



## Brief report

## Infant pertussis prevention information on Web sites of Michigan birthing hospitals



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and acellular pertussis  
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Vaccinating pregnant women and household contacts of infants is recommended for pertussis prevention. In structured abstraction of Web sites of Michigan birthing hospitals, we found only 36% contained any pertussis prevention information, and it usually required a specific search for pertussis. Hospitals should emphasize pertussis prevention as part of general information for expectant parents.

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Infants <3 months, too young to be vaccinated themselves, account for most of pertussis hospitalizations and deaths.<sup>1</sup> To better protect infants, the U.S. Advisory Committee on Immunization Practices (ACIP) has recommended since 2005 a strategy of cocooning infants, whereby mothers and others in close contact with newborns receive a booster dose of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine.<sup>2</sup> However, cocooning programs are logistically challenging to implement, requiring substantial resources for parent education and vaccine delivery; as such, cocooning programs have shown only moderate success in vaccinating postpartum mothers and limited success in vaccinating other family members.<sup>3</sup> Moreover, a Canadian study found that in the context of low community incidence of pertussis, >10,000 family members would need to be vaccinated to prevent 1 infant pertussis hospitalization.<sup>4</sup> Therefore, as an additional strategy to reduce pertussis in infants, the ACIP recommended in 2011 that Tdap vaccine be administered to pregnant women, optimally in their third trimester to maximize passive antibody transfer to the infant.<sup>5</sup>

In a recent study, 91% of Michigan birthing hospitals reported offering Tdap vaccine to postpartum mothers, but only 73% had a process to assess mothers' Tdap vaccine status, 20% had a written hospital policy to offer Tdap vaccine, and only 4% vaccinated household contacts of newborns.<sup>6</sup> The study did not explore the extent to which hospitals informed parents and family members about the recommendation to receive Tdap vaccination.

Over 70% of Internet users have looked online for health information within the last year.<sup>7</sup> The birth of a child may be a time when parents and family members seek information about hospital visiting hours or other policies. Therefore, birthing hospital Web sites may be a useful mechanism to inform parents and family members about preventing infant pertussis through Tdap vaccination. Our objective was to document the presence of information about pertussis prevention for newborns on the Web sites of Michigan birthing hospitals.

### METHODS

We conducted a structured data abstraction of public Web sites for all 85 Michigan birthing hospitals. Data were collected October–December 2013.

We used the Google search engine to identify each hospital's homepage and used a 2-step search process. First, to assess information that expectant parents or family members might encounter while looking through general information about the birth and postpartum hospital stay, we followed links for birthing services (eg, labor and delivery, newborn nursery, neonatal intensive care unit [NICU]), guidance for parents (eg, "for expectant parents"), and policies for family members (eg, "for visitors"). We systematically reviewed each of those sections and documented the presence of any information related to infant pertussis prevention. Second, we conducted a manual search using relevant key words (Tdap, pertussis, whooping cough, DTaP [diphtheria-tetanus-acellular pertussis]) in each hospital Web site's search engine and data dictionary. Searching was performed by 1 author (E.N.S.); a research assistant performed an independent second search to ensure completeness.

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**Table 1**  
Hospital Web site information about infant pertussis prevention

Hospital	Pathway to information	Text of information
1	Hospital homepage ↓ Services ↓ Women's services ↓ Family birth place ↓ Women's services birthing binder	"Health officials now recommend that adults and adolescents receive a Tdap booster vaccine to protect against whooping cough (Pertussis). It is especially important for those in contact with infants less than 12 months of age."
2-4*	Hospital homepage ↓ Health services ↓ Children's services ↓ Neonatology	"Brothers and sisters of our infants may visit under the following conditions: Immunization card must be brought in for each visiting child (proof of Pertussis (whooping cough) and Varicella (chicken pox) vaccination)."

\*Part of same health system; all link to the same internal page.

We abstracted any mention of infant pertussis prevention using a standardized abstraction form, which included date accessed, pathway to information, and headers and subheaders searched. We stored screenshots to preserve the time-specific integrity of the data and used the screenshots to categorize the content of the information.

## RESULTS

Overall, among 85 birthing hospital Web sites, 31 (36%) included information about infant pertussis prevention, 19 (22%) included information about pertussis vaccination but did not mention infant pertussis prevention, and 35 (41%) had no pertussis information on their Web site. Of 85 Michigan birthing hospitals, 63 had their own independent Web sites, and 22 were included in the shared Web sites of 7 hospital systems. In total, there were 70 unique hospital homepages.

Four hospitals included information about infant pertussis prevention within general information about birthing services (Table 1). For hospital 1, the information was in a birthing binder, which also included information about nutrition, pregnancy hazards, obstetrics office visits, ultrasounds, breastfeeding, maternal changes, and how to prepare for childbirth. Hospitals 2-4 were part of a health system with shared internal Web pages; information was found in the neonatology section, which also included caring for a NICU infant and NICU visitation guidelines. The information from hospital 1 discussed vaccination for both adults and children, whereas the language for hospitals 2-4 referred to siblings only.

Through the manual search, information about infant pertussis prevention was found for 27 hospitals. The information pertained to 3 main categories: immunization recommendations, Web postings, and definitions (Table 2).

## DISCUSSION

This study documents the general dearth of information on hospital Web sites about protecting infants from pertussis through Tdap vaccination of pregnant mothers and household contacts:

**Table 2**  
Hospital Web site categories about infant pertussis prevention

Category	No. of hospitals	No. of pages	Typical information
Immunization recommendations	6	15	General information about immunization that notes infants are too young to receive Tdap vaccine; therefore, it is important for all others to receive the vaccine.
Web postings	10	57	Wide variety of 1-time blog posts or archived news articles; includes descriptions of past initiatives to increase pertussis vaccine uptake, encouragement for family members to get vaccinated, tips to keep babies healthy, restatement of CDC recommendation on infant pertussis prevention.
Definitions	25	51	Within broader definition of pertussis or pertussis vaccine, includes a restatement of or link to CDC recommendation on infant pertussis prevention.

CDC, Centers for Disease Control and Prevention.

only 31 of 85 Michigan birthing hospitals had any information about infant pertussis prevention, and in most cases it could only be found through a specific search. The remaining hospitals (n = 54) had no information about infant pertussis prevention. This study provides examples of how infant pertussis prevention information can be incorporated into a hospital Web site. One hospital chose its birthing binder as a forum to emphasize the importance of Tdap vaccination; this placement best supports the ACIP recommendation targeted to pregnant women<sup>5</sup> because it is likely to reach prospective parents browsing through a variety of newborn-related information. In contrast, many hospitals had clear statements recommending Tdap vaccination, but in locations that would only be found through searching for a pertussis-related term; that type of placement is unlikely to reach pregnant women who are unaware of the recommendation for Tdap vaccination.

Although cocooning alone has not been demonstrated to be effective, either from a clinical or cost perspective, it remains a component of the recommended strategy to prevent infant pertussis.<sup>5</sup> Including pertussis in the list of vaccines that should be up-to-date for visitors is another strategy to educate about pertussis prevention. We observed several examples of visitor Web pages that mentioned siblings to be up-to-date on influenza and chicken pox vaccine but no mention of pertussis vaccine. The health system (3 hospitals) that specifically mentioned sibling pertussis vaccination placed the information in the NICU section of the Web site; however, the same information is relevant for infants in the healthy newborn nursery.

Overall, these findings represent a missed opportunity to educate parents and family members about the importance of Tdap vaccination for people who will be in close contact with newborns. The newborn period is a teachable moment whereby expectant parents and their families and friends seek guidance on how to keep their baby healthy. Birthing hospital Web sites represent 1 component of the strategy to promote Tdap vaccination.

There are limitations to this study. We studied Michigan hospitals only; results may not be generalizable to other states. We did not capture information shared in person or by mail. We could not link Web site information to Tdap vaccination rates of mothers or family members; however, the very low Tdap rate for pregnant women<sup>5</sup> is consistent with the lack of information promoting vaccination.

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