Factors Associated With 2009 Pandemic Influenza A (H1N1) Vaccination Among Pregnant Women — Seattle, Washington, 2009–2010

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Background

Pregnant women are at increased risk for serious influenza infections

- Up to 5 times more likely to be hospitalized during influenza seasons than nonpregnant women
- Risk highest in 3rd trimester
- Comprise 1% of U.S. population but accounted for 13% of 2009 pandemic influenza A (H1N1) [pH1N1] deaths during April 15–June 16, 2009

Influenza vaccination among pregnant women is recommended by Advisory Committee on Immunization Practices and American College of Obstetricians and Gynecologists

- Seasonal influenza vaccination coverage 10–25% nationally
- No baseline data available for King County

Vaccination Strategy

Public Health — Seattle & King County implemented an enhanced vaccination strategy during fall 2009 to maximize pH1N1 vaccination of pregnant women

Requested delivery hospitals to ensure that pregnant women had access to pH1N1 and seasonal influenza vaccination

Asked prenatal care providers to recommend and administer vaccines

Prioritized vaccine distribution to obstetricians

Public Health vaccination clinics prioritized pregnant women

Objectives

Estimate pH1N1 vaccination prevalence among pregnant and early postpartum women

Identify factors associated with vaccination

Methods

Inclusion Criteria

- King County resident
- Delivered at a King County hospital during November 2009–January 2010
- All 11 delivery hospitals in King County provided a list with contact information of women who met inclusion criteria

Cross-Sectional Survey

- Paper, telephone, and Internet formats with follow-up contact for nonrespondents
- Available in English and Spanish
- $2 incentive included with the first paper survey
- Separate questions asked about seasonal and pH1N1 influenza infections and vaccinations

Analytic Methods

- Outcome: Self-reported receipt of pH1N1 vaccination during pregnancy or within 2 weeks of delivery
- Log binomial regression to estimate pH1N1 vaccination prevalence ratios
- Predictor variables:
  - Provider type
  - Provider recommendation
  - Vaccination availability through provider
  - Perception of risk for serious influenza infection
- Potential confounders:
  - Age
  - Race/ethnicity
  - Language
  - Education
  - Insurance

Results

Figure 1. Study population

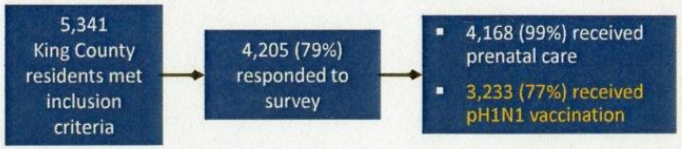


Table 1. Factors associated with pH1N1 vaccination (N=4,205)

Factor	Factor Prevalence n (%)	Vaccination Prevalence % (95% CI)	Adjusted Prevalence Ratio (95% CI)
Vaccination recommended by prenatal care provider			
Yes	3,758 (93)	82 (80–83)	2.10 (1.72–2.58)
No	274 (7)	30 (25–35)	Referent
Vaccination available through prenatal care provider			
Yes	3,177 (81)	82 (80–83)	1.14 (1.09–1.19)
No	749 (19)	72 (68–75)	Referent
Type of prenatal care provider			
Midwife only	329 (8)	63 (58–68)	0.89 (0.83–0.96)
Other provider*	3,544 (92)	79 (78–80)	Referent
Respondent's perception of a pregnant woman's risk for serious influenza infection			
Pregnant women are at high risk	2,796 (67)	85 (84–87)	1.27 (1.21–1.33)
Pregnant women are not at high risk	1,365 (33)	62 (59–64)	Referent

* Other provider category included obstetricians, family practitioners, hospital-based clinics, and community clinics

Figure 2. Vaccination location (n=3,233)

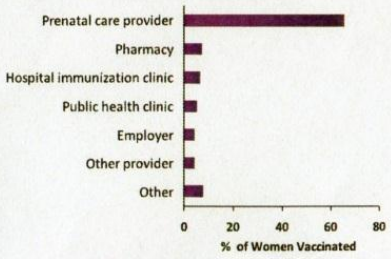
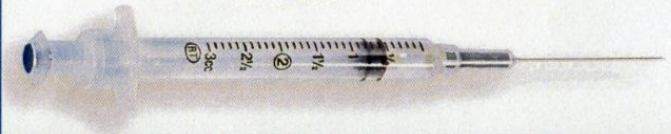


Table 2. Reasons for not being vaccinated (n=940)

Reason*	%
Concerned about vaccine safety	58
Did not think at risk for serious illness	26
Could not find vaccine	21
Doctor did not recommend	10
Do not normally receive flu vaccine	5
Cost was too high	1
Other reason	10

* Respondents could select more than 1 response



Discussion

- More than 75% of pregnant women in King County received pH1N1 vaccination versus 47% of pregnant women nationally
- Enhanced vaccination strategies involving obstetricians likely contributed to high coverage in King County
- Prenatal care providers responsible for >65% of pH1N1 vaccinations among pregnant women
  - Key role for obstetricians in routine immunization delivery
  - Vaccination outreach should include midwives

Limitations

- Only included deliveries during 11/09–1/10
  - Potential overestimation of vaccination coverage because women in 3rd trimester might have been prioritized for vaccination by providers
- Nonresponders might have had less access to prenatal care and lower vaccination rates
- Data were self-reported

Recommendations

- Prenatal care providers should be engaged in providing routine immunizations for women
- Providers should recommend seasonal influenza vaccination and make it available
- Providers and public health authorities should educate women about their risk for serious influenza infections during pregnancy and influenza vaccine safety

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