

# Healthy Places

## *Solving a Pneumonia Mystery*

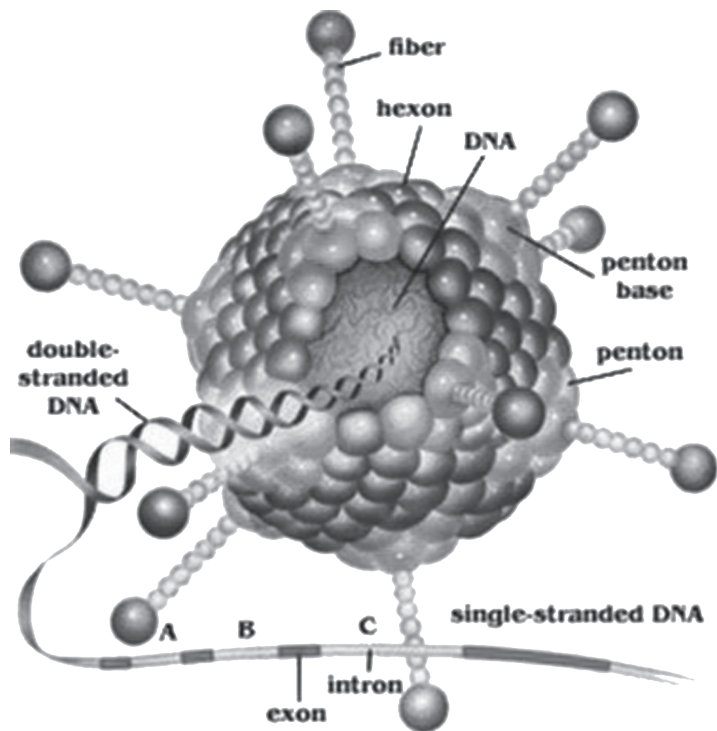
In Rhode Island, two classmates in one elementary school (designated the index school) and a child in a second school were diagnosed with encephalitis in late December 2006; one of these students from the index school later died. At the same time, these schools as well as two neighboring schools reported an unusually high number of children with pneumonia. In response, the Rhode Island Department of Health invited CDC Epidemic Intelligence Service Officers as well as epidemiology and laboratory staff to help identify the origin of the outbreak and recommend ways to stop it.

Field epidemiology and extensive specimens determined that the outbreak was caused by *Mycoplasma pneumoniae*, a small, highly infectious bacterium that is a common cause of mild pneumonia but occasionally causes severe pneumonia and encephalitis. Among the four schools reporting pneumonia cases, 76 children were infected. To stop ongoing transmission, students at the index school and their household contacts were offered preventive antibiotics. We disseminated materials for school hand hygiene and cough-etiquette campaigns. Alcohol-based hand sanitizing dispensers were installed in all schools in the state. These and other measures helped reduce ongoing transmission of mycoplasma as well as other pathogens during the peak respiratory illness season.



## Learning from an Outbreak of Human Adenoviruses

Among infants and young children, human adenoviruses are a frequent cause of mild gastroenteritis, conjunctivitis, and illnesses of the upper respiratory tract. Adenoviruses are generally rare among adults, but severe respiratory infections can afflict immunocompromised adults, those with underlying respiratory or cardiovascular disease, and, in particular, healthy military recruits, who are at greater risk due to the crowding and stress of basic training.



In 2007, several outbreaks of severe respiratory disease associated with a rare adenovirus (HAd14) occurred in the United States. While the settings varied—the general population in Oregon, a psychiatric unit in Washington State, a military base in Texas—all were characterized by severe febrile respiratory illness. Overall, eight deaths were reported, some among previously healthy young adults. In addition, retrospective review found an infant who died of HAd14-associated pneumonia in New York City in 2006. In response, NCIRD partnered with the U.S. Air Force and state public health departments in New York, Oregon, Texas, and Washington State to investigate the outbreaks and provide diagnostic and laboratory support. These investigations aimed to better characterize the virus that caused the outbreaks—learning how it was transmitted and the spectrum of illness caused by infection—and to help design control measures to prevent its spread.

Molecular biological investigations at a CDC laboratory found the same strain of HAd14 in all the outbreak sites, and suggested that a newly emerged strain of HAd14 accounted for the outbreak.

In collaboration with the Walter Reed Army Institute of Research, NCIRD is continuing to study whether antibodies to other HAdVs will cross-protect against HAd14. Results of these efforts will inform further development of adenovirus vaccines as well as future outbreak identification and control efforts.

# Examining Norovirus Outbreaks

In late 2006 and early 2007, several state health departments reported what they believed to be an increase in the number of outbreaks of acute gastroenteritis (AGE), especially those involving person-to-person transmission in long-term care facilities. In just three states—New York, North Carolina, and Wisconsin—there were more than 15,000 cases of gastroenteritis reported among patients and staff of these facilities. NCIRD undertook a comprehensive, multi-state investigation of the situation.

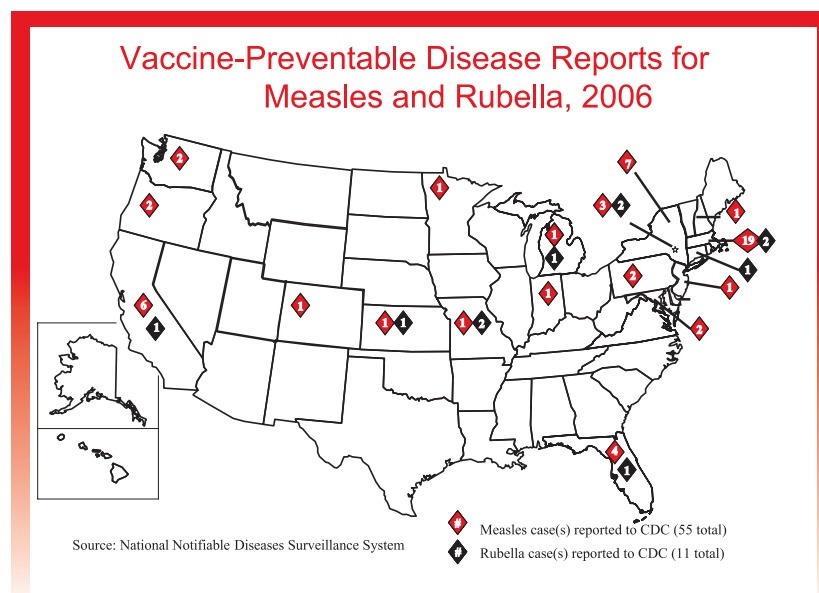
NCIRD examined outbreak data from a multitude of sources, including two dozen state health departments, while CDC laboratories tested hundreds of stool samples from across the country for the presence of norovirus—the most common cause of sporadic cases and outbreaks of AGE. The final analysis suggested that there had been a significant increase in the frequency of AGE outbreaks nationwide, particularly in nursing homes, and that this increase had been caused by two new strains of norovirus. Going forward, we will continue working to improve national outbreak surveillance, rapid laboratory assays, and a norovirus sequence database (CaliciNet) to help identify emerging norovirus strains and more accurately assess their threat to the public's health.

# Keeping the United States Free of Measles and Rubella

Indigenous measles and rubella were declared eliminated in the United States in 2000 and 2004, respectively. These remarkable successes were achieved through sustained high vaccination rates among children, effective surveillance, and prompt outbreak response. Measles and rubella remain common in many parts of the world, however, travelers carrying these diseases pose an ongoing challenge to the United States. Substantial public health resources are required for investigating and controlling even small outbreaks.

There were 30 reported cases of measles nationwide in 2007, including an outbreak in which the first case-patient was a 12-year-old Japanese baseball player taking part in the Little League World Series in Pennsylvania. During the same time period, 11 cases of rubella were reported, including a three-case cluster among foreign-born college students in Michigan.

Together with local and state health departments, CDC will continue working to prevent imported virus strains from gaining a foothold in the United States by ensuring high usage of the measles-mumps-rubella vaccine, conducting surveillance activities to quickly identify cases of measles and rubella, and responding to individual cases or outbreaks of these diseases.



# Immunization Education and Training: Meeting the Needs of Tomorrow

## Education and training for healthcare professionals

- NCIRD delivered **119 in-person presentations** to **14,465 healthcare providers**. Other training included nine netconferences, six satellite broadcasts, and two new web-based modules.
- **More than 21,000 healthcare professionals** were awarded continuing education credits for participating in training programs. Despite a six-month warehouse shutdown, the NCIRD Resource and Information Center distributed approximately **310,000 publications** as well as **14,000 CD toolkits** on vaccine storage and handling.
- NCIRD staff responded to approximately **5,700 immunization-related e-mail inquiries** from healthcare professionals.
- A 2007-2008 **Influenza Vaccine Production and Distribution vodcast** was created to acquaint healthcare providers, public health partners, and others with the vaccine manufacturing process.

## Epidemiology training takes new course

For more than 25 years, CDC has presented live epidemiology training sessions related to vaccine-preventable diseases for healthcare professionals. Since 1995, this comprehensive, four-part course on immuniza-

tion and vaccine-preventable diseases has been broadcast nationwide via satellite; with 5,000-10,000 healthcare providers participating in each broadcast, the program has become the backbone of CDC's immunization training curriculum over the last decade. Its success has spawned additional training broadcasts on a host of issues, including disease surveillance, pandemic influenza preparedness, and vaccine safety.

In 2007, NCIRD presented the epidemiology course as a live satellite broadcast for the last time. Beginning in 2008, the program will be delivered exclusively in the form of archived webcasts and DVDs. These new formats will provide increased flexibility for participants, who will be able to access curricula at their convenience—and still earn continuing education credits.



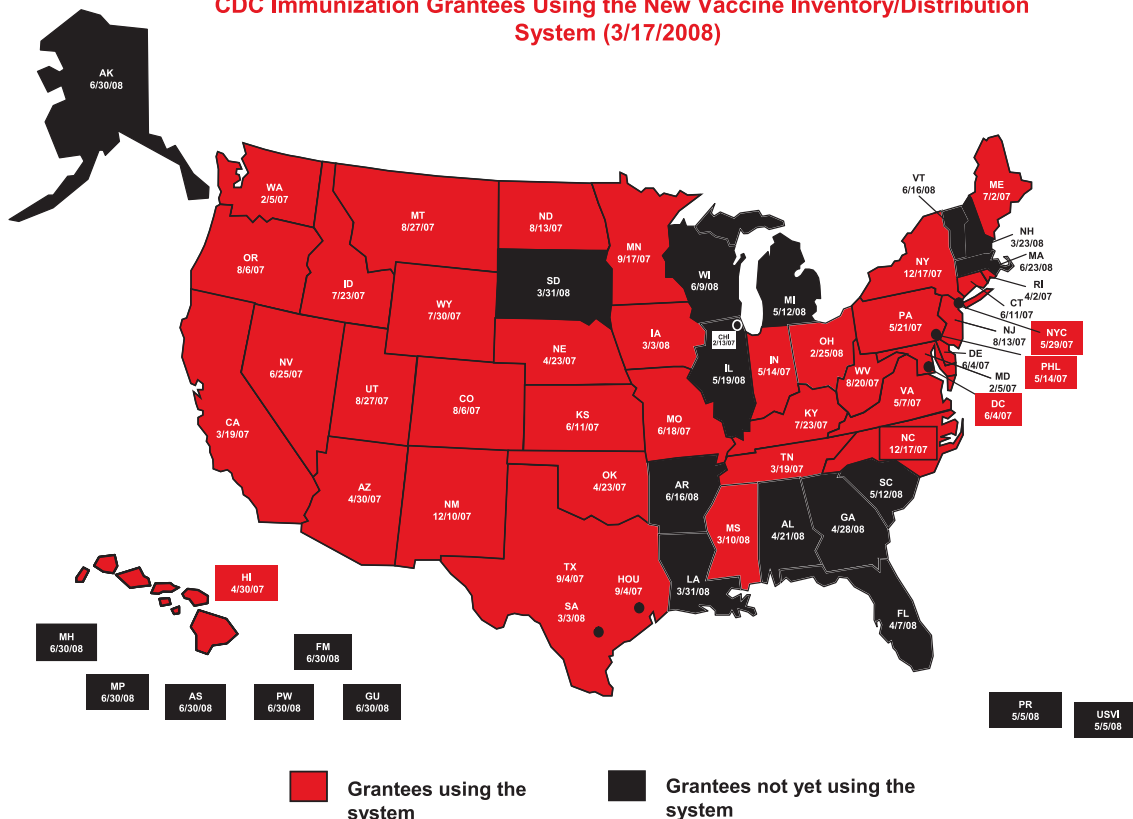
# Making Vaccines More Accessible

Throughout 2007, NCIRD worked to improve how vaccines are ordered and distributed throughout the United States. From producers to providers to patients themselves, these innovative new processes will create long-term benefits up and down the vaccine supply chain.

In September 2006, we began creating a consolidated national system to more efficiently inventory and distribute publicly purchased vaccines. Relying on a single, centralized distributor and a network of existing vaccine depots—facilities used to store and ship vaccines at the state or local level—this system will also improve CDC’s ability to gather information on inventory and distribution, down to the provider level. By November 2007, more than half (34) of CDC’s 64 immunization program grantees—including state and territorial health departments as well as selected metropolitan departments—were using the new system. In addition, the system has been able to reduce the number of depots by 36%, further improving distribution efficiency.

The way healthcare providers order vaccines is also changing. NCIRD is developing a centralized vaccine ordering system called the Vaccine Tracking System, or VTrckS, that will greatly simplify and streamline the way providers place orders. While these orders are being processed, VTrckS will enable NCIRD to track which vaccines are being used across the country. Not only will the system help to more accurately forecast future vaccine needs and potential changes in program cost, it will be ready on a moment’s notice to assist in any future pandemic response.

**CDC Immunization Grantees Using the New Vaccine Inventory/Distribution System (3/17/2008)**



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