

## **Syndromic Surveillance of Pregnancy and Influenza-Like Illness from Emergency Department Chief Complaints, Florida 2008-2009**

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## **Background**

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- New strain of influenza A H1N1 in April 2009
- Severe illness among pregnant women and infants has been reported
- Excess of influenza-associated deaths in pregnant women in 1918 & 1957 pandemics
- Epidemiology among pregnant women not fully understood

CDC. Pregnant Women and Novel Influenza A (H1N1) Virus: Considerations for Clinicians. [http://www.cdc.gov/h1n1flu/clinician\\_pregnant\\_guidance.htm](http://www.cdc.gov/h1n1flu/clinician_pregnant_guidance.htm).



# ESSENCE

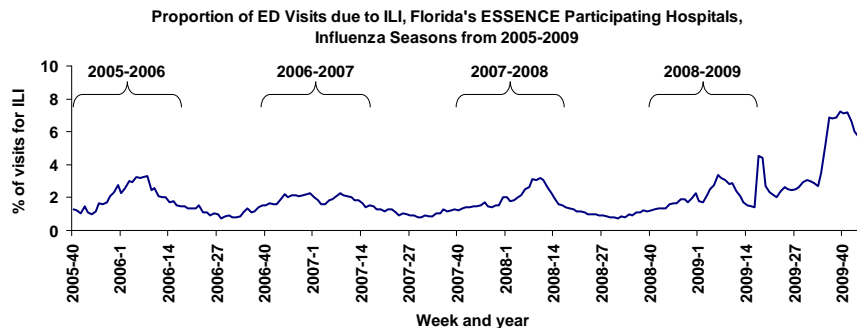
- **Electronic Surveillance System for the Early Notification of Community-Based Epidemics**
  - Web-based, automated electronic data collection
  - Based on emergency department (ED) chief complaint data
  - Chief complaint data is automatically coded into syndrome
  - Free text queries can also be done on chief complaint
- Currently, 132 facilities in FL report to ESSENCE on daily basis
  - >50% of ED visits in FL



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# Influenza-Like Illness (ILI)

- Influenza season is generally considered to be week 40 (early October) to week 20 (mid May)



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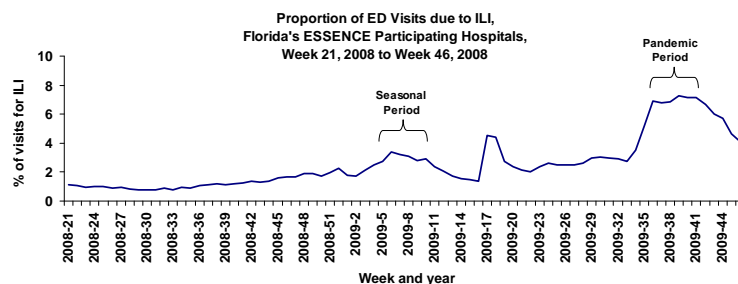
## Objective

- Use ESSENCE to gauge pregnancy and ILI
- Compare 2009 H1N1 influenza pandemic to peak of regular 2008-2009 influenza season
- Stratify by pregnancy status to assess whether pregnant women are disproportionately more likely to visit emergency departments (EDs) with ILI

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## Timeframe

- 6 week intervals serve as exposure variable
  - Exposure period: peak of pandemic influenza
    - Weeks 36-41 (9/6/09-10/17/09)
  - Control period: peak of seasonal influenza
    - Weeks 5-10 (2/1/09-3/14/09)



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## Methods

- Queries
  - All visits
  - ILI category
  - Mention of “preg” in chief complaint
  - ILI category + mention of “preg”
- Measure of effect: proportional morbidity ratio (PMR)
- Strata: pregnant women vs remaining ED population
- Chi-square homogeneity test across strata



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## Crude Results

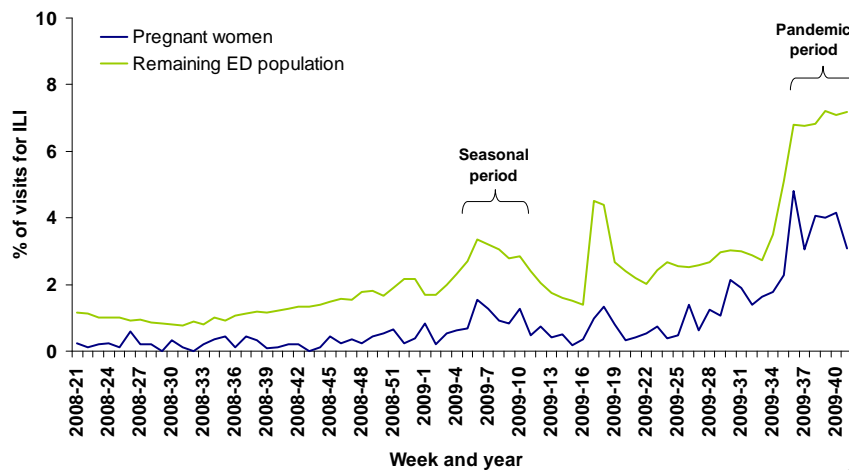
Total ED visits: 1,325,307

	Pandemic Period	Seasonal Period	Total
ILI	49,348	18,282	67,630
Not ILI	661,416	596,261	1,257,677
Total	710,764	614,543	1,325,307
Proportional morbidity	6.94%	2.97%	5.10%

Crude PMR: 2.33  
 95% Confidence Interval (CI): 2.295, 2.373  
 P-value: <0.0000001

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### Proportion of ED Visits due to ILI by Pregnancy Status, Florida's ESSENCE Participating Hospitals Week 21, 2008 to Week 41, 2009



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## Stratified Results

	PMR	95% CI	P-value
ED population (crude)	2.33	2.295, 2.373	<0.0000001
Pregnant women	3.55	2.747, 4.577	<0.0000001
Remaining ED population	2.33	2.291, 2.368	<0.0000001

Chi-square p-value for homogeneity: 0.0013

- ED visits are 2.33 times as likely to be for ILI during pandemic period compared to seasonal period
- ED visits by pregnant women are 3.55 times as likely to be for ILI during pandemic period compared to seasonal period

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## Conclusions

- ED visits during the 2009 pandemic period are more likely to be for ILI compared to seasonal influenza
- This difference is significantly more pronounced in pregnant women
- Suggests possibility that pregnant women are more extensively or severely affected by 2009 H1N1 pandemic than other ED populations

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## Limitations

- Media attention during pandemic may bias results (intense focus on pregnant women)
- Pregnancy status may or may not be included in chief complaint
- Misclassification may have occurred during category coding or free text query
- Results may not be generalizable due to underlying population (persons visiting ED)

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## Next Steps

- More accurate statewide estimate of impact using population-based denominator data from birth records
- Use admissions data from ESSENCE to assess severity of illness in pregnant women
- Comparison of severity of illness in reported cases of influenza in pregnant women

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## Other Project Areas

- Cases of H1N1 in hospitalized pregnant women are reportable in Florida
  - Extended survey required for these cases
- Participating in CDC study of pregnant women critically ill with H1N1
- Analysis linking birth certificate data to reported cases of H1N1 in pregnant women

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# Questions?

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