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Pertussis Identified among Unimmunized Children in Homer

On Friday, September 27, 2002, a Homer Public Health Nurse reported a possible case of pertussis in an unimmunized 2 year-old who had been ill for one week with a prolonged severe cough. An active investigation has led to detecting four laboratory-confirmed cases of *B. pertussis* in Homer school children. Epidemiological analysis suggests that pertussis has been circulating in the community for at least 2 months. Homer health care providers have rapidly worked to update immunizations of all children in Homer, and to treat clinical cases of pertussis and their contacts.

Immunization

The most effective means of preventing pertussis in a community is immunization of all children less than age 7 years. DTaP vaccine (diphtheria, tetanus, acellular pertussis vaccine) is recommended at 2, 4 and 6 months of age with boosters at 15-18 months and 4-6 years of age. Little data are available on use of an accelerated immunization schedule (using minimal intervals between doses) during a pertussis outbreak for infants and children who are not close contacts. Use of an accelerated schedule for infants, although acceptable, is not routinely recommended because it does not match the schedule of other needed vaccinations; this may result in inadequate immunization with other important childhood vaccines. Clinicians may choose to use an accelerated schedule for pertussis vaccine if it does not interfere with fully immunizing with the other childhood vaccines.

Medical Management of Cases and Contacts

Medical management of patients with pertussis is primarily supportive; antibiotics are only of value if given early. Hospitalized patients with possible pertussis should be kept in respiratory isolation until the completion of 5 days of a 14-day course of erythromycin (the drug of choice) or an alternative antibiotic (Table 1). In order to prevent spread of pertussis, erythromycin or an alternative antibiotic is also recommended for household and other close contacts of confirmed cases, regardless of age and vaccination status.

Diagnostic Testing

The "gold standard" laboratory test for pertussis is culture of a nasopharyngeal specimen from an acutely ill individual. Incubation for 24 hours prior to transport increases the chance of culturing *B. pertussis* from the specimen. The direct fluorescence antibody (DFA) test is neither sensitive nor specific for *B. pertussis*, but may be of limited use during a pertussis outbreak to rapidly identify possible cases. Polymerase chain reaction (PCR) testing is available at some reference laboratories and may become the rapid test of choice in the future.

Recommendations

1. All Homer children less than age 7 should have their pertussis vaccination status evaluated and, if necessary, updated immediately. Close contacts under age 7 and who are not up-to-date with DTaP/DTP should be brought up to date with doses of DTaP using the minimal recommended intervals of at least 4 weeks between doses 1 and 2 and doses 2 and 3; and at least 4 months between doses 3 and 4.
2. Close contacts to a laboratory-confirmed case of pertussis should receive a 14-day course of erythromycin by directly observed therapy (DOT). Medications and DOT will be provided free-of-charge. Azithromycin or clarithromycin may be used as alternatives to erythromycin, although efficacy data for these two newer macrolides are not as abundant. A third alternative drug is trimethoprim-sulfamethoxazole (TMP-SMZ). Close contacts will be determined in consultation with the Alaska Section of Epidemiology.
3. In a school where pertussis has been laboratory-confirmed, any student who develops symptoms of pertussis (a prolonged cough leading to problems with eating, talking, or breathing) should be excluded from school until he or she has completed 5 days of erythromycin (or one of the alternative drugs listed in Table 1) by DOT. A symptomatic student who does not complete an appropriate course of antibiotic listed in Table 1 should be excluded for 21 days after the last identified case of pertussis in the school.
4. Students and staff in all Homer schools should be monitored during the next two weeks for symptoms of pertussis (a prolonged cough leading to problems with eating, talking, or breathing) and referred to their private medical provider or the Homer Public Health Center for evaluation and specimen collection.
5. Homer school nurses should review students' vaccination records for medical and religious exemptions. Any student with an exemption who becomes a contact to a confirmed case should receive a 14-day course of erythromycin or one of the alternative drugs listed in Table 1.
6. Health care providers in Homer and the surrounding Kenai Peninsula towns should be alert for possible cases of pertussis and report suspected cases to the Section of Epidemiology at 907-269-8000 during business hours or 1-800-478-0084 after hours. Patients with a prolonged cough that leads to problems with eating, talking or breathing that is of less than one-week duration should be cultured for pertussis. Culture media and supplies are available from the State Laboratory-Anchorage, 907-334-2100 and will be supplied free-of-charge.

Table 1. Recommended and Alternate Medications for Treatment and Chemoprophylaxis of Pertussis.

Medication	Adult Dose	Child Dose
Drugs of Choice		
Erythromycin estolate (Ilosone)	Formulation not available for adults.	40 mg/kg/day in 2-3 divided doses for 7 days.
Erythromycin ethylsuccinate (E.E.S.)	1-2 g/day in 4 divided doses for 14 days. Max 2 gm/day.	40-50 mg/kg/day in 3-4 divided doses for 14 days. Max 2 gm/day.
Alternative Drugs		
Azithromycin (Zithromax)	10-12 mg/kg/day in one dose for 5 days.	10-12 mg/kg/day in one dose for 5 days.
Clarithromycin (Biaxin)	15-20 mg/kg/day in 2 divided doses for 7-10 days. Max 1 gm/day.	15-20 mg/kg/day in 2 divided doses for 7-10 days. Max 1 gm/day.
Trimethoprim (TMP)-sulfamethoxazole (SMZ) (Bactrim, Bactrim DS)	320 mg/day TMP/1600 mg/day SMZ in two divided doses for 14 days.	8 mg/kg/day TMP/40 mg/kg/day SMZ administered in two divided doses for 14 days.