Texas Preventable Disease NEWS

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contents:
Clusters of H. influenzae Infection in Texas Day-care Facilities and TDH Recommendations for Prophylaxis

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CLUSTERS OF H. INFLUENZAE INFECTIONS IN TEXAS DAY-CARE FACILITIES AND TDH RECOMMENDATIONS FOR PROPHYLAXIS

The Infectious Diseases Program of the Texas Department of Health is concerned about an increase in the number of reported secondary/subsequent *Haemophilus influenzae* type b (Hib) infections occurring in children attending Texas day-care facilities. By definition, both secondary and subsequent day-care cases are cases which occur from one to 60 days after a primary case in the same facility. A **secondary** case occurs in the same classroom as the primary case, whereas a **subsequent** case occurs in a different classroom. Through December 16, 1987, 19 Texas day-care facilities have reported clustering involving a total of 40 Hib infections among their attendees, including 18 primary, 2 co-primary, 16 secondary, and 4 subsequent infections.

1987 EXPERIENCE IN TEXAS

As of December 16, 1987, 15 day-care centers had a total of 16 **secondary** infections. The secondary cases occurred from two to 59 days following onset of the primary cases, with a median of eight days. One day-care facility in Travis County experienced both a secondary and a subsequent Hib infection 16 days following the primary case, and one Harris County facility experienced two secondary Hib infections eight days following the primary case. In three day-care facilities, it could be documented that the secondary case was either the only child or one of several children who did not receive rifampin prophylaxis.

Three day-care facilities in Williamson, Harris, and Dallas counties experienced **subsequent** cases occurring 7, 36, and 45 days, respectively, following onset of the primary case. The subsequent case in Dallas County proved interesting in that the primary and subsequent cases, both infants, were not exposed to one another in the same classroom, but they each had 3-year-old siblings who were in the same classroom at this day-care center.

One Dallas County day-care center reported two **primary** cases of *H. influenzae* meningitis in a single classroom with onset on the same day. All 19 classroom contacts were prophylactically treated with rifampin, and no secondary or subsequent cases were reported.

Although isolates were not available for outer membrane protein profiles, the cases in 12 of 19 day-care facilities had consistent antibiotic sensitivities. These data were not provided on cases in the remaining seven facilities.

PREVIOUS EXPERIENCE (1980-1986) IN TEXAS

Until recently, clusters of Hib infections in Texas day-care centers rarely have been reported. In fact, no day-care clusters of Hib infections were reported to the TDH from the time surveillance of the disease began in 1980 until 1986 when one secondary infection in a day-care

facility was reported to the Infectious Diseases Program. This cluster involved a day-care center in Grayson County where a case of Hib meningitis/septicemia occurred in a child 51 days after a child in the same classroom experienced an Hib septic arthritis. Day-care classroom contacts were not prophylactically treated at the time of the primary case.

Prior to 1987, virtually all of the secondary cases reported to the Infectious Diseases Program have occurred in households. Five episodes of secondary disease among household contacts were reported in 1985, and in 1986, four episodes were reported. In 1987, only one report of secondary transmission in a household was received.

1987 ATTACK RATES IN TEXAS COMPARED TO OTHER STUDIES

Two recent prospective studies demonstrated an almost negligible risk of secondary transmission in day-care centers. Murphy, et al, reported a secondary attack rate in Dallas County of 0.17% (1/587) in children under 4 years of age, and Osterholm reported no secondary cases during a two-year study of 1,086 day-care contacts in Minnesota.[1,2] However, a cooperative study conducted in Seattle, Atlanta, and Oklahoma in 1983-84 showed a larger risk of secondary transmission in day-care centers for children younger than 2 years of age (10/755=1.3%), and a recent two-year prospective study in Oklahoma reported a secondary attack rate of 1.7% (5/292) in children under 2 years of age.[3,4]

Secondary classroom attack rates in Texas day-care centers in 1987 ranged from 0.9% (1/110) to 14.3% (1/7). The number of classroom contacts varied from seven to 110; median classroom size was 12. The lowest attack rate was reported in a facility with an "open concept" where all of the 110 children and 14 staff members mingled throughout most of the day. The Harris County day-care center which reported two secondary cases experienced a secondary classroom attack rate of 10.0% (2/20). Overall, a secondary attack rate of 5.2% (16/307) was reported for these Texas day-care cases. If only the secondary cases under 2 years of age and their classroom contacts were included (as in the Oklahoma study), the classroom attack rate was 7.9% (13/164).

RECOMMENDATIONS FOR PROPHYLAXIS

Information provided to the Infectious Diseases Program indicates that the routine public health response to an Hib infection in a child attending a day-care facility varies greatly across the state. One reason for this diverse public health response is the difference between the American Academy of Pediatrics (AAP) and the Immunization Practices Advisory Committee (ACIP) recommendations for prophylaxis in day-care attendees. Although the AAP and the ACIP agree on prophylaxis recommendations when a case of Hib occurs in a household in which another child under 4 years of age resides (ie, that all members of the household, including adults and the index case, receive rifampin), the AAP and ACIP differ in their recommendations when a case occurs in a day-care setting. The AAP advises administering rifampin to all infants and supervisory personnel when two or more cases of invasive disease occur in a day-care group.[5] The ACIP, however, recommends that strong consideration should be given to administering rifampin prophylaxis to all children and staff in the day-care **classroom** in which one case of systemic Hib disease has occurred and in which one or more children under 2 years of age have been exposed.[6]

As in the past, the Texas Department of Health continues to support the ACIP guidelines for the prevention of secondary cases of Hib disease. Due to the current increase in secondary day-care center cases, it is imperative that local health authorities and physicians are reminded of the recommendations for prophylaxis.

BACTERIAL MENINGITIS/SYSTEMIC INFECTION CASE INVESTIGATION FORM

Texas Department of Health
Epidemiology Division

PERSONAL DATA

PATIENT'S NAME _____ _____ AGE _____ SEX _____

ADDRESS: _____ CITY: _____

DATE OF BIRTH: _____/_____/_____

RACE/ETHNICITY WHITE_____; HISPANIC_____; BLACK_____; AMERICAN INDIAN_____; ASIAN_____;

PHYSICIAN: _____ CITY: _____

DATE OF ONSET _____/_____/_____ OUTCOME: RECOVERED _____ DIED _____ (Date _____/_____/_____)

HOSPITAL DATA

HOSPITAL: _____ DATE ADMITTED: _____

CLINICAL ILLNESS (Please check all that apply):

_____ Meningitis
_____ Septicemia
_____ Cellulitis
_____ Epiglottitis
_____ Septic Arthritis
_____ Pneumonia
_____ Pericarditis
_____ Other

ETIOLOGIC AGENT (Check one)

_____ Neisseria meningitidis; serotype _____
_____ Haemophilus influenzae; serotype _____
_____ Streptococcus pneumoniae
_____ _____

Organism isolated from: _____ CSF; _____ BLOOD; _____ JOINT FLUID; _____ PLEURAL FLUID; _____ OTHER: _____

ANTIBIOTIC SENSITIVITY STUDIES: (circle all that apply)

Ampicillin/Penicillin	S	I	R	Not Done
Sulfadiazine	S	I	R	Not Done
Rifampin	S	I	R	Not Done
Chloramphenicol	S	I	R	Not Done

OTHER LABORATORY RESULTS

Test	Result	Source of Specimen
LA	_____	_____
CIE	_____	_____
Beta-lactamase	_____	(+)=resistant, (-)=sensitive

EXPOSURE
(for meningococcal and H. influenzae infections only)

1. Did the patient ever receive the Hib vaccine? YES _____; NO _____ IF YES: DATE OF VACCINATION _____

2. Did any member of patient's household have a similar illness during the 60 days before this patient's illness? YES _____ NO _____

   If YES, provide NAME: _____ Age _____ Relationship _____ Date _____

3. Total # household contacts: _____ How many given prophylaxis? _____ Dates of prophylaxis? _____

4. Did the patient attend/work at a day-care center/home during the 60 days before onset of illness? YES _____ NO _____

   If YES, Name of CENTER/HOME: _____ ADDRESS: _____ Date last Attended: _____

5. Total # classroom contacts: STUDENTS _____ STAFF _____ How many given prophylaxis? STUDENTS _____ STAFF _____

6. Type of prophylaxis: _____ Inclusive dates of prophylaxis: _____

7. Total enrollment of day-care center: _____ Total # of staff: _____ Total # prophylactically treated: _____

8. Did any other child in center have a similar illness during the 60 days before this patient's illness? YES _____ NO _____

   If YES, provide NAME(S) of primary case: _____ (Please fill out a case investigation form for this primary case.)

(Prophylaxis recommendations on reverse)

PROPHYLAXIS RECOMMENDATIONS

When prophylaxis is indicated, it should be administered to all eligible contacts at the same time to eliminate the organism from that population. Prophylaxis should begin within 24 hours of diagnosis or strong suspicion of case. Culturing contacts is not recommended. Prophylaxis should not substitute for close observation of case contacts for symptoms.

Neisseria meningitidis (meningococcus, gram negative diplococcus); incubation period is usally 3-4 days but can vary from 2-10 days.

Who should receive prophylaxis?
- All "family contacts" or household members who spend at least 8 hours a day with the case.
- Classroom contacts in the day-care center or day-care home attended by the case.
- Only hospital personnel who examine the throat, intubate, suction, or give mouth-to-mouth resuscitation to the case should receive prophylaxis.

Rifampin Dosage*
- Adults: 600 mg PO twice a day x 2 days
- Infants and children (1 month-12 years): 10 mg/kg** PO twice a day x 2 days
- Infants under 1 month: 5 mg/kg PO twice a day x 2 days.

Sulfadiazine Dosage: Use only if the organism has already been cultured and shown sensitive to sulfas.
- Adults: 1 gram PO twice a day x 2 days
- Children: (1-12 years of age): 500 mg PO twice a day x 2 days
- Infants (< 12 months): 500 mg PO once a day x 2 days.

In addition to the routine medications used to treat meningococcal infections, the index case should receive one of the above regimens before going home from the hospital in order to eradicate pharyngeal carriage of the N. meningitidis.

Haemophilus influenzae (H. flu) (small gram-negative rods); incubation period is short, usually 2-4 days.

Who should receive prophylaxis?
- All "family contacts" (members of the patient's household) if there is another child under 4 years of age residing in the home.
- Prophylaxis should strongly be considered for all staff and children--regardless of age--in the day-care classroom in which a case of systemic Hib disease has occurred, and in which one or more children under 2 years of age have been exposed.
- Children in the day-care classroom who have been vaccinated with the Hib vaccine should also receive rifampin.
- Hospital personnel do not need prophylaxis.

Rifampin Dosage:*
- Adults: 600 mg PO once a day x 4 days
- Infants and children (1 month-12 years): 20 mg/kg** PO once a day x 4 days

In addition to the routine medications used to treat H. influenzae infections, the index case should receive the above regimen before going home from the hospital in order to eradicate pharyngeal carriage of the organism.

* Before administering rifampin, note that rifampin:
- is not recommended for use during pregnancy
- interferes temporarily with effectiveness of oral contraceptives
- will turn urine, tears, saliva an orange/red color; soft contact lenses will be permanently stained if worn while taking rifampin.

** The maximum dosage of rifampin should not exceed a total of 600 mg per dose.

COMMENTS

Investigated by: _____

Agency: _____

Telephone: _____

Date: _____

RETURN COMPLETED FORM TO:

Infectious Diseases Program
Epidemiology Division
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3180

The TDH recommends rifampin prophylaxis for all staff and children, regardless of age, in the day-care classroom in which a case of systemic Hib disease has occurred and in which one or more children under 2 years of age have been exposed. Rifampin prophylaxis is effective in preventing secondary cases in day-care settings. However, prophylaxis of classroom contacts must: 1) begin as rapidly as possible, though no later than 14 days after last contact with the first case; 2) include at least 75% of the classroom contacts to be effective; and 3) include children who have received the Hib vaccine. Failure to meet these conditions may increase the risk of secondary transmission.

REPORTING OF HIB INFECTIONS -- THE CASE INVESTIGATION FORM

The Communicable Disease Prevention and Control Act (Texas Civil Statutes, Article 4419b-1) requires that all invasive ("systemic") infections by *H. influenzae* be reported to the Texas Department of Health. These include meningitis, septicemia, cellulitis, epiglottitis, septic arthritis, osteomyelitis, pericarditis, and pneumonia. Otitis media and conjunctivitis due to *H. influenzae* are not considered invasive disease and should not be reported to health officials.

The Bacterial Meningitis/Systemic Infection Case Investigation form (MENING-1, revised 12/87) is included in this issue of PDN and is available upon request from the Infectious Diseases Program, Epidemiology Division, TDH. Local and regional health department personnel are strongly encouraged to use this form when following up systemic infections caused by *H. influenzae* or *Neisseria meningitidis* (meningococcal infections). The TDH recommendations for prophylaxis are printed on the back of the form. The Infectious Diseases Program suggests the following priority for completion of case investigation forms:

1. A systemic *H. influenzae* or *N. meningitidis* infection in a child attending any day-care facility (licensed day-care center, day-care home, or private babysitter where more than one child is cared for).

2. A systemic *H. influenzae* infection in any child under 6 years of age.

3. A death in a patient of any age resulting from a systemic *H. influenzae* infection.

4. Any systemic *H. influenzae* infection.

Please send the completed forms to the Infectious Diseases Program, Texas Department of Health, 1100 W. 49th Street, Austin, TX 78756-3180. These reports are essential to the Infectious Diseases Program in order to assess the actual occurrence of *H. influenzae* infections in Texas day-care facilities.

Prepared by: Jan Pelosi, Epidemiologist Assistant, Infectious Diseases Program, Epidemiology Division, Texas Department of Health.

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