

# AMD Projects

Innovate • Transform • Protect

[www.cdc.gov/amd](http://www.cdc.gov/amd)

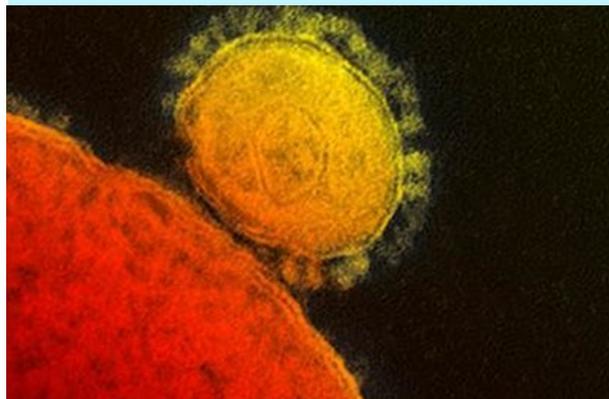
CDC's Advanced Molecular Detection and Response to Infectious Disease Outbreaks (AMD) initiative fosters scientific innovation to transform public health and protect people from disease threats.

## AMD Projects: Identifying the Unknown

### Using targeted and metagenomic sequencing to identify and characterize pathogens in unknown respiratory disease outbreaks

Coughing? It could be whooping cough, the flu, pneumonia, or a slew of other respiratory illnesses. Sometimes during outbreaks it's not so easy for medical or public health professionals to diagnose respiratory illnesses quickly. This is why CDC brings together highly skilled epidemiology and laboratory respiratory experts to form the Unexplained Respiratory Disease Outbreaks (URDO) work group. CDC epidemiologists look at the characteristics of the disease and patterns of an outbreak. CDC laboratory scientists help solve the mystery by identifying the pathogen causing an outbreak. But, there is a problem. Current diagnostic techniques can be slow and not as completely informative, slowing down an effective response to the outbreak.

CDC is developing a new tool to help laboratory scientists quickly identify which germ—including new or rare ones—is causing an outbreak. With targeted sequencing analysis, scientists will identify and characterize pathogens in respiratory specimens from URDO responses. They hope to also determine the specific strain responsible for an outbreak and whether or not that strain is resistant to antibiotics.



*New coronaviruses can appear unexpectedly in different parts of the world, causing outbreaks of respiratory illness. Identifying and stopping respiratory threats quickly increases global health security.*



By using a single method, in this case a testing “chip” containing thousands of short strands of genetic material (primer panels) that help start DNA replication, CDC will be able to identify the cause of a respiratory outbreak faster. This will allow for implementation of timely and effective prevention and control strategies to protect people’s health.

---

For more information on Unexplained Respiratory Disease Outbreaks, please visit the CDC website, <http://emergency.cdc.gov/urdo>.



## 2015 Update

In the first year, project investigators have been working to perfect specific primer panels for the testing chip. So far, primer panels have been successfully developed to identify *Mycoplasma pneumoniae*, Influenza A, and Respiratory Syncytial Virus (RSV), as well as determine certain strains of *Legionella pneumophila* and *Streptococcus pneumoniae*. Research continues to develop primer panels that are able to detect resistance to antiviral medication in Influenza H3N2. So far, primer panels have been perfected for three different germs and researchers are working to perfect at least 12 more.