Foreword

The Communicable Disease Control Manual has been developed to provide information on the prevention and control of communicable diseases in New Zealand and to provide national protocols for their control.

Its purpose is to help public health staff respond to communicable diseases. For each disease, a response protocol – specifying the minimum actions that should follow notification or reporting – has been developed. It is intended that Medical Officers of Health and health protection staff in Public Health Services will be the principal users of this manual.

The diseases covered by the manual are divided among vaccine-preventable, food- or waterborne, rare diseases, and other notifiable diseases. Revisions of the manual will be required when the current public health legislation review has been completed and various changes in legislation have been passed.

Sections of the manual will also be revised as practices in disease control and prevention change, and a procedure for recording amendments is given. The loose-leaf format has been designed so that you can add further material, national or regional, that you might want to use in conjunction with the manual itself.

I hope you will find this manual a valuable tool in responding to communicable diseases, and that it will help with our long-term goal of better control of communicable diseases.

Gillian Durham
Director of Public Health, and
General Manager, Public Health Group
The *Communicable Disease Control Manual* builds on a first draft produced in 1993 by ESR: Kenepuru Science Centre. Professor Diana Lennon, Dr Richard Meech, Dr Patrick O’Connor, Dr Rod Ellis-Pegler, and Dr Stuart Reid have all provided valuable comments on the draft.

This manual is part of the Public Health Group’s series of advice manuals for public health services: *Environmental Health Protection Manual* and *Food Manual*. It should be used in conjunction with Abram S Benenson’s *Control of Communicable Diseases Manual*, 16th edition (Benenson 1995).
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Control of Communicable Diseases in New Zealand

Control of communicable diseases continues to be one of the highest public health priorities, both nationally and internationally. Emerging and re-emerging microbial threats and drug resistance pose an ever-increasing challenge to public health practitioners. Added to this, are the high public expectations of protection from public health hazards and increasing interest from the media.

Notifiable Infectious Diseases

Under the Health Act 1956, medical practitioners are required to notify the Medical Officer of Health of any notifiable disease they suspect or diagnose. Notification data are recorded on a computerised database installed in each public health service and are used to guide local control measures. The data are collated and analysed at the national level by ESR: Kenepuru Science Centre on behalf of the Ministry of Health Public Health Group.

A revised schedule of notifiable diseases came into effect on 1 June 1996. The revision is the most comprehensive change to the schedule since the Health Act was enacted in 1956. The Ministry of Health is currently reviewing the public health regulatory framework.

Notifications provide the basis for the surveillance and control of communicable (and some non-communicable) disease in New Zealand. Public health control measures are required in response to individual cases of some diseases, such as meningococcal disease and tuberculosis, and in response to outbreaks of other diseases, such as campylobacteriosis and cryptosporidiosis.

The need for effective disease surveillance and control is increasing, as are people’s expectations to be protected from hazardous exposures. Surveillance is seen as a key strategy in preventing infectious diseases.

The notifiable diseases are specified in the Health Act 1956 as notifiable infectious disease (First Schedule, Part 1) and non-infectious notifiable disease (Second Schedule). Tuberculosis is notifiable under the Tuberculosis Act 1948. Notification confers special status. It provides a legal requirement for reporting, enables cases of disease to be notified without breaching the Privacy Act 1993, (and should assist more complete identification of cases).

The decision to make a disease notifiable is based on the disease’s public health importance, as measured by such criteria as incidence, impact, and preventability.

Notification of disease by a medical practitioners to the Medical Officer of Health provides information for Public Health Services for communicable disease prevention and control and for surveillance.
This allows the Medical Officer of Health to:

- identify cases of disease that require immediate public health control measures
- monitor disease incidence and distribution, and alert health workers to changes in disease activity in their area
- identify outbreaks and support their effective management
- assess disease impact and help set priorities for prevention and control activities
- identify risk factors for disease to support development of effective prevention measures
- evaluate prevention and control activities
- identify and assess emerging hazards
- monitor changes in disease agents through laboratory testing
- generate and evaluate hypotheses about disease occurrence
- fulfil statutory and international reporting requirements.

The information on disease rates used in this manual is from data collated by ESR.

A clinical description is given for each disease. The clinical description and laboratory tests together provide the case definition. The classification differentiates whether the case is confirmed, i.e., usually a positive laboratory test, or a possible or suspect case. The laboratory test indicates the appropriate test for diagnosis.

For information on powers for isolation and restriction refer to the Health and Infectious Diseases Regulations 1966.

Management of people who are contacts of a case of a notifiable disease

Cultural factors need to be taken into consideration when contact tracing. This is particularly important where diseases have been associated with gatherings of Māori and Pacific peoples, and where people may disperse to widely different locations and health districts.

Māori issues

There are a number of issues to consider when working with Māori whānau, hapū and iwi who have been in contact with others who have had a serious communicable disease. Many Māori whānau have retained extended kinship ties which involve collective sharing during times of stress such as when someone is very ill or following a death. This collective community sharing, by its very nature, enables affected whānau members to grieve in a supported environment, but may equally put the health of other whānau members at risk through exposure to communicable diseases. The larger the gathering, such as tangi, the greater the risk.

Additional issues to consider to ensure an effective response to Māori families:

1. Use Māori networks to assist identifying contacts who may be at risk by:
   - including cultural expertise (e.g., Māori community health workers) in the response team on call to deal with a communicable disease situation involving Māori families
• working with Māori family support networks (eg, whānau, hapū and iwi networks) to identify and contact people who may be at risk
• using Māori health professionals when appropriate and available (eg, Māori public health nurses) who may be better prepared to work in Māori specific environments such as marae
• using media (eg, iwi radio stations) to inform the public of factual information so that they can determine their own level of risk.

2. Disseminate health education information in a culturally effective manner by:
• working in partnership with kaumātua and whānau to access and work with affected Māori communities
• using appropriate settings which address Māori diverse realities (eg, sport clubs, marae).
• minimising barriers to using health education material by providing material in te reo Māori and English where possible.

Pacific health

Pacific communities are culturally diverse. They include peoples from different ethnic groups and cultures with specific customs, beliefs and traditions. Within each group there are also sub-groups, such as those born in New Zealand and those born overseas, church groups, community groups and sports groups.

Some issues when dealing with instances of a notified communicable disease are:
• recognise cultural diversity among Pacific peoples
• ensure that interpretation and translation services are available and accessible
• use Pacific health workers where possible
• involve Pacific radio and media where possible, and church, community and sports groups where appropriate.
### NOTIFIABLE INFECTION DISEASES UNDER THE HEALTH ACT 1956

**Section A – Infectious Diseases Notifiable to a Medical Officer of Health and Local Authority**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Notifiable to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute gastroenteritis **</td>
<td>Campylobacteriosis</td>
</tr>
<tr>
<td>Cholera</td>
<td>Cryptosporidiosis</td>
</tr>
<tr>
<td>Giardiasis</td>
<td>Hepatitis A</td>
</tr>
<tr>
<td>Legionellosis</td>
<td>Listeriosis</td>
</tr>
<tr>
<td>Meningoencephalitis – primary amoebic</td>
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</tr>
<tr>
<td>Shigellosis</td>
<td>Typhoid and paratyphoid fever</td>
</tr>
<tr>
<td>Yersiniosis</td>
<td></td>
</tr>
</tbody>
</table>

**Section B – Infectious Diseases Notifiable to Medical Officer of Health**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Notifiable to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquired Immunodeficiency Syndrome</td>
<td>Anthrax</td>
</tr>
<tr>
<td>Arboviral diseases</td>
<td>Brucellosis</td>
</tr>
<tr>
<td>Creutzfeldt-Jakob disease and other spongiform encephalopathies</td>
<td>Diphtheria</td>
</tr>
<tr>
<td>Haemophilus influenza b</td>
<td>Hepatitis B</td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>Hepatitis (viral) – not otherwise specified</td>
</tr>
<tr>
<td>Hydatid disease</td>
<td>Leprosy</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>Malaria</td>
</tr>
<tr>
<td>Measles</td>
<td>Mumps</td>
</tr>
<tr>
<td>Neisseria meningitidis invasive disease</td>
<td>Pertussis</td>
</tr>
<tr>
<td>Plague</td>
<td>Poliomyelitis</td>
</tr>
<tr>
<td>Rabies</td>
<td>Rheumatic fever</td>
</tr>
<tr>
<td>Rickettsial diseases</td>
<td>Rubella</td>
</tr>
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<td>Tetanus</td>
<td>Viral haemorrhagic fevers</td>
</tr>
<tr>
<td>Yellow fever</td>
<td></td>
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</tbody>
</table>

### DISEASES NOTIFIABLE TO MEDICAL OFFICER OF HEALTH (OTHER THAN NOTIFIABLE INFECTIOUS DISEASES)

**Notifiable to the Medical Officer of Health**

- Cysticercosis
- Taeniasis
- Trichinosis
- Decompression sickness
- Lead absorption equal to or in excess of 15µg/dl (0.72 µmol/l) ***
- Poisoning arising from chemical contamination of the environment

### NOTIFIABLE DISEASES UNDER TUBERCULOSIS ACT 1948

**Notifiable to the Medical Officer of Health**

- Tuberculosis (all forms)

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* During times of increased incidence practitioners may be requested to report, with informed consent, to their local Medical Officer of Health cases of communicable diseases not on this list.

** Not every case of acute gastroenteritis is necessarily notifiable – only those where there is a suspected common source or from a person in a high risk category (eg, food handler, early childhood service worker, etc) or single cases of chemical, bacterial, or toxic food poisoning such as botulism, toxic shellfish poisoning (any type) and disease caused by verocytotoxin E. coli.

*** Blood lead levels to be reported to the Medical Officer of Health (15 µg/dl or 0.72 µmol/l) are for environmental exposure. Where occupational exposure is suspected, please notify OSH through the NODS network.

(Updated June 1996)
Part One: Vaccine-preventable
Diphtheria

Epidemiology in New Zealand

Although there have been nine cases of suspected diphtheria notified in New Zealand since 1982 none has fulfilled the case definition. This low rate is attributable to improvements in living conditions in the earlier part of the century and to the use of immunisation in recent decades. There have been epidemics overseas, such as in Russia and the Ukraine in 1994, when immunisation programmes were disrupted.

Case Definition

Clinical description
An upper respiratory tract illness characterised by pharyngitis or laryngitis, low grade fever, with or without an adherent membrane of the tonsils, pharynx and/or nose, and/or toxic (cardiac or neurological) symptoms.

Laboratory test for diagnosis
Isolation of toxigenic Corynebacterium diphtheriae from a clinical specimen.

Case classification

Probable: A clinically compatible illness that is not laboratory confirmed.

Confirmed: A clinically compatible illness that is laboratory confirmed.

Cutaneous diphtheria is not notifiable.

Spread of Infection

Incubation period
Commonly two to five days, occasionally longer.

Mode of transmission
Contact with a patient or carrier or, more rarely, infected articles. Raw milk has also been a source of infection.

Period of communicability
Until bacteria have disappeared from discharges/lesions. This is variable, from less than two weeks to more than four. Effective antibiotic therapy promptly terminates shedding.
Notification Procedure

To be notified by medical practitioners on suspicion of a clinical diagnosis.

Medical Officers of Health should notify the Ministry of Health when the notification is received.

Management of Case

Investigation

Ensure laboratory confirmation by nose, throat or skin swab has been obtained and ascertain diphtheria immunisation status.

Identify whether the *C. diphtheriae* is toxigenic.

Restriction

Strict isolation for pharyngeal diphtheria, until two cultures from both throat and nose taken not less than 24 hours apart, and not less than 24 hours after finishing antibiotics, fail to show *C. diphtheriae*.

Treatment

Contact an infectious diseases physician. Antitoxin (available from Zeulig Pharmaceuticals) should be given immediately after bacteriologic specimens are taken, without awaiting results. Antibiotics, usually penicillin, in conjunction with antitoxin therapy should be administered after cultures have been obtained.

Counselling

The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Definition

All household members and other persons with a history of habitual, close contact (home, school or workplace) with the patient, as well as those directly exposed to oral secretions of the patient.

Investigation

All contacts (regardless of their immunisation status) should have nose and throat cultures taken, receive prompt antimicrobial prophylaxis, and be advised to seek early advice if symptoms develop.

Investigation and prophylaxis are not required for contacts of cutaneous diphtheria known to be non-toxigenic.
**Restriction**

Food handlers or early childhood service workers should be excluded from work until proven bacteriologically negative (two cultures taken from the nose/throat or skin not less than 24 hours apart and not less than 24 hours after finishing antibiotics).

Child contacts should be excluded from school or early childhood service until proven bacteriologically negative.

**Prophylaxis**

Prophylaxis is recommended as follows:

### Immunisation

- Fully immunised children up to seven years of age should receive one injection of DT.
- Individuals over the age of seven years who are fully immunised should be given one injection of Td, (adult tetanus-diphtheria vaccine).
- Unimmunised children up to their seventh birthdays should be given three injections of DTPH, DTP or DT at monthly intervals. The type of vaccine depends on the age-dependent need for Hib immunisation and if pertussis is contraindicated.
- Unimmunised individuals after their seventh birthday should receive three injections of Td at monthly intervals.

### Antibiotics

All close contacts, after cultures have been taken, should be given seven days oral erythromycin (children: 40 mg/kg/day, adults: 500 mg six hourly, to a maximum of 2 g/day). Cultures should be repeated on contacts proven to be carriers two weeks after completion of therapy.

**Other Control Measures**

### Identification of source

Check for other cases in community.

### Disinfection

Bacterial. All articles in contact with patient, and all articles soiled by discharges of patient.

### Health education

Consider a media release by the Medical Officer of Health to encourage immunisation. Remind doctors of the New Zealand recommendation of a diphtheria booster every 10 years for adults, using Td.
Haemophilus influenzae type b
Invasive Disease

Epidemiology in New Zealand

*Haemophilus influenzae* type b (Hib) used to be an important cause of serious illness in children under five years of age in New Zealand; the annual rate of Hib disease in 1993 was 3.5 per 100,000. Following the addition of Hib vaccine to the national immunisation schedule in February 1994 the rate of the disease reduced to 2.3 in 1994 and to 0.5 per 100,000 in 1995. In 1997 nine cases were notified, a rate of 0.2 per 100,000 population. *Haemophilus influenzae* type b invasive disease was added to the revised schedule of notifiable diseases from 1 June 1996.

Case Definition

Clinical description

Invasive disease due to Hib may cause septicaemia, meningitis, epiglottitis, cellulitis, septic arthritis, pneumonia or osteomyelitis.

Laboratory test for diagnosis

Isolation of *Haemophilus influenzae* type b from a normally sterile site
OR
detection of a positive antigen test in CSF.

Case classification

*Probable:* A clinically compatible illness with positive laboratory test, or a confident diagnosis of epiglottitis by direct vision, laryngoscope or X-ray.

*Confirmed:* A clinically compatible illness with isolation of *Haemophilus influenzae* type b from a normally sterile site.

Spread of Infection

Incubation period

Probably two to four days.

Mode of transmission

By direct contact or by droplet inhalation of respiratory tract secretions.
Period of communicability
Non-communicable within 24–48 hours after starting effective antibiotic therapy.

Notification Procedure
To be notified reporting by medical practitioners on a probable clinical diagnosis.

Management of Case

Investigation
In consultation with the attending medical practitioner, ascertain if suspected or proven cases have occurred in the same household or early childhood service in the previous 60 days.

Restriction
Isolation until 24 hours after the start of effective parenteral antibiotic therapy. Exclude from an early childhood service until four days of rifampicin completed.

Treatment
Intravenous antimicrobial therapy with augmentin, or a second or third generation cephalosporin.

Ensure that cases treated with augmentin, receive rifampicin 20 mg/kg (max 600 mg) once daily for four days to eradicate carriage of the organism, before they are discharged from hospital. Cases treated with a second or third generation cephalosporin do not need rifampicin.

Children under the age of two years should have a complete course of immunisation regardless of any previous immunisation against Hib. Re-immunisation should start one month after the onset of the disease.

Counselling
Parents of the case should be advised of the nature of the infection and its mode of transmission.

Discuss the risk of infection of other siblings, advise on immunisation for children under the age of five years.

Management of Contacts

Definition
See Immunisation Handbook (MoH 1996e)

Contacts to be offered rifampicin prophylaxis are:
• all household contacts including adults in households with one or more unimmunised children under four years old
• all members of a household where there is a child under the age of 12 months, regardless of whether the infant has been immunised
• in early childhood services, where children under two years of age are cared for, staff and all children under four years regardless of immunisation status are contacts following one case of Hib, if they have been in contact with the case for more than four hours a day for four or more days a week
• if there are two or more cases of Hib in an early childhood service within a 60-day period, all staff and children should be offered prophylaxis.

Investigation
If the case attends an early childhood service, liaise with the director of the service to arrange for prophylaxis for contacts. Routine throat or nasopharyngeal culture of contacts is not recommended.

Restriction
Children and staff should be excluded from the early childhood service until chemoprophylaxis has been started. Once rifampicin has been started, contacts may attend an early childhood service.

Counselling
Advise that exposed children who develop a febrile illness should be assessed by their family doctor. Advise on immunisation.

Prophylaxis
Rifampicin prophylaxis is given to eradicate the carrier state.

Prophylaxis should be given as soon as possible, and up to seven days after the hospitalisation of the index case, to:
• close household contacts of the case in the week prior to the onset of illness (as above)
• early childhood service contacts (as above).

Rifampicin prophylaxis is not recommended during pregnancy.

Recommended dose for rifampicin prophylaxis:
Adults: 600 mg daily for four days.
Children: 20 mg/kg daily (to a maximum of 600 mg/day) for four days.
Infants under one month: 10 mg/kg/day for two days.
Rifampicin must be taken two hours before or two hours after meals to ensure absorption.

Explain the side effects of rifampicin:
• orange discolouration of soft contact lenses, tears and urine
• may decrease the effectiveness of oral contraceptives: women should be advised to use alternative barrier contraception for two weeks after rifampicin course is finished.

The case and household contacts should be given prophylaxis simultaneously.
Immunisation: All children aged less than five years should have their immunisation status checked, and if incomplete should complete their immunisation with DTPH, or Hib vaccine.

Other Control Measures

Disinfection

Not applicable.

Health education

Encourage parents and early childhood services to ensure children receive a full course of immunisation with DTPH or Hib vaccine. Encourage early childhood services to keep up-to-date immunisation records of children (see the Health (Immunisation) Regulations 1995).

Educate parents and caregivers regarding the risk of secondary cases in contacts less than four years old and the need for prompt evaluation and treatment if fever or excessive drowsiness or irritability develops.

Reporting

If a cluster of cases occurs, forward on outbreak a surveillance report to the ESR.
Hepatitis B

Epidemiology in New Zealand

A total of 136 cases of hepatitis B were notified in 1997, a rate of 3.8 per 100,000. Only three cases were in children under the age of 14 years. Hepatitis B is one of the nine diseases covered by the national immunisation schedule. The risk of infection with hepatitis B in New Zealand is associated with ethnicity and geography. Those especially at risk have been Māori, Pacific people and those of Asian descent. An estimated 1–2 percent of the population are carriers of hepatitis B.

Case Definition

Clinical description
The acute illness but not the carrier state is to be notified.

An illness with variable symptoms including fever, malaise and anorexia with jaundice and/or elevated serum aminotransferase levels.

Laboratory test for diagnosis
HBsAg positive and anti HBc IgM positive.

Case classification

Probable: A clinically compatible illness with a positive HBsAg test.

Confirmed: A clinically compatible illness that is laboratory confirmed with a positive antiHBc IgM test.

Spread of Infection

Incubation period
Forty-five to 180 days, commonly 60–90 days.

Mode of transmission
Transmission by percutaneous or permucosal exposure to infected body fluids. Blood, semen and vaginal fluids are infectious.

Period of communicability
Blood is infective two to three weeks before the onset of symptoms, during the clinical disease and for two to three months after. Blood remains infective if HbsAg is present. The carrier state may
follow asymptomatic infections and is most common after infection in utero, in infancy and in those with immunodeficiency.

Carriers of hepatitis B are defined as people who have two HbsAg positive tests taken at least six months apart.

Those who are both HBsAg and HBeAg positive have the highest infectivity to others.

**Notification Procedure**

The serologically confirmed acute illness, not the carrier state, is notifiable by medical practitioners to the Medical Officer of Health.

**Management of Case**

**Investigation**

Assist and advise the primary medical practitioner. Consider investigation for likely source of infection including sexual contact, sharing of contaminated drug injecting equipment, exposure to blood or body fluids, or perinatal transmission.

**Restriction**

Precautions against exchange of body fluids until HBsAg negative.

**Treatment**

Supportive.

**Counselling**

The case should be advised of the nature of the infection and its mode of transmission.

Advise:
- not to donate blood
- not to share drug injecting equipment
- not to share razors or toothbrushes
- to use safer sex practices
- to inform health care attendants of infection.

Discuss with the primary care doctor follow-up of the case to identify those who become carriers of hepatitis B. The carriers will need ongoing advice on follow-up care and precautions against transmission. (Refer to *Management of Hepatitis B Carriers* Moyes, 1997.)
Management of Contacts

Definition
Persons having percutaneous or permucosal exposure to infective body secretions (blood, saliva, semen and vaginal fluids), including:
- perinatal exposure
- sexual exposure
- percutaneous exposure (sharing drug injecting equipment, “needlestick” injury)
- and/or members of case’s household.

Investigation
Determine if contact is hepatitis B susceptible by urgent serological testing for HBsAg and anti-HBs. If both are negative see Table 1. If either test is positive no further action apart from counselling is required.

Restriction
As for case until results of blood tests are known.

Counselling
Contacts should be advised of the nature of the infection and its mode of transmission.

Prophylaxis
See Table 1 on the following page.

The first dose of hepatitis B vaccine can be given at the same time as the HBIG dose but at a separate site.

HBIG is available from the Blood Transfusion Services.
TABLE 1: Hepatitis B virus post-exposure recommendation

<table>
<thead>
<tr>
<th>Type of Exposure</th>
<th>Hepatitis B immune globulin</th>
<th>Vaccine*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dose</td>
<td>Recommended Timing</td>
</tr>
<tr>
<td>Perinatal</td>
<td>100 IU IM</td>
<td>within 12 hr of birth</td>
</tr>
<tr>
<td>Percutaneous</td>
<td>400 IU IM*</td>
<td>single dose within 12 hr</td>
</tr>
<tr>
<td>Sexual contacts of acute hepatitis</td>
<td>400 IU IM</td>
<td>within 14 days of sexual contact</td>
</tr>
<tr>
<td>Sexual contacts of carriers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

* The current vaccine used is the H-B Vax II (MSD). The paediatric formulation is 2.5 µg for age 10 years and under. For adolescents 10-19 years the dose is 5 µg per dose. The adult dose is 10 µg per dose (1 ml).

a HBIG doses: age 1 month - 4 years 200 IU; age 5-9 years 300 IU.

b Sexual contacts of carriers are not given HBIG.

Other Control Measures

Identification of source

If the case could be transfusion-related, contact the Blood Transfusion Services.

Disinfection

Viral measures.

Health education

Encourage immunisation of all children.

Advise on risks of blood-borne viruses.

Hepatitis B carriers: All women are screened antenatally for hepatitis B carrier state. Babies born to carrier mothers require HBIG and hepatitis B vaccine within 12 hours of birth. See Table 1 and the Immunisation Handbook (MoH 1996e).

All sexual and household contacts of hepatitis B carriers should be vaccinated but are not given HBIG. Hepatitis B vaccine is available free to household and sexual contacts of carriers.

For needlestick injuries, see Update of Clinical Management Guidelines HIV/AIDS (MoH 1997c).

Reporting

If a cluster of cases occurs, forward an outbreak surveillance report to the ESR.
Measles

Epidemiology in New Zealand

Measles continues to be a major threat to public health in New Zealand. In the 1997 epidemic, approximately 2,000 cases were reported, including 216 hospitalisations and no deaths.

The national immunisation strategy is to offer immunisation with MMR to children at age 15 months and a second dose in Form One. Improvements in immunisation coverage are needed if future outbreaks are to be prevented.

The vaccine is less effective under the age of 12 months. Thus, individuals born between 1969 and 1975 (ie, aged between 22 and 28 years in 1997) are less likely to be immune as vaccine was then recommended to be given at the age of 10 months.

Case Definition

Clinical description

Cases must meet all the following criteria:

- fever 38°C or higher
- generalised maculopapular rash lasting three or more days
- cough or coryza or conjunctivitis or Koplik spots.

Laboratory tests for diagnosis

Demonstration of measles specific IgM antibody
OR
a significant rise in measles antibody titre (IgG)
OR
isolation of measles virus from a clinical specimen.

Case classification

Probable: A clinically compatible illness.

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

Spread of Infection

Incubation period

Ten to 14 days.
Mode of transmission
Air-borne by droplet spread or by direct contact with nasal or throat secretions of infected persons.

Period of communicability
From just before the prodrome until a few days after the appearance of the rash.

Notification Procedure
To be notified by medical practitioners on a probable clinical diagnosis, immediately.

Management of Case
Investigation
In consultation with the attending medical practitioner, obtain laboratory confirmation where possible for the first cases seen in an area and for any case not clearly linked epidemiologically to a confirmed case.

Restriction
Exclude cases from school/institution/work for at least four days after the appearance of the rash.
In hospitals: respiratory isolation until four days after the appearance of the rash.

Treatment
Nil specific.

Counselling
The case and the parents/caregivers as appropriate should be advised of the nature of the infection and its mode of transmission.

Management of Contacts/ Outbreak Control
Further information is in the Immunisation Handbook (MoH 1996e).

Definitions
A susceptible individual is an individual who does not have documented immunity to measles or who has not received two doses of measles vaccine.

A contact is any person at the same institution (such as a school or early childhood service), or within the same household, or has occupational or social contact with the case.

An outbreak has occurred if one case is identified and confirmed in an institution (an early childhood service, a school, a university hostel etc).
Epidemic: It is likely an epidemic of measles is occurring if there are outbreaks in more than one institution or neighbourhood in an area.

Investigation
Ensure that the first case/s are confirmed by serology (as above).
Contact medical practitioners, hospitals and schools in the locality of the case to alert them that other cases are likely.
If there are no other confirmed cases in the area it is sufficient to warn institutions and caregivers to immunise susceptible children. If cases are confirmed consideration should be given to immunising school and other contacts.

Restriction (during non-epidemic periods)
Unimmunised contacts, who do not have a history of doctor-diagnosed measles, may be excluded from early childhood services, schools, or patient care for 14 days after exposure. They may return after receiving immunisation.

Counselling
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.

Prophylaxis
Recommend immunisation of all contacts 12 months of age and over without documentation of immunisation unless contraindicated. Immunise as soon as possible and preferably within 72 hours of exposure to the case.
Contacts under 12 months of age should receive immunoglobulin within six days of contact with the source case. Children receiving immunoglobulin should not receive measles/mumps/ rubella immunisation for three months.

Other Control Measures

Health education
Consider a media release to advise on immunisation.

Epidemic control
Recommendations which may be considered in the event of the Ministry of Health declaring a local or regional epidemic:
• immunisation of all contacts 12 months of age and older, without documentation of immunisation, unless contraindicated and preferably within 72 hours of onset of measles
• immunisation of all contacts aged between 9-12 months, with reimmunisation three months later
• if a case in a school or institution is notified within 72 hours of onset, pupils attending the school should be advised. Immunisation should be encouraged
• measles/mumps/rubella vaccine is recommended. Single antigen measles vaccine is not available.

If there are outbreaks at more than one institution in an area, please inform the Ministry of Health.

Mass immunisation / community-wide immunisation may be considered to either avert an epidemic or control spread to other areas.

Other control measures include lowering the age of the first MMR immunisation to age 12 months. If there are cases of measles in infants, the age of first MMR may be lowered to nine months with reimmunisation three months later. Immunising infants as young as six months may be considered; consult with the Ministry of Health for the most recent advice.

**Reporting**

If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Mumps

Epidemiology in New Zealand

There were 88 cases of mumps notified in 1997, a rate of 2.4 per 100,000.

Mumps occurs in periodic epidemics in New Zealand, with the most recent epidemics occurring in 1989 and 1994. Prior to the introduction of measles-mumps-rubella (MMR) vaccine in 1990, mumps epidemics occurred every three to five years in New Zealand, as shown from laboratory surveillance and hospital discharge data.

Mumps is one of the commonest cause of viral meningitis in children who have not received MMR vaccine.

Case Definition

Clinical description
An illness with acute onset of fever and unilateral or bilateral tender, self limited swelling of the parotid or other salivary gland, lasting more than two days, and without other apparent cause.

Laboratory test for diagnosis
Isolation of mumps virus from a clinical specimen
OR
a significant rise in mumps antibody level by any standard serologic assay, except following vaccination
OR
a positive serologic test for mumps IgM antibody except following vaccine.

Case classification
Probable: A clinically compatible illness.

Confirmed: A case with laboratory confirmation or a clinically compatible illness that is epidemiologically linked to another case.

Spread of Disease

Incubation period
Twelve to 25 days, commonly 18 days.
**Mode of transmission**
By droplet spread and by direct contact with the saliva of an infected person.

**Period of communicability**
From six to seven days before the onset of parotitis until nine days after.

**Notification Procedure**
To be notified by medical practitioner.

**Management of Case**

**Investigation**
In consultation with the attending medical practitioner, ascertain mumps immunisation status of case.

**Restriction**
Respiratory isolation for nine days from the onset of swelling. Exclude cases from school or early childhood service for nine days from onset of swelling or until fully recovered, whichever is sooner.

**Treatment**
Nil specific.

**Counselling**
The case should be advised of the nature of the infection and its mode of transmission.

**Management of Contacts**

**Definition**
Any person at the same institution (school, early childhood service etc) or household in close personal contact with the case.

**Investigation**
If a school student, check with school and others in the area for other cases and contacts.

**Restriction**
Consider exclusion of susceptible contacts from attending school or early childhood service for at least 14 days after the last exposure to infection. The longest incubation period for mumps is 26 days. Immunised contacts are not excluded from school or early childhood service.
**Counselling**
On the risk of disease and benefits of immunisation.

**Prophylaxis**
Passive immunisation is not effective. Active immunisation is of no value following exposure. All susceptibles should be offered MMR to provide protection against future exposure.

**Other Control Measures**

**Disinfection**
Disinfect articles soiled with nose and throat secretions.

**Health education**
Encourage immunisation with MMR of all children at 12–15 months and in Form One.

**Reporting**
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Pertussis

Epidemiology in New Zealand

Epidemics of pertussis occur in about four-yearly cycles in New Zealand. The most recent epidemic started in 1996. Pertussis became notifiable on 1 June 1996. There were 283 cases notified in 1997, a rate of 7.8 per 100,000. The previous epidemic was in 1990 and 1991. In 1991 there were more than 300 hospitalisations for pertussis. Hospitalised cases represent a small fraction of the total disease burden in the community.

The occurrence of outbreaks in the UK and Japan after a reduction in immunisation rates has highlighted the importance of immunisation as a key control strategy.

Case Definition

Clinical description

A disease characterised by a cough lasting longer than two weeks, and one or more of the following:

- paroxysms of cough
- cough ending in vomiting or apnoea
- inspiratory whoop.

Laboratory test for diagnosis

Isolation of *Bordetella pertussis* from a pernasal swab.

Collecting a nasopharyngeal swab

A nasopharyngeal swab should be collected from all suspect cases of pertussis. A flexible wire stemmed swab should be passed through the nose until it contacts the nasopharynx. The swab should remain on the nasopharynx for 15–30 seconds or until the patient coughs. Ideally, the swab should be transported to the laboratory in Amies transport media with charcoal. It may be most convenient to send the patient to the local medical laboratory for these swabs, as these laboratories have the correct swabs and transport media.

Case classification

*Suspect* (in children under five years of age): Any paroxysmal cough with whoop, vomit or apnoea for which there is no other known cause.

*Probable*: Cough lasting longer than two weeks and one or more of the following: paroxysmal cough; cough ending in vomiting or apnoea; inspiratory whoop, for which there is no other known cause.

*Confirmed*: A clinically compatible illness that is laboratory confirmed or that is epidemiologically linked to a confirmed case.
Spread of Infection

Incubation period
Commonly seven to ten days, and rarely exceeding 14 days.

Mode of transmission
Direct contact with respiratory secretions and droplet spread.

Period of communicability
Highly communicable in the catarrhal stage before the paroxysmal cough stage. For control purposes the communicable stage lasts from the catarrhal stage to three weeks after the onset of paroxysmal cough in a patient who has not been treated with antibiotics. When treated with erythromycin the period of infectivity lasts until five days of a 14-day course of antibiotics has been completed.

Notification Procedure
Notify all cases, including suspect cases, to the Medical Officer of Health, without delay.

Management of Case

Investigation
In consultation with the attending medical practitioner, ascertain pertussis immunisation status and determine whether the case attends a school, early childhood service or other institution.

Restriction
Exclude the case from school/institution/work until the case has received at least five days of a minimum of a 14-day course of erythromycin, or exclude for three weeks from the date of onset of typical paroxysms of cough.

Treatment
Erythromycin is the drug of choice. Co-trimoxazole is an alternative.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Definition
Any person at the same institution (such as a school or early childhood service) or with household, work or social contact with the case.
Investigation
Contact health professionals, hospitals and schools in the area in which the case arose to search for other cases and contacts.

Restriction
Exclude household contacts who have not previously had pertussis or who have not been immunised against pertussis from attending an early childhood service for 14 days after the last exposure to infection. This period may be reduced to five days if the contact has taken five days of a 14-day course of erythromycin.

Counselling
Check immunisation status and encourage immunisation of susceptible children under the age of seven.

Treatment
Post-exposure vaccination is not effective.

Offer a 14-day course of erythromycin to all household and early childhood contacts of cases in households and early childhood services where there are other infants aged less than one year, regardless of immunisation status.

Encourage immunisation of unimmunised contacts and other susceptible individuals in the community.

Other Control Measures

Identification of source
Not applicable.

Disinfection
In hospital, bacterial.

Health education
Discuss the possibility of a media release by the Medical Officer of Health and/or the Ministry of Health to highlight the importance of immunisation.

Encourage immunisation.

Reporting
Inform the Ministry of Health of any outbreaks.
Poliomyelitis

Epidemiology in New Zealand

Wild polio virus has been eliminated from New Zealand. There is an extremely low risk of cases being imported to New Zealand from endemic areas. Unimmunised New Zealanders who travel to endemic areas are at risk of infection. Vaccine-induced paralysis is very rare, with one case reported for every 2.6 million doses of vaccine distributed.

Global poliomyelitis eradication by the year 2000

The World Health Organization (WHO) has set up an initiative to eradicate poliomyelitis by the year 2000. In order to be certified as polio free, New Zealand has to set up a programme of surveillance and investigation of all cases of acute flaccid paralysis (AFP) in children under the age of 15 years.

All cases of acute flaccid paralysis are to be notified as a case of suspected poliomyelitis and have a full clinical, epidemiological and virological investigation. The case should also be reported by the paediatrician to the New Zealand Paediatric Surveillance Unit (NZPSU) co-ordinated by Associate Professor Barry Taylor, Department of Paediatrics and Child Health, University of Otago. Detailed information will be collected by the surveillance unit from the paediatrician on the child’s illness and progress.

Two faecal samples are required from every case of AFP within the first 14 days of the illness, and the child must be re-evaluated 60 days after the onset of paralysis. The information collected will be reviewed by the National Certification Committee for the Eradication of Poliomyelitis. The paediatric surveillance system started in November 1997, and ongoing review and surveillance will continue for at least three years.

Case Definition

Clinical description

A disease, with no other apparent cause, characterised by:

- acute flaccid paralysis of one or more limbs with decreased or absent deep tendon reflexes in affected limbs
- no sensory or cognitive loss
- may affect bulbar muscles.

Vaccine associated

A vaccine associated case is defined as one occurring in a vaccine recipient 7–30 days after receiving oral polio vaccine, or one occurring in a contact of a vaccinee 7–60 days after the vaccinee received oral polio vaccine.
Wild virus associated

A wild virus associated case is any case not meeting the criteria for being vaccine associated. Such cases may be imported or indigenous.

Imported: This is defined as a case occurring in someone who has travelled or resided in a polio endemic area within 30 days of disease onset, or who is epidemiologically linked to someone who has done so. Surveillance should be intensified on both a local and national level to detect any additional cases without delay.

Indigenous: This is defined as a case not meeting the above criteria, and it constitutes a national communicable disease emergency. Contact the Ministry of Health urgently.

Laboratory test for diagnosis

All specimens must be tested in a WHO-accredited laboratory. The ESR virus culture laboratory is accredited for poliomyelitis testing. ESR have recently developed a test for rapid detection of poliovirus by PCR, with results available in 48 hours. Contact ESR for the specific method of packing and transporting the specimens.

Two faecal specimens collected at least 24 hours apart 0–14 days after the onset of paralysis are to be collected and sent to ESR.

(Acute poliomyelitis titres may assist diagnosis, but viral isolation and identification is required to confirm a case of poliomyelitis.)

Case classification

Probable: A clinically compatible illness.

Confirmed: A clinically compatible illness in which the neurological deficit persists 60 days after the onset of symptoms or the individual has died, with no other cause.

Spread of Infection

Incubation period

Three to 35 days, commonly seven to 14 days for paralytic cases.

Mode of transmission

Direct contact through close association. There have been rare reports of milk, foodstuffs and other faecally contaminated materials as vehicles of transmission but where sanitation is good, as in New Zealand, spread is by pharyngeal secretions.

Period of communicability

Not known accurately. The virus appears in the throat as early as 36 hours and in faeces within 72 hours of exposure. It persists in the throat for one week and in the faeces three to six weeks or longer. Cases are most infectious during the first few days before and after onset of symptoms.
**Notification Procedure**

Notify all cases of acute flaccid paralysis.

Ensure paediatricians have notified the NZPSU.

Medical Officers of Health are to inform the Ministry of Health immediately on suspicion of case.

The Ministry of Health is required to notify WHO.

**Management of Case**

**Investigation**

In consultation with the attending medical practitioner and specialist advice, ensure laboratory confirmation, ascertain polio immunisation status, and determine whether the case attends a school or other institution.

The occurrence of a single non-vaccine-associated paralytic case in a community warrants immediate investigation.

**Restriction**

Exclude from school/work for at least 14 days from onset and until recovery. Enteric precautions in the hospital.

**Treatment**

Nil specific.

**Counselling**

The case should be advised of the nature of the infection and its mode of transmission.

**Management of Contacts**

**Definition**

Any person at the same institution (such as a school or early childhood service) or with household, work or social contact with the case.

**Investigation**

Thorough search for sick persons, especially children, to assure early detection and to facilitate control.

**Restriction**

Nil.
Counselling
Advise on immunisation as below.

Prophylaxis
Post-exposure immunisation is not protective. Ensure immunisation of unimmunised contacts and susceptible individuals in the community.

Close contacts of a vaccine associated case should be observed for three weeks; no other investigation or intervention is required.

Contacts of an imported wild virus case should be immunised appropriately as soon as possible to contain spread.

Other Control Measures

Identification of source
Discuss with the Ministry of Health.

Disinfection
Of nasopharyngeal secretions and faeces. In areas of modern and adequate sewage disposal systems faeces and urine are discharged into sewers.

Health education
Discuss the possibility of a media release by the Medical Officer of Health and/or Ministry of Health.

Immunisation is recommended for travellers to areas of high prevalence.

Reporting
Ministry of Health will notify WHO.
Rubella

Epidemiology in New Zealand

Rubella was added to the revised list of notifiable diseases from 1 June 1996. There were 79 cases of rubella were reported in 1997, a rate of 2.2 per 100,000.

Occasional cases of rubella infection in pregnancy and congenital rubella syndrome continue to occur in New Zealand. A cohort of women born in the years 1965 to 1967 (ie, aged 31–33 years in 1998) may be less likely to have been immunised as children than women born before or later. Current control measures include antenatal screening and vaccination of susceptible women after delivery and a two-dose MMR immunisation schedule at ages 15 months and at 11 years (Form One).

Case Definition: Rubella Infection

Clinical description

An illness with a generalised maculopapular rash and fever AND one or more of the following:

• arthralgia/arthritis
• lymphadenopathy
• conjunctivitis.

Rubella often presents atypically and is difficult to diagnose clinically with certainty. If accurate diagnosis is important it must be laboratory confirmed.

Laboratory test for diagnosis

Isolation of rubella virus from a clinical specimen
OR
demonstration of rubella-specific IgM antibody, except following immunisation
OR
a fourfold rise in rubella antibody titre between acute and convalescent sera.

Case classification

Probable: A case that meets the clinical case definition.

Confirmed: A clinically compatible illness that is laboratory confirmed or has a close epidemiological link to a laboratory confirmed case.
Case Definition: Congenital Rubella Syndrome

Clinical description
A live or stillborn infant with clinically compatible defects (cataracts, congenital heart disease, hearing defects, microcephaly, mental retardation, purpura, hepatosplenomegaly).

Laboratory test for diagnosis
Isolation of rubella virus from a clinical specimen from the infant
OR
demonstration of rubella-specific antibody (IgM) in the infant’s serum
OR
persistence of rubella-specific IgG antibody of titre higher than expected from passive transfer of maternal antibody
OR
laboratory confirmed maternal rubella infection in the first trimester of pregnancy.

Case classification
Probable: A clinically compatible illness.

Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Fourteen to 23 days, commonly 16–18 days.

Mode of transmission
Via contact with nasopharyngeal secretions of infected persons. Infection is by droplet spread or direct contact with patients. Infants with congenital rubella shed rubella virus in their pharyngeal secretions and urine.

Period of communicability
Rubella is highly communicable for one week before and at least four days after the onset of the rash. Infants with congenital rubella may shed virus for months after birth.

Notification Procedure
Notify probable cases of rubella and congenital rubella to the Medical Officer of Health.
Management of Case

Investigation
In consultation with the attending medical practitioner, ascertain rubella immunisation status and determine whether the case attends a school, early childhood service or other institution.

Restriction
Exclude case from school, early childhood service, institution or work until fully recovered or for seven days after onset of rash. Avoid contact with women of childbearing age.

Treatment
Nil specific.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Definition
Persons with exposure to a clinical case of rubella.

Investigation
Check immunisation status of contacts. Advise serological testing for pregnant women, in consultation with their doctors. (Immunisation Handbook (MoH 1996e).)

Restriction
Nil.

Counselling
Advise of the nature of the infection and its mode of transmission.

Prophylaxis
Post-exposure prophylaxis is not effective. Encourage immunisation with MMR to protect against future exposure. Immunisation is contraindicated during pregnancy.

Other Control Measures

Identification of source
Not applicable.
Disinfection
Contact isolation precautions in hospitals.

Health education
Encourage immunisation during childhood, and pre-pregnancy serological testing and immunisation if indicated in women of childbearing age. Pregnant women are screened during pregnancy and non immune women are immunised after delivery.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Tetanus

Epidemiology in New Zealand

Tetanus is a preventable disease. It is seen now almost exclusively in the elderly. Some older people have never been vaccinated and are at potential risk, particularly women when pursuing outdoor activities (eg, gardening).

Case Definition

Clinical description
Acute onset of hypertonia and/or painful muscular contractions, most commonly of the jaw and neck which may proceed to generalised muscle spasms. The clinical presentation of tetanus may be subtle.

Laboratory test for diagnosis
Nil.

Case classification
Probable: Nil.
Confirmed: A clinically compatible case.

Spread of Infection

Incubation period
Usually 3–21 days, although it may range from one day to several months, depending on the character, extent and location of the wound.

Mode of transmission
Tetanus spores are usually introduced into the body through a puncture wound contaminated with soil, street dust, animal or human faeces. It can also be introduced through lacerations or burns, and many patients have no visible or recalled portal of entry.

Period of communicability
Not directly transmitted from person to person.
Notification Procedure

To be notified by medical practitioners on a clinical diagnosis.

Management of Case

Investigation

In consultation with the attending medical practitioner ascertain tetanus immunisation status and the circumstances of injury. There may be no history of injury.

Restriction

Nil.

Treatment

Tetanus immune globulin, penicillin (or metronidazole) and supportive treatment; see Table 2. Active immunisation should be initiated concurrently with treatment, because recovery from clinical tetanus does not induce immunity.

Counselling

The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Not applicable.

Other Control Measures

Identification of source

Not applicable.

Disinfection

Nil.

Health education

Emphasise the importance of childhood and adult immunisation. Recommend a tetanus booster every 10 years, using tetanus diphtheria vaccine.

In the event of injury, all wounds should be assessed to determine whether they are tetanus prone, and decisions made as outlined in Table 2.
Clean wounds are those less than six hours old, non-penetrating with negligible tissue damage; dirty wounds are those that are contaminated, infected, penetrating, more than six hours old, and with tissue damage.

### TABLE 2: Prevention of tetanus following injury. A summary of the requirement for tetanus immunisation and the need for tetanus immune globulin (TIG).

<table>
<thead>
<tr>
<th>History of tetanus immunisation and timing of that or timing of booster</th>
<th>1 &lt;5 years ago</th>
<th>2 &lt;10 years ago</th>
<th>3 &gt;10 years ago</th>
<th>4 Never or unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Clean wound</td>
<td>Nil</td>
<td>Nil</td>
<td>Booster Td</td>
<td>Booster Td</td>
</tr>
<tr>
<td>(b) Dirty wound</td>
<td>Nil</td>
<td>Booster Td</td>
<td>Booster Td</td>
<td>Course Td and TIG</td>
</tr>
</tbody>
</table>

* A tetanus immunisation course consists of three doses at not less than monthly intervals.

Note:
For adults or children seven years and over, use tetanus toxoid or Td. For children aged less than seven years, use tetanus toxoid or DT or DTPH. (If due, on routine immunisation schedule.)

For further details see *Immunisation Handbook* (MoH 1996e).

### Reporting
Not applicable.
Part Two: Food-and Waterborne Illness
Food- and Waterborne Illness

It has been estimated that there may be up to 300,000 cases of food-borne illness in New Zealand each year. Most are unreported and therefore not investigated. If a reported case is part of an outbreak, follow the Guidelines for Investigation of Disease Outbreaks in New Zealand (MoH 1996d).

For other cases of food- and waterborne illness, follow the specific disease protocol or the directions for acute gastroenteritis in this manual, and base the extent of the investigation on an assessment of the risk of disease spread.

In many cases of gastroenteritis illness no specific toxin or pathogen will be identified. An investigation should be carried out for the identification and control of defective food practices.

Persons Posing a Special Risk of Spreading an Infection to Other Persons

There are four groups of persons for whom it is particularly important to assess the risk of their spreading infection:

• food handlers whose work involves touching unwrapped foods to be eaten raw or without further cooking  
• health care, early childhood service or other workers who have direct contact, or contact through serving food, with highly susceptible persons, in whom a gastrointestinal infection would have particularly serious consequences  
• children aged under five years attending early childhood services or other groups  
• older children and adults with poor standards of personal hygiene because of illness or disability.

Each reported case in these groups needs to be assessed to find out whether they continue to excrete the organism and have become an ongoing carrier, or whether they have passed the illness on to contacts who are of the four risk groups. It may be necessary to recommend temporary exclusion from work or school or to transfer a worker to special duties or to make special sanitary arrangements in schools or institutions to reduce the risk.

The protocols in this manual describe the notification, the investigation and management of the person with a suspected food- or waterborne illness. For information on food safety, including hazard analysis critical control point (HACCP) evaluation, see Ministry of Health Food Manual (MoH 1997b).

Food- and waterborne illnesses are listed in Section A of the list of notifiable diseases. They are therefore notifiable to the Medical Officer of Health and the local authority. Follow local arrangements in ensuring investigation and control.
Acute Gastroenteritis

Epidemiology in New Zealand

Acute gastroenteritis was added to the revised schedule of notifiable diseases from 1 June 1996. Episodes and outbreaks of acute gastroenteritis are common in New Zealand. They are usually due to micro-organisms. Outbreaks of poisoning due to a chemical contaminant of water or food have only been rarely reported. Verotoxigenic 
  
  Escherichia coli  (VTEC) infection, in particular E.coli 0157:H7, is notifiable under acute gastroenteritis. VTEC is important because the infection may cause the haemolytic uremic syndrome or in adults thrombotic thrombocytopenic purpura. In overseas outbreaks of VTEC, sources identified include meat and meat products, radish sprouts, unpasteurised milk and contaminated apple cider.

Reporting acute gastroenteritis

Notify the following cases:

- outbreaks of acute gastroenteritis in two or more persons linked by common exposure to food, water or other suspected toxic substance
- a person in a high-risk occupation – eg, a food handler or worker in an early childhood service with an acute gastroenteritis
- a single case of botulism or a single case of chemical poisoning, or a verotoxigenic infection, in particular E. coli 0157:H7.

Possible causes

A specific pathogen or toxin is identified by laboratory analysis in less than half of the outbreaks of food- or waterborne gastrointestinal illness.

See specific disease entries in this manual for campylobacteriosis, cholera, cryptosporidiosis, giardiasis, hepatitis A, listeriosis, salmonellosis, shigellosis, typhoid, and yersiniosis.

There is a specific investigation questionnaire for verotoxigenic (VTEC), and for toxic shellfish poisoning, see Guidelines for Investigation of Disease Outbreaks in New Zealand (MoH 1996d). A separate questionnaire for listeriosis is also available from ESR.

Other possible causes of food-borne or waterborne disease include:

- chemical contaminants: from use of aluminium, copper or brass utensils, particularly if used to store acidic fruits/drinks; barbecued food where tanalised wood has been used
- bacterial toxins
  - Staphylococcus aureus
  - Bacillus cereus
  - Clostridium perfringens (and botulinum)
- bacterial infection
  - Vibrio spp. (including V. parahaemolyticus)
• viral infections: Rotavirus
  Small round viruses (Norwalk group)
  Enteric adenoviruses
• protozoal infection: Entamoeba histolytica
• marine biotoxins: Toxic shellfish.

**Case Definition**

**Clinical description**
An acute gastrointestinal illness with symptoms of diarrhoea and or vomiting.

Notify:
1. A single case of botulism, chemical poisoning, or a verotoxigenic E. coli infection, in particular E. coli 0157:H7
   OR
2. a person in a high-risk occupation – eg, food handler or an early childhood service worker with an acute gastroenteritis
   OR
3. a group of two or more persons linked by common exposure to food, water or other suspected toxic substance who experience an illness involving vomiting and/or diarrhoea (three or more loose stools per day), nausea and/or abdominal pain.

**Laboratory test for diagnosis**
Test for suspected pathogen or toxin. If the organism of a notifiable disease is isolated see the specific protocol.

**Case classification**
*Probable*: A clinically compatible illness.

*Confirmed*:
1. clinically compatible illness plus laboratory isolation of the specific organism or toxin
2. clinically compatible illness in a person who works in a high risk occupation
3. clinically compatible illness plus laboratory confirmation of a specific organism or toxin isolated from clinical specimens, and a common exposure to a food or water supply.

**Spread of Infection**

**Incubation period**
Variable and dose-dependent. Some examples are as follows:
Short incubation period (less than six hours): Bacillus cereus, Staphylococcus aureus.
Medium incubation period (six to 12 hours): Clostridium perfringens.
Longer incubation period (more than 12 hours): viral gastroenteritis, toxic shellfish poisoning.
**Period of communicability**

This depends on the type of organism. For example, *Bacillus cereus*, staphylococcal and clostridial food poisonings are not communicable. Viruses are communicable during the acute stage of the illness, and for varying times after. For example, Norwalk virus is communicable for 48 hours after diarrhoea has stopped, and rotavirus may be shed up to the eighth day.

**Mode of transmission**

Ingestion of contaminated food or water.

Person-to-person spread via the faecal-oral route.

**Notification Procedure**

Medical practitioners notify without delay.

**Management of Case**

**Investigation**

Consider whether to carry out an investigation to find the vehicle and circumstances of transmission (time, place and person) and plan control measures accordingly. In consultation with the attending medical practitioner, attempt to identify the source of infection, such as ingestion of suspect foods, exposure to human cases or animal faeces, and recent overseas travel. Specimens of suspect foods should be collected for analysis and referred to the nearest public health laboratory.

*See Guidelines for Investigation of Disease Outbreaks in New Zealand* (MoH 1996d) (includes a questionnaire for investigation of VTEC).

**Restriction**

Exclude from work those who work in areas of high risk, at least until they are well.

**Treatment**

Fluid and electrolyte replacement.

**Counselling**

Advise about hygiene.

**Management of Contacts**

**Definition**

A person who has been exposed to an infected person or infectious material in such a way that transmission may have occurred.
Investigation
Ask household and close contacts to report if they develop symptoms.

Restriction
Usually nil.

Counselling
Advise contact to seek care if sick.
Advise about hygiene.

Prophylaxis
Nil.

Other Control Measures

Identification of source
The actual or probable source of infection should be identified. Other control measures may involve the recall a food product; remediation, including encouraging development of a food safety programme on the premises; closure of premises; or advice and action to ensure the safety of a water supply (eg, boiling or chlorination). (See Section 14 of the Manual (MoH 1997b).)

Disinfection
Enteric precautions in institutions.

Health education
Educate the general public about safe food preparation and personal hygiene.
Educate food handlers in safe food handling.

Reporting
Liaise with the Environmental Health Officer of the territorial local authority.

If a cluster of cases occurs, forward an outbreak surveillance report to ESR. Guidelines for Investigation of Disease Outbreaks (MoH 1996d).
Campylobacteriosis

Epidemiology in New Zealand

Campylobacteriosis is the most frequently notified food-borne disease in New Zealand. In 1997, 8,848 cases were notified, a rate of 244.5 per 100,000. There is marked seasonality in notifications, with the peak in spring and summer.

Case Definition

Clinical description
An illness of variable severity with symptoms of abdominal pain, fever and diarrhoea, and often bloody stools.

Laboratory test for diagnosis
Isolation of Campylobacter from a clinical specimen.

Case classification
Probable: A clinically compatible illness that is epidemiologically linked to a confirmed case.
Confirmed: A case that is laboratory confirmed.

Spread of Infection

Incubation period
Three to five days, range one to ten days.

Mode of transmission
By ingestion of contaminated water or food, especially poultry. Person to person transmission and transmission from animals can occur.

Period of communicability
Throughout course of infection – usually several days to weeks.

Notification Procedure
To be notified by medical practitioners.
Management of Case

Investigation
Investigate if there is an outbreak or the case is in a high-risk occupation, including attendance at early childhood services.

Restriction
Exclude the case from work while symptomatic if they work in a high risk occupation or attend high risk area.
Exclude staff and children from early childhood services while symptomatic.
Bacteriological clearance should be considered for food handlers.

Treatment
Fluids and electrolyte therapy. The only indication for an antibiotic (erythromycin), is for a food handler, to shorten the excretion time. An antibiotic does not alter the clinical illness.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.
Educate about hygiene.

Management of Contacts
If symptomatic, investigate by laboratory testing and manage as a case until the results are known.

Other Control Measures
Identification of source
Investigate only in an outbreak.

Disinfection
Bacterial.

Health education
Educate the general public about safe food preparation and storage, and personal hygiene, including hand washing after contact with animals.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Cholera

Epidemiology in New Zealand

Cholera is not endemic in New Zealand but occasional imported cases occur. There were no reported cases in 1997. Cholera is a quarantinable disease under the Health (Quarantine) Regulations 1983.

Case Definition

Clinical description
An illness of variable severity characterised by watery diarrhoea and vomiting.

Laboratory test for diagnosis
Isolation of \textit{Vibrio cholerae} serogroup 01 or 0139 from a clinical specimen.

Case classification

\textit{Probable}: A clinically compatible illness linked epidemiologically to a confirmed case.

\textit{Confirmed}: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
A few hours to five days, commonly two to three days.

Mode of transmission
By ingestion of contaminated food and water.

Period of communicability
For the duration of the stool positive stage which is usually until a few days after recovery. Occasionally the carrier state may persist for several months. Tetracycline shortens the period of communicability.

Notification Procedure
To be notified by medical practitioners on a suspicion of a clinical diagnosis, immediately. Laboratories should be encouraged to report cases. Medical Officers of Health should notify the Ministry of Health.
Management of Case

Investigation
If an indigenous case occurs initiate a thorough investigation to find the source.
For an imported case, identify the country of exposure.

Restriction
Exclude from work those in a high risk occupation, such as food handlers and caregivers (of patients, children and the elderly), while they are excreting the organism.

Treatment
Prompt fluid replacement. Tetracyclines (usually doxycycline) reduce the volume and duration of diarrhoea and shorten the duration of excretion of the organism.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.
Educate about hygiene.

Management of Contacts

Definition
Household members or those exposed to a possible common source.

Investigation
A stool culture from contacts is recommended. Contacts should be under surveillance for diarrhoea for five days after the last exposure.

Restriction
As for case if symptomatic, whilst awaiting stool culture result.

Counselling
Encourage early referral if symptoms develop.
Educate about hygiene.

Prophylaxis
In New Zealand antibiotic prophylaxis for contacts is not recommended.
Other Control Measures

Identification of source
As above.

Disinfection
Bacterial.

Health education
Identify the population at risk and inform them of the need for early referral and treatment if symptoms develop.

Reporting
Cholera is an internationally quarantinable disease and must be notified to WHO.

The Ministry of Health will notify WHO. The Ministry is required to notify WHO and adjacent countries of the first case occurring in an area previously free of the disease.
Cryptosporidiosis

Epidemiology in New Zealand

Cryptosporidiosis was added to the revised list of notifiable diseases from 1 June 1996. There were 357 cases reported in 1997, a rate of 9.9 per 100,000. In 1998 there have been cases and outbreaks associated with public swimming pools. Overseas outbreaks have been associated with contaminated water supplies as well as contaminated food sources. The illness is caused by infection with the coccidian protozoan Cryptosporidium parvum.

Case Definition

Clinical description
An illness with diarrhoea and abdominal pain. The infection may be asymptomatic.

Laboratory test for diagnosis
Detection of Cryptosporidium parvum oocysts in a faecal specimen.

Case classification
Probable in an outbreak: A clinically compatible illness that is epidemiologically linked to a confirmed case.

Confirmed: A clinically compatible illness that is laboratory confirmed

Spread of Infection

Incubation period
Probably one to 12 days, with an average of seven days.

Mode of transmission
Faecal-oral, including person to person, from infected animals or from contaminated food or water.

Period of communicability
Oocysts, the infectious stage, appear at the start of the infection and are excreted for several weeks.

Notification Procedure
To be notified by medical practitioners on diagnosis.
Management of Case

Investigation
Investigate if there is an outbreak, or if the case is in a high risk occupation such as a food handler or a staff member at an early childhood service, or the case attends an early childhood centre. In an outbreak consider ingestion of contaminated water and check the supply.

Restriction
Exclude those cases in high risk occupations and children from attending early childhood services whilst symptomatic.

Treatment
Nil available.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.
Educate about hygiene.
In early childhood services or other institutional situations, provide instruction in good hygiene practice, including hand washing routines, nappy change routines, and correct use and storage of cleaning equipment. Hand washing is a more practicable barrier to infection than disinfection of toys or general surfaces.

Management of Contacts

Definition
A person who has been exposed to an infected person or infectious material in such a way that transmission may have occurred.

Investigation
Investigate contacts who are symptomatic.

Restriction
Contacts need not be excluded from work, school or other activities unless symptoms develop.

Counselling
Encourage early referral if symptoms develop.

Prophylaxis
Not applicable.
Other Control Measures

Identification of source

Identify the likely source, such as contact at an early childhood service, or contact with animals, or ingestion of untreated contaminated water. Check water supply for contaminants and for compliance with the drinking-water standards (MoH 1995a). Liaise with the territorial local authority and the regional council to ensure appropriate remedial action. In outbreaks associated with swimming pools refer to the circular letters sent to Medical Officers of Health on cryptosporidiosis (1998b). Advise on the necessity to boil water.

Disinfection

See the Drinking-water Standards of New Zealand (MoH 1995a).

Health education

As above for cases. If a water supply is involved liaise with the Territorial Local Authority and the Regional Council to inform the public.

Reporting

If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Giardiasis

Epidemiology in New Zealand

Giardiasis was added to the revised schedule of notifiable diseases from 1 June 1996. A total of 2119 cases were reported in 1997, a rate of 58.6 per 100,000. The most common means of transmission of *Giardia* is by the faecal-oral route. Children aged under five years have the highest incidence rate for this disease in New Zealand. Day-care attendance has been documented as a risk factor in the United States.

Water-borne transmission has also been suggested in New Zealand studies. *Giardia* cysts have been found in some water supplies.

Case Definition

**Clinical description**

An illness characterised by diarrhoea, abdominal cramps, bloating, weight loss or malabsorption. The infection may be asymptomatic.

**Laboratory test for diagnosis**

Detection of *Giardia* cysts or trophozoites in a specimen from the human intestinal tract
OR
detection of *Giardia* antigen in faeces.

**Case classification**

*Probable* (in an outbreak): A clinically compatible illness in a person epidemiologically linked to a confirmed case.

*Confirmed*: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

**Incubation period**

Five to 25 days or longer; median seven to 10 days.

**Mode of transmission**

Faecal-oral route. It may be waterborne.

**Period of communicability**

Throughout the entire period of infection.
Notification Procedure

Cases should be reported to the Medical Officer of Health on confirmation of a single case or on suspicion of an outbreak.

Management of Case

Investigation

Investigate if there is an outbreak, or if the case is in a high-risk occupation or attends an early childhood centre. In an outbreak consider as a source of infection the ingestion of contaminated water.

Restriction

Exclude those cases in high risk occupations and children from attending early childhood services whilst symptomatic.

Treatment

Use any imidazole (eg, metronidazole); longer courses of treatment are more effective than shorter courses.

Counselling

The case should be advised of the nature of the infection and its mode of transmission.

Educate about hygiene.

In early childhood services or other institutional situations, provide instruction in good hygiene practice, including hand washing routines, nappy change routines, and correct use and storage of cleaning equipment. Hand washing is a better barrier to infection than disinfection of toys or general surfaces.

Management of Contacts

Definition

A person who has been exposed to an infected person or infectious material in such a way that transmission may have occurred.

Investigation

Investigate contacts who are symptomatic.

Restriction

Contacts need not be excluded from work, school or other activities unless symptoms develop.
Counselling
Encourage early referral if symptoms develop.

Prophylaxis
Not applicable.

Other Control Measures

Identification of source
Identify the likely source, such as contact at an early childhood service, or ingestion of untreated contaminated water. Check water supply for contaminants and for compliance with the drinking-water standards (MoH 1995a). Liaise with the territorial local authority and the regional council to ensure appropriate remedial action.

Disinfection
See the Drinking-Water Standards of New Zealand (MoH 1995a).

Health education
As above for cases. If a water supply is involved, liaise with the territorial local authority to inform the public.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Hepatitis A

Epidemiology in New Zealand

In 1997, 344 cases of hepatitis A were reported, a rate of 9.5 per 100,000. Although basic hygiene and good food handling will remain the key control strategies, hepatitis A vaccine may assist with control in particular groups (eg, travellers to developing countries) and some occupational groups, such as sewerage workers. Men who have sex with men are also at increased risk.

Case Definition

Clinical description
An illness with a discrete onset of symptoms (fever, malaise, anorexia, nausea, or abdominal discomfort) with jaundice and/or elevated serum aminotransferase levels.

Laboratory test for diagnosis
Positive anti HAV IgM in serum.

Case classification

Possible: A clinically compatible illness epidemiologically linked to a confirmed case.

Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Fifteen to 50 days, commonly 28–30 days.

Mode of transmission
Person to person by the faecal-oral route. Common source outbreaks have been reported from contaminated water and food contaminated by an infected food handler. Foods implicated include salads and shellfish.

Period of communicability
Maximum infectivity is one to two weeks before and the first few days after the onset of jaundice.
Notification Procedure
To be notified by medical practitioners.

Management of Case

Investigation
Identify cases in a high-risk occupation such as a food handler or a staff member at an early childhood service, and check for the risk of transmission.

Investigate if there is an outbreak.

Restriction
Standard enteric precautions until liver function tests have peaked, by which time faecal excretion of virus is minimal or absent. Exclude from work, school, early childhood service or care activities and from food handling until well or at least seven days after the onset of jaundice.

Treatment
Nil specific.

Counselling
The case or parent/caregiver as appropriate should be advised of the nature of the infection and its mode of transmission.

Educate about hygiene, and advise not to prepare or handle food for others while symptomatic.

Management of Contacts

Definition
Contact with a case during the latter half of the incubation period and until a week after onset of jaundice, including:
• staff and children in close contact with the case at an early childhood service
• all household and sexual contacts
• if case is a food handler, then other food handlers in the establishment are considered as contacts.

Investigation
Search for missed cases and maintain surveillance of contacts in the patient’s household or, in a common source outbreak, persons exposed to the same risk. Continue surveillance for seven weeks.

Restriction
Contacts should be observed for the development of symptoms and need not be excluded from work or school or other activities unless symptoms develop.
**Counselling**

Encourage early referral if symptoms develop.

**Prophylaxis**

Contacts defined as above may be offered 0.03 ml/kg human immunoglobulin (IG). This should be given as soon as possible, and within two weeks of last exposure. Normal immunoglobulin is available from the Blood Transfusion Services. In an early childhood service, IG should be given to all classroom contacts (children and staff). If the service admits children in nappies, IG should be given to all potentially exposed children and staff in the service. IG is not indicated for contacts in the school or workplace situation except those at high risk as above.

In food and water-borne outbreaks, immune globulin may be effective if administered to people exposed to the common source if within two weeks of last exposure.

Hepatitis A vaccine should be offered at the same time as immunoglobulin.

**Other Control Measures**

**Identification of source**

Investigate for possible food-borne or water-borne source. If food-borne spread is suspected, the case should be investigated as for other gastrointestinal disorders and the appropriate control measures undertaken.

**Disinfection**

Sanitary disposal of faeces, urine and blood.

**Health education**

Educate about hygienic practices, particularly hand washing.

**Immunisation**

Immunisation with the hepatitis A vaccine should be considered for certain high-risk groups (eg, men who have sex with men, sewerage workers) or persons who may be at risk through work or travel in countries with a high endemic rate.

Hepatitis A vaccine may be considered to control outbreaks in defined and circumscribed communities. Please consult the Ministry of Health for advice.

**Reporting**

If a cluster of cases occurs, forward an outbreak surveillance report to the ESR.
Listeriosis

Epidemiology in New Zealand

There were 35 cases of listeriosis reported in 1997, of which eight were perinatal. Although most cases are sporadic, outbreaks have occurred in New Zealand in the past decade.

In early 1997, February to June, there was an increase in reported cases of listeriosis of the serotype 0/1 52. A specific investigation questionnaire was developed and will be used for future cases.

Listeriosis has the highest case-fatality rate for a food-borne illness in the western world because of the high case-fatality rate of perinatal infection.

Case Definition

Clinical description
An infection which produces several clinical syndromes including stillbirths, listeriosis of the newborn, meningitis, bacteraemia, or localised infections. Pregnant women, the immunosuppressed and the frail elderly are at greatest risk.

Laboratory test for diagnosis
Isolation of Listeria monocytogenes from a site that is normally sterile, including the foetal gastrointestinal tract.

Case classification
Probable: Not applicable.
Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Variable: Outbreak cases have occurred three to 70 days following an exposure to a contaminated food product. Median incubation period is estimated as three weeks.

Mode of transmission
Ingestion of contaminated foods such as unpasteurised milk or cheese, contaminated vegetables or meat products such as pâté, or shellfish. In perinatal infections, the foetus is infected in utero or during delivery.
Period of communicability
Mothers of infected infants may shed the bacteria in vaginal discharges and urine for 7–10 days after delivery. Infected individuals may shed the organism in their stool for several months.

Notification Procedure
To be notified by medical practitioners on microbiological confirmation.
Encourage laboratories to report clusters of positive microbiological specimens.

Management of Case
Investigation
Discuss the investigation with the Ministry of Health. Investigate using the listeriosis questionnaire developed by ESR. Forward the completed questionnaire to ESR.

Restriction
Enteric precautions. Asymptomatic mothers of neonatal cases can shed the organism for up to 10 days after delivery.

Treatment
Penicillin or amoxycillin alone or occasionally with an aminoglycoside, or cotrimoxazole alone

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Any other person exposed to the identified source(s) of infection, advise on the risk of infection.

Other Control Measures
Identification of source
The actual or probable source of infection, food or environmental, should be determined if possible. Ingestion of unpasteurised dairy products or improperly cooked meats or vegetables should be sought. A detailed investigation should be undertaken if two or more related cases have occurred.
Note: In New Zealand, the selling of cheeses made from unpasteurised milk is prohibited. Check the water tank if on roof.

Disinfection
Nil.
Health education

Advise pregnant women to avoid unpasteurised milk and dairy products, pâté, precooked chicken and ham, and other chilled precooked meat products, uncooked seafoods, chilled precooked seafood unless eaten hot, and stored salads. Advise pregnant women to avoid potentially infective material on farms, such as aborted animal foetuses.

Educate the public about safe domestic food preparation.

Reporting

If a food source is identified, discuss with the Ministry of Health.

If a cluster of cases occurs, notify the Ministry of Health and forward an outbreak surveillance report form to ESR.
Salmonellosis

Epidemiology in New Zealand

For typhoid and paratyphoid fevers, see the specific protocol. Salmonella infection is a common food-borne and water disease in New Zealand. There were 1,169 notifications of salmonellosis in 1997, a rate of 32.3 per 100,000. The highest age-specific rate of the disease is reported in children under the age of five years. Outbreaks are common. More information on Salmonella spp. is published quarterly by ESR Lab-Link (see reference list).

Case Definition

Clinical description
Salmonellosis presents as gastroenteritis. Asymptomatic infections may occur.

Laboratory test for diagnosis
Isolation of Salmonella species (excluding S. typhi) from any clinical specimen.

Case classification
Probable: A clinically compatible illness that is epidemiologically linked to a confirmed case.
Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Six to 72 hours, commonly 12–36 hours.

Mode of transmission
Ingestion of organisms in food or water either contaminated by faeces of an infected animal or person, or from infected food animals. Foods most commonly implicated include eggs, raw milk, dairy products, meat and meat products, poultry and poultry products. Animals (eg, chickens) may be a source of infection. Person-to-person spread occurs.

Period of communicability
Throughout the course of infection, which is variable, several days to several weeks. A carrier state may last months.
Notification Procedure

To be notified by medical practitioners on microbiological confirmation.

Management of Case

Investigation

In an outbreak, attempt to identify the source of infection, such as ingestion of suspect foods (especially raw eggs, meat, poultry and their products), exposure to human cases or animal faeces, and recent overseas travel.

See Guidelines for the Investigation of Disease Outbreaks in New Zealand (MoH 1996d).

If a specific food product is suspected discuss with the Ministry of Health.

Restriction

Exclude food handlers whilst symptomatic. Food handlers in contact with unwrapped foods which will not be subject to further cooking should be excluded until they have had two consecutive negative stool cultures taken 48 hours apart.

Other high-risk people, such as staff of early childhood education centres, health care workers, children attending early childhood centres and school children, exclude whilst symptomatic. Outbreaks are unusual in early childhood centres.

Treatment

Rehydration. Antibiotics are contraindicated and generally prolong carriage.

Counselling

The case should be advised of the nature of the infection and its mode of transmission.

Advise about hygiene.

Management of Contacts

Investigate food handlers and others who work in a high-risk occupation. Restrict as for a case those with a positive sample. For other contacts, investigation and follow-up is at the discretion of the Medical Officer of Health.

Counselling

To household contacts: encourage early referral if symptoms develop.

Educate about hygiene.

Prophylaxis

Nil.
Other Control Measures

Identification of source
Identify the source of infection if possible.

Disinfection
Disinfect soiled articles.

Health education
Educate the general public about proper food preparation and personal hygiene.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Shigellosis

Epidemiology in New Zealand

There were 114 cases of shigellosis reported in New Zealand in 1997, a rate of 3.2 per 100,000. Outbreaks in New Zealand are often caused by person-to-person transmission.

Case Definition

Clinical description
Shigellosis presents as gastroenteritis.

Laboratory test for diagnosis
Isolation of Shigella spp. from a clinical specimen.

Case classification
Probable: A clinically compatible illness that is epidemiologically linked to a confirmed case.
Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Range 12 hours to one week, usually one to three days.

Mode of transmission
Direct or indirect faecal-oral transmission. Food or water may become contaminated. The infective dose is low, at about 10–100 organisms.

Period of communicability
Throughout the course of the infection. Asymptomatic carriage may persist for months. Appropriate antimicrobial treatment reduces the duration of carriage to a few days.

Notification Procedure

To be notified by medical practitioners on microbiological confirmation.
Management of Case

Investigation
In consultation with the attending medical practitioner, attempt to identify source of infection, such as ingestion of suspect foods, exposure to human cases, and recent overseas travel. There is little to be gained from investigation of sporadic cases; investigations should focus on those in high-risk occupations and children attending early childhood services.

Restriction
For those at high risk: food handlers, childcare workers, health care workers, children, infants. Exclude from school or workplace contact until they have had two consecutive negative stool samples collected at least 48 hours apart.

Treatment
Fluid and electrolyte therapy.
Antibacterials: co-trimoxazole, or quinolones shorten duration and severity of illness and may be indicated in severe or prolonged disease.

Counselling
The case should be advised of the nature of the infection and its mode of transmission. Educate about hygiene.

Management of Contacts

Investigation
Investigate for symptomatic household contacts and symptomatic high-risk workers. Contacts who work in high-risk situations such as food handlers, hospital workers, and children in hospitals should have a stool culture. Search for mild unrecognised cases of the disease only in an outbreak where spread of infection is likely, not for sporadic cases.

Restriction
Nil if asymptomatic, but in outbreak exclude contact in a high-risk occupation until stool culture is tested as negative.

Counselling
Encourage early referral if symptoms develop. Educate about hygiene.

Prophylaxis
Nil.
Other Control Measures

Identification of source
Identify the source of infection if possible.

Disinfection
Bacterial.

Health education
Educate the general public about safe food preparation and personal hygiene.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Typhoid and Paratyphoid Fever

Epidemiology in New Zealand

There were 16 cases of typhoid reported in 1997. Most cases of disease notified in recent years are associated with overseas travel. Chronic carriers of *Salmonella typhi* may however exist in the community and occasionally infect household contacts.

Case Definition

Clinical description

An illness of variable severity with prolonged fever and systemic symptoms.

Laboratory test for diagnosis

Isolation of *S. typhi* or *S. paratyphi* from any clinical specimen.

Case classification

*Probable:* A clinically compatible illness that is epidemiologically linked to a confirmed case.

*Confirmed:* A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period

*Typhoid fever:* Variable, usual range of one to three weeks.

*Paratyphoid fever:* Variable, usual range of one to three weeks. For non-systemic gastroenteritis, one to 10 days.

Mode of transmission

By food and water contaminated by faeces and urine of patients or carriers: food vehicles in New Zealand have included shellfish taken from contaminated beds. Raw fruits and vegetables, contaminated milk and milk products have been vehicles in other countries.

Chronic carriage (*i.e.*, *S. typhi* excreted for more than a year) is most common among persons infected in middle age, especially women. Carriers frequently have demonstrable biliary tract abnormalities (*e.g.*, calculi, a non-functioning gall bladder), and *S. typhi* (or rarely, *S. paratyphi*) is carried in the biliary system and excreted in the faeces.
**Period of communicability**

Usually from the first week throughout convalescence. About 10 percent of typhoid patients become carriers.

**Notification Procedure**

To be notified by medical practitioners on suspicion.

**Management of Case**

**Investigation**

In New Zealand most cases occur in recent travellers or immigrants, or occasionally in a family with an older carrier relative.

**Restriction**

Enteric precautions whilst ill.

Exclude all typhoid and paratyphoid patients from work or school until well.

Exclude the following high-risk cases from work until clear:

- children under five years of age in group care
- food handlers (those in contact with unwrapped food which will not be further heated)
- staff working in early childhood services or healthcare staff providing care to immunocompromised patients.

Children are required to be excluded from school until bacteriologically clear.

For all cases: check the clearance of infection by three consecutive negative stool cultures.

Specimens should be collected at least 24 hours apart and at least 48 hours after antibiotics have been completed and not earlier than one month after the onset of symptoms.

If any one of these specimens is positive, repeat stool sampling at intervals of one month during the 12 months after onset, until three consecutive negative cultures have been obtained.

Exclude chronic carriers from work if in a high-risk group.

**Treatment**

Depending on sensitivities, quinolones, amoxicillin, cotrimoxazole or third-generation cephalosporins are all options. Carriage persisting for longer than six months should be referred to an infectious disease physician.

**Counselling**

The case should be advised of the nature of the infection and its mode of transmission.

Educate the patient or caregiver about hygiene.
Management of Contacts

Definition
A person exposed to an infected person or contaminated food. This includes all members of a travel group associated with an identified case.

Investigation
Investigate for source of infection or common exposure.

Check contacts as follows:
- Household members and other close contacts: Check with one negative faecal culture.
- Contacts in a high-risk occupation (as above): Exclude from work until two negative faecal samples taken at least 24 hours apart are obtained.
- Co-members of travel group: advise of risk. Screen with faecal cultures depending on degree of common risk.

Restriction
Exclude those in high-risk occupations until two negative specimens (as above).

Other contacts are not excluded from work or school.

Counselling
Advise early referral if symptoms develop.

Educate about hygiene.

Prophylaxis
Nil recommended.

Other Control Measures

Identification of source
The actual or probable source of infection should be identified.

Disinfection
Bacterial measures.

Health education
Educate the general public about safe food preparation and personal hygiene.

Reporting
Notify the Ministry of Health of the details of recent overseas travel by the case. If appropriate, the Ministry of Health will inform the overseas health authority.
Yersiniosis

Epidemiology in New Zealand

Yersiniosis was added to the revised schedule of notifiable diseases from 1 June 1996. There were 480 cases reported in 1997, a rate of 13.3 per 100,000.

Case Definition

Clinical description
An acute illness with diarrhoea, fever and abdominal pain. Mesenteric adenitis may occur and complications include arthritis and systemic infection.

Laboratory test for diagnosis
Isolation of *Yersinia enterocolitica* or *Y. pseudotuberculosis* from blood or faeces
OR
detection of circulating antigen by ELISA or agglutination test.

Case classification
*Probable:* A clinically compatible illness that is epidemiologically linked to a confirmed case.

*Confirmed:* A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Probably three to seven days, generally under 10 days.

Mode of transmission
Faecal-oral transmission from contaminated food and water or contact with infected people or animals. The bacterium has been isolated from a variety of foods, most commonly raw pork and pork products. It has also rarely been transmitted by blood transfusion from asymptomatic donors.

Period of communicability
Secondary transmission is rare. There is faecal shedding while symptoms persist, usually two to three weeks.
Notification Procedure
To be notified by medical practitioners on diagnosis.

Management of Case

Investigation
Investigate for source of infection, especially contaminated foods.

Restriction
Enteric precautions for hospitalised cases.
Restrict from work those in high-risk occupation whilst symptomatic.

Treatment
There is no clearly established treatment, but for individuals with continuing symptoms (usually abdominal pain or diarrhoea) consider an oral quinolone (eg, norfloxacin) or doxycycline.

Counselling
Advise on the mode of infection. Advise on hygiene.

Management of Contacts

Definition
A person with exposure to the same source of infection as the case.

Investigation
Search for those with asymptomatic infection only in an outbreak.

Restriction
Nil.

Counselling
Advise patient or caregiver on mode of infection and hygiene.

Prophylaxis
Nil.
Other Control Measures

Identification of source
Identify food product.

Disinfection
Bacterial.

Health education
Advise on safe food handling.

Reporting
If a cluster of cases occurs, forward an outbreak investigation report to ESR.
Part Three:
Rare Diseases
Anthrax

Epidemiology in New Zealand

This disease has not been recorded in New Zealand since 1954. The risk of imported disease may come from travellers who have purchased animal skins, hides or fibres and import them illegally. Control of imports to prevent anthrax is legislated under the Anthrax Prevention Regulations 1987. For further information see the Anthrax chapter of *Environmental Health Protection Manual* (MoH 1997a).

Case Definition

Clinical description

An illness with acute onset characterised by several distinct clinical forms, including:

- a skin lesion that has evolved over two to six days from a papule, through a vesicular stage to a depressed black eschar, with considerable swelling around the lesion
- a respiratory illness of abrupt onset followed by the development of dyspnoea progressing to hypoxia, with X-ray evidence of mediastinal widening
- abdominal distress followed by fever and signs of septicaemia (rare).

Ninety percent of cases are cutaneous anthrax.

Laboratory test for diagnosis

One or more of the following:

- isolation of *Bacillus anthracis* from a clinical specimen
- demonstration of *Bacillus anthracis* in a clinical specimen by immunofluorescence
- significant antibody titres developing in an appropriate clinical case.

Case classification

*Probable:* Not applicable.

*Confirmed:* A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period

Two to seven days, usually two days.
Mode of transmission
Contact with tissues of infected animals; contact with contaminated wool, hair, hides or products made from them; contact with soil associated with infected animals.

Period of communicability
No person-to-person transmission. Articles and soil contaminated with spores may remain infective for many years.

Notification Procedure
Medical practitioners are to notify the Medical Officer of Health on suspicion of a case.

Management of Case

Investigation
In consultation with the attending medical practitioner, attempt to identify the source of infection, such as exposure to imported animal products. Investigate any identified possible sources.

Restriction
Nil.

Treatment
Discuss with an infectious diseases physician. Penicillin is the drug of choice.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Advise persons with similar exposure to infected animal product, or in same workplace, of the risk.

Other Control Measures
For further information see the Environmental Health Protection Manual (MoH 1997a).

Identification of source
Investigate for imported hides and/or animal products.
Disinfection
See the Anthrax Prevention Regulations 1987 for details of control and disinfection.

Health education
Educate the public about the risks associated with importation of animal products.

Reporting
Report to OSH (with the consent of the patient) if employment-related.
Notify the Ministry of Health.
Arboviral Diseases

Epidemiology in New Zealand

Arboviral diseases are arthropod-borne, usually by mosquitoes, ticks or sandflies. All arboviral infections notified to date have been imported by travellers to New Zealand. Arboviral infections include the alphavirus group (eg, Ross River virus disease), and the flavivirus group (eg, dengue fever, Japanese encephalitis (JE) and Murray Valley encephalitis (Australian encephalitis). Yellow fever (page 3–42) and viral haemorrhagic fevers (page 3–39) are specified separately.

Dengue fever and Ross River virus disease fever are the arboviral diseases most likely to infect a New Zealand traveller in the Pacific. Dengue fever is endemic in Australia, the Pacific, Asia and Southeast Asia. Ross River fever and Murray Valley encephalitis occur principally in Australia and also in the Pacific. Japanese encephalitis occurs throughout Southeast Asia, parts of Asia and has recently been found in the Torres Strait islands off the north coast of Australia.

Case Definition

Clinical description

The main clinical syndromes are:

- encephalitis: acute central nervous system disease with aseptic meningitis or encephalitis eg, Japanese encephalitis, Murray Valley encephalitis
- fever with or without an exanthem: eg, dengue, Ross River fever
- arthritis: and rash eg, Ross River fever, dengue.

Laboratory test for diagnosis

Positive specific serological test.

Consult ESR or the virology laboratory at Auckland Hospital for the appropriate test and site.

Case classification

Probable: Compatible clinical illness in a person who has come from an endemic area.

Confirmed: Clinically compatible illness which is confirmed by specific serological testing.
Spread of Infection

**Incubation period**
Variable, generally between three and 15 days.

**Mode of transmission**
The above named infections are transmitted by mosquitoes. Specific diseases are associated with specific mosquito species.

**Period of communicability**
There is no transmission from person to person.

**Notification Procedure**
Notify on suspicion to Medical Officer of Health.

**Management of Case**

**Investigation**
Check case’s travel history and likely place where infection occurred. If the case has no recent history of travel overseas consider whether the disease was acquired locally. Contact the Ministry of Health for further advice on investigation and management.

**Restriction**
Nil.

**Treatment**
Symptomatic treatment.

**Counselling**
Advise on nature of infection.

**Management of Contacts**
Not applicable.

**Other Control Measures**
There is a risk of arboviral diseases – eg, Ross River fever – becoming endemic in New Zealand. Mosquito surveillance and control is important. For further information see the Environmental Health Protection Manual (MoH 1997a).
Identification of source

Identify country of origin of infection.

Health education

Advise travellers to avoid mosquitoes and to use insect repellents and personal protection whilst travelling in areas where arboviral diseases are endemic. Advise travellers to wear long-sleeved shirts and long trousers, to mosquito spray the room before retiring and to use mosquito repellent on exposed skin areas in the evening. For further information including advice on bed nets see *Health Advice for Overseas Travellers* (MoH 1996a). A pamphlet on mosquitoes is in preparation.

A National Pest Management Strategy is currently under development.

Japanese encephalitis vaccine is available on a named-patient basis under Section 29 of the Medicines Act 1981. For further advice consult the Ministry of Health, an infectious diseases specialist or ESR.

Reporting

Contact the Ministry of Health if there is any suspicion that the disease was acquired locally.
Brucellosis

Epidemiology in New Zealand

Bovine brucellosis has been eradicated from New Zealand. *Brucella ovis* infects sheep in this country, it does not affect humans. Occasional reports of brucellosis in recent years have not been confirmed as acute cases and represent persistent *Brucella* antibodies in those exposed in the distant past. A very small number of travellers or immigrants have been acutely infected outside New Zealand.

Case Definition

**Clinical description**

An illness characterised by acute or insidious onset of fever, night sweats, undue fatigue, anorexia, weight loss, headache and arthralgia. Untreated, complications such as septic arthritis may occur.

**Laboratory test for diagnosis**

One of the following:

- isolation of *Brucella* species from a clinical specimen
- a fourfold or greater rise in *Brucella* antibody titre (by SAT, ELISA, Coombs, IFA), between acute and convalescent phase serum specimens
- a single *Brucella* titre $\geq 160$ (by SAT or Coombs) confirmed either by a 2-mercaptoethanol test (2ME) titre of $\geq 160$. The presence of Brucella IgG antibodies $\geq 160$ is suggestive of ongoing infection.

Consider the possibility of cross reactivity in *Brucella* SAT test, with antibodies in people infected with *Yersinia enterocolitica*. Ensure that yersiniosis is excluded.

Serological diagnosis in the absence of relevant clinical symptoms rarely allows a confident diagnosis.

**Case classification**

*Probable:* A clinically compatible illness that is epidemiologically linked to a confirmed source.

*Confirmed:* A clinically compatible illness that is laboratory confirmed.

Consult an infectious disease physician before the case is classified as confirmed.
Spread of Infection

Incubation period
Five to 60 days; commonly one to two months.

Mode of transmission
By contact with tissues, secretions, blood, aborted foetuses and placentas from infected animals, or by ingestion of raw milk or dairy products from infected animals. No person-to-person spread.

Period of communicability
There is no communicability from person to person.

Notification Procedure
To be notified by medical practitioners on microbiological or serological confirmation.

Management of Case

Investigation
Confirm the diagnosis in consultation with the attending medical practitioner and ascertain whether it is an acute case. Attempt to identify the source of infection, such as exposure overseas to unpasteurised dairy products, or to infected animals.

Restriction
Nil.

Treatment
Discuss with an infectious diseases physician. Rifampicin plus tetracycline is the regimen of choice in adults. For children, substitute co-trimoxazole for tetracycline.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Advise persons with a similar exposure as the case, on the mode of transmission of the disease.
Other Control Measures

Identification of source
Unpasteurised dairy products from infected herds were implicated in the past. Bovine brucellosis has been eradicated from New Zealand.

Disinfection
Nil.

Reporting
Contact the Ministry of Health if any case is suspected of having contracted the disease in New Zealand.

The Ministry of Health will advise the Chief Veterinary Officer, Ministry of Agriculture and Forestry Regulatory Authority.
Creutzfeldt-Jakob Disease and Other Spongiform Encephalopathies

Epidemiology

Creutzfeldt-Jakob disease (CJD), and other spongiform encephalopathies was added to the revised list of notifiable diseases from 1 June 1996. CJD is one of four transmissible spongiform encephalopathies (TSE), that affect humans. The others are Gerstmann-Straussler-Scheinker syndrome, kuru, and fatal familial insomnia. There are four TSE that affect animals: scrapie of sheep and goats, transmissible mink encephalopathy, chronic wasting disease of American mule deer and bovine spongiform encephalopathy (BSE). A variant form of CJD (V-CJD) has been identified in the United Kingdom and is characterised by early age of onset, more prolonged duration, predominantly psychiatric presentation, and distinct brain pathology. Cases of V-CJD have been linked to BSE agent in cattle.

In New Zealand, the average annual incidence of CJD is 0.8 cases per million population and is highest in those aged 60–79 years. Seven cases have been linked to iatrogenic modes of transmission (human growth hormone administration, corneal transplant, and cadaveric dura mater used in neurosurgery).

To improve surveillance and investigation of this disease, it has been made notifiable. A case registry has been set up with the Department of Medicine, University of Otago.

CJD is a progressive dementing illness with associated myoclonus. It rapidly progresses to death within 12 months.

Case Definition

This is based on specific diagnostic criteria and assessed by the Registry and reporting clinician.

Spread of Infection

Incubation period

Variable depending on whether iatrogenic. Fifteen months to 30 years.

Mode of transmission

Thought to be a prion.

CJD has been transmitted from contaminated neurosurgical instruments, infected dura mater and
pituitary extracts, or transplantation of infected material such as infected cornea. Blood and blood products are a potential source.

The V-CJD in Britain is thought to be associated with consumption of food products from BSE infected cattle.

**Period of communicability**

Infectivity during the incubation period is not known. Central nervous system (CNS) tissue is infective throughout symptomatic illness.

**Notification Procedure**

To be notified by medical practitioners on suspected diagnosis.

Notify either the Ministry of Health or directly to the CJD register, Dr Martin Pollock, Associate Professor of Medicine, Department of Medicine, University of Otago.

**Management of Case**

**Investigation**

As for registry protocol, completed by the clinician.

**Restriction**

Use standard precautions for nursing care.

Advise not to donate blood.

**Treatment**

Nil specific.

**Counselling**

The clinician will provide.

**Management of Contacts**

Provide information on the disease.

Medical Officers of Health may be asked to assist in interviewing relatives for information for the Registry.
Other Control Measures

Identification of source
As in register protocol.

Disinfection
Advice on handling pathological tissue has been circulated to all acute hospitals.

Guidelines prepared in Australia have been circulated to Medical Officers of Creutzfeldt-Jakob Disease and Other Human Transmissible Spongiform Encephalopathies: Guidelines on Patient Management and Infection Control (NHMRC 1995).

Reporting
As above to the CJD Registry.
Cysticercosis and Taeniasis

Epidemiology in New Zealand

Cysticercosis and taeniasis remain notifiable diseases. They are uncommon in New Zealand but may occasionally be diagnosed in returning travellers or immigrants. Taeniasis is gut infestation with either *Taenia saginata*, the beef tapeworm, or *T. solium*, the pork tapeworm. Humans can be intermediate host to *T. solium*, the cysticerci of which may be found in various organs, particularly the brain (cysticercosis). Patients with this infestation may present with convulsions or, very rarely, there is evidence of space-occupying lesions elsewhere.

Case Definition

Clinical description
Weight loss, abdominal pain and digestive disturbance.

Laboratory test for diagnosis
Identification of proglottids, eggs in the faeces.

Case classification
Probable: Nil.

Confirmed: A clinically compatible illness with laboratory confirmation.

Spread of Infection

Incubation period
Variable.

Mode of transmission
Not normally transmitted from person to person. Infection is transmitted via raw or undercooked pork or beef. Nevertheless, individuals with gastrointestinal *T. solium* infection can themselves develop cysticercosis or transmit the infection to household contacts, who in turn may develop cysticercosis.

Period of communicability
Eggs remain viable in the environment for years.
Notification Procedure
To be notified by medical practitioners on inosis.

Management of Case

Investigation
Ask about the ingestion of raw or undercooked meat and history of overseas travel.

Restriction
Nil.

Treatment
Consult with a physician.

Counselling
Advise on mode of transmission.

Management of Contacts

Definition
Person with same history of exposure.

Investigation counselling
As for case.

Other Control Measures

Identification of source
If the case contracted the disease in New Zealand, inform the Ministry of Agriculture and Forestry Regional Veterinary Officer.

Disinfection
Nil.

Health education
Advise on food preparation.

Reporting
Advise the Ministry of Health.
Hepatitis (Viral) Not Otherwise Specified

Epidemiology in New Zealand

‘Viral hepatitis not otherwise specified’ is a category for other viral infections of the liver. It will include those emerging illnesses such as hepatitis G, and others such as D or E for which tests are now available and for which the epidemiology and course of the illness are now being defined. Hepatitis E has not occurred in New Zealand but may occur in a returning traveller.

Case Definition

Clinical description
An illness with variable symptoms including fever, malaise, anorexia and nausea with jaundice and/or elevated aminotransferase levels.

Laboratory test for diagnosis
Negative tests for hepatitis A, B, C
AND
a positive anti-HDV, or positive anti HEV or positive test for hepatitis G.

Case classification
Probable: Not applicable.

Confirmed: An illness compatible with the diagnosis of hepatitis and a positive laboratory test.

Spread of Infection

Incubation period
Depends on type:
- hepatitis D 2–8 weeks
- hepatitis E 15–64 days
- hepatitis G not known.
**Mode of transmission**

- Hepatitis D occurs in association with hepatitis B, blood and body fluid spread.
- Hepatitis E is spread by contaminated water- or food-borne spread.
- Hepatitis G is a blood-borne virus.

**Period of communicability**

- Hepatitis D unknown, but may be ongoing even when not detectable by current laboratory tests.
- Hepatitis E not known.
- Hepatitis G not known.

**Notification Procedure**

To be notified by medical practitioners on diagnosis.

**Management of Case**

**Investigation**

Check travel history for source of hepatitis E. Check exposure to blood and body fluids from person with prior hepatitis.

**Restriction**

Advise not to donate blood.

**Treatment**

Nil specific.

**Counselling**

Advise on prevention of blood-borne or food- and waterborne illnesses.

**Management of Contacts**

Advise close household and the sexual partner of a case of likely risk.

**Other Control Measures**

**Disinfection**

Viral measures.
Health education

Advise on the importance of sanitary disposal of faeces and careful hand washing after defecation and before handling food.

Reporting

Report any outbreaks of viral hepatitis to ESR. Discuss with the Ministry of Health.
Hydatid Disease

Epidemiology in New Zealand

The incidence of hydatid disease is low in this country due to a range of successful public health and agricultural sector interventions. Although cases continue to be notified, available evidence suggests that these are the result of infection from many years ago. It is important to attempt to differentiate recent from chronic cases. Any suspected cases should be investigated if they are 45 years old or under, following consultation with the Ministry of Health. The incidence of recent cases is monitored to assess the hydatids control programme of the Ministry of Agriculture and Forestry (MAF).

Case Definition

Clinical description

Symptoms are caused by the local pressure effects of cysts, most commonly in the liver. Many cysts are asymptomatic and found by chance, but they should still be notified.

Laboratory test for diagnosis

Identification of live Echinococcus granulosus in cyst fluid or, rarely, sputum
OR
positive serological tests for granulosus.

Case classification

Probable: Radiological or other organ imaging evidence of characteristic cystic disease with positive serological tests.

Confirmed: Histopathological or other demonstration of live granulosus cysts.

Spread of Infection

Incubation period

Variable – years.

Mode of transmission

In New Zealand the definitive host is the dog, and the usual intermediate hosts are herbivores such as sheep, goats, pigs, cattle and horses. The dog-sheep cycle is most important in New Zealand.

Hydatids are transmitted by hand-to-mouth transfer of tapeworm eggs from dog faeces. It is not directly transmitted from person to person.
Period of communicability: Dogs begin to pass eggs seven weeks after infection. Most infections resolve in six months although occasionally adult worms survive two to three years. Eggs may survive months in paddocks or gardens.

Notification Procedure

All cases are to be notified by medical practitioners.

Management of Case

Investigation

In consultation with the attending medical practitioner, contact the Ministry of Health for advice. Inform the Ministry of Agriculture and Forestry if there is any possibility of recent infection (within the last two years).

In consultation with Ministry of Health, Ministry of Agriculture and Forestry officials and the territorial local authority, arrange investigation, including the investigation of dogs.

Restriction

Nil.

Treatment

Antihelminthic medical and surgical treatment.

Counselling

The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Not applicable.

Other Control Measures

Identification of source

Together with MAF, attempt to identify likely animal source.

Disinfection

Nil.
Health education

Control slaughter of herbivores and ensure dogs have no access to uncooked viscera. Incinerate or deeply bury infected organs from dead intermediate hosts. Advise on general hygiene, including the importance of hand washing and the risk for young children.

Reporting

Advise the Ministry of Health.

Further control actions are the responsibility of MAF.
Leprosy

Epidemiology in New Zealand

Cases of leprosy in New Zealand occur in individuals who have contracted the disease overseas.

Case Definition

Clinical description

A chronic bacterial disease characterised by the involvement of, mainly, skin and peripheral nerves. Clinical forms represent a spectrum reflecting the cellular immune response to *Mycobacterium leprae*. Anaesthetic skin lesions and nerve enlargements are characteristic of the disease.

*Tuberculoid leprosy (TT):* A few anaesthetic skin lesions and individual peripheral nerve abnormalities.

*Borderline (BB):* Skin lesions characteristic of both TT and LL forms.

*Lepromatous (LL):* Widespread erythematous papules and nodules with facial and aural infiltration, often accompanied by both individual peripheral nerve abnormalities and a symmetrical peripheral neuropathy.

Note: The disease is now more usefully classified as multibacillary or paucibacillary leprosy on the basis of the number of bacteria found in skin smears.

This classification of leprosy determines chemotherapy.

Laboratory test for diagnosis

Demonstration of acid-fast bacilli in biopsy tissue or split skin smears

OR

a biopsy with characteristic pathological changes.

Case classification

*Probable:* A clinically compatible syndrome that lacks laboratory confirmation.

*Confirmed:* A clinically compatible syndrome with acid fast bacilli in biopsy or smear.

Spread of Infection

Incubation period

Very lengthy, ranging from nine months to more than 20 years.
**Mode of transmission**
Infection probably occurs from nasal secretions and cutaneous ulcers.

**Period of communicability**
Patients treated with modern drug regimens cease to be infectious within a few days.

**Notification Procedure**
To be notified by medical practitioner on a probable clinical diagnosis.

**Management of Case**

**Investigation**
In consultation with the infectious disease physician, ensure laboratory confirmation of diagnosis where possible.

**Restriction**
Nil.

**Treatment**
Medication should be administered under supervision of the appropriate specialist. Treatment regimens are long, from six months to two years.

**Counselling**
The case should be advised of the nature of the infection and its mode of transmission, reactions to medication, proper foot and limb care, and prevention of injury.

**Management of Contacts**

**Definition**
A person who has been in close regular contact with an infected person over a prolonged period.

**Investigation**
Refer contacts to an infectious diseases specialist for examination and follow-up.

**Restriction**
Nil.

**Counselling**
Advise on early symptoms.
Prophylaxis
Nil.

Other Control Measures

Identification of source
Check family and travel history.

Disinfection
Nil.

Health education
Inform family members of the mode of spread and the risk of the disease.

Reporting
Advise the Ministry of Health, which is required to provide information on leprosy to WHO.
Meningoencephalitis - Primary Amoebic

Epidemiology in New Zealand

Primary amoebic meningoencephalitis occurs rarely in New Zealand. The disease may be contracted from swimming in untreated thermal pools and has been limited in the past to pools in the central North Island.

Case Definition

Clinical description

Presents as fulminating meningitis.

Laboratory test for diagnosis

Demonstration in cerebrospinal fluid of the causative organism the amoeba, *Naegleria fowleri*.

Case classification

Probable: Clinically compatible illness with history of immersion in thermal pool.

Confirmed: Compatible illness which is laboratory confirmed.

Spread of Infection

Incubation period

Three to seven days.

Mode of transmission

Naegleria infection is acquired by exposure of nasal passages to contaminated water – eg, by diving or swimming in untreated thermal water.

Period of communicability

No person-to-person transmission.
Notification Procedure

Notify on suspicion.

Management of Case

Investigation

Investigate for exposure to thermal water.

Restriction

Nil.

Treatment

Consult an infectious diseases physician. Antifungals are used, though there is no unequivocally effective treatment.

Counselling

Advise on nature of infection.

Management of Contacts

Definition

Persons who have swum in the same pool as the case.

Counselling

Advise on nature of infection and encourage early referral as symptoms develop.

Prophylaxis

Nil.

Other Control Measures

Identification of source

Identify pool where case swam and prohibit public swimming.

Disinfection

Swimming pools containing residual free chlorine of 1–2 ppm are considered safe.
Health education
Advise public of danger of immersing head, especially the nose, in untreated thermal pools.

Reporting
Advise the Ministry of Health.
Liaise with the territorial local authority.
Plague

Epidemiology in New Zealand

There have been no cases of plague in New Zealand since an outbreak in Auckland at the turn of the century. However, both species of rodent flea necessary for plague transmission do exist in New Zealand.

There is an extremely low risk that persons infected with plague may enter New Zealand from countries where plague is endemic during the incubation period, before they have symptoms.

Case Definition

Clinical description
A disease characterised by fever and leucocytosis presenting in one of the following ways:
• regional lymphadenitis (bubonic plague)
• septicaemia (septicaemic plague)
• pneumonia (pneumonic plague)
• pharyngitis and cervical lymphadenitis (pharyngeal plague).

Laboratory test for diagnosis
Isolation of *Yersinia pestis*
OR
four-fold or greater rise in antibody *Y. pestis*.

Discuss laboratory testing with ESR.

Case classification

*Probable:* A clinically compatible illness with a single serological positive test.

*Confirmed:* A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Two to six days.
Mode of transmission
Transmitted by the bite of infected rodent fleas. Domestic pets carry the infected flea into the house. Other sources: handling tissues of infected animals, especially rodents and rabbits. Airborne droplet spread from patients with pneumonic plague.

Period of communicability
Fleas remain infective for some months. Person-to-person spread in bubonic plague occurs if the lesions are suppurating. Air-borne spread is common in pneumonic plague.

Notification Procedure
Immediate notification by medical practitioners on suspicion of a clinical diagnosis.
The public health service should immediately notify the Ministry of Health.

Management of Case
Investigation
In consultation with the attending medical practitioner identify the country where the infection was acquired.

Restriction
Strict isolation (with precautions against air-borne spread) for patients with pneumonic plague, until three days of treatment have been completed.

Treatment
Tetracyclines and chloramphenicol effective if used early. Quinolone antibiotics are an alternative. Consult an infectious diseases physician.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Definition
A person exposed to a case of pneumonic plague.

Investigation
Every effort should be made to locate contacts and unreported cases or undiagnosed cases.
Restriction
Contacts should be given chemoprophylaxis or, if they refuse, quarantined for six days.

Counselling
The contact should be advised of the nature of the infection and its mode of transmission, and the reason for and duration of quarantine.

Prophylaxis
Close contacts of a case of probable or confirmed pneumonic plague, including medical personnel should receive chemoprophylaxis using tetracycline or sulphonamides.

Other Control Measures
For further information see the Health (Quarantine) Regulations 1983.

Disinfection
Treat clothes, habitation and domestic pets for fleas. Follow intensive flea control with rodent control.

Health education
Discuss the possibility of a media release by the Medical Officer of Health or the Ministry of Health.

Reporting
Plague is an internationally quarantinable disease and must be reported to WHO within 24 hours. The Ministry of Health will arrange this.
Rabies

Epidemiology in New Zealand

New Zealand is rabies free, as are Australia, Papua New Guinea and the Pacific islands. Rabies is widely distributed, and all cases diagnosed will be imported.

Case Definition

Clinical description
An acute encephalomyelitis that progresses to coma and death within 10 days of the onset.

Laboratory test for diagnosis
Isolation of rabies virus from skin snips, saliva, CSF or neural tissue
OR
detection of viral antigen in tissue
OR
detection of rabies neutralising antibody at a titre of at least 1:5 in serum or CSF (provided the patient is not immunised).

(Note: These tests are not available in New Zealand, contact ESR.)

Case classification
Probable: A clinically compatible illness with history of travel to an area where rabies is endemic.
Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Usually two to eight weeks; may be five days or many years.

Mode of transmission
The rabies virus is carried in the saliva of rabid mammals; which depends on the country. Dogs, bats, cats, foxes and raccoons may suffer from rabies. Transmission is by bite or scratch from a rabid animal.
**Period of communicability**
From dogs and cats: for three to 10 days before onset of disease and throughout illness. Other animals (eg, bats) may transmit infection over many years, as they may be asymptomatic carriers.

**Notification Procedure**
Notify on suspicion.

**Management of Case**

**Investigation**
Check travel history, and history of animal bite.

**Restriction**
Nurse in isolation. Precautions required for respiratory secretions.

**Treatment**
Consult an infectious diseases specialist without delay for advice on post-exposure prophylaxis with rabies vaccination and rabies immune globulin (RIG). Vaccine is available in New Zealand.

**Counselling**
Advise on the nature of infection and treatment.

**Management of Contacts**

**Definition**
Contacts who have an open wound or mucous membrane exposure to patient’s saliva. Other Persons bitten by the same rabid animal.

**Prophylaxis**
Contacts should receive antirabies specific treatment: RIG + vaccine. Consult an infectious disease physician.

**Other Control Measures**
Note that a bat lyssavirus is present in Australia, found in four species of bat including flying foxes and a sheath-tailed bat. Animal studies suggest that human disease caused by bat lyssavirus may be prevented by rabies vaccine and rabies immunoglobulin. If a person is bitten or scratched by any Australian bat, prophylaxis should be started as soon as possible.
Identification of source
Check travel history and exposure to animals. The quarantine and health requirements for all imported animals maintains New Zealand’s rabies-free state.

Disinfection
Disinfect saliva and associated articles, viral measures. Transmission to attending personnel has not been documented. Use full isolation and protective clothing.

Health education
Advise intending travellers to countries where rabies is endemic of the risk. Pre-exposure vaccination may be indicated to persons at high risk.

Advise people travelling in a country with endemic rabies that if they sustain animal bites they should be assessed by a doctor, as soon as possible, about the need for immediate post exposure prophylaxis with RIG and rabies vaccine.

For further information see health Advice for Overseas Travellers (MoH 1996a).

Reporting
Advise Ministry of Health with clinical, exposure and travel details.
Rickettsial Disease

(including Q Fever due to Coxiella burnetii)

Epidemiology in New Zealand

Rickettsial diseases have not been considered endemic in New Zealand; however, two cases of murine typhus (due to \textit{R. typhi}) have been described north of Auckland. They include epidemic and murine typhus and other tick- and mite-borne rickettsial diseases. Travellers to/from other countries have occasionally been diagnosed with one of these diseases on return to New Zealand. Q Fever has never been diagnosed in a New Zealander who has not been travelling.

Case Definition

Clinical description
An illness most commonly characterised by the acute onset of fever, usually accompanied by myalgia, headache, and rash.

Laboratory test for diagnosis
Isolation of \textit{Rickettsia spp.} in a clinical specimen.

Consult a microbiologist or ESR for appropriate serological tests. The following serological tests are available at Auckland Hospital laboratory for diagnosing:
- \textit{Rickettsia mooseri} for murine typhus
- \textit{Rickettsia tsutsugamushi} for scrub typhus group
- \textit{Rickettsia conori} for tick typhus group.

Case classification

\textit{Probable}: A clinically compatible illness with a raised single titre in a traveller.

\textit{Confirmed}: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period
Variable depending on type.

Mode of transmission
Depending on type, from a bite of infected tick, flea, mite or louse. Q fever is dust-borne.
Period of communicability
Not directly transmitted from person to person.

Notification Procedure
To be notified by medical practitioners on serological confirmation.

Management of Case

Investigation
In consultation with the attending medical practitioner, attempt to identify the source of infection, such as recent travel.

Restriction
Nil.

Treatment
Consult infectious disease physician. Tetracyclines and chloramphenicol are the drugs of choice.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Not applicable.

Other Control Measures
Nil.

Reporting
Advise the Ministry of Health.
Trichinosis

Epidemiology in New Zealand

Trichinosis is caused by an intestinal roundworm, *Trichinella spiralis*, which, principally, produces its symptoms by migrating from the gut to skeletal muscles. It is uncommon in New Zealand but has been diagnosed in returning travellers, or more rarely still, after eating pork in New Zealand. In 1997, several pigs were diagnosed with *T. spiralis*; the Ministry of Agriculture managed the outbreak by slaughtering the affected animals. No human cases were associated with this.

Case Definition

Clinical description

A disease caused by the ingestion of *Trichinella* larvae. The disease has variable signs and symptoms including eosinophilia, fever, myalgia, and periorbital oedema.

Laboratory test for diagnosis

Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy OR positive serologic test for *Trichinella*.

Case classification

Probable: N/A

Confirmed: A clinically compatible case which is laboratory confirmed.

Spread of Infection

Incubation period

Varies between five and 45 days, usually eight to 15 days after eating contaminated meat.

Mode of transmission

Eating raw or insufficiently cooked pork and pork products.

Period of communicability

Not transmitted from person to person.

Animals remain infected for months. Meat requires cooking or freezing to kill the larvae.
Notification Procedure
To be notified by medical practitioners on diagnosis.

Management of Case

Investigation
Ask about the ingestion of inadequately cooked pork and its source.

Restriction
Nil.

Treatment
Mebendazole.

Counselling
Advise on mode of transmission and necessity to cook pork well.

Management of Contacts

Definition
Person with same exposure to pork as the case.

Investigation restriction counselling
As above.

Other Control Measures

Identification of source
Inform MAF Regional Veterinary Officer.

Disinfection
Nil.

Health education
Advise public on food preparation. Advise hunters of risk.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Viral Haemorrhagic Fevers

Epidemiology in New Zealand

Viral haemorrhagic fevers were added to the revised list of notifiable diseases from 1 June 1996. They are severe viral illnesses which cause epidemics with high fatality rates. It is possible a sick traveller may bring the disease to New Zealand, where it may spread from person to person. These diseases include Lassa fever, caused by an arenavirus, and Ebola disease and Marburg disease, both caused by members of the Filoviridae. There have been no cases in New Zealand in travellers entering the country.

Lassa virus is limited to western Africa. Ebola and Marburg diseases occur in central and eastern tropical Africa.

Case Definition

Clinical description

Severe systemic illnesses with differing symptoms, progressing to haemorrhages and shock. An appropriate travel history to an endemic country is required for the diagnosis.

Laboratory test for diagnosis

Discuss with ESR. Laboratory studies represent an extreme biohazard, and tests are not available in New Zealand.

Diagnosis is made by viral isolation or serology.

Case classification

Probable: A clinically compatible illness with history of travel to appropriate country.

Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period

Ebola haemorrhagic fever: two to 21 days.

Marburg disease: three to nine days.

Lassa fever: six to 21 days.
Mode of transmission

*Ebola and Marburg disease:* Person-to-person transmission occurs by direct or indirect contact with infected blood, secretions, organs or semen.

*Lassa fever:* Through aerosol or direct contact with excreta of infected rodents (Mastomys spp.). Person-to-person transmission occurs also by direct contact with blood, urine and sexual contact.

Period of communicability

*Ebola and Marburg disease:* Communicable as long as blood and secretions contain virus, up to three months.

*Lassa fever:* Communicable during the acute febrile phase when virus is present in the throat. Virus may be excreted in urine for three to nine weeks.

Notification Procedure

To be notified on suspicion.

The public health service should immediately notify the Ministry of Health.

Management of Case

Investigation

Identify the country of origin from the travel history.

Restriction

Strict barrier isolation on suspicion of diagnosis. Respiratory protection for Lassa fever. (See Disinfection section.)

Treatment

Lassa fever: consider ribavirin intravenously.

Counselling

The case should be advised of the nature of the infection and its mode of transmission. Establish the movements in the previous three weeks, and identify unreported cases.

Management of Contacts

Definition

Close contacts are those persons living with, caring for, or testing laboratory specimens from or having non-casual contact with the patient in the three weeks preceding the onset of illness.
Investigation
Identify all close contacts.

Restriction
Contacts may be quarantined or released under quarantine surveillance – that is, kept under surveillance for three weeks, provided they undertake to notify the Medical Officer of Health if suffering from a febrile illness.

Counselling
Explain the reasons for and likely duration of quarantine. Must not donate blood.

Prophylaxis
Nil.

Other Control Measures

Identification of source
Identify country of origin of infection.

Disinfection
Viral measures. Disinfection is required for all body fluids and the objects the patient has had contact with.

Health education
Discuss the possibility of a media release by the Medical Officer of Health and/or Ministry of Health.

Reporting
The Ministry of Health will arrange reporting to WHO.
Yellow Fever

Epidemiology in New Zealand

This disease may occur in travellers returning to New Zealand after travel to at-risk areas. Yellow fever is an international quarantinable disease. The vector, the mosquito *Aedes aegypti*, has not been identified in New Zealand, nor the disease diagnosed here.

Case Definition

Clinical description

A mosquito-borne viral illness characterised by fever and systemic symptoms leading to renal failure, shock and generalised haemorrhage.

Laboratory test for diagnosis

Viral isolation or serological tests.

These tests are not available in New Zealand, contact ESR.

Case classification

Probable: A clinically compatible illness with a history of travel to an appropriate country.

Confirmed: A clinically compatible illness that is laboratory confirmed.

Spread of Infection

Incubation period

Three to six days.

Mode of transmission

Reservoir: in urban areas, man and *Aedes aegypti* mosquito; in rural areas, other vertebrates, such as monkeys. Transmitted to humans by bite of infective *Aedes aegypti* mosquito.

Period of communicability

Blood of patient infective for mosquitoes shortly before fever and first three to five days of illness.
Notification Procedure

To be immediately notified by medical practitioners on a suspicion of a clinical diagnosis. The Medical Officer of Health should immediately notify the Ministry of Health.

Management of Case

Investigation
In consultation with the attending medical practitioner, ascertain yellow fever vaccination status and identify the source of infection, such as recent overseas travel.

Restriction
Nil.

Treatment
Nil specific.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts

Definition
Any unimmunised person arriving in New Zealand who has travelled through a yellow fever endemic country with the case.

Counselling
Advise on the incubation period and symptoms of the illness.

Other Control Measures

For further information see the Health (Quarantine) Regulations 1983.

Identification of source
Identify the country of origin of the infection.

Disinfection
Nil for patients in New Zealand. Insecticides used in endemic areas.
Health education

Travellers to yellow-fever-endemic countries must have valid yellow fever vaccination and should be encouraged to protect themselves from mosquitoes by the use of repellents, protective clothing and mosquito nets if rooms are not screened or air-conditioned.

Note that a valid international certificate against yellow fever is required by many countries for entry of travellers coming from or through recognised yellow fever zones of Africa and South America.

Reporting

Measures applicable to ships, aircraft and land transport are specified in the International Health Regulations (1969)(WHO 1983). The International Health Regulations are being updated.

The Ministry of Health is required to notify WHO.
Part Four:
Other Notifiable Diseases
Acquired Immunodeficiency Syndrome (AIDS)

Epidemiology in New Zealand

Human immunodeficiency virus (HIV) infection is endemic in New Zealand. For the most up-to-date information on the epidemiology of HIV and the acquired immunodeficiency syndrome (AIDS), see the quarterly report *AIDS – New Zealand*, produced by the AIDS Epidemiology Group, University of Otago Medical School. In 1997, there were 43 persons notified as having AIDS. The total number notified since monitoring began, to 31 December 1997, was 641, of whom 612 were male and 29 female.

In 1997, there were 63 persons found to be newly infected with HIV. A total of 1231 persons have been found to be infected with HIV, since testing began to 31 December 1997. Care must be taken in interpreting the HIV antibody data, as not all people at risk will have been tested, and testing may not be performed until many years after infection has occurred. It is estimated by the AIDS Epidemiology Group that at the end of 1997 there were approximately 700 people (600 males and 100 females) living diagnosed with HIV infection in New Zealand. HIV infection is not notifiable.

Case Definition

Note: It is essential that HIV tests be performed with the informed consent of the patient and with pre- and post-test counselling.

Clinical description

For surveillance purposes, AIDS is defined clinically as an illness characterised by one or more of the AIDS-defining diseases. These diseases, listed below, can be diagnosed on the basis of laboratory evidence (definitive diagnosis) or clinically (presumptive diagnosis). In both cases laboratory evidence of infection with human immunodeficiency virus Type 1 should be demonstrated.

The AIDS-defining diseases are:
- candidiasis of bronchi, trachea or lungs
- candidiasis, oesophageal
- cervical cancer, invasive
- coccidioidomycosis, disseminated or extrapulmonary
- cryptococcosis, extrapulmonary
- cryptosporidiosis, chronic intestinal (>1 month)
- cytomegalovirus disease (other than liver, spleen or nodes)
- cytomegalovirus retinitis (with loss of vision)
• encephalopathy, HIV-related
• herpes simplex: chronic ulcer(s) (>1 month); or bronchitis, pneumonitis or oesophagitis
• histoplasmosis, disseminated or extrapulmonary
• isosporiasis, chronic intestinal (>1 month)
• Kaposi’s sarcoma
• lymphoma, Burkitt’s (or equivalent term)
• lymphoma, primary, of brain
• Mycobacterium avium complex or M. kansasii, disseminated or extrapulmonary
• Mycobacterium tuberculosis, any site (pulmonary or extrapulmonary)
• Mycobacterium, other species or unidentified species disseminated or extrapulmonary
• Pneumocystis carinii pneumonia
• pneumonia, recurrent
• progressive multifocal leukoencephalopathy
• Salmonella septicaemia, recurrent
• toxoplasmosis of brain
• wasting syndrome due to HIV.

When diagnosing children under the age of 13, the above applies, but additional diseases form part of the definition:
• serious bacterial infections, multiple or recurrent (ie, any combination of at least two culture-confirmed infections within a two-year period), of the following types: septicaemia, pneumonia, meningitis, bone or joint infection, or abscess of an internal organ or body cavity.
• lymphoid interstitial pneumonitis.

Laboratory test for diagnosis
Antibodies to HIV confirmed at a reference laboratory.

Case classification
Probable: Not applicable.
Confirmed: Infection with HIV plus an AIDS-defining disease (as above).

Spread of Infection

Incubation period
Time from initial infection with HIV to clinical onset of AIDS is variable, and averages eight to 10 years in the developed world.

Mode of transmission
From an HIV-infected person via sexual contact, exposure to blood or tissues, including sharing contaminated drug-injecting equipment, transfusion of infected blood or blood products prior to
the start of routine testing (all donated blood has been screened since October 1985), and through antenatal and perinatal transmission.

**Period of communicability**

From the time of initial HIV infection, throughout life. Communicability varies with the viral load. This is high during initial seroconversion and later as the CD4 count falls.

**Notification Procedure**

AIDS is the notifiable condition. HIV infection is not notifiable in New Zealand.

Form H773/1A, for notification of a case of AIDS, should be sent to the Medical Officer of Health. The Medical Officer of Health should forward a copy to the AIDS Epidemiology Group, University of Otago Medical School.

Individual patient names are not reported to the Medical Officer of Health; a standard code is used.

**Management of Case**

**Investigation**

In consultation with the attending physician identify the mode of infection.

**Restriction**

Nil.

**Treatment**

Consult with infectious disease physician or physician with a special interest in HIV/AIDS. The *Update of Clinical Management Guidelines HIV/AIDS* (MoH 1997c), prepared by the AIDS Medical and Technical Advisory Committee (AMTAC) to the Ministry of Health, is a guide for treatment.

**Counselling**

People found to be infected with HIV/AIDS should receive appropriate counselling by a medical practitioner and/or counsellor.

**Management of Contacts**

**Definition**

Sexual or needle-sharing partners of HIV-infected person.

**Counselling/prophylaxis**

Management, including counselling and testing, is discussed in *HIV/AIDS Information for Health Professionals* (Department of Health 1993b). This publication is currently being updated.
Other Control Measures

Identification of source
If there is a cluster of cases, investigate for a common exposure including sharing of injecting drug equipment, healthcare exposure or skin penetration practice exposure.

Disinfection
Viral.

Health education and prevention
Information including issues regarding the initiation and maintenance of behaviour change are covered in *HIV/AIDS Information for Health Professionals* (Department of Health 1993b).

Other information is available from the New Zealand AIDS Foundation.

*For injecting drug users:* Needle and syringe exchange programmes exist throughout New Zealand based on pharmacies and community groups. A list of outlets is now on the web address, www.needle.co.nz

*HIV and pregnancy:* All pregnant women should be asked about risk behaviours that could predispose them to HIV. Strategies available to interrupt transmission from an infected mother to her baby include the administration of zidovudine (ZDV) during pregnancy, labour and in the neonatal period, in addition to the avoidance of breastfeeding. For further information see *HIV in Pregnancy* (MoH 1997d).
# Hepatitis C

## Epidemiology in New Zealand

Hepatitis C was added to the revised list of notifiable disease from 1 June 1996. It is an important cause of viral hepatitis in New Zealand. In 1997, there were 92 cases notified, a rate of 2.5 per 100,000. Injecting drug users are the most at risk for HCV, with over 50 percent showing evidence of infection. People who received a blood transfusion or blood products before screening was introduced in June 1992 are also at risk.

## Case Definition

(to be introduced in 1998)

New or incident infections only are notifiable.

Hepatitis C infection is often asymptomatic but may present as an illness with variable symptoms of lethargy, anorexia and jaundice.

**Incident case**

Demonstration of documented seroconversion to HCV when the most recent negative specimen was within the last 12 months

OR

demonstration of an anti-HCV positive test or HCV RNA test and a clinical illness consistent with acute HCV within the previous 12 months where other causes of acute hepatitis can be excluded.

Prevalent cases are not notifiable.

## Case classification

*Probable:* Nil.

*Confirmed:* See definition above of incident case.

## Spread of Infection

**Incubation period**

Two weeks to six months – commonly within six to nine weeks.
Mode of transmission
Transmission occurs by percutaneous exposure to contaminated blood and blood products. Contaminated needles and syringes are the most common route. Perinatal transmission does occur but is rare. Person to person and sexual transmission is much less common than for HBV.

Period of communicability
One or more weeks before onset of first symptoms, through clinical course of disease and during carrier state. Cases who are HCV PCR positive are potentially infectious.

Notification Procedure
The incident case, not the carrier state, is notifiable by medical practitioners on laboratory confirmation to the Medical Officer of Health.

Management of Case

Investigation
Investigate for parenteral exposure including injecting drug use.

Restriction
See counselling.

Treatment
Refer to an infectious disease specialist or gastroenterologist. Interferon is an option for carrier management.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Advise:
• not to donate blood
• not to share drug injecting equipment
• not to share razors or toothbrushes
• to use safe sex practices
• to inform health care workers (including dentists) of infection
• reduce or stop alcohol consumption
• consider hepatitis B immunisation.

Ensure follow-up of case to identify those who continue as carriers and to give advice on continued precautions against transmission.
Management of Contacts

Definition
Consider as contacts:
- persons sharing contaminated drug injecting equipment with case
- persons with long-term sexual exposure to a case.

Investigation
Screen contacts by serological testing: anti-HCV, HCV PCR and LFTs with follow-up tests in consultation with a physician.

Restriction
As for case until follow-up tests clear.

Counselling
Contacts should be advised of the nature of the infection and its mode of transmission, and instructed in preventive measures.

Prophylaxis
Nil.

Other Control Measures

Identification of source
If the case could be transfusion-related, contact the Blood Transfusion Services.

Disinfection
Viral measures.

Health education
Advise injecting drug users on single use injecting equipment. Provide information on the local outlets of the needle and syringe exchange scheme.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to the ESR.
**Legionellosis**

**Epidemiology in New Zealand**

In 1997, 61 cases of legionellosis were reported, a rate of 1.7 per 100,000. *Legionella* are ubiquitous in the New Zealand environment and are likely to be present in domestic water supplies.

*Legionella pneumophila* is the most common cause of illness, but other species have been identified, including *L. longbeachae, L. micdadei, L. bozemanii* and *L. dumoffii*. The disease is more common in older people, those who smoke, those with a chronic disease such as diabetes, and the immunocompromised.

**Case Definition**

**Clinical description**

An acute febrile illness most commonly presenting as pneumonia, although it is often a multisystem disease.

**Laboratory test for diagnosis**

Isolation of *Legionella* species from lung tissue, respiratory secretions, pleural fluid, blood or other tissues

OR
demonstration of *Legionella* species antigens in lung tissue, respiratory secretions or pleural fluid

OR
a fourfold or greater rise in IFA titre against *Legionella* species to > 128

OR
a stable high *Legionella* titre > 512 in convalescent phase serum.

**Case classification**

*Probable:* A clinically compatible illness with *Legionella* titre of > 256.

*Confirmed:* A clinically compatible illness with a positive laboratory test as above.

**Spread of Infection**

**Incubation period**

Two to 10 days, commonly five to six days.
Mode of transmission
The reservoir is primarily water and also soils, depending on species. Hot-water systems and cooling towers have been identified by epidemiological investigation as important reservoirs. The bacteria are also found in hot and cold taps and in soils, compost and potting mixes.

Transmission is probably air-borne via aerosol production.

Period of communicability
Person to person transfer has not been documented.

Notification Procedure
Notification by medical practitioners on clinical suspicion in a suspected outbreak.

Management of Case
Investigation
Ensure attending medical practitioner has obtained laboratory confirmation. Ascertain possible exposures. Enquire about water-cooled air-conditioned premises, institutions with warm water supplies, or spa pools visited in the previous ten days. Search for further cases to identify a common source of infection.

Investigate for recent exposure to soil – for example, in gardening, excavation or potting plants.

When more than one related case is identified, samples should be taken from any sludge, filters, circulating and reticulated water and potting mix and soils as appropriate. Samples should be stored and transported at 4–10°C, and be examined as soon as possible.

For further information see Guidelines for the Control of Legionellosis (MoH 1995b).

Restriction
Nil.

Treatment
Erythromycin is the drug of choice.

Counselling
The case should be advised of mode of infection.
Management of Contacts

Definition
Any person who has experienced exposure similar to those of the case.

Investigation and counselling
Advise on the mode of infection. Encourage early referral if symptoms develop.

Prophylaxis
Nil.

Other Control Measures

Identification of source
Investigate by environmental sampling, as indicated.

Disinfection
Disinfection of water sources may be important in control.

Health education
Ensure that appropriate cleaning protocols are in place for any air-conditioning or water systems in an outbreak.

Advise that cooling towers are regularly cleaned and serviced. Cost-effective interventions for domestic hot-water systems have not been established.

See Guidelines for the Control of Legionellosis (MoH 1995b).

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Leptospirosis

Epidemiology in New Zealand

The number of notifications of leptospirosis has declined since the early 1980s; 53 cases were reported in 1997, a rate of 1.5 per 100,000. Occupational risk factors, particularly exposure to dairy cattle and pigs, are important. Possums also carry leptospirosis.

Case Definition

Clinical description

An illness characterised by fever, headache, chills, myalgia, conjunctival suffusion, and less frequently meningitis, jaundice, or renal insufficiency.

Laboratory test for diagnosis

Isolation of leptospires from a clinical specimen
OR
a fourfold or greater rise in leptospiral microscopic agglutination titre (MAT) between acute and convalescent sera.
OR
a single high titre of ≥ 800 in the MAT.

Case classification

Probable: A clinically compatible illness with a single raised agglutination titre of > 400.

Confirmed: A clinically compatible illness that is laboratory confirmed by isolation of leptospira, or fourfold or greater rise in MAT or a single high titre of ≥ 800 in MAT.

Spread of Infection

Incubation period

Four to 19 days, commonly 10 days.

Mode of transmission

Reservoir varies with serovars. In New Zealand, *Leptospira pomona* (reservoir pigs) and *hardjo* (cattle) are important.

Transmission is through contact of skin or mucous membrane with water, moist soil or vegetation contaminated with the urine of infected animals, or by direct exposure to urine of infected animals.
Period of communicability
Animals excrete leptospires in urine for up to one month and occasionally longer.

Notification Procedure
To be notified by medical practitioners on microbiological or serological confirmation.

Management of Case
Investigation
In consultation with the attending medical practitioner, attempt to identify the source of infection.

Restriction
Nil.

Treatment
Penicillin or tetracycline are used. Many cases recover spontaneously.

Counselling
The case should be advised of the nature of the infection and its mode of transmission.

Management of Contacts
Definition
Any person who has experienced the same exposure as the case.

Counselling
Advise of the mode of infection and use of protective clothing.

Other Control Measures
Identification of source
If an occupational source is suspected, including direct animal contact, discuss notification of the case to OSH. Notification can only occur with the informed consent from the case. The OSH inspector will investigate and enforce prevention and control.

Disinfection
Bacterial measures. Articles soiled with urine should be disinfected.
Health education

Immunisation of dairy herds prevents disease in the animals and subsequent infection of humans.

Reporting

If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Malaria

Epidemiology in New Zealand

All cases of malaria in New Zealand are in travellers visiting New Zealand or returning from overseas. There were 65 cases of malaria notified in 1997, a rate of 1.8 per 100,000. Notification of cases is low.

The diagnosis should be considered in any febrile person who is likely to have been exposed during overseas travel to an area where malaria is endemic. For further information see Health Advice for Overseas Travellers (MoH 1996a).

Case Definition

Clinical description
Malaria is characterised by fever, rigours and headache and other variable symptoms.

Laboratory test for diagnosis
Demonstration of malaria parasites in a blood film.

Case classification
Probable: Not applicable.
Confirmed: Demonstration of *Plasmodium* species in a blood film.

Spread of Infection

Incubation period
Variable, species dependent, but commonly eight to 30 days.*P. falciparum* and *P. ovale* relapses may occur months to years after the initial infection.*P. falciparum* is extremely unlikely in an individual out of a malarious area and/or off prophylaxis for more than six weeks.

Mode of transmission
By the bite of an infective female anopheline mosquito; most species feed at dusk and early evening.

Period of communicability
Non-communicable in New Zealand.
Notification Procedure

To be notified by medical practitioners on microbiological confirmation.

Management of Case

Investigation

Identify country where the infection was acquired.

Restriction

Nil.

Treatment

Chloroquine and other aminoquinolones are the drugs of choice. Treatment should be in consultation with an infectious diseases specialist.

*P. vivax* and *P. ovale* always need eradicative primaquine treatment after cure of the malarial attack. No other drug eradicates these two plasmodia.

Counselling

The case should be advised of the nature of the infection and its modes of transmission, and advised not to donate blood.

Management of Contacts

Nil.

Other Control Measures

Disinfection

Not applicable.

Health education

Provide pre-travel advice for travellers to malaria-endemic countries. This includes advice on appropriate anti-malarial medication and on protection from mosquitoes by the use of repellents, protective clothing and mosquito nets if rooms are not screened or air-conditioned.

Reporting

Contact the Ministry of Health if there is any suspicion that the disease was acquired locally.
Neisseria meningitidis Invasive Disease

(Septicaemia and meningitis)

Epidemiology

Since 1991, New Zealand has been experiencing an epidemic of predominantly serogroup B meningococcal disease. High levels of group B disease have lasted for 10–15 years in other countries. In 1997, a total of 614 cases were notified, a rate of 17.0 per 100,000, and 24 died. Disease rates are higher in Māori and Pacific peoples, and rates of disease are highest in all children under the age of five years. At greatest risk are Pacific infants under the age of one year.

There is a vaccine available against serogroups A, C, Y and W135, but not against the locally more common serogroup B. The risk of secondary cases in close contacts is higher for some months after the case occurred.

Case Definition

Clinical description

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

Laboratory tests for diagnosis

Isolation of Neisseria meningitidis from blood, CSF or other normally sterile site
OR
detection of gram negative intracellular diplococci in blood or CSF or skin petechiae
OR
detection of meningococcal antigen in CSF
OR
a positive PCR.

Case classification

Probable: A clinically compatible illness.

Confirmed: A clinically compatible illness with one of the above laboratory tests positive.
**Spread of Infection**

**Incubation period**
Two to 10 days, commonly three to four days.

**Mode of transmission**
Transmission is from person to person through droplets of respiratory tract secretions.

**Period of communicability**
Until meningococci are no longer present in discharges from nose and mouth. Rifampicin eradicates *N. meningitidis* from mucosal surfaces.

**Notification Procedure**
To be notified by medical practitioners on suspicion of a clinical diagnosis.
Laboratories should immediately report positive laboratory tests.
If clusters of cases occur Medical Officers of Health should notify the Ministry of Health.

**Management of Case**

**Investigation**
In consultation with the attending medical practitioner, ascertain if there have been cases in the household, or early childhood service if appropriate.

**Restriction**
Respiratory isolation for 24 hours after the start of chemotherapy. Exclude case from school or early childhood service until a two-day course of rifampicin is completed, normally begun prior to discharge from hospital.

**Treatment**
Encourage early antibiotic treatment of suspect cases by general practitioner, preferably IM/IV benzylpenicillin or amoxycillin prior to admission to hospital, (see guidelines in *Immunisation Handbook* (MOH 1996e)).

Adults should receive benzylpenicillin 1.2g IV (or IM) or amoxycillin 1–2 g IV (or IM). Children should receive benzylpenicillin 25-50 mg/kg IV (or IM) or amoxycillin 50-100 mg/kg IV (or IM).

Give rifampicin to case before discharge from hospital to eradicate organism from nasopharynx.

**Dose:**
- children less than one month: rifampicin 5 mg/kg dose bd for two days.
- children over one month: rifampicin 10 mg/kg bd (maximum per dose 600 mg) for two days.
• adults: rifampicin 600 mg bd for two days.

Ceftrioxone is a suitable alternative for nasopharyngeal eradication: 125 mg IM for children under 12 years or 250 mg IM for older children and adults.

**Counselling**

The case should be advised of the nature of the infection and its mode of transmission.

Explain the side-effects of rifampicin:
• orange discolouration of soft contact lenses, tears and urine
• interference with the metabolism of many drugs, including causing decreased effectiveness of oral contraceptives (advise use of additional barrier methods for at least four weeks after the rifampicin).

Rifampicin is contraindicated in pregnancy. Ceftrioxone is a safe alternative.

**Management of Contacts**

**Definition**

Close contacts are:
• household contacts
• early childhood service contacts
• close institutional contacts
• persons of any age who have been exposed to the case’s oral secretions, such as through kissing or sharing food/drink utensils or bottles in the seven days prior to onset of illness in the index case
• persons who have frequently eaten or slept in the same dwelling in the seven days prior to the onset of illness in the index case
• health care personnel exposed to the case during mouth-to-mouth resuscitation or unprotected contact during endotracheal intubation in the seven days before the onset of the illness in the case.

Household members and other close contacts are at greater risk of developing the disease, compared with the general population for some months after the index case. The attack rate for household contacts exposed to patients who have sporadic meningococcal disease has been estimated as four cases per 1000 persons exposed, which is 500 to 800 times the risk of the general population. The rate of secondary disease is highest in the first few days after onset of the disease in the primary case.

Health care personnel are rarely at risk, even when caring for infected patients, except if intimate exposure to nasopharyngeal secretions occurs – eg, mouth to mouth resuscitation – see definition of close contacts.

**Investigation**

Routine throat or nasopharyngeal culture of contacts is not recommended because asymptomatic carriage is common.
**Restriction**

Nil.

**Prophylaxis**

Chemoprophylaxis should be given to close contacts as soon as possible and preferably within 24 hours of the diagnosis being made. Chemoprophylaxis is unlikely to be of benefit if given more than 14 days after the onset of illness in the index case.

**Dose:**
- children less than one month: rifampicin 5 mg/kg day for two days
- children over one month: rifampicin 10 mg/kg dose bd (maximum per dose 600 mg) for two days
- adults: rifampicin 600 mg bd for two days, or ceftriaxone 250 mg IM as a single dose.
- ceftrioxone (250 mg IM as a single dose) is safe for pregnant women.

For adults (excepting pregnant women), ciprofloxacin given as a single oral dose of 500 mg is also effective in eradicating the organism.

**Vaccine use in serogroup A, C, Y, and W135 disease**

A quadrivalent vaccine effective against serogroup A, C, Y, and W135 is available in New Zealand. Vaccine may be offered to household and other close contacts as they are at increased risk of the disease for some months after the case.

Serogroup C outbreaks do occur, and vaccine may be used to control spread through a community. The US guidelines (USDHHS 1997) are used in New Zealand to assess whether to use vaccine. These suggest vaccine be considered if the outbreak satisfies the following:

Outbreaks of group C disease can be divided into those in an organisation, such as a school or tertiary education institute, and those in a community who are not in close contact but who can be defined geographically.

An organisation outbreak is the occurrence of two or more confirmed or probable cases over three months or less in an organisation where the cases were not in close contact with each other.

A community outbreak is the occurrence of three or more confirmed or probable cases over three months or less, in people who are not in close contact with each other and are not institution related with a primary attack rate of at least 10 per 100,000 population at risk. The denominator is the population at risk in a defined geographical area.

From the population at risk, it may be possible to target the vaccine to a specific group such as a particular age group.

If more than one case of serogroup C disease occurs in an area, contact the Ministry of Health for assistance with assessment. Both the technical decision and its administration need discussion. Administer vaccine as soon as possible after decision to do so.
Counselling
Household and close contacts should be encouraged to seek medical advice with early signs of illness, especially fever and petechial rash.

Explain the side-effects of rifampicin (listed above).

Other Control Measures

Management of contacts when there are large groups involved
When there are large groups of people who have been exposed to a case it is likely that contacts may have returned to several health districts. This is particularly important when there is a tangi. (See the first chapter of this manual.) Local networks and community workers provide expertise and knowledge of the whānau and community and who and how to find contacts.

Any follow-up needs to be clearly co-ordinated by the most appropriate Medical Officer of Health so that districts provide uniform follow-up of close contacts and information provided to all contacts who may be at risk.

Discuss with the Ministry of Health.

Identification of source
In an outbreak ensure careful surveillance, early diagnosis and immediate treatment of suspected cases.

Disinfection
Bacterial.

Health education
Advise the public to seek help early, particularly with sick children.

Advice to doctors about the benefits of pre-hospital antibiotics and early diagnosis.

Discuss the possibility of a media release by the Medical Officer of Health and/or Ministry of Health. A media release may be necessary to assist in locating contacts in some circumstances.

Reporting
If a cluster of cases occurs, forward an outbreak surveillance report to ESR.
Rheumatic Fever

Epidemiology in New Zealand

Rheumatic fever and its chronic sequelae of rheumatic heart disease is an important health problem in New Zealand. Māori and Pacific peoples have higher rates of rheumatic fever than Pākehā New Zealanders. In 1997, there were 95 cases with an initial attack of rheumatic fever reported, and eight cases with a recurrence. The rate of an initial attack was 2.6 per 100,000.

Both initial attacks of rheumatic fever and recurrences are under surveillance. The number of recurrences provides a measure of the effectiveness of the benzathine penicillin prevention programme.

Case Definition

Clinical description: Initial attack

Diagnosis of the initial attack of rheumatic fever is based on the 1992 update Jones’ criteria (American Academy of Paediatrics 1997). This requires evidence of a preceding group A streptococcal infection and the presence of two major manifestations or one major and two minor manifestations.

<table>
<thead>
<tr>
<th>TABLE 3. Guidelines for the diagnosis of initial attack of rheumatic fever (Jones Criteria, 1992 Update)</th>
</tr>
</thead>
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<td><strong>Major manifestations</strong></td>
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</tbody>
</table>
| Carditis  
Polyarthritis  
Erythema marginatum  
Subcutaneous nodules |
| **Minor manifestations**                                                                                   |
| Clinical findings:                                      | Laboratory findings:                                      |
| Arthralgia  
Fever                                          | Elevated acute phase reactants                             |
|                                                    | • Erythrocyte sedimentation rate                           |
|                                                    | • C-reactive protein                                      |
|                                                    | • Prolonged PR interval                                   |
Laboratory test for diagnosis of streptococcal infection

Either elevated or rising streptococcal antibody titre
OR
positive throat culture of group A streptococcus (Streptococcus pyogenes)
OR
positive rapid streptococcal antigen test.

Case classification: initial attack

Probable: Evidence of preceding group A streptococcal infection and a major manifestation but does not fulfil complete Jones’ criteria.

Confirmed: Fulfils Jones’ criteria with evidence of group A streptococcal infection.

Case classification: recurrent attack

Probable: Evidence of preceding group A streptococcal infection and a reliable history of rheumatic fever in a patient with a single major or several minor manifestations.

Confirmed: Fulfils Jones’ criteria for initial attack.

Exceptions

The following are exceptions to Jones’ criteria in the absence of evidence of a preceding group A streptococcal infection:

• chorea may be the only manifestation of rheumatic fever and should be notified
• indolent carditis may be the only manifestation in patients who present for medical diagnosis months after the onset of rheumatic fever.

Spread of Infection

Incubation period

Rheumatic fever occurs one to five weeks (mean 19 days) after a group A streptococcal infection.

Mode of transmission

Group A streptococcal transmission is by direct contact with patient or carrier.

Period of communicability

Communicability of group A streptococcus: transmission does not occur after 24–48 hours of adequate penicillin therapy. Patients with untreated streptococcal pharyngitis may carry the organism for weeks or months; other individuals may simply carry this organism for many months.

Notification Procedure

Acute and recurrent cases are to be notified and recorded.
Management of Case

Investigation
Ensure arrangements are made for confirmed cases to receive long-term penicillin prophylaxis as recommended by the physician or paediatrician.

Restriction
Nil.

Treatment
Penicillin therapy for 10 days to eradicate group A streptococcus.
Continuing penicillin prophylaxis as recommended by a specialist.

Counselling
Advise on necessity for regular prophylaxis and recommendations for antibiotics before dental treatment.

Management of Contacts

Definition
Persons in close contact with case or known carrier.

Investigation
Throat-swab all household contacts under the age of 20, and treat with penicillin if group A streptococci are isolated.

Restriction
Not applicable.

Counselling
Not applicable.

Prophylaxis
Treat carriers as above.

Other Control Measures

Identification of source
Not applicable.
Disinfection
Nil.

Health education
Encourage early presentation for streptococcal sore throat. Educate the public on the relationship of streptococcal disease to acute rheumatic fever, chorea, rheumatic heart disease and glomerulonephritis.

Advise on the necessity to complete a full course of 10 days of penicillin therapy for streptococcal sore throats.

Exclude children with group A streptococcal throat infection from school until they have received 24 hours of penicillin therapy.

Reporting
If a cluster of cases of rheumatic fever occurs, forward an outbreak surveillance report to ESR.
Tuberculosis

Epidemiology in New Zealand

Tuberculosis remains an important communicable disease in New Zealand. The numbers of notifications fell from 1960 to 1987 but have not declined since. In 1997 a total of 329 cases of tuberculosis were notified, a rate of 9.1 per 100,000, compared with 355 cases, a rate of 9.8 per 100,000 in 1996. Of those reported in 1996, 256 cases were confirmed by a laboratory test or positive chest X-ray and physician assessment.

Full details of case and contact investigations are published in Guidelines for Tuberculosis Control in New Zealand (MoH 1996b).

Case Definitions

Tuberculosis disease, new case

Clinical description

A chronic bacterial infection due to Mycobacterium tuberculosis or M. bovis, characterised pathologically by the formation of granulomas. The most common site of infection is the lung, but other organs may be involved. There is usually a positive tuberculin test.

Laboratory test for diagnosis

Positive culture for Mycobacterium tuberculosis or M. bovis, or a positive microscopic examination for acid-fast bacilli when a culture has not been or cannot be obtained

OR

histology strongly suggestive of tuberculosis

OR

demonstration of M. tuberculosis nucleic acid in specimens.

Case classification

Probable: Not applicable.

Confirmed: A case that is laboratory confirmed or, in the absence of bacteriological or histological confirmation, a case in which there are symptoms or signs compatible with active tuberculosis, such as compatible radiology or clinical evidence of current disease, and full anti-tuberculous treatment has been started by a physician.

Tuberculosis disease, relapse or reactivation

A case of active tuberculosis diagnosed by a physician in a person whose tuberculosis has been non-infectious or quiescent following full, or partial, or no treatment.
**Tuberculosis infection requiring chemoprophylaxis - surveillance definition**

A person with a positive Mantoux test or Mantoux conversion
AND
no evidence of active disease
AND
has been placed on chemoprophylaxis with one or more drugs.

**Tuberculosis infection requiring preventive treatment - surveillance definition**

Preventive treatment is defined as anti-tuberculous treatment with multiple drugs given with the aim of curing tuberculosis in patients in whom:
active disease is suspected but remains unproven (ie, smear-negative, culture-negative disease)
OR
reactivation is likely to occur.

Note: Clinicians may prescribe two or more drugs as ‘preventive treatment’ for a person with chest X-ray evidence of ‘old disease’. This should be classified as tuberculosis infection not disease.

**Tuberculosis contact**

A person who has had contact with a confirmed case of active tuberculosis disease.

Close contact: Members of the same household as the index case (sharing a kitchen and/or bathroom facilities), or who are very close contacts of the case.

Casual contact: All other contacts.

Refer to the Guidelines for Tuberculosis Control in New Zealand (MoH 1996b) for the definition of a positive Mantoux test.

**Spread of Infection**

**Incubation period**

From infection to demonstrable primary lesion or significant tuberculin reaction, four to 12 weeks. The lifetime risk of development of disease after infection is 5–15 percent, and almost 80 percent of those developing disease do so within two years of infection.

**Mode of transmission**

Exposure to bacilli in airborne droplets produced by persons with pulmonary tuberculosis during coughing or sneezing. Bovine tuberculosis results from exposure to tuberculous cattle and is spread via contaminated unpasteurised milk or by droplet spread to farmers and animal handlers.
Period of communicability
Communicable whilst bacteria are present in sputum. Effective antimicrobial chemotherapy eliminates the risk of transmission; a person with smear-positive pulmonary disease should be in isolation for at least two weeks.

Notification Procedure
Notify on suspicion.

Management of Case

Investigation
When an index case is notified, assessment and investigation should begin without waiting for full culture results if history, sputum smears or chest radiographs are suggestive of tuberculosis. The investigation should follow the method in Guidelines for Tuberculosis Control in New Zealand, Chapter 5 (MoH 1996b).

Restriction
Patients with smear-positive tuberculosis require isolation either in hospital or at home. They may be discharged from isolation after two weeks antituberculous treatment. Patients with smear-negative sputum (ie, no acid-fast bacilli on ZN staining of sputum) need not be isolated; such patients may subsequently grow M. tuberculosis but that does not alter this initial decision. Restriction from school or work is unnecessary after 14 days chemotherapy.

Treatment
Treatment is initiated by a physician. Combination therapy is used for at least six to nine months; initial therapy usually includes isoniazid, rifampicin and pyrazinamide and sometimes ethambutol.

Counselling
Cases should be advised about the risk of spread of tuberculosis, about the necessity to complete the full course of medication and about the contact investigation and follow-up of both case and contacts.

Public health staff should also assess and discuss whether directly observed therapy (DOT) may be indicated, see Guidelines for Tuberculosis Control in New Zealand, Chapter 4 (MoH 1996b).

For information on applying to a District Court judge for an order for the isolation of an infectious person suffering from tuberculosis, see Guide to Section 16 of the Tuberculosis Act 1948 (MoH 1996c).
Management of Contacts

Definition
Members of the same household as the index case (sharing kitchen and/or bathroom facilities) or who are very close associates of the case are considered close contacts. All other contacts are considered casual contacts.

Investigation
Assess the probability of transmission from the index case. Identify contacts and assess their degree of risk and conduct the investigation as described in *Guidelines for Tuberculosis Control in New Zealand*, Chapter 5 (MoH 1996b).

Restriction
Nil.

Counselling
Advise about the risk of tuberculosis and the screening needed as part of the contact investigation.

Advise about how chemoprophylaxis is used. Provide information on signs and symptoms of tuberculosis and advise to consult a doctor early.

Prophylaxis
See *Guidelines for Tuberculosis Control in New Zealand*, Chapter 3 (MoH 1996b) for recommendations.

Isoniazid is recommended for children less than five years old with a definite exposure to a case whether or not infection has been demonstrated.

Other Control Measures

Disinfection
Decontamination of air during isolation by ventilation, sunlight or ultraviolet light. For discussion of ventilation measures and the cleaning, disinfecting and sterilising of equipment see *Guidelines for Tuberculosis Control in New Zealand*, Chapter 8 (MoH 1996b).

Health education
Public education as to the cause and means of spread of tuberculosis and that it can be effectively treated.

Reporting
If a cluster of cases occurs forward an outbreak surveillance report to ESR.
Supplementary Information
Disinfection

Methods are divided into bacterial measures and viral measures. Details on individual disinfections and antiseptics follow:

**Bacterial measures**

Bacterial measures:
- involve cleaning initially with cold water and detergent
- steam sterilise
  - OR
  - soak in phenolic solution
  - OR
  - soak in gluteraldehyde (2 percent).

For:
- cloth/towels, etc., routine hot wash
- dishes/cutlery, routine hot wash in soapy water.

**Viral measures**

For viral precautions refer to:
- *Guidelines for Disinfection or Sterilisation of Blood-borne Viruses (Hepatitis B. HIV)*

HEAT IS BEST

- Viral = Hypochlorite or Glutaraldehyde
- Bacterial = Phenolic, Hypochlorite Iodophor.
### TABLE 4: Recommended Disinfectants/ Antiseptics and Solutions

<table>
<thead>
<tr>
<th>Class/Category</th>
<th>Examples</th>
<th>Uses</th>
<th>In Use Strengths</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alcohol</strong></td>
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<tr>
<td>Ethyl alcohol</td>
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<tr>
<td>Isopropyl</td>
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<tr>
<td>Alcohol</td>
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<tr>
<td>Methylated</td>
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<tr>
<td>spirit</td>
<td></td>
<td></td>
<td>70%</td>
<td></td>
</tr>
<tr>
<td><strong>Aldehydes</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Glutaraldehyde</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cidex</td>
<td></td>
<td></td>
<td>2%</td>
<td>Requires pre-mixing</td>
</tr>
<tr>
<td>Aidal Plus</td>
<td></td>
<td></td>
<td>2%</td>
<td>No pre-mixing. Four weeks use once opened</td>
</tr>
<tr>
<td><strong>Chlorine-based</strong></td>
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<td></td>
</tr>
<tr>
<td>Sodium</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypochlorite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household bleach</td>
<td>3-5% – eg, Aquableach, Domestos, Janola</td>
<td>Environmental decontamination</td>
<td>10 ml/l water</td>
<td>Can be unstable in liquid form. Use fresh and correct strength. Corrosive to metals if used excessively. Sporicidal (at high concentrations). Ineffective in the presence of organic matter. Non toxic but should not be mixed with other cleaners.</td>
</tr>
<tr>
<td>Janola</td>
<td></td>
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<tr>
<td>Milton tablets</td>
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<td></td>
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<tr>
<td>Sodium Milton tablets</td>
<td>Ineffective in the presence of organic matter. Non toxic but should not be mixed with other cleaners.</td>
<td>Disinfecting baby feeding bottles, teats and other articles (non-metal), glass and plastics</td>
<td>160 ppm (1 tab/2 l of water)</td>
<td>Do not rinse baby bottles, teats.</td>
</tr>
<tr>
<td>Milton tablets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
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</tbody>
</table>
**TABLE 4: Recommended Disinfectants/ Antiseptics and Solutions**

<table>
<thead>
<tr>
<th>Class/ Category</th>
<th>Examples</th>
<th>Uses</th>
<th>In Use Strengths</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenolics</td>
<td>Prephen</td>
<td>Decontamination of the environment in some infected areas</td>
<td>Dispensed in tubes. Dilute to 2% (50 ml/5 l water).</td>
<td>Predominantly bactericidal - eg, MRSA, faecal orgs, TB. Limited sporicidal/virucidal activity. Detergent based. Minimally inactivated by organic matter. May be adsorbed, absorbed to rubber.</td>
</tr>
<tr>
<td>(clear soluble)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iodine-based</td>
<td>Betadine viodine</td>
<td>Pre-operative skin preparation and skin antiseptic.</td>
<td>10% in 70% spirit or aqueous 10% povidine iodine.</td>
<td>Available in several presentations - eg solutions, surgical scrub, gauze pads, ointments etc. Good antibacterial activity against all bacterial except acid fast. Fast acting. Can cause skin reactions if used over large areas of the body.</td>
</tr>
<tr>
<td>Iodophors (Povidine iodine)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td></td>
<td>Infected wound irrigation</td>
<td>3% in aqueous solution</td>
<td>Oxidising agent with physical action. Should not be used in cavities where O₂ cannot easily escape as O₂ emboli can occur.</td>
</tr>
<tr>
<td>Other</td>
<td>Eurobath hand wash</td>
<td>Superficial wounds</td>
<td>0.15%</td>
<td>Anti-bacterial cream for cuts, grazes, burns. Recommended use for burns only. Can dry the skin if not applied correctly. Eurobath contains skin emollients. Store dry to prevent organism growth.</td>
</tr>
<tr>
<td>Brulidine Cream</td>
<td></td>
<td>Burns</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Silver Sulphadiazine</td>
<td></td>
<td>Social and general handwash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral Soap</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class/ Category</td>
<td>Examples</td>
<td>Uses</td>
<td>In Use Strengths</td>
<td>Comments</td>
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<td>----------------</td>
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<td>-----------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Antiseptics</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Chlorhexidine/spirit</td>
<td>Intact skin antiseptic</td>
<td>Chlorhex 0.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chlorhexidine</td>
<td>Wound cleansing (traumatic wounds)</td>
<td>0.05%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bioprep</td>
<td>High-risk areas – eg, operating theatre, ICU, delivery suite, A&amp;E, laboratory, SCBU, mortuary</td>
<td>4% Chlorhexidine with skin emollients</td>
<td>For use in iodine-sensitive patients. Has residual effect. Hand Skin drying can occur if used incorrectly.</td>
</tr>
<tr>
<td></td>
<td>Hibiclens</td>
<td>A/A</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PV examinations</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td><strong>Chlorhexidine Obstetric Cream</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sterile Mouth Wash</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sterile water</td>
<td></td>
<td>General department use</td>
<td></td>
<td>Single use in 5-10, 20, 500 ml and 1 l. Harmless to tissues.</td>
</tr>
<tr>
<td>Normal saline</td>
<td></td>
<td>Irrigation of wounds</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Any procedure that requires sterile fluid for irrigation</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>As above 0.9%</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Irrigating solutions</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>As above 30, 100, 500 ml.</td>
<td></td>
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</tr>
</tbody>
</table>
Glossary

acute serum defined as serum taken within five days of onset of symptoms and convalescent serum taken two to six weeks after the onset of symptoms. The sera should be tested in parallel.

blood/body fluid precautions includes (1) avoidance of contact with infected blood and body fluids, (2) hand washing after contact with the case or potentially contaminated articles, (3) barrier protection, such as protective clothing, masks.

also see standard precautions

early childhood centre any day care centre, nursery school or pre-school

contact a person or animal who has been in association with an infected person or animal or a contaminated environment which might provide an opportunity to acquire the infective agent

enteric precautions includes hand washing after contact with the case or potentially contaminated article; and disposal of faeces to the sewerage system.

food handler a person engaged in:

• the commercial preparation, processing, serving or sale of food or drink for human consumption and whose work can involve touching unwrapped foods or drinks to be consumed raw or without further cooking
• the preparation, processing or serving of food or drink for young children, or sick, frail or elderly persons

hospital public or private hospital or nursing home

incubation period the time between initial contact with an infectious agent and the appearance of the first sign or symptom of the disease

institution any residential or educational establishment

isolation separation for the period of communicability of infected persons or animals from others, in such places and under conditions designed to prevent or limit the direct or indirect transmission of the infectious agent to those who are susceptible

quarantine the restriction of healthy contacts of an infectious case
**restriction**
the period of restriction or exclusion from specified activities

**school**
includes kindergarten, kohanga reo, playcentre, day nursery, day-care, voluntary children’s groups, primary or secondary school, technical school/college, private school, university, Sunday school

**source**
any person, animal, object or substance from which an infectious agent can pass to a host

**standard precautions**
are precautions taken by all staff and applied to all patients, regardless of their presumed infectious status. Standard precautions include handwashing, glove use, use of barrier protection (such as eye protection, masks, face shields and gowns), handling of used patient-care equipment and linen in a manner that prevents contamination and transmission of organisms, adequate cleaning and disinfection procedures for all environmental surfaces, appropriate handling and disposal of sharps and appropriate isolation precautions.
References


ESR, Kenepuru Science Centre [varying dates]. Lab-Link newsletter. Porirua: ESR.


Health Education Resources

Health education resources are available through the Authorised Providers attached to the public health services, and are listed in the Health Education Resource Catalogue (MoH 1998a).
Contact Numbers

Public Health Group, Ministry of Health
133 Molesworth Street
PO Box 5013
Wellington
Phone: (04) 496 2000
Fax: (04) 496 2340

ESR: Kenepuru Science Centre
Kenepuru Drive
PO Box 50 348
Porirua
Phone: (04) 237 0149
Fax: (04) 237 8983

National Vaccine Store, ESR: Kenepuru Science Centre
Kenepuru Drive
PO Box 50 348
Porirua
Phone: (04) 237 0149
Fax: (04) 237 4216

Commonwealth Serum Laboratory
PO Box 62-590
Central Park
Penrose
Auckland
Phone: 0800 502 757
Fax: (09) 579 8106

AIDS Epidemiology Unit
Department of Preventive and Social Medicine
University of Otago Medical School
PO Box 913
Dunedin
Phone: (03) 479 1200
Fax: (03) 479 0529
Amendment Procedures

Purpose

To provide a convenient way to update the manual and check that sections of the manual are current.

Procedures

Versions

Each page of the manual has its version number recorded. When a section is first issued, it is Version 1.0. Successive amendments involving replacement of individual pages, but not the whole section, are numbered as Versions 1.1, 1.2, etc. Reissue of the entire section would be as Version 2.0, 3.0 etc.

Updating

Each issue of amendments is numbered and is accompanied by an updated Version Record Sheet (see Attachment 1). When the amendments have been inserted and outdated pages removed, the Amendment Record (see Attachment 2) is initialled and dated. The inserted Version Record Sheet ensures that there is always the means available to confirm whether a certain part of the manual is current.

Initiating Amendments

Amendments can be initiated by making submissions to the Communicable Disease Control Manual Co-ordinator at the Ministry of Health, preferably using the Amendment Request Form (see Attachment 3). The submission will be acknowledged, and if the requested amendment is obviously straightforward and beyond dispute, it will be included in the next group of amended sections or pages to be circulated to manual holders. The Ministry will maintain a database of manual holders to facilitate distribution of amendments.

If a requested amendment requires discussion, the Amendment Request Form will be circulated for comment or included on agendas for the next relevant meeting. After the requested amendment has been considered, it will be formulated and distributed.
New Ministry Policy and Recommendations

As new recommendations and policy is developed, the Ministry will update the manual. This will generally be as a result of policy development and consultation. However, the Ministry reserves the right to make amendments as and when necessary without consultation. This will ensure that the manual reflects the current policies of the Ministry of Health.

Attachments

1. Version Record Sheet
2. Amendment Record Sheet
3. Amendment Request Form
## Attachment 1: Version Record Sheet

<table>
<thead>
<tr>
<th>Section</th>
<th>Current Version (30 June 1998)</th>
<th>Total Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction and Contents (including Amendment Procedures)</td>
<td>1.0</td>
<td></td>
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<tr>
<td>2. Vaccine Preventable</td>
<td>1.0</td>
<td></td>
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<tr>
<td>3. Food-borne Illness</td>
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<td></td>
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<tr>
<td>4. Rare Diseases</td>
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<td></td>
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<tr>
<td>5. Other</td>
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<tr>
<td>6. General Information (including disinfection glossaries, references, and contact details)</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Amendment No.</td>
<td>Dated</td>
<td>Entered By</td>
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</tbody>
</table>
## Attachment 3: Amendment Request Form

<table>
<thead>
<tr>
<th>Section</th>
<th>Amendment Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Include rationale; use extra sheets if short of space)</td>
</tr>
</tbody>
</table>

**Signature:** [Signature]  
**Date:** [Date]

**Post to:**  
**Communicable Disease Control Manual Co-ordinator**  
**Public Health Policy and Regulation**  
**Ministry of Health**  
**PO Box 5013**  
**WELLINGTON**