

Resource Burden at Children's Hospitals Experiencing Surge Volumes during the Spring 2009 H1N1 Influenza Pandemic

Date:

Feb 2011

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OBJECTIVES: The objective was to describe the emergency department (ED) resource burden of the spring 2009 H1N1 influenza pandemic at U.S. children's hospitals by quantifying observed-to-expected utilization.

METHODS: The authors performed an ecologic analysis for April through July 2009 using data from 23 EDs in the Pediatric Health Information System (PHIS), an administrative database of widely distributed U.S. children's hospitals. All ED visits during the study period were included, and data from the 5 prior years were used for establishing expected values. Primary outcome measures included observed-to-expected ratios for ED visits for all reasons and for influenza-related illness (IRI).

RESULTS: Overall, 390,983 visits, and 88,885 visits for IRI, were included for Calendar Weeks 16 through 29, when 2009 H1N1 influenza was circulating. The subset of 106,330 visits and 31,703 IRI visits made to the 14 hospitals experiencing the authors' definition of ED surge during Weeks 16 to 29 was also studied. During surge weeks, the 14 EDs experienced 29% more total visits and 51% more IRI visits than expected ($p < 0.01$ for both comparisons). Of ED IRI visits during surge weeks, only 4.8% were admitted to non-intensive care beds (70% of expected, $p < 0.01$), 0.19% were admitted to intensive care units (44% of expected, $p < 0.01$), and 0.01% received mechanical ventilation (5.0% of expected, $p < 0.01$). Factors associated with more-than-expected visits included ages 2-17 years, payer type, and asthma. No factors were associated with more-than-expected hospitalizations from the ED.

CONCLUSIONS: During the spring 2009 H1N1 influenza pandemic, pediatric EDs nationwide experienced a marked increase in visits, with far fewer than expected requiring nonintensive or intensive care hospitalization. The data in this study can be used for future pandemic planning.

Journal:

[Academic Emergency Medicine](#)

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