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Identification of a measles case using syndromic surveillance in Salt Lake County, Utah

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Objective

To detect measles cases during an outbreak using syndromic surveillance.

Introduction

In March–April 2011, Salt Lake Valley Health Department (SLVHD) investigated an outbreak of measles (N = 9) resulting from a single imported case from Europe. Syndromic surveillance was used to identify measles-like illness (MLI) and enhance early case detection, which is crucial for proper public health intervention (1).

Methods

Daily text-based chief complaint data, March 23–May 5, 2011, from 15 syndromic sites were obtained from EpiCenter (2) (funds provided by Utah Department of Health), mapped to 5 MLI syndromes (Table 1) and summarized using the Early Aberration Reporting System (EARS) (3). Events of interest included all 'rash' events that contributed to an alert or had a concerning chief complaint (e.g., eye pain), all 'febrile rash' events that had a concerning chief complaint, all 'prodrome' events that had a concerning chief complaint, all 'case definition' events April 7, 2011 onward (date after which public health intervention was still possible) and all 'measles/testing' events. Visit notes, laboratory tests and results were obtained daily for each event of interest and reviewed for MLI. Summary findings, including diagnoses, laboratory results, rash descriptions and suspect exposures, were documented and non-MLI events were ruled out. Events of high suspicion for measles were further investigated via patient interview by phone and/or home visit.

Results

Ninety-seven events of interest (of 2365 events captured in MLI syndromes) were identified: 32 rash, 58 febrile rash, 1 prodrome, 12 case definition and 8 measles/testing (14 were categorized in > 1 syndrome). Eighty-four events of interest were ruled out based on chart findings. Thirteen events of high suspicion for measles required further investigation. Twelve events were ruled out based on negative measles IgM results, evidence indicating other diseases (fifth disease and Kawasaki syndrome), vaccine reaction or inaccurate documentation of clinical symptoms. One event was found to be confirmed by positive measles IgM (Fig. 1).

Table 1. Measles-like illness (MLI) syndrome definitions

Syndrome	*Definition*
Rash	Rash and not chronic and not pregnancy and not medications and not exclude
Febrile rash	Fever and rash
Prodrome	Fever and (malaise or cough or runny nose or conjunctivitis)
Clinical case definition	Fever and rash and (cough or runny nose or conjunctivitis)
Measles/ testing	Measles

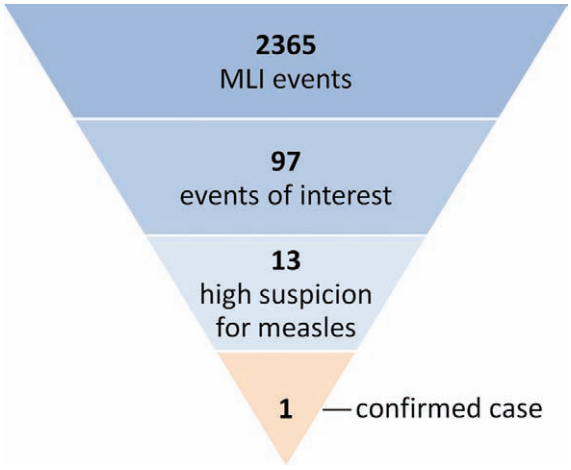

Fig. 1. Identification of 1 confirmed case of measles from 2365 measles-like illness (MLI) syndromic events.

Conclusions

Early identification of a measles case using syndromic surveillance during an outbreak was crucial in reducing contact exposures, preventing additional cases and reducing the cost associated with proper public health intervention. We estimate that early detection of the remaining 8 confirmed cases by syndromic surveillance could have reduced the direct cost of the outbreak by 82%. Syndromic surveillance played a significant role in curtailing the outbreak as a valuable tool to supplement active surveillance.

Keywords

Measles; syndromic surveillance; early detection; outbreak; cost

References

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