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## A Patient-Centered Right Care Approach to Sudden Infant Death Syndrome Prevention in a Rural Clinic

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Rural Clinic

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### Abstract

**Background:** Nationally, sudden infant death syndrome (SIDS) is the leading cause of death among babies 1 to 12 months of age, and many of these deaths are a result of sleep-related accidental suffocation while in an unsafe sleeping environment.

**Local Problem:** Baseline data from a chart audit at a rural clinic showed that only 80% of parents were placing infants on their backs for sleep, and there was no standardization among providers for teaching safe sleep practices. The aim of this project was to implement right care for SIDS prevention at newborn wellness visits 80% of the time within 90 days.

**Methods:** This rapid-cycle quality improvement project used four plan-do-study-act cycles that included tests of change related to team engagement, screening, intervention and referral to treat. Data were analyzed using run charts to evaluate the impact of interventions on outcomes.

**Interventions:** Weekly staff meetings were held for team engagement, a safe sleep checklist for screening for SIDS, a shared decision making tool was utilized for patient engagement, and a follow-up phone log for referral to treat.

**Results:** Achieving right care for SIDS prevention was met at 90% over 90-days. The checklist, referral to treat log book, and shared decision making tool were implemented at 100% by the end of the project. Staff were engaged through team meetings with improved Likert scores.

**Conclusions:** Provider and staff education was significant to the success of this project. Newborns were properly screened for SIDS risk. The project can be replicated in other clinical settings.

**Keywords:** SIDS, SUID, sudden infant death, cot death, sleep safety, pacifier

## A Patient-Centered Right Care Approach to Sudden Infant Death Syndrome Prevention in a Rural Clinic

Each year in the United States approximately 1,500 infants die from SIDS which accounts for the largest proportion of sudden unexpected infant deaths (CDC, 2018). Nationally, SIDS is the leading cause of death among babies, and many of these deaths are the result of sleep-related accidental suffocation while the infant is in an unsafe sleeping environment (Murphy, Xu, & Kochanek, 2013; Shapiro-Mendoza et al., 2014). In 1994 the Centers for Disease Control (CDC) launched a safe to sleep campaign presenting guidelines instructing parents to place infants on their backs to sleep on a firm surface in the same room but on a separate sleep surface (Moon, 2016). Since these guidelines were released, SIDS numbers are down by about 50% (Centers for Disease Control and Prevention [CDC], 2018). Each year in Louisiana, approximately 100 infants die from sudden unexpected infant death (CDC, 2018). A study by Pollack in the American Journal of Public Health (2011) estimated the cost of SIDS when coupled with smoking cessation services at \$210,500 per life saved. That same study attributed 23.6% of SIDS deaths to prenatal maternal smoking (Pollack, 2011).

A cause and effect analysis was performed to examine gaps in care at a rural family clinic. Chart audits revealed that only 80% of parents were placing their infants on their backs for sleep, 25% of mothers reported smoking, and there was no standardization among providers on teaching safe sleep practice. In 2017, a 4-month-old baby that was cared for by the Clinic died while co-sleeping with his parents. Referral to treatment was not tracked and there was no way to know if safe sleep practices taught in the clinic were being implemented in the home.

### **Available knowledge**

Caregiver education must extend beyond distribution of printed guidelines and include teaching that SIDS is not a random act that can be prevented by vigilance (Moon et. al, 2010). Safe sleep messages are not reaching all groups equally (Carlin & Moon, 2017). SIDS occurs more frequently when infants are placed on their stomachs to sleep rather than their backs. According to the National Infant Sleep Position study, instruction from the health care provider influences the decisions parents make regarding their infant's sleep environment (Colson et al., 2013). After reviewing national guidelines and literature on SIDS and sleep safety, providers at a rural family health clinic realized that there was a gap in the documentation of safe sleep teaching, and identification of newborns at high risk for SIDS. There was a lack of standardization of care among providers at the clinic. The guideline used in this project was from the Agency for Healthcare research and quality national guideline clearinghouse. The guideline provides detailed and specific best practice strategies and recommendations regarding infant sleep positioning and SIDS counseling (Wilkinson et. al, 2013).

### **Rationale**

To implement right care for SIDS prevention at newborn wellness visits, a standardized method of identification and screening was needed to improve the patient-centered and effective care provided to the community and meet the aims of the Institute of Medicine's quality care report (Agency for Healthcare Research and Quality, 2016). Screening, brief intervention and referral to treatment (SBIRT) is an evidence-based, comprehensive, brief, scientific model for delivery of early intervention to people with substance use disorders and those at risk for developing these disorders (Substance Abuse and Mental Health Services Administration, Center for Integrated Health Solutions, 2011). SBIRT was the method implemented by the project director to design interventions to address the gaps identified for the clinic. This was measured

by a combination of patient post-test, screening, and referral to treat. The aim of this quality improvement project was to improve right care for SIDS prevention in newborns ages 0-12 months to 80% at a rural family practice clinic within ninety days.

### **Methods**

The site of the QI project is a privately owned rural health clinic that serves approximately 50-85 patients daily, typically 65% of whom have Medicaid. There are approximately two to five newborns (age 0 to 12 months) seen daily. Staffing includes three nurse practitioners, three licensed practical nurses, two medical assistants, and an office manager. Stakeholders in this project included all of the clinic's staff, newborns ages 0-12 months, and their caregivers.

The project utilized four Plan-Do-Study-Act (PDSA) quality improvement rapid cycles to execute tests of change in the clinic over 90 days. Each cycle lasted two weeks, and revisions were made for the subsequent cycle to keep the project moving forward. Data were analyzed by run charts to identify correlation between intervention and outcome and any impact on the system.

### **Interventions**

The interventions focused on four areas: screening, brief intervention, referral to treat, and team engagement. Please refer to the PDSA cycles (Table 1). A screening checklist was given to parents of newborns during triage, and was reviewed by the provider once the patient was in the exam room. This identified patients at high risk for SIDS, and prompted providers to educate caregivers on safe sleep practices. A shared decision making tool (SDMT) was given to parents to help facilitate communication between parents and providers. Referral to treatment was conducted through entry of patients into a log book and providing follow up phone calls to

parents. This was later adapted to scheduling a follow up visit before the patient left the clinic. Team engagement intervention initially was a kickoff in service, followed by weekly huddles and a wrap-up party.

### **Study of Interventions**

Data from each intervention was collected three times each week throughout the project, and further recorded and graphed into Excel run charts. Rules of detection in run charts as defined by Ogrinc et al. (2012) were followed to identify changes needed at the end of each two week cycle to meet the aim of the project. Evaluation of data made it possible to detect changes, trends and variation over time, and positive reinforcement was implemented to build energy and team buy-in (Ogrinc et al., 2012). Use of a post-test within the SDMT was used to measure patient engagement. Team surveys were used to measure satisfaction using a Likert scale on a weekly team engagement survey. Iterative changes were made based on run chart interpretation.

### **Measures**

The process and outcome measures of the project's core interventions are described in detail (Table 2). The process of screening for SIDS risk was measured by calculating the percentage of infant visits screened using the checklist, and the outcome was defined by the percentage of the screened visits, which identified newborns at high-risk for SIDS. Team engagement measured by number of staff trained divided by number of staff on the team went from 22% to 90% with mean scores on Likert increasing from 55.5% to 85.5%. Patient engagement measured by number of tools completed divided by number of patients who qualified for the tool went from 0% to 100%. The balancing measure of visit length was tracked to see whether improved changes caused increased wait times. Validity and reliability were not

measured. Contextual elements were subjectively addressed and changes were implemented as needed. Collected data was reviewed, tallied, and compared to the previous week's findings.

### **Analysis**

The project used both qualitative and quantitative processes to gather and measure iterative changes over 90 days. Run charts (Figure 1-3) included depiction of goal, median, and value lines in different colors with annotations to identify changes, analyze trends and process shifts, and point out the variations in order to facilitate the process of decision making and adjustments of interventions. Mean percentages helped to assess the efficiency of the tests of change and drove project changes. Qualitative measurement was performed through staff and parent feedback and all findings drove changes in the tests of change during the ramps. This doctoral project was excused from review by the Institutional Review Board at Frontier Nursing University because it does not qualify as human subjects' research and meets federal requirements for quality improvement. No outside funding was received for this project.

### **Results**

Within the 90-day time-span of the project, a median of 90% in delivery of right care for SIDS prevention at wellness visits was achieved (Figure 1). The balancing measure of visit length showed that the project increased wait times by only one minute on average. A summary of measures and results from each PDSA cycle is displayed in Table 2.

### **Screening**

Screening was performed through utilization of a checklist to identify infants who were at high risk for SIDS (Figure 2). A median of 100% and an eight point run in cycle four signaled that using a checklist to evaluate for SIDS risk was effective. The checklist was a good tool to identify patients at high risk for SIDS, and served as a touchpoint between providers and patients



for clarification of sleep practices. Reviewing the checklist with parents in cycle 4 led to a 10% increase in the median.

### **Patient engagement**

Patient engagement through use of a SDMT (Figure 3) resulted in a median of 74% on the post-test Likert scale scores and showed a ten point run signaling that an effective change was made. Parents were eager to learn about SIDS and to demonstrate safe sleep practices, and use of the SDMT was an effective way to begin conversations about SIDS. SDM tools improve patient buy-in through collaboration (Colson et. al, 2013). Putting the SDMT into triage led to a 40% increase in use during cycle 2.

### **Referral to treatment**

Referral to treatment using a follow-up phone call log book to caregivers of infants at high risk for SIDS was highly variable and not effective in making a change and was later revised to including the scheduling of a follow-up appointment prior to the patient leaving clinic. Although keeping a log book was the most difficult and least effective part of the project, it served to identify that further interventions were needed in this area to best reach the caregivers of infants at high-risk for SIDS. Also, the addition of an incentive in the form of a \$5 gift card increased compliance by 22% in cycle 3 with using the log book by the nurses.

### **Team engagement**

Team engagement began with an initial kickoff in-service for the staff. Following the initial training, staff participated in weekly meetings, which included reminders. Staff completed a weekly team engagement survey to identify improvement areas. Mean Likert scores on the team engagement survey went from 22% to 90% at the end of the 90-day project. Staff buy-in and participation improved as the project continued. Ideal meeting time and length for the clinic

was 10-15 minutes during lunch to allow staff to participate without infringing on their other obligations.

### **Discussion**

Over the 90-day project time frame, a median of 90% right care for SIDS prevention at wellness visits was achieved. Teamwork played a key role and increased through the use of a kickoff in-service, weekly meetings and a wrap-up party. Staff competency increased from a mean of 22% to 90%. Administrative support was also key. Use of a screening checklist was successful in identifying patients at high risk for SIDS and screening rates increased from 0% to 100% at the end of the project. The use of the SDMT increased to from a baseline of 0% to 100%, and helped to increase the number of caregivers wanting to discuss SIDS and safe sleep practices. Use of a follow-up phone log did not reach goal, but helped evaluate if patients were scheduling appropriate follow-up appointments and usage was noted to increase by an average of 85.7% from a baseline of 0%.

### **Interpretation**

Using SBIRT was an effective method to reach a median of 90% right care for SIDS prevention at wellness visits. Using a patient-centered approach with a SDMT and checklist improved standardization. Post-test Likert scale scores showed an effective change had been made. Using a checklist to evaluate for SIDS risk was effective. A follow-up phone call log book to high risk for SIDS parents was highly variable and not effective in making a change and was revised to scheduling an appointment prior to the patient leaving clinic.

Teamwork was the key to implementing change and applying evidence-based guidelines to the practice setting, which resulted in improved standardization, screening for SIDS risk, and education on safe sleep practices, and right care. Staff buy-in and participation improved through

weekly team huddles. Parents were eager to learn about and demonstrate ways to help prevent SIDS, and the use of a SDMT was an effective way to start conversations and increase parent buy-in. A screening checklist was a good tool to identify at infants at high risk for SIDS and served as a touchpoint between providers and patients for clarification of safe sleep practices. A log book with follow up phone calls was variable in effectiveness, and making follow up appointments prior to patients leaving the clinic was a better referral to treatment process for the clinic. Incentives were helpful in encouraging compliance with the SDM tool, check list and call log book.

Use of the SDMT helped to spark conversations between parents of newborns and providers. Similar results are found in the literature regarding overcoming cultural perceptions (Moon et. al, 2010). Barriers that the team had to overcome included remembering to give out the shared decision making tool and checklist as well as entering parents into the call log book. The team's support of the project contributed to its success, and enabled providers to reach out to more parents about SIDS prevention.

### **Limitations**

The project had several limitations, which may reduce the generalizability to other sites. Internal validity may have been affected by bias. The design of the project was geared towards a standalone family practice and may not be easily implemented in a setting such as a hospital where follow-up is limited. Imprecision of delivery of the SDMT and the checklist may result in missed opportunities to impact right care for SIDS prevention. Parent perception, cultural beliefs, and level of comprehension may have influenced data collection. Attempts to mitigate this occurred when providers reviewed the handouts. It is possible that parents who did not want to

discuss the topic of SIDS may have answered questions falsely in order to avoid discussion of smoking or sleep practices.

### **Conclusions**

After implementation of this QI project right care for SIDS prevention at wellness visits was 90% which exceeded the goal of 80%. The success of this project was largely credited to the amazing team, whose buy-in and participation coupled with the support of the administration allowed attainment of goals. The simplicity and adaptability of using the SDMT and screening checklist and the minimal time increase needed to implement made this project easily sustainable, measurable, and replicable in other clinics. The clinic will continue to use the SDMT and checklist with plans of adding it to the EMR and weekly team meetings will be incorporated into the schedule. To sustain these and other QI innovations, the team must buy into the importance of change and serve as change agents. Further study is needed regarding SIDS prevention.

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Table 1

*PDSA Cycles and Interventions*

<b>Focus</b>	<b>PDSA #1</b>	<b>PDSA #2</b>	<b>PDSA #3</b>	<b>PDSA #4</b>
<b>Team Engagement</b>	Kickoff team in-service	Weekly team meeting with team engagement survey	Weekly team meeting with revised team engagement survey with change of day	Weekly team meeting with change of time
<b>Patient Engagement</b>	Implementation of a shared decision-making tool for parents with newborns	Revised shared decision-making tool placed in triage	SDMT with Teach back demonstration	Safe to sleep video played in well child waiting room
<b>Screening</b>	Implementation of SIDS checklist	Revised SIDS checklist	Use of smoking cessation handout	Reinforcement of checklist by all NPs during visit
<b>Referral for Right Care</b>	Referral for right care through phone call log for high risk for SIDS patients	Start a call back follow up phone call log for all patients 0-12 months old	Reminder poster and gift card incentive for all nurses who use call log	Follow up appointment scheduled prior to patient leaving
Table 1				

Table 2

*Measures and Results*

<b>AIM: To improve right care for SIDS prevention in newborns ages 0-12 months to 80% at wellness visits over a 90-day period.</b>				
<b>Test of Change</b>	<b>Measure Type</b>	<b>Operational Definition</b>	<b>Baseline</b>	<b>Results</b>
Teamwork	Process:	# staff trained/ # staff on team	22%	90%
	Outcome:	Mean score on Likert scale each week	55.5%	85.5%
Patient Engagement	Process:	# tools completed/ # patients who qualified for the tool	0%	100%
	Outcome:	Mean score on post-test measure within tool each week	20%	74%
Screening for SIDS risk	Process:	# checklists administered/ total # of visits for children 0-12 months old	0%	100%
	Outcome:	# high risk for SIDS/ total # of patients screened	0%	70%
Referral to Treatment	Process:	# log book entries of follow-up phone calls/ total # of high risk for SIDS patients	0%	100%
	Outcome:	# of parents who receive follow-up phone calls/ total # of HR SIDS patients in log book	0%	85.7%
	Balancing Measure	Mean visit length tracked to ensure that screening does not interfere with clinic schedule	49 minutes	50 minutes

Table 2.



Figure 1

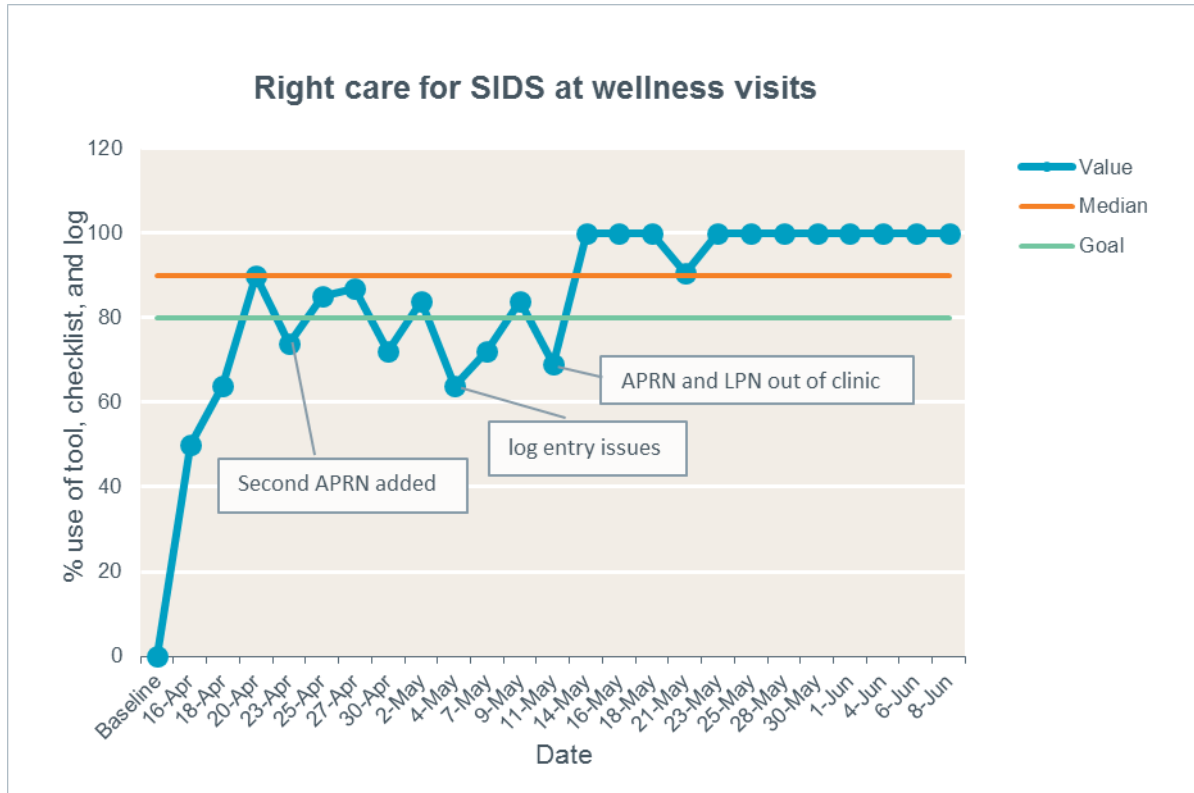


Figure 1: A median of 90% right care for SIDS at wellness visits was achieved. AIM was measured by combination of patient post-test, screening and referral to treat and reached a mean of 100% by cycle four signaling that an effective change took place.

Figure 2

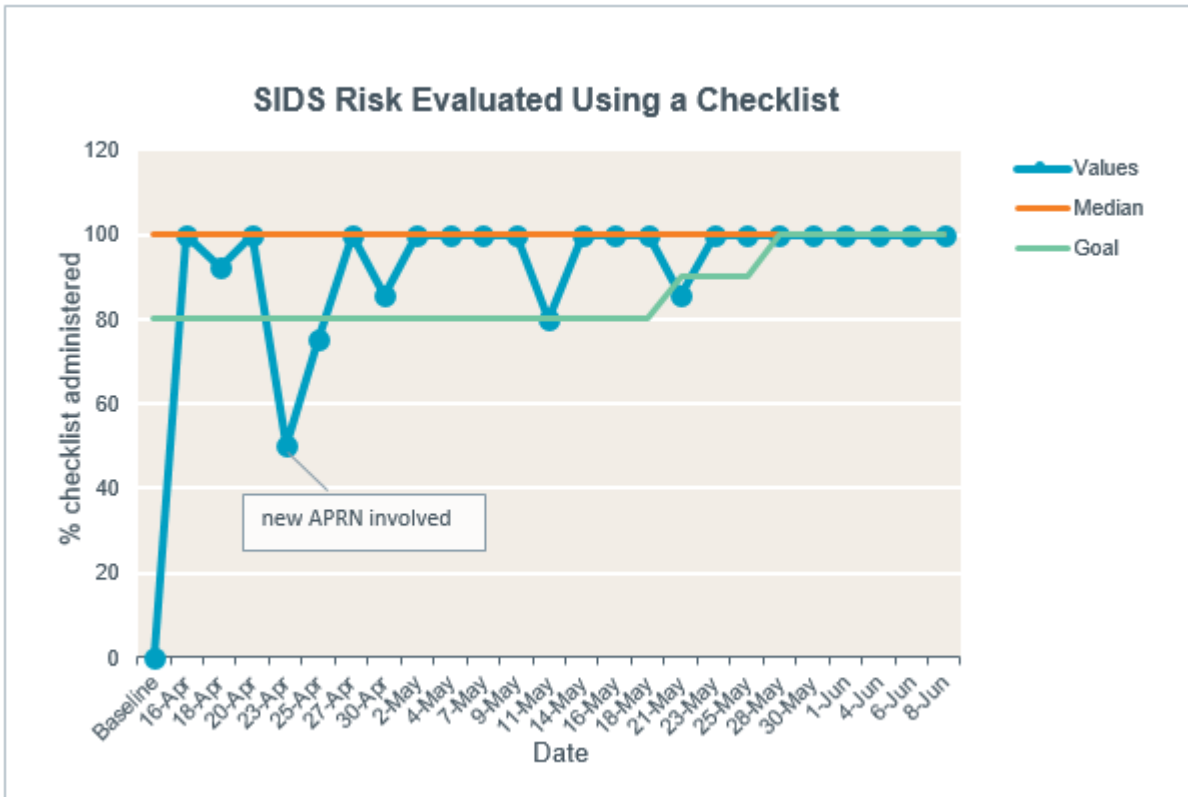


Figure 2: Screening for SIDS risk was implemented using a checklist and had a median of 100% by cycle four with an overall mean of 95% for all four cycles and supported that using a checklist is one way to identify high risk for SIDS patients. Overtime implementation of a checklist reached 100% by staff buy-in.

Figure 3

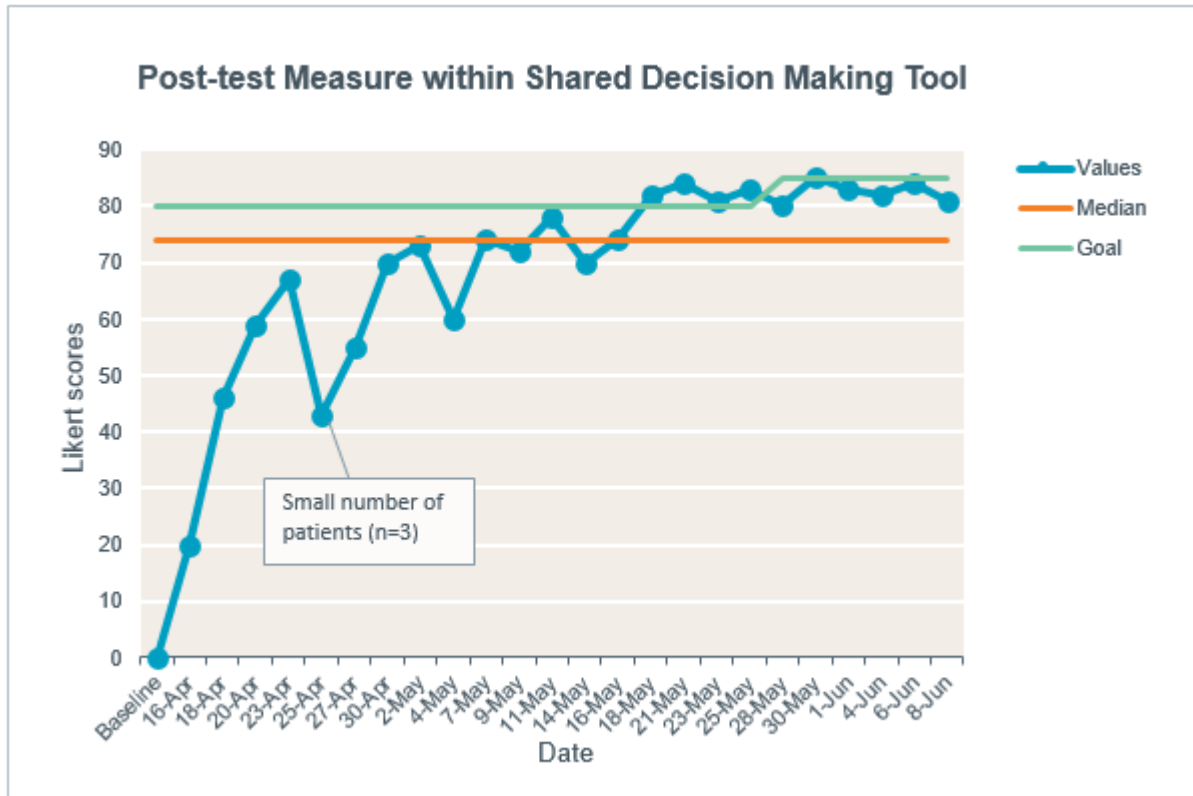


Figure 3: Patient engagement outcome measure reached a median of 74% with a ten point run above the median in cycles three and four signaling an effective change. Use of a shared decision making tool helped initiate conversations about safe sleep practices between parents and providers.