ONTARIO MINISTRY OF HEALTH

GUIDELINES FOR MANAGEMENT OF CONTACTS OF CASES OF INVASIVE GROUP A STREPTOCOCCAL DISEASE (GAS) INCLUDING STREPTOCOCCAL TOXIC SHOCK SYNDROME (STSS) AND NECROTIZING FASCIITIS

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I . INTRODUCTION

There has been a recent emergence of severe Group A streptococcal (GAS) disease in Ontario causing severe illness and high mortality. Cases have ranged from bacteraemia without focus of infection to severe necrotizing soft tissue infections with or without streptococcal toxic shock syndrome.

There are few data on secondary cases of invasive disease and no firm evidence to suggest that the use of prophylaxis in close contacts may prevent severe illness. However, given the severity of the infections being documented and evidence of secondary transmission documented by the Ontario Group A Streptococcal Study, the Advisory Committee on Communicable Diseases considers that prophylaxis may be prudent in certain situations. Study findings have also shown that people with pre-existing conditions which adversely affect the immune system are at a higher risk of contracting the disease when compared to the general population. The conditions documented include old age, diabetes, alcohol abuse, cancer and HIV infection.

The following guidelines have been prepared to assist in the public health management of household and close contacts of cases of invasive GAS. In general, these guidelines should be considered as interim as periodic revisions will be necessary when new data are made available.

Guidelines for the investigation and prophylaxis within hospitals are not included in this document.

II. SURVEILLANCE AND REPORTING

With the re-emergence of severe GAS in Ontario, surveillance of GAS infections began in the fall of 1990, when a number of cases of severe invasive disease due to group A streptococci occurred in the metro Toronto area. Toxic shock-like syndrome, or streptococcal toxic shock syndrome (STSS) as it is now known, was first defined in the U.S.A. in 1987 and, in Ontario, was made a reportable condition under the Health and Protection and Promotion Act in 1991. Forty six cases were reported from 1991 to 1994 (2 cases in 1991, 16 cases in 1992, 9 cases in 1993 and 21 cases in 1994) through the provincial Reportable Disease Information System (RDIS).

Because the clinical picture of severe GAS disease in Ontario includes many cases of bacteraemia and necrotizing fasciitis and other soft tissue infections without evidence of STSS, a more comprehensive definition of severe GAS disease has been made reportable.

As of April 1995, GAS disease, invasive, is now the reportable condition.

The following is the surveillance case definition for invasive GAS:

(a) isolation of group A streptococcus from a normally sterile site with or without evidence of clinical severity;

OR

(b) isolation of group A streptococcus from a non-sterile site with evidence of clinical severity

The following are considered evidence of clinical severity:

(1) Streptococcal toxic shock syndrome (STSS) which is characterised by hypotension

(systolic BP ≤ 90 mm Hg in adults or < 5th percentile for age in children) and at least two of the following signs:

(i) Renal impairment (creatinine ≥ 177 umol/L for adults);

(ii) Coagulopathy (platelet count ≤ $100x10^9$ or disseminated intravascular coagulation);

(iii) Liver function abnormality (SCOT, SGPT or total bilirubin levels ≥ 2x upper limit of normal for age);

(iv) Adult respiratory distress syndrome (ARDS);

(v) A generalized erythematous macular rash that may desquamate. OR

(2) Soft-tissue necrosis, including necrotizing fasciitis or myositis or gangrene; OR

(3) Meningitis; **OR**

(4) A combination of any of these conditions.

III. LABORATORY INVESTIGATION PROCEDURES

Identification of strain type in cases of severe GAS is important for determining trends, tracking virulence changes and identifying clustered cases. Upon identification of a case of severe GAS, bacterial isolates should be sent to Central or Regional Provincial Laboratories, Laboratory Services Branch, for forwarding to the National Centre for Streptococcus, the reference laboratory, for M- and T-typing and detection of GAS pyrogenic exotoxins. Specimens sent to the laboratory must include full details of the clinical features of the case (see Appendix 1)

IV. CONTACT MANAGEMENT

There are limited data on the occurrence of secondary disease following a case of severe GAS disease. However, based on information obtained through the Ontario Group A Streptococcal Study together with data derived from cases occurring in the US, there appears to be an increased risk of disease in close contacts of a case of severe GAS (STSS or necrotizing soft tissue infections) which is about 250 times greater than the general population. This is based on an observed rate of disease of 2 per 100,000 in the general population and 500/100,000 among close contacts (confidence limits are very wide). Although these figures are likely to change as more information becomes known, current evaluation of the data suggests that intervention for close contacts is reasonable. The overall impact of the intervention (prophylaxis) would be small, preventing 0.2 to 0.9% of cases. At present, the only prophylactic regimens are based on data obtained from studies to eliminate GAS from the pharynx and require administering the antibiotic for 10 days.

Further studies are needed to establish better the rate of secondary spread, understand organism and host factors that contribute to the risk of invasive infection more completely, identify short course antimicrobial regimens that may be used for prophylaxis and assess the economic burden of invasive GAS infections. However, based on current knowledge, the following interventions may be considered where there is a case of STSS, necrotizing soft tissue disease or death.

1. HOUSEHOLD AND CLOSE CONTACTS

Chemoprophylaxis may be considered in contacts of invasive GAS cases presenting with:

a. STSS
b. necrotizing fasciitis (NF) or other soft tissue necrosis
   or
c. death directly attributable to invasive GAS within 7 days of diagnosis who meet the contact definitions outlined below.

Definitions

Household contacts of a case of invasive GAS with STSS, NF or death are defined as:

- all contacts living in the same household as the case within the 7 days prior to the case patient becoming ill;

Close contacts of a case of invasive GAS with severe illness include:

- persons who share sleeping arrangements;
- any persons who have had direct mucous membrane contact with the oral or nasal secretions of a case within 7 days prior to case patient illness;

Management of Contacts

The purpose of prophylaxis is to eradicate nasopharyngeal colonization of GAS and thus potentially prevent disease in close contacts and transmission to non-immune susceptible people. Prophylaxis should be given to identified contacts only after the case has met the case definition for the specific invasive GAS diseases outlined above.

Once a decision has been made to offer chemoprophylaxis to a close or household contact of a case, this should be administered as soon as possible. Chemoprophylaxis should be administered only to those contacts whose exposure occurred within the 7 days preceding the onset of symptoms in the case patient and up to 24 hours following the start of their appropriate treatment

Antibiotics for Prophylaxis

Although Penicillin VK has been the standard antibiotic for treatment of GAS, the success rate for eradication of the organism in cases of pharyngitis treated for 10 days ranges from 80% to 85% but may be as low as 65%. In general, cephalosporins appear to be somewhat more effective than Penicillin VK in eradicating GAS from the pharynx in close contacts. A 10 day course of either a cephalosporin (e.g Keflex) or erythromycin, in cephalosporin allergic persons, should therefore be used. Penicillin VK may be used as an alternative.

Duration of Prophylaxis

It is important that all identified close and household contacts complete the recommended course for the full 10 days of the selected antimicrobial. Table 1 (appendix) summarizes the antibiotic regimens for prophylaxis of contacts of severe invasive GAS disease.

2. LONG-TERM CARE FACILITIES

Because cases of invasive GAS have been associated with outbreaks in long-term care facilities, and the strain may be widespread within the facility, the following approach may be useful in the investigation and control of invasive GAS disease.

When invasive GAS occurs in a long-term care facility such as a nursing home, the facility should:-

- review its records for any recent cases of infection possibly due to GAS e.g. pharyngitis, pneumonia, cellulitis, conjunctivitis; and,

- assess the potential for a source of infection from outside the facility (e.g. regular visits from children who have recently been ill).

Investigation has shown that in older people GAS disease may occur without significant clinical features. Possible GAS infections include conditions such as pharyngitis, pneumonia, cellulitis, conjunctivitis. Unfortunately the organism may then spread to others in whom serious invasive disease may occur.

If an excess of GAS infection is identified (an incidence rate of possible GAS infections > 1 per 100 residents per month or at least 2 cases in one month in homes with less than 200 residents) the following action may be taken:

- all residents and patient care staff should be screened for GAS with throat, nose and skin lesions swabs for culture;

- anyone colonized with GAS should receive prophylaxis;

- non-patient care staff should be asked about possible recent GAS infections. Those with a positive history should be swabbed and positives treated with antibiotics as per recommended regimen;

- active surveillance for GAS infection should be started and continued for 1-2 months, and appropriate specimens should be taken for culture to rule out GAS whether suspected infections occur.

If no excess is identified, especially if there is evidence of an outside source of infection for the index case, then active surveillance alone for 2 to 4 weeks to ensure the absence of cases is warranted.

3. CHILD CARE CENTRES AND NURSERY SCHOOLS.

Asymptomatic colonization of the upper respiratory tract by GAS is frequent in children younger than 5 years and provides the focus from which the organism is spread. There are few data to suggest that the patterns of invasive GAS disease have changed significantly in young children and no data to suggest that specific prophylaxis for contacts needs to be applied in most situations. However, health departments should investigate child care centres where there is a high level of GAS infections including invasive GAS disease.

4. UNUSUAL SITUATIONS

For unusual situations that do not fall under the above categories, consult with the Physician Manager, Senior Medical Consultant or the designated consultant for GAS, Disease Control Service, Public Health Branch.

Appendix 2

Table 1 – Summary of GAS Prophylaxis Regimen for Close Contacts

Drug	Dosage*
Cephalexin (Keflex)	Children: 25-30 mg/kg/day in divided doses (Maximum 500 mg/dose) Adults: 250mg qid or 500 mg/dose q12h
Erythromycin	Children: (estolate suspension) 25-30 mg/kg/day in divided doses (Tablets –maximum 500 mg/dose) Adults: (base) 250 mg q6h
Penicillin VK	Children: 25-30 mg/kg/day in divided doses (Maximum 500 mg/dose) Adults: 300 mg q6h

*** all prophylactic regimens are administered orally and taken for 10 days**