Improving Pediatric Primary Vaccine Series Completion in a Primary Care Practice

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INTRODUCTION

- The pediatric primary vaccine series includes: diphtheria, tetanus and pertussis (DTaP), polio, measles, mumps and rubella (MMR), Haemophilus influenza b (Hib), hepatitis B, varicella, and pneumococcal conjugate (PCV) vaccines, this series should be completed by the age of 18-months (United Health Foundation, 2016).
- Having an emphasis on the 18-month well-child exam, with a specific focus on vaccinations has the potential to improve the completion rate of the pediatric primary series for vaccinations.
- All opportunities to vaccinate should be utilized, including vaccinating during sick visits and preventing missed opportunities (McElligott et al., 2011).
- Oklahoma has a completion rate of 73% (United Health Foundation, 2016).
- Tulsa county pediatric vaccine completion rate is 62.12% (Muchmore, 2014).

PURPOSE STATEMENT & OBJECTIVES

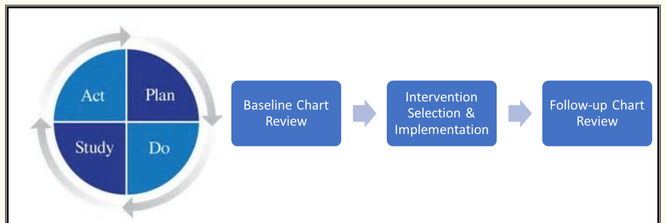
Purpose Statement

This poster will describe a quality improvement project that assisted the staff of a pediatric primary care office determine and implement an intervention to improve primary vaccine completion rates at their practice.

Proposed Questions

1. What is the rate of improvement between pediatric primary vaccine rate at baseline and rate after staff intervention?
2. What is the practice's primary vaccine completion rate compared to the county and state's completion rate?

MATERIALS AND METHODS



•A quality improvement (QI) initiative utilizing the plan-do-study-act (PDSA) rapid cycle method was conducted to implement a staff chosen intervention to increase vaccine completion status of all patients in the practice. The intervention was evaluated through the analysis of an initial chart analysis and a second chart analysis.

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RESULTS

Total Patient Vaccines. In the initial group 78.2% of the patients (*n*=136) were current with vaccinations, 21.8% were not current (*n*=38). In the second group, 36.5% were current (*n*=38) and 63.5% were not current (*n*=47). The difference between the two groups was both clinically and statistically significant (χ^2 (1) = 40.028, *p* = .000, Φ = .4). The value of chi-square is significant because .000 is less than .05.

Intervention. The determined vaccine intervention was implemented after the initial review. One hundred percent of the providers and nurses participated in a 30-minute survey session. The providers and nurses then began assessing the vaccine status of each patient on every visit, administering missing vaccines as needed or scheduling a nurse visit to receive the vaccines if the patient was too ill to receive the vaccine at that time during the six-week project time period. There were 20 opportunities to vaccinate patients that were not up to date, 10 (50%) of those patients received vaccines on the day of the appointment, and 7 of the patients were scheduled for a nurse visit to receive missing vaccines (35%), decreasing the number of missed opportunities.

Vaccines . In the initial group regarding the four DTaP vaccines recommended, *n*=141 were current, for those not current, *n*=33. In the second group, the four DTaP vaccines were current in *n*=43, and *n*=31 for those who were not current (χ^2 (1) = 14.253, *p* = .000, Φ = .2). The value of chi-square is significant because .05 is equal to .05. The Hib requires three vaccines, with *n*=141 current in the initial group, and *n*=33 who were not current; and, in the second group *n*=43 were current and *n*=31 were not current (χ^2 (1) = 14.253, *p* = .000, Φ = .2) The value of chi-square is significant because .000 is less than .05. The PCV requires four vaccines and was *n*=137 in the initial group, and *n*=37 who were not current. In the second group, n=35 who were current, and *n*=39 who were not current (χ^2 (1) = 24.144, *p* = .000, Φ = .3). The value of chi-square is significant because .000 is greater than .05.

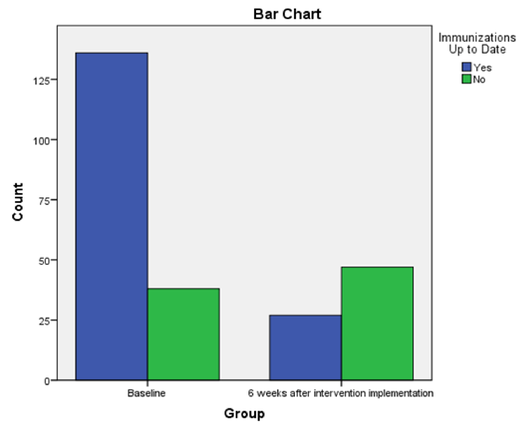
Vaccines by Race. Current vaccine status among races was also evaluated in both groups. There were Hispanics (*n*=5) who were current, and *n*=7 who were not current. Blacks were *n*=9 current and *n*=7 who were not current. Asians were *n*=4 current, *n*=4 who were not current, (χ^2 (4) = 6.751, *p* = .15, Φ = .2). The value of chi-square is not significant because .449 is greater than .05. These comparisons were not statistically significant but were clinically significant

Table 1
Demographics

	Initial	Second
Age Mean(SD)	16.9 (1.15)	16.9 (1.24)
Sex		
Male	n=146	n=47
Female	n=75	n=27
Race		
American Indian	n=21	n=7
Asian	n=4	n=4
Black	n=9	n=7
Hispanic	n=10	n=3
White	n=130	n=53

Table 2
Vaccine Status

	Initial Status N=174	Second Status N=74	p = comparing initial and second groups	Φ
DTaP1	n=174	n=72	.05	.1
DTaP2	n=173	n=72	.02	.2
DTaP3	n=172	n=70	.001	.2
DTaP4	n=141	n=43	.000	.8
HIB1	n=173	n=72	.02	.2
HIB2	n=173	n=72	.02	.2
HIB3	n=141	n=43	.000	.8
HIB4	n=141	n=43	.000	.8
IPV1	n=173	n=72	.02	.2
IPV2	n=173	n=72	.02	.2
IPV3	n=171	n=71	.001	.2
PCV1	n=173	n=70	.002	.2
PCV2	n=172	n=70	.001	.2
PCV3	n=168	n=56	.000	.5
PCV4	n=137	n=35	.000	.9
MMR1	n=171	n=63	.000	.3
VAR1	n=171	n=65	.000	.3



CONCLUSIONS

- There was no rate of vaccine completion improvement between the initial and second group with the given time frame.
- The staff chosen intervention was successful by vaccinating 50% of the patients were not up to date and scheduling a check-up or nurse visit for another 35% of them to receive the vaccines.
- Vaccine rates are the lowest starting with the fourth dose of DTaP, the third does of HIB and the fourth dose of PCV.
- The demographic results showed that blacks and Hispanics had the lowest vaccine completion rates.
- Strengths of the project include an inclusion of all 15-month and 18-month well child exams that occurred during the project time intervals in both the initial and second groups and the participation of all staff members in the quality improvement process.
- Limitations of this study include the short project time interval, different size initial and second groups and conducting the project in a single pediatric practice.

RECOMMENDATIONS

- Continue assessing vaccine status of every patient at every visit.
- Assess vaccine status of all 15-month and 18-month well child exams at the end of a full year to evaluate vaccine rate changes compared to baseline rates.
- Initial and second groups need to have a similar sample size.

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