Implementation and Case-Study Results of Potentially Better Practices for Staffing in Neonatal Intensive Care Units

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ABSTRACT

OBJECTIVE. Five NICUs that participate in the Vermont Oxford Network Quality Improvement Collaborative have implemented several potentially better practices in an attempt to decrease nurse turnover by 50%. These potentially better practices focus on orientation, rewards and recognition, healthy work environment, nurse-physician collaboration, and nursing autonomy.

METHODS. Each unit implemented some or all of the potentially better practices. An Excel spreadsheet tool for tracking turnover rates was developed and used to measure the impact of the potentially better practices on retention. Rates were measured quarterly.

RESULTS. After implementation of the potentially better practices, turnover rates fell at all of the NICUs ranging from 13% to 64%.

CONCLUSIONS. Nurse retention is multifactorial. Implementation of the potentially better practices had a positive influence on nurse satisfaction but a varied impact on nurse retention. The impact of larger issues such as pay and staffing levels is significant and may not be influenced at the unit level.
FIVE NICUs IN the Vermont Oxford Network’s Neonatal Intensive Care Quality Improvement Collaborative 2002 (Baylor University Medical Center, Children’s Hospital of Illinois, DeVos Children’s Hospital, Jackson-Madison County General Hospital, and Parkview Hospital) formed a focus group called the Staffing Turnover and Retention Strategies (STARS) to identify and implement potentially better practices (PBPs) to decrease turnover and increase retention of nurses. This group completed a review of the literature, performed surveys and site visits, developed a data collection tool, and implemented PBPs in each facility.

Implementation of 5 PBPs is described. These address orientation, rewards and recognition, developing a healthy work environment, nurse–physician collaboration, and nursing autonomy. Case studies from several different centers are highlighted. Lessons learned and suggestions for application of the PBPs in other centers are included.

METHODS

Development of the Nurse Turnover Tool
The percentage of nurse turnover on a quarterly and annual basis was selected to measure retention. Interventions and strategies that resulted in decreased nurse turnover likely would have an impact on and improve other areas in the work environment.

Data starting in 2001 are collected quarterly on an Excel spreadsheet. The data include the unit’s nursing full-time equivalents as well as total number of staff. Nurse managers find it useful to distinguish between full-time equivalent and total, especially with larger units or those with a higher percentage of part-time staff. Additional information is gathered to clarify the reason for turnover, such as retirement, relocation, or salary. Data from 2002, 2003, and the first 2 quarters of 2004 were collected to compare with the baseline from 2001. Results are outlined in Fig 1.

Use of Plan-Do-Study-Act and the Rapid-Cycle Model for Improvement
Each center prioritized PBPs that were developed by the group and worked to implement these via the model for improvement (Table 1). This process requires the team to set a local aim, identify a measure to track progress, and break down the PBP into a series of smaller changes. Each of these smaller changes then is tested in plan-do-study-act cycles. On the basis of analysis of what happens when the change is tried on a small scale, the local team takes action to embed further, modify, or abandon the plan for implementing the PBP. The implementation of a given PBP typically requires multiple plan-do-study-act cycles. The following case studies demonstrate application of this method.

CASE STUDIES

PBP 1: Facilitate Professional Development and Expertise Through Orientation (DeVos Children’s Hospital)
A successful orientation program that leads to the retention of staff is one that facilitates the new employee’s welcome and integration to unit culture and can improve retention. Careful evaluation of the program, including feedback from recent orientees and preceptors, is the first step in determining whether changes are needed. The NICU at DeVos Children’s Hospital performed such an evaluation and implemented the following changes to the orientation program.

Hiring practices at DeVos Children’s Hospital have changed dramatically in the past 5 years. Previously, only experienced nurses were selected to work in the NICU. Recently, new graduates have been hired to meet the needs of a growing census. Many of these new graduates leave the unit after only a year or 2 of practice. This trend is similar in many nursing units. Reasons for departure vary and include some variables that are out of the control of the unit. However, feedback indicated that the unit was not always welcoming to new staff and that processes that were used for the orientation program were not always effective.

A multidisciplinary team met to redesign the orientation process. The group surveyed preceptors and new employees. A literature review was conducted to identify the latest trends in adult learning. Other centers in the Vermont Oxford Network were queried to gain new ideas. The group reviewed all current teaching tools and materials and recommended the following changes:

1. Identify preceptors who want to teach and have strong clinical skills rather than expecting all staff to precept
2. Limit the number of preceptors for each orientee to 1 or 2
3. Develop didactic programs that are clinically focused, including some that are computer based
4. Use teaching opportunities, such as rounds with the physicians and other disciplines
5. Provide written material that supports the class material, some available on CD
6. Structure clinical experiences to move from basic skills to more advanced
7. Use a variety of strategies to welcome new staff, including an ongoing new employee support group, welcome letters before the start date, and lunch with the director
8. Have frequent contacts with new staff during orientation as well as for several months after they are finished to obtain feedback and offer support
9. Complete some of the formal orientation on the night shift to ease transition and help identify resources

Follow-up surveys of new nurses and preceptors at DeVos Children’s Hospital identified that satisfaction with the orientation process has increased by 10%. In the 1.5 years since implementation, turnover of new graduates in the first 2 years of service in this NICU has decreased from 50% (8 of 16 in 2001) to 33% (4 of 12 in 2002).

PBP 2: Provide Appropriate Recognition and Rewards for Professional Staff to Improve Satisfaction and Retention (Jackson-Madison County General Hospital)

Recognition and reward programs are important factors that lead to feeling valued in an organization. Nonmonetary rewards may be implemented at the unit level when monetary options are not possible. At Jackson-Madison, the leadership team developed a survey to obtain baseline information on the level of satisfaction in the unit. The results were reviewed with the staff, and suggestions for nonmonetary rewards were identified and implemented.

A hospital-wide program was introduced to reinforce customer focus within the culture. Specific expected staff behaviors were described. When any employee witnesses another demonstrating these behaviors, they reward that employee with a “catcher” card (Fig 2). This can be redeemed for rewards such as coffee mugs, pens, and discount coupons and also is recorded in the employee file. An emphasis on participating in the program was implemented at the unit level.

Another opportunity for rewarding employees is participation in the Clinical Competency Level-Ladder. The purpose of the competency ladder is to recruit and retain clinically competent nurses by providing a method for recognition and reward. This clinical ladder rewards those who continue to improve themselves. Many nurses have found this to be a way to increase their base pay and improve competency levels.

PBP 3: Promote a Healthy Work Environment (Children’s Hospital of Illinois)

Providing a supportive work environment is important for staff satisfaction and retention, especially during sentinel events. After experiencing a sentinel event, staff are deeply affected. Although these events occur when there is a breakdown in systems or processes, people often struggle with feelings of failure, fear, and guilt. It became evident that a systematic approach to support staff after sentinel events was needed.

A work group that included representatives from inside and outside the hospital was formed. After collecting information from managers and doing a literature review, the group defined the incidents that would trigger this new system on the basis of the staff emotional response. A calling tree was developed for staff/management to use to notify appropriate personnel immediately. Calls also activated immediate psychological support from a team within or outside the hospital.

A checklist and communication log for the manager was developed to make sure that all issues were addressed and staff were supported consistently. Managers now focus on actions that help the involved people process the event and move forward. The goal is to help staff be comfortable in continuing to function in their professional capacity. Special emphasis with parents/families is on open disclosure and providing information that is needed to preserve professional relationships.

Educational sessions were held for managers, including the most effective ways to support staff through critical events. Addressing this in advance provides staff with better support. Response to the training was very positive, and many stated that they appreciated having the resources assembled to them. After this system was active for 1 year, an informal review was conducted to determine whether revisions were needed. The primary area identified was the need to conduct ongoing educa-
tion sessions as a result of changes in management personnel.

**PBP 4: Improve Nurse–Physician Collaboration in the NICU (Baylor University Medical Center and Children’s Hospital of Illinois)**

Multidisciplinary rounding in the NICU serves as a vehicle for improving nurse–physician collaboration. One potential benefit for establishing nurse participation in rounds is to set mutual goals and objectives and avoid inconsistencies in practices. According to Shortell et al, timely, accurate, and open communication is key to coordinated patient activities.

Multidisciplinary rounding engages all team members in patient care decisions, allows for cross-monitoring of staff activities, and potentially decreases costs and errors related to inappropriate and inconsistent plans of care. Multidisciplinary rounds were implemented by 2 of the project teams. At Baylor, the staff completed a survey to evaluate team effectiveness and cohesiveness before implementing any changes. The survey also served as the measurement of the effectiveness of team collaboration. The results were used in developing guidelines for nurse participation in the rounding process. Nursing reports during rounds covered knowledge of most recent progress notes, changes in the infant’s assessment, medication/respiratory treatments (input/output), psychosocial issues, and discharge teaching.

Children’s Hospital of Illinois collected data that revealed nurses to be present at bedside rounds 39% of the time. The aim was to have nurses participate inpatient care rounds 100% of the time. An evidenced-based proposal for redesigning rounds was developed and included conducting rounds in a room adjacent to the NICU and requiring staff nurses to participate. This proposal was strongly endorsed by the Unit Practice Council and the Director of Neonatology. A poster that contained the rationale and supporting evidence was placed in the NICU break room. A letter that detailed the proposed change was circulated to every nurse. The staff were given an opportunity to provide feedback and offer suggestions.

Clear expectations for the nurses’ involvement in rounds were developed. The nurses justifiably were concerned about patient safety, with decreased numbers of staff available at the bedside once patient care rounds were moved to an adjoining conference room. This was addressed by streamlining the process to reduce the amount of time that nurses would be absent from the bedside.

Rounds would be conducted on a routine schedule, affording parents an opportunity to attend and interact with the care providers. Mild resistance was encountered from the neonatologists, because the change required patients to be examined before rounds, potentially decreasing efficiency. The NICU has not consistently met the goal of involving nurses in rounds 100% of the time because of a tendency to regress to former patterns of behavior on weekends; however, participation increased from 40% in May 2003 to 80% in August 2004 (Fig 3).

Both project teams have uncovered similar benefits in restructuring patient care rounds to incorporate nurse participation. Both units have reported improved staff satisfaction with the rounding process and improved retention rates in nurses (turnover decreased by 43% at Baylor and 62% at Children’s Hospital of Illinois). Multidisciplinary rounding has had an unexpected effect on parent satisfaction. Comments on parent satisfaction surveys indicate that parents appreciate the opportunity to have input into decisions related to their infant’s care, and this is best afforded through multidisciplinary rounds. Improved communication between nurses and physicians has resulted in fewer inappropriate and inconsistent plans of care.

**PBP 5: Promote Nursing Autonomy (Baylor University Medical Center, DeVos Children’s Hospital, and Parkview Hospital)**

Different approaches to increasing nurse autonomy were used at 3 centers. Two developed and implemented patient care protocols that allow the nurse to determine the suitability of changes in care as the infant progresses. At the third center, staff engaged in the identification of issues and development of strategies regarding nurse retention.

Parkview implemented care protocols to increase nursing autonomy. The main areas of focus were on frequency of blood glucose monitoring, intervals of blood pressure monitoring, weaning to an open crib, and advancement of feedings. These protocols outline how nurses may modify the infant’s care without a specific physician’s order. Physicians and nurses collaborated to design these mutually acceptable protocols. A nursing subcommittee with physician advisors approved recommendations. Staff reviewed the protocols, and revisions were made. An in-service session was performed to educate the staff further.

At Baylor, an interdisciplinary group developed an evidence-based protocol to identify newborn screening intervals with standardized orders to treat blood sugar

![FIGURE 3](http://pediatrics.aappublications.org/)

Nurse participation in rounds (PBP 4): percentage of time that nurses are involved in patient care rounds, Children’s Hospital of Illinois.
values. This protocol enables the health care team to minimize clinically significant neonatal hypoglycemia and reduce the number of NICU admissions for intravenous glucose therapy.

To increase staff involvement in retention activities and increase nursing autonomy, a staff retention committee was formed at DeVos Children’s Hospital. The group meets quarterly to review turnover statistics, discuss issues on the unit that may affect retention, and formulate strategies to increase staff satisfaction and retention.

Turnover has ranged from 8% to 18% in the past several years. Most turnover occurred on the night shift. Staff cited the long wait to get to days as a major factor in their decision to leave. There were day shifts available elsewhere in the organization, and 10% of the turnover consisted of staff transferring to these positions. Also cited was the relative low shift differential on nights, making it financially neutral to transfer to a day shift.

The group reviewed data from exit interviews and met with the director of Human Resources to identify a means to stop the flow of staff from the night shift. The group negotiated an additional pay incentive for staff on nights. Since this change was made, no additional transfers from nights have occurred. The group also surveyed staff to seek feedback on what might contribute to their satisfaction. It was proposed that floating no longer be required for staff with 25 years of service or greater (a total of 32 staff). This was implemented recently.

RESULTS
The STARS group’s overall aim was to decrease nurse turnover by 50% as compared with the baseline obtained in 2001 via implementation of 5 PBPs as outlined. Three met this aim, whereas 2 showed a smaller decrease that ranged from 29% to 36% (Fig 1). It is important to recognize that with implementation of the PBPs, instant results were not realized. In most centers, retention rates fluctuated. In addition, a 3-year time frame is insufficient to verify that a lasting effect on turnover has been achieved.

DISCUSSION
Nursing satisfaction is improved when nurses have increased autonomy. Giving staff a voice and control over their own destiny in areas that they deem important is a key component of nursing autonomy that has been linked in the literature to improved retention.\(^9,10\) Formation of a retention committee and the formulation of care protocols have contributed to an increased level of nursing autonomy at these centers.

Use of the turnover tool is a helpful way to collect and interpret data. Especially helpful is the ability to track the reasons for turnover. This allows discussion with administration to be more precise and assists in the identification of areas for improvement.

The larger system in which the unit resides has a significant impact on retention. Several centers in the STARS group experienced increased turnover during some years of the project as a result of institutional issues that were outside their control. In 1 setting, pay had been held at a low level for a number of years. This contributed to difficulty with both recruitment and retention. In another setting, massive reorganization occurred, requiring nurses to work in areas outside their preference. When there is dissatisfaction with such fundamental components of work life, the implementation of unit-based initiatives to address retention will have limited success.\(^11\) Implementation of the PBPs where the infrastructure is stable may have a greater impact on retention.

Unit-based issues also may have a negative impact on retention. Prolonged periods of high census and acuity combined with inadequate staffing were reported as contributors to higher turnover in 3 centers and low census with subsequent floating to other units in another. Two found that unresolved ethical issues regarding the treatment of infants who are at the edge of viability had a negative impact on retention. Difficulties with communication between staff and management and the staff’s displeasure with their lack of involvement in unit decision-making also were cited by several centers. When staff believed that their concerns had been heard and appropriate action had been taken, satisfaction increased and turnover was reduced.

It is critical to involve staff in the identification of retention issues and solutions, implementation of changes, and measurement of outcomes. Management alone cannot be successful in this endeavor. Because only the staff can identify what they value in a situation, the leadership team must be open to their input, feedback, and involvement. Leadership, physicians, and staff must demonstrate and foster a culture of mutual respect. With a supportive infrastructure, an engaged leadership team, and involved staff, positive results will be realized.

It is important to note that the results of the units described in the case studies may not be reproducible in all settings. These centers self-selected to participate in this project and possessed a high degree of motivation to reduce turnover. They also were located in urban settings, where the supply of nurses may be greater and average daily census in the NICU was fairly constant. NICUs in rural settings may have more difficulty recruiting nursing staff, and unpredictable variance in census that often is experienced in rural or smaller units may have an impact on staffing success as well.

CONCLUSIONS
The impact of larger infrastructure factors on unit-based retention cannot be minimized. Nevertheless, careful
tracking of reasons for turnover, targeted activities to address issues, and staff involvement in the process have demonstrated value.

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