MATERIAL SAFETY DATA SHEET - INFECTIOUS SUBSTANCES

SECTION I - INFECTIOUS AGENT

NAME: Streptococcus pneumoniae

SYNONYM OR CROSS REFERENCE: Pneumococcus, Diplococcus, Pneumococcal pneumonia

CHARACTERISTICS: Gram-positive diplococci, alpha hemolysis on blood agar, no specific group antigen, facultatively anaerobic, lancet-shaped or in chains, more than 90 serotypes

SECTION II - HEALTH HAZARD

PATHOGENICITY: Sudden onset with shaking chill, pleural pain, dyspnea, a cough productive of rusty sputum and leukocytosis; clinical features include pneumonia, bacteremia, otitis media, meningitis, sinusitis, peritonitis and arthritis; onset may be less abrupt in elderly requiring x-rays for diagnosis; in infants, vomiting and convulsions may be initial manifestations; important cause of death in infants and elderly; 5-10% fatality with antimicrobial therapy, but 20-40% among patients with underlying disease; neurologic sequelae and/or learning disabilities can occur in meningitis patients

EPIDEMIOLOGY: Continuing endemcity, particularly in infancy, old age and alcoholics; more frequent in industrial cities and lower socio-economic groups; occurs in all climates and seasons; incidence is highest in winter and spring in temperate zones; usually sporadic in North America but may occur in epidemics in closed populations

HOST RANGE: Humans

INFECTION DOSE: Not known

MODE OF TRANSMISSION: By droplet spread; by direct oral contact; indirectly through articles freshly soiled with respiratory discharges; person-to-person transmission of the organisms is common, but illness among casual contacts and attendants is infrequent

INCUBATION PERIOD: Not well determined

COMMUNICABILITY: Communicable until discharges of mouth and nose no longer contain virulent pneumococci in significant numbers; penicillin renders patient non-infectious within 24-48 hours; many persons are carriers; risk of infection following contact with carrier or infected person low, except in institutional settings

SECTION III - DISSEMINATION

RESERVOIR: Humans; pneumococci are commonly found in the upper respiratory tract of healthy persons throughout the world

ZOOONOSIS: None
VECTORS: None

SECTION IV - VIABILITY

DRUG SUSCEPTIBILITY: Sensitive to penicillin and erythromycin

DRUG RESISTANCE: High level of resistance to penicillin; resistance to other therapeutic agents such as TMP/SMX, erythromycin, tetracycline, chloramphenicol, ceftriaxone, and cefotaxime

SUSCEPTIBILITY TO DISINFECTANTS: Susceptible to many disinfectants - 1% sodium hypochlorite, 70% ethanol, 2% glutaraldehyde, formaldehyde, iodines

PHYSICAL INACTIVATION: Sensitive to moist heat (121° C for at least 15 min) and dry heat (160-170° C for at least 1 hour)

SURVIVAL OUTSIDE HOST: Mouse carcass - 180-270 days; Dust - up to 25 days; Glass - 1-11 days; Sputum at room temperature - 7 days; Gauze 2-15 days

SECTION V - MEDICAL

SURVEILLANCE: Monitor for symptoms of infection; confirm bacteriologically

FIRST AID/TREATMENT: Penicillin G, administered parenterally (erythromycin for those hypersensitive to penicillin)

IMMUNIZATION: Polyvalent vaccine containing capsular polysaccharides for those at high risk of fatal infection (vaccine should be given only once to adults to avoid systemic reactions to a second dose); vaccine is less effective in those under 2 years of age

PROPHYLAXIS: Penicillin treatment

SECTION VI - LABORATORY HAZARDS

LABORATORY-ACQUIRED INFECTIONS: 78 recorded cases of Streptococcus spp. with 4 deaths up to 1976; 5th most common laboratory-acquired infection

SOURCES/SPECIMENS: Sputum, blood, respiratory secretions, throat swabs

PRIMARY HAZARDS: Inhalation of infectious aerosols; direct contact of mucus membranes; accidental parenteral inoculation

SPECIAL HAZARDS: None

SECTION VII - RECOMMENDED PRECAUTIONS

CONTAINMENT REQUIREMENTS: Biosafety level 2 practices, containment equipment and facilities for all activities involving known or potentially infected clinical materials or cultures; animal biosafety level 2 facilities for studies utilizing infected animals

PROTECTIVE CLOTHING: Laboratory coat; gloves when contact with infectious materials is unavoidable

OTHER PRECAUTIONS: None

SECTION VIII - HANDLING INFORMATION
SPILLS: Allow aerosols to settle; wearing protective clothing, gently cover spill with absorbent paper towel and apply 1% sodium hypochlorite, starting at perimeter and working towards the centre; allow sufficient contact time (30 min) before clean up

DISPOSAL: Decontaminate before disposal; steam sterilization, chemical disinfection, incineration

STORAGE: In sealed containers that are appropriately labelled

SECTION IX - MISCELLANEOUS INFORMATION

Date prepared: May, 2001

Prepared by: Office of Laboratory Security, PHAC

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[Material Safety Data Sheets - Index]

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Important Notices