Evaluation and Development of Potentially Better Practices to Improve the Discharge Process in the Neonatal Intensive Care Unit

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The authors have indicated they have no financial relationships relevant to this article to disclose.

ABSTRACT

OBJECTIVE. Our goal was to identify potentially better practices that create a successful discharge planning process that spans the entire newborn intensive care stay to the next level of care by embedding the discharge planning into all aspects of patient care and communication.

METHODS. Potentially better practices were developed through recommendations from a content expert and a literature review. Internal benchmarking, self-assessment tools, monthly conference calls, the Neonatal Intensive Care Quality Improvement Collaborative 2002 listserv, parent feedback, and semiannual conferences were used to finalize recommendations and implement practices.

RESULTS. Potentially better practices included (1) create an easy-to-use/easy-to-access discharge planning tool kit, (2) restructure written and oral communication tools and processes to reflect plans 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 continuous quality improvement tools and processes to ensure parent/caregiver and staff satisfaction, and (5) analyze and enhance transfers into and interactions with the community.

CONCLUSION. The potentially better practices are recommendations that are designed to integrate organizational, clinical, and operational processes to ensure optimal discharge planning from admission through follow-up in the community.
NICUs experience pressure to manage care efficiently from the time of admission through transition to the next level of care. The discharge collaborative group chose to address the frustrations that occur around the process of discharge planning. Critical issues that were addressed included (1) lack of discharge planning that occurs between the admission of an infant and the immediate pre-discharge period, (2) voluminous teaching that occurs at the end of hospitalization just before a family goes home, (3) the lack of a collaborative interdisciplinary approach in many NICUs, which underlines a successful discharge, (4) the lack of critical, focused communication between team members in addressing progression to discharge, and (5) the need for effective parental education for a successful discharge.

The aim was to create a successful discharge planning process that spans the NICU stay to the next level of care. The goal was to embed discharge planning into all aspects of patient care and communication. A process needed to be developed to evaluate the plan of care continuously against clinical and social issues. The focus of the group was to ensure that resources that are needed to prepare infants and their caregivers to be successful after discharge are applied at the optimal times and in the most effective ways possible. The intent was to focus on the plan of care for “the day,” the hospital acute care “stay,” and “the way” to the next level of care (M. Hill, RN, MS, CMAC, unpublished data, 2002).

METHODS

The process for developing potentially better practices (PBPs) was managed by a content expert who extracted best practice recommendations from a literature review that included both adults and pediatrics and work done at the Center for Case Management, Inc, on improving the discharge process (M. Hill, RN, MS, CMAC, unpublished data, 2002). The scope and the nature of the collaborative did not allow for benchmark visits to individual centers. There were no mechanisms for identifying centers that have global best practices in place for discharge that were addressed included (1) lack of discharge planning in place for discharge from NICUs in a manner that is practical. In this aspect, the subject of effective discharge from the NICU did not lend itself to identifying benchmark centers within the Vermont Oxford Network database in a manner that has been used for prevention of certain disease states, such as chronic lung disease or nosocomial infection. The model on which the collaborative decided was internal benchmarking within the collaborative participants. Recommendations from the content expert were reviewed and discussed by the group, and a list of PBPs was finalized on the basis of consensus and what was practical to accomplish within the time constraints of the collaborative. A self-assessment tool that was completed by centers at the beginning of the collaborative showed that, although no one center excelled across the continuum of the discharge process, individual centers performed certain parts of the process very well. This validated our model of using internal benchmarking to draw on individual centers’ best practices and using group learning to advance all collaborating centers.

Semiannual meetings, a listserv, and monthly conference calls with a facilitator were used to discuss individual center work, use group learning, and plan for collaborative work. Individual centers received input and/or feedback from parents of NICU graduates.

RESULTS

The group developed the following 5 PBPs:

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 transfers into and interactions with the community (M. Hill, RN, MS, CMAC, unpublished data, 2002).

The rating of the level of evidence on the basis of the Muir Gray class of evidence scale1 to support each of these practices is shown in Table 1.

Measurements that were agreed on by the collaborative were as follows:

1. Parent education is completed within the defined “transition point” time frame
2. Maintain or decrease length of stay
3. Increase staff satisfaction with the discharge process
4. Increase family satisfaction with the discharge process
5. Decrease unpredicted readmission rates

PBPs

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

Audits of common discharge preparation in participating centers demonstrated that substantial work is done within the first 2 days of admission, followed by extended periods of inactivity, and concludes with a flurry of activity and teaching during the last day or two of hospitalization. This was universal across all participating centers, although the components of preparation differed among centers (eg, in some centers, circumcision caused a delay or chaos on the day of discharge,
whereas in others, teaching caused delays). The group looked for common elements of care delivery that the family of every infant who is discharged from the NICU experiences. These elements are labeled “transition points” and are ordered to provide a list of tasks to be completed before the next transition point occurs. They are designed to spread discharge preparation over the hospital stay so that the infant and the family are prepared to go to the next level of the continuum of care. One center’s example is shown in Fig 1.

Transition points varied from center to center but shared the concept of accomplishing tasks in a timely manner (eg, parent orientation to the unit) and spreading tasks that need to be accomplished before discharge over the hospital stay. Transition point checklists guide caregivers and are designed to be used during rounds to hold participants in care accountable. Each infant has a checklist so that caregivers can record dates when activities are completed. The checklist was designed to be reviewed with parents so that expectations become a shared responsibility with staff. Parents can help drive the process when a transition point arrives by asking staff to complete tasks in a timely manner. The tool also assists parents in planning for the infant’s homecoming and facilitates the learning of new tasks that are important for an informed discharge.

**PBP 2: Restructure Interdisciplinary Oral and Written Communication Tools and Processes to Reflect Plans for “the Day, the Stay, and the Way” to Discharge**

Verbal reporting of the patient’s condition and progress for the shift or past 24 hours has been the primary source of information between health care staff. This information may or may not be shared with the interdisciplinary team and does not necessarily focus on what needs to be accomplished for a successful discharge. Making effective care and treatment decisions depends on gathering data from many different sources. Interdisciplinary team rounds are a critical strategy that is used in NICUs to accomplish this objective. Discussion in rounds should focus on a plan of care for the day, the stay, and the way to discharge with outcomes to be achieved, family education, and barriers to achieving those outcomes.

Rounds are conducted in various ways depending on the type of unit. NICUs struggle to determine the best approach, such as walking rounds at each bedside or rounding off the unit to protect confidentiality. The best ways to include all disciplines and parents vary by unit. ROUNDS should be held twice a day, limited to 30 to 60 minutes with the purpose of discussing the plan for “the day” (short-term goals for the next 12–24 hours), the plan for “the stay” (are the family and the infant on target for tasks beyond the next day? If not, then is there a plan for resolution?), and the plan for “the way” to discharge (what are the plans or tasks that need to be accomplished for the infant to go home or to the next level of care?).

More extensive interdisciplinary meetings should be conducted weekly or as needed for infants with complex discharge needs (M. Hill, RN, MS, CMAC, unpublished data, 2002). Family/infant conferences should address parents’ expectations and questions about the plan of care. The environment of the interdisciplinary rounds should become one of low tolerance for the status quo. Each team member must come prepared.2

Potential benefits from structured interdisciplinary rounds include (1) coordination of care and discharge of a well-prepared family, (2) greater staff satisfaction when a collaborative plan is followed and the entire team is aware of the next steps, (3) clear role responsibilities and accountability from each team member, which lead to less overlap of duties and rework. The

### TABLE 1 PBPs Strength of Evidence Matrix: No Place Like Home Exploratory Group

<table>
<thead>
<tr>
<th>PBP</th>
<th>Level of Evidence*</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create an easy-to-use, easy-to-access discharge planning tool kit</td>
<td>5</td>
<td>Refs 2–4</td>
</tr>
<tr>
<td>2. Restructure interdisciplinary oral and written communication tools and processes to reflect a plan for “the day, the stay, and the way” to discharge</td>
<td>5</td>
<td>M. Hill, RN, MS, CMAC, unpublished data, 2002 and Refs 4–6</td>
</tr>
<tr>
<td>3. Maximize the impact and use of caregiver educational tools, and update materials and delivery systems for caregiver education</td>
<td>5</td>
<td>M. Hill, RN, MS, CMAC, unpublished data, 2002 and Refs 7–16</td>
</tr>
<tr>
<td>4. Use various continuous quality improvement tools and processes to ensure parent/caregiver and staff satisfaction</td>
<td>5</td>
<td>Refs 17–29</td>
</tr>
<tr>
<td>5. Analyze and enhance transfers into and interactions with the community</td>
<td>5</td>
<td>Refs 30–43</td>
</tr>
</tbody>
</table>

* Based on the Muir-Gray Classification System: level 1, strong evidence from at least 1 systematic review of multiple well-designed, randomized, controlled trials; level 2, strong evidence from at least 1 properly randomized, controlled trial of appropriate size; level 3, evidence from well-designed trials without randomization, including single group, pre–post, cohort, time series, or matched case controls; level 4, evidence from well-designed nonexperimental studies, preferably from >1 center or research group; and level 5, opinion of respected authorities, based on clinical evidence, descriptive studies, or reports of expert committees.
<table>
<thead>
<tr>
<th>Target times</th>
<th>Date/Initial</th>
<th>Don/NA</th>
<th>Action to be completed</th>
<th>Initiated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADM</td>
<td></td>
<td></td>
<td>Family assessment &amp; orientation initiated</td>
<td>RV/CMS/K</td>
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<td></td>
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<td></td>
<td>Pumping started by 6 hrs</td>
<td>RV/CMS/K</td>
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<td></td>
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<td></td>
<td><strong>NMS #1</strong></td>
<td><strong>RN</strong></td>
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<tr>
<td>Day 2</td>
<td></td>
<td></td>
<td>Plan of Care and Teaching Initiated</td>
<td>RV/CMS/K</td>
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<td></td>
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<td>Lactation Consult (24 – 72 hrs)</td>
<td>LC</td>
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<td>PAMC consents to treatment signed &amp; in chart</td>
<td>RV/CMS/K</td>
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<tr>
<td>Day 7</td>
<td></td>
<td></td>
<td><strong>Psycho-Social Risk and Support Assessment &amp; Plan</strong></td>
<td><strong>SW</strong></td>
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<td></td>
<td>Developmental Therapist Assessment &amp; Plan</td>
<td><strong>DT</strong></td>
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<td></td>
<td>Pediatrician identified</td>
<td>RV/CMS/K</td>
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<td>Pediatrician office informed of baby's presence</td>
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<td></td>
<td></td>
<td></td>
<td>Family assessments and unit orientation completed</td>
<td>RV/CMS/K</td>
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<td></td>
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<td></td>
<td><strong>NMS #2</strong></td>
<td><strong>RN</strong></td>
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<tr>
<td>Day 10-14</td>
<td></td>
<td></td>
<td>Cranial ultrasound (for babies 32 weeks 5 days or less)</td>
<td>MD/NNP</td>
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<tr>
<td>Day 30</td>
<td></td>
<td></td>
<td>Interdisciplinary case review pm</td>
<td>RV/CMS/K</td>
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<tr>
<td>Day 60</td>
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<td></td>
<td>Interdisciplinary case review pm</td>
<td>RV/CMS/K</td>
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<td></td>
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<td><strong>NMS #3 or Thyroid Function</strong></td>
<td><strong>MD/NNP</strong></td>
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<td>Home Readiness assessment</td>
<td>CMS/WS</td>
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<td></td>
<td>Increase care by parent (videos and teaching)</td>
<td><strong>RN</strong></td>
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<td></td>
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<td></td>
<td>CPR training</td>
<td><strong>RN</strong></td>
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<td></td>
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<td></td>
<td>Feasible for one week - 70°C caffeine</td>
<td>MD/NNP</td>
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<td>Feasible for one week - 70°C caffeine</td>
<td>MD/NNP</td>
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<tr>
<td>Open OR</td>
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<td>Hearing Screen (&gt;34 wks) ALGC</td>
<td><strong>RN</strong></td>
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<td></td>
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<td></td>
<td>Circumcision</td>
<td>MD/NNP</td>
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<td></td>
<td>Feasible for one week - 70°C caffeine</td>
<td>MD/NNP</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Feasible for one week - 70°C caffeine</td>
<td>MD/NNP</td>
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<tr>
<td>50% Full oral feedings</td>
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<td>Interdisciplinary case review pm</td>
<td>RV/CMS/K</td>
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<tr>
<td>3 days to DC</td>
<td></td>
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<td>DC feeding plan: formula volume</td>
<td><strong>RN</strong></td>
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<td></td>
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<td>Desire Outcomes Met, Open concerns resolved</td>
<td><strong>RN</strong></td>
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<td></td>
<td>Teaching COMPLETED</td>
<td><strong>RN</strong></td>
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<td></td>
<td></td>
<td></td>
<td>Developmental discharge assessment if &lt;32 wks or &lt;3B</td>
<td><strong>DT</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pediatrician appointment made by</td>
<td>RV/CMS/K</td>
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<td>Car seat</td>
<td>Recall check OK</td>
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<td>Rooming in Plane</td>
<td>RV/CMS/K</td>
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<tr>
<td>Special Needs</td>
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<td>Sleep study (AMS – see criteria)</td>
<td>MD/NNP</td>
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<td></td>
<td>Home monitor and G2 training</td>
<td>MD/NNP</td>
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<tr>
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<td>Hearing Screen followup</td>
<td><strong>BAER</strong></td>
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<td>ROP exam:</td>
<td>ROP follow up</td>
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<td></td>
<td>Continuous Feeding</td>
<td>MD/NNP</td>
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<td></td>
<td>Discharge length, OTC, Hot</td>
<td><strong>RN</strong></td>
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<td>Discharge pictures</td>
<td><strong>RN</strong></td>
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<td></td>
<td>Medications: Teaching</td>
<td>Relabeled</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Other follow up per DC planning summary and DCC/SM notes</td>
<td>CMS/WS</td>
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<tr>
<td>D/C &lt; 24 hrs</td>
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<td></td>
<td>How does the baby feel</td>
<td><strong>Mother</strong></td>
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<td></td>
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<td></td>
<td>Discharge</td>
<td><strong>Father</strong></td>
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<td>Discharge pictures</td>
<td><strong>RN</strong></td>
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<td></td>
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<td>Medications: Teaching</td>
<td>Relabeled</td>
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<td>Other follow up per DC planning summary and DCC/SM notes</td>
<td>CMS/WS</td>
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<tr>
<td>Immunizations</td>
<td></td>
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<td>Maternal HBsAg status</td>
<td>Postdelivery</td>
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<td></td>
<td></td>
<td></td>
<td>Clinic consent</td>
<td>Hepatitis B Vaccine #1</td>
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<tr>
<td>30 day</td>
<td></td>
<td></td>
<td>Clinic consent</td>
<td>Hepatitis B Vaccine #1</td>
</tr>
<tr>
<td>60 day</td>
<td></td>
<td></td>
<td>Info consent</td>
<td>Hepatitis B Vaccine #2</td>
</tr>
<tr>
<td>D/C</td>
<td></td>
<td></td>
<td>Synagis (48 hrs before D/C)</td>
<td>MD/NNP/RDN</td>
</tr>
</tbody>
</table>

**FIGURE 1**
Example of one center's transition point checklist. ANA indicates Alaska Neonatology Association; CM, case manager; DT, developmental therapist; HBIG, hepatitis B immune globulin; HbsAg, hepatitis B surface antigen; RN, registered nurse; RT, registered therapist; MD/NNP, neonatologist or neonatal nurse practitioner; SW, social worker; NA, not applicable.
infant and the family should become the focus. Improved communication with the family and among team members can be achieved when time- and goal-driven outcomes are the focus.3

The group also tested a multidisciplinary discharge assessment tool. The tool is “a method to identify risks at the time of discharge” and “offers specific recommendations for use with infants who are medically or socially high risk.”4 Several months were spent revising and testing the tool. The positive feature of the tool is an objective screening for social risk with a scoring system that categorizes the infant into low, intermediate, or high risk for interventions to be required at discharge and a list of possible interventions provided for each risk area. The challenges that the group faced in attempting to implement the tool included a complex scoring system, the lack of validation of the tool, and the duplication of social risk assessment tools by some units.

At the conclusion of the collaborative, the group rejected the multidisciplinary discharge assessment tool because of its complexity and lack of proven validity and reliability. Nevertheless, all units adopted individual assessment tools to categorize social and medical risk as part of the discharge process.

PBP 3: Maximize the Impact and Use of Caregiver Educational Tools, and Update Materials and Delivery Systems for Caregiver Education

Most parents know little about caring for an infant who has required NICU care. General information relating to newborn care may be lacking for some parents. In addition, an infant who is born preterm may have parents who were unable to attend prenatal or parenting classes. Many infants who leave the NICU still have complicated health care needs relating to medication, feeding, and equipment, such as home oxygen or apnea monitoring. The NICU team needs the appropriate tools and resources to educate families as they prepare to take their infant home.

Family-centered care plays a key role in the NICU, promoting parental involvement in decision-making and planning. Family-centered care promotes family education and prepares the family through discharge planning for transition to the next level of care (M. Hill, RN, MS, CMAC, unpublished data, 2002). The NICU staff must have educational tools and resources that are accurate, understandable, and appropriate for most families. Parents have different learning needs, styles of learning, and cultural beliefs that will have an impact on discharge teaching. Staff should assess family educational style and needs and barriers to learning and develop teaching strategies that best match the family.5

A Cochrane review of information that is provided to families at discharge showed that both verbal and written information improved the knowledge and the satisfaction for parents.6 This evidence confirms the need for adding written educational material to the verbal teaching that is done in NICUs. Discharge teaching strategies include “care-by-parent experience,”7 determination of learning priorities by families using the card sort method,8 and clinical pathways.9,10 The goal of this PBP was for each center to review its current parent teaching material, share the information with other centers, and develop additional materials.

Previously, the Oschner Clinic and Ross Laboratories developed a resource manual for NICU families.11,12 This manual served as a template to create a list of common discharge teaching topics. During the collaborative, each center accepted responsibility for development of information on topics from the list to share with all centers. Parental input also was used to develop materials on common issues such as caring for an infant with a pet in the household. This increased the amount of new parent education material that was available and included specific information that was important to individual sites. The comprehensive parent education material has assisted in meeting the goal of this PBP to have current educational materials and resources available for staff to use with families throughout the hospitalization and as they prepare for discharge. All centers are using the expanded educational material and use both verbal and written material for parent education.

PBP 4: Use Various Continuous Quality Improvement Tools and Processes to Ensure Parent/Caregiver and Staff Satisfaction

Health care systems today are increasingly competitive and market driven. There is increased emphasis on customer service.13,14 Hospitals are organizing efforts to understand, measure, and meet the needs of families. Today, satisfaction with service is seen as a key outcome measure of health care at the individual, family, patient population, and organization levels. Patient satisfaction, defined as the perception that the patient’s needs and expectations are being met, is an indicator for evaluation and comparison of quality in health plans, hospitals, and large-practice clinic settings.15–17 Furthermore, research suggests an association between staff satisfaction and patient satisfaction.18,19

Overall satisfaction with the care that is delivered is affected by the discharge planning process and discharge outcomes achieved.20,21 Items that have an impact on parent satisfaction relating to discharge include items such as adequacy of teaching related to the patient’s problems, preparedness for discharge, timeliness of discharge, and success of the transition to home. This makes it important not only to elicit feedback from parents after discharge but also to address areas of concern and reduce the stress in the transition to home.

Approximately 6 published parent satisfaction surveys are applicable to the neonatal population.22–24 Many patient satisfaction surveys that are done by hospitals
have limited applicability to the NICU population and do not measure the many dimensions of neonatal care that are important to parents. They are paper based and generally mailed after discharge. Response rates generally are low.

Howsyourbaby.com addresses these issues and was developed specifically for the newborn population.²⁵ Being Internet based, it can be embedded as a tool in the NICU discharge process by having the parent fill out the survey in the NICU setting before discharge. This feature allows each NICU to achieve high response rates, adding legitimacy to parental responses. Three of the 6 centers were using the survey at the onset of the collaborative, and the remaining centers worked on implementing the survey in their units.

The howsyourbaby.com survey addresses general satisfaction with care; parent feelings about preparedness for discharge; ability and confidence with feeding their infant; familiarity with their infant; feeling like a parent; their participation in care; and how much education they received in the general areas of safe sleep, car seats, home safety, shaken infant syndrome, and specific medical problems that affect their infant. An added, open-ended question asks parents to share ideas of how the discharge process might be improved. Centers with active parent support groups asked whether graduate parent support was helpful in preparing them for discharge. The survey also has the ability for individual centers to ask site-specific questions.

Staff satisfaction with various aspects of discharge was measured using the tool in Fig 2. 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, the teaching and preparation of home equipment, cardiopulmonary resuscitation education, timeliness of circumcision, and whether there was a clear understanding of roles involved in the process and suggestions for improvements. Baseline data were measured at the beginning of the collaborative and again ~8 months later. One center extended the concept of customer satisfaction by getting feedback from community pediatricians

Please circle your role on the unit: Nurse, MD, NNP, RT, Social Worker, Other

Please rate your response to the following statements:

Key:
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree,
N/A = Not Applicable

1. I am satisfied with the discharge process overall. 1 2 3 4 5 N/A
2. My workload allows enough time for parent teaching. 1 2 3 4 5 N/A
3. I am satisfied with the documentation done on the family teaching record. 1 2 3 4 5 N/A
4. The discharge plan is clearly documented. 1 2 3 4 5 N/A
5. Each discipline’s assigned role in the discharge process is clear. 1 2 3 4 5 N/A
6. In the last few months I have seen the following changes made in the unit’s discharge process:

Comments/Suggestions:

* Abbreviated version used for follow-up measurement. Full survey available in NICQ 2002 VON Collaborative “No Place Like Home” Resource Kit.

FIGURE 2
Staff satisfaction survey: discharge.
and implementing suggestions to improve the discharge process from their standpoint in meeting needs for continuity into the outpatient setting.

PBP 5: Analyze and Enhance Transfers Into and Interactions With the Community
The complex nature of many NICU patients requires a smooth connection with community resources to facilitate transition to the next level of care. A variety of practices can aid in the connection: (1) plans for follow-up health care, including an appointment for the first physician follow-up visit, should be made before discharge because evidence shows that it results in increased chances of appointments’ being kept (M. Hill, RN, MS, CMAC, unpublished data, 2002); (2) if equipment or home visits by various health care providers will be needed, then arrangement must be made well in advance of discharge; (3) the implementation of a postdischarge service model of advanced nursing for 18 months of follow-up in the home; and (4) tracking readmissions for infants who are discharged from the hospital and evaluating the causes of each in terms of its implications for accomplishing a successful discharge.

The NICU graduate remains vulnerable to health-related complications in the first several years of life. A successful transition from the NICU to home necessitates continuing expert care. Expansion of the neonatal nurse practitioner role to post-NICU follow-up facilitates the delivery of expert care in the primary care setting.27 A study of infants who weighed <1500 g and were discharged an average of 11 days earlier, 200 g lighter, and ~2 weeks younger at discharge than the control infants showed no statistically significant differences in readmission, number of acute care visits, incidence of failure to thrive, or reported child abuse or foster placement when followed by an advanced practice nurse during this period.28 The collaborative worked on the first 2 goals within this PBP. The third goal of the postdischarge service model was considered to be important but not attainable within the varying practice models at the different institutions and the time constraints of the collaborative. Similarly, the collaborative was unable to work on a successful model for capturing readmissions, because as many as 50% of infants in some NICUs would have been admitted to another institution. Therefore, implementing postdischarge continuity strategies is a particularly challenging aspect of successful discharge planning because many NICUs represent wide patient and geographic areas.29

DISCUSSION
Literature suggests that consensus on quality improvement efforts is important to gain local acceptance and implement guidelines and for effective group functioning.30 The process for this collaborative differed in that guidelines and PBPs were developed by a content expert and presented to the group for discussion and finalization. There was no group “discovery” process. The process followed a model for widespread implementation of clinical guidelines and PBPs to local application and may be more applicable as a model for quality improvement for NICUs that are not part of the group that formulated the PBPs. It is possible that differing models of implementing quality improvement may affect the success of the effort.

There is a lack of clear “evidenced-based” practices around the discharge process.31 A recent review of discharge planning for older people concluded that there was limited information on the effective components of discharge planning.32 This also is evidenced by the low-level strength of evidence for the PBPs on the Muir Gray Classification System.1

Randomized trials in adults with differing medical conditions that compared discharge planning with traditional discharge process showed no improvement in readmission rates, length of stay, cost, or health outcomes.31 Some studies showed beneficial effects (success in staying in the home setting) in selected populations such as the elderly.33 Additional studies have combined discharge planning with advanced practice nurse home care and demonstrated reduced readmissions and decreased costs for elderly patients and those with hip fractures.34,35 Other studies demonstrated a similar benefit solely with community-based interventions after discharge,28,36,37 but results may not hold for certain groups of patients.38

The transition point checklist concept that was developed in this collaborative represents an important tool for keeping the NICU care team, including parents, on track in performing tasks in preparation for discharge. Unlike disease-specific care pathways, it has general applicability for all patients in the NICU and can be individualized to specific units. It addresses the finding that 30% of all hospital discharges are delayed for nonmedical reasons.39

Another important tool that was developed to focus continually on discharge planning was the emphasis on changing interdisciplinary communication to focus on the day, the stay, and the way. This was meant to go hand in hand with the transition point tool to keep team members focused on planning for a successful and timely discharge. In our experience, such focused conversation is uncommon during rounds in many NICUs.

Two of 3 randomized trials showed improvement in patient satisfaction with discharge planning.20–22 None of these trials included children. Much of what is written has been in the adult arena and may have limited application for the NICU setting because NICU-specific issues such as breastfeeding success, feeling like a parent, and knowing your infant are key elements in parent satisfaction.

Institutional restrictions that limited Internet access
was a significant barrier that delayed implementation of howsyourbaby.com in several centers. Research indicates that this format is much more amenable to honest responses than other formats. Much of the time in the collaborative was spent either implementing howsyourbaby.com or embedding it in the discharge workflow so that a high number of parents who were going home completed the survey. Response rates as high as 85% were achieved in some centers. This conceptually is an important accomplishment because satisfaction surveys typically are biased because of low response rates.

Our discharge collaborative worked on processes that affect discharge such as improved workflow, focused communication, parent education, parent and staff satisfaction, and improving components of the transition to home. The purpose was to overcome organizational barriers to embed discharge planning process throughout an infant’s NICU stay so that discharge could occur promptly when an infant was medically ready. Important objective measures of discharge success that were not addressed specifically include length of stay, cost, postdischarge mortality and morbidity, postdischarge satisfaction, and rates of hospital readmission and emergency department visits.

CONCLUSIONS
Discharge planning is a continuous process that begins on admission and ends at the time of follow-up into the community. No clinical trials have examined the discharge planning process of infants in outcome-based research studies (M. Hill, RN, MS, CMAC, unpublished data, 2002). The PBPs offered are recommendations that are designed to integrate organizational, clinical, and operational processes to ensure optimal discharge planning from admission through follow-up into the community.

ACKNOWLEDGMENTS
We express our great appreciation to Maria Hill, RN, MS, CMAC, content expert, for clinical expertise and guidance; Nancy Leahy-Jacklow for facilitation of this group; and the staff and families at The Children’s Hospital at Providence, Alaska, Mission Hospitals, North Carolina, Rockford Memorial Hospital, Illinois, St John’s Hospital and Medical Center, Detroit, University of Minnesota Children’s Hospital, Fairview, and Yakima Valley Memorial Hospital, Washington.

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*Pediatrics* 2006;118;S115
DOI: 10.1542/peds.2006-0913H

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