

Reduction of Early Readmission in the Newborn Period: A Quality Improvement Project

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Introduction

- Although infant mortality rates have been declining since 2000, the U.S. still has the highest rates in the industrialized world
- It is estimated that 3%, or 90,000, of healthy newborns born in the U.S. are readmitted in the first 30 days of life
- While 40% of early readmissions are thought to be due to preventable causes, with a lack of continuum of care in the newborn period, this number is projected to rise
- The provision of comprehensive follow-up programs have shown to reduce neonatal readmissions by 15%, however, it is not a common practice in the clinical setting

Objective

The purpose of this project was to determine whether the implementation of a comprehensive discharge readiness toolkit would reduce early readmission rates in the newborn period.

Aims

1. Decrease early readmission rates in the newborn period
2. Increase provider satisfaction regarding the discharge readiness evaluation process
3. Describe maternal satisfaction with discharge preparedness and follow-up support provided

Methods

Study Design: pretest posttest intervention

Setting: single, tertiary delivery center in the PNW

Sample:

Study population: a convenience sample

- All mother- infant dyads that delivered in 12-week period that were English-speaking, infants 37 0/7 weeks to 41 6/7 weeks, no known anomalies, did not require > CPAP during resuscitation and were not admitted to the NICU at any point during their hospital stay
- The second sample included 6 Newborn APPs that rounded on the newborn infants while in-patient

TABLE 1

Characteristics of Subjects Included in the Project, N = 128

Variable	n (%)
Median Age of Infant ± SD (weeks)	39.0 ± 1.2
Gender of Infant	
Male	65 (50.8)
Female	63 (49.2)
Race of Infant	
Other	6 (4.7)
Black	11 (8.6)
Native American	21 (16.4)
Hispanic	24 (18.8)
Asian	17 (13.3)
Caucasian	49 (38.3)
Type of Growth	
Small for Gestational Age	9 (7.0)
Appropriate for Gestational Age	103 (80.5)
Large for Gestational Age	16 (12.5)
Mode of Delivery	
C-section	60 (46.9)
Vaginal	68 (53.1)
Singleton or Multiple	
Singleton	116 (90.6)
Multiple	12 (9.4)
Para	
1	51 (41.1)
2 or higher	71 (58.9)
Median Age of Mother ± SD (years)	31.0 ± 6.0

Intervention

Three evidence-based components to the discharge readiness toolkit included:

Readiness Checklist completed by a provider before discharge

Follow-up consultation within 72 hours of discharge via telephone

Additional postnatal education for the mother after discharge

Outcome Variable & Measures

Rate of early readmission: single question on follow-up survey e-mailed at 30 days of life

Provider Satisfaction: Pre and Post satisfaction survey

Maternal Satisfaction: Post-intervention satisfaction survey adapted from Camacho, et al.

Statistical Analyses

Data analysis was completed using SPSS.

- A paired *t*-test was used to analyze the significance (alpha = 0.05) of the reduction in readmission rates.
- Provider satisfaction was determined by comparing the results of a satisfaction survey pre and post project implementation using Wilcoxon signed ranks test.
- Descriptive statistics were collected to evaluate maternal satisfaction with the discharge readiness follow-up support and education.

Results

A summary of the study sample demographics is summarized in Table 1. There were 128 mother-infant dyads included who were racially and ethnically diverse. Roughly half the infants were male, the majority were appropriately grown and 6 sets of twins were included. About 40% were first time mothers.

The readmission rate during the project implementation period was 0% compared to a historical rate of 2.8% (32 infants); therefore no statistical analysis was performed

As demonstrated in Table 2, the median provider satisfaction score increased from 20.0 to 23.5 with a *p*-value of 0.027. The implementation of a standardized checklist resulted in a statistically significant change in provider satisfaction.

There was a high attrition rate with only 51 out of 118 mothers filling out the post-intervention satisfaction survey e-mailed at 30 days.. However, the descriptive statistics collected showed an average mean summary score of 18.27 - out of maximum of 20 - reflecting a high degree of satisfaction with the follow-up consultation and education.

Maternal Satisfaction Survey Results: Post intervention (n =51)

	Minimum	Maximum	Median
Q1: Provider Knowledge	3	5	5
Q2: Amount of information	3	5	5
Q3: Clarity of information	3	5	5
Q4: Directions	3	5	5
Mean Summary Score	15	20	18.27

Note: Scores ranged from 1 (strongly disagree) to 5 (strongly agree) with minimum of 4 and maximum of 20.

TABLE 2

Provider Satisfaction Scores Pre and Post Data, N= 6

5-point Likert Satisfaction Survey	Baseline M (SD)	Post Data M (SD)	P Value
Current discharge evaluation	4.00 (.753)	5.00 (.516)	
Familiar with AAP guidelines	4.00 (.753)	5.00 (.516)	
Perceives checklist as useful	3.50 (.816)	5.00 (.516)	
Views of discharge readiness	4.50 (.548)	5.00 (.000)	
Checklist would improve flow	4.00 (.753)	5.00 (.516)	
Total Score	20.0 (1.86)	23.5 (1.21)	0.027*

Note. M=median, SD=standard deviation; Scores range from 1 (strongly disagree) to 5 (strongly agree). *Wilcoxon Signed Ranks Test

Conclusions

- A comprehensive discharge readiness bundle guided by evidence was developed and implemented in a tertiary delivery center with promising results
- The increase in provider satisfaction with a standardized tool to evaluate discharge readiness was statistically significant and warranted a change in practice
- Maternal reports of satisfaction with follow-up care received was high
- Preliminary readmission rates during the study period was zero
- The quality improvement project may have positively impacted early hospital readmission rates
- Further research is warranted to examine the individual elements of the discharge toolkit



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