Epidemiology Matters:

CDC Keeps America Healthy, Safe, and Secure

CDC's epidemiologists do life-saving work to investigate, prevent, and stop dangerous diseases. They collect and study data in order to find the causes of disease outbreaks. This helps CDC prevent or respond to future threats to Americans' health.

Case Study: Fort Leonard Wood

In February 2009, CDC epidemiologists investigated a disease outbreak that led to 2 fatalities at the Fort Leonard Wood (FLW) Army training center in Missouri. After visiting the training center and interviewing trainees and staff, CDC investigators were able to identify the cause of the outbreak. They also helped trainees and staff take steps to prevent further cases of the infection.

What happened at Fort Leonard Wood?

When 2 previously healthy Army trainees contracted pneumococcal meningitis and died, CDC epidemiologists went to work. Pneumococcal meningitis ("noom-uh-KA-kuhl MEN-in-JIE-tis") is an infection that causes swelling and inflammation of the membranes covering the brain and spinal cord.

How did CDC investigate the outbreak?

CDC's epidemiologists begin their research by gathering facts about the community where the outbreak is happening. In this case, it was the Alpha Company of the 554th Battalion at FLW.

Disease Detectives

Epidemiology is the study of the origin and causes of diseases in a community. CDC's disease detectives — scientists, statisticians, health care providers, and public health professionals — use this scientific method to investigate health problems and disease outbreaks.

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America Needs a Strong CDC

CDC is on the cutting-edge of health security and works 24/7 to safeguard America's health. For more information on epidemiology and the life-saving work of the CDC, visit **www.cdc.gov** or call **1-800-CDC-INFO**.

CDC collected information including:

- The number of trainees in the Alpha Company (303)
- Which routine vaccinations trainees and staff had received
- Housing and training arrangements for different companies in the 554th Battalion
- The number of cases of pneumonia at FLW during the time of the outbreak

CDC also interviewed trainees and staff to gather:

- Demographic information
- Information about any symptoms they were having
- Medical history data
- Influenza vaccine (flu shot) status
- Nasal and throat swabs from certain individuals

After the data were collected, the epidemiologists created a database with the information. They analyzed the data to find out which characteristics were associated with the infection.

What did CDC investigators discover?

The epidemiologists identified no additional cases of pneumococcal meningitis infection during the investigation period (February 1–21, 2009). They did identify 72 cases of pneumonia among the trainees.

The investigators found no association between trainees getting sick and having any of these risk factors:

- Taking antibiotics
- Living in a room with more than 4 trainees
- Smoking
- Showing one or more illness symptoms
- Living on any particular floor of the barracks

What did CDC do to prevent more cases of the disease?

Epidemiologists were able to stop the FLW outbreak by:

- Giving vaccinations and antibiotics to trainees and staff
- Teaching better hand hygiene (hand washing) and cough etiquette (like coughing into a tissue)

The information gained from this investigation helped CDC improve outbreak detection and timely response at FLW and other military training installations. CDC also determined that new vaccines might provide additional opportunities to reduce pneumonia among military trainees in the future.

Reference: Dawood et al.: Outbreak of Pneumonia in the Setting of Fatal Pneumococcal Meningitis among US Army Trainees: Potential Role of Chlamydia pneumonia Infection. BMC Infectious Diseases 2011 11:157

CDC's epidemiologists prevent and stop dangerous diseases.