

Appendix 1: The History of Immunisation in New Zealand

Vaccine	Year the vaccine was introduced	
Diphtheria	1926	Became available in New Zealand for selected schools and orphanages
	1941	Offered routinely to children less than seven years of age
Tetanus	1940–45	Tetanus toxoid became available as a voluntary vaccination
Pertussis	1945	Introduced by the Department of Health – given on request
	1953	Combined pertussis-diphtheria vaccine became available, although usage was restricted
BCG	1948	Initially introduced for nurses, then later extended to all adolescents
	1963	Adolescent BCG programme was discontinued in the South Island and phased out in the North Island by 1990
	1976	Neonatal BCG was introduced, initially in high risk districts, and then variably implemented throughout New Zealand
Salk poliomyelitis (IPV)	1956	Became available; initially 8–9 year olds were targeted, then 5–10 year olds, then 11–15 year olds
	1959	Offered to all those between 6 months and 29 years of age
	2002	IPV replaced OPV on the National Immunisation Schedule, either as IPV or combined with the DTaP vaccine
Universal DTwP	1958	DTwP became available and the first schedule commenced
	1960	DTwP was supplied to medical practitioners free of charge
Sabin poliomyelitis (OPV)	1961	Initially introduced for children under 12 months of age, administered by the Department of Health
	1962	In April 95 percent of all school children received two doses; in September it was offered to all adults and adolescents (administered by the Department of Health)
	1967	From April general practitioners were able to administer OPV along with DTwP
	2002	OPV was replaced by IPV on the National Immunisation Schedule
Measles	1969	Due to adverse reactions, the measles programme was suspended in late 1969 until the Edmonston B strain vaccine became available in February 1970
	1974	The recommended age changed to 12 months
	1981	The recommended age changed to 12–15 months
	1990	MMR Introduced to the Schedule for all infants at 15 months of age

Vaccine	Year the vaccine was introduced	
Rubella	1970	Introduced to the Schedule for all children at four years of age
	1979	Low uptake at 4 years, especially for boys, spurred a change to an 11-year-old (year 7/form 1) girl vaccination
	1990	MMR Introduced to the schedule for all infants at 15 months of age
Hepatitis B	1985	Plasma derived vaccine was introduced for newborn babies born to HBeAg positive mothers
	1987	Extended to newborns of hepatitis B surface antigen positive mothers and newborns in high risk districts (eg, Northland, South Auckland, Rotorua, Napier, Gisborne)
	1988	In February it was introduced to the Schedule for all infants (catch up programmes for pre-schoolers were implemented during 1988)
	1989	In December recombinant hepatitis B vaccine replaced the plasma derived vaccine
	1990	Publicly funded hepatitis B immunisation was extended to all children under 16 years of age (catch up school programmes were also implemented)
MMR	1990	Introduced to the schedule for all infants at 15 months of age
	1992	A second dose was introduced for 11-year-old (year 7/form 1) boys and girls
	2001	The second dose of MMR was changed from 11 years of age to 4 years of age. A school based catch up programme was offered for all 5–10 year olds.
Hib	1994	Introduced to the schedule as DTwPH at 6 weeks, 3 months and 5 months of age, and as monovalent Hib at 18 months of age. All children under 5 years of age were offered vaccination against Hib
	1996	Given as DTwPH at 6 weeks, 3 and 5 months, and a booster at age 15 months
	2000	Given as Hib-Hep B at 6 weeks and 3 months, and as DTaP/Hib at 15 months
	2006	Given as Hib-Hep B at 6 weeks and 3 months, and as Hib alone at age 15 months
Tetanus/diphtheria (Td)	1994	Introduced to the Schedule, replacing tetanus toxoid
Influenza	1997	Introduced to the Schedule for adults 65 years of age and over
	1999	Introduced to the Schedule for those under 65 years of age with certain medical conditions
Acellular pertussis DTaP (Infanrix)	1999	Introduced for infants/children under 7 years of age who had a previous reaction to whole cell pertussis in DTwPH
	2000	In August DTaP was introduced for all infants
Adult dose acellular pertussis dTap (Boostrix(-IPV))	2006	Introduced to the schedule at 11 years of age, combined with IPV as dTap-IPV

Previous National Childhood Immunisation Schedules

February 2002 Immunisation Schedule

	DTaP-IPV	Hib-Hep B	Hep B	DTaP/Hib	Polio (IPV)	MMR	Td
6 weeks	•	•					
3 months	•	•					
5 months	•		•				
15 months				•		•	
4 years	•					•	
11 years					•*		•

* For those children who had not received a fourth dose of polio vaccine.

January 2001 Immunisation Schedule

	DTaP	Hib-Hep B	Hep B	DTaP/Hib	Polio (OPV)	MMR	Td
6 weeks	•	•			•		
3 months	•	•			•		
5 months	•		•		•		
15 months				•		•	
4–5 years					•	•	
11 years					•*		•

* For those children who had not received OPV4.

August 2000 Immunisation Schedule

	DTaP	Hib-Hep B	Hep B	DTaP/Hib	Polio (OPV)	MMR	Td
6 weeks	•	•			•		
3 months	•	•			•		
5 months	•		•		•		
15 months				•		•	
11 years					•	•	•

1996 Immunisation Schedule

	DTPH	Hep B	Polio (OPV)	MMR	Td
6 weeks	•	•	•		
3 months	•	•	•		
5 months	•	•	•		
15 months	•			•	
11 years			•	•	•

1994 Immunisation Schedule

	DTPH	Hep B*	Polio (OPV)	MMR**	DT	Hib	Td
6 weeks	•	•					
3 months	•	•	•				
5 months	•		•				
12–15 months		•		•			
18 months			•		•	•	
5 years			•				
11 years				•			
15 years							•

* Hepatitis B was introduced for all neonates with catch up to children under five years in 1988.

** MMR was introduced at 15 months in 1990 and at age 11 years in 1992.

1984 Immunisation Schedule*

	DTP	Polio (OPV)	Measles	DT	Rubella	Tetanus
6 weeks	•					
3 months	•	•				
5 months	•	•				
12–15 months			•			
18 months		•		•		
5 years		•				
11 years					Girls only	
15 years						•

* See notes in the 1994 Immunisation Schedule table above

1980 Immunisation Schedule

	DTP	Polio (OPV)	Measles	DT	Rubella	Tetanus
3 months	•	•				
5 months	•	•				
12 months			•			
18 months		•		•		
5 years		•				
11 years					Girls only	
15 years						•

1971 Immunisation Schedule

	DTP	Polio	Measles	DT	Rubella	Tetanus
3 months	•	•				
5 months	•	•				
10 months			•			
18 months		•		•		
4 years					•	
5 years				•		
15 years		•				•

1967 Immunisation Schedule

	DTP	Polio	DT
3 months	•	•	
4 months	•	•	
5 months	•	•	
18 months		•	•
5 years			•

1961 Immunisation Schedule

Age	DTP	DT
3 months	•	
4 months	•	
5 months	•	
5 years		•

Note: between 1961 and 1967 polio was administered by the Department of Health.

Appendix 2: Immunisation Catch Up Schedules

A) National Childhood Immunisation Schedule catch up schedules

First dose at 3–7 months			
First dose	DTaP-IPV	Hib-HepB	
1 month interval	DTaP-IPV	Hib-HepB	
1 month interval	DTaP-IPV	HepB	
At age 15 months	Hib		MMR
At age 4 years	DTaP-IPV		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 8–11 months			
First dose	DTaP-IPV	Hib-HepB	
1 month interval	DTaP-IPV	Hib-HepB	
1 month interval	DTaP-IPV	Hep B	
6 month interval	Hib		
At age 15 months			MMR
At age 4 years	DTaP-IPV		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 12–14 months			
First dose	DTaP-IPV	Hib-HepB	
1 month interval	DTaP-IPV	HepB	
1 month interval	DTaP-IPV	Hib-HepB	
At age 15 months			MMR
At age 4 years	DTaP-IPV		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 15 months – 3 years			
First dose	DTaP-IPV	Hib-HepB	MMR
1 month interval	DTaP-IPV	HepB	
1 month interval	DTaP-IPV	HepB	
At age 4 years	DTaP-IPV		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 4 years			
First dose	DTaP-IPV	Hib-HepB	MMR
1 month interval	DTaP-IPV	Hep B	
1 month interval	DTaP-IPV	Hep B	
6 month interval	DTaP-IPV		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 5–7 years			
First dose	DTaP-IPV	HepB	MMR
1 month interval	DTaP-IPV	HepB	
1 month interval	DTaP-IPV	HepB	
6 months interval	DTaP-IPV (or Td and IPV > 7 years)		MMR
At age 11 years	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

First dose at 7 years and older**			
First dose	Td and IPV	HepB	MMR
1 month interval	Td and IPV	HepB	
1 month interval	dTap-IPV*	HepB	MMR
10 year interval	dTap-IPV*		

* Adult diphtheria, tetanus, pertussis and inactivated polio vaccine.

** dTap-IPV may be considered for all three doses of the primary series. See note 9.

Notes

1. There is considerable flexibility in these schedules, and the recommended intervals between doses are not sacrosanct. Vaccines may be given simultaneously and/or the schedule shortened to monthly intervals if this is deemed necessary to ensure the required numbers of doses are administered.
2. If the schedule is interrupted it is not necessary to repeat prior doses; simply resume the schedule as if no dose has been missed.
3. If the immunisation status of a vaccine recipient is uncertain or unknown then the vaccine provider should err on the side of giving rather than not giving the vaccine.
4. If a child attends infrequently, and failure to return for future immunisation is of concern, it is prudent to administer as many antigens as possible at the first visit.
5. In the catch-up schedule for children 12–14 months of age, the third hepatitis B vaccine dose may be moved to a six month interval if the MMR dose at 15 months coincides with the third catch-up visit and 3 injections are not accepted.
6. MMR, Hib and pertussis are given as a priority for children 15 months of age and over because these diseases pose the greatest immediate risk.

7. MMR should be given either at 15 months, or if the child/adult is older than 15 months, at the first immunisation visit.
8. A single dose of Hib vaccine administered at 15 months of age and over is sufficient to induce immunity.
9. After the seventh birthday, Td should be used. The dTap-IPV vaccine is given at age 11 years as a booster. As at 2006, dTap and dTap-IPV are licensed for distribution for booster doses only. However, there are expected to be no safety concerns to giving three doses of dTap-IPV to previously unimmunised older children and adults. Therefore, using dTap should be considered for all catch up and adult schedules for primary and booster immunisations.

B) Pneumococcal Immunisation Programme Catch Up Schedules

Following are recommendations for pneumococcal vaccines for children at higher risk of pneumococcal disease who have received a dose of a pneumococcal vaccine previously.

Age of child	Previous dose(s) of any pneumococcal vaccine	Recommendations
23 months or under	Any or none	As in Table 16.6, chapter 16
24–59 months	4 doses of conjugate vaccine	1 dose of polysaccharide vaccine at 24 months of age, 6–8 weeks after the last dose of conjugate vaccine; and 1 dose of polysaccharide vaccine 3–5 years after the first dose
24–59 months	1–3 doses of conjugate vaccine	1 dose of conjugate vaccine; 1 dose of polysaccharide vaccine 6–8 weeks after the last dose of conjugate vaccine; and 1 dose of polysaccharide vaccine 3–5 years after the first dose
24–59 months	1 dose of polysaccharide vaccine	2 doses of conjugate vaccine, 6–8 weeks apart, beginning at 6–8 weeks after the dose of polysaccharide vaccine; 1 dose of polysaccharide vaccine 3–5 years after the first dose of polysaccharide vaccine
24–59 months	No previous dose of conjugate or polysaccharide vaccine	2 doses of conjugate vaccine 6–8 weeks apart; 1 dose of polysaccharide vaccine 6–8 weeks after the last dose of conjugate vaccine; and 1 dose of polysaccharide vaccine 3–5 years after the first dose of polysaccharide vaccine

Appendix 3: Immunisation Standards 2006

Purpose

The National Immunisation Schedule for children and adults protects against nine serious vaccine preventable diseases. In addition, the Schedule offers publicly funded immunisation to individuals at risk of influenza, tuberculosis and pneumococcal disease. Immunisation against meningococcal B disease is offered as part of a special immunisation programme. These Immunisation Standards apply to the delivery of all the Schedule vaccines.

Immunisation involves many individuals and organisations. The following information aims to identify their roles and responsibilities, and to set standards for service delivery.

Roles and responsibilities

Parents/caregivers

Parents/caregivers roles are to:

- ensure the child receives age appropriate immunisations at six weeks; 3 months, 5 months and 15 months; and 4 and 11 years of age, and the MeNZB™ vaccine at six weeks, three, five and ten months of age (the parents/guardians need to consent to each immunisation)
- agree to the delivery of two or three injections at one visit (extra visits will be required if immunisations are not given at the same time, to ensure full protection from the diseases)
- agree to the collection of their child's immunisation information on the National Immunisation Register (NIR) or be given the opportunity to opt off the collection of this information on the NIR (for NIR birth cohort children)
- when requested, provide the child's Immunisation Certificate to an early childhood service or primary school.

Parents/caregivers who choose not to have their children immunised should explain this decision to their children. If they so wish, children may be immunised when they reach an age at which they are competent to make their own informed choice.¹

Early childhood service and primary schools

Early childhood service and primary schools' roles are to:

- request the parent/caregiver at the time of enrolment, for children born after 1 January 1995, to provide the child's Immunisation Certificate

- document the information from the Immunisation Certificate on the early childhood service/school immunisation register. Information includes the child's name, date of birth, and immunisation status, and confirmation as to whether the Certificate was shown or not.

Vaccinators

Vaccinators include general practitioners, practice nurses (vaccinating under the direction of a medical practitioner) and authorised independent vaccinators, such as public health nurses, and some practice nurses or occupational health nurses, authorised by a medical officer of health to practise independently.

The vaccinator is responsible for the delivery and administration of the vaccines on the National Immunisation Schedule, including the MeNZB™ vaccine. The vaccinator should also ensure that all individuals under their care are given the opportunity to receive all their immunisations on time by operating a recall system and providing written and/or phone recalls.

To be effective the vaccines must be:

- stored and transported within the correct temperature range (+2°C to +8°C) (see chapter 2)
- given before the vaccine expiry date
- correctly reconstituted (where necessary) and given using strict aseptic technique
- administered using the correct dose, appropriate needle length, angle and injection site for the vaccinee (see chapter 2).

As with all health care, informed consent must be obtained. Consent need not always be written, but the vaccinator must keep a written record of the immunisations delivered. Where the vaccinee is a child, the vaccinator must record the immunisations given in the child's *Well Child Tamariki Ora Health Book* and accurately complete the child's Immunisation Certificate. For those children born within the NIR birth cohort, or all those receiving the MeNZB™ vaccine their immunisation history will be collected on the NIR unless the parent/caregiver has opted off the collection of this information (for the purposes of safety monitoring all those receiving the MeNZB™ vaccine must have their information collected on the NIR).

Organisations offering immunisation services

Organisations offering immunisation services include general medical practices, primary health organisations, independent practice associations, outreach immunisation service providers, iwi providers, public health services, Plunket, and lead maternity carers (for specific vaccines only).

For immunisation services to achieve high coverage levels of effective vaccines, the service should:

- have links to comprehensive primary health care
- reduce barriers to access
- have either electronic or manual links to the NIR, in order to:
 - provide ongoing monitoring of immunisation coverage of children attending their service and measuring coverage at two years of age
 - operate a reminder and recall system
 - have systems allowing identification of those behind on immunisations
- monitor influenza immunisation coverage for those 65 years of age and over, and the ‘at risk groups’
- at every opportunity offer immunisations to those who are behind on the National Immunisation Schedule
- have systems for follow up of non-immunised children
- meet cold chain accreditation requirements and continue to maintain the procedures for cold chain management. If there are cold chain failures, discuss with the medical officer of health, and/or local immunisation co-ordinator/facilitator to determine if the vaccines need to be discarded or if patient follow up is required.

Immunisation co-ordinators/facilitators

Immunisation co-ordination varies throughout New Zealand, but the key components of the role may include:

- providing support and co-ordination between different providers
- monitoring cold chain management, including cold chain accreditation
- providing support and co-ordination for the education of providers in delivery of immunisations
- establishing a mechanism for follow up and immunisation of non-immunised children.

Medical officers of health and public health services

The medical officer of health has statutory responsibilities for:

- surveillance and control of vaccine preventable diseases (including outbreak control)
- approval of authorised independent vaccinators.

A medical officer of health also provides advice to vaccinators and the public.

Public health services (or public health nurses working outside these units) may provide:

- school based immunisation programmes
- assistance with the follow up of children who do not respond to recall.

Institute of Environmental Science and Research (ESR)

ESR operates the national vaccine store. ESR's responsibilities include ensuring that the quality of vaccines arriving in New Zealand meet the prescribed specifications, distributing the vaccines through vaccine distributor networks, and the ongoing cold chain audit process. ESR also has a role in the collation of information on notifiable diseases, including the vaccine preventable diseases.

District Health Boards (DHBs)

There are 21 DHBs in New Zealand, responsible for providing publicly funded health care services, including immunisation services, for the population of their geographical region. The statutory objectives of DHBs are to:

- improve, promote and protect the health of communities
- promote the integration of health services, especially primary and secondary care services
- promote effective care or support of those in need of personal health services or disability support.

The DHB funding obligations under primary health services are to:

- provide services to help children stay well, including the immunisations on the National Immunisation Schedule
- provide all the immunisation services listed on the National Immunisation Schedule (as contained in the Ministry of Health Immunisation Handbook) at no charge
- co-ordinate immunisation services at the regional level
- achieve maximum target immunisation coverage levels for their population.

Ministry of Health

The Ministry of Health is responsible for:

- ensuring the adequacy of the immunisation programme at the national level through a national co-ordination function
- monitoring and analysing information on immunisation coverage, the vaccine preventable diseases (including implied vaccine effectiveness) and adverse events following immunisation

- purchasing health education materials to assist individuals to make an informed choice about immunisation
- monitoring DHB performance
- national promotion of immunisation
- advising the Minister of Health on immunisation policy and developing and co-ordinating *Immunisation in New Zealand: Strategic directions*, including issues relating to:
 - the National Immunisation Schedule
 - the National Immunisation Register
 - strategies for improving coverage
 - purchase of programmes to promote immunisation
 - auditing the performance of cold chain management and accreditation
 - providing technical support to medical officers of health on matters relating to vaccines and immunisation.

The Ministry of Health currently undertakes vaccine purchase for all National Immunisation Schedule vaccines (including the MeNZB™ vaccine), except the influenza vaccine.

Minister of Health

The Minister has overall responsibility for all aspects of the National Immunisation Programme, through funding agreements with the purchasers. The following target has been set for immunisation: 95 percent of children will be fully immunised at two years of age.

Standards for vaccinators

Standard 1: The vaccinator is competent in the immunisation technique and has the appropriate knowledge and skills for the task

Required characteristics

- 1.1 The vaccinator completes an appropriate training programme. If a vaccinator is working as an independent vaccinator they should have a current authorisation certificate from a medical officer of health or the Director-General of Health.
- 1.2 The vaccinator administers sufficient immunisations to maintain competence, and demonstrates his/her competence biennially to an approved peer.
- 1.3 The vaccinator is able to deal with anaphylactic and other reactions, resuscitation, spillages (blood or vaccine) and the safe disposal of needles, syringes and vaccines (see chapter 2 and Appendix 6).

- 1.4 The vaccinator remains current with developments in immunisation theory, practice and policy with at least four hours of self directed learning or immunisation education/training every two years.
- 1.5 The vaccinator communicates immunisation information effectively and in a culturally appropriate way to families and individuals.
- 1.6 The vaccinator has had education and training to use the NIR to check a child's immunisation records, administer the correct vaccines, and follow up.

**Standard 2: The vaccinator obtains informed consent to immunise
(see chapter 2).**

Required characteristics

- 2.1 The vaccinator obtains consent for each immunisation episode and records that the patient/parent/guardian has been informed of the benefits and risks of immunisation in order to make an informed decision about immunisation and the immunisation programme. (Children can give consent if they have the understanding and maturity to form a balanced judgement about immunisation. Parents/guardians should be encouraged to be involved in their child's decision.)
- 2.2 The vaccinator communicates using clear, simple terminology appropriate to the listener's values, beliefs and culture. Communication should be supported by suitable health education material.
- 2.3 The vaccinator allows time to answer questions and obtains feedback indicating that the patient/parent/guardian understands which vaccine is being given and why.
- 2.4 Consent need not always be written consent, but the vaccinator should keep a written record that verbal consent was obtained.
- 2.5 Adequate information about the disease and vaccination must be given to patients/parents/guardians to enable informed consent.
- 2.6 The vaccinator informs the parent/caregiver that vaccinations given will be recorded on the NIR (for birth cohort children) unless the parent/caregiver chooses to opt off the NIR.

Standard 3: The vaccinator provides safe immunisation

Required characteristics

- 3.1 The venue is appropriate for the patient/parent/caregiver with facilities available for assessment and management of adverse events, including anaphylaxis (see chapter 2).
- 3.2 The vaccinator can treat AEFIs (adverse events following immunisation), including anaphylaxis, and has a contingency plan for seeking emergency assistance.

- 3.3 Because of the potential for anaphylactic reactions, vaccinees with their parents/caregivers are required to remain under observation for a minimum of 20 minutes after immunisation.
- 3.4 The vaccinator ensures continuity of the cold chain and the practice's participation in cold chain accreditation (see chapter 2).
- 3.5 Before vaccinating, the vaccinator:
- ascertains the date of the last immunisation, to ensure doses are spaced correctly
 - enquires about any reactions following previous vaccine doses
 - checks for true contraindications (see chapter 1 and the specific disease chapters)
 - determines the current health of the vaccinee and the possible immune suppressed status of contacts.
- See the prevaccination checklist in chapter 2.
- 3.6 The vaccinator uses aseptic techniques in preparation and administration of all vaccines (see chapter 2 and Appendix 6), visually checks the vaccine, reconstitutes vaccines with the diluent supplied (as appropriate) and uses vaccines within the recommended period after reconstitution.
- 3.7 The vaccinator provides verbal and written information about care after immunisation, including management of expected vaccine responses and accessing advice and medical attention, if required, during office and after office hours (see chapter 2).
- 3.8 The vaccinator carries indemnity insurance for their personal/professional protection and that of the vaccinee.

Standard 4: The vaccinator documents information on the vaccine(s) administered, and maintains patient confidentiality

Required characteristics

- 4.1 The vaccinator documents the patient's personal details, including: NHI, name, date of birth, address, contact telephone number, next of kin details, and general practitioner (if the vaccinator is not the usual primary care provider).
- 4.2 The vaccinator will ensure the immunisation information is sent to the NIR (ie, electronically or manually), where applicable.
- 4.3 The vaccinator documents the following details:
- date administered
 - consent obtained

- vaccine type and number in the series
- batch number and expiry date
- injection site (eg, deltoid not upper arm)
- needle length
- the patient was observed for 20 minutes post-vaccination
- if the vaccine is given by a non-standard route, the reason must be well documented
- the date for the next immunisation (if required) for the patient/parent/caregiver, in the *Well Child Tamariki Ora Health Book*.

4.3 The vaccinator ensures the Immunisation Certificate is accurately completed.

4.4 If the vaccinator is not the usual primary care provider, and the patient/parent/guardian consents, the patient's general practitioner or other primary care provider is informed, within four weeks, of the receipt of the vaccine(s). When a child is registered on the NIR all associated providers will be notified that an immunisation event has occurred.

4.5 The vaccinator ensures the Immunisation Benefit Claim Form is accurately completed.

4.6 The vaccinator ensures all immunisations are reported with NHI number, as agreed by the Ministry of Health.

4.7 All personal documentation is appropriately treated and stored to maintain confidentiality, and is made available to the patient/parent/caregiver on request.

Standard 5: The vaccinator administers all vaccine doses for which the vaccinee is due at each visit and only follows true contraindications

Required characteristics

5.1 The vaccinator follows the National Immunisation Schedule and delivers the immunisations recommended for that visit, unless the patient/parent/guardian does not consent to this.

5.2 When catch up immunisation is required, this is planned with the minimum number of visits.

5.3 A dose of vaccine is deferred or avoided only when contraindicated. The reason for deferral or avoidance must be well documented (see chapter 1 and the specific disease chapter).

Standard 6: The vaccinator reports adverse events following immunisation promptly, accurately and completely

Required characteristics

- 6.1 Any severe or unexpected reactions are reported to the Medical Assessor, Centre for Adverse Reactions Monitoring, PO Box 913, Freepost no. 112002, Dunedin, on the reply paid postcard HP3442 (copies can be found in the *MIMS New Ethicals*, or Figure 2.7 of the *Immunisation Handbook 2006*, or obtained from the local immunisation co-ordinator/facilitator) or via online reporting at <http://carm.otago.ac.nz>, and to the patient's general practitioner (if the vaccinator is another person). If the patient/parent/guardian does not consent to being identified, the report should be made without personal identification. Other significant events occurring in association with vaccination, which may or may not be caused by immunisation, should also be reported (recognised reactions from vaccines are listed in the specific disease chapters).
- 6.2 If uncertain about the safety of further doses, the vaccinator seeks specialist (eg, paediatrician, infectious disease physician or medical officer of health) opinion.
- 6.3 The vaccinator ensures the adverse event, and any subsequent decisions relating to the event, are clearly documented in the child's *Well Child Tamariki Ora Health Book* and in the vaccinator's records, and are fully explained to the patient/parent/caregiver.
- 6.4 Informs the DHB NIR administrator of CARM Report feedback so that it can be recorded on the NIR.

Standards for organisations offering vaccination services

Standard 7: The organisation, which employs vaccinators to offer vaccination services, has links to comprehensive primary health care and the Well Child programme

Required characteristics

- 7.1 Immunisation is delivered, not in isolation, but as an integrated part of Well Child activities through primary health care.
- 7.2 If possible, at the time of immunisation the organisation undertakes other health promotion and/or disease prevention activities, in accordance with the recommended New Zealand Well Child schedules.

Standard 8: The organisation achieves high immunisation coverage of its population

Required characteristics

- 8.1 The organisation has an effective, secure, NHI-based system for recording and reporting immunisations and identifying patients requiring immunisation.
- 8.2 The organisation has electronic linkage to the NIR or a paper-based process for registration and immunisation event notification and uses the NIR to assist with follow up.
- 8.3 The organisation provides reminders and recalls when immunisations are overdue.
- 8.4 Attendance at the organisation is used as an opportunity to remind patients/parents/caregivers of the importance of immunisation, and, if appropriate, to check and bring up to date the individual's immunisation status.
- 8.5 Those who do not respond to recall are appropriately referred to the outreach immunisation service, as per local protocol.

Standard 9: The organisation supports vaccinators

Required characteristics

- 9.1 The organisation provides back up and support for vaccinators working in the community.
- 9.2 The organisation supports the need for practice nurses/vaccinators to have access to ongoing education and training on immunisation and vaccines.

Standard 10: The service is readily available, with no barriers to access

Required characteristics

- 10.1 No fee is charged to the parent/caregiver for the child's immunisations that are on the National Immunisation Schedule (or for completing the child's Immunisation Certificate).
- 10.2 Where possible, immunisations are provided at all times when the service is open.
- 10.3 Where possible, immunisations are provided without the need for an appointment.
- 10.4 Where possible, immunisation should also be offered out of normal working hours.
- 10.5 The service is culturally appropriate.
- 10.6 Sources for further information include:
 - Health Immunisation Regulations 1995
 - Medicines Act 1981

- Medicines Regulations 1984
- Health (Infectious and Notifiable Diseases) Regulations 1966, Amendment No. 2, regulation 44A
- National Immunisation Register Privacy Policy
- Ministry of Health Cold Chain Accreditation Practice Assessment Form (October 2004)
- Ministry of Health Cold Chain Accreditation Reviewer Form (October 2004)
- IMAC Vaccine Storage and Distribution National Standards
- IMAC Standards for Delivery of Vaccinator Training Courses for Non-Medical Vaccinators, 2nd edition, 2002. (Note: these standards will be updated during 2006)
- IMAC Standards for Delivery of Updates for Trained Non-Medical Vaccinators, 1st edition, 2003
- Guardianship Act 1968.

Reference

- 1 *Consent in Child and Youth Health: Information for practitioners* is available from the Ministry of Health website (www.moh.govt.nz). Duties regarding informed consent are more fully outlined in the Code of Health and Disability Services Consumers' Rights.

Appendix 4: Authorisation as an Independent Vaccinator

Authorisation as an independent vaccinator

Protocol for authorisation of vaccinators in New Zealand

November 2004

Authority

Medicines Regulations 1984, clause 44A (2) states 'The Director-General or a medical officer of health may authorise any person to administer a vaccine for the purposes of an approved immunisation programme if that person, following written application, provides documentary evidence satisfying the Director-General or the medical officer of health as the case may be, that that person:

- i. Can carry out basic emergency techniques including resuscitation and the treatment of anaphylaxis and
- ii. Has knowledge of the safe and effective handling of immunisation products and equipment and
- iii. Can demonstrate interpersonal skills and
- iv. Has knowledge of the relevant diseases and vaccines in order to be able to explain the vaccination to the patient, parent or guardian of the patient who is to consent to the vaccination on behalf the patient, to ensure that the patient or parent or guardian of the patient can give informed consent to the vaccination'.

Any authorisation given by the Director-General or a medical officer of health under subclause (2) of the regulation shall be valid for a period of two years (from the date of training) and shall be subject to such conditions as the Director-General or the medical officer of health, as the case may be, thinks fit.

Successful applicants will be authorised to administer either all or specific vaccines on the National Immunisation Schedule and any other vaccine as authorised by medical officer of health or the Director-General. This would not normally include travel vaccines. Authorisation is equivalent to 'certified' as referred to in Schedule 3, clause 2.1 (s) of the Section 88 Notice to General Practitioners (February 2002).

Authorisation for vaccinating other populations, for example influenza or hepatitis B vaccination of workplace staff, as part of a locally approved schedule, will be subject to whatever conditions the medical officer of health, or Director-General of Health, decides. The authorised vaccinator will have to apply to the local medical officer of health for the approval of a local vaccination programme.

Process for initial authorisation

Applicants applying for authorisation as an independent vaccinator will be required to:

1. Demonstrate that within the preceding 12 months, they have attended, completed and passed a vaccinator training course that meets the *Standards for Delivery of Vaccinator Training Courses* published by the Immunisation Advisory Centre (IMAC) in 1998 and any subsequent revisions. Specifically the course should consist of:
 - a minimum 16 hours educational input
 - a written test (minimum one hour duration consisting of a combination of multiple choice and short answers, and may be oral at the facilitator's discretion)
 - clinical assessment (by the immunisation co-ordinator/facilitator or an appropriately authorised independent vaccinator). Information about the practice environment will be collected at the time of this assessment.
2. Provide evidence of current practising certificate and indemnity insurance. Competencies for the Registered Nurse Scope of Practice (Nursing Council 2004) require that all nurses have appropriate competencies for their practice and can access and use emergency equipment.

Health professionals providing vaccination for specific groups or individuals or work settings may be authorised to administer only certain vaccines on the National Immunisation Schedule or on a locally approved schedule.

Process for reauthorisation

The Standards for Immunisation Providers (Vaccinators) in the *Immunisation Handbook 2006* (see Appendix 3):

- (1.2) The vaccinator administers sufficient immunisations to maintain competence and demonstrates his/her competence biennially to an approved peer.
- (1.4) The vaccinator remains current with developments in immunisation theory, practice and policy with at least four hours of self-directed learning or immunisation education/training every two years.

Independent vaccinators may meet these educational requirements through self-directed learning such as:

- attending vaccination related lectures
- reading relevant articles
- being peer reviewed

- analysing critical events
- anaphylaxis/resuscitation practice.

The purpose of the ongoing training is to:

- bring them up to date with new and recent developments
- revise key areas of the vaccination process
- reviews the essential skills required to undertake vaccination.

Applicants for reauthorisation will be required to:

1. demonstrate that within the preceding 12 months, they have undertaken specific education update(s) for trained vaccinators; the training should be of a minimum of 4 hours duration
2. the Medical Officer of Health and the immunisation co-ordinator/facilitator will agree on a process for the regular assessment of clinical competency.
3. provide evidence of current practising certificate and indemnity insurance. Competencies for the Registered Nurse Scope of Practice (Nursing Council 2004) require that all nurses have appropriate competencies for their practice and can access and use emergency equipment.

Process when authorisation has not been maintained i.e. where the authorisation expired more than six months previously

In general where five years or more have elapsed since the applicant completed their initial vaccinator training, they will be required to attend, complete and pass a vaccinator training course that complies with the *IMAC Standards for Delivery of Vaccinator Training Courses* because:

- there will have been significant developments in vaccination delivery in the intervening interval and
- prior to 1998 there were no national standards for the delivery of vaccinator training courses.

If the applicant has attended update sessions at least every two years but has never requested Authorisation as a Vaccinator, they will be assessed on a case-by-case basis by the Medical Officer of Health and the immunisation co-ordinator/facilitator.

If the applicant has completed a vaccinator training course within the last five years, they will be required to:

1. attend the first available vaccinator Update training course and submit evidence of attendance to the Medical Officer of Health
2. provide evidence that they have attended specific vaccination education sessions of a minimum of 4 hours duration during the last two years

3. demonstrate their clinical competency in vaccination (within the 3 months prior to application) to the immunisation co-ordinator/facilitator or an appropriately authorised independent vaccinator
4. provide evidence of current practising certificate and indemnity insurance. Competencies for the Registered Nurse Scope of Practice (Nursing Council 2004) require that all nurses have appropriate competencies for their practice and can access and use emergency equipment.

Process where applicant is new to the health district in which they intend to practise

If an authorised independent vaccinator wishes to practise in another health district, they must get authorisation from the local Medical Officer of Health before practising independently. The applicant will be required to:

1. provide evidence of current practising certificate and indemnity insurance. Competencies for the Registered Nurse Scope of Practice (Nursing Council 2004) require that all nurses have appropriate competencies for their practice and can access and use emergency equipment
2. provide details of their proposed work in the district.

This protocol was initially developed by John Holmes, Ann Shaw and Lyn Smith and incorporated comments and suggestions from Drs Derek Bell, Maree Leonard, Ed Kiddle, Phil Shoemack, Mel Brieseman and Daniel Williams (Medical Officers of Health).

It was further reviewed by the Medical Officers of Health from all the health districts in New Zealand at their national meeting in November 2004 and also discussed with Loretta Roberts, Regional Immunisation Coordinator for IMAC and their comments have been incorporated.

It will be reviewed in July 2006 unless there are changes to legislation. Any comments should be sent to John Holmes, Medical Officer of Health (Otago/Southland), PO Box 5144, Dunedin.

Independent vaccinators delivering an immunisation service

Authorised independent vaccinators should be aware that the following details of practice will be considered if they decide to seek medical officer of health approval for a local immunisation programme.

	Office Use Only
1. Location/s (specify)	
2. Staff There must be two people present for outreach or offsite immunisation – one of whom must be an approved non-medical vaccinator; the other must be either a registered nurse or have first aid and basic life support training.	
3. Linkages with the local immunisation co-ordinator/facilitator <ul style="list-style-type: none"> • Do you have processes for regular contact with your local immunisation co-ordinator/facilitator? 	
4. Person Specification. Attach copies of appropriate documentation. <ul style="list-style-type: none"> • current approval as an independent vaccinator issued by the local medical officer of health*. • current practising certificate* • current certificate in basic life support* (normally valid for 12 months) • indemnity insurance.* 	
5. Legal You should have knowledge of the Provisions contained in the following legislation: <ul style="list-style-type: none"> • The Code of Health and Disability Consumers’ Rights Regulation 1996 • Privacy Act 1993 (storage and transfer of information) • The Health and Safety in Employment Act 1992 (suitable area for post vaccination observation, correct disposal of vaccines, etc) • Medicines Act 1981. 	
6. Venue Venue must allow for safe management of delivery of immunisations. <ul style="list-style-type: none"> • Privacy • Resting space • Waiting space • Maintenance of privacy of records. 	

<p>7. Documentation</p> <p>You should have documented processes for the following</p> <p>a. Pre vaccination:</p> <ul style="list-style-type: none"> • What information is provided to patients (including consent)?* • How do you identify persons eligible for free vaccination?* <p>b. Post vaccination:</p> <ul style="list-style-type: none"> • How will patient details be recorded?* • What are the means of recording administration of a vaccine(s) and any post-vaccination adverse events?* • How will notice of administration be provided to the primary care provider?* • What information will be provided to the vaccinee post-vaccination (including provision of emergency care)?* • How will information on adverse reactions be reported*. <p>NOTE: For influenza vaccinations</p> <p>It will be necessary to provide the following information to the MOH:</p> <ul style="list-style-type: none"> • number of recipients who were >65 years (free vaccines) • number of <65 years eligible for free influenza vaccine • number of non-eligible influenza vaccines given. 																															
<p>8. Equipment</p> <p>The following should be available:</p> <table border="0"> <tr> <td>• Cell phone/phone access</td> <td>Yes / No</td> </tr> <tr> <td>• Oxygen cylinder, flow meter, tubing and paediatric/adult masks</td> <td>Yes / No</td> </tr> <tr> <td>• Airways – infant through to adult</td> <td>Yes / No</td> </tr> <tr> <td>• Ambubag (Adult /Infant)</td> <td>Yes / No</td> </tr> <tr> <td>• Adrenaline</td> <td>Yes / No</td> </tr> <tr> <td>• Syringes (1mL, 2.5mL, 5mL), Needles (1.58cm to 3.8cm)</td> <td>Yes / No</td> </tr> <tr> <td>• Sharps box</td> <td>Yes / No</td> </tr> <tr> <td>• Alcohol swabs, Cotton wool balls/gauze etc</td> <td>Yes / No</td> </tr> <tr> <td>• Thermometer/sphygmomanometer</td> <td>Yes / No</td> </tr> <tr> <td>• Vaccines</td> <td>Yes / No</td> </tr> <tr> <td>• Appropriately monitored vaccine storage[#]</td> <td>Yes / No</td> </tr> <tr> <td>• Min-Max thermometer or recording device for monitoring</td> <td>Yes / No</td> </tr> <tr> <td>• Gloves</td> <td>Yes / No</td> </tr> <tr> <td>• 0.5% Hypochlorite</td> <td>Yes / No</td> </tr> <tr> <td>• Approved biohazard bag</td> <td>Yes / No</td> </tr> </table>	• Cell phone/phone access	Yes / No	• Oxygen cylinder, flow meter, tubing and paediatric/adult masks	Yes / No	• Airways – infant through to adult	Yes / No	• Ambubag (Adult /Infant)	Yes / No	• Adrenaline	Yes / No	• Syringes (1mL, 2.5mL, 5mL), Needles (1.58cm to 3.8cm)	Yes / No	• Sharps box	Yes / No	• Alcohol swabs, Cotton wool balls/gauze etc	Yes / No	• Thermometer/sphygmomanometer	Yes / No	• Vaccines	Yes / No	• Appropriately monitored vaccine storage [#]	Yes / No	• Min-Max thermometer or recording device for monitoring	Yes / No	• Gloves	Yes / No	• 0.5% Hypochlorite	Yes / No	• Approved biohazard bag	Yes / No	
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9. Optional Additional Emergency Equipment		
• Intravenous cannula and administration sets	Yes / No	
• Intravenous fluids	Yes / No	
• Hydrocortisone for injection	Yes / No	
• Antihistamine for injection	Yes / No	
• Soda bicarbonate	Yes / No	
• Saline Flush	Yes / No	

See the IMAC Cold Chain Standards.

Applicant: Date:

NOTE: Please ensure that you have included the documentation marked with an *

Appendix 5: Immunisation Certificate

The Health (Immunisation) Regulations 1995 require parents of children born from 1 January 1995 to show their child's Immunisation Certificate when these children start at an early childhood service and on school entry.

The Immunisation Certificate shows whether a child is fully immunised or not. Information must be recorded at 15 months of age when the early childhood vaccinations are complete, and after the immunisations at four years of age or at school entry. For those parents who decline to have their child vaccinated, the certificate may be completed at any time.

Parent/caregiver responsibilities

Parents or caregivers remain free to choose whether or not to vaccinate their child, but they must make a choice, and get a certificate to provide documentation of their choice.

Vaccinator responsibilities

When completing and signing the Immunisation Certificate, vaccinators should be confident that a child is fully vaccinated. The primary concern is the child's protection. If the previous vaccination history is uncertain and parents/guardians do not wish their child to be vaccinated, the child should be certified as 'not fully' vaccinated. Children who have not received the necessary doses of a vaccine or have no evidence of laboratory proven disease should be recorded as not fully vaccinated.

The Immunisation Certificate is included in the *Well Child Tamariki Ora Health Book*. This book also contains the record of the child's vaccinations. Vaccinators should ensure they record vaccination and other relevant health information in this book. This becomes particularly important if the child sees different health professionals. If the child's book is lost, it should be replaced. Copies of the *Well Child Tamariki Ora Health Book* and Immunisation Certificate pads can be obtained from the authorised provider of health education materials – usually the local public health service.

Early childhood services and school responsibilities

All early childhood services and primary schools, including kohanga reo, independent schools and kura kaupapa Māori, must keep an immunisation register for children born from 1 January 1995. The register is a tool to help reduce the spread of vaccine preventable diseases in early childhood services and schools, as well as in the wider community.

The early childhood service or school has the responsibility to:

- advise the child's parent/caregiver that an Immunisation Certificate is required
- ensure the parent or caregiver is requested to provide the Certificate
- record the information from the certificate (or the fact that it was not shown) on the register
- advise the parent/caregiver that a general practitioner, practice nurse or public health nurse can help them get a certificate if they do not have one.

Appendix 6: Vaccine Presentation, Preparation and Disposal

Presentation of vaccines

The vaccines in current use are supplied in pre-filled syringes, single dose ampoules and vials. An ampoule is made of clear glass with a narrow neck, which is snapped off to allow access to a single dose of vaccine. A vial is a glass container with a rubber seal on the top protected by a metal or plastic cap until it is ready for use. Vials contain either liquid or dry preparations.

Vaccines should not be mixed in the same syringe, unless the manufacturer's information sheet specifically states it is permitted.

Preparation and administration of vaccines

In order to minimise the risk of spread of infection and needle-stick injury, vaccinators should observe standard occupational health and safety guidelines.

Needles must always be changed between drawing up and administering the vaccine, as the passage of needles through rubber seals causes blunting, resulting in increased tissue trauma if the same needle is used to administer the injection. A new needle prevents tracking the vaccine through the skin and subcutaneous tissues where absorbed vaccines are more likely to cause local reactions. Do not expel the air contained in the new needle – it is sterile and minute in quantity.

Drawing up vaccine from ampoules

- Most inactivated vaccines contain an adjuvant and must be shaken vigorously prior to being drawn up, to obtain a uniform suspension.
- Flick the top of the ampoule with a finger to bring the fluid down into ampoule from the neck.
- Snap the ampoule neck quickly and firmly. A small gauze pad may be placed around the neck of ampoule to protect fingers from trauma.
- Draw up the vaccine quickly to prevent contamination by airborne contaminants. Do not scrape the needle tip on the inside of ampoule, nor allow the needle tip or shaft to touch the contaminated rim of the ampoule. The ampoule may be held upside-down as long as the needle tip or shaft does not touch the rim, otherwise surface tension is broken and the fluid will drip out.
- Change the needle, choosing the appropriate gauge and length for administration.
- After noting the batch number and expiry date, dispose of the empty vaccine ampoules and used needles into the sharps container.

Drawing up vaccine from vials

- Most inactivated vaccines contain an adjuvant and to obtain a uniform suspension must be shaken vigorously prior to being drawn up.
- Flip the plastic cap off the vial, taking care not to touch rubber seal.
- With the vial upright, insert tip of needle through the centre of rubber seal where it is thinner and easier to penetrate. Keeping firm pressure on the needle during insertion prevents cutting the rubber core from the seal.
- Withdraw the contents of the vial into the syringe.
- Draw back slightly on the plunger (to empty the needle of vaccine) and tap the barrel of syringe to dislodge any air bubbles. Expel air from the syringe and needle until the vaccine is visible at the needle connection part of the syringe.
- Change the needle, choosing the appropriate gauge and length for administration.
- After noting the batch number and expiry date, dispose of the empty vaccine vials and used needles into the sharps container.

Reconstitution and drawing up of freeze-dried vaccine, such as MMR

Freeze-dried vaccine must be reconstituted with the diluent supplied and used within the recommended period after reconstitution. For the single dose MMR vaccine in current use, this is eight hours (providing it is protected from light and stored at +2°C to +8°C).

- Flip the plastic cap off the diluent vial, taking care not to touch rubber seal.
- With the vial upright, insert needle tip through the centre of rubber seal where it is thinner and easier to penetrate. Keeping firm pressure on the needle during insertion prevents cutting the rubber core from the seal.
- Invert the vial and draw up the entire volume of diluent.
- Flip the cap off the vaccine vial and then slowly, to avoid frothing, empty the contents of the syringe into the vial, using the vial entry technique mentioned above.
- Swirl the vial gently to dissolve. The needle and syringe may be removed or left in place.
- After reconstitution the vaccine should be checked to see that the colour compares with the information supplied by the manufacturer on the package insert and that there is no particulate matter present. The MMR vaccine in current use should be clear yellow.
- Withdraw the contents of the vial into the syringe.

- Draw back slightly on the plunger (to empty the needle of vaccine) and tap the barrel of the syringe to dislodge any air bubbles. Expel air from the syringe and needle until the vaccine is visible at the needle connection part of the syringe.
- Change the needle, choosing the appropriate gauge and length for administration.
- After noting the batch number and expiry date, dispose of the empty vaccine vials and used needles into the sharps container.

Disposal of needles, syringes, and vaccine vials/ampoules

Do not separate needles from syringes or recap needles, unless a recapping device is used. All empty, partly used vials/ampoules, syringes and needles should be discarded into the sharps container.

Sharps containers

- Sharps containers should be made of rigid, leak and puncture proof material. They must be fitted with a carrying handle and have an opening that is wide enough to allow disposable materials to be dropped into the container with one hand while still preventing removal of the contents.
- Sharps containers should be situated out of children's reach and available in every area where vaccinations take place.
- Sharps containers should be filled only to the indicated line, then sealed and given to an approved hazardous waste disposal person for incineration (as per the Resource Management Act 1991).

Spillages

- For blood or vaccine splashes on the skin – thoroughly wash the area under cold running water then wash with the iodine-based hand wash vaccinators have available.
- For spills on work surfaces, put on gloves and treat the spill by wiping the area with a pad soaked in 0.5 percent hypochlorite (household bleach diluted 1 to 9 parts water). Repeat with the hypochlorite solution and a fresh pad then clean up with water or a commercial detergent. Alternatively granular hypochlorite can be used for liquid spills, by applying sufficient granules to absorb the spilt fluid and then cleaning up after 10 minutes contact time. Carefully seal all contaminated material in approved biohazard bag for incineration by an approved hazardous waste disposal person.
- Contaminated linen is adequately treated by a routine hot wash cycle (60°C–70°C) using an ordinary bleach concentration.

Appendix 7: Medicines Act 1981, Section 47

The Medicines Act 1981, section 47, Storage and delivery of medicines states:

- 1) No person who is in possession or charge of any prescription medicine or restricted medicine shall put it:
 - a) In any cupboard, box, shelf, or other place of storage in which articles of food or drink are stored or kept for ready use; or
 - b) In any place to which young children or unauthorised persons have ready access.
- 2) No person shall pack any medicine, or prepare it for use in any room or on any bench that is used for the purpose of packing, preparing or consuming any food or drink.
- 3) Except as otherwise provided in any regulations made under this Act, no person who is in possession, for the purposes of any business, of a prescription medicine or a restricted medicine that is kept for the time being within any building or vehicle shall leave that building or vehicle unattended, unless he has taken all reasonable steps to secure that building or vehicle, or the part of it in which the medicine is kept, against unlawful entry.
- 4) No person shall deliver on retail sale, or in circumstances corresponding to retail sale, any medicine otherwise than through the post or by handing it or causing it to be handed to the person, or another person reasonably believed to be acting on that person's behalf, to whom it is addressed or for whose use it is intended.
- 5) Every person commits an offence against this Act who, without reasonable excuse, contravenes any of the provisions of this section.

Appendix 8: Hepatitis B Antibody Levels in Infants

Testing of infants born to mothers at risk of passing hepatitis B infection (chronic carriers and acute HBV cases in the third trimester) is recommended at five months of age at the time of their fourth dose of hepatitis B vaccine (see Chapter 3).

Interpretation of test results taken at five months of age:

- Where an infant has hepatitis B antibody present at a level above 100 IU/L the infant has an effective immune response to hepatitis B surface antigen. (If the level is above 2000 IU/L it is a very strong response.)
- Where the infant has a hepatitis B antibody level below 10 IU/L there is no evidence of an immune response to the hepatitis B vaccine. The low level of antibody detected in the test may be due to residual passively injected immunoglobulin given at birth. Additional doses of hepatitis B vaccine should be provided, with follow-up to monitor antibody levels. (This should be only a small group of infants.)
- Until further information becomes available to narrow the range, where the infant has a hepatitis B antibody level between 10–100 IU/L the result should be regarded as *indeterminate*. Residual injected immunoglobulin cannot be distinguished from a modest vaccine-induced response. For *indeterminate* results, additional vaccine doses, with follow up testing of antibody levels, are recommended.

The following theoretical calculations for clearance of a dose of injected IgG immunoglobulin are provided. It should be noted that higher levels of immunoglobulin may be present if clearance is slower in an individual infant.

- The half-life for most IgG antibodies is of the order of three weeks. A 100 IU dose of hepatitis B immunoglobulin will produce measurable levels of hepatitis B antibody, which will be higher in smaller infants. After five months, the level of injected IgG will fall to approximately 2 IU/L if the half-life is three weeks and to approximately 22 IU/L if the half-life is around six weeks.

Note: If an infant who has received HBIG at birth is found at five months of age to have anti-HBs in the range 10–100 IU/L, the result must be regarded as being *indeterminate*. Possible interpretations are:

- a recent acute infection with HBV from which the infant is recovering. In this case, IgM anti-HBc will be present and a rising level of anti-HBs will be detected on follow-up testing. (Note: detectable IgG anti-HBc of maternal origin may persist in an infant for more than 12 months and is of no diagnostic value.)
- an unusually long half-life for HBIG. In this case IgM anti-HBc will be absent and, further tests after 2–3 months will show a falling level of anti-HBs.

Appendix 9:

Meningococcal Invasive Disease

The information provided below has been updated from the Ministry of Health *Meningococcal Disease Circular Letter June 1998: To General Practitioners, Medical Officers of Health and Paediatricians*. For an update on the epidemiology of meningococcal disease see Chapter 15.

Control of meningococcal disease

Early diagnosis and treatment of meningococcal disease is important, because the disease may be fulminant.

The available evidence favours pre-hospital administration of parenteral antibiotics in cases of suspected meningococcal disease.

Prompt treatment with antibiotics may prevent death and permanent disability, such as damage to the brain, or deafness. Practitioners are reminded of the advice provided in Chapter 15 of the *Immunisation Handbook 2006* to administer parenteral antibiotics to suspected cases.

Recommended antibiotics

Prior to transfer to hospital, practitioners should administer parenteral antibiotics to:

- all suspected cases of meningococcal disease in whom there is any haemorrhagic rash
- all other suspected cases for whom the delay to assessment in hospital is likely to be greater than 30 minutes.

The recommended antibiotics are:

- | | |
|-------------------|-------------------------------------|
| benzyl penicillin | • adults: 1.2 g IV (or IM) |
| | • children: 25–50 mg/kg IV (or IM) |
| amoxycillin | • adults: 1–2 g IV (or IM) |
| | • children: 50–100 mg/kg IV (or IM) |

Do not be deterred if these antibiotics are not available. Almost any parenterally administered antibiotic in appropriate dosage will inhibit the growth of meningococci.

If possible, take a throat swab (*the swab should sample the nasopharyngeal area*) when antibiotics are administered, as it may be of assistance in establishing an aetiological diagnosis. The swab should be sent to the hospital with the patient.

Those most at risk from meningococcal disease are children under five years of age. In infants the illness may be non-specific.

Clinical description

Neisseria meningitidis causes meningitis or meningococcal septicaemia. The disease presents as an acute illness with fever, nausea, vomiting and headache, and may progress rapidly to shock and death. Petechial rash is seen in about 50 percent of cases.

Symptoms and signs

These may include:

- fever, malaise, prostration
- nausea, vomiting and headache
- rash – petechial or purpuric or maculopapular
- neck stiffness
- young children refusing drinks or feeds
- being sleepy, difficult to rouse
- photophobia
- arthritis/arthritis.

Because the illness may progress rapidly, early diagnosis and treatment of meningococcal disease is of great importance.

The following points may assist practitioners.

- Examine all the skin of everyone in whom the diagnosis is suspected, as even a single petechial or purpuric lesion may be of significance.
- For individuals with darker skin colouring, it may be more difficult to see petechiae, and a more careful examination will be required. Parents may notice a rash that may otherwise be overlooked.
- The prognosis of meningococcal meningitis is better than that of meningococcal septicaemia. Although neck stiffness and meningococcal irritation are important, their absence does not exclude meningococcal septicaemia or meningitis and is not necessarily reassuring.
- If the practitioner has considered the diagnosis and decided that the clinical features do not merit assessment in hospital, caregivers should be warned to seek urgent medical help, no matter what the time, if there is significant deterioration in the individual's condition or if any petechial or purpuric lesions develop.

Alternative to penicillin pre-admission antibiotic for suspected meningococcal disease

For patients with a documented history of a severe reaction (such as anaphylaxis), to penicillins, neither penicillin nor amoxicillin should be used. Any of the third-generation cephalosporins would be an acceptable alternative to penicillin. These drugs are known to have a low cross-reactivity with the penicillin-allergic patient. However, there is potential for antibiotic resistance to develop if parenteral cephalosporin use is widespread.

The Ministry of Health recommends that patients with a documented history of anaphylaxis to penicillin, and who are suspected of suffering from meningococcal disease, should be sent immediately to hospital without pre-admission antibiotics.

Ceftriaxone is available on the Medical Practitioners Supply Order.

Acute management and public health control measures

Following arrangements for immediate admission of cases of meningococcal disease to hospital, all cases should be notified immediately on suspicion to the Medical Officer of Health, Public Health Service. The Public Health Service will arrange contact tracing and antibiotic prophylaxis. All adults and children in close contact with primary cases of meningococcal disease should receive antibiotic prophylaxis, preferably within 24 hours of the initial diagnosis, although it may be effective up to 10 days after contact.

Those at particular risk include:

- household contacts
- early childhood service contacts
- those living in close contact in semi-closed communities and institutions
- persons who have had contact with the patient's oral secretions through kissing and sharing of food or beverages.

Chemoprophylaxis

Rifampicin – recommended dose of 10 mg/kg (maximum dose 600 mg) every 12 hours for two days. For infants less than one month of age: four doses of 5 mg/kg/day over two days.

Vaccine for serogroups A, C, Y and W135

Vaccine may be considered for close contacts of cases of serogroup C meningitis. If there are clusters of cases of serogroups A, C, Y and W135 in the community, the need for a vaccine programme will be assessed by the Medical Officer of Health.

Ministry of Health meningococcal disease national prevention and control plan

The Ministry of Health is coordinating a multi-year national prevention and control plan. This is outlined below:

- Intensified epidemiological surveillance.
- Promoting public awareness to encourage early medical intervention.
- Promoting professional and public awareness to encourage early diagnosis and treatment.
- Prevention of secondary cases by notification, contact tracing and offering prophylactic antibiotics.
- Meningococcal B Immunisation Programme.

The Ministry of Health has agreed on the following key public and professional messages and encourages the use of these messages in the media, to achieve national consistency.

Meningococcal Disease Key Messages (Public)

- If your child is sick – check them often.
 - Do not wait – take action. Doctors' visits are free for children under six.*
 - Meningococcal disease – early treatment saves lives.
 - Children may be seriously ill if they:
 - have a fever
 - refuse drinks or feeds
 - are sleepy or floppy – or harder to wake
 - vomit
 - are crying or unsettled
 - have a rash/spots
 - have a headache.
 - Anyone can get meningococcal disease – though those at greatest risk are children under five and young adults.
 - The MenZB™ vaccine does not provide protection from other strains of meningococcal disease.
 - **IF YOUR CHILD GETS WORSE – TAKE THEM STRAIGHT BACK TO THE DOCTOR.**
- * Note – there may be a change to this policy in the future.

Meningococcal Disease Key Messages (Professionals)

- Meningococcal disease is a killer; early intervention saves lives.
- It is a year-round disease, but cases of meningococcal disease increase during winter and spring.
- Have a high index of suspicion for meningococcal disease.
- Check all skin areas for the presence of a rash.
- Be aware of the febrile child – suspect meningococcal disease.

Meningococcal Disease

Key Messages (Professionals) cont.

- Accurately assess severity of illness – and ensure treatment.
- Give advice to parents/caregivers on checking the child at regular intervals.
- Advise young adults not to remain on their own if they are sick.
- In suspected cases of meningococcal disease start intravenous or intramuscular antibiotic treatment as soon as possible
- Prior to transfer to hospital, practitioners should administer parenteral antibiotics to:
 - all suspected cases of meningococcal disease in whom there is any haemorrhagic rash
 - all other suspected cases for whom the delay in reaching the hospital is likely to be greater than 30 minutes.
- If you do not suspect meningococcal disease:
 - encourage early return
 - plan a review.
- The Meningococcal B Immunisation Programme is completed on 30 June 2006. However, children and young people aged 5–19 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 ten 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.
- The MeNZB™ vaccine does not provide protection against other strains of meningococcal disease eg, A, C, Y, W135. Immunisation is available for these other strains. Note these vaccines are not available on the National Immunisation Schedule. However, they are publicly funded as part of the Pre- and Post-Splenectomy Programme for eligible individuals.
- *Haemophilus influenzae* type b (Hib)/other vaccines do not protect against meningococcal disease.

Appendix 10: Management of Exposure to Varicella During Pregnancy and Care of the Newborn

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Figure 1: Exposure to varicella zoster virus during pregnancy

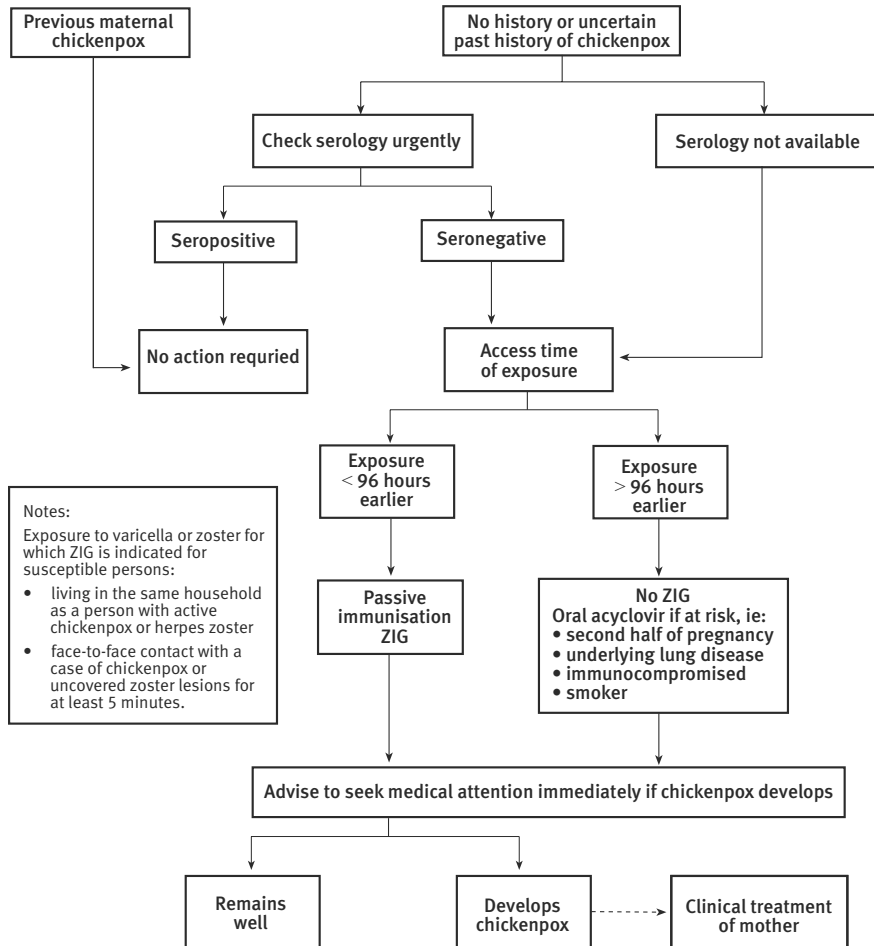


Figure 2: Fetal medicine counselling following varicella zoster in pregnancy

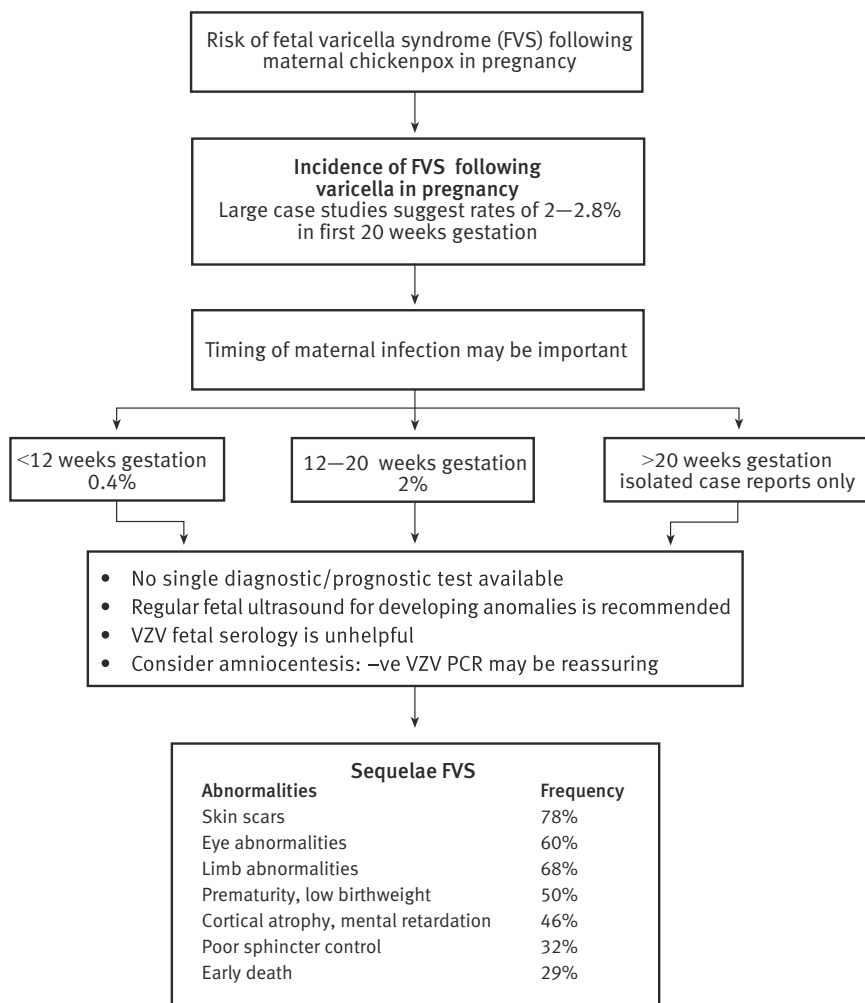
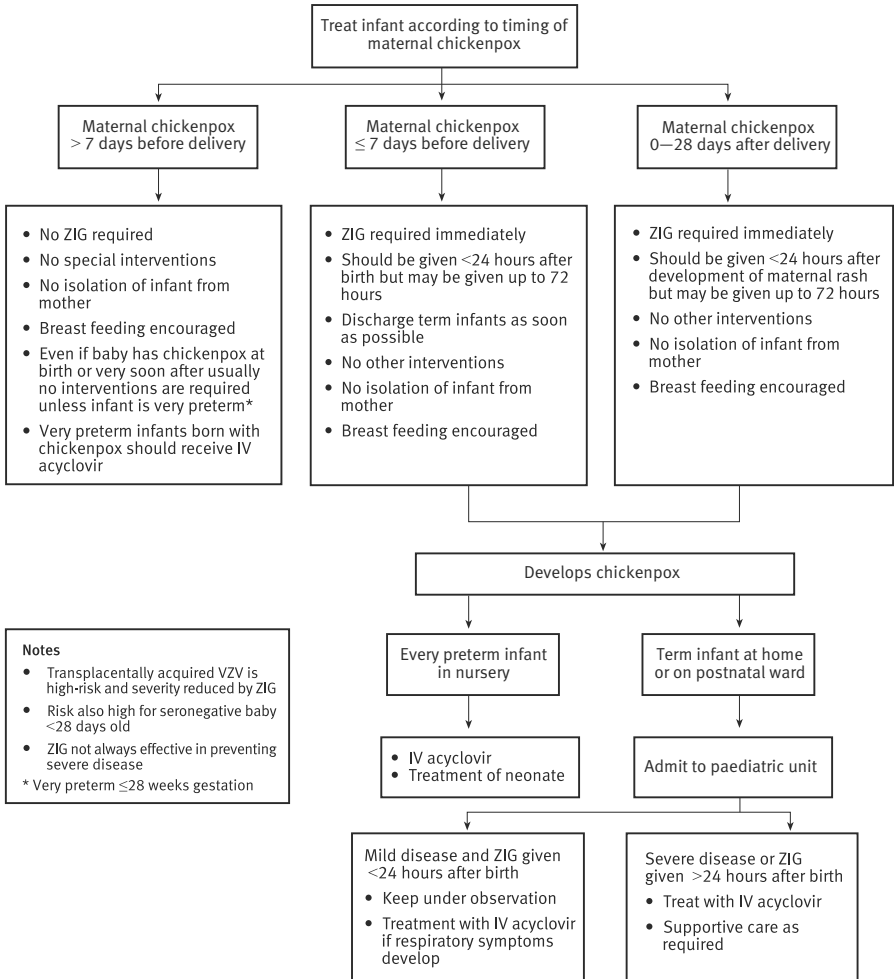


Figure 3: Management of infants from mothers with perinatal varicella zoster



Reference

1 Palasanthiran P, Starr M, Jones C (eds). 2002 *Management of Perinatal Infections*. Sydney: Australasian Society for Infectious Diseases.

Appendix 11: Websites

- New Zealand Ministry of Health (www.moh.govt.nz)
- Medsafe (www.medsafe.govt.nz)
- ESR (www.esr.cri.nz)
- Immunisation Advisory Centre (www.immune.org.nz)
- *The Australian Immunisation Handbook* 8th edition (www.health.gov.au)
- WHO (www.who.int)
- United States (US) Centers for Disease Control and Prevention (www.cdc.gov)
- US National Foundation for Infectious Diseases (www.nfid.org)

Influenza web sites

- National Influenza Strategy Group (www.influenza.org.nz)
- WHO Collaborating Centre for Reference and Research on Influenza, Melbourne, Australia (www.influenzacentre.org)
- WHO Epidemic and Pandemic Alert Response - Influenza (www.who.int/csr/disease/influenza/en/index.html)

Information on national influenza centres and vaccine manufacturers around the world, as well as links to reports of the Weekly Epidemiological Record, which are also downloadable as pdf files.

- FluNet (<http://oms.b3e.jussieu.fr/>)

WHO's geographical information system for monitoring global influenza activity. Recent activity is featured in a series of animated maps and news reports, and listings of participating centres, influenza vaccine manufacturers, and related websites are provided.

- US Centers for Disease Control and Prevention (www.cdc.gov/flu)

Information for the general public and health professionals on influenza viruses, vaccines, and antiviral agents, and on the clinical features and natural history of human influenza.