Evidence-Based Quality Improvement in Neonatal and Perinatal Medicine: The Neonatal Intensive Care Quality Improvement Collaborative Experience

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This supplement is a collection of original articles written by participants in the Vermont Oxford Network (VON) Neonatal Intensive Care Quality Improvement Collaborative 2002 (NIC/Q 2002). It is the third in a planned series of supplements that began in January 1999 with the electronic supplement in Pediatrics titled “Evidence-Based Quality Improvement in Neonatal and Perinatal Medicine” and continued in April 2003 with “Evidence-Based Quality Improvement in Neonatal and Perinatal Medicine: The NIC/Q 2000 Experience.”

The premise of this series is that the quality of practices in clinical, organizational, and operational care for newborn infants and their families can be improved dramatically using the 4 key habits for improvement: (1) systems thinking; (2) a habit for change; (3) evidenced-based clinical science; and (4) multicenter, multidisciplinary collaborative learning. This current collection represents the work of the NIC/Q 2002 Evidenced-Based Quality Improvement Collaborative in Neonatology. The articles in this collection provide a detailed description of a multiinstitutional improvement collaborative. They should be of interest to health care providers as they pertain both to the NICU setting specifically and to collaborative quality improvement in general.

The collaborative, sponsored by the VON, comprised multidisciplinary teams from NICUs in the United States and Canada. The 46 centers in the NIC/Q 2002 collaborative were selected on the basis of willingness to make the personal and financial commitment to join the project with an annual fee, as well as funding travel expenses for the teams. Each center was responsible for determining whether local Institutional Review Board approval was necessary for participation. The 46 centers and their key personnel are listed in Appendix 1. They include many sites from the NIC/Q and NIC/Q 2000 collaboratives. These teams worked together from March 2000 through October 2003 with the guidance of expert faculty and staff (Appendix 2) to identify, test, and implement change ideas that are designed to improve the quality and safety of care. We refer to these change ideas as “potentially better practices” (PBPs), rather than the more commonly used term “best practices,” to indicate that there is uncertainty and that what is best in 1 setting may not be in another. Some of the change ideas are based on strong scientific evidence, whereas others are based on expert opinions, benchmarking site visits, family recommendations, and group discussions. The strength and evidence for the PBPs was assessed by the teams using the Muir Gray classification system. The PBP recommendations were documented using the Potentially Better Practice Concept Worksheet (Fig 1). In addition to developing PBPs, patient safety was a strong underlying theme of the collaborative, which worked closely with the Center for Patient Safety in Neonatal Intensive Care funded by the Agency for Healthcare Research and Quality.

The collaborative met twice each year. These meetings consisted of interactive plenary sessions that included didactic presentations and group exercises, as

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Abbreviations: VON, Vermont Oxford Network; NIC/Q 2002, Neonatal Intensive Care Quality Improvement Collaborative 2002; PBP, potentially better practice

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Potentially Better Practice Concept Worksheet
(Complete a separate worksheet for each Potentially Better Practice)

Topic Area:

Potentially Better Practice:

Rationale:

Classifying the strength and quality of the evidence: (adapted from Muir Gray 1997)

1. Strong evidence from at least one systematic review of multiple well-designed randomized controlled trials
2. Strong evidence from at least one properly designed randomized controlled trial of appropriate size
3. Evidence from well-designed trials without randomization, including single group pre-post, cohort, time series or matched case-control studies
4. Evidence from well-designed non-experimental studies preferably from more than one center or research group
5. Opinions of respected authorities, based on clinical evidence, descriptive studies or reports of expert committees

Indicate the highest level evidence available for this PBP: ______

Cite Pertinent References:

Potential benefits:
(Including estimate of number needed to treat)

Potential risks and costs:
(Including estimate of number needed to harm)

How does the concept become operational?:
List the key points and any recommended PDSA cycles for implementing this Potentially Better Practice. Cite any additional references related to operationalizing the concept.

Person submitting this information:

Name: ______________________________________
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FIGURE 1
Potentially Better Practice Concept Worksheet used by exploratory-group teams to record their PBPs. Courtesy of the VON.
well as significant time for teams to work together in self-selected exploratory groups. The exploratory groups, working under the guidance of a quality improvement coach and a clinical faculty expert, were charged with identifying specific PBPs in their area of focus. The teams in each exploratory group chose the improvement topic for the group. After gaining experience in the testing and implementation of these practices, the exploratory groups presented their work to the entire collaborative. The topics for the 7 exploratory groups include chronic lung disease, pain and sedation, family-centered care, discharge planning, staffing, obstetric/neonatal/perinatal communication, and nosocomial infection. Between meetings, teams worked together through facilitated conference calls, e-mail discussion lists, and optional site visits.

This supplement includes articles from 6 of the exploratory groups. There are 2 articles from each of the groups; the first describes the development of PBPs, and the second describes the implementation and testing of these practices. The final section includes 5 additional articles that developed out of the collaborative work in the areas of oxygen saturation targeting, standards for nasal cannula oxygen administration, sucrose for analgesia, treatment of infants at the margins of viability, and management of high-order multiple births. The authors for this collection are volunteers from the participants of the NIC/Q 2002 exploratory groups. Some of the authors have published widely in the past, whereas others are acting as first author for the first time. The most important aspect of this collection is the dedication and teamwork demonstrated by all of the participants in the collaborative. Their interest in improving the quality and safety of care for high-risk newborn infants and their families is to be commended.

Another important point is that PBPs that are presented in this collection are just that: “potentially” better. These are only recommended potentially better practices, not scientifically proven “best” practices. The practices that are described in this collection do not represent guidelines or consensus statements. It is possible that if subjected to rigorous randomized trials, then some of the PBPs might not be supported and would need to be revised or deleted. The PBPs are not endorsed by the VON; rather, these practices are the work product of multidisciplinary teams that are involved in a multicenter quality improvement collaborative. They are only a work in progress. We are sharing them with the hope that they will be used as a starting point for assessing and improving practices in NICUs beyond our collaborative.

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