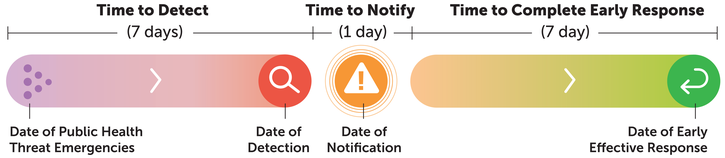
Using 7-1-7 outbreak timeliness metrics to evaluate school-related outbreak responses in Pima County, AZ

By: Tyler Baccam, MS, Eleana Acosta Zavala, MBBS, CIC
Pima County Health Department,
Tucson, AZ

PIMA COUNTY HEALTH DEPARTMENT

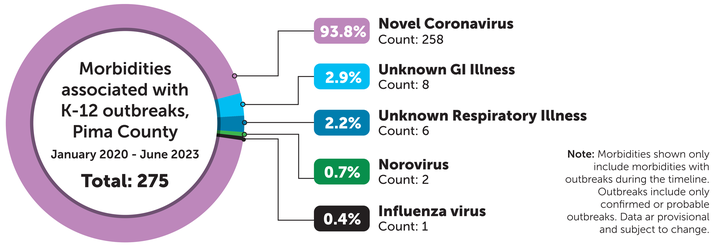
BACKGROUND

Pima County is located in the south-central region of the United States, in Arizona and is home to 1,043,433 residents (2020 census). The Pima County Health Department (PCHD) and its partners are committed to improving the health status of our community through the integration of public health principles and epidemiology. PCHD collaborated with Resolve to Save Lives and developed a monthly report to evaluate 7-1-7 metrics and outbreak response timeliness for local school-related outbreaks. Pima County has over 315 public, charter, and private K-12 schools, who reported a total of 278 total outbreaks from January 2020 to June 2023.



7-1-7 Implementation Toolkit - 7-1-7 Alliance. (2024, January 15). 7-1-7 Alliance. https://717alliance.org/digital-toolkit/

Pima County Outbreaks in K-12 Schools by Morbidity, January 2020 – June 2023



Note: Morbidities shown only include morbidities with outbreaks during the timeline. Outbreaks include only confirmed or probable outbreaks. Data ar provisional and subject to change.

RESULTS

7-1-7 Metrics

Median response time in days and percentage of outbreaks that met each timeliness goal

TYPE OF EVENT	DETECT	NOTIFY	RESPOND	ALL TARGETS
All school outbreaks (N=275)	MEDIAN: 7 Days	MEDIAN: 7 Days	MEDIAN: 0 Days	MEDIAN: –
	% MET TARGET: 52%	% MET TARGET: 11%	% MET TARGET: 96%	% MET TARGET: 13%
Respiratory illness (N=259)	MEDIAN: 7 Days	MEDIAN: 7 Days	MEDIAN: 0 Days	MEDIAN: –
	% MET TARGET: 51%	% MET TARGET: 10%	% MET TARGET: 97%	% MET TARGET: 11%
Gastrointestinal illness (N=10)	MEDIAN: 5.5 Days	MEDIAN: 0 Days	MEDIAN: 5.5 Days	MEDIAN: –
	% MET TARGET: 80%	% MET TARGET: 100%	% MET TARGET: 67%	% MET TARGET: 70%

BOTTLENECKS AND ENABLERS

	PREVENTED Timely Action	FACILITATED Timely Action
DETECTION	• Lack of capacity at the schools to identify illness trends • Lack of clearly identified outlines for reporting to public health • High turnover of health office staff	• Surveillance system • Good relationships with school partners
NOTIFICATION	• Delay in communication, inappropriate communication routes • Changes in reporting tools • Technology barriers • Nature of illness/symptoms may contribute to delays	• Clear and multiple channels of communications - meeting • Multiple levels of accountability • Acknowledgement of responses
RESPONSE	• Lack of response (lost to follow up) • Contact tracing was difficult and very time consuming (duplicate processes) • Community hesitancy misinformation and trust issues • Coordination for control measures	• Pooled testing for COVID-19 • Prepackaged protocol/ response plans for schools to implement

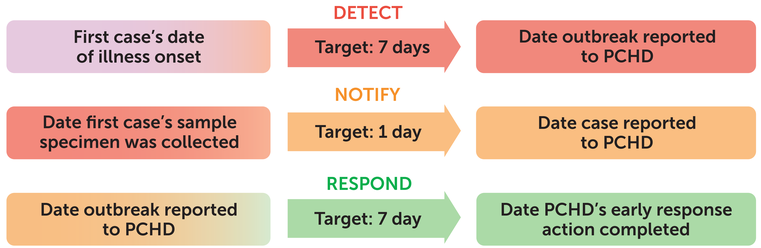
ACTIONS AFTER 7-1-7 ANALYSIS

- Enhanced communication channels within PCHD teams, including Epidemiology, Schools Teams, and Preparedness and Response Teams.
- Included 7-1-7 Metrics in Outbreak Surveillance Reports.
- Developed documentation tools to measure the 7-1-7 metrics for all communicable outbreaks.
- Standardized the process for reporting outbreaks and requesting resources for schools (as needed).
- Maintained response capacity by appropriately staffing epidemiology team to provide timely outbreak response.

METHODS

- Data for all school-related outbreaks in Pima County from January 2020 – June 2023 was collected retrospectively through Arizona's Medical Electronic Disease Surveillance Intelligence System (MEDSIS).
- Quantitative data regarding time to detection, notification, and initial effective response were compared with the 7-1-7 timeliness metrics according to locally-tailored definitions
- Analysis of school outbreaks was further categorized into respiratory and gastrointestinal illness (GI) outbreaks t assess if there are morbidity-based differences in timeliness.
- Through a 7-1-7 Interdisciplinary Workshop with PCHD's Epidemiology Division and Youth and School Communities Program, bottlenecks and enablers were identified, and actionable goals were set for PCHD to improve school outbreak response.

7-1-7 Data definitions (MEDSIS)



ACKNOWLEDGEMENT

This work was conducted by the Pima County Health Department Epidemiology Division in partnership with the Youth and School Communities Program. We thank Resolve to Save Lives for their support and resources with the 7-1-7 metrics, and Andrew Gall for his guidance and contributions.