Introduction

The purpose of the *Immunisation Handbook 2020* (the *Handbook*) is to provide clinical guidelines for health professionals on the safest and most effective use of vaccines in their practice. These guidelines are based on the best scientific evidence available at the time of publication, from published and unpublished literature.

> The information contained within the *Handbook* was correct at the time of publication. This edition of the *Handbook* will remain current unless amended electronically via the Ministry of Health website (**www.health.govt.nz/our-work/preventative-health-wellness/immunisation**) or until the next edition or update is published.

Changes to the *Handbook* in 2020

All chapters have been updated and revised since the 2017 edition (2nd edition, 2018). The following changes have been made.

- Changes have been made to the anaphylaxis and emergency management section (section 2.3.3) in chapter 2 'Processes for safe immunisation' and Appendix A4.2 'Resuscitation requirements for all authorised vaccinators and pharmacy vaccinators'.
- Chapter 4 'Immunisation for special groups' has been rearranged and updated. Tables 4.3–4.6 have been updated.
- With the introduction of the 12-month immunisation event, the measles, mumps, rubella and pneumococcal chapters have been updated accordingly.
- Chapter 15 'Pneumococcal disease' has also been updated, to reflect the two-dose primary series of PCV10 and earlier booster at 12 months.
- Chapter 12 'Meningococcal disease' has been updated to include recommendations on the use of the recombinant group B meningococcal vaccine, 4CMenB (Bexsero).
- Following discontinuation of Td vaccine (ADT-Booster), the tetanus and diphtheria chapters have been updated to include recommendations on Tdap for adults.
- MMR, varicella and zoster vaccines are recommended to be administered either intramuscularly or subcutaneously as indicated (see section 2.2.3).
- Changes have been made to the following vaccine abbreviations – Hib-PRP, MenACWY, MenC, ZV (see Commonly used abbreviations table).

The National Immunisation Schedule

The National Immunisation Schedule (the Schedule) is the series of publicly funded vaccines available in New Zealand (see Table 1). Some vaccines are also offered as part of an extended immunisation programme for targeted special groups in response to a recognised need (see Table 2). See also section 2.1.7 for a summary of the primary immunisation requirements for adults (funded) and other funded and unfunded recommendations for this age group.

On 1 July 2012, the management and purchasing of vaccines transferred from the Ministry of Health to PHARMAC. All publicly funded vaccines are now listed on PHARMAC's Pharmaceutical Schedule (see **www.pharmac.govt.nz**), and the district health boards (DHBs) are responsible for funding these once PHARMAC has listed them.

PHARMAC considers medicine and vaccine funding applications from pharmaceutical suppliers, health professionals, consumer groups and patients. Usually, manufacturers/ suppliers decide whether to make an application for funding. Normally this will follow registration and approval of the medicine or vaccine by Medsafe. PHARMAC will generally only consider an application for a medicine or vaccine to be funded once it has been registered and approved by Medsafe.

Following a vaccine funding application, PHARMAC will assess the vaccine, seek clinical input (for vaccines this may be from the immunisation subcommittee of the Pharmacology and Therapeutics Advisory Committee [PTAC] or from PTAC itself), and conduct an economic analysis. The recommendations from the immunisation subcommittee are then considered by PTAC, which will provide advice to PHARMAC. PHARMAC then decides what priority the application has for funding and consults with the Ministry of Health on capacity and implementation issues that may be associated with introducing a new vaccine. Depending on the outcome of that process, PHARMAC may then negotiate with the supplier. If an agreement is reached, PHARMAC will consult with the health sector on a funding proposal.

The Ministry of Health remains responsible for and manages the National Immunisation Programme, which:

- aims to prevent disease through vaccination and to achieve coverage that prevents outbreaks and epidemics
- is accountable for achieving the Immunisation Health Target
- monitors disease burden and those at risk
- provides guidance to the sector on immunisation, cold chain and resources
- ensures immunisation providers deliver services that meet the needs of their population
- implements the National Immunisation Schedule
- delivers trusted and effective vaccine programmes
- provides immunisation resources, including the *Immunisation Handbook*

- improves information and data systems
- manages the National Immunisation Register (NIR).

The Ministry of Health works with PHARMAC to ensure there is a strong link between vaccine decisions, management and the National Immunisation Programme.

> Although funding decisions will be communicated to the sector, vaccinators are advised to regularly check the Pharmaceutical Schedule and any online updates (see **www.pharmac.govt.nz**) for changes to funding decisions, and the *Handbook* (available at **www.health.govt.nz/our-work/preventative-health-wellness/immunisation**) for the latest immunisation information.

Changes to the National Immunisation Schedule in 2020

Table 1 shows the 2020 National Immunisation Schedule, and Table 2 shows the vaccines funded for special groups at higher risk of some diseases.

Changes to vaccine funding in 2020 are as follows:

- From 2020, the quadrivalent inactivated influenza vaccine (Afluria Quad; see chapter 10 'Influenza') will be the Schedule vaccine for eligible individuals, including pregnant women and adults aged 65 years and older.
- An immunisation event has been introduced at age 12 months. This enables two doses of MMR to be given in the second year of life, replacing the MMR dose that was previously given at age 4 years.
- PCV10 (Synflorix) will now be given at age 6 weeks, 5 months and 12 months (ie, 2+1 schedule, omitting the 3 months dose and bringing the booster dose in the second year of life from 15 months to 12 months). The extended immunisation programme for targeted special groups (using PCV13 and 23PPV) remains unchanged, except that eligibility has been extended to children age 5–18 years who had received at least two (rather than four) doses of PCV10.
- DTaP-IPV (Infanrix-IPV) will continue to be given age 4 years.

Tdap (Boostrix) will replace Td at the 45-year and 65-year events and for tetanus-prone wounds.

Table 1: National Immunisation Schedule, commencing 1 October 2020

Antigen(s)	DTaP-IPV-HepB/Hib	PCV10	RV1	MMR	Hib-PRP-T	VV	DTaP-IPV	Tdap	HPV9	Influenza	ZV
Brand	Infanrix-hexa	Synflorix	Rotarix	Priorix	Hiberix	Varivax	Infanrix-IPV	Boostrix	Gardasil9	Afluria Quad	Zostavax
Manufacturer	GSK	GSK	GSK	GSK	GSK	GSK	GSK	GSK	Seqirus/MSD	Seqirus	MSD
Pregnancy								●[a]		●	
6 weeks	●	●	●								
3 months	●		●								
5 months	●	●									
12 months		●		●							
15 months				●	●	●[b]					
4 years							●				
11 or 12 years[c]								●	● 2 doses[c]		
45 years								●[d]			
65 years								●		● annually	●[e]

a. Tdap is for women during every pregnancy, from 16 weeks' gestation, preferably in the second trimester.

b. VV is funded for children born on or after 1 April 2016.

c. HPV is funded for individuals aged 26 years and under: 2 doses are recommended for individuals who receive the first dose before their 15th birthday, even if they are 15 years or older at the time of the second dose; 3 doses are recommended for those aged 9–26 years with certain medical conditions, plus an additional dose post-chemotherapy.

d. Funded only for adults who have not received 4 previous doses of tetanus vaccine.

e. One dose of ZV is funded for anyone age 65 years on or after 1 April 2018. There is a catch-up programme until 31 December 2020, with 1 dose of ZV funded for individuals aged 66–80 years, inclusive.

2020 changes to extended immunisation programme for special groups

Vaccines funded for special groups are described in Table 2 below. Changes to existing programmes in 2020 are as follows.

1. Tdap vaccine funding for pregnant women was extended in 2019, it is now recommended to be given from 16 weeks' gestation of every pregnancy, preferably in the second trimester. (Funded when given any time in the second or third trimester.)
2. A single dose of Tdap is funded for parents or primary caregivers of infants admitted to a neonatal intensive care unit or special care baby unit for more than 3 days, who had not been exposed to maternal vaccination at least 14 days prior to birth.
3. A single dose of Meningococcal ACWY (MenACWY-D) is funded for individuals aged between 13 and 25 years entering or in their first year of living in boarding school hostels, tertiary education halls of residence, military barracks, or prisons.

Table 2: Extended immunisation programme for special groups – vaccines funded in addition to the routine schedule

Note: Vaccinators are advised to regularly check the Pharmaceutical Schedule and any online updates (**www.pharmac.govt.nz**) for changes to funding decisions for special groups. See also chapter 4 'Immunisation of special groups'.

Vaccine	Individuals eligible for funded vaccine
Haemophilus influenzae type b (Hib-PRP-T) (chapter 6)	For (re)vaccination of patients who are: • post-haematopoietic stem cell transplant (HSCT) or chemotherapy • pre- or post-splenectomy or with functional asplenia • pre- or post-solid organ transplant • pre- or post-cochlear implants • undergoing renal dialysis and other severely immunosuppressive regimens For use in testing for primary immune deficiency[a]
Hepatitis A (HepA) (chapter 7)	Transplant patients Children with chronic liver disease Close contacts of hepatitis A cases
Hepatitis B (HepB) (chapter 8)	Household or sexual contacts of patients with acute or chronic hepatitis B virus (HBV) infection Babies of mothers with chronic HBV infection need both hepatitis B vaccine (HepB) and hepatitis B immunoglobulin (HBIG) at birth Children aged under 18 years who have not achieved positive serology and who require additional vaccination HIV-positive patients Hepatitis C-positive patients Following non-consensual sexual intercourse Prior to any planned immunosuppression[b] Patients following immunosuppression[b] Solid organ transplant patients, including liver or kidney transplant Post-HSCT patients Following needle-stick injury Dialysis patients
Human papillomavirus (HPV) (chapter 9)	People aged 9 to 26 years inclusive who are: • confirmed with HIV infection • transplant (including stem cell) patients • post-chemotherapy

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Vaccine	Individuals eligible for funded vaccine
Annual influenza vaccine (chapter 10)	Patients aged 6 months to <65 years who: • have any of the following cardiovascular diseases: – ischaemic heart disease – congestive heart failure – rheumatic heart disease – congenital heart disease – cerebrovascular disease • have either of the following chronic respiratory diseases: – asthma, if on a regular preventative therapy – other chronic respiratory disease with impaired lung function • have diabetes • have chronic renal disease • have any cancer, excluding basal and squamous skin cancers if not invasive • have any of the following other conditions: – autoimmune disease – immune suppression or immune deficiency – HIV – transplant recipients – neuromuscular and central nervous system diseases/disorders – haemoglobinopathies – are children on long-term aspirin – have a cochlear implant – errors of metabolism at risk of major metabolic decompensation – pre- and post-splenectomy – Down syndrome • are pregnant • are children aged 4 years and under who have been hospitalised for respiratory illness or have a history of significant respiratory illness, including children age under 5 who were hospitalised with measles • are patients who are compulsorily detained long-term in a forensic unit within a DHB hospital[c]
Measles, mumps and rubella (MMR) (chapters 11, 13 and 18)	(Re)vaccination of patients prior to planned or following immunosuppression[b]
Meningococcal C conjugate vaccine (MenC) and quadrivalent meningococcal conjugate vaccine (MenACWY-D) (chapter 12)	Pre- and post-splenectomy or with functional or anatomical asplenia HIV Complement deficiency (acquired or inherited) Pre- or post-solid organ transplant Close contacts of meningococcal cases HSCT (bone marrow transplant) patients prior to any planned immunosuppression[b] Following immunosuppression[b] Individuals aged between 13 and 25 years entering or in their first year of living in boarding school hostels, tertiary education halls of residence, military barracks, or prisons.

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Vaccine	Individuals eligible for funded vaccine
Pertussis-containing vaccines (chapter 14)	Pregnant women – recommended to be given from 16 weeks' gestation of every pregnancy, preferably in the second trimester.(Funded when given any time in second or third trimester) Tdap is funded for parents or primary caregivers of infants admitted to a neonatal intensive care unit or special care baby unit for more than 3 days, who had not been exposed to maternal vaccination at least 14 days prior to birth (Re)vaccination of patients who are: • post-HSCT or chemotherapy • pre- or post-splenectomy • pre- or post-solid organ transplant • undergoing renal dialysis or other severely immunosuppressive regimens
13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (23PPV) (chapter 15)	PCV13 and 23PPV for (re)vaccination of high-risk children aged under 5 years: • prior to planned or on immunosuppressive therapy or radiotherapy (vaccinate when there is expected to be a sufficient immune response) • with primary immune deficiencies • with HIV infection • with renal failure or nephrotic syndrome • who are immune-suppressed following organ transplantation (including HSCT) • with cochlear implants or intracranial shunts • with cerebrospinal fluid leak • receiving corticosteroid therapy for more than 2 weeks, and who are on an equivalent daily dosage of prednisone of 2 mg/kg per day or greater, or children who weigh more than 10 kg on a total daily dosage of 20 mg or greater • with chronic pulmonary disease (including asthma treated with high-dose corticosteroid therapy) • preterm infants, born before 28 weeks' gestation • with cardiac disease, with cyanosis or failure with diabetes • with Down syndrome • who are pre- or post-splenectomy, or with functional asplenia PCV13 and 23PPV for (re)vaccination of patients aged 5 years and older: – with HIV – pre- or post-HSCT[d] or chemotherapy[d] – pre- or post-splenectomy or with functional asplenia – pre- or post-solid organ transplant – undergoing renal dialysis – with complement deficiency (acquired or inherited) – with cochlear implants – with primary immune deficiency PCV13 and 23PPV for use in testing for primary immune deficiency.[a]
Inactivated polio vaccine (IPV) (chapter 16)	(Re)vaccination of patients prior to planned or following immunosuppression[b]

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Vaccine	Individuals eligible for funded vaccine
Tetanus, diphtheria and pertussis (Tdap) (chapter 19)	(Re)vaccination of patients prior to planned or following immunosuppression[b] Boosting of patients with tetanus-prone wounds For use in testing for primary immune deficiency[a]
Bacillus Calmette–Guérin (BCG) (chapter 20 and Appendix 8)	For infants at increased risk of tuberculosis (TB): • living in a house or family with a person with current or past history of TB; or • having one or more household members or carers who within the last 5 years lived in a country with a rate of TB ≥40 per 100,000 for 6 months or longer; or • who, during their first 5 years, will be living 3 months or longer in a country with a rate of TB ≥40 per 100,000
Varicella vaccine (VV) (chapter 21)	Non-immune patients: • with chronic liver disease who may in future be candidates for transplantation • with deteriorating renal function before transplantation • prior to solid organ transplant • prior to any planned immunosuppression[b] • for post-exposure prophylaxis of immune-competent hospital in-patients Patients at least 2 years after bone marrow transplantation, on advice of their specialist Patients at least 6 months after completion of chemotherapy, on advice of their specialist HIV-positive patients with mild or moderate immunosuppression who are non-immune to varicella, on advice of their HIV specialist Patients with inborn errors of metabolism at risk of major metabolic decompensation, with no clinical history of varicella Household contacts of paediatric patients who are immunocompromised, or undergoing a procedure leading to immunocompromise, where the household contact has no clinical history of varicella Household contacts of adult patients who have no clinical history of varicella and who are severely immunocompromised or undergoing a procedure leading to immunocompromise, where the household contact has no clinical history of varicella

a. Upon the recommendation of an internal medicine physician or paediatrician.

b. The period of immunosuppression due to steroid or other immunosuppressive therapy must be longer than 28 days.

c. This is a Pharmaceutical Schedule Section H – Hospital Medicines List funding restriction.

d. PCV13 is funded pre- or post-HSCT or chemotherapy. 23PPV is only funded post-HSCT or chemotherapy.

Eligibility for publicly funded vaccines

Only vaccines given according to the Schedule are available free of charge, unless there is a specific funded programme in response to a recognised need (see Table 2). The immunisation benefit is paid by DHBs to providers for the administration of:

- all childhood Schedule vaccines
- influenza vaccine to eligible children and adults (ie, those at higher risk of disease)
- ZV to individuals at age 65 years and for catch-up (until 31 December 2020) of individuals aged 66-80 years, inclusive
- tetanus-diphtheria-pertussis (Tdap) boosters given at ages 45 and 65 years (now funded)
- hepatitis A, hepatitis B, Hib-PRP-T, human papillomavirus (HPV), inactivated polio vaccine (IPV), MMR, meningococcal conjugate, pertussis, pneumococcal conjugate and/or polysaccharide, and varicella vaccines only, for eligible children and adults (ie, at higher risk of disease) as part of an extended immunisation programme for special groups.

The *Health and Disability Services Eligibility Direction 2011* (the Eligibility Direction) issued by the Minister of Health sets out the eligibility criteria for publicly funded health and disability services in New Zealand. Only people who meet the eligibility criteria defined in the Eligibility Direction can receive publicly funded (ie, free or subsidised) health and disability services.

Regardless of their immigration and citizenship status, all children aged under 18 years are eligible to receive Schedule vaccines, and providers can claim the immunisation benefit for administering the vaccines. All children are also eligible for Well Child Tamariki Ora services.

Non-residents who were aged under 18 years when they commenced HPV vaccination are currently funded to complete the course, even if they are aged 18 years or older when they complete it.

Further information on eligibility can be found on the Ministry of Health website (**www.health.govt.nz/eligibility**).

Notifiable diseases

All diseases preventable by vaccines on the Schedule (or as part of a targeted programme) are notifiable, except for HPV, seasonal influenza, rotavirus, varicella and herpes zoster.

Note: Rotavirus infections presenting as gastroenteritis are notifiable as acute gastroenteritis.

> It is a legal requirement (under the Health Act 1956) that health professionals notify their local medical officer of health of any notifiable disease they suspect or diagnose so that appropriate action (eg, public health prevention and control activities) can be undertaken.

Notification processes, and the diseases to which they relate, have been updated in the Health Act and supporting Health (Infectious and Notifiable Diseases) Regulations 2016. See the Ministry of Health's 2017 document *Guidance on Infectious Disease Management under the Health Act 1956* (available at **www.health.govt.nz/publication/guidance-infectious-disease-management-under-health-act-1956**) for an explanation, as well as the processes and forms for notifiable diseases.

The case definitions used by the medical officer of health to classify the notified case for surveillance purposes (and to assist in identifying appropriate prevention and control activities) and the laboratory tests required to confirm the diagnosis can be found in the *Communicable Disease Control Manual*. For the most up-to-date information, refer to the online version (available at **www.health.govt.nz/publication/communicable-disease-control-manual-2012**).