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Using Sentinel Surveillance to Rapidly Assess Critical Care Capacity During Fall 2009 H1N1 Influenza Pandemic, Washington

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H1N1 Influenza Pandemic

- Unique challenges of pandemic
- Pandemic response requires timely information on medical resource usage
- Decentralized US and State system

Critical Care Capacity Project

- Project goal: Obtain real-time data on critical care resource utilization during pandemic
- Although other agencies developing systems, no existing data source that met needs

Critical Care Capacity Project (2)

- Partnership between Washington State Hospital Association (WSHA) and Washington State Department of Health (DOH)
- WSHA has existing web-based data collection system in most/all acute care hospitals (QBS)

Methods

- Recruitment of geographically representative hospitals with intensive care units in Washington State
- Data tracked from Nov 6, 2009-Jan 25, 2010

Methods (2)

- Daily entry of 6 data elements:
 - Number of CC beds and ventilators available
 - Number in use
 - Number used for severe acute respiratory infection (SARI)
- Data compared to influenza-associated deaths and critical care (CC) hospitalizations in PHIMS

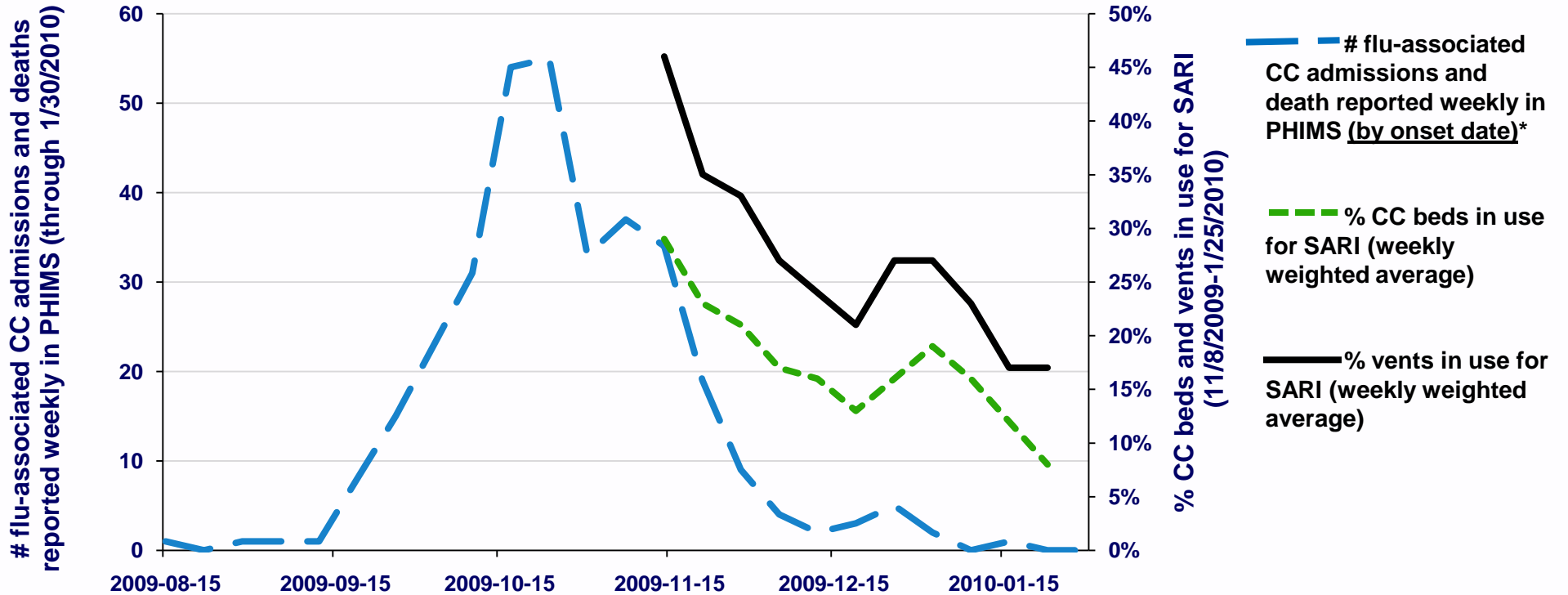
Results

- Of 20 hospitals solicited ,17 (85%) participated (median daily reporting 11, range 5-17)
- Percent of critical care beds used daily for SARI ranged 1-33%
- Percent of ventilators used daily for SARI ranged from 9-57%

Results (2)

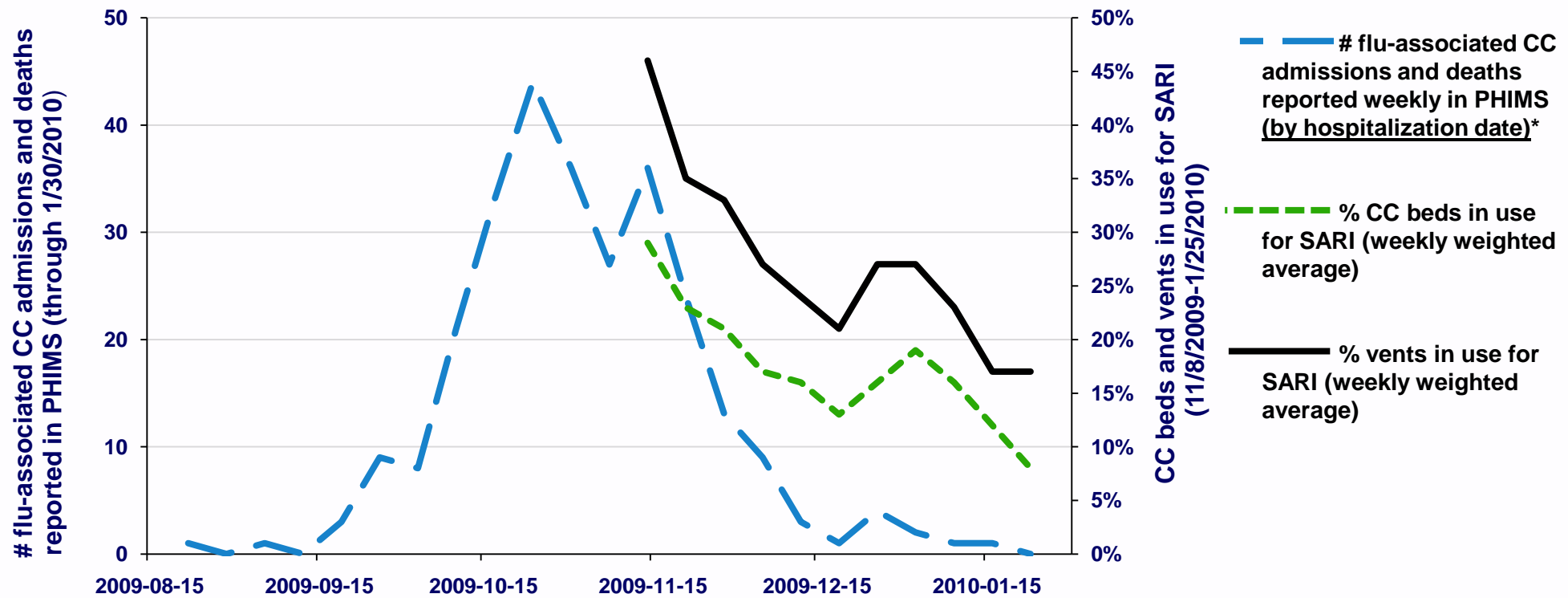
- In PHIMS, 339 critical care admissions and deaths due to influenza from 9/20/2009-1/31/2010
- PHIMS cases reported a median of 4 days after hospital admission (IQR 2-7)

Number of influenza-associated critical care admissions and deaths in PHIMS by date of onset and percent CC beds and ventilators in use for “Severe Acute Respiratory Infection” reported in QBS



* 339 PHIMS cases with onset date

Number of influenza-associated critical care admissions and deaths in PHIMS by hospitalization date and percent CC beds and ventilators in use for “Severe Acute Respiratory Infection” reported in QBS



*277 PHIMS cases with hospitalization date

Results (3)

- High correlation between % CC beds and vents in use for SARI reported in QBS and influenza-associated CC hospitalizations and deaths in PHIMS
 - PHIMS flu CC admits & deaths-% CC beds for SARI
corr 0.87
 - PHIMS flu CC admits & deaths-% vents for SARI
corr 0.92

Conclusions

- Sentinel critical care resource system was:
 - Rapidly implemented
 - Required little training
 - Provided real-time data regarding critical care resource utilization
 - High correlation with PHIMS validated sentinel system

Conclusions (2)

- Limitations of sentinel system:
 - Variation in daily reporting
 - Variable motivation of reporters
 - Not representative of all LHJs
 - Hospitals had competing requests for data
 - Biases of sentinel surveillance

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