recorded as Indigenous on the ACIR. Some Indigenous children are recorded as "unknown" Indigenous status.

National vaccination coverage estimates for Indigenous and non-Indigenous children are shown in Table 3. There is little difference between coverage in Indigenous and non-Indigenous children at 2 years of age, with 91%–92% fully vaccinated. At 1 year of age, though, coverage is lower for Indigenous children compared with non-Indigenous children by about 6% for polio and DTP vaccines and for full vaccination.

Table 3: Coverage estimates from the Australian Childhood Immunisation Register for Indigenous and other children 'fully vaccinated' at age 1 and 2 years*

Vaccine	Indigenous status	1 year	2 years
Hepatitis B	Indigenous	94.1	97.6
	Other	*94.3*	*95.8*
DTP	Indigenous	86.5	95.3
	Other	*92.0*	*95.1*
OPV	Indigenous	86.4	95.0
	Other	*91.9*	*95.0*
Hib	Indigenous	92.9	92.6
	Other	*93.8*	*93.5*
MMR	Indigenous	N/A†	94.2
	Other	*N/A†*	*93.8*
All vaccines	Indigenous	84.3	91.0
	Other	*90.4*	*92.1*

Source: Australian Childhood Immunisation Register, Health Insurance Commission.

* 3-month cohorts, age at 31 December 2005, calculated at 31 March 2006. Coverage assessment date was 12 or 24 months after the last birth date of each cohort.

† Not included in coverage estimates for that age group.

Vaccination coverage estimates for adults are provided by questionnaire interviews during the 2001 National Health Survey, and shown in Table 4 below. Influenza vaccination coverage was higher for Indigenous adults compared to non-Indigenous adults in the 50–64 year age group, where the vaccine is funded only for Indigenous adults. In this age group, coverage was 47% for Indigenous adults, higher than the 26% for non-Indigenous adults. However, coverage was higher in older age groups (65 years or over) where it is funded for both Indigenous and non-Indigenous adults (Indigenous 71%, non-Indigenous 75%).

Pneumococcal vaccination coverage was lower than for influenza. Only 25% of Indigenous adults had been vaccinated in the past 5 years. This was higher than for non-Indigenous adults (14%) for whom the vaccine was not funded at that time. In the 2004–05 National Aboriginal and Torres Strait Islander Health Survey, national coverage levels had increased to 60% for influenza and 34% for pneumococcal vaccine, but these are still lower than coverage for the groups eligible for the mainstream programs.

Table 4: Vaccination coverage estimates from the 2001 National Health Survey for Indigenous and non-Indigenous adults, by age

Vaccine	Indigenous status	50–64 years	65+ years	Total 50+ years
Influenza*	Indigenous	47 (38-56)	71 (50-92)	51 (43-59)
	Other	*26 (24-28)*	*75 (74-76)*	*47 (46-48)*
Pneumococcal†	Indigenous	20 (15-25)	47 (29-65)	25 (19-31)
	Other	*3 (2-4)*	*28 (26-30)*	*14 (13-15)*

Source: Unpublished data from the National Health Survey, provided by Australian Bureau of Statistics.

* Vaccinated in the last 12 months.

† Vaccinated in the last 5 years.

APPENDIX 1: SUMMARY OF NOTIFICATIONS, HOSPITALISATIONS AND DEATHS FOR VACCINE PREVENTABLE DISEASES, BY INDIGENOUS STATUS, AUSTRALIA 1999–2002*

Disease†	Indigenous status	Notifications (2000–2002)			Hospitalisations (July 1999–June 2002)			Deaths (2000–2002)		
		No.	Rate‡	Rate ratio	No.	Rate‡	Rate ratio	No.	Rate‡	Rate ratio
Diphtheria§	Indigenous	0	–	–	0	–	–	0	–	–
	Other	*1*	–		*2*	–		*0*	–	
Hib disease (invasive)£	Indigenous	13	1.2	**9.7**	–	–	–	–	–	–
	Other	*34*	*0.1*		–	–		–	–	
Hepatitis A	Indigenous	113	9.1	**2.9**	82	4.5	**2.1**	1	–	–
	Other	*899*	*3.1*		*1227*	*2.1*		*2*	–	
Hepatitis B (acute)	Indigenous	57	7.2	**4.4**	30	2.8	**3.7**	2	–	–
	Other	*469*	*1.6*		*433*	*0.8*		*8*	–	
Influenza¶	Indigenous	–	–	–	594	49.3	**2.9**	2	–	–
	Other	–	–		*9719*	*17.1*		*61*	–	
Measles	Indigenous	3	0.2	**0.6**	2	0.1	**0.4**	0	–	–
	Other	*110*	*0.4*		*170*	*0.3*		*0*	–	
Meningococcal disease	Indigenous	92	7.2	**2.1**	121	5.5	**1.3**	5	–	–
	Other	*975*	*3.4*		*2440*	*4.3*		*33*	–	
Mumps**	Indigenous	5	0.3	**0.4**	9	0.4	**1.8**	0	–	–
	Other	*270*	*0.9*		*129*	*0.2*		*1*	–	
Pertussis	Indigenous	408	41.8	**0.9**	150	6.2	**2.4**	0	–	–
	Other	*13 528*	*46.9*		*1478*	*2.6*		*7*	–	
Pneumonia	Indigenous	NN	NN	–	17455	1580	**3.2**	130	19.1	**3.1**
	Other	*NN*	*NN*		*283 876*	*495*		*3569*	*6.2*	
Pneumococcal disease	Indigenous	214	44.7	**4.5**	269	22.0	**4.5**	5	–	–
	Other	*1926*	*9.9*		*2806*	*4.9*		*16*	–	
Poliomyelitis††	Indigenous	0	–	–	2	0.3	**2.8**	0	–	–
	Other	*0*	–		*54*	*0.1*		*0*	–	
Rubella‡‡	Indigenous	5	0.5	**0.4**	1	0.1	**0.6**	0	–	–
	Other	*310*	*1.1*		*81*	*0.1*		*0*	–	
Tetanus§§	Indigenous	1	0.3	**16.2**	0	–	–	0	–	–
	Other	*6*	*0.0*		*80*	*0.1*		*1*	–	
Varicella£ £	Indigenous	NN	NN	–	197	8.9	**1.2**	0	–	–
	Other	*NN*	*NN*		*4285*	*7.6*		*10*	–	

* Notifications (NSW, NT, SA and WA only) where the date of onset was between 1 January 2000 and 31 December 2002; hospitalisations (all states) where the month of separation was between 1 July 1999 and 30 June 2002; deaths (QLD, NT, SA and WA) where the date of death was recorded between 1 January 2000 and 31 December 2002.

† See full original report for case definitions. For diseases not included in Section 3, case definitions are listed below.

‡ Average annual rate per 100 000 population, age standardised to the ABS Australian population estimates for 2001.

§ Notifications: isolation of toxigenic *Corynebacterium diphtheriae*, plus either pharyngitis or laryngitis, and toxic symptoms. Hospitalisations: ICD-10 codes A36.0, A36.1, A36.2 or (A36.8 + I41.0). Deaths: A36. One notification of a cutaneous infection acquired overseas.

£ Hospitalisations and deaths not included because there is no ICD-10 code specific to *Haemophilus influenzae* type b.

¶ Notifications not included due to low completeness of Indigenous status field.

** Notifications: isolation of mumps virus, rise in mumps antibody, or clinically compatible illness. Hospitalisations and deaths: ICD-10 code B26.

†† Notifications: acute flaccid paralysis without apparent cause. Hospitalisations and deaths: ICD-10 code A80. Hospitalisations include vaccine-associated polio and imported cases.

‡‡ Notifications: generalised macropapular rash, fever, epidemiological link to a confirmed case, plus arthralgia/arthritis, lymphadenopathy or conjunctivitis. Hospitalisations and deaths: ICD-10 code B06.

§§ Notifications: a clinically compatible illness without other apparent cause. Hospitalisations and deaths: ISD-10 code A35.

£ £ Hospitalisations and deaths: ICD-10 code B01.

NN = not notifiable.

APPENDIX 2: NATIONAL IMMUNISATION PROGRAM SCHEDULE (AT 1 NOVEMBER 2005)

Age	Vaccine
Birth [a]	Hepatitis B (Hep B) [b]
2 months	Hepatitis B [c] Diphtheria, tetanus and acellular pertussis (DTPa) *Haemophilus influenzae* type b (Hib) [d,e] Inactivated poliomyelitis (IPV) Pneumococcal conjugate (7vPCV)
4 months	Hepatitis B [c] Diphtheria, tetanus and acellular pertussis *Haemophilus influenzae* type b [d,e] Inactivated poliomyelitis Pneumococcal conjugate
6 months	Hepatitis B [c] Diphtheria, tetanus and acellular pertussis *Haemophilus influenzae* type b [d] Inactivated poliomyelitis Pneumococcal conjugate [f]
12 months	Hepatitis B [c] *Haemophilus influenzae* type b [e] Measles, mumps, rubella (MMR) Meningococcal C
12-24 months	Hepatitis A (Aboriginal and Torres Strait Islander children in high risk areas) [g]
18 months	Varicella
18-24 months	Pneumococcal polysaccharide (Aboriginal and Torres Strait Islander children in high risk areas) [h] Hepatitis A (Aboriginal and Torres Strait Islander children in high risk areas)
4 years	Diphtheria, tetanus and acellular pertussis Measles, mumps, rubella Inactivated poliomyelitis
10-13 years [i]	Hepatitis B Varicella
15-17 years [k]	Diphtheria, tetanus and acellular pertussis
15-49 years	Influenza [l] (Aboriginal and Torres Strait Islander people medically at-risk) Pneumococcal polysaccharide [m] (Aboriginal and Torres Strait Islander people medically at-risk)
50 years and over	Influenza [l] (Aboriginal and Torres Strait Islander people) Pneumococcal polysaccharide [m] (Aboriginal and Torres Strait Islander people)
65 years and over	Influenza [l] Pneumococcal polysaccharide [m]

a Although not part of the National Immunisation Program, Bacille Calmette-Guerin (BCG) vaccine at birth is funded for Aboriginal and Torres Strait Islander babies in the Northern Territory, northern Queensland and northern Western Australia, and other babies at high risk of leprosy or tuberculosis. Contact your State or Territory Health Department for more information.

b Hepatitis B vaccine should be given to all infants as soon as practicable after birth. The greatest benefit is if given within 24 hours, and must be given within 7 days.

c Total of three doses of hepB required following the birth dose, at either 2m, 4m and 6m or at 2m, 4m and 12m.

d Give a total of 4 doses of Hib vaccine (2m, 4m, 6m and 12m) if using PRP-T Hib containing vaccines.

e Use PRP-OMP Hib containing vaccines in Aboriginal and Torres Strait Islander children in areas of higher risk (Queensland, Northern Territory, Western Australia and South Australia) with a dose at 2m, 4m and 12m. PRP-OMP vaccines are also given to Indigenous babies in some other states and territories and to non-Indigenous babies. Contact your State or Territory Health Department for details.

f Medical at-risk children require a fourth dose of 7vPCV at 12 months of age, and a booster dose of polysaccharide pneumococcal vaccine at 4 years of age.

g Two doses of hepatitis A vaccine are required for Aboriginal and Torres Strait Islander children living in areas of higher risk (Queensland, Northern Territory, Western Australia and South Australia). Contact your State or Territory Health Department for details.

h Contact your State or Territory Health Department for details.

i These vaccines are for one cohort only within this age range, and should only be given if there is no prior history of disease or vaccination. Dose schedules may vary between jurisdictions. Contact your State or Territory Health Department for details.

k This vaccine is for one cohort only within this age range. Contact your State or Territory Health Department for details.

l Yearly vaccination.

m For Indigenous adults who received the first dose at 50 years of age or over and non-Indigenous 65 years of age or over, a single revaccination 5 years later. For Indigenous adults who received the first dose before 50 years of age, revaccination 5 years after the first dose and once more at 50 years of age or 10 years after the first revaccination, whichever is later. For non-Indigenous adults who received the first dose before 65 years of age, a single revaccination at 65 years or 10 years after the first dose, whichever is later. In the Northern Territory, polysaccharide pneumococcal vaccine should be given to all Aboriginal and Torres Strait Islander people aged 15 years or more.

APPENDIX 3: CONTACT DETAILS FOR MORE INFORMATION ON IMMUNISATION

Australian Capital Territory

ACT Health
Population Health
Phone: (02) 6205 1700
Email: HealthACT@act.gov.au
Web site: www.health.act.gov.au

Australian Government

Australian Government Department of Health and Ageing
Web site: www.immunise.health.gov.au/

New South Wales

Public Health Unit phone numbers:

Greater Southern; Queanbeyan (02) 6124 9942, Albury (02) 6021 4799
Greater Western; Dubbo (02) 6841 5569, Bathurst (02) 6339 5601, Broken Hill (08) 8080 1499
Hunter New England; Newcastle (02) 4924 6477, Tamworth (02) 6767 8630
North Coast; Port Macquarie (02) 6588 2750, Lismore (02) 6620 7500
Northern Sydney & Central Coast; Hornsby (02) 9477 9400, Gosford (02) 4349 4845
South Eastern Sydney & Illawarra; Randwick (02) 9382 8333, Wollongong (02) 4221 6700
Sydney South West; Liverpool (02) 9828 5944, Camperdown (02) 9515 9420
Sydney West; Parramatta (02) 9840 3603, Penrith (02) 4734 2022.
Website: http://www.health.nsw.gov.au/living/immunisation/index.html

Northern Territory

Department of Health and Community Services
Centre for Disease Control Offices
Darwin (02) 8922 8044, Alice Springs (08) 8951 6907, East Arnhem (08) 8987 0357,
Barkly (08) 8962 4259, Katherine (08) 8973 9049.

Queensland

Public Health Unit phone numbers:

Brisbane Southside (07) 3000 9148
Gold Coast (07) 5509 7222
Darling Downs (07) 4631 9888

Brisbane Northside (07) 3624 1109
Sunshine Coast (07) 5409 6600
Rockhampton (07) 4920 6989
Wide Bay (07) 4197 7277
Cairns (07) 4050 3600
Townsville (07) 4750 4000

Mackay (07) 4968 6611
Mount Isa (07) 4744 4404
Website: www.health.qld.gov.au/cchs/about_immunis.asp
www.health.qld.gov.au/health_professionals/diseases.asp#6

South Australia

South Australian Immunisation Coordination Unit
Phone: (08) 8226 7177
Website: http://www.dh.sa.gov.au/pehs/

Tasmania

Tasmanian immunisation hotline: 1800 671 738
Website: http://www.dhhs.tas.gov.au/services/view.php?id=713

Victoria

Department of Human Services
Communicable Disease Control
Phone: (03) 9096 5132
Website: www.health.vic.gov.au/immunisation

Western Australia

Central Immunisation Clinic
Phone: (08) 9321 1312
Local Population Health Unit phone numbers:
Albany (08) 9842 7500
Broome (08) 9194 1630
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