

5 Questions: Yvonne Maldonado on whooping cough

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(Medical Xpress)—The United States is on track to have its biggest whooping cough epidemic in 60 years, with more than 21,000 cases already reported in 2012. The highly contagious and potentially fatal disease, officially known as pertussis, starts with cold symptoms and progresses to coughing bouts severe enough to leave patients gasping for air.

Yvonne Maldonado, MD, Lucile Packard Children's Hospital's service chief of pediatric infectious disease and a professor of pediatrics at the School of Medicine, told Inside Stanford Medicine writer Erin Digitale who should worry about pertussis and how parents can protect their families.

Q: Who gets hit hardest by pertussis?

Young infants under a year—especially babies under 6 months of age—are most vulnerable to complications of pertussis, with about a dozen babies dying in the U.S. each year.

The disease is caused by a bacterium, [Bordetella pertussis](#), that produces many different toxins. These toxins stimulate the body's [immune response](#), making our airways very inflamed and swollen. Because babies have small airways, the swelling leaves a very small area for air passage to occur. When they're trying to breathe, babies with pertussis have to take this really big breath, producing the classic "whoop" sound. They

can have apneic spells, when they stop breathing, and can also develop secondary [bacterial pneumonia](#).

We can get rid of *B. pertussis* bacteria with antibiotics, but the toxins that cause airway swelling do not go away with antibiotics. That means babies can be sick for weeks to months. Pertussis can also affect older children and adults, who may also suffer months of severe coughing [bouts](#) but do not generally experience serious complications.

Q: Why does the United States have so many cases of pertussis this year?

We're headed to the worst year since vaccination began several decades ago, but nobody really knows why. One theory is that the [vaccine](#) may not be as effective as we thought. Historically, we used a vaccine consisting of whole pertussis bacteria that were treated and killed, but that vaccine caused symptoms such as fevers. The vaccines now used, which were first licensed in 1991, instead contain components isolated from the bacteria. These vaccines cause fewer symptoms, but new evidence suggests they may not provide long-lasting immunity, leaving people who have not been recently vaccinated vulnerable to the disease. Since the early 2000s we've been seeing a resurgence of pertussis, with a higher proportion of cases affecting teens and adults than at any point in the past. That's why a booster shot is now recommended for everyone over age 10.

Also, some research suggests that pertussis outbreaks are more likely in geographic areas where more parents refuse to vaccinate their kids, so we're working to let people know that the vaccine is safe and that forgoing vaccination for children who do not have a medical reason to do so can put communities at risk.

Q: Do we now have an epidemic in California?

No. This year we've had fewer than 400 cases, a huge drop in the number of cases. We had our epidemic in 2010, when 10 infants died in California alone. After that, we stepped up vaccination efforts and took a lot of measures at the state level to reduce exposure to pertussis. Up to 80 percent of babies with pertussis get infected by someone in their household, such as a parent, grandparent or sibling. New babies are too young to be vaccinated, so to protect them we've done something called "cocooning"—making sure family members around that baby have been vaccinated.

Q: Who should get vaccinated?

Infants should be vaccinated at 2, 4 and 6 months, with a booster shot at age 15-18 months and another at age 4-6 years. The pertussis vaccine is among those required for children to enter kindergarten in California. Starting in the 2012-13 school year, California law also requires children entering seventh grade to have a pertussis booster.

Any adult who has not had a booster shot since childhood should also receive the vaccine, regardless of age. And those planning to travel to states with epidemics should get vaccinated rather than changing their travel plans.

We're making a special effort to vaccinate pregnant women, both at Packard Children's and across the state, in their third trimester of pregnancy. We think the mother develops antibodies that cross the placenta to protect the baby, so that infants will be born with some protection. Expectant dads and grandparents who will spend a lot of time around a newborn should get vaccinated, too.

Q: Where can families find more information about getting the vaccine?

Ask your primary care physician or your child's pediatrician for information about receiving the vaccine. For local families that lack a health-care provider, Santa Clara County provides information about obtaining low-cost [pertussis](#) vaccination for children at www.sccgov.org/sites/sccphd/en...ges/TdapClinics.aspx.

Provided by Stanford University Medical Center

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