Increasing Rates of Vaccination with Tdap in Uninsured Patients

Utilizing Retail Clinics

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Abstract

Prior to the introduction of vaccine, pertussis was a common cause of morbidity and mortality in children. Rates of infection dramatically decreased after widespread vaccination programs were introduced in the 1940s. Waning antibody production in adults led to reemergence of pertussis in the 1980’s. It is estimated that there are now as many as 600,000 infections in the US yearly. In adults, infection may be asymptomatic or benign but in young, unimmunized infants, it may cause serious illness and death. Household contact with adults appears to be the source of infection for most cases occurring in young infants. A vaccine for adolescents and adults (Tdap) has been available since 1995, but overall vaccine rates are very low. There are about 4 million patient visits to retail health clinics per year. The majority of these patients have health insurance, which covers vaccination costs. About 15% are uninsured, and have no primary care provider to monitor their immunization status. One way to increase vaccination rates in this population is to offer Tdap during their retail health clinic visit. The purpose of this prospectus is to explore strategies to increase pertussis vaccination rates in uninsured patients visiting retail clinics through advertising, provider education, and no-cost vaccine.

Problem Summary

Bordetella pertussis, a gram-negative pleomorphic aerobic bacilli infection of the respiratory tract, was discovered by Jules Bordet and Octave Gengou in 1906. The first pertussis vaccination was developed and licensed in the United States in 1914, and combined with diphtheria and tetanus toxoids in 1918. Before vaccine was available, pertussis was a common and feared childhood disease. Charles West, a pioneer of English pediatrics, observed that
“there is scarcely a nursery to everyone’s great discomfort in which it is not known as a familiar and most unwelcome visitant” (Hardy, 2003, p. 9). The widespread use of infant vaccinations in the US in the 1940’s led to a dramatic fall in the number of infections. In 1976, the number of reported cases in hit its lowest point of just over 1,000. In the past 20 years, the incidence of reported pertussis has steadily increased, with an increasing proportion of cases reported among adolescents and adults. This resurgence means that pertussis is again a public health issue (Coudeville, Van Rie, Getsios, Caro, Crepey & Nguyen, 2009).

Infection with pertussis may initially manifest with symptoms identical to the common cold, consisting of cough, coryza, malaise, and low-grade fever. The cough increases in frequency and becomes spasmodic with repetitive bursts of 5-10 coughs within a single inspiration. The episode may conclude with an audible whoop, giving the disease the name whooping cough. Posttussive vomiting is also common. It may take as long as three months for the cough to completely resolve (Halperin, 2008). Pertussis in young infants is a serious disease. Bouts of paroxysmal coughing induce apnea and result in cyanosis and hypoxia. It may cause subconjunctival and scleral hemorrhages, upper-body petechiae, umbilical and inguinal hernias, subcutaneous emphysema, rib fractures, otitis media, pneumonia, atelectasis, emphysema, pneumothorax, and esophageal tears with hematemesis and melena. Neurologic complications include hypoxic encephalopathy, seizures, and intracranial hemorrhage. Nutritional status is compromised due to posttussive vomiting. Risk of death in the young infant is between 0.3 and 1.3% (Connelly, 2003). This risk is highest in infants younger than 12 months of age, especially during the first few months of life until they have received one or two doses of pediatric vaccine. In adolescent and adults, pertussis infections may be asymptomatic or range from mild to severe. Complications of pertussis in adults include urinary incontinence, rib fractures, pneumothorax,
inguinal hernia, aspiration, pneumonia, seizures, and otitis media (Rothstein & Edwards, 2005). Death is rare. Kretsinger et al., (2006) explains that immunity to pertussis declines approximately 5-10 years after completion of childhood vaccinations, leaving adolescents and adults susceptible to infection. During 2000-2006, there were 103,940 cases of pertussis reported in the US (average 14,849 cases each year) and 156 pertussis-related deaths. However, it is suspected that infection is under-recognized in adults and adolescents and that the actual number of cases among adults per year is 600,000. Pertussis is highly transmittable through direct contact with discharge from respiratory mucous membranes of infected persons. Up to 90% of susceptible household contacts develop clinical disease following exposure to an index case (Centers for Disease Control and Prevention [CDC], 2009). Data from 2000-2006 show that 27% of reported pertussis cases occurred in individuals 15-39 years of age: household contact with these individuals appears to be the source of infection for most cases occurring in young infants (McEvoy & Miller, 2010). As a result, the CDC now recommends that adolescents aged 11 through 18 and adults 19-65 receive a single dose of tetanus, diphtheria and attenuated pertussis (Tdap) instead of Td for booster immunization. (CDC, 2008, para 7-8). Unfortunately, only 2.1 percent of eligible adults have had Tdap in the previous two years (Trust for America’s Health, 2010). As a result, both the National Vaccine Advisory Committee and the Partnership for Prevention advocate that access to vaccines be improved, including among uninsured adults. (Hinman & Orenstein, 2007). This proposal explores ways to increase vaccination rates in this population by educating health care providers, targeted advertising, and no-cost vaccine.
Goal:

Reduce transmission of pertussis from adolescents and adults to infants by increasing rates of immunization with Tdap. This will reduce the morbidity and mortality associated with infections in adults and children. It will also reduce costs of emergency rooms visits and hospitalizations.

Objectives:

1. Increase provider awareness of need for adolescents and adults to receive one dose of attenuated pertussis vaccine after their initial DTP/DTaP series.
2. Increase provider awareness of need for adolescents and adults in contact with infants younger than age 12 months (e.g., parents, grandparents younger than age 65yrs, childcare providers, healthcare personnel) to receive a dose of Tdap before 10 year booster is due.
3. Increase provider awareness that Tdap vaccine will be available at no cost to uninsured patients.
4. Increase rate of provider offering vaccination to eligible patients.
5. Increase patient awareness of need for adolescents and adults to receive one dose of attenuated pertussis vaccine after their initial DPT/DTaP series.
6. Increase patient awareness of need for adolescents and adults in contact with infants younger than age 12 months (e.g., parents, grandparents younger than age 65yrs, childcare providers, healthcare personnel) to receive a dose of Tdap before 10 year booster is due.
7. Eligible patients will receive Tdap.

Methodology:
The settings are retail health clinics located inside a national chain of pharmacy and drug stores. This chain operates 560 clinics nationwide. This project will utilize 10 clinics in the Dallas-Fort Worth area. Each clinic is staffed with one nurse practitioner or physician assistant, who completes all aspects of the patient visit, including entering insurance information into the medical record, completing health history and physical exam, administering vaccines, patient education, and collection of fee for service. Patients self-present to convenience care clinics, primarily for the treatment of a minor acute illness.

Increasing vaccination rates shall be achieved by increasing provider and patient recognition of need for Tdap vaccination in adolescents and adults and offering no-cost vaccine. Patient awareness shall be increased by creating an advertising campaign consisting of signage to be displayed at the retail health clinic locations and incorporation of information about this vaccine into clinic literature displayed in the store. The information shall also be printed on literature given to patients at discharge. Advertisements for clinic services that are regularly broadcasted via the store public address system will be updated to include information about this vaccine service. Cash register receipts from the store and the pharmacy will include reminders of the need to be vaccinated with Tdap. Discussions of vaccine shall be incorporated into ongoing community outreach presentations.

Health care providers shall receive specific training via an Electronic learning (“E-learning”), a mechanism used by the organization to disseminate new or updated information to the clinic staff. Content of the E-learning for Tdap shall include a discussion of the reemergence of pertussis, rational for administering Tdap, target populations, its indications and contraindications, and a discussion of the availability of no-cost Tdap vaccine for the uninsured.
A prompt shall be placed in the body of the electronic medical record to remind the provider to query the patient about Tdap status. The provider has already entered insurance information into the record and is able to identify patients who qualify for no-cost vaccine. The provider shall also document how patient learned about the vaccine program.

Candidates for Tdap consist of adolescents ages 11-18, adults age 19-64, and populations in close contact with infants less than 12 months of age. Adolescents aged 11-18 years should receive a single dose of Tdap if they have completed the recommended childhood DTP/DTaP series. Adults aged 19-64 years should receive a single dose of Tdap to replace a single dose of Td if they received their last dose of Td 10 or more years ago. If it has been less than 10 years but two or more years since the last Td, Tdap may be offered if there is an increased risk for pertussis or its complications. Adults who have close contact with an infant less than 12 months old (e.g., parents, grandparents less than 65 years old, childcare providers), should receive a single dose of Tdap at an interval of less than 10 years since the last Td if they have not previously received Tdap. Any woman of childbearing age who might become pregnant is should receive a single dose of Tdap. Exclusions consist of history of Guillain-Barre syndrome less than 6 weeks after a previous dose of tetanus-toxoid containing vaccine, moderate to severe acute illness, allergies to a component of vaccines or substances used in the manufacturing of vaccine, a history of severe allergic reaction after a previous vaccine dose, or unstable neurological disease.

Phase I of the study will involve the creation, dissemination, and completion of the E-learning to providers, completion of modifications to the electronic medical record and concurrent implementation of the advertising strategies. The estimated amount of time needed to complete these activities is 6 weeks.
In Phase II, the vaccine shall be administered to eligible patients. It will be available for three months after three months or until the supply of vaccine is exhausted.

The study will require IRB permission through Texas Woman’s University, as well as permission through the retail health clinic’s corporate headquarters.

**Evaluation**

A comparison will be made between the number of Tdap vaccines administered pre and post project implementation, per clinic location and in total. This will be compared against the number of Tdap vaccines administered nationally by this chain of retail health clinics to determine if an outside event influenced increase in vaccine utilization during the period of the project. Patient demographics including age, sex, date of last vaccine, indication, and manner of learning about need for vaccine will be analyzed. The relationships between the method of learning about vaccine: through provider, by signage, clinic literature, overhead public address system, or cash register receipt and the number of vaccines given will be explored. This will provide information about the most successful ways to reach this population with health information. Dallas and Tarrant County pertussis surveillance data will be analyzed to determine if there has been any statistically significant change in incidence of disease after project completion. Statistics will be calculated using SPSS statistical software Gradpack version 17.0. Individual provider educational records will be accessed to determine if there is a relationship between completion of the E-learning and the number vaccinations ordered and administered by provider.

**Budget**

Corporate advertising costs:

- Creation and implementation of signage $50.00
Addition of advertising to cash register tapes $25.00
Creation and dissemination of new public address system advertising $50.00
Incorporation of information into store literature $50.00

Staff education costs:

Creation and dissemination of Electronic Learning $150.00
Staff time to complete E-learning: 15 minutes each for 20 staff members ($11.50 per staff member) $225.00

Information Technology services costs:

Costs to addend Electronic Medical Record $50.00

Vaccine costs-

Cost of vaccine and administration @ $62.00 per dose (Minute Clinic, n.d.)

100 doses for the 10 clinics $6,200.00
Total cost of implementation $6,800.00
Total grant request: $6,810.00

Summary

Prevention of pertussis in vulnerable infants as well as adolescents and adults is an important public health goal. This project supports this goal by implementing methods to increase provider and patient awareness of need for Tdap vaccine and evaluating of the effectiveness of those methods. The results of can be utilized when planning further vaccine campaigns. By vaccinating three hundred patients, the entire community benefits by a decrease in the incidence of this disease and its associated costs.
References


