Measles Still Threatens Health Security

On 50th Anniversary of Measles Vaccine, Spike in Imported Measles Cases

Fifty years after the approval of an extremely effective vaccine against measles, one of the world’s most contagious diseases, the virus still poses a threat to domestic and global health security.

On an average day, 430 children – 18 every hour – die of measles worldwide. In 2011, there were an estimated 158,000 measles deaths.

In an article published on December 5 by JAMA Pediatrics, CDC’s Mark J. Papania, M.D., M.P.H., and colleagues report that United States measles elimination, announced in 2000, has been sustained through 2011. Elimination is defined as absence of continuous disease transmission for greater than 12 months. Dr. Papania and colleagues warn, however, that international importation continues, and that American doctors should suspect measles in children with high fever and rash, “especially when associated with international travel or international visitors,” and should report suspected cases to the local health department. Before the U.S. vaccination program started in 1963, measles was a year-round threat in this country. Nearly every child became infected; each year 450 to 500 people died each year, 48,000 were hospitalized, 7,000 had seizures, and about 1,000 suffered permanent brain damage or deafness.

People infected abroad continue to spark outbreaks among pockets of unvaccinated people, including infants and young children. It is still a serious illness: 1 in 5 children with measles is hospitalized. Usually there are about 60 cases per year, but 2013 saw a spike in American communities – some 175 cases and counting – virtually all linked to people who brought the infection home after foreign travel.

“A measles outbreak anywhere is a risk everywhere,” said CDC Director Tom Frieden, M.D., M.P.H. “The steady arrival of measles in the United States is a constant reminder that deadly diseases are testing our health security every day. Someday, it won’t be only measles at the international arrival gate; so, detecting diseases before they arrive is a wise investment in U.S. health security.

Eliminating measles worldwide has benefits beyond the lives saved each year. Actions taken to stop measles can also help us stop other diseases in their tracks. CDC and its partners are building a global health security infrastructure that can be scaled up to deal with multiple emerging health threats.

Currently, only 1 in 5 countries can rapidly detect, respond to, or prevent global health threats caused by emerging infections. Improvements overseas, such as strengthening surveillance and lab systems, training disease detectives, and building facilities to investigate disease outbreaks make the world -- and the United States -- more secure.

“There may be a misconception that infectious diseases are over in the industrialized world. But in fact, infectious diseases continue to be, and will always be, with us. Global health and protecting our country go hand in hand,” Dr. Frieden said.

Today’s health security threats come from at least five sources:

- The emergence and spread of new microbes
- The globalization of travel and food supply
- The rise of drug-resistant pathogens
- The acceleration of biological science capabilities and the risk that these capabilities may cause the inadvertent or intentional release of pathogens
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“With patterns of global travel and trade, disease can spread nearly anywhere within 24 hours,” Dr. Frieden said. “That’s why the ability to detect, fight, and prevent these diseases must be developed and strengthened overseas, and not just here in the United States.”

The threat from measles would be far greater were it not for the vaccine and the man who played a major role in creating it, Samuel L. Katz, M.D., emeritus professor of medicine at Duke University. Today, CDC is honoring Dr. Katz 50 years after his historic achievement. During the ceremony, global leaders in public health are highlighting the domestic importance of global health security, how far we have come in reducing the burden of measles, and the prospects for eliminating the disease worldwide.

Measles, like smallpox, can be eliminated. However, measles is so contagious that the vast majority of a population must be vaccinated to prevent sustained outbreaks. Major strides already have been made. Since 2001, a global partnership that includes the CDC has vaccinated 1.1 billion children. Over the last decade, these vaccinations averted 10 million deaths – one fifth of all deaths prevented by modern medicine.

“The challenge is not whether we shall see a world without measles, but when,” Dr. Katz said.

“No vaccine is the work of a single person, but no single person had more to do with the creation of the measles vaccine than Dr. Katz,” said Alan Hinman, M.D., M.P.H., Director for Programs, Center for Vaccine Equity, Task Force for Global Health. “Although the measles virus had been isolated by others, it was Dr. Katz’s painstaking work passing the virus from one culture to another that finally resulted in a safe form of the virus that could be used as a vaccine.”