Typhoid and paratyphoid fever

Epidemiology in New Zealand

Most cases of typhoid and paratyphoid fever notified in New Zealand are associated with overseas travel. Chronic carriage of *Salmonella typhi* may occur and act as a source of infection.

More detailed epidemiological information is available on the Institute of Environmental Science and Research (ESR) surveillance website at www.surv.esr.cri.nz.

Further information on foodborne illness is available at www.foodsafety.govt.nz and www.mpi.govt.nz.

Case definition

Clinical description

Typhoid fever typically presents with insidious onset of fever, headache, malaise, anorexia, dry cough, relative bradycardia and hepatosplenomegaly (50 percent). Less commonly, there may be rose spots on the trunk (30 percent of Caucasians), abdominal pain (20–40 percent), constipation (38 percent), diarrhoea (10 percent) and cerebral dysfunction. If untreated, the illness may last for 3–4 weeks and be complicated by intestinal perforation (3–10 percent) or haemorrhage, death (12–30 percent) or relapse (up to 20 percent).

Paratyphoid fever is a similar illness to typhoid fever but the clinical manifestations tend to be milder, the duration is shorter and the case-fatality rate is much lower. It often manifests as acute gastroenteritis.

Laboratory test for diagnosis

**Laboratory confirmation requires** isolation of *Salmonella typhi* or *Salmonella paratyphi* from a clinical specimen.

All isolates should be referred to ESR for further characterisation.

Case classification

- **Under investigation:** A case that has been notified, but information is not yet available to classify it as probable or confirmed.
• **Probable:** A clinically compatible illness that either is a contact of a confirmed case of the same disease or has had contact with the same common source – that is, is part of a common-source outbreak.

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

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

## Spread of infection

### Incubation period

- **Typhoid fever:** From 3 days to over 60 days (usual range 8–14 days).
- **Paratyphoid fever:** 1–10 days.

### Mode of transmission

Ingestion of food and water contaminated by faeces and urine of patients or carriers. In New Zealand, food vehicles have included shellfish taken from sewage-contaminated beds. In other countries, shellfish, raw fruits and vegetables, contaminated milk and milk products have been vehicles. Flies may spread organisms to food. Large epidemics are most often related to faecal contamination of water supplies or street-vended foods.

Person-to-person direct transmission is uncommon.

### Period of communicability

Usually from the first week of illness throughout convalescence. About 10 percent of untreated typhoid patients shed the organism in stool for more than 3 months, and 2–5 percent become permanent carriers.

Chronic carriage (that is, *Salmonella typhi* excreted for more than 1 year) is most common among people infected in middle age, especially women. Carriers frequently have biliary tract abnormalities such as calculi or a non-functioning gall bladder. Fewer *Salmonella paratyphi* patients become chronic carriers.

### Notification procedure

Attending medical practitioners or laboratories must immediately notify the local medical officer of health of suspected cases. Notification should not await confirmation.

### Management of case

**Investigation**

Obtain a detailed food history, a history of travel, exposure to untreated water or sewage or exposure to possible contacts with a similar illness.
Restriction
In a health care facility, only standard precautions are indicated in most cases; if the case is a diapered or incontinent child, apply contact precautions for the duration of illness.

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

For further details, refer to the exclusion and clearance criteria in Appendix 2: Enteric Disease.

Counselling
Advise the case and their caregivers of the nature of the infection and its mode of transmission.

Educate about hygiene, especially hand cleaning.

Management of contacts
Identify contacts for investigation, restriction and counselling as appropriate.

Definition
All those with unprotected household or other close contact with a case during the period of communicability or who have been exposed to the same contaminated food or water. This includes all members of a travel group associated with an identified case.

Investigation
All close contacts require one negative faecal specimen.

Restriction
For further details, refer to the exclusion and clearance criteria in Appendix 2: Enteric Disease.

Counselling
Advise all contacts of the incubation period and typical symptoms of typhoid or paratyphoid infection, and to seek early medical attention if symptoms develop.
Educate about hygiene, especially hand cleaning.

Other control measures
Identification of source
Check for other cases in the community or at-risk groups. Investigate potential food or water sources of infection in all cases.
If indicated, check water supply for microbiological contamination and compliance with the latest New Zealand drinking-water standards (Ministry of Health 2008).

If a water supply is involved, liaise with the local territorial authority to inform the public. Advise on the need to boil water.

**Disinfection**

Clean and disinfect surfaces and articles soiled with stool or urine. For further details, refer to Appendix 1: Disinfection.

**Health education**

Educate the public about safe food preparation (see Appendix 3: Patient Information).

In early childhood services or other institutional situations, ensure satisfactory facilities and practices regarding hand cleaning; nappy changing; toilet use and toilet training; preparation and handling of food; and cleaning of sleeping areas, toys and other surfaces.

**Reporting**

Ensure complete case information is entered into EpiSurv.

If a cluster of cases occurs, contact the Ministry of Health Communicable Diseases Team and outbreak liaison staff at ESR, and complete the Outbreak Report Form.

Liaise with the environmental health officer of the local territorial authority where food premises are thought to be involved. Liaise with the Ministry for Primary Industries if a contaminated commercial food source is thought to be involved.

**References and further information**