

Severe Respiratory Illness Associated with a Nationwide Outbreak of Enterovirus D68 – United States, 2014

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Summary: A CDC disease detective investigated the largest reported national outbreak of EVD68 to better understand who was most affected. Most of the patients hospitalized with respiratory disease were children and many had a history of asthma; more than half required intensive care.

Abstract:

Background: Enterovirus D68 (EV-D68) has been infrequently reported historically, and is typically associated with isolated cases or small clusters of respiratory illness. Epidemiologic information and clinical characteristics have been limited. Beginning in August 2014, increases in severe respiratory illness associated with EV-D68 were reported.

Methods: We collected regional syndromic surveillance data from Missouri, Illinois and Colorado, and hospital admissions data from one hospital in each of these states. Respiratory specimens from hospitalized patients nationwide, most of whom were identified as rhinovirus- or enterovirus positive in hospitals, were submitted and typed by molecular sequencing. We collected clinical and epidemiologic characteristics of EV-D68 cases using a standard patient form submitted with each specimen. We used Mantel-Haenszel chi-square tests to compare patients requiring intensive care with those who did not.

Results: During August – September, 2014, syndromic surveillance and hospital-level data from Missouri, Illinois and Colorado demonstrated increases in respiratory illness compared to the previous two years. EV-D68 was detected in 45% (707/1568) respiratory specimens collected nationwide. Patient forms were available for 484 hospitalized patients; 92% were under 18 years. Reported symptoms included dyspnea (83%), cough (79%), wheezing (68%), and fever (47%). Most patients (64%) required intensive care. Forty eight percent had a history of asthma or reactive airway disease (asthma/RAD); 70% of patients with an asthma/RAD history required intensive care, compared to 58% of those with no asthma/RAD history ($p=0.013$).

Conclusions: EV-D68 may cause widespread, severe respiratory illness. Increased disease severity in asthmatics highlights the importance of regular assessment of asthma management plans. Maintaining preparedness for emerging respiratory diseases requires clinician awareness, robust, flexible surveillance systems and laboratory and epidemiology capacity at all levels of public health.