

Cocooning: A Strategy to Prevent Pertussis in Infants

In 2010, California experienced a serious pertussis (whooping cough) epidemic that took the lives of ten infants and hospitalized more than 475. Preventing deaths and hospitalization in infants from pertussis is a critical public health issue.

Cocooning is a term that describes the process of immunizing all contacts of newborns with pertussis-containing vaccine (either DTaP for children less than seven years old or Tdap for those over seven) to form a protective ring of immunity from this disease for infants. Contacts can include mothers, fathers, grandparents, siblings, nannies, and babysitters. Health care providers are also part of the cocoon, as they may have regular contact with a newborn.

Studies have shown that caregivers transmit pertussis to infants.¹ Pertussis is extremely contagious, with a high attack rate or basic reproduction number (R_0). The R_0 for pertussis is estimated at 12-17, which is similar to measles and in contrast with influenza, which has an R_0 of 1-2. Ninety percent of susceptible household contacts become infected with pertussis when a household member contracts the disease.² In 2005, a San Francisco mother contracted pertussis while in the hospital and spread the disease to her newborn. The infant was hospitalized and eventually died from the complications of the disease.

Although it may be higher in California, national data indicate that the Tdap immunization rate for family members of newborns is well below 10 percent and only 17 percent for health care workers.³ For these two groups, there is real room for improvement.

Hospitals have an important role in facilitating the cocooning process. All birthing hospitals in San Francisco are immunizing pregnant or postpartum women with Tdap. Two San Francisco birthing hospitals have gone further. The University of California San Francisco and San Francisco General have set up programs to immunize family contacts of newborns, even those who are not their patients. This model of prevention and good public health should be carried out by all birthing hospitals across California.

Health care providers outside of the hospital setting can also play a role in the cocooning process. First, they themselves should be vaccinated, a fact that can be forgotten by providers.⁴

Second, providers can remind patients with infants that they and their family members should all be vaccinated to protect the infant. Every office visit is an opportunity to vaccinate and create a cocoon of immunization protection around a newborn.

In addition to on-time immunization of infants, reducing susceptible people around a newborn by cocooning offers the best way to decrease the spread of pertussis to the population that bears the highest burden of the disease. Efforts in this direction represent a high standard of health care and an intervention that will improve the health of all Californians. 

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The San Francisco Immunization Coalition has educational materials (posters and DVDs) for providers about pertussis and cocooning. For more information, go to www.sfimmunize.org.

References

1. Transmission of *Bordetella pertussis* to young infants. *Pediatr Infect Dis J.* 2007; 26: 293-299.
2. California Department of Public Health Report. August 2010.
3. National Health Interview Survey. *MMWR* 2010; 59:1302-6.
4. ACIP provisional recommendations for health care personnel on use of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine (Tdap) and use of postexposure antimicrobial prophylaxis. *Centers for Disease Control.* April 2011.