

## Collaborative Epidemiological Investigations of Novel Influenza A (H1N1) in San Antonio, Texas – April-May, 2009

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## Background

- DSHS requested assistance from CDC on April 24, 2009
- Team deployed on April 25, 2009
  - 6 epidemiologists in San Antonio
  - 2 epidemiologists in Austin
- Two additional epidemiologists deployed to San Antonio on April 29 & 30, 2009
- Objectives:
  - Describe the outbreak
  - Characterize transmission in different settings
  - Assess performance of rapid diagnostic tests



## Investigations

- Analysis of ILI surveillance data
- Estimate secondary household attack rates
- Investigate healthcare worker infection risk
- Assess viral shedding
- Conduct school survey
- Measure performance of rapid antigen tests

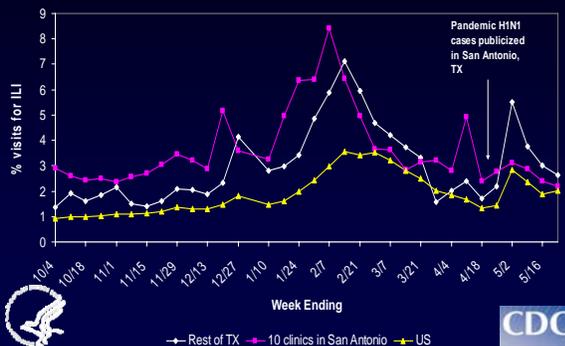


## ILI Surveillance in San Antonio, Texas, and USA

- Assessed changes in the proportion of clinic visits for ILI during the outbreak of novel A (H1N1)
  - San Antonio – 10 TexasMed clinics
  - Texas – sentinel surveillance data
  - US – ILINet data



The percent of clinic visits for ILI at 10 Texas MedClinics in San Antonio, the state of TX excluding San Antonio, and USA: October 2008–May 2009



## Estimation of Secondary Household Attack Rate

- Active case finding, April 10 to May 8, 2009
- HSR 8, SAMHD, Comal county
- Multiple data sources
  - Regional public health & DoD Influenza laboratory in San Antonio
  - Telephone interview with children absent from school
  - Tracing close contacts of cases
- Sample collected if ILI symptoms at time of interview
- Index Case
  - Laboratory confirmed, ILI symptoms, Acute respiratory infection



### Secondary Household Attack Rate

- 5% laboratory confirmed novel influenza A (H1N1)
- 10% Influenza-like illness
- 14% Acute respiratory infection



### Healthcare Worker (HCW) Infection Risk

- HCWs from three Texas hospitals with two confirmed novel A (H1N1) inpatients
- Healthcare workers exposed or not exposed to patients
- Exposure defined as within 6 feet
- Modifying risk factors (PPE, antivirals)
- Acute and convalescent blood



### HCW Preliminary Results

- 84 exposed and 89 not exposed
- 73 exposed took oseltamivir prophylaxis median of 4 days (range 1-12 days) after first exposure
- PPE use was low among exposed HCW
  - N95 mask = 56%
  - Surgical mask = 20%
  - No mask = 25%
- Influenza-like Illness
  - 3/84 exposed vs. 0/94 not exposed (p=0.12)
- Serology results are pending

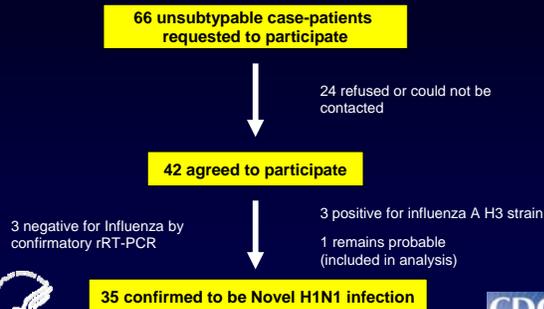


### Viral Shedding

- Serial collection of nasopharyngeal and stool specimens
  - Every other day until day 10 after last fever
  - Two and three weeks after last fever
- Influenza-like illness (ILI) questionnaire at enrollment and with each visit
- Specimen collection and ILI questionnaire
  - Mainly by trained nursing team



### Case Enrollment



### Duration Signs and Symptoms

Sign/Symptom	Range Duration (Days)
Cough	0-21
Runny Nose	0-25
Headache	0-20
Subjective fever	0-11
Documented fever	0-11
Sore throat	0-21
Muscle Ache	0-11
Difficulty breathing	0-13
Rash	0-9
Eye infection	0-10
Seizure	0-1
Diarrhea	0-11
Vomiting	0-11



## Performance of Rapid Antigen Tests

- Collaboration with United States Air Force School of Aerospace Medicine (USAFSAM)
  - Patients presenting with ILI to Air Force clinics in San Antonio area
  - April 1 to June 7, 2009
  - 1,538 nasal wash samples tested by rapid antigen test in clinic and RT-PCR at USAFSAM laboratory
  - QuickVue Influenza A+B (Quidel, San Diego, CA)
- Low sensitivity of rapid tests for seasonal influenza and novel influenza A (H1N1)



## Background

- Web-based survey of a High School in Guadalupe County, Texas (N=2030)
- Household and individual level data
- Objectives:
  - Assess community mitigation and non-pharmaceutical interventions
  - Assess protective effects of 2008-2009 trivalent seasonal influenza vaccine



## Non-pharmaceutical Interventions

- Activities to protect self from becoming ill with pH1N1
  - Over half reported more frequent hand washing
  - About a fifth reported avoidance of ill persons
  - Less than one tenth reported avoidance of crowds
- Activities to protect others from becoming ill with pH1N1
  - About a third reported staying at home
  - About a third reported isolating self
  - About one fifth reported washing hands



## Summary of Findings

- San Antonio experienced a focal outbreak of novel influenza A(H1N1)
- Household attack rates
  - Lower than seasonal influenza
  - Children introduced infection into household
  - Antivirals may have reduced secondary attack rates
- Hospital worker infection risk
  - Little apparent illness among staff exposure to 2 patients in San Antonio
  - PPE use was inconsistent, opportunities for education
- Viral shedding
  - Shedding was prolonged in some patients, up to 3 weeks
  - Viral culture is ongoing to determine infectiousness
- Rapid influenza antigen tests
  - Low sensitivity for diagnosing seasonal influenza A and novel influenza A (H1N1)
- School survey
  - Public health messages received



## Contribution to National Guidance

- Data from Texas is contributing to national guidance
  - Pandemic vaccine strategy
  - Exclusion policies
  - Use of rapid influenza antigen tests



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