Implementation and Case-Study Results of Potentially Better Practices to Improve the Discharge Process in the Neonatal Intensive Care Unit

Marla M. Mills, RN, CNP, Debra C. Sims, RNC, Jack Jacob, MD

Neonatal Intensive Care Unit, University of Minnesota Children’s Hospital, Fairview, Minneapolis, Minnesota; Neonatal Intensive Care Unit and Alaska Neonatology/Pediatrix Medical Group, The Children’s Hospital at Providence, Anchorage, Alaska

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ABSTRACT

OBJECTIVE. The objective of this study was to implement potentially better practices for discharge planning in the NICU.

METHODS. Each participating hospital completed a self-assessment tool on discharge planning and a staff satisfaction survey. Parent satisfaction data were obtained from an Internet-based survey. Many projects regarding discharge planning were completed at each participating center. A major emphasis was the development of transition points to span discharge planning over the entire hospitalization. Results of compliance with tasks or processes that were identified by the transition points and results of staff and parent satisfaction surveys were monitored over time.

RESULTS. The implementation of the transition points at each center demonstrated an improvement in the completion of discharge tasks within the recommended time frame. Combined results of all centers demonstrated a moderate improvement in compliance with transition points from baseline to final measurement in the following areas: unit orientation (56%–81%), identification of a parent feeding plan (74%–92%), completion of cardiopulmonary resuscitation training (55%–72%), and car seat education (42%–63%). Staff survey results showed improvement from baseline to final measurement in the following areas: staff satisfaction with the discharge process (32%–50%), clear documentation of the discharge plan (26%–40%), and clarity of team members’ roles in the discharge process (24%–44%). A resource kit on discharge planning was developed for staff and included a section with parent education material. An Internet-based parent satisfaction survey was implemented successfully.

CONCLUSIONS. All centers that participated in the collaborative made significant strides in the discharge planning process. Overall, parent satisfaction with discharge planning was high, and improvements were noted in staff satisfaction and availability of resource material.
The transition from hospital to home for families of an infant who has been in the NICU can be challenging. Comprehensive discharge planning can have a positive effect on the family’s transition to home. An uncoordinated discharge can result in families’ being unprepared to go home. The 6 hospitals in the Vermont Oxford Discharge Planning Collaborative (named the No Place Like Home group [NPLH]) had an overall aim to create a successful discharge planning process that spans the NICU stay to the next level of care and a goal to embed discharge planning into all aspects of patient care and communication. The centers participating in this collaborative include Mission St Joseph’s Hospital, Asheville, NC; Rockford Memorial Hospital, Rockford, IL; St John’s Hospital and Medical Center, Detroit, MI; The Children’s Hospital at Providence, Anchorage, AK; University of Minnesota Children’s Hospital, Fairview, Minneapolis, MN; and Yakima Valley Memorial Hospital, Yakima, WA.

The group developed and implemented 5 potentially better practices (PBPs) in the area of discharge planning. The practices were developed through expert advice, literature review, internal benchmarking, discussion, and group agreement. Implementation of practices occurred through a variety of projects that affect all aspects of care in the NICU. Some of these projects took place at all participating centers, and some projects were center specific.

The following PBPs were focused on for discharge planning:

1. Create an easy-to-use, easy-to-access discharge planning tool kit.
2. Restructure interdisciplinary oral and written communication tools and processes to reflect a “plan for the day, the stay, and the way” to discharge.
3. Maximize the impact and use of caregiver educational tools, and update materials and delivery systems for caregiver education.
4. Use various continuous quality improvement tools and processes to ensure parent/caregiver and staff satisfaction.
5. Analyze and enhance interactions with and transfers into the community (M. Hill, RN, MS, CMAC, unpublished data, September 2002).

METHODS

After achievement of consensus on the PBPs for discharge planning, the focus of the group turned to the implementation of these PBPs. The results of the self-assessment and staff survey identified areas on which the collaborative and individual centers could focus to improve the discharge process, and common needs were identified. All centers worked on staff satisfaction, parent satisfaction, transition point tools, and parent education.

Individual centers worked on additional projects in the areas that often provided ideas for improvements in other centers. Implementation of the PBPs for discharge planning affected documentation, interdisciplinary communication, parent education, timing of care provided, and family involvement in care. Many projects were completed as rapid-cycle projects based on the plan-do-study-act (PDSA) format. Most of the centers implemented areas of discharge planning in small, sequenced steps. Semiannual meetings, monthly conference calls, and a listserv allowed the group to work on multiple projects and review individual center projects. Through sharing of ideas and progress, other centers gained new insights on current projects and ideas for new projects. Some common indicators were agreed on to measure progress in the areas of staff satisfaction, parent satisfaction, and compliance with transition points. Each center determined its own format and implementation for rapid-cycle projects on the basis of its own needs. Results from each center were shared with staff, and new rapid-cycle projects developed. Combined results from all centers were tabulated to measure the progress of the collaborative in the areas of parent satisfaction, staff satisfaction, and transition points. Results were presented as percentages, in a format that was consistent with “simple, practical measurement” for rapid-cycle projects.

RESULTS

PBB 1: Create an Easy-to-Use Easy-to-Access Discharge Planning Tool Kit

All units identified the need to coordinate discharge teaching and planning so that it occurs throughout the hospitalization and does not overwhelm parents and staff at the end of the hospital stay. The group was able to identify and agree on several key transition points that are reflective of the patient’s physiologic status throughout the hospitalization. Each center implemented the transition points in a way that worked best in their unit. Centers developed a transition point tool to incorporate the points into their plan of care and documentation.

The goal was to spread tasks in the discharge process over the hospitalization and eliminate the last day rush. Each participating hospital monitored the discharge process before implementation of the transition points and reassessed practice at 3- and 9-month intervals. A summary of the compliance for completion of discharge tasks within the transition point time frame is provided in Table 1 (all centers’ data combined) with ranges noted. A goal of 85% compliance for completion of transition points within the appropriate time frame was determined. A moderate improvement was noted in compli-
ance with transition points from the beginning of the project to final measurement in the areas of unit orientation (56%–81%), identification of a feeding plan by parents (74%–92%), completion of cardiopulmonary resuscitation training (55%–72%), and car seat education (42%–63%).

The implementation of the transition points at each center was different. Mission Hospitals emphasized teamwork and embedding discharge teaching into every aspect of care. They chose not to change any forms but emphasized oral and written communication among all disciplines. University of Minnesota Children’s Hospital, Fairview, developed a new discharge kardex with a goal to provide documentation in 1 location that is accessible to all team members. Children’s Hospital at Providence developed a transition point checklist that was used as a reminder at the bedside for disciplines to complete. Through the “study” phase of multiple PDSA cycles, Children’s Hospital at Providence incorporated the checklist as a permanent record into the education portion of the unit care plan. Yakima Valley Memorial Hospital revised a 2-page document that is used by all the disciplines involved in the care of the infant and the family and that incorporated the transition point format. After several revisions, staff used the form more consistently, duplication of documentation has decreased, and satisfaction with the overall discharge process has improved. Rockford Memorial Hospital chose to implement the transition point checklist with the goals to have it become a permanent chart record and incorporate the checklist into the interdisciplinary plan of care and education record. Documentation has improved steadily, and staff rely on the checklist as a communication tool.

Each center identified other opportunities for improvement. For example, University of Minnesota Children’s Hospital, Fairview, developed a parent letter that lists their responsibilities under each of the major transition points. Yakima Valley Memorial Hospital has worked further on modifying the parent letter for use in their unit. University of Minnesota Children’s Hospital, Fairview, identified feeding management close to discharge as problematic and developed cue-based feeding guidelines to promote the infant’s ability to self-regulate his or her oral intake and advance feedings on the basis of readiness cues. In cue-based feedings, infants are fed orally when readiness cues are present but fed by gavage as needed to maintain an adequate intake. The initial project involved healthy, bottle-feeding preterm infants but has since expanded to include breastfeeding infants, infants with chronic health problems, and term infants.

Another challenging area that was identified by University of Minnesota Children’s Hospital, Fairview, was how discharges late in the day resulted in increased staffing needs, limited additional admissions, and family frustration with a late discharge. A discharge time of 11:00 AM was established so that families and staff could plan and be ready to leave in a timely manner. Having a set discharge time allows for the cleaning of rooms, assignment revisions for the next shift, and accepting new admissions. The earlier discharge allows families to arrive home and settle in during the day. The percentage of discharges that occur before 11:00 AM has increased from 30% to 73%.

TABLE 1 Compliance With Transition Points: Information for All Centers

<table>
<thead>
<tr>
<th>Transition Point</th>
<th>Baseline, %</th>
<th>January 2004, %</th>
<th>July 2004, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 1 wk after admission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit orientation</td>
<td>56 (22–85)</td>
<td>72 (46–92)</td>
<td>81 (73–95)</td>
</tr>
<tr>
<td>Psychosocial assessment</td>
<td>72 (42–100)</td>
<td>77 (69–100)</td>
<td>83 (58–100)</td>
</tr>
<tr>
<td>Metabolic screening</td>
<td>95 (88–100)</td>
<td>93 (81–100)</td>
<td>95 (90–100)</td>
</tr>
<tr>
<td>Parent feeding plan identified</td>
<td>74 (50–100)</td>
<td>84 (57–100)</td>
<td>92 (85–100)</td>
</tr>
<tr>
<td>During level II care but at least 72 h from discharge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPR training</td>
<td>55 (33–75)</td>
<td>70 (48–89)</td>
<td>72 (42–82)</td>
</tr>
<tr>
<td>Hearing screening</td>
<td>71 (39–94)</td>
<td>70 (35–96)</td>
<td>79 (41–90)</td>
</tr>
<tr>
<td>Back to Sleep education</td>
<td>60 (40–94)</td>
<td>60 (27–100)</td>
<td>67 (55–100)</td>
</tr>
<tr>
<td>Primary doctor identified</td>
<td>92 (84–100)</td>
<td>86 (68–100)</td>
<td>82 (64–92)</td>
</tr>
<tr>
<td>Car seat education and testing</td>
<td>42 (4–94)</td>
<td>51 (42–96)</td>
<td>63 (35–100)</td>
</tr>
<tr>
<td>Within 1–3 d before discharge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge medication education/prescriptions</td>
<td>59 (38–91)</td>
<td>70 (39–100)</td>
<td>59 (25–100)</td>
</tr>
<tr>
<td>Follow-up appointments</td>
<td>63 (29–91)</td>
<td>67 (39–100)</td>
<td>59 (45–95)</td>
</tr>
<tr>
<td>Immunization education</td>
<td>89 (75–94)</td>
<td>83 (50–100)</td>
<td>90 (89–100)</td>
</tr>
<tr>
<td>Home feeding plan</td>
<td>86 (70–100)</td>
<td>83 (65–100)</td>
<td>81 (61–100)</td>
</tr>
<tr>
<td>Parent satisfaction survey</td>
<td>50 (41–60)</td>
<td>29 (23–36)</td>
<td>46 (29–56)</td>
</tr>
</tbody>
</table>

CPR indicates cardiopulmonary resuscitation. Ranges are from all centers.

a Goal of 85% compliance was met.
nary rounds with documentation occurring on paper charts, computerized formats, and checklists. Each unit has its own system for verbal reporting and written documentation.

Discharge planning can and should be incorporated into daily medical rounds, nursing reports, and written documentation. However, this type of system may result in fragmentation of documentation because discharge planning may not consistently be part of the focus of the daily plan. Parent involvement in rounds or care conferences also is different for each hospital. Scheduled interdisciplinary rounds have been identified in the literature as helpful in discharge planning.2

Mission Hospitals revamped multidisciplinary rounds to meet better the needs of the team members. The results of a survey of team members who participated in rounds demonstrated that the members wanted to focus on infants who would be discharged within 1 week and adhere to a time limit of <1 hour per session. The team leader reviews the following for each infant who is anticipated to be within 1 week of discharge: projected day of discharge, home equipment and medication, home health needs, home feeding plan, screening needs (eg, car seat trial; hearing, developmental, or feeding assessment), identification of a pediatrician, and necessary follow-up. The change in format seems to have had a positive impact on the completion of discharge tasks at the appropriate transition points and length of stay.

Children’s Hospital at Providence had a long-standing tradition of weekly walk-about interdisciplinary grand rounds that were disruptive for the unit and ineffective for many members. A work group met and determined that rounds should provide a clear clinical picture, involve all team members, coordinate discharge with the best possible outcome for the infant and the family, and support transition to home and community.

The process and format were changed so that multidisciplinary rounds now occur outside the unit, in a conference room, and are structured to review patients who are at a transition point of 50% oral feedings and patients with significant medical, social, or ethical issues. Staff nurses are present when their patient is on the list, and the case is presented briefly and includes a roundtable presentation from all disciplines, with discussion time limited to 10 minutes, and notes or plans are recorded on the medical chart. The change has been positive for most members. Measurements occur periodically to sustain the gain and ensure that the change remains positive.

PBP 3: Maximize the Impact and Use of Caregiver Education Tools
Parent education is 1 of the critical components of discharge planning. Providing parents with the knowledge, skills, and resources to care for their infant after discharge remains 1 of the cornerstones of discharge planning. Discharge teaching must be individualized to meet the learning needs and styles of different families.3 Discharge teaching includes both general and very specialized teaching. The NPLH group developed written material for teaching several topics.

A list of parent education topics was developed and divided among the group with each center responsible for development or revision of its assigned topics. Oschner and Ross Laboratories developed an NICU Infant Book for use by parents and nurses.4-5 Many of the topics included in this book have been revised with permission. The updated material was available to all participating centers by the listserv and in a resource kit that was distributed at a Vermont Oxford Network (VON) collaborative meeting (VON, NPLH resource kit [unpublished data], October 2003). Because many families have Internet access during the hospitalization of their infant,6 a list of Internet resources for families was developed.

Rockford Memorial Hospital uses several pamphlets and instruction sheets as parent education tools. The nurses noted that they were collecting and distributing the same materials for every family and suggested that all materials be combined into a folder for distribution shortly after admission. Several PDSA cycles were completed, and welcome folders were developed for parents. Additional evaluation showed that parents were overwhelmed with the amount of information that they received at admission. The next PDSA will divide the information into 2 folders: (1) pamphlets, brochures, and instructional sheets that are useful in the early phase of orientation to NICU and (2) parent instruction sheets to prepare for caring for their infant at home.

PBP 4: Use Various Continuous Quality Improvement Tools and Processes to Ensure Parent and Staff Satisfaction
Many quality improvement processes were used in the implementation of the PBPs to ensure quality care and measure the impact of each project. Multiple rapid-cycle projects were completed to analyze the impact of each change with frequent monitoring to ensure lasting changes. Staff communication was central to the successful implementation of the PBPs. Some of the methods used included posters, discussion at staff meetings, e-mail, and personal contact.

Initial staff input was obtained at all participating centers by a staff survey on discharge planning. The survey used was adapted from a survey that was developed by St John Hospital and Medical Center and consisted of 21 questions and an open-ended question asking how discharge planning could be improved. Areas that were included in the survey were satisfaction with the overall process, the plan, documentation, perception of whether families were prepared for discharge, timeliness of such things as prescriptions and medication teaching, home equipment and the cardiopulmonary resuscitation education, timeliness of circumcision, and...
whether there was a clear understanding of roles involved in the process and any suggestions for improvement.

Each center used the results of the surveys to identify areas of focus for discharge planning within each hospital and across the collaborative when results from all of the participating centers were combined. Five key questions from the original survey were included in a repeat survey that was administered several months after the start of the collaborative and again close to the end of the collaborative. The results of the modified survey from all participating centers are shown in Fig 1. Improvement was noted in staff satisfaction with the discharge process (32%–50%), workload allows time for teaching (19%–38%), clearly documenting the discharge plan (26%–40%), and clarity of team members’ roles in the discharge process (24%–44%). Improvement was noted in all centers from baseline to the final measurement, except in the area of staff satisfaction with documentation.

A goal of the NPLH collaborative was to implement a family satisfaction tool. The tool that was used for this goal was the Internet-based parent satisfaction survey howsyourbaby.com that was developed especially for the NICU population.7 Many of the questions in the survey are oriented toward the discharge process. Survey questions address general satisfaction with care, parents’ feelings about preparedness for discharge, ability and confidence in feeding, familiarity with their infant, feeling like a parent, participation in care, and adequacy of information from staff about medical and care issues. The collaborative group also developed open-ended questions that were oriented toward improving the discharge process. Some individual centers also developed center-specific open-ended questions.

At the beginning of this collaborative, 3 of the 6 participating centers were using the howsyourbaby.com survey, although none had made the use and completion of the survey part of their unit’s culture. Much of the energy so far has been spent on overcoming barriers relating to implementation of the tool rather than using the tool to guide practice. It is helpful to have the survey completed in the NICU before discharge to improve response rates.

One way to facilitate the process is to embed into the discharge process the task of having parents complete the survey. The transition point checklist was helpful in facilitating this. At Children’s Hospital at Providence, bedside staff, charge nurses, and family care coordinators lead parents to a desktop computer, sign them onto the Web site, and have them complete the survey in privacy on the day of discharge. Using this process, the NICU has been successful in having >80% of families fill out the survey.

Experience suggests that the following barriers are common and need to be addressed for implementation to be successful:

- Having hospital administrators understand the need for a NICU-specific patient satisfaction tool was a significant barrier. Many centers and pediatric departments were using hospital-wide tools such as the Press Ganey survey,8,9 which may meet the needs of the hospital as a whole but have limited applicability for the NICU population.
- Many NICUs are not oriented to having computers dispersed throughout the NICU. This was an initial barrier to implementation. Computer and Internet access for staff and family was a barrier that delayed implementation for some. Computers and Internet access...
use needs to be incorporated into the NICU to optimize implementation.

- Computer phobia among nursing staff with reluctance to be involved also may be a problem. Training a core group of staff on all shifts who can serve as at-the-time facilitators for the remainder of the staff is a successful strategy.

- The survey generates a large amount of data that can be difficult to present concisely. It is helpful to have dedicated staff that can interpret and organize the presentation of data for staff and leadership. This is crucial if the information is to be used for staff feedback and quality improvement efforts that are based on results.

Centers that are more advanced in the use of this tool are at a point of using the data to change practice. Feedback from open-ended questions has been especially valuable in revealing opportunities for improvement. Examples of these include a program for smoking cessation for identified families at a time when they are most likely to be amenable to behavioral intervention, addressing the issue of consistent caregivers, parental participation in multidisciplinary rounds, and developing a cue-based feeding program to decrease parent frustration with feeding management near discharge. Survey responses for all centers in the collaborative for preparedness for discharge, feeding confidence, and teaching on car seats and sleeping are shown in Fig 2. Parent readiness for discharge was high at the beginning and throughout the collaborative. Parents’ receiving just the right amount of information regarding car seat trials and safe sleep demonstrated some variability throughout the collaborative.

University of Minnesota Children’s Hospital, Fairview, identified clarity of role responsibility in the discharge process as 1 area that needed improvement. Initially, staff with responsibility in the discharge process were interviewed to determine specific discharge tasks. The discharge tasks were listed, and agreement was reached to clarify which person/role had primary or shared responsibility for task completion. The final role responsibility list was shared with all team members by e-mail and poster. A significant improvement, from 46% to 82%, was noted on the staff survey: Staff agreed with the statement, “Each discipline’s role in the discharge process is clear.”

**PBP 5: Analyze and Enhance Interactions With and Transfers Into the Community**

The ultimate goal of the NPLH group is the discharge of infants to their family and community. Once families are home, parents need support and resources within their community. Many children who are discharged from the NICU have no or few special needs related to their neonatal course. However, some children who are discharged from the NICU will have or be at risk for health and educational problems for many years. These needs are met best in the community setting through medical and educational services that are available to families. The NPLH group as a collaborative did not focus extensively on posthospital experience of families, but each center evaluated its status in this area. Many centers completed individual projects with a focus on community resources, providers, and feedback from families once home from the hospital.

Children’s Hospital at Providence initiated the implementation of follow-up telephone calls after discharge from the NICU. Questions developed included (1) How prepared were you to take your infant home? (2) On a
scale of 1 to 10, on what 1 thing did we rate a 10? (3) What do we need to improve on most? (4) Have you seen your infant’s physician yet? (5) Has your infant been readmitted to the hospital or required any emergency care? Follow-up calls are made within 1 month of discharge.

The second week at home is believed to be the ideal contact time and is a long-term goal of this project. Challenges to date include time and personnel resources to complete the calls, disconnected numbers, and families not at home at the time of the calls. Feedback shows that families are very willing to talk about their discharge experience, and almost all stated that their discharge went smoothly. Limited implementation and inability to contact all families as a result of challenges mentioned prevent drawing conclusions from any results to date.

Children’s Hospital at Providence conducted a survey that requested feedback from pediatricians who assume care of NICU graduates. They inquired whether families were adequately prepared in the care of their infant and whether there were gaps in preparation of the family and their actual needs once in the community. Generally, pediatricians believed that NICU graduate families were savvy in the care of their infants and that education and management of the care of their infant seemed sufficient. Areas of improvement included more consistent information from the NICU during the hospital stay and a better understanding of nutrition goals and management initiated in the NICU.

Hoping to ease the often difficult and cumbersome process that families may experience as they move from tertiary care to community services, Mission Hospitals participated with community providers in the 17 counties of Western North Carolina to form a partnership that addressed the referral process for early intervention (EI)-eligible families. Grant monies were obtained through Duke Endowment to provide a full-time developmental specialist in the NICU. Part of that role includes educating families about EI, making the referral to the community provider, and arranging for the families to meet the community provider before discharge from the NICU. This increased contact with families, as well as the additional information about EI services, provides a smoother transition to home and care in the community. The partnership reports that there has been an increase in families who retain EI services after discharge.

A matrix of the implementation of the PBP’s for discharge planning at each participating center is shown in Fig 3. Each center completed the matrix early in the collaborative and then periodically updated the matrix to monitor progress.

**DISCUSSION**

The use of transition points helps provide a framework for discharge planning. Transition points help keep all team members on the same page. The concept of transition points provided enough structure for discharge planning to be useful yet offered enough flexibility that each center implemented the transition points to suit their own process. The focus of monitoring the transition points was completion of the tasks within the recommended time frame. Centers in the collaborative used a variety of tools to implement the transition points. The result of the chart audit at each center helped to determine future areas for additional work. The data from individual centers showed improvement in many areas, although in many cases, they did not reach the compliance goal of 85%.

Written and verbal communication with parents and among all team members is crucial to facilitating a smooth discharge. One method that is recommended in the literature and that also was implemented in some centers and was in place before the collaborative is the use of interdisciplinary rounds. Interdisciplinary rounds provide input from all team members and families and provide a format for the creation of effective long-range planning.

Family education in preparation for discharge is built into the concept of the transition points, with families learning key pieces throughout the hospitalization rather than the day of discharge. A variety of written information can supplement the verbal and caregiving experiences as families prepare to go home. The collaborative completed many handouts for parents and developed a list of Internet sites to aid in teaching.

The implementation of a parent satisfaction tool (howyourbaby.com), based on work from the previous VON collaborative, was available for all centers and presented a challenge for some centers. This was true despite the common use of other patient satisfaction tools by these hospitals. The Internet access issue was a significant barrier that delayed implementation for several centers. Research, however, indicates that this format is much more amenable to honest responses than other formats.

The tool itself has some advantages compared with other, general patient satisfaction tools in that it is Internet based, is completed before discharge, and can be embedded into the discharge workflow for staff. This is important because many patient surveys that are mailed after discharge have poor response rates, and results may be difficult to interpret without having a complete picture of parental views.

The tool also has items that are specific to the NICU population relating to social service support, how well parents got to know their infant, how often they got to hold and participate in the care for their infant, adequacy of teaching for patient-specific problems, how often they fed their infant, success at breastfeeding at discharge, and questions about household smoking and abuse. An important feature is the ability to ask open-ended questions to identify issues that are important for
Parents but not considered a priority by providers. The finding of problems and frustration on the issue of feeding toward the end of the hospital stay is a case in point.

A significant amount of time was required to implement the howsyourbaby.com tool. Therefore, the group did little work using the information from the tool to

![TABLE 1](image)

<table>
<thead>
<tr>
<th>Measurements:</th>
<th>Alaska</th>
<th>Florida</th>
<th>Rockford</th>
<th>St. John's</th>
<th>Yakima</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Education is completed within defined &quot;trigger point&quot; timeframes</td>
<td>O</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>+</td>
</tr>
<tr>
<td>2. Maintain or decrease length of stay</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>3. Increase staff satisfaction with the discharge process</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4. Increase family satisfaction with the discharge process</td>
<td>O</td>
<td>+</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>5. Decrease unpredicted readmission rates</td>
<td>+</td>
<td>X</td>
<td>X</td>
<td>O</td>
<td>+</td>
</tr>
<tr>
<td>6. For institutions with defined transfer criteria, transfers will occur within 24 hours of infant meeting those criteria</td>
<td>X</td>
<td>+</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**FIGURE 3**

PBP implementation matrix.

A significant amount of time was required to implement the howsyourbaby.com tool. Therefore, the group did little work using the information from the tool to

![TABLE 2](image)

| PBP#1: Creation of an easy to use/ready to access discharge planning tool kit (Measure #1 and 6) | O | + | X | X | O | + |
| PBP#2: Restructure interdisciplinary written and oral communication tools and processes to reflect changes for the day, the stay and the way to discharge (Measures #1, 2, 3, and 4) | O | O | O | X | O | O |
| PBP#3: Maximize the impact and utilization of caregiver educational tools. Update material and delivery systems for caregiver education (Measures #3, 4, and 5) | + | + | X | X | + | + |
| PBP#4: Utilize various continuous quality improvement tools and processes to assure parent/caregiver and staff satisfaction (Measures #2, 3, 4, and 5) | + | + | O | X | + | + |
| PBP#5: Analyze and enhance transfer/interactions into the community (Measures #2, 4, 5, and 6) | + | + | + | + | + | X |

Note: PBP #5 is agreed to be an important piece of discharge planning, but due to time constraints not as much focus will occur from this group on this PBP.
improve processes in the NICU. This is the next step for many centers and underscores the perseverance and time commitment that it takes to implement this PBP. Nevertheless, the survey is rich in specific content that is amenable to interventions toward improving care and teaching.

One of the challenges for this project was to translate the large amount of data from the survey into information that could be presented concisely to staff and management. This was accomplished, and several centers are involved in providing graphic feedback information to staff on a quarterly basis. In addition, centers that are more advanced in the use of this tool have the need to access their own data and manipulate it for quality improvement purposes. These issues are being addressed.

The collaborative identified several limitations of the survey that may need additional development in the future. A common problem with patient satisfaction instruments is that ratings are misleadingly high. This also was seen in our survey. Although this may speak for the care provided, many factors that are unrelated to care might result in overwhelmingly positive responses in patient satisfaction surveys.

It is important to recognize that the field of parent satisfaction research is in its infancy and additional development of tools needs to occur. Another factor that may require modification of the tool in the future is the need to concentrate on other aspects of neonatal care that have an impact on parent satisfaction. These are identified as predelivery care, delivery and stabilization care, transport and admission, critical and stable phases of care, and follow-up care. This may necessitate surveying parents at different times during the NICU stay and also at some period after discharge.

Finally, centers with more experience with the tool have identified the need for additional information on the issue of parent satisfaction, such as whether there are differences in satisfaction between fathers and mothers, between patients with short versus long stays or between infants with complicated medical courses and those with self-limited problems, and between teen families versus older ones. These questions underscore the need for satisfaction tools to have the flexibility to change as the science of measuring parent satisfaction advances.

The second aspect to this PBP was improving staff satisfaction with the discharge process. There is reason to consider patient and staff satisfaction together. Evidence shows that there is a strong correlation between patient satisfaction and staff satisfaction, indicating a convergence of these 2 measures. Intuitively, a rushed discharge in which parent teaching and preparation are done at the last minute is a major frustration for nursing staff and families. The exploratory group demonstrated significant improvement in satisfaction with the discharge process, clarity of roles, and the discharge plan.

There was not as much improvement noted in the area of documentation, but with the implementation of the transition points, ongoing revisions and improvement in documentation continued through much of the exploratory group work.

Much of work of this collaborative focused on the in-hospital experience as families prepare for home. The immediate time period as infants make the transition from hospital to home and support for families within their community remain very important. Individual centers worked on this in follow-up telephone calls and referrals to EI services. The impact of discharge planning on the posthospital experience remains a rich opportunity for additional work in the NICU population.

CONCLUSIONS

The NPLH group focused on multiple facets of discharge planning in the implementation of the PBPs. Through multiple rapid-cycle projects, changes were made in care planning, documentation, and parent teaching material. Evaluation of the changes made was measured in patient outcomes and parent and staff satisfaction.

The resulting recommendations needed to provide enough structure to be helpful in discharge planning but have enough flexibility that each unit could adapt and implement the recommendations in a way that best fit their unit. Each center in the collaborative focused on slightly different PBPs. All NICUs in the exploratory group demonstrated significant improvement in discharge planning and continue their work in this area.

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Implementation and Case-Study Results of Potentially Better Practices to Improve the Discharge Process in the Neonatal Intensive Care Unit
Marla M. Mills, Debra C. Sims and Jack Jacob
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