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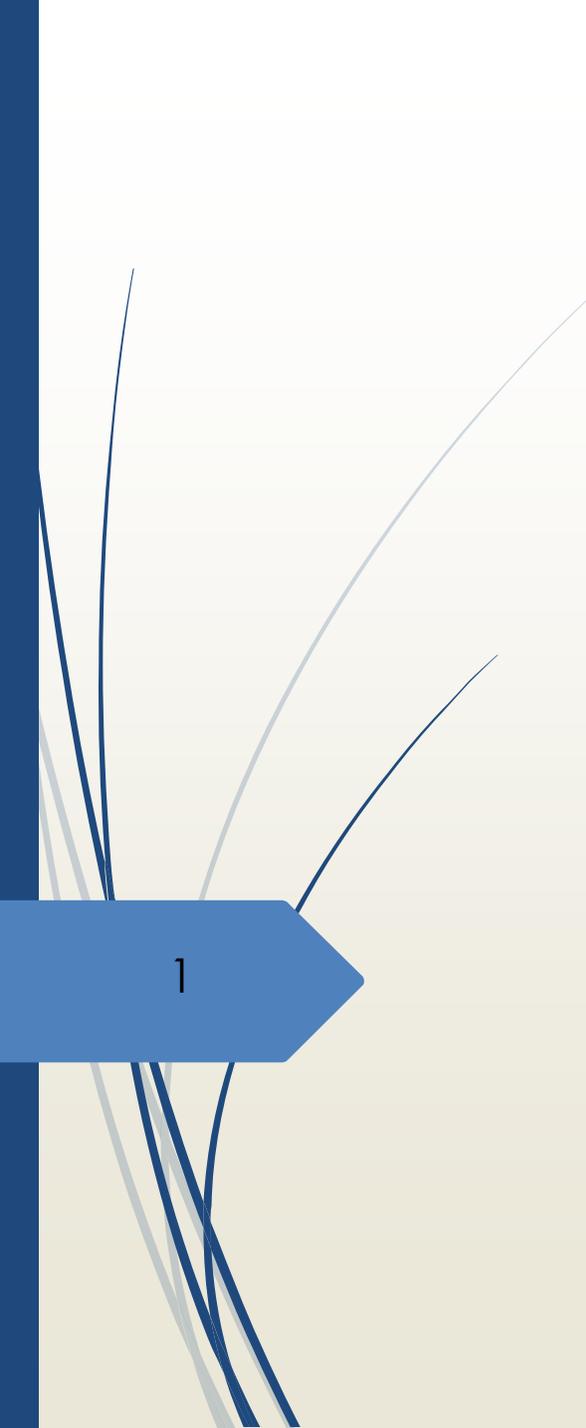


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Tdap Vaccination in Pregnancy

EMMC Family Medicine Center and Residency, Bangor ME

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September 2016

Project Advisor: Dr. Robin Pritham

Collaborating Student: Elizabeth Doughty

Problem Identification and description of need

- In order to best provide preventative healthcare to the population, it is important for providers to be aware of vaccination guidelines and advocate for patient compliance to reduce morbidity and mortality. In the last 5 years, there have been significant changes in Tdap vaccination recommendations in pregnancy.
- Prior to June 2011, the Advisory Committee on Immunizations Practices (ACIP) recommended Tdap vaccination to be given to women postpartum.¹ Beginning June 2011, guidelines also endorsed vaccination during pregnancy if the woman had not received Tdap before.¹
- However, data has been found that Tdap vaccination between 27 and 36 weeks of pregnancy most effectively boosts IgG placental transmission to the fetus and results in longer lasting detection of antibody presence after birth.^{2,3} As a corollary, maternal vaccination during this critical time period has the potential to reduce risk of infant morbidity and mortality. In October 2012, ACIP guidelines changed to recommend vaccination between 27 and 36 weeks of every pregnancy to augment IgG placental transfer to the fetus, irrespective of previous vaccination status.¹
- Maternal Tdap vaccination has been proven to be safe to the fetus during pregnancy and yet not all pregnant women receive the immunization.⁴
- A review of 16 States found overall Tdap vaccination rates before, during, and after pregnancy ranged from 38.2% to 76.6% from September 2011 to December 2011.¹ Of these states, Maine was found to have a vaccination rate of 66.2%.¹
- In one Tdap vaccination attitudes survey, 89% women reported they would get the Tdap vaccination during pregnancy if their physician advocated the immunization.⁵ Thus, it is important for physicians to be aware of the updated guidelines and to directly advocate vaccination for every pregnant woman.

Public Health Cost & Unique Cost considerations in host community

- In 2014, there were 13 reported deaths related to pertussis and 8 of these were in the immunologically vulnerable population of infants less than 3 months old.⁶
- Approximately half of infants less than one year old infected with pertussis require hospitalization.² Of the cohort hospitalized, 23% develop pneumonia and 1.6% die.²
- It is particularly important to be cognizant of pertussis risks in Maine as the state has the second highest rate of pertussis in the USA with incidence of 41.9 per 100,000.⁶
- Per previous chart reviews performed by Dr. Robin Pritham, Medical Director at Eastern Maine Medical Center (EMMC) Family Medicine Center and Residency, Tdap vaccination in pregnancy compliance ranged 76-90% with overall 80% vaccinated between a sampling of dates between September 2014 to September 2015 at the family medicine outpatient clinic.

History of EMMC Family Medicine Center and Residency Maternal Tdap Vaccination Compliance					
Date	Deliveries	Tdap Vaccinated	Offered and Declined	Not Documented	Percent Vaccinated
January 2014-March 2014	53	42	11	0	79%
September 2014-January 2015	80	61	19	0	76%
May 2015-June 2015	32	29	3	0	90%
July 2015-September 2015	41	33	8	0	80%
Total:	206	165	41	0	80%

Community perspective on issue & support for project

- ▶ Dr. Nina Quicksell, DO PGY-2
 - ▶ What is your perception of the EMMC Family Medicine Center and Residency's compliance of the ACIP guideline to administer Tdap in the third trimester of pregnancy? "Most patients get it, the problem is getting the medical assistant staff to remember to remind us."
 - ▶ How do you think providers weigh maternal Tdap vaccination importance? "Providers are not considering the Tdap vaccination unless it is brought up because so many other things are going on, we lose focus."
 - ▶ What are the barriers to compliance with guidelines to vaccinate pregnant women with Tdap? "A lot of it is providers not bringing it up."
 - ▶ How are residents trained on Tdap in the third trimester of pregnancy guidelines? "Through rotations in OB and here [at the EMMC Family Medicine Center and Residency]; also through the ALSO course."

Community perspective on issue & support for project

▶ Christie Brown, FNP

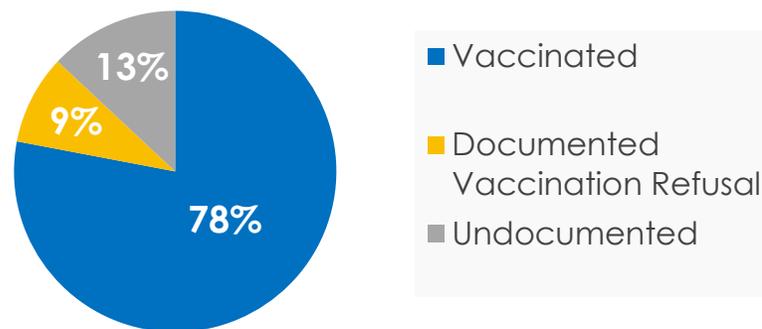
- ▶ How are providers trained on Tdap in the third trimester of pregnancy guidelines? “We use the immunization schedules posted on personal electronic devices/CDC website. Tdap in pregnancy training was topic of discussion around clinic when guidelines came out. Discussed at staff meetings.”
- ▶ Are providers reminded to vaccinate with Tdap during pregnancy? “Charts are reviewed by the clinical nurse manager and support staff and reminders to immunize are placed in the appointment summary line.”
- ▶ How do you think EMMC Family Medicine Center and Residency could improve patient compliance with vaccination recommendations? “Perhaps begin educating about safety of immunizations at prenatal screening/intake.”
- ▶ Why do you think patients refuse Tdap in pregnancy? “I think they are afraid of needles.”
- ▶ How do you respond when a pregnant patient states they do not want the vaccination? “Ask them to reconsider, to do independent research and come back with questions.”

Intervention & Methodology

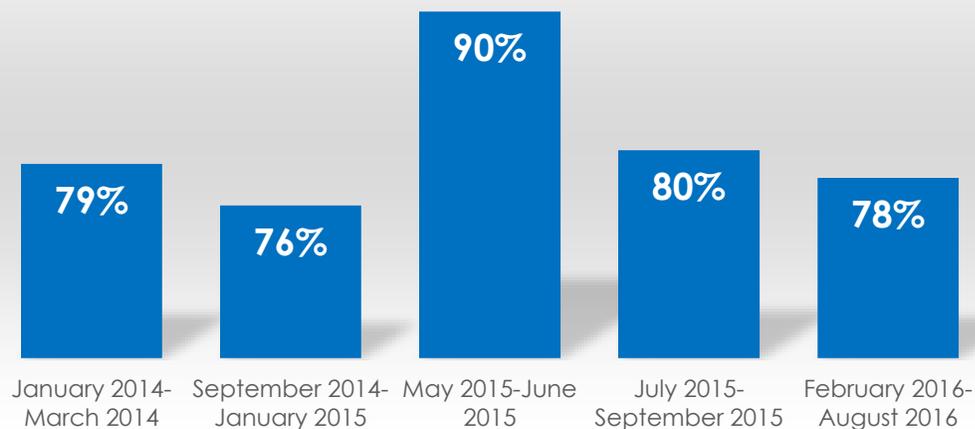
- ▶ **Goal:** To assess EMMC Family Medicine Center and Residency's maternal Tdap vaccination rates and distribute an educational handout for quality improvement.
- ▶ **Methodology:** A data report was generated through electronic medical records (EMR) search utilizing the same methods of previous EMMC Family Medicine Center and Residency quality improvement reviews of maternal Tdap vaccination rates. To generate the number of pregnancies within the time frame, the EMR was searched with parameters that included women with an estimated due date between February 1st 2016 and August 1st 2016. To determine numbers of those vaccinated, a second parameter was added selecting patients who had documented Tdap vaccination between August 1st 2015 and August 1st 2016. Within the unvaccinated group, the patients with documented refusal in the EMR were classified as documented Tdap refusal. The remaining number of patients were placed into the undocumented, unvaccinated group.
- ▶ **Intervention:** To communicate clinic compliance rates and provide a reminder of the importance of maternal Tdap vaccination, I decided to create an educational handout including high-yield points about pertussis and this project's data report findings (see appendix A). This handout was e-mailed to EMMC Family Medicine Center and Residency's provider, resident, and clinical support staff listservs. Further, the handout was posted in the nursing documentation room, office break room, on two bulletin boards, and in physician preceptor room for total of 5 locations around office. Finally, physical copies of the handout were placed in all of the residents mailboxes.

Results/Response

EMMC Family Medicine and Residency Tdap in Pregnancy Compliance:
February to August 2016



Comparison of Maternal Tdap Vaccination Rates at Various
Time Periods



- ▶ 92 eligible pregnancies discovered:
 - ▶ 72 (78%) were vaccinated
 - ▶ 8 (9%) were documented refusals
 - ▶ 12 (13%) were not documented as given or offered in the EMR
- ▶ Vaccination rates were found to be consistent with previous data of overall 80% compliance at sporadic periods of data review January 2014 to September 2015.
- ▶ Surprisingly, there were 8 undocumented cases in the dates reviewed compared to no undocumented cases in dates previously analyzed by Dr. Robin Pritham.
- ▶ Educational handout developed (appendix A):
 - ▶ Posted in 5 non-patient areas in the EMMC Family Medicine Center and Residency office
 - ▶ Distributed paper copy to all resident mailboxes
 - ▶ E-mailed out to clinic faculty, providers, residents, and clinical support staff

Evaluation of Effectiveness & Limitations

► Limitations:

- The computerized data report could not individually pick out what week of the pregnancy the Tdap was given for each patient but instead assessed for vaccination during the August 2015 to August 2016 time frame. As a result, there is the potential that some of the numbers counted as vaccinated may have had it administered outside the 27 to 36 weeks recommended time period but otherwise during or closely around pregnancy.
- Since the search only evaluated entries on the EMR flowsheet and immunization administration record, undocumented numbers may have been falsely inflated due to the possibility of patients being vaccinated outside the EMMC system. The undocumented rate may have also been inflated if providers simply typed in notes that the vaccination was refused instead of adding it into the flowsheet.

► Evaluation of effectiveness:

- The handout educated faculty, providers, residents, and clinical support staff of the clinic's maternal Tdap administration rates, ACIP guidelines, and rationale for vaccination.
- In order to evaluate effectiveness of the handout on vaccination rates, several months would have to pass after project completion to accumulate an adequate sample of pregnant women. This was not feasible due to the time constraint of a 5-week rotation in Bangor, ME.
- However, several providers gave positive feedback that the handout was a helpful reminder; two directly reported that they wanted to use the information to reach out to patients and/or clinical care staff.

Recommendations for the Future

- ▶ Documentation of Tdap refusal could be improved by scheduled, regular reminders to providers and clinical support staff during the weekly office huddles.
- ▶ Provider awareness of maternal Tdap vaccination compliance could be raised by increasing data report frequency to bimonthly and having subsequent discussions of Tdap vaccination rates in the office huddles for each report.
- ▶ For future projects, more accurate and in-depth data could be obtained with a chart review to determine exactly what weeks of pregnancy patients received the Tdap vaccination. Also, a thorough chart review could determine if there are trends based on training background or provider's level of experience being associated with lower or higher vaccination rates.
- ▶ The office plans to add a check box to pregnancy intake forms that most providers fill out for each pregnancy visit. When this is completed, future projects could repeat these methods to see how maternal Tdap vaccination compliance compares before and after the intervention.

References

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6. National Center for Immunization and Respiratory Disease (2015, October). 2014 Final Pertussis Surveillance Report. Retrieved from <https://www.cdc.gov/pertussis/downloads/pertuss-surv-report-2014.pdf>

Interview Consent

- ▶ Thank you for agreeing to be interviewed. This project is a requirement for the Family Medicine clerkship. It will be stored on the Dana Library ScholarWorks website. Your name will be attached to your interview and you may be cited directly or indirectly in subsequent unpublished or published work.
- ▶ The interviewer affirms that he/she has explained the nature and purpose of this project.
- ▶ The interviewee affirms that he/she has consented to this interview.
- ▶ Yes X
- ▶ Name:
- ▶ Name:

Appendix A:

Educational handout

- Posted in 5 non-patient areas in the EMMC Family Medicine Center and Residency office
- Distributed to all resident mailboxes
- E-mailed out to clinic faculty, providers, residents, and clinical support staff

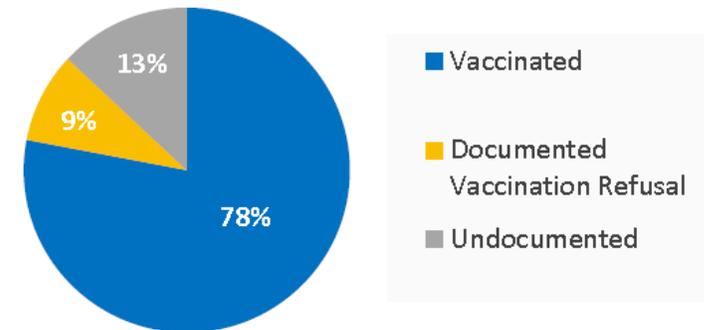
Tdap Vaccination in the Third Trimester of Pregnancy

Advisory Committee on Immunization Practices recommends Tdap vaccination between 27 and 36 weeks of pregnancy regardless of previous vaccination status¹

WHY IS IT SO IMPORTANT?

- Maine has the second highest rate of pertussis in the nation at 41.9 per 100,000²
- Approximately half of infants < 1 year old infected with pertussis require hospitalization¹
- In the cohort hospitalized, about 23% develop pneumonia and 1.6% die¹
- Vaccination during 27 to 36 week time period of pregnancy most effectively boosts maternal IgG placental transmission to fetus and thus reduces risk of morbidity and mortality¹

EMMC Family Medicine Center and Residency Tdap in Pregnancy Compliance February to August 2016



REMEMBER TO VACCINATE AND DOCUMENT!

1. Maine Center for Disease Control and Prevention 2014, November. Tdap for Pregnant Women. Retrieved from <http://www.maine.gov/dhs/medci/infectious-disease/immunization/providers/communications/2014/November/newsletter.pdf>

2. National Center for Immunization and Respiratory Disease (2014, October). Final Pertussis Surveillance Report. Retrieved from <https://www.cdc.gov/nprr/pubs/ downloads/pertussis-surv-report2014.pdf>