



University of Kentucky
UKnowledge

DNP Projects

College of Nursing

2016

Childhood Immunization Tracking Practices by Healthcare Providers

Erin E. Clarke
University of Kentucky, erinclarke14@gmail.com

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Clarke, Erin E., "Childhood Immunization Tracking Practices by Healthcare Providers" (2016). *DNP Projects*. 95.
https://uknowledge.uky.edu/dnp_etds/95

This Practice Inquiry Project is brought to you for free and open access by the College of Nursing at UKnowledge. It has been accepted for inclusion in DNP Projects by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

Final DNP Project Report
Childhood Immunization Tracking Practices by Healthcare Providers

Erin E Clarke

University Of Kentucky

July 19, 2016

Committee Chair: Leslie Scott, PhD, PPCNP-BC, CDE, MLDE

Committee Member: Dianna Inman, DNP, RN, APRN, CPNP, PMHS

Clinical Mentor: Shawn Reathaford, MD

Table of Contents

DNP Manuscript Childhood Immunization Tracking Practices by Healthcare Providers.....	1
Appendix A.....	9
Appendix B.....	10
Appendix C.....	11
Capstone Report References.....	14

Background

Childhood immunizations protect children from life-threatening illnesses and are one of the most profound measures of the quality of pediatric primary care, however immunization rates for children under three years old still fall below national goals for up to date coverage (Fiks, 2007). Up to date rates of immunization are based on the number of recommended doses of vaccines that children receive by a fixed age (Robison, 2010). Because the majority of vaccines are administered by the age of three, the population of focus will be children 0-3 years of age. The recommendations for childhood immunization schedules are clearly delineated and nationally standardized. This immunization schedule is approved by the Academy of Pediatrics, the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention, the American Academy of Family Physicians, and the American College of Obstetricians and Gynecologists (Recommended Childhood and Adolescent Immunization Schedule-United States, 2014). In addition to preventing children from getting serious illnesses, childhood vaccines prevent 21 million hospital visits, prevent 732,000 deaths, and save 1.38 trillion dollars in societal costs (Elam-Evans, 2014). Despite the many benefits of vaccines and the national recommendations, nearly 25% of children ages 19-35 months fall short of receiving all recommended vaccines (Bundy, 2013).

In examining the reasons for underimmunization in children, both parent factors and provider factors come into play. Provider factors that attribute to underimmunization are a problem because it is the responsibility of the pediatric primary care provider to ensure full immunization coverage for the health of the child. The main component of provider practices

that lead to underimmunization in children is missed opportunities for vaccination during visits (Robison, 2010).

According to the Centers for Disease Control and Prevention, in the year 2013 the national vaccination coverage for children ages 19-35 months was as follows: 83.1% for DTaP, 92.7% for poliovirus, 91.9% for MMR, 82% for Hib, 90.8% for HepB, 91.2% for varicella, and 82% for PCV (Elam-Evans, 2014). Immunization rates can be viewed in table form in Appendix A. Many vaccines reach the national goal of 90% coverage, however the Hib, DTaP, and PCV remain below. In terms of provider based factors, approximately 21.4-44.8% of children ages 3-24 months who were not fully up to date on immunizations had visits with providers during which no vaccines were administered (Robison, 2010). The problem of the ineffective provider practice that leads to missed opportunities for childhood immunizations needs to be addressed to ensure that the best possible care is provided to the child. In the state of Kentucky in the year 2013, the vaccination coverage for children ages 19-35 months was as follows: 84.1% for DTaP, 91% for poliovirus, 89.5% for MMR, 90.6% for Hib, 90.8% for HepB, 91.5% for varicella, and 81.7% for PCV (Elam-Evans, 2014). Kentucky demonstrates vaccination rates below the national average for the poliovirus, MMR, and PVC vaccines.

Procedure

A project to evaluate the current practices for tracking immunizations and reducing missed opportunities for vaccination was targeted in the state of Kentucky. The objectives of this study were the following:

1. Evaluate provider's current practices for childhood immunization tracking
2. Evaluate practices up to date rates for childhood immunizations
3. Evaluate provider and practice demographics

4. Attempt to identify trends between up to date immunization rates and multiple variables such as tracking method, presence of missed opportunities, and availability of alternative schedules.

The procedure for bringing this project to fruition began with obtaining approval for the study from the Institutional Review Board in the Office of Research Integrity. This approval was granted after submitting an application that detailed the project. A survey was then developed that would enable the information sought after to be delivered in an organized and timely manner. This survey was then reproduced using the online REDCap instrument, which ensured that all participants would remain anonymous and that the information would be secure. The survey is depicted in Appendix B. Upon final completion of the survey two organizations, the National Association of Pediatric Nurse Practitioners Kentucky Chapter and the Kentucky Coalition of Nurse Practitioners & Nurse Midwives, were utilized for dissemination of the survey. These two organizations sent the survey via a link in an email to members of their respective listserv and participation was voluntary. Exclusion criteria and inclusion criteria were established and state that participants considered for use in the analysis of this project must meet the following requirements:

1. Serve a population that is at least 15% pediatric
2. Have Internet access in order to complete the electronic survey
3. Be capable of reading and comprehending English
4. Provide childhood immunizations at their practice

Those participants who did not meet these criteria were excluded from statistical analysis in this project, but were represented in the demographics section of the data report. A total of thirty-five participants took the survey and provided data for the project.

Findings

Of the thirty-five respondents, the majority were between the ages of 41-50 years and were female. The majority held a Master's degree, however there were eight participants with a DNP degree. The participants differed in both their practice type and location with 85% representing family nurse practitioners and 15% representing pediatric nurse practitioners that are evenly divided between rural and urban. The majority of the practitioners in this study had less than five years of experience in their current position, with the next highest percentage of participants having five to ten years of experience. Finally, the majority of participants served populations in which at least fifty percent of the patients were enrolled in Medicaid. A summary of this demographic data can be found in Appendix C.

In order to analyze the data that the survey produced SPSS software was used. The goal of this project, to identify trends between immunization rates and other variables regarding immunization tracking, was reached by comparing variables in SPSS. Specifically, the Mann-Whitney U test was used because immunization rate is an ordinal variable and this was compared with various nominal variables to test for association. The main variables that were analyzed with immunization rates were the following: documentation type (of which 85% of participants used some form of electronic documentation), presence of an alternative schedule (of which most respondents did not offer), presence of an electronic prompt (of which the majority of respondents did not have), and whether or not the provider has personally experienced a missed opportunity for vaccination (85% of participants have experienced). The test statistic in the Mann-Whitney U test is significant at the level of less than or equal to .05. Although none of the analyses for these variables resulted in a statistically significant test value, the analysis between

immunization rates and whether or not the provider missed an opportunity for vaccination came the closest to being significant at the .067 value.

The results from the open response questions on the survey also provided data about immunization tracking by the participants. As to the question regarding who bears responsibility for keeping track of the pediatric patient's immunization status, answers ranged from "provider" to "nursing staff" to "the patient" to "parents" and "ultimately whoever signs the certificate". As to the question asking participants to identify what they perceive as obstacles to ensuring no missed opportunities for vaccination, the results included the following: having too busy of a schedule, parents being unaware of the immunization schedule, issues with patients keeping appointments, time constraints, social media and false information, and having no electronic health record.

Discussion

This study had limitations that obstruct the use of the data and findings for wider use. Firstly, the total number of participants was low at thirty-five and this made it impossible to draw statistically significant conclusions about the association among variables. Those participants who responded that they did not know the current immunization rates at their practice had to be eliminated from the statistical analysis because immunization rate is the comparison variable used, therefore even fewer participants were available. Another limitation to this study was that the time frame was only a few weeks long and therefore the window to complete the survey was relatively short. In order to get greater results that can be used more generally to change practice, a larger and more focused study should be conducted. Specifically, one that targets pediatric providers in particular could provide better results.

In reviewing the data from this project as well as the findings from the literature review, multiple themes emerge. The first is the presence of an electronic health record. The statistical analysis between immunization rates and documentation type did not yield significant results, however many participants identified having an electronic health record as a way to ensure that missed opportunities for vaccination are reduced. This is corroborated by the results of the literature search in which a 2003 study showed that the introduction of an electronic health record to a pediatric practice resulted in improved immunization status and higher quality of documentation (Adams, 2003). In taking the topic of an electronic health record further, the presence of a prompt within the system to check immunization status was also a popular answer among participants when asked to identify ways to reduce missed opportunities for vaccination. This is clinically significant despite the lack of statistical significance found during analysis because the participant's ideas are validated by evidence in the literature review. A 2002 study found that after a chart prompt was introduced for the intervention group those patient's demonstrated a higher percentage of up to date immunization status than the control group of patients (Burns, 2002). Another study in 2007 found that immunization rates increased from 81.8% to 90.1% when a prompt or alert for checking immunizations was introduced in the electronic health record at every visit (Fiks, 2007). Putting forth an electronic health record with a prompt for immunization status into practices that are without could greatly help improve immunizations rates.

Another theme that emerged during this project was missed opportunities for vaccination. Although the statistical analysis between the variables immunization status and presence of a missed opportunity did not produce significant results, the test statistic of .067 is fairly close to .05 and can be considered clinically significant. Of the participants who responded to the

question of whether they had personally experienced a missed opportunity to vaccinate, 84% responded yes and 16% responded in the negative. It is reasonable to believe that missing vaccinations would lead to a decreased percentage of patients who are up to date on their immunizations. Missing an opportunity for vaccination is a provider issue, and as the provider should bear the responsibility for ensuring immunization coverage in patients it is very important that steps are taken to reduce these missed opportunities.

The topic of vaccine education arose multiple times in responses in the survey. Multiple participants identified parent or caregiver misinformation as an obstacle to reducing missed vaccination opportunities and social media was mentioned as a factor. Parent or caregiver education is important to managing immunizations as evidenced by a 2002 study that found that 8% of underimmunization is due to parent or caregiver perceived barriers (Taylor, 2002). When parents are given the complete and correct information about vaccines they can make educated decisions, which will ideally be represented in immunization rates. Although this project focused on the provider aspect of missed immunizations rather than the parent or patient aspect, there is a role and responsibility of the provider to provide patient and family education in order to ensure up to date immunization status.

In conclusion, this project sought to survey providers in Kentucky in regards to immunization status and tracking methods, among other variables, and attempt to identify trends in the data. The results of the survey were enlightening and provided incentive to conduct more research in the area. Although there were no statistically significant findings in the analysis of the data, there were clinically significant findings that could be used to move practice forward in regards to childhood immunizations. It is clear that the presence of an electronic health record and a prompt within that system is the most effective method of documentation and practices

without this method would benefit from adopting them. Reducing missed opportunities for vaccination will also increase immunization rates. Overcoming obstacles to ensuring that these opportunities are not missed would include utilizing the electronic health record and prompt to review immunizations at every single patient visit and providing effective parent or caregiver information about vaccines. A larger scale and more specifically targeted study like this one would provide more plentiful data in order to corroborate these findings and help move pediatric practice forward.

Appendix A

	<u>National Immunization Rates</u>	<u>Kentucky Immunization Rates</u>
DTap	94.7%	94.6%
Polio	99.3%	91.3%
MMR	91.5%	88.6%
HIB	92.6%	91.8%
Varicella	91.0%	92.4%
Hep B	91.6%	92.6%
PCV	92.6%	91.6%

www.cdc.gov/vaccines

Appendix B

Descriptive statistics, Frequency table	N (35)	%
Age		
20-30 yrs	3	8.8%
31-40 yrs	2	5.9%
41-50 yrs	16	47.1%
51-60 yrs	7	20.6%
60 + yrs	6	17.6%
Gender		
Male	2	6.1%
Female	31	93.9%
Level of Education		
MSN	24	70.6%
DNP/PhD	8	23.5%
Other	2	5.9%
Licensure		
PNP-PC	5	15.2%
PNP-AC	0	0%
FNP	28	84.8%
Experience		
<5 years	4	41.2%
5-10 yrs	7	20.6%
10-15 yrs	4	11.8%
15-20 yrs	5	14.7%
20 + yrs	4	11.8%
Practice Setting		
Rural	17	50%
Urban	17	50%
Patients on Medicaid		
<20%	4	11.8%
21-30%	3	8.8%
31-50%	7	20.6%
51-70%	12	35.3%
70 +	8	23.5%

Appendix C

1. What is your primary licensure?
 - a) MD
 - b) FNP
 - c) PNP, PC
 - d) PNP, AC

2. What is your highest level of education completed?
 - a) MSN
 - b) MD
 - c) PhD/DNP
 - d) Other

3. What is your gender?
 - a) Male
 - b) Female

4. Which age group applies to you?
 - a) 20-30 years
 - b) 30-40 years
 - c) 40-50 years
 - d) 50-60 years
 - e) 60 + years

5. How many years experience do you have in your current position?
 - a) Less than 5 years
 - b) 5-10 years
 - c) 10-15 years
 - d) 15-20 years
 - e) 20 + years

6. Do you serve in your practice a population that is at least 15% pediatric?
 - a) Yes
 - b) No

7. Which of the following best describes your practice?
 - a) Rural
 - b) Urban

8. Describe the percentage of your patients who are on Medicaid:
 - a) Less than 20%
 - b) 20-30%
 - c) 30-50%
 - d) 50-70%
 - e) Greater than 70%

9. Does your practice support parent/caregiver right to refuse vaccination?
- a) Yes
 - b) No

Comments:

10. Does your practice offer alternative schedule options for immunizations?
- a) Yes
 - b) No

If yes, please choose any of the following alternative schedules you utilize in your practice:

- a) No more than 1 vaccine per visit
- b) No more than 2 vaccines per visit
- c)
- d) No live vaccines until 2 years of age
- e) No live vaccines until 4 years of age
- f) Split MMR vaccine and administer separately
- g) Other, please describe:

11. Describe the methods for which your practice ensures immunizations are given on time:

12. Which form of documentation does your practice utilize?

- a) Paper
- b) Electronic
- c) Combination of paper and electronic

13. How are immunizations recorded in your practice? Please describe:

14. Describe who bears responsibility for keeping track of a patient's immunization status:

15. Describe the policies in place at your practice for immunization tracking:

16. Describe measures you personally take as a provider to ensure a patient receives vaccinations on time:

17. Describe the process that takes place when a patient misses an immunization:

18. What are the up to date immunization rates for children ages 0-35 months at your practice?

- a) Greater than 95%
- b) 90-95%
- c) 85-90%
- d) Less than 85%

e) Don't know

19. If you have an electronic health record system, does it provide a prompt for immunizations?

- a) Yes
- b) No

20. Describe your stance on the topic of parent right to refuse vaccination

- a) "I will not see a child whose parents refuse to vaccinate"
- b) "I will not see a child who parents refuse to vaccinate but another provider in our practice will treat them"
- c) "I will work with families who wish to spread out vaccinations"
- d) Other, please describe:

21. Describe the percentage of families at your practice who refuse vaccination for their child

- a) Less than 1%
- b) 2-5%
- c) 5-10%
- d) Greater than 10%

22. Have you experienced an incident in which you as a provider missed an opportunity for immunization?

- a) Yes
- b) No

23. What do you see as obstacles to ensure minimal missed opportunities for vaccination?
Describe:

24. What do you think is the best method to ensure that missed opportunities for vaccination do not occur? Describe:

References

- Adams, W., Mann, A., and Bauchner, H. (2003). Use of an Electronic Medical Record Improves the Quality of Urban Pediatric Primary Care. *Pediatrics*, *111*(3), 626-632.
- Bundy, D., Persing, N., Solomon, B., King, T., Murakami, P.,...& Miller, M. (2013). Improving Immunization Delivery using an Electronic Health Record: The ImmProve Project. *Academic Pediatrics*, *13*(5), 458-465.
- Burns, I., Zimmerman, R., & Santibanez, T. (2002). Effectiveness of chart prompt about immunizations in an urban health center. *Journal of Family Practice*, *51*(12), 230-233.
- Centers for Disease Control and Prevention. (2014). *Vaccinations for Children Program: CDC Vaccine Price List*. Retrieved from <http://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/index.html>.
- Elam-Evans, L., Yankey, D., Singleton, J., and Kolasa, M. (2104). National, State, and Selected Local Area Vaccination Coverage Among Children Aged 19-35 Months- United States, 2013. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report*, *63*(34), 741-748.
- Fiks, A., Grundmeier, R., Biggs, L., Localio, A., & Alessandrini, E. (2007). Impact of Clinical Alerts Within an Electronic Health Record on Routine Childhood Immunization in an Urban Pediatric Population. *Pediatrics*, *120*(4), 707-714.
- Robison, S., Kurosky, S., Young, C., Gallia, C., & Arbor, S. (2010). Immunization

Milestones: A More Comprehensive Picture of Age-Appropriate Vaccination.

Journal of Biomedicine and Biotechnology, doi:10.1155/2010/916525.

Taylor, J., Darden, P., Brooks, D., Hendricks, J., Wasserman, R., & Bocian, A. (2002).

Association Between Parents' Preferences and Perceptions of Barriers to

Vaccination and the Immunization Status of Their Children: A Study From Pediatric

Research in Office Settings and the National Medical Association. *Pediatrics*, 110(6),

1110-1116.