



Evaluating the Role of Healthcare Access on Prenatal Vaccination Rates in the U.S.



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Learning Objective

- To compare vaccination rates for influenza and Tdap against different health insurance types using the Pregnancy Risk Assessment and Monitoring System (PRAMS).
- To compare provider influenza vaccine recommendation against different health insurance types using PRAMS.

Background

- Pregnant women are at an increased risk of hospitalization from influenza compared to non-pregnant women (1).
- The Advisory Committee on Immunization Practices (ACIP) recommends influenza vaccination for all women who are pregnant or may become pregnant during influenza season and Tdap vaccination during each pregnancy, preferably during gestational weeks 27-36 (2, 3).
- Vaccination remains low. During 2019-20 Influenza season, 61.2% of pregnant women received influenza vaccination, 56.6% received Tdap vaccination and 40.3% of women received both (3).
- Predictors of vaccination include vaccine knowledge, race/ethnicity, and maternal age, physician recommendation and health insurance (4).
- It was reported that women with private/military insurance have higher vaccination rates of influenza and Tdap (55.3%, 58.8% respectively) compared to women with public insurance (44.2%, 50.8%) or no insurance (30.1%, not reported) (3).

Methods

- PRAMS was developed in 1987 as a surveillance project by the Center for Disease Control and Prevention (CDC) and state health departments to collect state-specific, population-based data via questionnaire on maternal attitudes and experiences before, during, and after pregnancy.
- We used the Phase 8 (2016-2018) multi-state PRAMS dataset which included 52,247 respondents with information on influenza and Tdap vaccination (eligibility criteria).
- Primary outcomes: fully vaccinated, partially vaccinated or unvaccinated.
- Secondary outcome: provider recommendation.
- Primary predictor: health insurance type.
- Secondary Predictor: change in health insurance.
- Confounding variables: maternal age, race/ethnicity, household income, maternal education, urban/rural residency, and marital status.
- Multivariable logistic regression was used to estimate adjusted odds ratios (OR) comparing the odds of partial vaccination or full vaccination versus unvaccinated and corresponding 95% confidence intervals (CI).
- Statistical analysis was performed using SAS software.

Tables

Table 1. Odds of vaccination by health insurance status during pregnancy – 22 states. PRAMS, 2016-2018.

Health Insurance During Pregnancy	Unvaccinated	Partially Vaccinated	Partially vs. Unvaccinated	Fully Vaccinated	Fully vs. Unvaccinated
	Weighted % (95% CI)	Weighted % (95% CI)	Adjusted OR (95% CI)	Weighted % (95% CI)	Adjusted OR (95% CI)
Private	12.2 (11.5, 12.8)	25.5 (24.7, 26.3)	Reference	62.3 (61.4, 63.3)	Reference
Medicaid	21.6 (20.7, 22.5)	34.1 (33.0, 35.1)	0.73 (0.62, 0.87)	44.3 (43.3, 45.4)	0.68 (0.58, 0.80)
Health Care Exchange	19.8 (17.4, 22.2)	32.5 (29.5, 35.5)	0.74 (0.58, 0.94)	47.7 (44.5, 50.9)	0.62 (0.49, 0.78)
SCHIP/CHIP	21.7 (16.4, 27.0)	28.0 (22.2, 33.9)	0.61 (0.38, 0.98)	50.3 (43.7, 56.8)	0.66 (0.43, 1.01)
Other government	24.8 (19.7, 29.8)	31.7 (26.2, 37.2)	0.61 (0.42, 0.89)	43.5 (37.7, 49.4)	0.55 (0.38, 0.78)
Military	14.3 (10.9, 17.7)	29.5 (25.3, 33.7)	1.36 (0.83, 2.22)	56.2 (51.7, 60.7)	1.30 (0.82, 2.06)
IHS	16.0 (11.8, 20.1)	35.7 (30.8, 40.7)	0.96 (0.65, 1.43)	48.3 (43.2, 53.4)	0.88 (0.60, 1.31)
Other insurance	22.4 (19.7, 25.1)	31.6 (28.6, 34.6)	0.66 (0.49, 0.87)	46.0 (42.7, 49.3)	0.60 (0.44, 0.81)
No insurance	37.4 (34.3, 40.6)	27.3 (24.4, 30.1)	0.37 (0.28, 0.49)	35.3 (32.3, 38.3)	0.30 (0.24, 0.39)
Health Insurance Change During Pregnancy					
Became Uninsured	29.2 (25.3, 33.2)	30.2 (26.3, 34.2)	0.52 (0.37, 0.73)	40.5 (36.5, 44.5)	0.47 (0.36, 0.63)
Became Private Insured	20.4 (12.1, 28.7)	36.5 (25.4, 47.6)	1.6 (0.75, 3.54)	43.1 (3.2, 54.0)	0.85 (0.40, 1.8)
Became Public Insured	21.8 (19.8, 23.8)	33.1 (30.9, 35.3)	0.87 (0.72, 1.05)	45.1 (42.8, 47.5)	0.78 (0.65, 0.93)
Maintained Same Insurance Status	15.6 (15.1, 16.2)	28.3 (27.6, 29.0)	Reference	56.1 (55.3, 56.9)	Reference
Maintained No Insurance	48.2 (43.1, 53.3)	22.4 (18.2, 26.5)	0.38 (0.26, 0.56)	29.4 (24.7, 34.1)	0.28 (0.19, 0.42)

Table 2. Odds of receiving flu vaccine recommendation by health insurance status and during a health insurance change – 22 states, PRAMS, 2016-2018.

Health Insurance During Pregnancy	Recommended Influenza Vaccine During Pregnancy		
	Weighted % (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Private	91.0 (90.5, 91.6)	Reference	Reference
Medicaid	84.3 (83.5, 85.0)	0.53 (0.48, 0.58)	0.94 (0.80, 1.12)
Health Care Exchange	86.0 (83.9, 88.2)	0.61 (0.50, 0.74)	0.95 (0.74, 1.22)
SCHIP/CHIP	76.6 (71.0, 82.3)	0.32 (0.23, 0.45)	0.66 (0.43, 0.99)
Other Government	75.8 (70.7, 81.0)	0.31 (0.23, 0.41)	0.62 (0.44, 0.88)
Military	90.3 (87.6, 93.1)	0.92 (0.67, 1.27)	1.59 (1.03, 2.47)
IHS	87.9 (84.9, 90.9)	0.72 (0.54, 0.96)	1.34 (0.95, 1.89)
Other Insurance	82.9 (80.4, 85.4)	0.48 (0.40, 0.58)	0.96 (0.71, 1.28)
No Insurance	67.2 (64.2, 70.3)	0.20 (0.17, 0.24)	0.38 (0.30, 0.49)
Health Insurance Change During Pregnancy			
Became Uninsured	75.9 (72.2, 79.6)	0.38 (0.31, 0.47)	0.48 (0.35, 0.65)
Became Private Insured	78.0 (67.5, 88.5)	0.43 (0.23, 0.79)	0.47 (0.21, 1.06)
Became Public Insured	77.6 (75.6, 79.7)	0.42 (0.37, 0.48)	0.59 (0.49, 0.70)
Maintained Same Insurance Status	89.2 (88.7, 89.7)	Reference	Reference
Maintained No Insurance	56.9 (51.8, 62.0)	0.16 (0.13, 0.20)	0.26 (0.19, 0.37)

Results

- Those with private insurance had a full vaccination rate of 62.3% and partial vaccination rate of 25.5%.
- Pregnant women insured with Medicaid were 32% less likely to be fully vaccinated.
- Those who reported Health Care Exchange as their insurance provided were 38% less likely to be fully vaccinated.
- Those with other government insurance, other insurance and no insurance were less likely to be fully vaccinated when compared to private insurance.
- Those who became uninsured, publicly insured and those who remained uninsured were less likely to be fully vaccinated when compared to those who maintained the same health insurance during their pregnancy.
- Those with SCHIP/CHIP, other government insurance, and those who are uninsured were less likely to receive a flu vaccine recommendation when compared to those with private insurance.
- Those women who became publicly insured, became uninsured or maintained no health insurance were less likely to be recommended flu vaccination by a healthcare provider.

Limitations

- Not all states (e.g., California, Ohio and Idaho) participate in PRAMS surveillance.
- Reporting bias.

Conclusion

- We identified differences in vaccination rates based on health insurance status. Those with Medicaid, HCE, other government, other insurance, or no insurance were less likely to be fully vaccination.
- Women who became uninsured, became publicly insured or had no insurance were less likely to receive a provider recommendation.

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