



NEISSERIA SPP.

PATHOGEN SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: *Neisseria* spp. (other than *N. gonorrhoeae* and *N. meningitidis*)

SYNONYM OR CROSS REFERENCE:

1) The majority of human-associated *Neisseria* species are non-pathogenic and are normal inhabitants of the upper respiratory tract. Human associated species include: *N. gonorrhoeae*, *N. meningitidis*, *N. lactamica*, *N. cinerea*, *N. polysaccharea*, *N. mucosa*, *N. flavescens*, *N. sicca*, *N. subflava* including the biovars *subflava*, *flava*, and *perflava*, and *N. elongata* subspecies *elongata*, *glycolytica*, and *nitroreducens*. Only *N. gonorrhoeae* and *N. meningitidis* are regarded as pathogens [1](#), [2](#).

2) *Neisseria* species associated with animals include: *N. canis*, *N. weaveri* (dogs), *N. denitrificans* (guinea pigs), *N. macacae* (rhesus monkey), *N. dentiae* (cows), and *N. iguanae* (lizards). [1](#), [2](#)

CHARACTERISTICS: *Neisseria* spp. are gram-negative, non-motile, and non-spore-forming bacteria belonging to the family Neisseriaceae [1](#), [3](#). All members of the *Neisseria* spp., except the three subspecies of *N. elongata* and *N. weaveri*, occur as diplococcal bacteria with their adjacent sides flattened, resembling a kidney or coffee bean. The three subspecies of *N. elongata* and *N. weaveri* occur as medium to long, plump rods in pairs or short chains. All species are oxidase positive [1](#), [3](#), and all species except *N. elongata* subspecies *nitroreducens* and *N. elongata* subspecies *elongata* are catalase positive [3](#). Most species grow optimally at temperatures ranging between 35 to 37 °C, and growth is usually stimulated by carbon dioxide and humidity. Species are generally aerobic but some species may demonstrate growth under anaerobic conditions.

SECTION II - HAZARD IDENTIFICATION

PATHOGENICITY/TOXICITY: *Neisseria* spp. are part of the commensal flora of mucosal membranes of humans and some animals, and are generally considered non-pathogenic except for *N. gonorrhoea* and *N. meningitidis* [1](#). Individuals with underlying medical conditions and/or immune suppression or deficiency may develop serious infections caused by the normally commensal *Neisseria* species. For example, *N. lactamica* had been reported to cause bacteremic pneumonia and septicemia in immunocompromised individuals [4](#). *N. cinerea* is commonly isolated from the upper respiratory tract, but has also been isolated from other sites including the cervix, rectum, conjunctivae, blood and cerebrospinal fluid (CSF) [1](#). It has also been associated with rare cases of peritonitis [5](#), tonsillitis, lymphadenitis, proctitis, and pulmonary cavitation [6](#). *N. flavescens* and *N. polysaccharea* are found in the upper respiratory tract and the oropharynx (respectively) of humans, and are rarely associated with infectious processes [1](#). *N. subflava*, *N. flava*, *N. perflava*, *N. mucosa*, and *N. sicca* are found in the upper respiratory tract of humans and are occasional isolates from infectious processes, including endocarditis, bacteraemia, meningitis, pneumonia, empyema, pericarditis, peritonitis, septic arthritis, and liver abscess [1](#), [7-10](#). *N. elongata* subspecies are found in the upper respiratory tract of humans and have been isolated from infectious processes, including endocarditis, septicaemia, and osteomyelitis [1](#), [11-13](#). *N. weaveri* is part of the normal canine oral flora and has been isolated from a case of lower respiratory tract infection [14](#).

EPIDEMIOLOGY: Worldwide; part of the commensal flora of the upper respiratory tract and oropharynx of humans and some animals [1](#).

HOST RANGE: Humans and some animals (dogs, guinea pigs, rhesus monkeys, cows, and iguanid lizards) [1](#).

INFECTIOUS DOSE: Unknown.

MODE OF TRANSMISSION: May be transmitted by contact with droplets and discharges from the nose and throat of infected persons; however, transmission is rare due to low virulence. May also be transmitted through bites by infected or colonized dogs (for *N. weaveri*).

INCUBATION PERIOD: Unknown.

COMMUNICABILITY: Not known to be readily transmitted from person-to-person due to low virulence.

SECTION III - DISSEMINATION

RESERVOIR: Humans and some animals (dogs, guinea pigs, rhesus monkeys, cows, and iguanid lizards) [1](#).

ZOONOSIS: May be possible for animal pathogens; *N. weaveri* (found in dogs) has been isolated from wounds sites in humans as a result of dog bites [14](#).

VECTORS: None.

SECTION IV – STABILITY AND VIABILITY

DRUG SUSCEPTIBILITY: *Neisseria* spp. are susceptible to cefotaxime, ceftriaxone, and amoxicillin [6](#), [10](#), [15](#). Depending on the strains, some demonstrate intermediate to high resistance to penicillin and amoxicillin [15](#), [16](#). *N. polysaccharea* is resistant to vancomycin [1](#).

SUSCEPTIBILITY TO DISINFECTANTS: Gram-negative bacteria are generally susceptible to a number of disinfectants, including phenolic compounds, hypochlorites (1% sodium hypochlorite), alcohols (70% ethanol), formaldehyde (18.5 g/L; 5% formalin in water), glutaraldehyde, and iodines (0.075 g/L) [17](#).

PHYSICAL INACTIVATION: Bacteria are generally sensitive to moist heat (121 °C for at least 15 minutes) and dry heat (160 to 170 °C for at least 1 hour) [18](#).

SURVIVAL OUTSIDE HOST: Unknown; however, it may be similar to other members of the genus including *N. gonorrhoeae* and *N. meningitidis*. *N. gonorrhoeae* is known to survive on different surfaces including toilet seats (brief periods of up to 2 hours) [3](#), [19](#), toilet paper (up to 3 hours) [19](#), slides (up to 17 hours), and towels (up to 24 hours). *N. meningitidis* does not survive well in the environment, but has been reported to survive on grass and plastic at ambient temperatures for hours to days [20](#).

SECTION V - FIRST AID / MEDICAL

SURVEILLANCE: Monitor for symptoms. Confirm by CSF or blood culture, or culture of biopsy specimens [6](#), [21](#).

Note: All diagnostic methods are not necessarily available in all countries.

FIRST AID/TREATMENT: Wash the exposed area with soap and warm water (omit soap if mucous membrane exposure). Treat with appropriate antibiotic therapy if required.

IMMUNIZATION: None.

PROPHYLAXIS: None.

SECTION VI - LABORATORY HAZARD

LABORATORY-ACQUIRED INFECTIONS: No cases of laboratory-acquired infection have reported up to date.

SOURCES/SPECIMENS: Throat and/or nasopharyngeal swabs and washings [21](#), pleural-effusion specimens, blood [9](#), [13](#), CSF [9](#), biopsy specimens [6](#), [10](#), and wound specimens [14](#).

PRIMARY HAZARDS: Accidental parenteral inoculation and/or ingestion of contaminated samples, and exposure of mucosal membranes via inhalation of infectious airborne secretions.

SPECIAL HAZARDS: None.

SECTION VII - EXPOSURE CONTROLS / PERSONAL PROTECTION

RISK GROUP CLASSIFICATION: Risk Group 2 [22](#). This risk group applies to the genus as a whole, and may not apply to every species within the genus.

CONTAINMENT REQUIREMENTS: Containment Level 2 facilities, equipment, and operational practices for work involving infectious or potentially infectious materials, animals, or cultures. These containment requirements apply to the genus as a whole, and may not apply to each species within the genus.

PROTECTIVE CLOTHING: Lab coat. Gloves when direct skin contact with infected materials or animals is unavoidable [23](#). Eye protection must be used where there is a known or potential risk of exposure to splashes.

OTHER PRECAUTIONS: All procedures that may produce aerosols, or involve high concentrations or large volumes should be conducted in a biological safety cabinet (BSC) [23](#). The use of needles, syringes, and other sharp objects should be strictly limited. Additional precautions should be considered with work involving animals or large scale activities.

SECTION VIII - HANDLING AND STORAGE

SPILLS: Allow aerosols to settle and, while wearing protective clothing, gently cover spill with absorbent paper towels and apply an appropriate disinfectant, starting at the perimeter and working towards the centre. Allow sufficient contact time before clean up [23](#).

DISPOSAL: Decontaminate all wastes that contain or have come in contact with the infectious organism by autoclave, chemical disinfection, gamma irradiation, or incineration before disposing [23](#).

STORAGE: The infectious agent should be stored in leak-proof containers that are appropriately labelled [23](#).

SECTION IX - REGULATORY AND OTHER INFORMATION

REGULATORY INFORMATION: The import, transport, and use of pathogens in Canada is regulated under many regulatory bodies, including the Public Health Agency of Canada, Health Canada, Canadian Food Inspection Agency, Environment Canada, and Transport Canada. Users are responsible for ensuring they are compliant with all relevant acts, regulations, guidelines, and standards.

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PREPARED BY: Pathogen Regulation Directorate, Public Health Agency of Canada.

Although the information, opinions and recommendations contained in this Pathogen Safety Data Sheet are compiled from sources believed to be reliable, we accept no responsibility for the accuracy, sufficiency, or reliability or for any loss or injury resulting from the use of the information. Newly discovered hazards are frequent and this information may not be completely up to date.

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