Measles

Te Mana Ora Protocol

This protocol is based on the Ministry of Health Communicable Disease Control Manual[1], the Ministry of Health's Immunisation Handbook[2], and the Measles Case and Contact Management Chart - Effective 18 October 2023_V1.4.pdf (available in Teams).

Recent changes are in **blue**. Te Mana Ora-specific content is in **green**.

- Protocol users should **document** their response to **action points,** marked throughout with this arrow.

Contents

1. Associated documents

Te Whatu Ora Waitaha Māori health policy

Te Whatu Ora Waitaha tikanga policy

Te Whatu Ora Waitaha interpreter procedure

Te Mana Ora privacy/nohotapu policy

Case report form, letters:

K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Measles\FormsStdLettersQuest

Ministry online information:

https://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/measles

Measles Case and Contact Management Chart - Effective 18 October 2023_V1.4.pdf in the Ministry of Health Teams document library (requires Ministry of Health Teams access)

Border Health Protocol Christchurch International Airport Limited:

http://cdhbintranet/communitypublichealth/cphpoliciesandprocedures/Protection%20Team/Home.aspx

2. The Illness

Measles is the most common vaccine-preventable cause of death among children throughout the world. See the Immunisation Handbook for a summary of the global burden of disease and WHO's measles elimination strategy.

In 2017, New Zealand was verified by the World Health Organization as having eliminated endemic measles. It has maintained elimination since then. This means that there has not been sustained transmission of measles for longer than a year in New Zealand since 2014. However, measles is often imported into New Zealand following international travel. New Zealand has continued to experience outbreaks of measles in recent decades. This is due to historically low immunisation rates and therefore insufficient levels of immunity across the population to prevent community transmission. Prevention of measles outbreaks relies on improving coverage with measles-mumps-rubella (MMR) vaccination.[1]

Epidemiology in New Zealand

Measles vaccine was introduced in New Zealand in 1969 and moved to a two-dose schedule (as a combined MMR vaccine) in 1992. Measles became a notifiable disease in 1996. The two-dose schedule at ages 15 months and 4 years was introduced in 2001 (see the Immunisation Handbook for more information about the history of the Schedule) and was changed in 2020 to 12 months and 15 months following the 2019 outbreaks.[2]

Historical holes in coverage, due to a combination of issues including historically low immunisation coverage in the childhood programme, unfounded vaccine safety concerns at the turn of the 21st century, changes to the schedule for MMR dose 2 from age 11 years to 4 years, and compromised vaccine due to lack of adequate cold chain processes prior to 2004 have meant that young adults and adolescents (ages 15–30 years), in particular, are under immunised against measles[2]

Prior to the introduction of two-dose MMR schedule, measles epidemics occurred in 1991 (the number of cases was estimated to be in the tens of thousands) and 1997 (when 2,169 cases were identified). In 2019, nine outbreaks occurred, six were linked to imported cases from the Philippines, Japan, Thailand, Australia and Singapore. In 2019, 2,213 cases were notified, of which 775 were hospitalised (ESR, 8 June 2020). The worst affected region was Counties Manukau DHB, which had 1,174 cases, many of whom were of Māori and Pacific ethnicity, children too young to be immunised and unimmunised young adults.[2]

Importation of measles by non-immune people who had travelled overseas was also linked to the smaller measles outbreaks in New Zealand in 2009, 2011, 2014 and 2016.[2]

To eliminate measles epidemics, modelling suggests that New Zealand needs to achieve a coverage level of 90 percent or greater for both doses of MMR. If this coverage level is achieved and maintained in those aged 12 months to 50 years, elimination of measles can be maintained. In quarter ending 31 December 2019, the 5-year-old immunisation coverage rate (i.e., fully immunised with two doses of MMR) was 89 percent – nearing a target of 90 percent.[2]

For details of measles notifications, refer to the most recent measles and notifiable disease reports from ESR (available on the Public Health Surveillance website).

Table 1: Te Mana Ora cases by district, last 13 years

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Te Whatu Ora Waitaha	168		17	4	1	1	1		1	13	44		
Te Whatu Ora South Canterbury	1		1						1		2		
Te Whatu Ora Te Tai o Poutini | West Coast	7	1		1									
TOTAL	176	1	18	5	1	1	1		2	13	46	0	0

Table 2: Te Mana Ora cases by ethnicity, last 13 years

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
European	152	1	14	4		1	1		2	12	34		
Maori	16		1	1	1						7		
Pacific	3		2								3		
Asian	5									1	1		
Other													
Unknown			1								1		
TOTAL	176	1	18	5	1	1	1		2	13	46	0	0

Clinical description

Measles is transmitted by airborne spread as well as direct contact with infectious droplets. Measles is one of the most highly communicable of all infectious diseases, with an approximate basic reproductive number of 12–18 in developed countries. There is a prodromal phase of two to four days with fever, conjunctivitis, coryza and Koplik's spots on the buccal mucosa. The characteristic maculopapular rash appears first behind the ears on the third to seventh day, spreads over three to four days from the head and face, over the trunk to the extremities. It lasts for up to one week. The patient is most unwell during the first day or two after the appearance of the rash.[2]

Complications are common, occurring in 10 percent of cases and include otitis media, pneumonia, croup and diarrhoea. Encephalitis has been reported in 1 in every 1000 cases, of whom some 15 percent die and a further 25–35 percent are left with permanent neurological damage. Other complications of measles include bronchiolitis, sinusitis, myocarditis, corneal ulceration, mesenteric adenitis, hepatitis and immune thrombocytopenic purpura (ITP or thrombocytopenia).

Measles infection causes acute immune suppression of the cellular and humoral immunity that leads to the depletion of immunological memory and antibody repertoire. This loss in immunity increases the long-term risk of further infections requiring medical treatment. Although there are potential implications for long term effects on immune memory of individuals who have had measles, currently, there is no evidence to recommend reimmunisation. [2]

Sub-acute sclerosing panencephalitis (SSPE) is a rare but fatal degenerative central nervous system disease resulting from persistent measles virus infection. It typically occurs 7–11 years after wild-type measles infection, at an estimated rate of 4–11 per 100,000 measles cases with higher incidence if measles occurs before 2 years of age. Recent literature shows that SSPE is under-reported or under-diagnosed in the US. Cases have occurred following undiagnosed measles or clinically mild disease, particularly when immunisation coverage has been low or where infants too young to have been immunised have acquired the infection while travelling to endemic regions. [2]

The case fatality rate for reported cases of measles in the US is 1–3 per 1000. Measles is particularly severe in the malnourished and in patients with defective cell-mediated immunity, who may develop giant cell pneumonia or encephalitis without evidence of rash and have a much higher case fatality rate. Measles during pregnancy can cause miscarriage, stillbirth and preterm delivery.[2]

Measles is also serious in healthy children: over half of all the children who died from measles in the UK between 1970 and 1983 were previously healthy. No other conditions were reported as contributing to the death of seven people who died from measles in the 1991 New Zealand epidemic.[2]

Incubation

To onset of **fever:** about 10 days but may be 7–18 days from exposure.

To onset of **rash:** about 14 days but may be 7–21 days from exposure.

The incubation period may be longer in the immune suppressed or those given immunoglobulin after exposure.

Transmission

Airborne spread or by **direct contact** with nasal or throat secretions of cases. The measles virus has a short survival time (less than 2 hours) and is rapidly inactivated by heat, sunlight and pH extremes.

Communicability

From **4 full days before to 4 full days after onset of rash** (count the day of rash onset as day 0), i.e. a total of 9 days.

Prevention

Prevention in the community is achieved by 'herd' immunity when a >95% immunisation coverage of the population is achieved. Disease in contacts can be prevented by vaccination of susceptible contacts with MMR within 72 hours of exposure or passive immunisation with immunoglobulin if 3-6 days after exposure. Other public health preventive measures include isolation of cases and exclusion of susceptible contacts from high-risk settings.

3. Notification

Health practitioners or laboratories must notify on suspicion. Notification should not await confirmation.

4. Case definition

Clinical criteria

An illness characterised by **all** of the following:

- **cough** and/or **coryza** and/or **conjunctivitis** and/or **Koplik's spots** present at the time of rash onset.
- **fever** (at least 38ºC if measured) present at the time of rash onset.
- generalised maculopapular **rash**, starting on the head and neck and then spreading down and out and fading.

Prodrome: 2-4 days with fever, conjunctivitis, coryza and Koplik spots.

Case classification

Under investigation: A case which has been notified but information is not yet available to classify it as probable or confirmed.

Probable: A clinically compatible illness where there is a high index of suspicion[i] of disease, and either laboratory suggestive evidence[ii] or laboratory confirmatory testing is inconclusive or cannot be performed.

Confirmed: A clinically compatible illness that is laboratory confirmed[ii] or epidemiologically linked to a confirmed case.

Not a case: A case that has been investigated and subsequently has been shown not to meet the case definition.

An **outbreak** has occurred if one case is identified and confirmed in an **institution** (an early childhood centre, school, university hostel etc.).

Epidemic: Likely if more than one outbreak in more than one institution or neighbourhood in an area.

5. Laboratory testing

Nucleic acid amplification tests (NAAT), e.g., **PCR**, are preferred for diagnosis. Nasopharyngeal or oropharyngeal samples have the highest yield particularly in the seven days after the onset of rash. **Urine** testing can be useful for those presenting **more than three weeks after onset of rash**. Submitting **both a throat or nasopharyngeal swab and a urine sample** provides the best yield if sampling is **delayed**.

Definitive laboratory evidence for a confirmed case is:

- A positive NAAT of a non-vaccine strain.

[i] A high index of suspicion is if someone has a clinically compatible illness, is susceptible to measles (not immune/immunised) and has been in an area with known measles cases (either in Aotearoa New Zealand or overseas) during the incubation period OR when there is an epidemiological link to a probable case.
[ii] See Laboratory Testing section below.

Suggestive laboratory evidence is:

- IgG seroconversion between paired sera tested in parallel.
- IgM detection in an unvaccinated person.

The use of **serology** in the investigation of a suspected measles case is **only recommended in cases where NAAT is not possible AND if requested by a medical officer of health after discussion with a clinical microbiologist**. If the clinician is unable to take a blood sample at the time, sampling logistics should be discussed with Southern Community Laboratories, who may arrange a home visit by a laboratory phlebotomist. Contact for SCL is the Head of Department, Patient Services, SCL (03) 359 0919 or 027 278 6521.

Any positive IgM result should be discussed with a clinical microbiologist.

Genotyping information is useful for epidemiology and outbreak investigation. Genotyping via sequencing can be performed on measles-positive NAAT samples at the National Measles and Rubella Reference Laboratory (NMRL) at Canterbury Health Laboratories (CHL), Christchurch. Genotyping should be performed on all:

- New importations
- Index cases and the first 5-10 cases of an outbreak/cluster. If outbreaks continue, then additional samples should be genotyped on a monthly basis
- Sporadic cases that are not epidemiologically linked to other genotyped cases or clusters, and
- All samples requested by the medical officer of health investigating the outbreak.

Samples from patients with **recent measles vaccination history** can also be tested for the presence of the measles vaccine strain at CHL, SCL Dunedin and LabPlus in Auckland via a **vaccine-strain-specific PCR assay**.

All requests for NAAT for measles and samples referred for genotyping or testing for the presence of the measles vaccine strain should have recent vaccination status included on the request form.

Sample requirements:

For genotyping via sequencing and vaccine-strain-specific PCR a minimum of 1 mL of primary patient sample (ideally nasopharyngeal swab sample in universal transport medium) should be sent to the respective laboratory

In addition, 1 mL of all positive samples should be sent to the NMRL at CHL if possible.

If this is not possible during an outbreak, with high sample numbers, then at least 10 positive samples per week (and all those samples that require genotyping) should be forwarded to the NMRL at CHL.

Note: laboratory testing is not always required for contacts of known cases to be classified as confirmed cases.

Interpreting serology

Serology is most useful for detecting IgG in those who have an **unclear vaccination history**, although commercial assays do not detect all vaccine-induced immunity. There are limited circumstances where IgG testing may be appropriate to test **exposed contacts** to determine if they are immune, such as:

- Immunocompromised people or pregnant women for whom normal human immunoglobulin (NHIG) may be recommended if they are known to be susceptible.
- Healthcare workers for whom it is too late for post-exposure prophylaxis to be effective.
- People who need to be excluded from critical duties unless they have demonstrable immunity to measles.
- Seeking confirmation of immune status due to unknown vaccination status or partially vaccinated individuals (to support decisions regarding restriction requirements or necessity for a booster vaccination).

Limitations

IgM serology is often unreliable, particularly in previously vaccinated people. Recent vaccination may result in an IgM response, and previously vaccinated but infected persons may not develop an IgM response. IgM serology confirmed by the reference laboratory may occasionally help in late presentations and should be interpreted in discussion with a clinical microbiologist.

After measles vaccination, measles IgM is produced as part of the seroconversion and can be detected for 1–2 months. Serologically diagnosed cases who have received a measles-containing vaccine 8 days to 6 weeks before

testing should not be classified as confirmed measles cases unless they are also linked epidemiologically to another confirmed case before vaccination.

Measles IgG detected without IgM within 1–2 days of a rash strongly suggests prior immunity and that the rash is more likely due to causes other than measles.

When there are few or no true measles cases in a region, the **positive predictive value** of diagnostic tests is decreased. False-positive results of IgM tests can also occur as a result of testing suspected measles cases with exanthemata caused by Parvovirus B19, rubella and Human herpesvirus 6, among others. In addition, as countries maintain high levels of vaccination activity and increased surveillance of rash and fever, the notification of febrile rash illness in recently vaccinated people can be anticipated. Thus, managers in the measles elimination programme must be prepared to address the interpretation of a positive result of a laboratory test for measles IgM when clinical and epidemiological data may indicate that the case is not measles.[iii]

6. Cultural and social context

Cultural, social, work and home environments affect any person's risk of contracting a communicable disease, the likely impact of that disease on them, and their likelihood of passing the infection on others. Keep these factors in mind at every point of your investigation and follow-up.

- Request an **interpreter** if needed.
- **Consider** the potential impact of cultural, social, work or home factors on a person or family's ability or willingness to provide information and/or follow public health advice.
- **Tailor your advice** to the situation.
- **Seek advice yourself** if unsure. Talk to:
  - Te Mana Ora Māori Relationships Manager or Pacific Relationships Manager or Communicable Diseases Manager for advice on multilingual staff at Te Mana Ora, and community and primary care support people or agencies.
  - Ngā Ratonga Hauora Māori for Māori patients at Christchurch Hospital or Christchurch Women's hospital.
- If appropriate, and with the case and/or contact's permission, seek the **assistance** of family or other community members, community leaders, and/or support agencies if required.

7. Management of case

Investigation

- **Action immediately**
- If the notification is **received from a laboratory, discuss it with the patient's doctor** to obtain the clinical history and to ensure that the patient has been informed of their diagnosis.
- Discuss notification with the **medical officer of health**, who must **advise head office** via 0800 GET MOH**.**
- Request notifying doctor to obtain **laboratory confirmation,** if possible, for sporadic cases. Contact the laboratory (Virology: ext. 80356, Serology: ext. 80416) for urgent tests or results. The MOoH can contact on call microbiology registrar to arrange weekend testing if required.
  (Note that testing may not be necessary or appropriate for cases with an epidemiological link to a confirmed case in outbreak situations.)
- eNotifications should be processed in EpiSurv and then the 'case event' in NCTS processed into a 'case' regardless of status (under investigation, confirmed, not a case, etc). The principal investigator should be the owner of the case in NCTS.
- Check that the **following information** is obtained as soon as possible:
  - the **date of onset** (important to establish duration of communicability)
  - any **immune suppression** (may be no rash)
  - **contact** with a possible, probable or confirmed case

[iii] Dietz, V., et al., The laboratory confirmation of suspected measles cases in settings of low measles transmission: conclusions from the experience in the Americas. Bull World Health Organ, 2004. 82(11): p. 852-7.

  - history of **prior MMR** vaccination (the vaccine may cause a fever and non-infectious rash around 6-12 days after immunisation)
  - history of **travel.**
- Speak with the case/parent for **further details including possible contacts**, on the same day as notification.
- If the notification is of a **suspect case**, **discuss** again with the MOoH and **decide** whether to initiate contact follow-up and **Active case finding** immediately or to await laboratory confirmation.
- Consider establishing an **incident management team**.

On the West Coast, the Public Health Nurses follow up measles notifications.

Active case finding

- **Enquire** about illness in anyone else who may have been exposed to the **same source** that the case acquired the infection from.
- **Alert institutions or settings** where exposure may have occurred and **provide them with information** about measles to circulate.
- **Alert health professionals and laboratories** in areas where the case may have acquired the infection or was infectious and ask them to notify all cases to the public health unit promptly.
- Consider a **media alert** to assist in finding cases.
- Request members of the community to **present early** if signs/symptoms develop.

Restriction

- **Isolate** (i.e., stay home unless seeking health care) for **at least four days after the appearance of the rash**. If seeking health care call ahead to inform that they are infectious with measles.
- Discuss any **barriers or supports** that might be required for effective isolation and **help** arrange support if required (discuss with Te Mana Ora manager).
- Complete regular **monitoring** of isolation by phone call, unless medical officer of health determines otherwise.
- **Release** from isolation on day 5 (4 full days after onset of rash).
- If the case refuses to isolate the medical officer of health may consider issuing a **public health direction**.
- In health care facilities, **airborne precautions** should be taken until 4 days after the appearance of the rash.
- For managing the privacy and medico-legal situation of an **infectious passenger intending to travel** refer to Te Mana Ora protocol 'Border Health Protocols for a Public Health Response to Public Health Risks at Christchurch International Airport Limited', Part Two: p.15, Notes for Response to Communicable Disease: http://cdhbintranet/communitypublichealth/cphpoliciesandprocedures/Protection%20Team/Home.aspx

Treatment

Treatment is supportive. Vitamin A treatment in hospital at the time of measles infection can reduce the risk of fatality and eye complications and should be considered particularly in cases with severe or complicated measles, immunodeficiency, malabsorption, malnutrition or documented vitamin A deficiency.

Counselling

- The case or parents/caregivers should be **advised of the nature of the infection and its mode of transmission.** A Ministry of Health fact sheet is available: https://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/measles **.**
- If **other vaccinations** are incomplete, recommend the case catches up once they are through the acute illness.

8. Management of contacts

Contact management advice is included in the Ministry of Health's Communicable Disease Control Manual, the Immunisation Handbook, the Measles Case and Contact Management Chart - Effective 18 October 2023_V1.4.pdf in the Ministry of Health Teams document library (requires Ministry of Health Teams access), and a Ministry of Health online advice sheet.

Definitions

Contact

Any person who has been **in a confined space** with an infectious case or has spent time in that space **within one hour** after it has been vacated by the case.

Confined settings may include early childhood services, classrooms, households, transportation, waiting rooms, consultations rooms, indoor occupational or social settings. Some judgement may be required by the local medical officer of health, noting that measles is highly infectious, and this should be taken into account when determining contacts and public health action. However, if appropriate control measures (eg, mask wearing, ventilation, and other infection prevention and control measures) have been in place, a medical officer of health may use their discretion in determining whether a person is a contact or not.

Close contacts who are at high risk of severe disease include the following groups; infants under 12 months of age, immunosuppressed people; non-immune pregnant people and for 6 weeks post-partum; non-immune children aged <5 years.

Susceptible contact

Any contact who does not have acceptable presumptive evidence of immunity (see below).

Acceptable presumptive evidence of immunity:

- Date of birth before **1 January 1969** (presumed to be immune following exposure to the wild virus)
- Documentation of **vaccination**.
  - For children aged 11 months[iv] to under 15 months: documentation of at least one dose of measles-containing vaccine from age 11 months.
  - For individuals aged 15 months and older: documentation of two doses of measles-containing vaccine, given at least one month apart and given after 11 months of age. This can include the contact's second measles-containing vaccine after exposure to an infectious case as long as it has been given within 72 hours of initial exposure.
- Documentation to **confirm immunity**, e.g., serology.
- Documentation of **previous infection**, e.g., medical records.

The National Investigation Centre (NIC) Triage team have established a measles "Evidence of Immunity" workstream, which provides public health services with the option to refer contacts to the NIC to find evidence of measles immunity (by them accessing NIR, EpiSurv, and contacting GPs).

- Contacts **requiring evidence of immunity** to be sought should be **referred to the NIC** through the Task function on NCTS. If large groups of contacts are being referred to the NIC and further support is required, email NIC.triage@health.govt.nz.

Testing contacts for immunity to measles (IgG) is not generally recommended because of the cost and the time taken for the result to be known. However, Te Mana Ora staff **may offer serological testing** where this may affect decisions about quarantine. Sampling logistics should be discussed with Southern Community Laboratories, who may arrange a home visit by a laboratory phlebotomist. Contact for SCL is the Head of Department, Patient Services, SCL (03) 3590919 or 0272786521.

If in doubt, vaccinate as there are no undue effects from vaccinating an individual who is immune.

Casual contacts

"Casual contact" is a new category in the Measles Case and Contact Management Chart - Effective 18 October 2023_V1.4.pdf, defined as "Anyone who has attended an event in an indoor setting where at least some (but not all) of the individuals who attended are likely to have had sufficient contact with the infectious measles case to put them at risk of infection." This contact category can be used where either those who attended are unknown, or their level of exposure to the infectious case cannot be determined. Casual contacts will not be actively managed by public health.

[iv] In July 2023 the Immunisation Handbook was updated. MMR given from 11 months of age may now be counted as MMR1. However, as of December 2023 neither the Communicable Disease Control Manual nor the Measles Contact Management Chart have been updated to reflect this advice.

Investigation

- Use **NCTS** to manage cases and contacts.
- **Identify** all possible exposure settings (household and visitors, social, health care, workplace, school/ECEC, sports and clubs, public places etc) via interviews with case / caregivers.
- Seek **additional details** of exposures from a **contact person** in each setting as required.
- **Discuss** each setting with the MOoH and team leader and **decide** whether public health staff will follow up contacts **individually**, provide advice for a **contact person** in the setting to distribute, and/or provide **public advice** via media or social media. Consider:
  - The likely infectivity of the case (partially immunised cases may be less infectious)
  - Degree of exposure (physical proximity, duration)
  - Known presence of people at high risk (unimmunised, pregnant, immunosuppressed)
  - Ease or difficulty of contacting people exposed in that setting
  - The stage of the outbreak
  - Public health resources available

Restriction

- Advise susceptible contacts to **quarantine** (i.e., stay home unless seeking health care) from **seven days after first exposure** to an infectious case until **14 full days after last exposure** to an infectious case. That is, if there has been a single exposure, quarantine is for seven days (from 7 until 14 days after exposure). However, if exposure has been for more than one day (potentially exposure to several cases with differing infectious periods), then quarantine will be for more than seven days.
  Quarantine period **will end on Day 18 if given human normal immunoglobulin (HNIG) or intravenous immunoglobulin (IVIG)** as HNIG/IVIG may extend the incubation period.
  However, partially vaccinated contacts (those who have only received one dose of MMR):
  - Will not be requested to quarantine, but
  - Should be **excluded from higher risk settings**[v], unless the setting is one where all others present have acceptable presumptive evidence of immunity, and
  - Should be advised to **avoid contact with those at risk of severe disease**, such as infants under 12 months, non-immune pregnant people, women in the first 6 weeks post-partum, non-immune children under 5, and individuals who are immunosuppressed, and
  - Should wear a **mask** if in close contact with people outside the household, and
  - The contact will continue to **be monitored for signs and symptoms** consistent with measles for at least 14 days, and
  - A **second MMR** needs to be administered as soon as possible (but at least four weeks from the first dose).
- Contacts who have previously received one documented dose of MMR and then receive their **second dose of MMR within 72 hours after first exposure**, are **not considered susceptible** and can go back to school or work.
- The medical officer of health should consider whether it is necessary to **exclude children who are contacts from early childhood services** using the Education (Early Childhood Centres) Regulations 1998.

Further information on post exposure MMR vaccination and quarantine/exclusion is available at Post-exposure MMR vaccination and exclusion.

Non-susceptible contacts (see 'Acceptable presumptive evidence of immunity' above) need **no restriction**.

- Discuss any **barriers or supports** that might be required for effective quarantine and **help** arrange support if required (discuss with Te Mana Ora manager).
- Provide a **letter** (either directly to each contact or via a contact person for an exposure setting) summarising quarantine advice, including dates, and how to seek support. Sample letters are in this folder: K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Measles\FormsStdLettersQuest

[v] Higher risk settings include early childhood education centres, healthcare, and other settings where there may be high levels of contact and with susceptible people who may be more prone to developing severe disease if infected.

- In high-risk situations the MOoH may consider issuing **Health Act directions** to individuals requiring quarantine.
- Where resources permit, **remain in contact** with quarantined individuals and:
    - enquire regularly about symptoms,
    - check about support needs,
    - ask about compliance with quarantine; and
    - provide a letter of release/thanks at the end of the quarantine period.

Prophylaxis

MMR Vaccination

A single dose of MMR when given to an unvaccinated person within 72 hours of first contact with an infectious person may reduce the risk of developing disease as post exposure prophylaxis. If there is doubt about vaccination status, MMR should still be given. MMR will not exacerbate the symptoms of measles if a person is already incubating the disease, but in these situations, any measles-like illness occurring shortly after vaccination is likely to be due to infection.

If MMR is not given within 72 hours of first exposure, it should still be offered at any later interval to provide protection from future exposures, unless the vaccine is contraindicated. (Note that vaccination may have to be delayed while a contact is in quarantine, and that MMR availability may be affected by outbreaks).

In an outbreak, the use of MMR for infants aged 6–11 months should be considered. If MMR0 is vaccine is given to an infant aged under 11 months, two more doses are still required from age 11 months and at least four weeks apart. This is because the seroconversion rate is lower when MMR is administered to an infant aged under 11 months. Similarly, to optimise early protection, toddlers should be given both doses of MMR four weeks apart.

Human normal immunoglobulin prophylaxis for contacts

Human normal immunoglobulin (HNIG; Normal Immunoglobulin-VF) is recommended for measles-susceptible individuals in whom the **vaccine is contraindicated** (see Immunisation Handbook) and susceptible **pregnant** contacts. For these individuals, HNIG is given to attenuate disease and should be given **as soon as possible**, up to a **maximum of six days** after exposure. All other susceptible contacts should be offered MMR as post-exposure prophylaxis (as described above). HNIG provides no benefit to those who are already exhibiting symptoms of measles.

HNIG may be recommended for the following contacts of measles cases as soon as possible and up to six days after exposure:

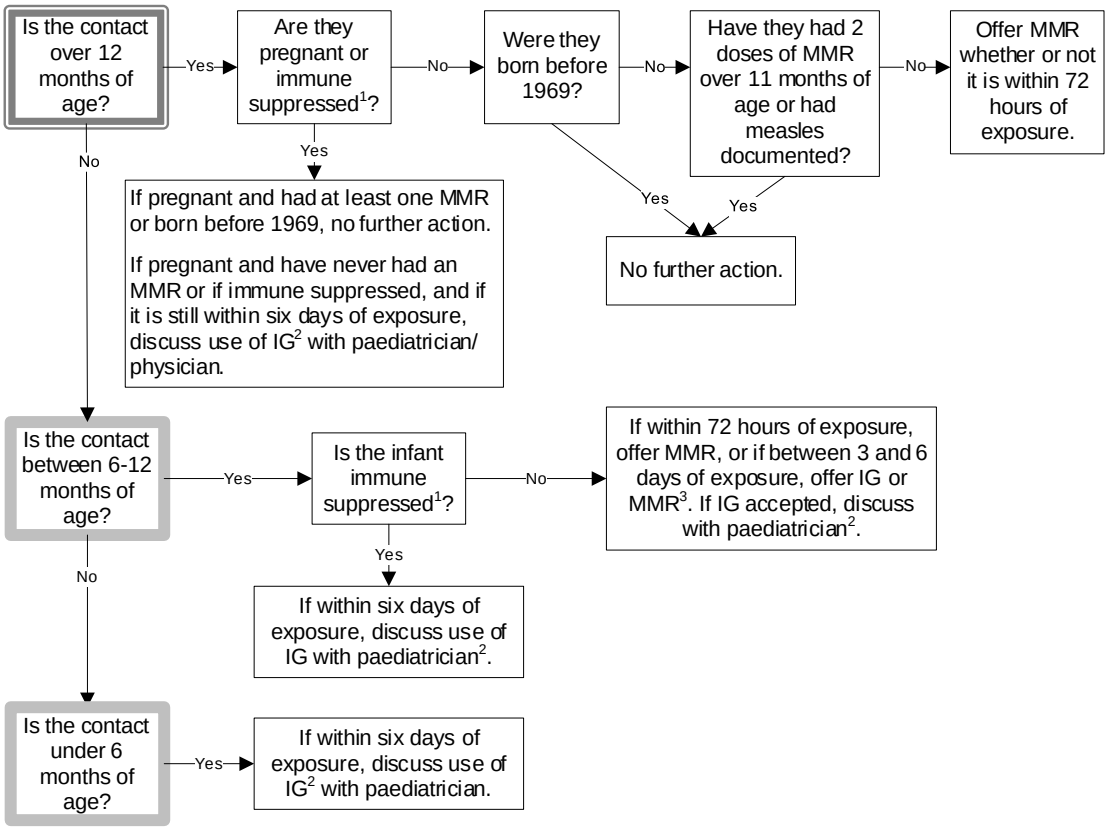
- immunocompromised or immune-deficient people
- susceptible pregnant women
- immune-competent infants aged under 6 months: because maternal antibody wanes in the first six months of life, evidence of maternal vaccination status or serology tests may not predict protection for these infants. Maternal serology may be helpful for neonates. The role of an infant measles IgG test is unclear but may be helpful if available rapidly. Discuss use of HNIG for these infants with a paediatrician
- immune-competent children aged between 6 and 12 months, who are outside the 72-hour exposure window for MMR vaccination
- infants born prematurely <28 weeks' gestation are considered non-immune irrespective of maternal immune status.

For further details for infants under 6 months and immunocompromised children refer to the Starship Child Health guidelines.

- For susceptible contacts**, consider the use of MMR vaccine, human normal immunoglobulin (HNIG) or intravenous immunoglobulin (IVIG).** Refer to the flow diagram **in Figure 1** and accompanying footnotes for which contacts are to receive MMR or immunoglobulin.
- If MMR is advised, **fax the MMR request form** to the Moorhouse Medical Centre, see Moorhouse medical Flowchart: http://cdhbintranet/communitypublichealth/cphpoliciesandprocedures/Documents/Forms/M.aspx
  or the patient's GP, see General Practice Flowchart:
  https://cdhbintranet.cdhb.health.nz/communitypublichealth/cphpoliciesandprocedures/Documents/Forms/G.aspx

- If immunoglobulin (IG) is advised **the MOoH or GP is to discuss the contact with an infectious disease physician or a paediatrician and** make a referral to them. In South Canterbury and West Coast, the MOoH may need to make alternative referral arrangements, and the HPO may need to arrange for their local blood bank to obtain IG. The Immunisation Handbook measles chapter includes IG instructions and dosage.

Figure 1: public health guidelines for the management of measles contacts



Notes:

1. If a contact is immune suppressed, give immunoglobulin (IG) regardless of vaccination status
2. Subsequently requires follow up to review when it may be appropriate to give MMR for long term measles immunity.
3. To be fully vaccinated a person requires two MMR over 11 months of age, at least 1 month apart.

- MMR= measles, mumps and rubella vaccination. IG = immunoglobulin.
- IG is a blood derived product and parental consent is required for it to be given. Consent forms are available from the Ministry of Health and Transfusion Medicine (Blood Bank).
- IG should not be given sooner than 3 weeks after MMR.
- MMR should not be given sooner than 5 months after IG.

Casual contacts

Casual contacts (see definition above) will not be actively managed by public health. They may be advised to:

- Check their own immunity
- Seek advice about post-exposure MMR if non-immune
- Self-monitor for symptoms for 14 days and if any measles symptoms develop self-isolate and contact Healthline or a healthcare provider for advice
- If immunosuppressed, pregnant, or post-partum, inform their health care provider that they are a casual contact.

Counselling

- **Advise** all contacts to **seek early medical attention** if symptoms develop and take precautions so as not to infect others. It is important they **telephone** and alert the health provider before attending their medical centre to prevent the risk of spreading the virus in health care settings.
- **Provide information to the institution/family** on the disease risk and ensure all caregivers are aware of the disease and receive advice to ensure all unimmunised children receive MMR. A Ministry of Health Fact Sheet is available: https://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/measles

Follow-up of passengers after in-transit exposure

If a case of disease is identified prior to the arrival of an international flight:

- Follow the **ill traveller protocol** (i.e. flow diagram 1.1 of the Border Health Airport Protocol: http://cdhbintranet/communitypublichealth/cphpoliciesandprocedures/Documents/Forms/B.aspx
- If the MOoH has a high index of suspicion that the case is likely to be measles, then **Contact tracing** (see details below) should be carried out on arrival.
- passengers and crew **not considered as contacts** should be provided with the following information:
    - the need to check whether they are fully immunised or immune against measles, and to arrange MMR catch-up if they are not, and
    - the Healthline number (0800 611 116) if they have questions or start developing symptoms.

If a suspected case of measles has travelled on a flight or other long-haul transit (bus, train, etc) during the infectious period and is detected after the arrival of the flight:

- as soon as the Medical Officer of Health has a high index of suspicion that the suspected case is likely to be measles, or on confirmation of the case, consider:
    - Issuing a general media alert
    - Direct email and/or SMS messaging to all passengers and crew
    - Contact tracing

General media alert

A media alert lets passengers and crew know as soon as possible that they may have been infected on the identified flight/journey and what they need to do. The media alert may also help to raise awareness within the health sector. The alert should be issued as quickly as possible, and include the following information:

- Affected flight number etc, date/time, origin and destination
- A statement about the contagious measles case on the journey, and the possibility that susceptible passengers and crew members may have been infected
- The need for all passengers and crew to check whether they are fully immunised or immune against measles, and to arrange MMR catch-up if they are not
- Healthline number (0800 611 116) if they have questions or start developing symptoms

Direct email and/or SMS messaging to all passengers and crew

Direct email and/or SMS messaging to passengers and crew complements the media alert and should be information similar to the media alert. If contact tracing is carried out, then this should also be mentioned in the message. Establish a contact person at the airline or other transport company and liaise with them to issue the email/SMS.

Contact tracing

The effectiveness of post-flight contact tracing has been questioned. However, given that New Zealand has experienced sustained measles outbreaks linked to measles importations in recent years, contact tracing is still recommended on international flights, as soon as possible up to 14 days after the flight.

- For **international flights**, follow the instructions in the Border Health Airport Protocol: https://cdhbintranet.cdhb.health.nz/communitypublichealth/cphpoliciesandprocedures/Documents/Forms/B.aspx
- For other types of transit (domestic flights, bus, train, etc), liaise with the transport provider, and follow up as per
- **Management of contacts** above.
- Provide contacts with advice about **Restriction** and **Prophylaxis** as per the sections above**.**

9. Outbreak Control

If there is a significant increase in the number of epi-linked and sporadic cases, Te Mana Ora response may need to move from full public health follow-up of all notified cases to targeted follow-up plus public health support of community-wide measures. Any transition will require time and preparation. The following strategies should be discussed promptly with the local Outbreak Committee, other Te Whatu Ora stakeholders, primary care representatives, ESR, and national NPHS teams:

- **Reducing** the extent of public health case and contact **follow-up** (e.g. limiting follow-up to household/family and high-risk contacts and settings, in conjunction with increased care and follow-up through primary care)
- Change of **surveillance**, encouraging notification based on clinical criteria and reduced emphasis on laboratory confirmation and laboratory surveillance.
- Providing **information and advice to health professionals** on the situation and on public health measures including infection control
- **Communication with the public** on the measles situation, and promoting immunisation
- Improving **population immunity** through:
  - Active recall of children eligible for MMR1 through primary care.
  - Increasing outreach immunisation for children who have missed MMR1 and are not able to be reached through existing primary care services.
  - Bringing the scheduled 15-month immunisations (MMR1 and Hib) forward to 12 months (discussion with national NPHS teams needed).
  - Additional MMR dose for infants aged 9-12 months (=MMR0 if given before age 11 months), delivered through primary care (discussion with Ministry of Health needed). MMR1 will need to be given at least 4 weeks after MMR0.
  - Bringing MMR2 forward, as far forward as 4 weeks after MMR1 (discussion with Ministry of Health needed).
  - MMR catch-up programmes in primary schools, ECECs, and other community settings.
  - MMR catch-up for adolescents and adults who have had only 1 dose of measles vaccine – encouraged through primary care (vaccine is free).

An interim **delegation model** has been developed to facilitate management of measles outbreak workload across public health services, and a **national Measles Response Plan** is under development. They are available in the Ministry of Health's Teams document library.

10. Other control measures

Infection control

Ensure that the attending medical practitioner and laboratory collection rooms understand the importance of **prompt isolation** of a suspected case within their health care facility and the need to **leave the consultation/examination room vacant for one hour** after the suspected case has left.

Visits of cases and contacts (who may be entering the infectious period) to laboratory collection rooms should be planned ahead by telephone.

Health education

Measles vaccine is recommended as MMR at age 12 and 15 months. Two doses of measles vaccine are recommended because nearly all the approximately 5 percent who fail to be protected by the first dose will be protected by the second. The second dose of measles vaccine can be given as soon as four weeks after the first dose.

Stress the importance of **two doses of measles vaccination** for all children and encourage early childhood services to keep up-to-date **immunisation records** of attending children.

Where dose/s have been delayed or missed, **catch-up vaccination** is recommended. This applies to anyone born from 1 January 1969.

All children and unimmunised adults are eligible for a **free** primary course (two doses of MMR vaccine).

11. Reporting

- The medical officer of health should inform **NPHS national teams** of cases via 0800 GET MOH**.**
- If there is a significant situation advise **ESR**
- **Document** your response to each **action point** (marked with this arrow) in this protocol
- Enter case details on **EpiSurv and NCTS.**
- Enter contact details in **NCTS.**
- **Once closed (including if determined to be 'not a case') the NCTS case record must be closed (this does not automatically happen based on EpiSurv status).**
- If a cluster, **report as an outbreak** in EpiSurv and write an **Outbreak Report.**

12. References and further information

1. Communicable Disease Control Manual, Ministry of Health, 2022
2. Immunisation Handbook, Ministry of Health, 2022

13. Document Control

Protocol review task	Responsibility	Date completed
Advise team and quality & web co-ordinators of review (and planned timeframes)	PHS	08/10/2019
Create draft update document, including this table, and save in EDMS	PHS	24/10/2019
Review Ministry of Health (MoH) advice, literature, other protocols, and write draft update	PHS	24/10/2019
Update Fact Sheet (or source link from MoH website)	PHS	24/10/2019
Send drafts to MOsH, CD, Team Leader, and HPO for feedback	PHS	24/10/2019
Update drafts further as required	PHS	20/11/2019
Send final drafts to Com Dis MOoH	PHS	09/12/2019
Com Dis MOoH sign-off	Com Dis MOoH	10/12/2019
Send final drafts to Clinical Director for approval	Com Dis MOoH	10/12/2019
Clinical Director approval (by email to PHS, WC, and QC, who will save in Y:\CFS\Quality\ApprovedDocuments\DAFApprovals).	CD	
Complete **electronic** document control tasks incl. header; footer; EDMS metadata. Check Te Mana Ora P&P site page links work, or add new links as required. Create .pdfs (for external links), and save to: • Protocols – Y:\CFS\Quality\Archive\Protection\IntranetPROTOCOLS Above folders are checked once a week and new documents are uploaded to: • Protocols – Surveillance (PHU server) website and MS Teams • Fact Sheets – CPH website or links are checked to MoH website	QC	V7, 16/01/2024
Update **paper** copies (on-call folder/ vehicle)	HPO	
Advise operational/ regional staff of update, summarising any substantial changes (text highlighted in **blue** in document)	HPO	
Once finalised, save the original draft document incl. this table (recording update process) in: Y:\CFS\Quality\Archive\Protection\ComDisProtocols	QC	V7, 16/01/2024
Minor update notes v2: Updated to reflect January 2021 changes to Ministry's CCDM: adding throat swab as appropriate sample, incorporating the changes to the Immunisation Schedule and the changes to presumptive evidence of immunity, updating algorithm for post-exposure MMR, noting that culture is no longer performed in NZ but is included as acceptable diagnostic test if used to diagnose overseas.	PHS CD	V2, 17/02/2021
Major update notes v4: substantial changes in light of re-writes of CD Manual and Immunisation Handbook measles sections.	PHS/ CD	V4, 15/12/2022
Minor update notes v5: Added Pacific Relationships Manager into Cultural and Context section.	QC	V5, 16/02/2023
Minor update notes v6: updated in light of Ministry advice that MMR given at age 11 months can be counted as MMR1, prolonged quarantine for contacts given IG, the new "casual contact" category, and other changes in October Case & Contact Management Chart	PHS/CD	V6, 13/12/2023
Minor update notes v7: Standardise the process for treating a suspect measles notification like any other notifiable disease by processing them in EpiSurv during the initial notification. And a requirement for HPOs to make a note in NCTS while awaiting the results.	TL/CD	V7, 16/01/2024