Quality Improvement Kit

Improving Discharge Management

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OVERVIEW

This Quality Improvement Kit is designed to provide your NICQ 2009 quality improvement team with readymade material that you can use to initiate improvement efforts in this Collaborative. Your team can use these Kits to jump-start their quality initiatives. Thus, these Kits should be thought of as 'Starter Kits.' Over the course of NICQ 2009 the teams in the collaborative will be encouraged to refine the kits based on further review of the evidence and their own experiences testing and implementing the changes.

This Quality Improvement Kit is based on a set of clinical practices that have the potential to improve the outcomes of neonatal care, known as **Potentially Better Practices (PBP's).** Some of these PBP's are derived from the work of previous collaborative Neonatal Intensive Care Unit (NICU) teams that have made focused attempts to improve the quality of neonatal care in the previous Neonatal Intensive Care Quality (NICQ) collaboratives. Others are derived from a review of the literature and from expert recommendations.

These practices are not recommendations or protocols from the Vermont Oxford Network. They are labeled 'potentially better' rather than 'better' or 'best' because until the practices are evaluated, customized, and tested in your own NICU, you will not know whether are truly 'better' or 'best' (or 'worse'). Depending on the particular circumstances in your unit, you may have to implement other practices or modify existing ones in order to successfully improve neonatal outcomes in your unit.

The PBP's in this collection are not necessarily the only ones required to achieve the improved outcomes you are targeting. Thus this list of PBP's is not exhaustive, exclusive, or all-inclusive. Changes in practice, guided by these PBPs, will require testing and adaptation to your particular circumstances and context in order to achieve measured improvements in outcomes [1].

As you test and implement these PBP's you should monitor the results closely to ensure that you are obtaining the desired results, that no harm is being done, and that no unanticipated results are seen. In addition to the suggested measures, you should track some balancing measures.

In previous NICQ collaboratives, the teams have used the Model for Improvement described by Langley and colleagues [2], as a framework for their improvement efforts. The key elements of the Model for Improvement are (1) Aims (2) Measures (3) Changes (4) PDSA cycles.

In this Kit, each PBP is placed within the framework of the Model for Improvement and has associated with it an aim, a measure, a list of suggested changes, and tips and tools for implementing changes (that include potential barriers to implementation).

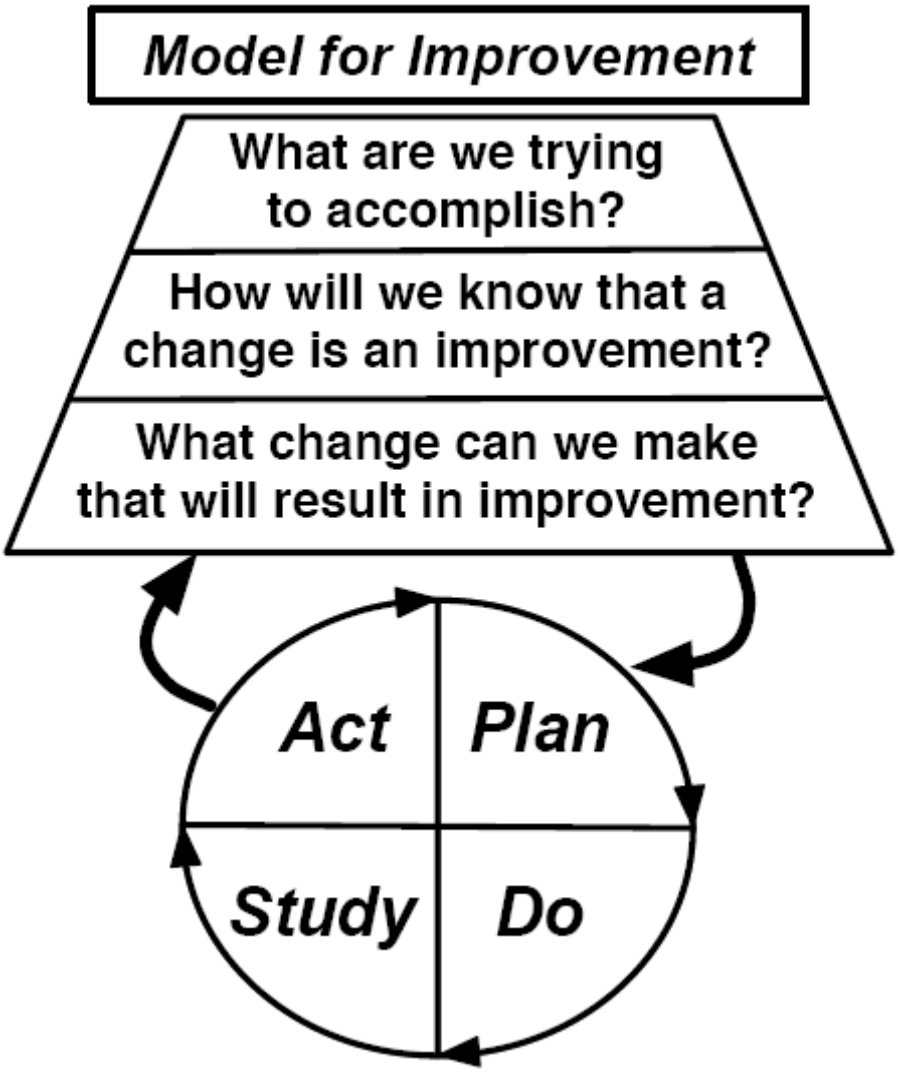

Figure. Model for Improvement

Your team can implement as many of the PBP's in this Kit as you wish, based on an assessment of your unit's priorities, and based on availability of resources, time, and individuals with quality improvement skills. Your team can modify the tools provided in this Kit as desired. For example, if your team feels that the wording of a specific aim is not suitable for your unit, you should feel free to modify the aim based on your local discussions and decisions. Similarly, your team is free to modify the exact methods of obtaining measurements in your project, the data collection tools, and the exact change ideas you implement as this project progresses.

As mentioned above, this is a Starter Kit. As you work in the NICQ 2009 Collaborative to make improvements, you will collaborate and share your progress, challenges and breakthroughs with members of the NICQ community. An expected byproduct of this improvement work will be a set of improvement case studies, tools and resources to

support others' improvement, but the initial focus and emphasis for your team should preferably be on testing, adapting and implementing practices provided in this Kit. Furthermore, it is expected that as a result of working with these initial PBP's your Topic Group will refine and perhaps add to the this set of practices.

OVERALL GOAL

The overall goal of this Quality Improvement Kit is for each participating center to develop and utilize a longitudinal discharge management process that is evidence-based, practical, easy to access and use. Each participating center should provide a successful transition to home for every infant and family based on an understanding of their unique medical and social requirements.

Ideally the overall goal of discharge management would be measured based on a parental satisfaction survey with one or more targeted questions regarding length of stay, quality of care received, and follow-up coordination.

In the absence of such a survey, length of stay may be used as a surrogate.

POTENTIALLY BETTER PRACTICES (PBP's)

The potentially better practices (PBP's) included in this kit are the following:

PBP 1. Recognize families and caregivers as full partners in discharge management and planning to ensure that medical and family needs and expectations are being met.

PBP 2. Utilize interdisciplinary guidelines and expectations for key assessments of infant and family status.

PBP 3. Determine the timing of infant discharge based on infant medical status, infant functioning, and caregiver competence.

PBP 4. Coordinate closely with primary care providers and community support services to facilitate a smooth and successful transition to home.

PBP 5. Measure readmissions reliably and minimize their frequency by prospectively addressing infant feeding problems and other identified areas of risk.

This list of PBP's to improve the neonatal discharge process is not an exhaustive or exclusive list, and these are not the only PBP's that may improve discharge management. Some may be controversial. We refer to these practices as "potentially better" rather than "better" or "best" because we believe that until the practices are evaluated, customized, and tested in your own NICU, you will not know whether are truly "better" or "best". Depending on the particular circumstances in your unit, you may have to implement other PBP's in order to successfully improve neonatal respiratory outcomes in your unit. As you implement these PBP's you should monitor the results closely to ensure that you are obtaining the desired results, that no harm is being done, and no unanticipated results are seen.

PBP 1. Recognize families and caregivers as full partners in discharge management and planning to ensure that medical and family needs and expectations are being met.

Rationale

The 1992 Family Centered Care Guidelines "recognize the family is the constant in the child's life, while the healthcare professionals and service systems often change" [3]. Adoption of family-centered care values into the NICU with parents heavily involved as equal partners in the care delivery, decision-making, and planning for the next level of care has been a goal of VON NICQ Collaboratives since 2000 [4]. The Vermont Oxford Network recognizes the need and benefit for families to be involved in their infant's discharge care. Several dimensions of care have been identified as important to parents whose infants received neonatal intensive care through the discharge process: assurance, caring, communication, consistent information, education, environment, follow-up care, pain management, participation, proximity, and support [5]. High quality family centered care assesses the parents' understanding and interest, commitment, and ability to care for their infant. After assessment the team should prepare the family through instruction and education discharge planning for the transition to the next level of care. Training the family in key aspects of infant functioning and care at each stage of recovery enables the team to assess the parents' capacity to care for the infant and enables the family to have a realistic picture of what it will take to care for the infant. Together the team and the parents can then accurately predict and account for resources required for the infant. Overall family satisfaction with the care delivered is greatly impacted by the discharge process. Since discharge is the last process connecting the hospital to the family, a well-executed discharge is crucial. Finally, the most recent Joint Commission National Safety Goals include recommendations relating to encouraging families active involvement in their own care as a patient safety strategy [6].

1.a. Aim

Aim to have a family satisfaction survey filled out on every patient discharge or disposition. Within these surveys, 100% of families should have high satisfaction with care (agree or strongly agree) as measured using the chosen survey instrument and 100% of families should report readiness for discharge.

1.b. Measure

The family and caregivers' experience of NICU care can be assessed by using any of several tools:

- www.howsyourbaby.com parental survey. Questions may be tailored to measure the discharge process (for further information, contact Dr. Bill Edwards at Dartmouth-Hitchcock)[7]
- Press-Ganey scores
- Hospital specific exit survey

1.c. Changes to Test

- Ensure that discharge planning begins at admission. Assess the family's need around discharge, identify the resources they will need, and begin the process of

obtaining them. To identify their needs, consider creating a 'Family Assessment Tool'.
- Utilize patient satisfaction surveys regarding discharge management and readiness for discharge.
- Make callbacks to families within 48 hours of discharge to home.
- Have families undergo and interview or complete a survey at follow-up clinic discharge visit.
- Incorporate family members into decisions made on bedside rounds.
- Strive towards creating a livable space at the infant's bedside.
- Create a Family Advisory Council to provide ongoing input and feedback regarding the efforts of the unit towards incorporating the family in the discharge process and preparing them for the next level of care.
- Offer CPR to all parents.
- Consider implementation of the COPE program: an educational-behavioral intervention program for parents that commences early in the hospitalization and has been shown to improve parent mental health outcomes, enhance parent-infant interaction, and reduce hospital length of stay [8].

Potential Barriers to Change

- Cost of additional educational materials and process.
- Cost of staff spending more time with families to understand and manage their expectations.
- Cost to develop or purchase a patient satisfaction tool.
- Cost to develop reports and give feedback to bedside clinicians.
- Families may feel that they are being given responsibility for care before they are ready.

1.d. Potential Risks

- None identified

PBP 2. Utilize interdisciplinary guidelines and expectations for key assessments of infant and family status.

Rationale
Determining the ideal time to discharge to home is a complex decision that requires multidisciplinary collaboration. The parents, the community medical provider, all members of the NICU team, hospital and home nurses, respiratory therapists, dieticians, physical, occupational, speech, and developmental therapists, are all involved. Case managers, discharge coordinators, primary nurses, and social workers should partner with parents for the discharge process [9]. Guidelines developed by the American Academy of Pediatrics, provide guidance for safe discharge criteria for the high-risk infant [10]. Critical pathways and guidelines that follow key transitions help facilitate key health care interventions and promote expected patient outcomes, as well as encourage ongoing management, family engagement in care, and family education. Because critical pathways and guidelines can be fit to specific patient populations, they are effective in promoting consistent care, communication among providers and parents, and timely parent teaching [11]. Numerous successful critical pathways towards discharge from the NICU have been designed [12-16]. Guidelines should be multidisciplinary involving nursing, respiratory care, physician / NNP, and family input. Specific transitions within a pathway trigger specific interventions for common neonatal issues such as thermoregulation, apnea / bradycardia resolution and monitoring, growth evaluation, breast or nipple feeding competence, infant and caregiver cue-based behavior, CPR teaching, car seat education and assessment, and key learning expectations for primary caregivers. Guidelines should individualize parental / primary caregiver learning needs on admission, incorporate modifications and demonstration of newly acquired skills throughout the hospitalization, and in preparation for discharge to the next level of care.

2.a. Aim
Utilize an easy to use and easy to access critical pathway for discharge management. 100% of the assessments mandated by the guidelines will be completed on time for every infant.

2.b. Measure
The suggested measure has two parts:

- Arrange a telephone follow-up call to the home to establish that the infant is meeting minimum feeding criteria established at discharge (e.g. frequency of feedings, volume for bottle, time at each and one/both breasts for breast, need to awaken for feeds).
- Track weight gain after discharge. Since the first weight at primary care follow-up is less accurate due to scale differences, use second weight post-discharge at primary care visits to demonstrate continued weight gain.

2.c. Changes to Test

- Create a critical pathway for discharge planning with clearly identified time points for key assessments.

- Share your critical pathways with the family. Involved and empower them in the infant's journey through the pathway.
- Create a discharge cardex that allows documentation of goals that is easily accessible
- Develop a transition point checklist to remain at the bedside for various disciplines to review and act on, including oral feeding progression..
- Provide parents with a document that lists their responsibilities at each one of the major transition points.
- Develop cue-based feeding guidelines to promote the infant's ability to self-regulate his or her oral intake and advance feeds on the basis of readiness cues. Ensure that all nurses demonstrate knowledge and skill in this area.
- Establish clear unit based guidelines without variance for apnea / bradycardia management, the use of home monitoring, and triggers to obtaining monitors if necessary [17].
- Encourage CPR participation and make it available to all families, caregivers. Consider training additional staff such as respiratory therapists, nursing students to teach CPR.
- Develop or adopt car seat safety guidelines for assessing infant respiratory stability.
- Provide information regarding SIDS and reinforce the preferred "back to sleep" positioning.
- Promote guidelines promoting transitioning from isolette to bassinette based on feeding and thermoregulation independent of weight or gestation.
- Include the timing and arrangements of circumcisions for parents that request them in your critical pathway.
- Include the coordination and scheduling of retinopathy of prematurity (ROP) exams into your critical pathway.

Potential Barriers to Change

- Cost associated with new tools and training staff
- Discharge beyond 36 weeks post-menstrual age for infants not meeting functional status goals, including oral feeding competence

2.d. Risks

- A guideline that does not recognize the unique needs of different infants may lead to poorly timed assessments.

PBP 3. Determine the timing of infant discharge based on infant medical status, infant functioning, and caregiver competence.

Rationale
Infants historically were discharged from high risk nurseries and NICUs based on infant weight rather than by progressive physiologic and developmental criteria. However randomized controlled trials have demonstrated that earlier discharge may be safely accomplished if the infant is physiologically stable, the parents are actively involved, competent discharge follow-up is assured, and if an organized program tracking growth and development is in place [10, 18-20]. Achieving adequate growth should be considered longitudinally, not just in the days and weeks prior to discharge. Ideally it is a highlighted aspect of discussion on daily rounds. Among most preterm infants and infants born with special needs, oral feeding is best learned in the hospital under the care of physicians, nurses, and feeding therapists [10]. Oral feeding skills should be encouraged to develop while gavaged feeds are continued to ensure adequate total caloric intake. Breast milk provision and breast feeding even among infants receiving calorically fortified feeds are to be encouraged by physicians and nursing staff [21]. Although discharge gavage feeding has been safely used in the home setting, it should only be considered when feeding is the last issue delaying discharge of an older convalescing infant and adequate support at home can be guaranteed [10]. Multidisciplinary education of nursing staff and caregivers towards accurate recognition of suck-swallow-breath coordination, infant feeding cues, and satiation is important as is proper oral feeding technique, including breast and bottle feeding. A sustained pattern of oral intake and weight gain of sufficient duration and family participation of feeding competence should be demonstrated prior to discharge.

3.a. Aim
Discuss the feeding maturation of preterm infants and the goals of feeding in terms of discharge daily on interdisciplinary rounds.

3.b. Measure
The proportion of infants' discharge feeding plans and infant's oral feeding skills discussed on daily rounds.

3.c. Changes to Test
- Develop a core group of nurses trained to recognize feeding cues, suck-swallow coordination, and provide oral feeding support for other clinicians and family caregivers.
- Create an observation check list for parents to demonstrate that they are competent at assessing and feeding their infants prior to discharge.
- Utilize lactation consultants liberally and identify community lactation consultants for post-discharge support.
- Encourage and facilitate lactation and breast feeding using a standardized evidence-based interventions similar to the Rush Mothers' Milk Club program [22].
- Discuss the growth chart on daily rounds.

Potential Barriers to Change

- Reluctance to making infant oral feeding competence a top priority for determining discharge
- Resistance to assuring oral feeding knowledge, assessment, and skills of clinicians
- Reluctance of nurses to delegate feeding management to lactation consultants
- Perception that bottle feeding is easier

3.d. Risks

- Mistaken assessments of discharge readiness leading to early or delayed discharge.

PBP 4. Coordinate closely with primary care providers and community support services to facilitate a smooth and successful transition to home.

Rationale

The discharge management process facilitates the transition to the next level of care whether that is to home or to another level of care. Smooth and successful transition disposition is dependent on communication and cooperation between the transferring facility (NICU) and the accepting facility or agency (accepting hospital or primary care physician and home care agencies). The discharge plan should be fully designed to meet the infant's needs at the next level of care. NICUs need to provide a comprehensive discharge summary and other essential information to community providers and to transferring/receiving facilities. Relationships should be developed to determine with community providers and/or facilities necessary information to provide families prior to discharge. Nurses have unique opportunities to influence infant well-being directly through continued contact with families and through interventions that support infant caregivers [23]. When surveyed, health care professionals and families both agreed on the importance of developing closer, clearer relationships between hospital and primary health care services [24]. The most recent Joint Commission National Safety Goals include recommendations relating medication reconciliation at the time of transition from hospital to home or referral facility [6].

4.a. Aims

100% of infants have a post discharge care plan in place including primary care and subspecialty care appointments, medication reconciliation for parents and primary care physician, an accurate discharge summary, and arrangements for community support services and follow up.

4.b. Measures

- Primary Care Provider (PCP) communication satisfaction via survey.
- The proportion of PCP that report receiving an accurate discharge summary before the time of first follow-up visit.
- The proportion of parents who receive an accurate medication reconciliation form and an accurate discharge summary.
- Proportion of infants seen by the primary care provider on schedule.
- Proportion of infants with appropriate ROP follow up exams.

4.c. Changes to Test

- Create a position of discharge manager. Ideally this role will ensure availability of all follow-up appointments and services and ensures proper communication, progression of planning, and documentation.
- Use a discharge check list.
- Develop a resource manual that contains information regarding community providers, preferred communication preferences, contact information, clinic dates, etc.
- Develop a resource manual that contains information regarding the hospitals that accepts infants from your center as back transports. Include in the reference,

contact information, level of care of the nursery, comfort with dealing with specific conditions.

- Be in accordance with the Joint Commission National Safety Goals [6]:
    1. A process should exist for comparing the patient's current medications with those ordered for the patient while under the care of the organization.
    2. When a patient is referred or transferred from one organization to another, the complete and reconciled list of medications is communicated to the next provider of service and the communication is documented.
    3. When a patient leaves the organization's care directly to his or her home, the complete and reconciled list of medications is provided to the patient's known primary care provider, or the original referring provider, or a known next provider of service, including home care.
    4. When a patient leaves the organization's care, a complete and reconciled list of the patient's medications is provided directly to the patient, and the patient's family as needed, and the list is explained to the patient and/or family.
- Back transport facilities should receive a clear written discharge summary and have the opportunity to discuss any questions or concerns prior to the transport.
- Communicate with referral services, other specialists.
- For each patient, within a week of admission and when an infant reaches 32 weeks post-menstrual gestation, contact the primary care provider to review the infant's status and ensure that the indicated resources for discharge are in place.
- Arrange ancillary follow-up services such as home health care, home monitoring, visiting nurses, and home respiratory care.
- Provide callbacks to facilities/agencies within 24 hours to determine the accuracy of the discharge plan and success of the family transition.
- Pre-arrange and schedule all follow-up appointments prior to discharge. Present these to the family in writing. The primary care provider should receive a clear written discharge summary at the time of discharge and have the opportunity to discuss any questions or concerns prior to the first follow-up appointment.
- Ensure that families have a mechanism to have questions/concerns addressed between the time of discharge and the first follow-up appointment either with the primary care provider or with the nursery. If the nursery is providing this service, there must be a means of documenting the telephone contacts and recommendations.
- Implement follow-up phone calls to families and/or primary caregivers.

Potential Barriers to Change:

- Cost to extend the complexity of the discharge process
- Cost to establish a medication reconciliation system
- Cost to train staff to evaluate the home plan of care
- Cost for staff to follow-up with care in the community
- Inadequate or inaccessible community support services
- Inadequate or inaccessible subspecialty medical services

4.d. Risks

- Omissions could lead to inadequate follow up, missed appointments, and lack of necessary care, or medications.
- Poor planning or coordination of follow up care could lead to increased burdens and expense for the family.

PBP 5. Measure readmissions reliably and minimize their frequency by prospectively addressing infant feeding problems, respiratory problems, and other identified areas of risk.

Rationale

Infants are discharged home increasingly early and with progressively more complex medical needs. These changes have led to substantially increased neonatal readmission rates [25]. More worrisomely is the fact that rehospitalization rates with severe illness is much higher among NICU graduates [26]. Neonatologists have limited control over events that occur long after discharge from the NICU; however information on rehospitalization in the immediate postdischarge period is highly desirable. A well-planned discharge of a medically stable and functional infant is important to assure safe and effective care in the home and to minimize avoidable hospital readmissions. Of particular interest are late preterm infants [26], infants born extremely low birthweight (ELBW), infants requiring palliative care, infants who are technology dependent [27, 28]. In one study by Escobar and others, high rates of rehospitalization for respiratory distress were reported among infants born <33 weeks gestational age and suggests that lung immaturity may be responsible for their increased risk of rehospitalization [26]. In the same study, infants born 33 to 36 weeks gestational age comprised only 9% of NICU discharges, but made up 19% of NICU rehospitalizations. In this group, 71% of infants were rehospitalized because of jaundice [26]. Other studies have underscored the important role that RSV infection plays in rehospitalization rated among preterm infants with BPD as well as those born late preterm but without known severe lung injury [29, 30].Understanding the increased risk of rehospitalization in premature infants requires physicians and policy makers to consider factors beyond adjusted postmenstrual age. Utilizing physiologic and developmental parameters, parental competency indicators, demographic and health services variables at or around the time of discharge, may improve our ability to predict these undesired events.

5.a Aims

Reduce the rehospitalization rate in the two weeks from discharge to <2% [26].

5.b Measures

Create a policy to call all infants 14 days following discharge to confirm post-discharge follow-up appointments. Track the proportion of all infants and two subpopulations of infants (VLBW infants, late-preterm infants) with respect to overall health, emergency department (ED) visits, or readmissions.

5.c. Changes to Test

- Consider a policy of two follow-up phone calls to every discharge patient. The 1st phone call should occur 48 hours following discharge to assess entry into the home and to investigate imminent or developing problems. A second phone call is suggested at 14 days to investigate for ED visits, readmissions, and overall health.
- Analyze each readmission to identify preventable factors and provide feedback to NICU staff regarding each potential cause.

- Categorize the most common preventable reasons for the visit or readmission (i.e. feeding/dehydration, respiratory illness, jaundice, etc.).
- Categorize the type of patient (i.e. late preterm, ELBW infant, infants requiring palliative care, infants that are technology dependent.
- Determine common causes for readmissions and create interventions where appropriate. Subtype reason for readmission: respiratory problems, general infection, GI problems, accidents, failed community service, parental fatigue/frustration, feeding/dehydration/failure to thrive.
- If feeding problems / failure to thrive are a major cause of rehospitalizations consider implementation of intensive education regarding feeding, hydration status. Consider creation of a tool to assess feeding competence or discharge comfort with breastfeeding score prior to discharge.
- If bronchiolitis is a major cause of rehospitalization, consider increased use of palivizumab and increased education regarding handwashing and infectious disease prevention.
- If jaundice is a major cause of rehospitalization, consider adopting a more conservative management plan with regards to bilirubin management.
- Consider increased use of home health care nursing.

Potential Barriers to Change:

- Resistance to increased phone calls to parents.

5.d. Risks

- Potential for increased length of stay.

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