

AMD Projects

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CDC's Advanced Molecular Detection (AMD) initiative fosters scientific innovation to transform public health and protect people from disease threats.

AMD Projects: Attacking Legionnaires' Disease

Rapid molecular detection of *Legionella* for outbreak response

First discovered in 1976 at an American Legion convention in Philadelphia, Pennsylvania, Legionnaires' disease continues to cause outbreaks in the United States. Even though it is a leading cause of waterborne outbreaks in this country, reliable, rapid, and consistent analysis techniques have not been developed.

Available techniques to determine the most likely source of transmission require matching clinical and environmental samples and can be used for only 1 of 60 species of *Legionella*. Right now, it can take more than 3 weeks to isolate and characterize the bacterium, if a specimen is even collected from a patient. These hurdles leave many cases and outbreaks uncharacterized. State and local health departments rely on CDC laboratories because they do not have the specialized skills and extensive funding required to analyze *Legionella* specimens.

CDC is creating a database of *Legionella* genomes that will improve capacity for identifying outbreak-causing strains so that isolating the bacteria from samples may no longer be necessary.

These new laboratory techniques will revolutionize how assessments are made about the source of disease transmission, which is the cornerstone of controlling *Legionella* outbreaks. Rapid identification of a source will allow faster implementation of prevention efforts. This project will help streamline standard operating procedures for state and local laboratories, assisting state health departments in investigating their own outbreaks and leading to quicker public health response.



Most people with Legionnaires' disease will have pneumonia (lung infection) since the Legionella bacteria grow and thrive in the lungs. Pneumonia is confirmed either by chest x-ray or on physical exam.

