

Introduction

The National Immunisation Schedule 2006

The new National Immunisation Schedule (Schedule) commenced on 1 February 2006. This edition of the Handbook provides information on the new Schedule, vaccines available and the epidemiology of the vaccine preventable diseases in New Zealand.

To assist immunisation coverage and disease prevention in New Zealand the Schedule will be reviewed every two years and may change as new, safer and more effective vaccines and combinations become available.

Table 1: National Immunisation Schedule commencing 1 February 2006

Age	Immunisation given		Special programme**
6 weeks	DTaP-IPV	Hib-Hep B	MeNZB™
3 months	DTaP-IPV	Hib-Hep B	MeNZB™
5 months	DTaP-IPV	Hep B	MeNZB™
10 months***			MeNZB™
15 months	Hib	MMR	
4 years	DTaP-IPV	MMR	
11 years	dTap-IPV*		
45 years	Td		
65 years	Td	Influenza (annually)	

Key: D: diphtheria, T: tetanus, aP: acellular pertussis, d: adult diphtheria, ap: adult acellular pertussis, IPV: inactivated polio vaccine, Hib: *Haemophilus influenzae* type b, Hep B: hepatitis B, MMR: measles, mumps and rubella, Td: adult tetanus and diphtheria vaccine, MeNZB™: meningococcal B vaccine.

* IPV will be given until the end of 2007 for those who have not previously had four doses.

** MeNZB™ vaccine will be available providing provisional consent is extended. See also Table 1.2 for additional individuals eligible for MeNZB™ vaccine.

*** Infants who receive their 3rd dose between 5 and 6 months of age, have the 4th at a minimum of 10 months of age. Infants who receive their 3rd dose after 6 months of age or older, have the 4th dose at a minimum of four months after the 3rd dose.

Babies of HBsAg positive mothers need hepatitis B immunoglobulin (HBIG) and vaccine at birth. Household and sexual contacts of hepatitis B cases and carriers should be offered hepatitis B immunisation.

Neonatal BCG should be offered to infants at increased risk of tuberculosis defined as those who:

1. will be living in a house or family/whānau with a person with either current tuberculosis or a past history of tuberculosis
2. have one or both parents who identify as being Pacific people
3. have parents or household members who have within the last five years lived for a period of six months or longer in countries where there is a high incidence of tuberculosis*
4. during their first five years will be living for three months or longer in a high incidence country*
5. live in specific geographical areas as defined by the medical officer of health after consultation with the Ministry of Health (see chapter 12).

- + All countries except Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Holland, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, New Zealand, Norway, Slovakia, Sweden, Switzerland, the UK, and the US.
- All children transfer to the new Schedule on 1 February 2006.
- At age 11 years, the dTap-IPV vaccine (adult diphtheria, tetanus, acellular pertussis and inactivated polio vaccine) will be offered in 2006 and 2007 so that children receive four doses of polio vaccine. From 2008 the vaccine offered at age 11 years will be dTap.
- Hib and MMR will be given at age 15 months. The fourth dose of a pertussis containing vaccine will be given at age four years as DTaP-IPV.
- The Meningococcal B Immunisation Programme is completed on 30 June 2006. However children and young people, aged 5 to 19 years should complete a course of MeNZB™ up to 31 December 2006, after that the vaccine is not available to them.
- From 1 July 2006 MeNZB™ vaccine will be available to infants as a four dose course at age six weeks, three, five and 10 months. Children under the age of five years should complete a course of MeNZB™ vaccine whilst the vaccine is available. The Ministry of Health will communicate with practitioners if there are changes or additions to this programme.
- Pneumococcal conjugate vaccine is funded and available for a specified group of children at high risk of pneumococcal disease, on recommendation of a paediatrician or other secondary care specialist (such as haematologist, infectious diseases physician). These are children:
 - on immunosuppressive therapy or radiation therapy, when there is expected to be sufficient immune response
 - with primary immune deficiencies
 - with HIV infection
 - with renal failure, or nephrotic syndrome
 - immune suppressed following organ transplantation
 - with cochlear implants or intracranial shunts
 - with chronic cerebrospinal fluid leaks
 - receiving corticosteroid therapy for more than two weeks, who are on an equivalent daily dosage of prednisone of 2 mg/kg per day or greater, or a total daily dosage of 20 mg or greater.
- A vaccine programme for adults and children pre- or post-splenectomy will be funded from 2006. Pneumococcal, meningococcal polysaccharide A,C,Y,W135, MeNZB™ and Hib vaccines are now funded for children pre- and post-splenectomy or with functional asplenia, and for adults pre- and post-splenectomy.

- Adult tetanus boosters will be offered at 45 and 65 years of age.
- Influenza vaccine is funded for adults over the age of 65 years and adults and children with chronic medical conditions.

Changes in the Immunisation Handbook 2006

There is a **Key Points** section for each of the chapters that focus on a particular disease (chapters 3–17) to assist health professionals.

The Western Pacific Region remains poliomyelitis free but polio reappears in some countries

In October 2000 the World Health Organization (WHO) declared the Western Pacific Region to be polio free. New Zealand and other countries of the Western Pacific continue to provide high coverage polio vaccine programmes, disease surveillance programmes, laboratory testing and diagnosis of cases of acute flaccid paralysis (AFP). The reappearance of poliomyelitis in countries such as Indonesia and across Africa has put back the WHO goal of eradication of poliomyelitis from the world for at least another two years.

Influenza and the risk of a pandemic influenza

Emergence and spread in South East Asia and beyond, of a highly pathogenic avian influenza H5N1 virus able to infect humans has led to fears of an influenza pandemic arising through change in the virus. Vaccine manufacturers are developing a vaccine against an H5N1 strain and countries around the world have developed emergency plans.

Information on new vaccines which are available or in development

- Meningococcal B vaccine and the New Zealand immunisation programme (see chapter 15).
- Meningococcal C conjugate vaccine, results from the programmes in the United Kingdom and Australia.
- Pneumococcal conjugate vaccine –this vaccine is now funded for a specific group of children at special risk (see chapter 16). It is hoped this programme can be extended to other children at risk of pneumococcal disease when funds are available.
- Funded immunisation programme for adults and children pre- and post-splenectomy (see chapters 16,15,7).
- MMRV (measles, mumps, rubella and varicella vaccine) is likely to be licensed in New Zealand within the next year (see chapters 9 and 17).
- Adult dose pertussis vaccine combined with adult dose diphtheria, tetanus and inactivated polio vaccine is now on the National Immunisation Schedule at age

11 years. It is expected that recommendations for use of the adult pertussis containing vaccine will be extended as results of clinical trials become available (see chapter 6).

- Human papilloma virus vaccines are now in stage III clinical trials. Applications to license the vaccine have or will be submitted in many countries, including New Zealand, in the next one to two years (see chapter 19). This vaccine is best given to girls before the onset of sexual activity.
- New rotavirus vaccines are in stage III clinical trials (see chapter 19).
- Combination typhoid and hepatitis A vaccines are licensed in New Zealand (see chapter 14).

Other recommendations

Adult immunisation: These recommendations are unchanged.

The following vaccines are recommended and are publicly funded.

- Adults should have received a primary series of vaccines against tetanus and diphtheria. Boosters of tetanus-diphtheria (Td) are recommended at 45 and 65 years of age. These recommendations that boosters are given at a specific age may increase uptake as it is expected Td immunisation will be linked with other preventive health visits (see chapter 5).
- Adult females of childbearing age should know whether or not they are immune to rubella. Combined MMR vaccine is available for susceptible adults (see chapter 11).
- Hepatitis B vaccine is available for household and sexual contacts of known hepatitis B carriers (see chapter 3).
- IPV is available for adults who have not received a primary course of polio vaccine (see chapter 8).

Varicella vaccine

For these recommendations see chapter 17.

Safe delivery and assessing contraindications

- For updated recommendations see chapter 1.
- Emergency equipment and management of anaphylaxis; see chapter 2, and the inside of the Handbook's back cover.
- The questions likely to be asked, concerns, and information about the latest research and assessments of vaccine safety have been updated. (See chapter 20).
- For the updated standards for immunisation see Appendix 3.

Immunisation programme changes

Outreach immunisation services

Outreach immunisation services have been set up in 16 District Health Boards (DHBs). Outreach services are primary health care providers who are referred children according to a local protocol, for tracing and follow up of missed or delayed immunisations. The aim is to either immunise the child or to ensure they are linked back to a primary health care service for immunisation and other health services.

Cold chain accreditation

Cold chain accreditation (CCA) is a process that allows primary care practices to demonstrate their management of vaccine stocks in the cold chain, as required by existing national cold chain standards. The demonstration is through a self audit that is reviewed by the local immunisation co-ordinator/facilitator. The CCA process minimises the levels of vaccine wastage and ensures the provision of effective vaccines for the National Immunisation Schedule vaccines.

For a practice to achieve CCA they must meet all the essential requirements for their cold chain management. CCA is valid for up to three years (see chapter 2).

National Immunisation Register

The National Immunisation Register (NIR) is aimed at benefiting individuals by facilitating the delivery of immunisation services and providing an accurate record of their immunisation history. It will also provide national and regional level information on the immunisation coverage of a specified population, and assist in achieving New Zealand coverage targets (ie, 95 percent of children fully immunised by two years of age), thus improving individual and population health through the control or elimination of vaccine preventable diseases.

The NIR was implemented during 2004/05 to collect immunisation information for the Meningococcal B Immunisation Programme. During 2005 the NIR began collecting immunisation information on all individuals born after a specified date (ie, a birth cohort). In the future the NIR may also collect other immunisation information (eg, 11 year immunisation event or adult immunisations).

Immunisation Research Strategy

The Ministry of Health and the Health Research Council (HRC) jointly fund an Immunisation Research Strategy. Further information is found on the HRC website www.hrc.govt.nz.

National Serosurvey

The Ministry of Health has contracted with the University of Otago for a National Serosurvey. This is currently under way.

Immunisation coverage in New Zealand

It is important to know the level of immunisation coverage in New Zealand children, that is, the proportion of children who have either been immunised with a specific vaccine or who have completed an immunisation series.

This information is used to assist programme planning and to target disease control interventions. It is also used to assess the risk of epidemics of vaccine preventable diseases, for measuring vaccine efficacy, monitoring the frequency of adverse events, and assessing acceptability of the National Immunisation Schedule. More detailed information is useful at a regional level to assist with targeting services.

Up until 2000 ESR provided estimates of national immunisation coverage using immunisation benefit claims and information from capitated practices. The denominators were based on census data and population projections. Table 2 below is an estimate of coverage in 2000, based on claims from January to June 2000.

Table 2: National immunisation coverage for 2000 based on benefit claim data

Vaccination*	Recommended timing	National coverage levels (%)
DTwPH/DTaP 1	6 weeks	89
DTwPH/DTaP 2	3 months	87
DTwPH/DTaP 3	5 months	90
DTwPH/DTaP/Hib	15 months	86
Hep B/Hib-Hep B	6 weeks	89
Hep B/Hib-Hep B	3 months	87
Hep B	5 months	90
OPV1	6 weeks	84
OPV2	3 months	81
OPV3	5 months	82
MMR 1	15 months	85

Source: ESR. Immunisation coverage surveillance using benefit claim data, January–December 2000. Report to Ministry of Health.

* D=diphtheria, T=tetanus, wP = whole cell pertussis, aP= acellular pertussis, Hib=*Haemophilus influenzae* type b, Hep B= hepatitis B, OPV= oral polio vaccine, MMR= measles, mumps and rubella.

National Immunisation Coverage Survey 2005

The last national immunisation coverage survey completed in 1992 showed inadequate levels of fully immunised coverage at age 2 years (<60 percent), and disproportionately lower levels for Māori (42 percent) and Pacific (45 percent)¹. A follow-up survey was undertaken in the North health region² in 1996 that suggested

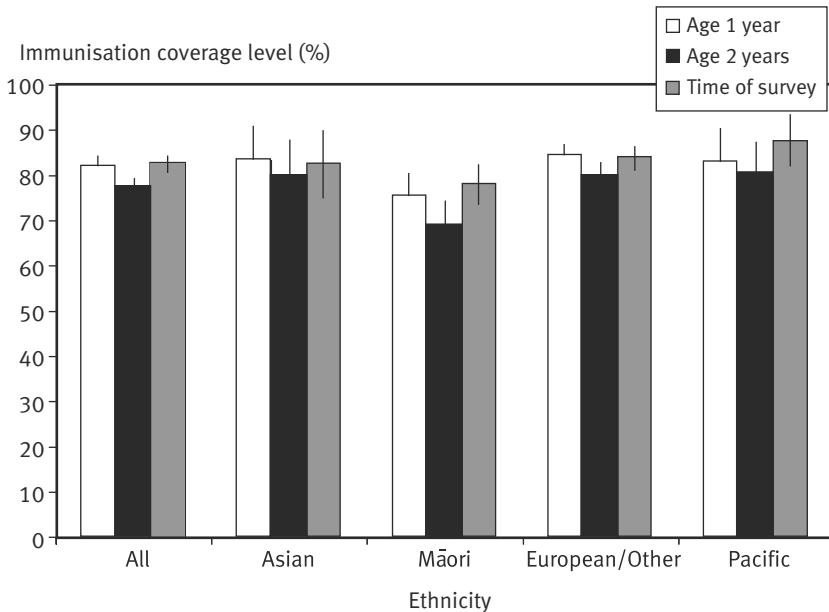
1 Note that the references quoting these figures did not indicate whether these differences were statistically significant.

2 North Health included the sub-regions Northland, and North, West, Central, and South Auckland.

little improvement with 63 percent of children fully immunised at age 2 years, and Māori significantly lower at 45 percent.

A National Childhood Immunisation Coverage Survey was undertaken between January and March 2005 that showed improvement over previous coverage estimates. Fully immunised coverage at age 2 years had improved from less than 60 percent in 1992 to 77.4 percent in 2005. However, Māori were significantly less likely to be fully immunised at age 2 years (69 percent) compared with European/ Other ethnicity (80.1 percent) (Figure 1).

Figure 1: Fully immunised coverage at different time periods by ethnicity



Although there were no significant differences between the four health regions³ the Southern region tended to have better coverage overall, and have the best coverage rates for Māori (although this was not statistically significant). The DHBs with significantly better coverage than total New Zealand coverage were South Canterbury, Southland, and the West Coast (which had significantly better coverage than all other DHBs⁴) (Figure 2). Whanganui DHB⁵ coverage was significantly lower than West Coast, South Canterbury, Southland, Canterbury, and MidCentral DHBs, and the total New Zealand coverage. Northland coverage was significantly less than

3 Northern, Central-Northern, Central-Southern, Southern.

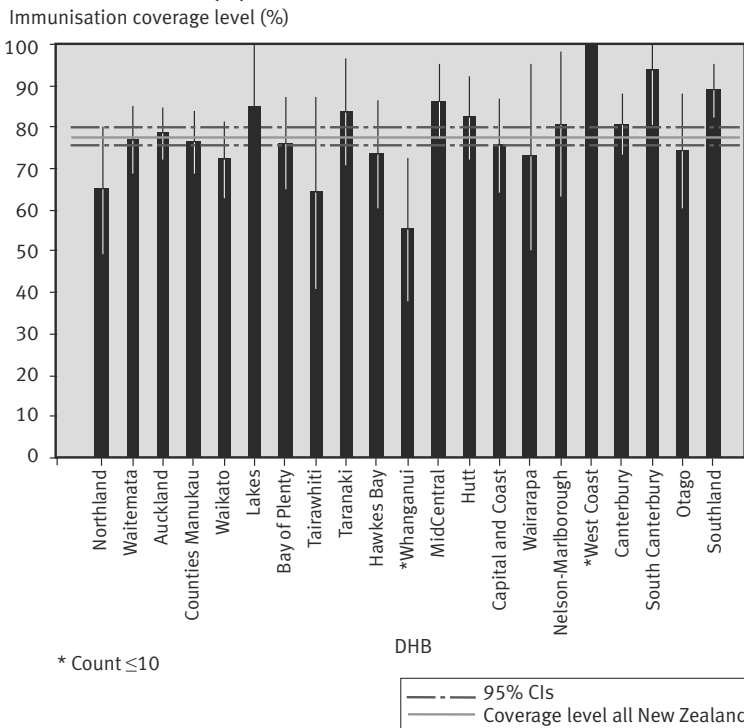
4 Although the survey contained only 6 children within the West Coast DHB increasing the possibility that chance may have explained the survey result.

5 The survey included only 10 children in the Whanganui DHB and therefore results should be interpreted with caution.

the first three DHBs as for Whanganui. These survey results have highlighted the priority that needs to be given to improving immunisation coverage for Māori and for predominantly North Island DHBs.

Figure 1 shows results for coverage at age 1 year, and at the time of the survey⁶, in addition to coverage at age two years. Coverage rates drop at two years of age but return to similar levels at the time of the survey indicating a catch-up of late vaccination occurring after age two years. Late vaccination results in a vulnerable population increasing the chances for epidemics (especially of measles). Improving on-time coverage (within four weeks of recommended due date) is an important control measure for vaccine preventable diseases. Coverage rates for individual vaccines at age two years are shown in Table 3. The trend is for decreasing coverage for each sequential dose; however the greatest (and significant) decline in coverage is for the 15 month DTaP and Hib vaccinations. For these 15 months immunisations, the coverage levels in Māori children are significantly lower than European/Other and Pacific ethnic groups for the DTaP4, Hib3, and MMR (see Figure 3). Priority needs to be given to improving coverage for the 15 month vaccinations and above all for Māori.

Figure 2: Coverage at age 2 years by DHB including 95 percent confidence intervals (CI)



6 Coverage at the time of the survey does not place time restrictions on when a child receives a vaccine and covers the age ranges represented in the survey of 2–3-year-olds.

Table 3: Vaccination coverage level (95% confidence intervals (CI)) at age 2 years

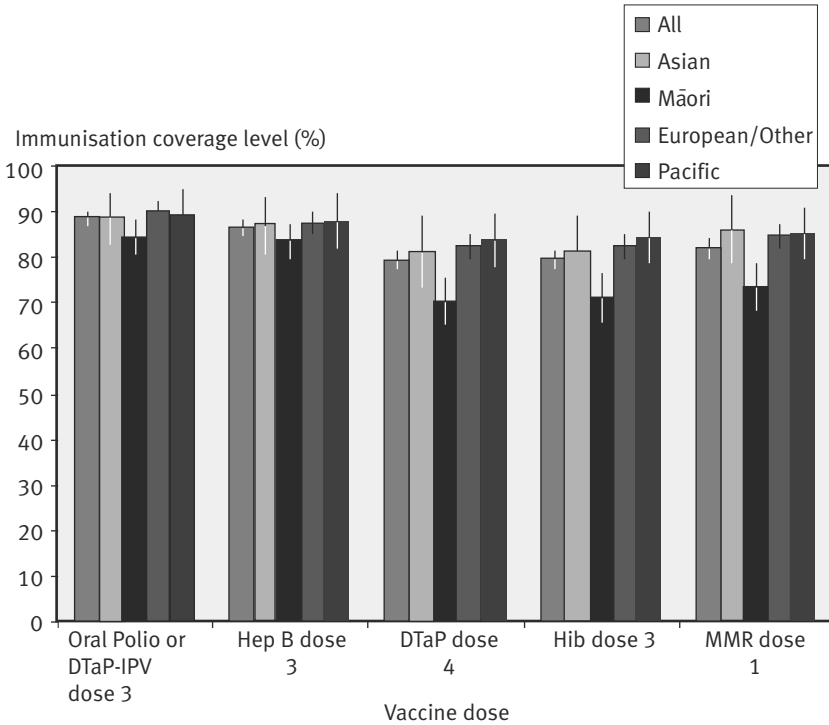
Vaccine Dose*	Coverage Level % (95% CI)
DTaP dose 1	92.1 (90.9, 93.4)
DTaP dose 2	90.6 (89.3, 92.0)
DTaP dose 3	88.6 (87.0, 90.3)
DTaP dose 4	79.3 (77.2, 81.5)
Oral Polio or DTaP-IPV dose 1	92.1 (90.8, 93.4)
Oral Polio or DTaP-IPV dose 2	90.4 (89.0, 91.8)
Oral Polio or DTaP-IPV dose 3	88.5 (86.8, 90.1)
Hib dose 1	91.3 (89.9, 92.6)
Hib dose 2	90.0 (88.5, 91.4)
Hib dose 3	79.6 (77.5, 81.6)
Hep B dose 1	90.6 (89.2, 91.9)
Hep B dose 2	88.9 (87.4, 90.4)
Hep B dose 3	86.5 (84.8, 88.3)
MMR dose 1	82.0 (79.8, 84.1)
Neonatal Hep B + HBIG	72.0 (53.5, 90.5)

Source: National Childhood Immunisation Coverage Survey 2005.

* DTaP – diphtheria, tetanus, acellular-pertussis vaccine, IPV – inactivated polio vaccine, Hib – *Haemophilus influenzae* type b vaccine, Hep B – hepatitis B vaccine, MMR – measles, mumps, rubella vaccine, HBIG – hepatitis B immunoglobulin

The results from the National Childhood Immunisation Coverage Survey 2005 can be used as a baseline measure with which to compare coverage rates following implementation of the National Immunisation Register (NIR). Monitoring and evaluation of immunisation coverage rates and targets can contribute to improved immunisation coverage. Individual primary care practices within New Zealand with high coverage rates have attributed their success to the use of enrolled populations, good recall systems and outreach services to high-risk children. In addition to the use of the NIR, the development of Primary Health Organisations (PHOs) with enrolled populations is likely to result in an improvement of coverage levels from the 2005 survey. The impact of the NIR, PHOs, and other interventions with the potential to increase childhood immunisation coverage can be assessed when the NIR has sufficient data for analysis of coverage levels and then compared with the 2005 survey results.

Figure 3: Immunisation coverage at age 2 years by ethnicity



Influenza immunisation coverage

The New Zealand target for influenza vaccine coverage in adults over the age of 65 years is 75 percent. The influenza vaccine coverage for the population eligible for funded vaccine is calculated from benefit claims data for those over 65 years attending a PHO. At the present time the coverage data for those with chronic medical conditions is not robust.

The coverage for those over 65 years enrolled in a PHO was 58 percent in 2004 and 61 percent in 2005. This increase was achieved in spite of a delay in arrival of influenza vaccine and the pressures on health care workers delivering the Meningococcal B Immunisation Programme at the same time.

The influenza vaccine coverage by DHB in adults over the age of 65 years is shown in Figure 4.

Figure 4: Influenza vaccination coverage in adults over 65 enrolled in Primary Health Organisations

