

Paralytic Shellfish Poisoning (PSP)

Reporting Obligations

Paralytic Shellfish Poisoning is designated as a disease of public health significance and is reportable under the Ontario Health Protection and Promotion Act. Report all suspect and confirmed cases within **one business day** to the health unit.

REPORTING FORM

Epidemiology

Aetiologic Agent:

Paralytic Shellfish Poisoning (PSP) is caused by toxins that are produced by oceanic phytoplankton or dinoflagellates. The toxin most commonly associated with paralytic shellfish poisoning is saxitoxin. Saxitoxin is water-soluble and heat stable. There are over 20 known toxins formed from either saxitoxin or its derivatives. Species of dinoflagellates belonging to the *Alexandrium* genus are the primary saxitoxin producers.

Cases of reported PSP are rare in Canada; however, the disease may be under-reported as it only became nationally notifiable in 2008.

Clinical Presentation:

PSP is caused by potent neurotoxins that can pose a severe and urgent health threat.

Onset of clinical signs typically begins between 30 minutes and 3 hours after ingestion of the contaminated food, but symptoms have been reported less than one minute after food consumption. The progression of paralysis may be rapid in severe cases. The intensity and progression of the symptoms are dependent on the type, dose, and concentration of the toxin ingested in the shellfish.

The first symptom is often paresthesia (i.e., sensation of tingling or numbness) around the lips or mouth, which spreads to the face and neck. Other early symptoms may include tingling or numbness in the fingertips/toes; dizziness or a “floating” sensation; headache; diaphoresis or excess saliva production. Gastrointestinal symptoms such as nausea, vomiting and abdominal pain may or may not occur.

Typically, the next symptoms to develop are generalized paresthesia, descending paralysis/weakness of the extremities, and ataxia. Incoherent speech and dysphagia have also been reported. Individuals remain conscious and alert throughout.

In severe cases, rapid progression to respiratory muscle paralysis and respiratory failure may occur. This can lead to respiratory arrest and death. Most deaths occur within 12 hours of ingestion. In mild cases, symptoms usually resolve completely within a few hours to a few days. Symptoms in individuals with moderate to severe illness resolve over two to three days. Individuals with severe PSP illness who survive beyond 24 to 48 hours usually recover without long term complications.

Modes of transmission:

Consumption of contaminated shellfish, raw or cooked.

Incubation Period:

Less than 12 hours. Symptoms may occur from within a few minutes to up to 12 hours after consumption of shellfish contaminated with toxin.

Period of Communicability:

Not communicable by person-to-person transmission.

Risk Factors/Susceptibility

Susceptibility varies. Some individuals can tolerate large doses of the toxins. Children are more susceptible. Alcohol consumption may have a protective effect against the toxin by acting as a diuretic. Case-fatality rate can be as high as 10%.

Diagnosis & Laboratory Testing

A diagnosis of PSP should be based on clinically compatible signs and symptoms, in the context of a history of recent shellfish/seafood consumption. Confirmation of the diagnosis can be made by detection of the biotoxin (i.e., saxitoxin, or its analogues) at concentrations sufficient to cause symptoms in the shellfish remaining from the same lot or harvest area as the shellfish consumed/implicated in the illness.

Detection of PSP toxins in a urine sample, although not currently available in Canada, can be carried out in partner labs if clinically warranted.

Treatment & Case Management

Treatment is under the direction of the attending health care provider. Individuals should seek immediate medical attention. There is no known anti-toxin for PSP. Treatment is supportive. Individuals with serious illness should be hospitalized and placed under respiratory care. In general, supportive measures are the basis of treatment for PSP, especially ventilator support in severe cases. Without supportive treatment, up to 75% of severely affected persons die within 12 hours.

Public Health staff will investigate to determine the possible source of the illness and to discuss contacts. Although not transmissible from person to person, contact follow-up is recommended for others who may also have consumed potentially contaminated food. These individuals should be instructed on disease symptoms, when to seek medical attention, transmission, incubation period and preventive measures.

Patient Information

PATIENT FACT SHEET

References

1. [Ministry of Health, Infectious Diseases Protocol - Ontario Public Health Standards, 2022.](#)

Additional Resources

1. [Canadian Food Inspection Agency “Marine Toxins in Bivalve Shellfish”](#)
2. [PHO. “Paralytic Shellfish Poisoning”, Dec 2022.](#)