

TUVALU OUTBREAK MANUAL

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Communicable Diseases Reporting

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Publication Information

First published in 2003

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Publisher: Warwick Educational Publishing Inc.

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Cataloguing-in-Publication data

National Library of Australia

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Tuvalu Outbreak Manual

Appendicies

Date of Publication:01 September 2003

ISBN 0-9579788-3-9

1. Disease Control

I. Nelesone, Tekaai, 1967- . Durrheim, David, 1962- . Speare, Richard, 1958- .

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The production of this manual was made
possible by a grant from

Glaxo Smith Kline



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Introduction

Certain infectious diseases require immediate effective response if they occur on Tuvalu. These diseases are listed under Diseases with Outbreak Potential. Lymphatic filariasis does not spread directly from person to person, but is targeted for elimination in Tuvalu and so all people with **acute episodes of lymphatic filariasis** are being sought to confirm elimination.

To effectively control outbreaks you should:

- Familiarise yourself with the **case definitions** in this manual. The infectious diseases included are those which, when they occur more frequently than usual, pose a serious threat to the public's health.
- **Be alert** and look for cases meeting the case definitions.
- **Immediately respond as indicated.** An immediate correct response will limit the extent of an outbreak.
- Always remember that the **national outbreak team** is there to provide you with epidemiological, diagnostic and logistical **support** during outbreaks.
- Complete a **zero-report** for each week to indicate that you are still actively looking for these important infectious diseases and fax it to the national Director of Health (20481) on Friday each week.

KEYS TO EFFECTIVE OUTBREAK RESPONSE

- Know the case definitions
- Vigilantly look for cases
- Rapidly follow the recommended response
- Contact the national Director of Health for assistance
- Complete a zero-report each week

Conditions Requiring Immediate Response on Clinical Presentation Alone

- Acute flaccid paralysis [polio] – any case of acute flaccid paralysis in a child less than 15 years of age for which no other cause is apparent
- Five or more cases of diarrhoea (> 3 unformed stools in a 24 hour period or self-reported diarrhoea), which can be linked by person, place and time
- Three or more cases of diarrhoea (> 3 unformed stools in a 24 hour period or self-reported diarrhoea) where there is visible blood in the stool, which can be linked by person, place and time
- Insidious onset of febrile disease with constipation or diarrhoea and headache [typhoid]
- Sudden onset of febrile illness with a non-blistering generalized rash [measles]
- Sudden onset of febrile disease with intense headache and/or neck stiffness, with or without a haemorrhagic rash [meningococcal meningitis]
- Sudden onset of profuse painless watery stools with rapid dehydration in a person 5 years or older [cholera]
- Outbreaks of three or more cases of febrile disease due to no obvious cause, which can be linked by person, place and time [influenza; dengue; leptospirosis; biological warfare agents; Severe Acute Respiratory Syndrome; West Nile virus encephalitis; and others]
- Episode of febrile disease with painful and swollen lymph vessels or nodes [acute episodes of lymphatic filariasis]

Diseases With Outbreak Potential

Acute Flaccid Paralysis (Poliomyelitis)

CASE DEFINITION: Any case of acute flaccid paralysis in a child less than 15 years of age for which no other cause is apparent.

CONFIRMED WHEN: The clinical case definition is met and poliovirus is found in the stool.

INFORMATION BOX

Clinical picture

99% of infections are asymptomatic or non-specific febrile illness. Paralytic cases may begin with fever, malaise, headache and nausea, followed by muscle pain or stiffness, and then partial or complete paralysis in one or more limbs. There are decreased or absent tendon reflexes in the affected limbs and no sensory loss. Onset is usually sudden and paralysis is asymmetrical. Up to 10% of paralytic cases in an epidemic die, usually due to paralysis of the respiratory muscles.

Infectious agent

Poliovirus 1, 2 and 3 all cause paralysis. Type 1 is responsible for most outbreaks caused by wild virus, while Type 3 causes most vaccine-associated disease.

Reservoir

People, particularly those who are asymptomatic. There is no long-term carrier state.

Transmission

Faecal-oral transmission is most important, particularly in areas of poor sanitation. Where sanitation is good, transmission by coughing and sneezing has been implicated in certain outbreaks.

Incubation period

Normally 7-14 days, but can vary from two days to a month.

Period of infectiousness

Virus can be found in the throat for about a week and in faeces for up to 6 weeks, but cases are most infectious a few days before and after the start of symptoms.

PREVENTING POLIO

- Encourage your local community to practise good personal hygiene (see Key food and water hygiene messages - Appendix B).
- Immunise all children with Oral Polio Vaccine (OPV) and maintain the Cold Chain as OPV is destroyed by heat.

Schedule: Within 24 hours of birth
 6, 10 and 14 weeks

RESPONSE

Infection Control Precautions

- Standard Precautions (see Appendix A).
- Where patient is in diapers or incontinent, add Contact precautions (Appendix A).

Treatment

- Hospitalise as soon as possible.

Specimens

- 5 – 10 g of fresh stool from the patient (a “thumb nail” quantity).
- Use plastic screw-top container and place in the fridge, not freezer.
- Follow standard packing and shipping procedure (Appendix C). Maintaining the Cold Chain (0 - 8°C) is essential.
- Contact the Princess Margaret Hospital Laboratory to indicate that there is a stool specimen from a suspected AFP case (refrigerate while awaiting collection).

Reporting

- Phone 20765 immediately to report a suspected case.
- Phone 20753 to let the laboratory technician know that a specimen has been taken from an AFP case.
- Begin a line-listing of cases (see back page).

Contacts

- Where deemed necessary by the National EPI Co-ordinator on epidemiological grounds or where poliovirus is isolated from an AFP case's stool, all children below five years of age in the affected island should receive two drops of OPV, regardless of their immunisation status. Occasionally the National EPI Co-ordinator will extend the age group for immunisation.
- If poliovirus is isolated, then a second round of OPV immunisation should be performed four weeks after the first round.

Diarrhoea Outbreaks

CASE DEFINITION: Five or more cases of diarrhoea (>3 three unformed stools in a 24 hour period or self-reported diarrhoea), which can be linked by place, person and time.

CONFIRMED WHEN: The causative organism is detected by laboratory examination of a stool specimen. This is most successful when the stool specimen reaches the laboratory within a few hours in an icebox or when the specimen is immediately put in Cary-Blair medium and refrigerated.

INFORMATION BOX

Clinical picture

Clinical presentation depends on the organism responsible and common symptoms are diarrhoea, vomiting, abdominal cramps and fever.

Infectious agent

A large number of different organisms (viruses, bacteria and protozoa) and chemical substances can cause diarrhoea outbreaks. Some are mainly food-borne, (e.g., Salmonella, Campylobacter, Clostridium perfringens and some types of E. coli), while other organisms are mainly waterborne, particularly enterotoxigenic E. coli. Where vomiting is a major symptom then viral gastro-enteritis or food poisoning caused by staphylococci, Bacillus cereus, Clostridium perfringens or non-cholera Vibrio species should be suspected. The short incubation period of food poisoning usually allows incrimination of a specific food item and tracing of other victims.

Reservoir

Important examples are: poultry (Campylobacter, Salmonella species), shell-fish (Vibrio species), people (Staphylococcus aureus, viruses, Giardia lamblia).

Transmission

Hand (contaminated by infected faeces) to mouth is the most common mode of transmission of infectious agents but contaminated food is also often implicated, like poultry (Campylobacter, Salmonella species), raw sea-food (Vibrio species), contaminated flash-fried rice (Bacillus cereus), contaminated warmed-up leftovers (Clostridium perfringens) and faecally contaminated water (ETEC, Giardia lamblia) also plays an important role.

Incubation period

From hours (Staphylococcus aureus) to 3 weeks (Giardia lamblia).

Period of infectiousness

Usually only while symptomatic or for a short time after symptoms cease.

PREVENTING DIARRHOEA

Clinics should be the source of clear messages on effective food hygiene, like the “**Ten Golden Rules for Safe Food Preparation**”.

1. Choose food that is safely processed
2. Cook food properly
3. Eat cooked food immediately
4. Protect food after cooking
5. Protect food from insects, rodents & animals
6. Wash hands repeatedly
7. Reheat cooked food thoroughly
8. Use boiled water
9. Avoid contact between cooked and raw food
10. Keep all working surfaces very clean

RESPONSE

Infection Control Precautions

- Standard Precautions (see Appendix A).
- Where patient is in diapers or incontinent, add Contact Precautions (see Appendix A).

Treatment

- Only adequate fluid replacement should be used, unless the laboratory finds an organism requiring antibiotic or anti-protozoal therapy. A decision on specific therapy, if any, can then be made in consultation with the national Director of Health.

Specimens

- If specimens are submitted from hospitalised patients, these should be 5-10 g of fresh stool in a plastic screw-top container and immediately sent to the laboratory. Delays should be limited, preferably to less than 2 hours. Otherwise inoculate a specimen in Cary-Blair medium and refrigerate until the specimen can be shipped to the Princess Margaret Hospital Laboratory.

Reporting

- Phone 20765 immediately when three or more cases of diarrhoea are suspected to be linked by person, place or time.
- Begin a line-listing of cases (see back page).

Contacts

- The risk to contacts can be reduced by maintaining good hygiene and boiling water before consumption (see Appendix B).
- Where commercial food or drink is implicated, complete a list of candidate foods (including milk and water supply) and embargo under refrigeration all foods still available. Enquire about the origin, preparation and storage of suspected food and examine food handlers where indicated. Submit suspected leftover food for laboratory examination if directed by the national Director of Health.
- Antimicrobial prophylaxis is not indicated.

Dysentery Outbreaks

CASE DEFINITION: Three or more cases of diarrhoea where there is visible blood in the stool, which can be linked by place, person and time.

CONFIRMED WHEN: The causative organism is detected by laboratory testing of a stool specimen.

INFORMATION BOX

Clinical picture

Severity of disease is variable, from asymptomatic to prominent diarrhoea containing blood, pus and mucous. Fever, nausea, vomiting and abdominal cramps may also be present. A variety of other systemic signs/symptoms may also occur depending on the specific agent, like toxic megacolon and haemolytic-uraemic syndrome (*Shigella dysenteriae* 1), haemolytic-uraemic syndrome (EHEC), arthritis and convulsions (*Campylobacter jejuni*), and systemic abscesses (amoebiasis).

Infectious agent

Bacteria (certain strains of *Escherichia coli*, *Shigella dysenteriae*, *Shigella flexneri*, *Campylobacter jejuni*) and a protozoan (*Entamoeba histolytica*).

Reservoir

People – EIEC, EHEC, *Shigella* species, amoebiasis.

Cattle – EHEC, *Campylobacter*.

Domestic pets and poultry – *Campylobacter*.

Transmission

Faecal-oral transmission is important, either through direct contact or by contaminated food. Occasionally *Entamoeba histolytica* is responsible for large water-borne outbreaks.

Incubation period

From a few hours in shigellosis to many months in amoebiasis, usually days to weeks.

Period of infectiousness

Most infectious during the diarrhoeal phase, but some patients may be short term carriers.

PREVENTING DYSENTERY

- This is similar to diarrhoea prevention. As most causes of dysentery require only relatively few organisms to produce disease, strict personal hygiene, particularly of food handlers, is essential.
- Careful food preparation and storage, and pasteurisation of milk are effective in preventing dysentery caused by *Campylobacter*.

RESPONSE

Infection Control Precautions

- Standard Precautions (see Appendix A).
- Where patient is in diapers or incontinent, add Contact Precautions (see Appendix A).

Treatment

- Assess hydration, and institute adequate fluid replacement. Antibiotic therapy is always indicated in cases of dysentery and at this stage the recommended antibiotic is chloramphenicol. The dose per 24 hours for adults is 500 mg p.o./i.v. for 7 days, while the dose for children is 50 mg/kg in four divided doses for 5 days.
- Where there is a high fever (>39°C), paracetamol may be used (10 mg/kg every 4 – 6 hours).

Specimens

- If specimens are sent from hospitalised patients, these should be 5-10 g of fresh stool in a plastic screw-top container and immediately sent to the laboratory. Delays should be limited, preferable to less than 2 hours. Otherwise inoculate a specimen in Cary-Blair medium and refrigerate until the specimen can be shipped to the Princess Margaret Hospital Laboratory.

Reporting

- Phone 20765 immediately when three or more cases of dysentery are suspected to be linked by person, place or time.
- Begin a line-listing of cases (see back page).

Contacts

- Antimicrobial prophylaxis is not indicated.
- The risk of dysentery can be reduced by good sanitation and boiling water before consumption (see Appendix B).
- Where commercial food or drink is implicated, complete a list of candidate foods (including milk and water supply) and embargo under refrigeration all foods still available. Enquire about the origin, preparation and storage of suspected food and examine food handlers where indicated. Submit suspected leftover food for laboratory examination if directed by the national Director of Health.

Febrile disease with constipation or diarrhoea and headache (Typhoid)

CASE DEFINITION: Insidious onset of febrile disease with constipation or diarrhoea and headache.

CONFIRMED WHEN: Stool, blood or urine culture grows *Salmonella typhi*.

INFORMATION BOX

Clinical picture

Usually insidious onset of fever, severe headache, malaise, loss of appetite, an enlarged spleen, non-productive cough and gastro-intestinal upset, more commonly constipation than diarrhoea. Often the pulse is unusually slow when compared to what would be expected with the fever (relative bradycardia). Mild and atypical infections may occur, but, if disease is not treated, it progresses and may result in perforation of the ileum with an acute abdomen or progressive neurological disease and death. With correct treatment the fatality rate can be reduced from 20% to < 1%. Occasionally, after treatment, relapses occur.

Infectious agent

Salmonella typhi.

Reservoir

People. Some people become chronic carriers with intermittent excretion of bacteria in faeces and less often urine.

Transmission

Transmission through food and water contaminated by the faeces or urine of patients and carriers. Contaminated shellfish, raw vegetables or fruit, and milk have all caused outbreaks. Food-handlers that are typhoid carriers pose a major risk. Flies can also transmit bacteria from faeces onto food.

Incubation period

From 3-30 days, usually 8-14 days.

Period of infectiousness

During symptomatic illness, but up to 5% of infected people become chronic carriers.

PREVENTING TYPHOID

- This is similar to diarrhoea prevention. As typhoid requires relatively few organisms to produce disease, strict personal hygiene, particularly of food handlers, is essential.
- Careful food preparation and storage is important (see Appendix B).

RESPONSE***Infection Control Precautions***

- Standard Precautions (see Appendix A).
- Where patient is in diapers or incontinent, add Contact Precautions (see Appendix A).

Treatment

- All suspected cases of typhoid should be hospitalised as soon as possible.
- Assess hydration, and institute adequate fluid replacement. Antibiotic therapy is always indicated in cases of typhoid and at this stage the recommended antibiotic is chloramphenicol. The dose in adults is 500 mg/kg p.o. every 6hrs for 14 days, while the dose for children is 50 mg/kg/24hrs p.o. divided into four equal doses and given every 6 hours or 75 mg/kg/24hrs i.v. in four divided doses for 14 days. The choice of antibiotic may need to be adjusted once the laboratory has completed sensitivity analysis.
- Where there is a high fever (>39°C), paracetamol may be used (10 mg/kg every 4 – 6 hours).

Specimens

- Stool and blood cultures should be performed on hospitalised patients to confirm the diagnosis. 5-10 g of fresh stool in a plastic screw-top container should immediately be sent to the laboratory, while blood should be sent to the laboratory in blood culture bottles.

Reporting

- The national Director of Health should be phoned (20765) immediately when typhoid is confirmed by culture.

Contacts

- Antimicrobial prophylaxis is not indicated.
- Close contacts should be alerted to the symptoms of typhoid and be advised to present to the health service should they develop symptoms.
- The risk of typhoid can be reduced by adequate sanitation, good food hygiene and boiling water before consumption (see Appendix B).
- Where commercial food or drink is implicated, complete a list of candidate foods (including milk and water supply) and embargo under refrigeration all foods still available. Enquire about the origin, preparation and storage of suspected food and examine food handlers where indicated. Submit suspected leftover food for laboratory examination if directed by the national Director of Health.

Febrile Disease with Non-Blistering Generalised Rash (Measles)

CASE DEFINITION: Sudden onset of febrile disease with non-blistering generalised rash.

CONFIRMED WHEN: Serology, antigen detection or molecular techniques are positive; or case meets the clinical case definition and is linked to a laboratory confirmed case.

INFORMATION BOX

Clinical picture

A highly contagious infectious disease characterised by all of the following clinical features: a generalised non-blistering maculopapular rash which usually appears on the third to seventh day of illness and which lasts for >3 days; a temperature often exceeding 38°C; and cough, or conjunctivitis. Malnourished children may develop severe disease, with haemorrhagic rash, protein-losing enteropathy and blindness, and up to 10% of malnourished children will die.

Infectious agent

Measles virus.

Reservoir

Infected people.

Transmission

Airborne by droplet spread, direct contact with secretions or through contaminated articles.
Highly infectious.

Incubation period

Usually 10 days (ranging from 1 – 3 weeks).

Period of infectiousness

From just before the prodrome to 4 days after the appearance of rash.

PREVENTING MEASLES

- Live attenuated measles vaccine is given IM to all children between 9 and 12 months of age. It is important to protect the vaccine from heat and light as it can be destroyed.
- Campaigns to increase measles coverage should reach the maximum number of target age-group children.
- The immunisation status of all children admitted to Princess Margaret Hospital must be checked in their Tuvalu Under Five Health Chart and catch-up immunisation offered to those who are not fully immunised or not carrying a Chart.

RESPONSE

Infection Control Precautions

- Standard and Respiratory Precautions (see Appendix A).

Treatment

- A patient should be considered highly infectious for 4 days after appearance of rash and preferably isolated, or at least restricted from contact with groups of people.
- Very sick patients with complications should be hospitalised.
- A child hospitalised with fever and rash should be isolated on admission.
- Paracetamol may be given for fever and discomfort (10 mg/kg every 4 – 6 hours p.o.).

Specimens

- During the outbreak response blood should be taken (one red-top tube) if within 30 days of rash onset. This specimen should be refrigerated and standard packing and shipping procedure should be followed (see Appendix C).
- During an outbreak it is usually only necessary to send specimens from the first 5 cases of fever and rash.

Reporting

- Phone 20765 when a patient meeting the case definition is discovered.
- Complete the line-listing form for suspected outbreaks of measles (see back page).

Contacts

- Where deemed necessary by the national EPI Co-ordinator, on epidemiological grounds, a focused campaign of measles immunisation may be conducted in an affected area. A single dose of measles vaccine will be given to a target age-group, irrespective of immunisation status.
- Any measles outbreak should be used as an opportunity to promote catch-up vaccination of unimmunised children on the affected island.

Meningococcal Meningitis

CASE DEFINITION: Sudden onset of febrile disease with intense headache and/or stiff neck, with or without a haemorrhagic rash.

CONFIRMED WHEN: *Neisseria meningitidis* is cultured from cerebrospinal fluid or blood; or Gram negative diplococci are present in CSF or from skin lesions.

INFORMATION BOX

Clinical picture

An acute disease with fever, nausea, vomiting, intense headache and stiff neck. Often there is a petechial rash that may blister. Progression to coma and shock may be rapid. Some infections are asymptomatic or present as a respiratory / pneumonic picture. Occasionally there is only a septicaemia with skin haemorrhage. If untreated, 50% of cases die. With prompt diagnosis and therapy less than 10% will die, although permanent neurological damage is common.

Infectious agent

Neisseria meningitidis. The groups that cause disease are A, B, C, W135, X & Y.

Reservoir

People, asymptomatic nasal carriers are common.

Transmission

Respiratory droplets.

Incubation period

3 – 5 days (ranging from 1 – 10 days).

Period of infectiousness

The bacteria remain in the nasal and pharyngeal discharges for an extended period unless treated with rifampicin.

PREVENTING MENINGOCOCCAL DISEASE

- Overcrowding of young people and children in schools, barracks and colleges should be avoided.

RESPONSE

Infection Control Precautions

- Standard and Respiratory Precautions (see Appendix A).
- The Respiratory Precautions should be strictly applied for at least 24 hours after starting adequate intravenous treatment with penicillin.

Treatment

- Where meningococcal meningitis is suspected on the outer Islands, do not wait for a doctor to perform a lumbar puncture before beginning antibiotic therapy (penicillin 4 million units every four hours i.v. for adults, 100,000 units per kg per dose i.v. every 4 hours for children). Chloramphenicol should also be administered (750 mg i.v. every 6 hours for 10 days for adults and in children 40mg/kg stat i.v., then 25 mg/kg/dose every 6 hours with a maximum of 1 gram per day for 10 days). This may be adapted following antibiotic sensitivity results.
- Hospitalise all suspected cases in isolation.

Specimens

- All patients with the clinical syndrome should have a lumbar puncture to obtain CSF performed as soon as possible by a doctor, after excluding papilloedema.

Reporting

- The national Director of Health should be phoned (20765) immediately to report any case meeting the case definition.
- Begin a line-listing of cases (see back page).

Contacts

- Close surveillance of household and other intimate contacts, particularly for the onset of fever.
- Rifampicin is necessary for close contacts (for adults – 600 mg b.d. p.o. for two days, for children > one month – 10 mg/kg and for children < one month – 5 mg/kg) and for all confirmed meningococcal patients before discharge from hospital.

Profuse Watery Diarrhoea (Cholera)

CASE DEFINITION: Sudden onset of profuse painless watery stools with rapid dehydration in a person 5 years of age or older.

CONFIRMED WHEN: *Vibrio cholerae* is cultured from a stool sample; or a patient meets the clinical case definition and is linked to a laboratory confirmed case.

INFORMATION BOX

Clinical picture

Most cases are asymptomatic or have mild diarrhoea. In severe cases there is acute onset of profuse painless diarrhoea (rice water stools), occasional vomiting, rapid dehydration and circulatory collapse. Where severe cases are incorrectly treated more than half will die, usually within a few hours.

Infectious agent

Vibrio cholerae 01 (two types, either classical or El Tor) and 0139 release a powerful toxin which bind to the gut wall and stimulates the release of large volumes of water. A high infective dose is necessary for severe clinical disease.

Reservoir

People, and occasionally shellfish. *V. cholerae* is an environmental bacteria found in water bodies at low numbers with amplification by humans during epidemics.

Transmission

Ingestion of water contaminated with faeces or vomit from patients or carriers. Occasionally food contaminated by faeces (hands or flies) is the source.

Incubation period

Usually 2 – 3 days (occasionally from hours to a week).

Period of infectiousness

Usually only while diarrhoea lasts and for a few days after symptoms cease, but occasionally for a couple of months.

PREVENTING CHOLERA

- Health education should stress the use of safe water for domestic purposes (drinking, cooking, and washing hands and eating utensils). Water should be boiled (rolling boil for 3 minutes). The boiled water should be protected from contamination, preferably by storing it in a closed container in a fridge.
- Hand washing is important, especially by food-handlers and those caring for patients and young children.
- Safe disposal of faeces in fly-proof latrines is important to prevent contamination of the environment. Sufficient toilet paper should be available to prevent contamination of fingers.
- Fly breeding should be prevented by regular refuse disposal and improved sanitation.
- Boil all shellfish for at least 10 minutes before serving; shellfish should not be eaten during a cholera outbreak.

RESPONSE

Infection Control Precautions

- Standard Precautions (see Appendix A).
- Where patient is in diapers or incontinent, add Contact Precautions (see Appendix A).

Treatment

- Admit patient to a clinic or Princess Margaret Hospital.
- Immediate rehydration is critical. Eighty to ninety percent of patients can be successfully treated by oral rehydration (8 teaspoons of sugar and ½ teaspoon of salt in 1 litre of safe water or one packet of ORS mixed in clean water). If dehydration is more severe, intravenous fluids should be administered (Ringers lactate/Hartman's/Normal saline): 30 ml/kg in the first hour; 70 ml/kg over the next 2-3 hours, and then to replace ongoing losses.
- In severe cases that are hospitalised and at high risk (e.g. pregnant women) oral antibiotics can accelerate recovery (Adults: Doxycycline 100 mg every 12 hours p.o. for 4 days. Children: Cotrimoxazole: trimethoprim 5 mg/kg; sulphamethoxazole 25 mg/kg b.d. for 3 days).

Specimens

- In a hospitalised patient, a freshly passed stool should be collected in a screw-top bottle, before antibiotics are administered, and immediately sent to the laboratory.
- The specimen should be placed in Cary-Blair transport medium and refrigerated.

Reporting

- The national Director of Health should be phoned (20765) immediately to report any case meeting the case definition.
- Begin a line-listing of cases (see back page).

Contacts

- The affected community can markedly reduce their risk of infection by good sanitation and water purification practices (see Appendix B).
- Vaccination and mass chemoprophylaxis are not effective in controlling cholera.
- Close contacts of a proven case should be placed under surveillance for 5 days.

Outbreaks of Acute Febrile Disease

CASE DEFINITION: Outbreaks of three or more cases of febrile disease due to no obvious cause, which can be linked by person, place and time [influenza; dengue; leptospirosis; biological warfare agents; Severe Acute Respiratory Syndrome; West Nile virus encephalitis and others]

A large variety of infectious agents may cause epidemics of acute or sub-acute febrile disease. Fever may be accompanied by non-specific signs like rigors (e.g. malaria, influenza, dengue) or organ-specific signs. Although most of these diseases do not usually occur on Tuvalu, modern travel means that infected people, insects or other animals may introduce them into Tuvalu. Many of these febrile diseases require urgent response to prevent deaths and spread in the community. Recently several Pacific island nations have had epidemics of dengue, West Nile virus has spread from the East to the West Coast of the United States of America and may spread to Pacific island countries and Severe Acute Respiratory Syndrome (SARS) emerged in Asia and threatens to become a global epidemic.

It is therefore essential that all health workers remain on the alert for clusters of systemic febrile disease. Where outbreaks of three or more cases of febrile disease not due to obvious causes occur, these should be reported to the national Director of Health.

The value of immediately responding to suspected outbreaks of febrile disease without a definite diagnosis is well demonstrated by the recent epidemic of Severe Acute Respiratory Syndrome (SARS). Despite a definite causal agent not being identified, public health responses (isolation with respiratory precautions) were possible on detection of cases meeting the clinical case definition of: 1) fever $> 38^{\circ}\text{C}$, 2) dry cough, shortness of breath, difficulty in breathing or pneumonia and 3) travel from a SARS infected area or contact with a suspect SARS case.

Non
Outbreak
Diseases
Targeted
for
Elimination

Adenolymphangitis (ALA) (Lymphatic Filariasis)

CASE DEFINITION: Sudden onset of febrile disease with painful and swollen lymph vessels or nodes.

CONFIRMED WHEN: Microfilaria of *Wuchereria bancrofti* are detected in blood specimens; or Og4C34 is positive in a blood specimen.

INFORMATION BOX

Clinical picture

Some people who are infected do not have obvious symptoms. Others have recurrent acute episodes of fever and local inflammation of lymph nodes and/or vessels. Disease may progress to chronic swelling and disabling deformity of limbs, breasts or female genitalia (elephantiasis), or scrotum (hydrocoele). Other signs include lymph in the urine (chyluria) and respiratory symptoms (tropical pulmonary eosinophilia syndrome).

Infectious agent

Wuchereria bancrofti is the parasite responsible for lymphatic filariasis in Tuvalu.

Reservoir

People who have microfilariae in their blood.

Transmission

Bites of infected mosquitoes. In Tuvalu, *Culex* mosquitoes are responsible for transmission.

Incubation period

Inflammation may occur within weeks of infection but many months may pass before microfilariae appear in the blood.

Period of infectiousness

Infection is not directly transmitted between people. Mosquitoes that have fed from a person with microfilaria become infective 12-14 days later.

Reason for monitoring

Not for outbreak response but because there is no proven surveillance system for confirming elimination despite a global elimination programme.

PREVENTING FILARIASIS

- Community members should be encouraged to participate in Mass Drug Administration (MDA) campaigns using DEC and Albendazole.
- Personal protection against mosquito bites.

RESPONSE***Infection Control Precautions***

- None necessary.

Treatment

- Assess the patient for local secondary infection over the affected lymph vessels and nodes, and the area drained by the lymph nodes. Where local infection is present, neomycin cream should be topically applied every 8 hours. The patient should be reassessed on a daily basis and a doctor should be consulted if the condition deteriorates or does not improve.
- The duration of clinical signs, inflammation and pain can be reduced by administering systemic non-steroidal anti-inflammatory medication. Ibuprofen 400 mg every 8 hours should be administered for a maximum of five days.
- A single dose of DEC therapy (6 mg per kg patient weight) should be administered, after blood collection is completed.
- Regular, at least daily, washing of the affected limb with clean water and soap, followed by careful drying.

Specimens

- All patients with the ALA syndrome should have a rapid card test for filariasis performed, with the result read and recorded within ten minutes.
- Patients who have a positive card test should have venous blood (5 ml) drawn prior to DEC treatment. The blood specimen should be halved into a purple top tube and a red top tube. Both tubes should be refrigerated. These specimens should be sent in an icebox with icepacks (see Appendix C) to Princess Margaret Hospital Laboratory as soon as possible.

Reporting

- A line-listing form should be completed for all patients meeting the ALA case-definition (see back page). This should be faxed to the national Director of Health (20481) with the weekly zero-reporting form on a Friday.

Contacts

- No action necessary.

Appendices

Appendix A

Standard Precautions

(All body fluids, except sweat, are regarded as potentially infectious).

Hand-washing

- Wash hands after touching blood, body fluids, secretions and contaminated items, whether or not gloves are worn.
- Wash hands immediately after gloves are removed, between patient contacts and when working on different areas of the same patient to prevent cross-contamination of different body sites.
- Use a plain (non-antimicrobial) soap for routine hand washing.

Gloves

- Wear gloves (clean, non-sterile) when touching blood, body fluids, secretions, excretions, contaminated items, mucous membranes and non-intact skin. Change gloves between tasks on the same patient after contact with material that may have a high concentration of micro-organisms. Remove gloves promptly after use without touching non-contaminated surfaces and before going to another patient and wash hands immediately.

Mask

- Wear mask during procedures that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions.

Gown (or plastic apron)

- Wear a gown (clean, non-sterile) or plastic apron during procedures that are likely to generate splashes or sprays of blood, body fluids, secretions and excretions. Remove as promptly as possible and wash hands immediately.

Patient-Care Equipment

- If equipment is soiled with blood, body fluids, secretions and excretions, prevent skin and mucous membrane exposures, contamination of clothing, and transfer of micro-organisms to other patients and environments. Ensure that reusable equipment is not used for the care of another patient until it has been cleaned, disinfected or autoclaved. Ensure that single-use items are discarded properly.

Environmental Control

- Simple cleaning of environmental surfaces is adequate unless there has been significant soiling by potentially infectious body fluids when disinfection is required.

Linen

- When soiled with blood, body fluids, secretions and excretions, handle, transport and process in a manner that prevents skin and mucous membrane exposure and contamination of clothing, so that transfer of micro-organisms to other patients and environments is prevented.

Occupational Health and Blood-borne Pathogens

- Take care to prevent injuries when using needles, scalpels and other sharp instruments or devices; when handling sharp instruments after procedures; when cleaning used instruments; and when disposing of used needles. Never recap used needles, or use any other technique that involves directing the point of the needles from disposable syringes by hand, and do not bend, break or otherwise manipulate used needles by hand. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers, which are located as close as practical to the area where the items are used.
- Use mouthpieces, resuscitation bags or other ventilation devices as an alternative to mouth-to-mouth resuscitation methods where the need for resuscitation is predictable.

Respiratory Precautions

Use with Standard Precautions:

Patient Placement

- Ideally, place the patient in a private room. Keep the room doors closed and the patient in the room. When a private room is not available, place the patient in a room with patients who have active infection with the same microorganism, but with no other infection.

Respiratory Protection

- A susceptible person should not enter the room of patients known or suspected to have the disease, if other immune care givers (staff that have been vaccinated against the disease) are available. Respiratory protection should be worn.

Patient Transport

- Limit the movement and transport of the patient from the room to essential purposes only and then place a mask on the patient.

Contact Precautions

Use with Standard Precautions.

Patient Placement

- Place the patient in private room. When a private room is not available, place the patient in a room with a patient(s) who has active infection with the same micro-organism but with no other infection.

Gloves and Hand-washing

- Wear gloves when entering the room. Change gloves after having contact with infectious material that may contain high concentrations of micro-organisms (faecal material and wound drainage). Remove gloves before leaving the patient's environment and wash hands immediately with an antimicrobial agent or waterless antiseptic. Afterwards ensure that hands do not touch potentially contaminated environments, to avoid transfer of micro-organisms to other patients or environments.

Gown (or plastic apron)

- Wear a gown (or plastic apron) (a clean, non-sterile gown is adequate) on entering the room, when you anticipate that your clothing will have substantial contact with the patient or environment. Remove the gown before leaving the patient's environment. After removal, ensure that clothing does not contact potentially contaminated surfaces.

Patient Transport

- Limit the movement and transport of the patient from the room to essential purposes and prevent soiling of the environment.

Patient-Care Equipment

- When possible, dedicate the use of non-critical patient-care equipment to a single patient (or cohort with the same infection). If equipment is shared, then adequately clean and disinfect.

Appendix B

Key Food and Water Hygiene Messages

- Drink only water that has been boiled or chlorinated.
- Dispose of human excreta promptly and safely.
- Wash hands after contact with excreta and before preparing or eating food.
- Cook food or reheat it thoroughly, and eat it while still hot.
- Avoid uncooked food unless it can be peeled or shelled.

Appendix C

Packing and Shipping Procedure

All specimens should be handled in such a way as to minimise the risk of transmitting pathogens during transport and handling. It is also very important to keep any micro-organism alive so that it can be cultured in the laboratory.

Ways to ensure this include:

- Do not contaminate the environment when obtaining and packing a specimen.
- Practise meticulous hand washing with soap after collecting a specimen.
- Carefully observe all other relevant infection control measures for the particular condition (see Appendix A); like always using disposable gloves.
- Specimens should be collected in correct, safe containers that do not leak (e.g. well-fitting screw-top containers or well-sealed blood specimen bottles).
- Always place specimen container in a plastic bag that is tied off with a rubber band (if it is not a self-sealing bag). Enough absorbent material should be placed in this bag to absorb any fluid spilt from the sample bottle.
- Then place this bag, with a request form, in a separate plastic bag that is also sealed.
- Place sealed bag into a cold box that is in good condition.
- Follow recommended procedure for packing a cold box.
- Check that the cold box seal is intact and that there are no cracks in the cold box.
- If the box is broken, it should be replaced.
 - Ice packs should be frozen solid for 2 days before use.
 - You need enough ice packs to line the bottom, sides and top of the cold box.
 - Seal the box with tape or string.
- Notify Princess Margaret Hospital Laboratory that the specimen has been sent.

Appendix D

Glossary

Attenuated	The process by which a potentially dangerous organism is made less dangerous in order to provide immunity
Cary-Blair Medium	A material that allows growth of certain bacteria
Case Definition	The signs and symptoms that are typical of a disease or condition
EHEC	Enterohaemorrhagic <i>E. coli</i> – a bacteria which causes bleeding in the bowel
EIEC	Enteroinvasive <i>E. coli</i> – a sub type of the <i>E. coli</i> bacteria that penetrates the bowel wall
Haemolytic-Uraemic Syndrome	Bleeding tendency and renal failure most often associated with infection
im	By intramuscular injection
Incubation Period	Period of time between initial infection and onset of first symptoms
Infectious agent	Any agent that can cause infection, it may be a virus, bacteria, fungus, protozoan or worm
iv	By intravenous administration
Maculopapular	Skin rash where there is colour change (macule) which is raised above the normal surface of the skin
Outbreak	Increase in cases of a disease in a particular area beyond what would normally be expected
Period of Infectiousness	Time in which an infected person can spread an infection to another person
p.o.	Per os, orally
Protein-losing Enteropathy	Condition of the gut usually after toxin damage where there is excessive protein loss
Relative Bradycardia	Heart rate that is slower than one would anticipate with fever
Reservoir of Infection	The natural environment of an infectious agent from where it can spread to a host
Toxic Megacolon	A condition where toxins damage the large gut wall and cause it to expand in size
Toxin	Poison formed in the body by a pathogenic organism, like some bacteria
Transmission	Refers to how an infectious agent is transferred or spread

Appendix E

Facsimile Transmittal Sheet

Tuvalu Ministry of Health



To: Dr Tekaa Nelesone

Fax number: 20481

Phone number: 20765

From:

Island:

Signature:

Date:

Reference Number:

Re:

Outbreak Report

Rapid reporting of conditions requiring immediate response on clinical presentation alone
Please complete for the current week and fax to Dr Tekaa Nelesone on Friday.

Zero Reporting: Have there been any cases of:	No	Yes
Acute flaccid paralysis (polio)		
Diarrhoea Outbreak (5 or more cases linked by person, place & time)		
Dysentery Outbreak (3 or more cases linked by person, place & time)		
Typhoid (febrile disease with abdominal symptoms and headache)		
Measles (febrile disease with generalised non-blistering rash)		
Meningococcal meningitis		
Cholera (profuse watery diarrhoea)		
Systemic febrile disease (3 or more cases linked by person, place and time)		
<i>If yes, please phone 20 765 (Dr Tekaa Nelesone) immediately and begin line-listing.</i>		
Other conditions targeted for elimination	No	Yes
Acute adenolymphangitis (lymphatic filariasis)		
<i>If yes, begin line-listing.</i>		

Appendix F

Line-Listing of Cases

Suspected disease / condition:

No.	Name	ID No.	Age	Sex	Address	Date of onset	Laboratory Specimen(s)		Other Information
							Type	Result	
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

Summary of outbreak response:

Your name _____

Island _____

Date _____