Cost savings of using an IIS to assess immunity status during an outbreak

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Background

Minnesota Immunization Information Connection (MIIC)

- Minnesota's statewide immunization information system (IIS)
- Created in 2002
- 9 million clients
- 93 million immunizations
- 93.5% of clients ages 4 months through 5 years have 2+ non-flu vaccinations

Measles Outbreak 2017

- April – August 2017
- 75 cases
- Several thousand exposures
- MIIC played important role

MIIC and Child Cares

- 8,500 exposures in child care and school settings
- MN State Law requires centers to have vaccination records or legal exemptions on file for attendees
- MDH staff found poor record-keeping
- To assess vaccination status:
  - Primary method: MIIC
  - Back-up method: provider follow-up calls

Usefulness of MIIC During Outbreak

How can we quantify the resource savings of MIIC during the 2017 measles outbreak?

Objective

Quantify the resource savings of MIIC to determine immunity status in a child care center setting during the 2017 measles outbreak.

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Methods

Data Sources

- Child care center exposure list (N = 1,251)
- Salary type

Position	Hourly Rate
MDH Epidemiologist[1]	$26.18
National Epidemiologist[2]	$32.69
National Registered Nurse (RN)[2]	$33.60

- Time spent actively determining vaccination status
  - MIIC look-up (5 min. or 0.083 hours)
  - Provider follow-up (60 min. or 1 hour)

[1]Minnesota Association of Professional Employees 2015-17 Pay Grid
[2]Bureau of Labor Statistics, May 2016

Scenarios

Scenario	Description
No IIS	Staff made calls to providers for all attendees to determine MMR vaccination status.
IIS	Staff found all attendees in MIIC and used history to determine MMR vaccination status
90% IIS	• Staff found 90% of attendees in MIIC and used history to determine MMR vaccination status. • Staff made calls to providers for remaining 10% of attendees to determine MMR vaccination status.

Resource Analysis

- Calculated total time for each scenario
- Calculated total cost for each position in each scenario

	No IIS Time	IIS Time	90% IIS Time
MDH Epidemiologist Salary	$	$	$
National Epidemiologist Salary	$	$	$
National RN Salary	$	$	$

- Estimated resource savings
  - Actual differences: time, cost by salary type
  - Percentage change
  - No IIS scenario as reference

Results

Total Resources

- Time (hours):

Scenario	Time
No IIS	1,251
IIS	104
90% IIS	219

- Cost (USD):

Scenario	MDH Epidemiologist Cost
No IIS	$32,751.18
IIS	$2,729.27
90% IIS	$5,731.46

Resource Savings

Comparison	Time Saved (Hours)	Cost Saved (USD): MDH Epidemiologist
IIS vs. No IIS	1,147	$30,021.92
90% IIS vs. No IIS	1,032	$27,019.72

- IIS results in 92% fewer resources used than No IIS
- 90% IIS results in 82% fewer resources used than No IIS

Conclusions

Summary

- Use of IIS during outbreaks saves substantial time and costs
- IIS is important tool in public health outbreak response
  - Identifying vaccination status
  - Implementing exclusion or post-exposure prophylaxis
- Use of IIS helps shorten outbreaks
- IIS participation among providers is vital

Limitations

- Excluded costs associated with IIS maintenance
- Didn’t account for:
  - MIIC user experience variation
  - Provider follow-up variation
  - Communication delays
- Only three scenarios

Future Steps

- Promote findings among Minnesota Department of Health staff and key stakeholders
- Explore ways to quantify other uses of IIS
- Use results to promote MIIC use in Minnesota

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