

## NSW Control guidelines for Public Health Units

| Revision History |      |            |         |
|------------------|------|------------|---------|
| Version          | Date | Revised by | Changes |
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### NSW guidance

There are no Series of National Guidelines for Vibriosis. This document provides NSW guidance on the surveillance and management of Vibriosis.

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## Summary

| Public health priority:   | High for clusters and higher priority species<br>Routine for everything else  |
|---------------------------|---|
| PHU response time:        | Respond to suspected clusters and higher priority cases within 1 working day of notification/detection. Enter confirmed cases on NCIMS within 1 working day.<br>Follow-up of routine cases is at the discretion of the relevant public health unit. |
| Case management:          | Determine possible exposures  |
| Contact management:       | Education   |
| Roles & Responsibilities: | PHU: Case follow-up, case classification, data quality, cluster detection at local level.<br><br>HPNSW: Cluster detection statewide.  |

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## 1. Reason for surveillance

- To identify the source of clusters and to prevent further cases through control measures
- To monitor the epidemiology of vibriosis to inform the development of better prevention strategies.

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## 2. Case definition

Only confirmed cases should be notified

### Confirmed case

A confirmed case requires laboratory definitive evidence only

### Laboratory definitive evidence

Isolation or molecular detection of *Vibrio* species (note that toxigenic *Vibrio cholerae* O1 or O139 are notified separately under Cholera) from an appropriate clinical specimen.

*Appropriate clinical specimens include stool, sterile site samples including blood, and deep wound swabs. Skin and ear swabs would not meet this definition.*

## Factors to be considered in case identification

Laboratory diagnosis of vibriosis involves detection or isolation of *Vibrio* species from a clinical specimen. Special media are required for culture.

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## 3. Notification criteria and procedure

Vibriosis is to be notified by diagnostic laboratories on microbiological confirmation.

Further information on notification requirements can be found online: [NSW Health disease notification procedures](#).

Only **confirmed cases** should be entered into NCIMS.

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## 4. The disease

### Infectious agent

There are many different species of the *Vibrio* bacteria that cause human disease. Different *Vibrio* species commonly coexist in the same aquatic environments.

**Table 1: Most important *Vibrio* spp causing human infections** (Adapted from Baker-Austin et al. Nature Reviews-Disease Primers 2018)

| Vibrio species                | Source of infection |           |             | Route of infection |                | Clinical manifestation/<br>disease severity   |
|-------------------------------|---------------------|-----------|-------------|--------------------|----------------|---|
|                               | Seafood             | Sea water | Fresh water | Oral               | Wound exposure |   |
| <i>V. cholerae</i><br>O1/O139 | Rarely              | Yes       | Yes         | Yes                | Rarely         | Cholera   |
| <i>V. cholerae</i><br>(other) | Yes                 | Yes       | No          | Yes                | Yes            | Gastroenteritis/ wound infections, rarely sepsis  |
| <i>V. parahaemolyticus</i>    | Yes                 | Yes       | No          | Yes                | Yes            | Gastroenteritis/ wound infections, rarely sepsis  |
| <i>V. vulnificus</i>          | Yes                 | Yes       | No          | Yes                | Yes            | Gastroenteritis/ wound infections, sepsis, high case fatality rate particularly among immunocompromised |

|                         |        |     |    |     |     |   |
|-------------------------|--------|-----|----|-----|-----|---|
| <i>V. alginolyticus</i> | No     | Yes | No | No  | Yes | Wound & ear infections, rarely sepsis                 |
| <i>V. fluvialis</i>     | No     | Yes | No | Yes | Yes | Gastroenteritis, rarely wound, eye and ear infections |
| <i>V. hollisae</i>      | Yes    | Yes | No | Yes | No  | Gastroenteritis & wound infections, rarely sepsis     |
| <i>V. mimicus</i>       | Rarely | Yes | No | Yes | Yes | Gastroenteritis, rarely wound, eye and ear infections |
| <i>V. metschnikovii</i> | No     | Yes | No | Yes | No  | Gastroenteritis                                       |

## Mode of transmission

Gastrointestinal vibriosis is most commonly transmitted by eating contaminated raw or undercooked seafood, especially shellfish. Infection can also occur when the *Vibrio* bacteria enter the body through a break in the skin while a person is in salt or brackish water. *Vibrio* species can also cause ear infections when this water enters a person's ear. Person-to-person transmission of *Vibrio* bacteria is rare, but more common within households.

## Timeline

The time between exposure and onset of symptoms varies with infection type (e.g., gastrointestinal, infected wound, systemic infection with bacteraemia) and *Vibrio* species. Symptoms of gastrointestinal infection with most *Vibrio* species can appear anywhere from 4–96 hours after eating raw or undercooked seafood but usually appear within 12–24 hours after exposure. Gastrointestinal symptoms last around 3 days (range 8 hours to 12 days). Symptoms of wound infection might appear as few as four hours after exposure, and symptoms of blood infection usually appear within four days of exposure.

## Clinical presentation

Symptoms of vibriosis can vary depending on the species and site of infection. Common symptoms include watery diarrhea, stomach cramps, vomiting, fever, chills. Ear and wound infections often appear red, swollen and painful. Symptoms usually appear within 12-24 hours and can last 1-7 days. Most people infected with vibriosis will recover on their own; however, people with underlying health conditions or weakened immune systems, such as the elderly, may develop life-threatening illness resulting in hospitalisation or death.

*Vibrio vulnificus* has one of the highest case-fatality rates for a foodborne pathogen particularly among people with underlying health conditions.

## Laboratory process in NSW

*Vibrio* species can grow on a wide variety of bacteriological media including blood agar, MacConkey agar, Hektoen (HE) agar, Xylose Lysine Deoxycholate (XLD) agar and specialised selective/differential media for *Vibrio* species, such as thiosulphate citrate bile salt (TCBS) agar. In NSW, laboratories do not routinely use specialised media for *Vibrio* species, unless the *Vibrio* culture is requested by the treating clinician, or by some laboratories if there is suspicion that the patient has vibriosis. A presumptive identification of the *Vibrio* species can be made from growth on differential media such as TCBS but will require confirmation using additional laboratory tests.

*Vibrio* bacteria can also be detected using nucleic acid tests (NAT) by laboratories that use gastrointestinal pathogen multiplex assays containing *Vibrio* species as one of the targets. A culture of the isolate from the primary sample will be required to identify the *Vibrio* species detected by the NAT and to differentiate between vibriosis and cholera. It is important to note that the NAT cannot discriminate between live and dead bacteria present in the sample.

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## 5. Managing single notifications

### Response times

#### Investigation

Begin follow-up investigation within one day of notification for

- a single case of *Vibrio cholerae* (in case further typing indicates the organism is toxigenic *Vibrio cholerae* O1 or O139)
- a potential cluster of confirmed cases (see section 7. Managing clusters)
- on request from the One Health Branch

*Vibrio vulnificus* can lead to severe clinical outcomes and have a high fatality rate, particularly among vulnerable populations. As such, individual case follow up may be beneficial to assess whether there is ongoing risk to other vulnerable people (e.g. in the environment, or from the same exposure source) and whether any further public health action is warranted. This is at the discretion of the PHU director.

Investigations of outbreaks will follow the control guidelines for managements of suspected foodborne outbreaks.

#### Data Entry

The following data needs to be entered into NCIMS for each case that is followed up.

| Required data                    | Where to enter data in NCIMs               |
|----------------------------------|--|
| Clinical symptoms and onset date | Clinical package                           |
| Underlying health conditions     | Risk History package                       |
| Place of exposure/acquisition    | Both in Clinical and Risk History packages |
| Seafood and water exposures      | Risk History package                       |

In the event of an outbreak or enhanced public health investigation, additional data points may be required.

## Response procedure

The response to a notification will normally be carried out in collaboration with the case's health carers. For cases where the PHU undertakes follow-up, PHU staff should ensure that action has been taken to:

- confirm the onset date and symptoms of the illness
- confirm results of relevant pathology tests, or recommend the tests be done
- find out if the case or relevant caregiver has been told what the diagnosis is before beginning the interview
- seek the doctor's permission to contact the case or relevant caregiver
- review case and contact management
- determine if case had travelled overseas.
- For cases with no overseas travel, investigate the possible source of infection.

## Case management

### Investigation and treatment

Treatment is managed of the diagnosing doctor.

Cases that are followed up should have their overseas travel ascertained for the exposure period (7-days before onset of illness), including the countries visited. For cases with most of their exposure in Australia, shellfish and environmental exposures should be collected as per the questionnaire.

Refer to [Therapeutic Guidelines](#). Antibiotics are generally not recommended to treat mild *Vibrio* infections. People with diarrhea or vomiting should drink plenty of liquids to prevent dehydration. Antibiotics may be used to treat severe or prolonged *Vibrio* infections. *Vibrio* wound infection is treated with antibiotics and surgery to remove dead or infected tissue.

### Education

Inform the case or relevant caregiver about the nature of the infection and the mode of transmission. Emphasise the importance of hygiene practices, particularly handwashing before eating, preparing food, and after using the toilet.

### Isolation and restriction

Cases who are food handlers or carers for young children, the elderly or vulnerable persons should be advised not to attend work until 48 hours after the resolution of symptoms. Children in childcare should not attend until 24 hours after diarrhoea has stopped.

## Contact management

For single cases, contact management is not required. However, if other people in the household (or household like situation) are also unwell with diarrhoea they should be encouraged to be investigated for vibriosis and be excluded from food handling and care of children or patients until at least 48 hours after diarrhoea has ceased.

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## 6. Managing Clusters/Outbreaks

### Cluster detection

The presence of *Vibrio* bacteria in seafood-growing areas is primarily influenced by sea temperature and other environmental conditions. With climate change leading to rising sea temperatures, the risk of vibriosis outbreaks is expected to increase. Australia has already experienced a rise in multi-jurisdictional vibriosis outbreaks, particularly *Vibrio parahaemolyticus* due to contaminated oysters. The surveillance of vibriosis in NSW needs to be sensitive to localised increases in cases, and it will also have to remain adaptable to changing conditions.

PHUs should monitor case numbers to identify potential foodborne clusters. *Vibrio parahaemolyticus* is the species most likely to cause foodborne vibriosis outbreaks, requiring a lower threshold for cluster detection. **Appendix 1** provides a flow chart for the PHU follow up of cases.

A cluster investigation should commence when at least two cases of *Vibrio parahaemolyticus* from different households are notified with a single incubation period (4 days), within a local health district.

PHUs can employ other cluster detection and monitoring methods tailored to the local context to identify potential outbreaks and initiate investigations when necessary. For example, if a vibriosis case is reported alongside a suspected foodborne outbreak with matching symptoms, the PHU could interview the vibriosis case as part of the investigation.

One Health Branch will monitor case numbers at a cross-jurisdictional and national level and may prompt an investigation. The NSW Food Authority may also prompt an investigation based on evidence of an issue at the food level, which will be communicated to public health units by the One Health Branch.

Since multiple *Vibrio* species may coexist in the same environment and contribute to a single outbreak, if an investigation of a particular *Vibrio* species is active in the PHU, notifications of other contemporaneous *Vibrio* species should be considered related and included in the investigation.

During active cluster investigations, active surveillance may help identify additional cases. PHUs should communicate with other PHUs and liaise with One Health Branch who will share information with other Australian jurisdictions.

### Cluster investigation

Begin follow-up investigation on same day of detection of a potential cluster. Immediately notify the One Health Branch if a cluster has been identified along with the findings of the investigation. Local clusters should be investigated by the Public Health Unit using the full vibriosis questionnaire found [here](#).

Follow standard foodborne outbreak investigation principles (set out in the [foodborne illness control guidelines](#)) if the investigation suggests a food as the source.

If the epidemiological investigation suggests that local fresh shellfish may be the source of illness, the PHU will collaborate with the NSWFA and One Health Branch to ensure the prompt provision of the following information.

PHUs must provide as much detail as possible about:

- the type of shellfish consumed
- when and where they were purchased

Accurate information will enable effective traceback of the shellfish through retail to the growing area. All commercial oysters and mussels produced in NSW are harvested in accordance with the NSW Shellfish Program, established by the Food Regulation 2015 under the Seafood Food Safety Scheme. NSWFA have produced additional vibriosis [guidance to industry to improve risk management](#). For additional information on *Vibrio* food safety risks see [Vibrios in Seafood](#) by SafeFish Australia.

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## 7. References

Baker-Austin C, Oliver JD, Alam M, et al. *Vibrio* spp. Infections. Nature Reviews – Disease Primers 2018; 4(1):8.

Brehm TT, Berneking L, Martins MS, et al. Heatwave-associated *Vibrio* infections in Germany, 2018 and 2019. Euro Surveill 2021;26(41):pii=2002041.

Leong L, et al. An outbreak of *Vibrio parahaemolyticus* food poisoning associated with consumption of oysters, Australia, 2021-2022. Emerging Infectious Diseases 2024.

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## 8. Appendices

Appendix 1. Vibriosis PHU follow up flow chart

Appendix 2. Questionnaire

Appendix 3. Fact Sheet



# Appendix 1

