Amoeba Response Protocol

Safe Drinking Water which has the Trust of Consumers

Environmental Health Directorate

Contents

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Amoeba Response Protocol

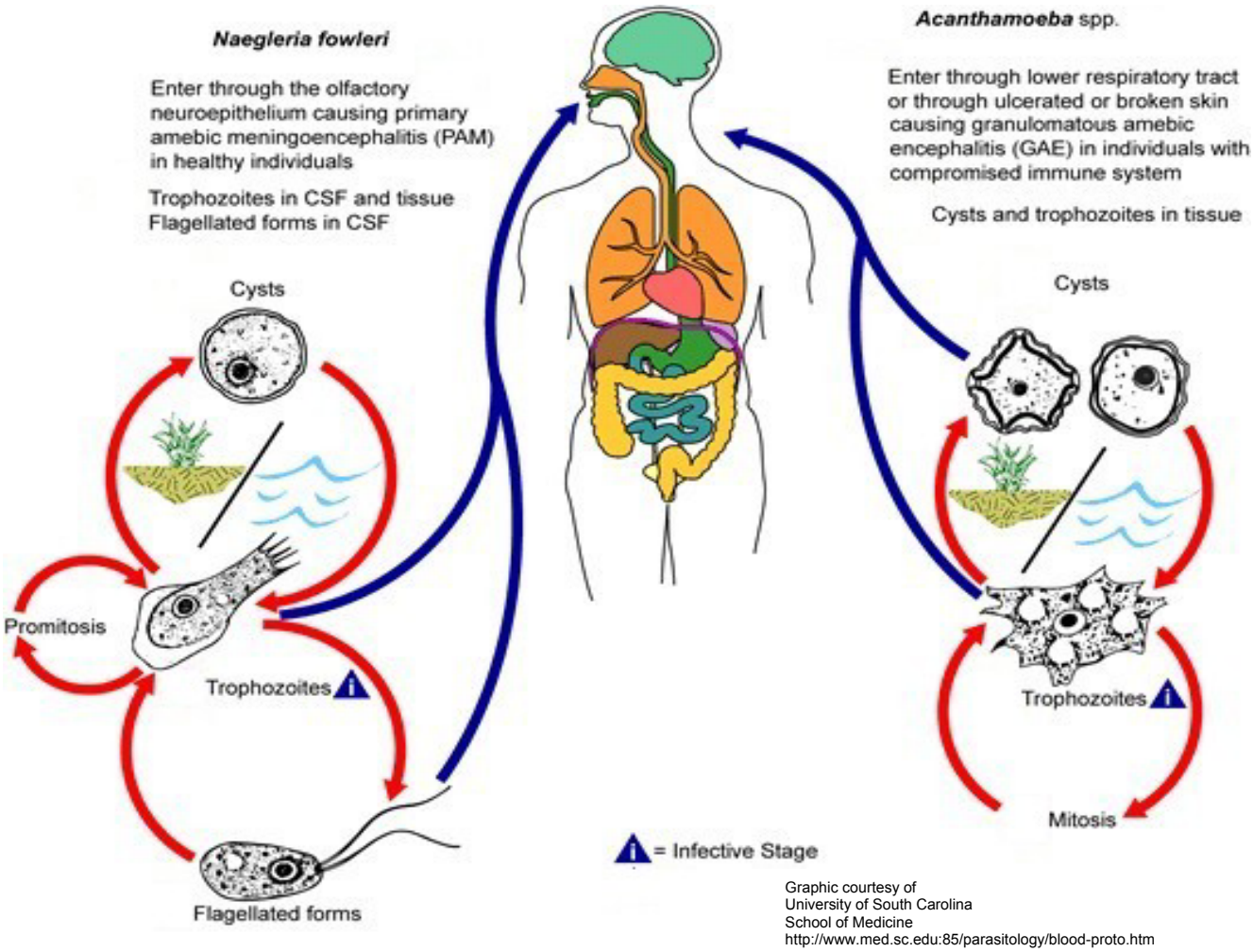
1.0 Background

Naegleria fowleri is a free-living ameboflagellate in soil and aquatic habitats. *Naegleria* infection (amoebic meningitis) is acquired by exposure of the nasal passages to contaminated water, most commonly by diving or swimming in fresh water, or inadequately maintained spas, tubs or swimming pools.

There have been three recorded cases of amoebic meningitis in Western Australia, two in 1980 and one in 1985. There have been no further cases since this disease became a notifiable disease in May 1985. The infection is fatal in virtually all cases, but can be prevented by adequate disinfection of the relevant water exposures and through public education.

This protocol has been developed by the Department of Health in consultation with the Water Corporation and PathWest to assist with the management of positive drinking water samples for thermophilic amoeba and positively identified *Naegleria fowleri* from reticulated water supplies. It is divided into two sections for drinking water providers and swimming pool operators

2.0 Mode of Transmission



Graphic courtesy of
University of South Carolina
School of Medicine
http://www.med.sc.edu:85/parasitology/blood-proto.htm

3.0 Protocol for Drinking Water Providers

3.1 Australian Drinking Water Guidelines

"Two groups of free-living amoebae, *Naegleria* and *Acanthamoeba*, have been responsible for human infections in Australia. Infection is opportunistic and generally results from contact during recreational bathing, or domestic uses of water other than drinking. Public water supplies can contaminate swimming pools. The occurrence of these organisms is unrelated to faecal contamination and their ecology in aquatic environments is more complex than that of enteric protozoa. "

"Cerebral infection by *Naegleria fowleri* is strictly waterborne and although rare is usually fatal. Since these amoebae are able to colonise piped water supplies, disinfection at the water source may not adequately control them unless the disinfectant pervades the whole distribution system."

"*Acanthamoeba* species cause both cerebral and corneal disease. An environmental source of infection has rarely been identified with certainty."

"Both *Acanthamoeba* and *Naegleria* species are known to support symbiotic growth of *Legionella* species within the cell and the presence of these amoeba in cooling tower water can indicate conditions that favour *Legionella*."

3.2 Sampling Frequencies

Routine monitoring for the amoeba *Naegleria fowleri* is required during the months of the year when water temperatures within the distribution system are likely to exceed 20° C (amoeba proliferates in all waters above 20° C and below 2% salinity).

Drinking water providers are expected to establish and monitor temperature profiles within the distribution system to determine the months of the year when it is likely that the distribution system temperature will exceed 20° C. During these periods amoeba samples shall be taken at the same time and place as bacteriological samples. Greater sampling frequency may be necessary where bacteriological problems are detected.

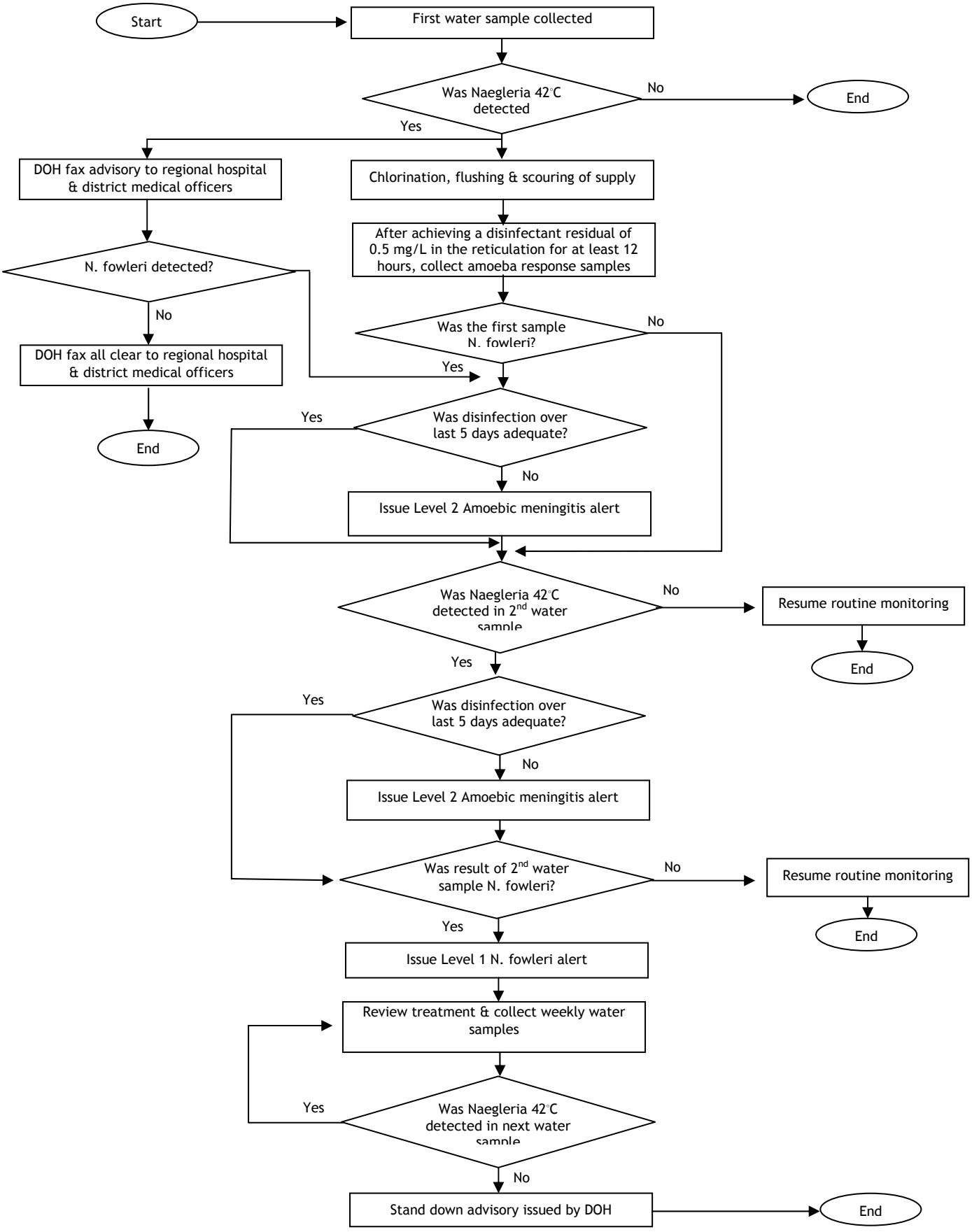
3.3 Reporting Protocol

Licensed water providers are expected to notify the Department of Health in accordance with the following table:

Emergency Reporting Event	Report Due	Report to
Any thermophilic *Naegleria* tolerant to 42°C including repeats.	**Level 1** **Immediate notification by fax, phone and/or electronic mail to** DWAlert@health.wa.gov.au	**Principal Medical Officer** **93884999** **(if not available during working hours to the Emergency Duty Officer** **94804960)**

For additional information please refer to either your Memorandum of Understanding for Drinking Water or the Department of Health document "Reporting Requirements for Scheme Drinking Water Providers".

3.4 Amoeba Protocol Response Flowchart



3.5 Drinking Water Media Statements

3.5.1 DOH Fax Advisory to Regional Hospitals and District Medical Officers

TO ALL DOCTORS IN THE _____AREA

Dear Doctor

DETECTION OF NAEGLERIA IN WATER RETICULATION

I write to advise you that the (*Drinking Water Provider*) have detected an as yet unspeciated *Naegleria* in the scheme drinking water system of (*Locality*).

The (*Drinking Water Provider*) has increased disinfection processes and it is unlikely that repeat samples will detect further colonisation. It is also unlikely that this will turn out to be a pathogenic *N. fowleri*.

Although it is unlikely that any human illness will result from this colonisation I am writing to you to enable you to maintain a high level of suspicion if clinically suggestive cases are brought to your attention in the near future.

The symptoms of amoebic meningitis usually occur three to seven days after infection and include:

- Severe and persistent headache
- Sore throat
- Nausea
- Vomiting
- High fever
- Sleepiness

Further information is available on the population health website, http://www.population.health.wa.gov.au/environmental/resources/Amoebic%20Meningitis050111.pdf, via local government environmental health staff or by contacting Dr Paul Van Buynder on 9388 4801.
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Yours faithfully

Dr Paul Van Buynder
PRINCIPAL MEDICAL CONSULTANT
HEALTH PROTECTION GROUP
POPULATION HEALTH

3.5.2 Level 2 Amoebic Meningitis Alert

To be issued either:

(a) jointly by DOH and Licensed Water Provider (MOU responsible officers) following JACP meeting if single positive confirmation of *N. fowleri* and disinfection not adequate

OR

(b) by the Department of Health (Principal Medical Consultant) if serial detections of thermophilic amoeba. Region specific.

Members of the (*Named*) community and surrounding areas are warned that the recent sustained hot weather and elevated water temperatures have increased the chance of infection from amoeba in water around and within the home. If water containing amoeba goes up the nose, it can lead to the rare but fatal illness Amoebic Meningitis. As a general precaution, the following advice is provided to prevent water that may contain amoeba going up the nose:

- Don't allow water to go up your nose or sniff water into your nose when bathing, showering or washing your face.
- Don't jump into or duck dive into bathing water – walk or lower yourself in.
- Don't allow children to play unsupervised with hoses or sprinklers as they may accidentally squirt water up their nose.
- Let bath and shower taps run for a few minutes to flush out the pipes.
- Swim in and play with safe water only. Stay out of dirty pools, waterholes, dams, swimming pools, spas etc.
- Alternatively, swim in heavily salinated estuarine water or sea water as you cannot get amoebic meningitis from water containing more that two per cent salt. Note that salt water swimming pools contain much less than two per cent salt.
- Disinfect your swimming pool water and any other water that is not from the town supply. Chlorine is the most effective way to continually disinfect water as it kills all stages of *Naegleria fowleri*.
- Keep wading pools clean by emptying, scrubbing and allowing them to dry in the sun after each use.

3.5.3 Level 1 *Naegleria fowleri* Alert

To be issued jointly by DOH and Licensed Water Provider (MOU responsible officers) following JACP meeting, if single positive confirmation of *Naegleria fowleri* and second sample detection of a thermophilic amoeba. Region specific.

Method of distribution, eg media release, letter drop, PC Cops, word of mouth, to be decided at JACP meeting.

Members of the (*Named*) community are advised that there have recently been detections of the amoeba *Naegleria fowleri* in the "specific locality" drinking water supply. Amoeba can occur when there are periods of sustained hot weather (where water temperatures range between 28 °C and 40 °C) and lowered levels of chlorine in the water.

Water is safe to drink from the reticulated supply.

All actions are being undertaken by the "Water Service Provider" to maintain an adequate chlorine residual and due to this action the risk to the community is considered to be small. However, as *Naegleria fowleri* can cause Amoebic Meningitis (if water containing this amoeba goes up the nose), this alert has been issued.

To prevent infection, do not allow water that may contain amoeba to go up the nose:

- Don't allow water to go up your nose or sniff water into your nose when bathing, showering or washing your face.
- Don't jump into or duck dive into bathing water – walk or lower yourself in.
- Don't allow children to play unsupervised with hoses or sprinklers as they may accidentally squirt water up their nose.

In addition:

- Let bath and shower taps run for a few minutes to flush out the pipes.
- Swim in and play with safe water only. Stay out of dirty pools, waterholes, dams, swimming pools, spas etc.
- Alternatively, swim in heavily salinated estuarine water or sea water as you cannot get amoebic meningitis from water containing more that two per cent salt. Note that salt water swimming pools contain much less than 2% salt.
- Disinfect your swimming pool water. Chlorine is the most effective way to continually disinfect water as it kills all stages of *Naegleria fowleri*.
- Keep wading pools clean by emptying, scrubbing and allowing them to dry in the sun after each use.

Please make sure your next door neighbours know about this alert.
Further updates will be issued as results of water samples become available.

4.0 Protocol for Swimming Pool Operators

4.1 Amoebic Meningitis Trigger Alert for Swimming Pool Owners - Media release

This Standard Operational Procedure (SOP) will be operational during the hot summer months October – April, inclusive.

The purpose of the SOP is to trigger the media release, *Amoebic Meningitis Alert for Swimming Pool Owners*, 1-3 days prior to the predicted occurrence of hot weather.

If not triggered earlier, the media release, *Amoebic Meningitis Alert for Swimming Pool Owners* will be issued in the first week of December to all areas of WA.

	Activity	Details	Responsible officer*	Frequency
1	Temperature forecast	Check maximum forecast temperature for tomorrow and the next 3 days in Perth, Geraldton, Kalgoorlie, Bunbury, Albany & Esperance using http://www.bom.gov.au/weather/wa/forecasts.shtml, Check maximum forecast temperature for tomorrow and the next 3 days in Merredin using Bureau of Meteorology, Special Services Unit's "FARMWEATHER Central Wheatbelt" by fax polling 1902935370 (costs about $2.00/call). If maximum forecast temperature ≥ 38°C for the next 3 days, notify 1) Manager, applied EH, or 2) Director EH in person and by email	Admin assistant, Applied EH, or Secretary PMC office	Each working day at 9am
2	Ask Public Affairs branch to issue media release in relevant region	Decide in which regions the media release should be issued. If maximum forecast temperature ≥ 38°C for the next 3 days and if an alert has not been issued within the last few weeks: Perth – metropolitan area Geraldton – Mid West and Murchison Merredin - Wheatbelt Bunbury – South West Kalgoorlie – Goldfields Albany – Great Southern Esperance – Esperance newspaper & Goldfields radio	1) Manager, Applied EH, or 2) Director EH	As required
3	Inform Director EH & PMC	Inform Director EH and PMC of decision to issue media release	1) Manager, Applied EH, or 2) Director EH	On same day as decision to issue media release
4	Issue media release		Public Affairs branch	As required
5	Inform Manager, Applied EH	Send copy of media release to Manager, Applied EH	Public Affairs branch	On same day as media release issued
6	Inform regional PHU Director	Send copy of media release to regional PHU Director	Public Affairs branch	On same day as media release issued

*1) Principal position responsible for activity. 2) Secondary position responsible for activity

Note: The Department of Health recommends swimming pool owners north of Geraldton to be constantly alert to the risk of amoebic meningitis from October to April as water temperatures are always high during these months.

4.2 Swimming Pool Media Statements

4.2.1 Amoebic Meningitis Alert for Swimming Pool Owners – Media release, 2003

The Environmental Health Branch of the Department of Health will issue a routine summer alert. See Section 6.6 - Standard Operational Procedure. If not triggered earlier, this alert will be issued in the first week of December.

Swimming pool owners need to ensure their pools are adequately maintained to prevent amoebic meningitis, following the onset of hot weather.

The Director of Environmental Health said swimming pool owners in both country and metropolitan areas should take note of this alert.

"Sustained hot weather means some pool temperatures will reach and exceed 28 degrees Celsius, creating ideal conditions for amoeba to develop" the Director said. "If water containing amoebae goes up the nose, it can lead to the deadly illness Amoebic Meningitis. Swimming pool owners are advised to ensure their facilities are kept clean, free of dirt and leaves, and properly chlorinated. They should test the water in their swimming pools at least twice a day. Where stabiliser is not used, the water should contain at least two milligrams per litre of chlorine, and four milligrams of chlorine per litre where stabiliser is used. As well, the pH should be kept between 7.2 and 7.6. People are also advised not to swim in suspect water such as dirty pools, water holes and dams. It is also important to change water in 'splasher' or wading pools after every use."

Delivering a **Healthy WA**

Government of Western Australia
Department of Health