National guidelines for Swedish neonatal nursing care: evaluation of clinical application

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Abstract

Objective. To evaluate the clinical application of national guidelines for neonatal nursing.

Design. Questionnaire survey.

Setting. Thirty-nine neonatal care units in Sweden.

Study participants. Thirty-five of 39 nurse managers at all Swedish neonatal care units.

Intervention. Thirteen clinical guidelines for neonatal nursing care were presented in 1997. Recommendations on evidence-based nursing care and auditing measures were given. Most neonatal units in Sweden participated in the guideline development.

Main outcome measures. Extent of guideline application, ways in which the guidelines were used and perceived usefulness.

Results. The guidelines were applied to different extents in 30 of the 35 units. Almost all the guidelines were applied, especially those covering general nursing care. In total, 72 Quality Improvement (QI) projects were reported, of which 51 concerned specific topics covered in the guidelines. Twenty units applied the guidelines as a starting point for QI. Four units evaluated nursing practice against the guidelines. Four factors [Dynamic Standard Setting System (DySSSy) as the QI method, 4 years of practice as nurse manager, experience of nursing research, and good staff resources] were closely related to a more extensive application of the guidelines. Units with both a nurse manager and an assistant nurse manager were more likely to have used the guidelines as the basis for changing clinical practice.

Conclusions. The guidelines were successfully disseminated and diffused, but practitioner involvement in guideline development did not guarantee implementation. Downsizing, leadership and facilitation seemed to be crucial factors when getting evidence into practice. Limited occurrence of evaluations of clinical practice against guideline recommendations suggests a need for valid and user-friendly measures.

Keywords: clinical guidelines, evaluation, neonatal nursing, quality improvement

By providing descriptions of appropriate health care that are useful for care providers and care purchasers, as well as the general public, clinical guidelines have received a broad international interest [1]. It is suggested that the gap between scientific evidence and clinical practice can be significantly reduced by guidelines [2,3]. Quality improvement (QI) is supported by the provision of recommendations for best practice and measures for compliance rating [1,4,5]. Improvements in care processes and patient outcomes as a result of adherence to recommendations in clinical guidelines have also been demonstrated [6,7], even though increased standardization may be perceived to reduce individualized decision-making [8,9].

Although guidelines have been shown to have a number of benefits, they are not applied spontaneously. Feasibility and application are demonstrated to have a complex pattern [3,10]. Benefits appear to relate to a complex mix of national and local factors, such as validity, dissemination and implementation. Validity is enhanced by developing guidelines using a rigorous methodology, basing recommendations on best available evidence (where possible, systematic reviews of research evidence) and ensuring involvement of all stake-
holder groups affected by the guideline [11,12]. Typically this requires development at a national or regional level because of the resource implications involved [6]. Numerous strategies have been used for dissemination and implementation [5,6,13]. Implementation seems to be enhanced by local adaptation and ownership of the guideline and reinforced by measurement to compare local practice against the guideline [14,15]. It has been proposed that economic constraints in health care may negatively influence the implementation of guidelines [16].

In the development of guidelines for nursing care there are particular challenges, because of the limited evidence base, particularly evidence on effectiveness derived from experimental studies [17]. However, as the body of knowledge concerning nursing is growing, the need for guidelines in nursing care becomes prominent as a means to ensure that this new knowledge influences practice [4,13].

The development and dissemination of neonatal guidelines in Sweden

Neonatal nursing is characterized by caring for the infant in an extensive interaction with medical care and advanced technology. The nurse also has an important role in supporting the parents and in providing them with guidance on how to care for their infant [18]. In 1993, when a guideline project in neonatal nursing was initiated, no nursing practice guidelines existed at a national level in Sweden. Outcome measurement within neonatal care was also an issue. Traditional outcome measures, such as mortality, morbidity and medical complications, were often inappropriate when evaluating the effect of nursing care processes.

The development of neonatal nursing guidelines was initiated by two of the authors and carried out in co-operation with 93% (42 out of 45) of all neonatal units in Sweden at that time. Participation was offered to all units. The goals of the project were threefold: (i) to introduce ‘quality thinking’ in to neonatal nursing care; (ii) to develop clinical practice guidelines; and (iii) to provide measures for auditing neonatal nursing care. The work proceeded in four phases: planning, local activity, compilation and dissemination (Figure 1).

Planning
A survey that included all participating neonatal units was undertaken to identify topics focusing on patient problems and nursing interventions. Seven broad subject fields were identified, and after negotiations among participating nurses these were used as a framework for the guideline project (see Appendix).

Local activity
Two nurses from each unit were trained in a method for QI, namely, the Dynamic Standard Setting System (DySSSy) [19]. This method is based on the quality improvement cycle and dimensions of structure, process and outcome [20,21]. Facilitated by the two nurses, a team at each unit developed, implemented and audited a standard on a topic within the content framework. In general the units were successful in these activities. Support was given through the project meetings and contacts with the project leader (LW).

Compilation
The project leader and seven nurses from selected units comprised a group for compiling the guidelines. The locally derived standards were revised and compiled after conducting extensive literature reviews in each topic area. Using an informal process, the guidelines were assembled to contain a mixture of evidence-linked and consensus-based recommendations. To facilitate the evaluation of clinical practice, suggestions for audit measures were included within the guidelines. Finally, experts in different fields of neonatal care reviewed the materials. The methodology used was not completely in accordance with recommended guideline development process [11,12].

All together, 13 guidelines (see Appendix) were presented in a standardized way in a report. For each guideline, underlying evidence was outlined in a background statement. The standard of care – including structure, process and outcome

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<tr>
<td>Planning</td>
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<tr>
<td>Questionnaire</td>
<td>■</td>
<td></td>
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<td>Framework</td>
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<td>Education</td>
<td>▼</td>
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<td>Meetings</td>
<td>▼</td>
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<td>Local work</td>
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<td>Work group</td>
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<td>Experts</td>
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<td>Compiling</td>
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<td>Presentation</td>
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Figure 1. Overview of the time scale and development of the neonatal nursing guidelines. → Activity over time; finished at arrowhead; ■, activity at one occasion; ▼, education seminars and meetings for participating nurses; ▲, work group meetings; ▲, joint meetings with experts and participating nurses.
criteria – followed, supported by relevant comments and references. Each guideline was supplemented with proposals on auditing measures.

Dissemination
The guidelines were presented at a national conference and the report was sent to all participants. The Journal for Swedish Paediatric Nurses published a special issue on the project [22]. After dissemination, it was up to the units to select, adapt and implement the guidelines.

This project was the first attempt to develop guidelines for a nursing specialty in Sweden and was characterized by extensive participation of clinical nurses. The broad participation had been advantageous for reaching project goals. However, whether it would also result in comprehensive use of the guidelines produced was unknown. Consequently, as one part of a wider evaluation, the actual application of the guidelines was investigated 1 year after dissemination through a questionnaire survey. The objective of this paper is to present the results of this survey.

Method

Sample
At the time of the survey there were 39 neonatal units in Sweden that had participated in the development of the guidelines. Three units had been closed since the time of developing the guidelines. A questionnaire was mailed to the 39 nurse managers at these units. After two reminders, 35 (90%) managers completed the questionnaire. Length of experience as a nurse manager ranged between 6 months and 30 years (median 3 years). Thirty of the respondents reported training in management, of whom six also had undertaken academic courses in nursing science. The remaining five respondents did not report any courses.

Setting
The medical care of newborn infants is organized according to three levels in Sweden. Eleven of the 35 units that responded were located at university hospitals, 18 at county hospitals and six at local hospitals. The number of beds per unit ranged from seven to 35 (median 15). Twenty-five of the units had both a nurse manager and an assistant nurse manager. Twenty-one of the units had access to either a full-time or part-time facilitator for QI. Thirty-two nurse managers reported that their units had systems for QI, of whom 18 used the DySSSy method.

Questionnaire
A questionnaire was developed covering seven key areas: three relating to background variables and four to guideline utilization (Table 1). The questionnaire consisted of 56 items, of which 52 had fixed response alternatives and four were open-ended questions. Half of the items with fixed responses were statements measured by 5-point Likert scales, ranging from ‘agree totally’ to ‘disagree totally’. For the remaining items, the fixed responses related directly to the content of the question.

Data analysis
The fixed response alternatives were categorized as either positive (agree totally and agree) or negative (disagree and disagree totally). The relationship between background and outcome variables was analysed using chi-square tests and logistic regression. Independent variables for logistic regression were selected by a screening analysis based on visual differences in the distribution of answers and chi-square tests for each individual variable [23]. Chi-square tests were used to determine correlations between independent variables.

The respondents’ answers to the open-ended questions were subject to content analysis, in order to study areas of similarities and differences [24]. After identifying thematic categories, analyses were carried out using the kappa statistic to establish the inter-rater reliability of the researchers (LW and AMB). Cohen’s kappa for each question (κ = 0.72–0.86) and total percent agreement (85.9%) were calculated. The kappa values obtained were considered to range from good to excellent agreement [25]. The few areas of disagreement were negotiated and then a final categorization was made.

Results

Application of the guidelines
The nurse managers estimated the extent of guideline application at their units. In five units (14.3%) the guidelines were not used at all. The remaining 30 units reported variable application of the guidelines, with 13 units using the guidelines sparingly and four using them to a greater extent (top of Figure 2). Two main types of guideline application were apparent. In 40 units the guidelines were used primarily as educational material. The remaining 20 units applied the guidelines in order to change and evaluate clinical practice. Differences in the extent of guideline application were apparent. In 10 units the guidelines were used primarily as educational material. The remaining 20 units applied the guidelines in order to change and evaluate clinical practice. Differences in the progress of clinical application were reported. From a quality cycle perspective, most of the units were in the planning (descriptive) phase of QI. Four units were evaluating nursing practice against the guidelines (Figure 2).

Correlation between background and outcome variables
The extent of application (top of Figure 2) was dichotomized (no – little versus some – very large). Four independent variables significantly increased the likelihood of using the guidelines: (i) using DySSSy as a QI method; (ii) 4 or more years of experience as a nurse manager; (iii) experience of nursing research at the unit; (iv) the nurse manager’s estimation of sufficient staff resources for delivering a high standard of care (Table 2). Units that employed both an assistant nurse manager and a nurse manager (n = 25) were more likely to have used the guidelines as the basis for changing clinical practice. Units
Table 1. Questionnaire used in neonatal guideline survey

<table>
<thead>
<tr>
<th>Domains</th>
<th>Items used in results presentation</th>
<th>Answer categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit structure</td>
<td>Number of beds</td>
<td>Number</td>
</tr>
<tr>
<td></td>
<td>Statements on conditions for high standard care</td>
<td>Likert scales</td>
</tr>
<tr>
<td></td>
<td>Access to facilitator</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Performed nursing research</td>
<td>Yes/No</td>
</tr>
<tr>
<td><strong>The nurse manager</strong></td>
<td>Experience as manager</td>
<td>Number of years</td>
</tr>
<tr>
<td></td>
<td>Assistant nurse manager</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>Courses additional to professional training</td>
<td>Nursing Management, Nursing sciences, other</td>
</tr>
<tr>
<td><strong>Prerequisites for QI</strong></td>
<td>Statements on staff attitude, staff competence, time constraints, resources for education</td>
<td>Likert scales</td>
</tr>
<tr>
<td></td>
<td>Using a model for QI work</td>
<td>Available QI models</td>
</tr>
<tr>
<td><strong>Outcome variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guideline application</td>
<td>Extent of</td>
<td>Five categories: not at all – large</td>
</tr>
<tr>
<td></td>
<td>Way of</td>
<td>As educational material/in quality improvement</td>
</tr>
<tr>
<td></td>
<td>Areas for and number of QI projects</td>
<td>Open-ended</td>
</tr>
<tr>
<td><strong>Opinion of the guidelines</strong></td>
<td>Presentation style</td>
<td>Likert scales</td>
</tr>
<tr>
<td></td>
<td>Importance of measures</td>
<td>Likert scales</td>
</tr>
<tr>
<td></td>
<td>Usefulness for nurse manager</td>
<td>Likert scales</td>
</tr>
<tr>
<td></td>
<td>Usefulness in clinical practice</td>
<td>Likert scales</td>
</tr>
<tr>
<td><strong>Guideline development</strong></td>
<td>Benefits and obstacles in the local part of the work</td>
<td>Open-ended</td>
</tr>
<tr>
<td><strong>Further work on the national level</strong></td>
<td>Perceived needs</td>
<td>Open-ended</td>
</tr>
</tbody>
</table>

without an assistant manager used the guidelines mainly as educational material ($\chi^2 = 6.43$, d.f. = 1, $P=0.01$). No significant correlation was found between having access to a facilitator ($n=21$) and the way of using the guidelines ($\chi^2 = 2.86$, d.f. = 1, $P=0.09$).

The nurse managers were asked to estimate their unit’s readiness for QI. The staff were almost unanimously considered to have a positive attitude to QI. In general, they were also regarded sufficiently competent to work with QI. The financial resources for staff education varied as well as time provision for teams to perform QI activities. Sixty-three per cent of the nurse managers viewed time constraints as a problem. In relation to guideline utilization no significant differences were apparent between units with low or high estimates of readiness for QI (Table 3).

Reported QI projects and perceived usefulness of the guidelines

Almost all of the 13 guidelines were applied in clinical practice. Of 35 respondent units, 24 reported 72 QI projects, of which 51 concerned topics specifically covered in the guidelines (Table 4). The remaining 11 nurse managers did not answer this question. The most frequently applied guidelines focused on family-centred care, breastfeeding and pain management. Twenty-one projects concerned more general attributes of care and care organization (Table 4, Miscellaneous).

Most of the units were preparing for implementation (Figure 2), beginning with the development of local protocols. Therefore few results of guideline application were reported. Difficulties with implementation were described in terms of shortage of time ($n=7$) and organizational problems ($n=5$) as an effect of cutbacks and restructuring. However, three units reported improved patient outcomes related to guideline application (nosocomial infection, pain management and breastfeeding).

Nurse managers using the guidelines considered them to be presented in an appropriate way and felt that the provision of corresponding audit tools was important ($n=30$). Twenty-three of the nurse managers viewed the guidelines as very useful (three expressed no opinion and there were four non-responders).

Benefits and obstacles with developing guidelines in a collaborative project

Several advantages of developing guidelines were reported: (i) valuable in general ($n=12$); (ii) enhancement of the staff’s
National nursing guidelines

Figure 2. Application at unit level of the neonatal nursing guidelines (n = 35, one drop-out in extent in guideline application).

Table 2. Logistic regression indicating those factors significantly related to the likelihood of using the guidelines to a greater extent (n = 30)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B-coef.</th>
<th>P</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using DySSSy (n = 20)</td>
<td>4.47</td>
<td>&lt; 0.02</td>
<td>87.3</td>
<td>2.42–3155.4</td>
</tr>
<tr>
<td>≥ 4 years experience as nurse manager (n = 17)</td>
<td>3.50</td>
<td>&lt; 0.03</td>
<td>33.2</td>
<td>1.55–711.9</td>
</tr>
<tr>
<td>Experiences of nursing research (n = 17)</td>
<td>3.42</td>
<td>&lt; 0.04</td>
<td>30.7</td>
<td>1.35–698.3</td>
</tr>
<tr>
<td>Adequate staff (n = 27)</td>
<td>4.04</td>
<td>&lt; 0.05</td>
<td>56.7</td>
<td>1.02–3148.5</td>
</tr>
</tbody>
</table>

Model $\chi^2 = 25.7$, d.f. = 4, $P < 0.001$.

1 B-coef., Non-standardized logistic regression coefficient.

Some guidelines more ‘popular’ than others

The guidelines covering general nursing were applied most frequently (Table 4). The division between general and special nursing care was influenced by the Swedish regulation about nursing care [26]. The general section reflects a holistic care perspective, attempting to cover physiological, psychological, social and spiritual needs. In the special care section the guidelines are focused mainly on how different nursing interventions are delivered regarding the infant’s well being and safety.

Discussion

From the results of this survey it is clear that most of the nurse managers were familiar with the guidelines and two-thirds of them regarded the guidelines as very useful. Widespread activities related to the guidelines were reported. The guidelines were used at most of the units, though to varying degrees and in different ways. A number of interesting issues, highlighted in the following discussion, emerge from the findings.

knowledge, especially regarding the ability to reflect critically on clinical practice (n = 12); (iii) increased involvement of staff in QI activities and engagement in changes of care processes (n = 8); (iv) improvements in nursing care (n = 5). Obstacles, which resulted in poor teamwork and a limited contribution to the guideline development, were described as: (i) deficient knowledge and understanding of the DySSSy method (n = 10); (b) lack of motivation in the local work group and lack of support from management and colleagues (n = 10); and (iii) shortage of time (n = 7).
Table 3. Distribution of the nurse managers’ estimations of their units’ readiness for working with QI in relation to reported guideline application (n = 35)

<table>
<thead>
<tr>
<th>QI prerequisites</th>
<th>Guideline application</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Extent</td>
</tr>
<tr>
<td></td>
<td>No – little</td>
</tr>
<tr>
<td>Extent</td>
<td></td>
</tr>
<tr>
<td>Direction</td>
<td></td>
</tr>
<tr>
<td>Staff attitude to QI</td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>15 (48%)</td>
</tr>
<tr>
<td>Negative</td>
<td>0</td>
</tr>
<tr>
<td>Staff competencies in QI</td>
<td></td>
</tr>
<tr>
<td>Sufficient</td>
<td>14 (44%)</td>
</tr>
<tr>
<td>Insufficient</td>
<td>3 (9%)</td>
</tr>
<tr>
<td>Financial resources for education</td>
<td></td>
</tr>
<tr>
<td>Sufficient</td>
<td>10 (32%)</td>
</tr>
<tr>
<td>Insufficient</td>
<td>5 (16%)</td>
</tr>
<tr>
<td>Time for QI</td>
<td></td>
</tr>
<tr>
<td>Available</td>
<td>5 (15%)</td>
</tr>
<tr>
<td>Unavailable</td>
<td>13 (38%)</td>
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</table>

Internal drop-outs for the different questions varied from one to eight.

Table 4. Distribution of reported QI projects 1 year after publication of neonatal nursing guidelines (reported topics, n = 72). The topics in the columns for general and specific nursing care constituted all 13 guideline areas

<table>
<thead>
<tr>
<th>General nursing care</th>
<th>#</th>
<th>Special nursing care</th>
<th>#</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family-centred care</td>
<td>11</td>
<td>Pain management</td>
<td>8</td>
<td>Nursing records</td>
</tr>
<tr>
<td>Breastfeeding/nutrition</td>
<td>8</td>
<td>Transportation</td>
<td>4</td>
<td>Care organization</td>
</tr>
<tr>
<td>Developmental supportive care</td>
<td>5</td>
<td>Medical–technical safety</td>
<td>4</td>
<td>QI methods</td>
</tr>
<tr>
<td>Support to the family in crises</td>
<td>3</td>
<td>Hygiene routines</td>
<td>3</td>
<td>Medical guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interventions in intensive care</td>
<td>2</td>
<td>Staff competence (no area defined)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency cases</td>
<td>1</td>
<td>Indefinable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin care</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medication administration</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CPAP treatment</td>
<td>0</td>
<td></td>
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</table>

CPAP, Continuous positive airway pressure.

Reasons for the ‘popularity’ of the general guidelines have to be speculative. They may reflect the core elements in neonatal nursing care and were, therefore, prioritized and put into practice more promptly. These guidelines may also deal with clinical areas in which nurses have a high degree of autonomy and are able to implement changes in care independently of other professionals. An interesting observation is that the most frequently applied guidelines covered areas in which nursing research had recently been completed in Sweden [27–30].

Almost one-third of the 21 QI projects that could not be assigned to the guidelines (Table 4, Miscellaneous) concerned nursing documentation. This finding is not surprising as QI raises issues on access to data from patient records and there was a strong focus on development of nursing documentation in Sweden during the 1990s [31].

Interpreting the application of the guidelines

Although many of the guidelines were applied and perceived to be useful, it is obvious that several managers reported limited use of the guidelines. A third of the units principally used them as educational material, for example when having lessons at the unit. Despite the fact that changed behaviour has to start with deeper knowledge, traditional education as a sole activity hardly changes clinical practice [32]. As few as eight units had fully implemented a guideline and only four of them had been auditing clinical practice. This is an area
for concern as completion of the quality improvement cycle, through auditing and evaluating practice, is important to ensure that the process of care reflects guideline recommendations [5].

One possible explanation for these implementation problems could be a perceived problem with the adequacy or validity of the guidelines [10]. This is, however, unlikely as most of the nurse managers reported the guidelines to be appropriate and suitable for use. We believe that valid interpretation of the survey outcomes requires consideration of the broader context, including issues such as the health care economy, leadership, facilitation and the implementation strategy adopted [5,16,33].

**Downsizing and changes in manager role**

Reorganizations and cutbacks were explicitly reported as obstacles to implementation of the guidelines. The motivation amongst staff and the possibilities for managers to initiate and support implementation processes were affected. The impact of guidelines in a constrained economy has been questioned [16]. Attempts at improving nursing care may be more vulnerable to financial restrictions because they often concern large groups of staff and complex interventions. Compliance with guidelines may demand extra resources or acquisition of new knowledge and skills, which can negatively affect the use of recommendations [10]. Conversely, it could be suggested that short-term investment should produce a longer-term gain by reducing cost-ineffective variations in care [1]. However, there may have been too extensive changes in Swedish health care during the 1990s to realize such investments. Between 1990 and 1995 the number of hospital beds was reduced by 28% and health care personnel was reduced by 27% [34]; health care expenditure as a percentage of the gross national product decreased during these years from 8.6% to 7.2% [35]. This general downsizing has had consequences for neonatal care, with three neonatal units being closed during 1997.

Management issues are closely related to organizational changes. Because of management decentralization, staff and economic issues have resulted in arduous and extensive tasks for nurse managers at unit level in Sweden. To take the lead for quality patient care is one responsibility among many others [36]. Findings in our survey point to the importance of the availability of resources and knowledge at the management level to initiate changes in care. This is illustrated by the links between length of experience as a nurse manager and extent of guideline implementation, and between access to an assistant nurse manager and an improvement-oriented application of the guidelines. We assume further that the small proportion of nurse managers having academic courses in nursing science, made it more difficult to take adequate initiatives aimed at improving nursing care [36]. Insight into the research process should increase skills in critical appraisal and evidence-based care, an assumption supported by the finding of a positive relationship between experience of nursing research at the unit and guideline utilization.

**Leadership and facilitation**

Lack of time, lack of motivation among staff and insufficient knowledge were specified as obstacles to implementation of the guidelines and care improvement, although in estimating readiness for QI, most nurse managers reported a positive staff attitude to QI and sufficient staff competencies in QI. None of the estimation parameters in readiness for QI were related to guideline utilization (Table 3). This lack of association between reported prerequisites and actual guideline implementation may question the impact of downsizing. It can also be a result of unforeseen obstacles. Humphris and Littlejohns comment on this as follows: ‘The implementation of guidelines requires the understanding that apparently simple and straightforward changes are set within a complex chain of interdependent units that may block progress’ [37].

The findings emphasize the importance of clear leadership in implementing change as well as generating questions on how facilitation should be provided. Access to a facilitator was surprisingly not a significant influence on the utilization of the guidelines. The nurse managers’ comments on deficient knowledge and lack of motivation amongst staff could, however, indicate problems with the type and level of facilitation provided. Another aspect of facilitation, or of organizational context, was the finding of a positive relationship between maintaining the use of method for guideline development (DrySSy) and guideline implementation. It could be interpreted that the format of the guidelines was less compatible with other models for QI, or as we suggest, that repeated alterations to models of change management are an obstacle to promoting evidence based care.

**Project design did not guarantee implementation**

The development of the guidelines combined a ‘top-down/bottom-up’ approach in an attempt to marry scientific awareness and clinical experience. Most of the local teams were successful in producing and implementing a standard of care during the period of guideline development, which proved to be an interesting contrast with the ‘real’ implementation of the guidelines.

The neonatal guidelines were disseminated and diffused, however, implementation was not a part of the project. When implementing the guidelines, the local strategy varied from doing nothing to systematically covering all of the guidelines in a teaching programme. We assumed that the ‘collaborative’ design of the development of the guidelines would enhance the application of them. This assumption seems to have been inappropriate. Practitioner involvement in development enhanced awareness about the guidelines [4], but did not guarantee implementation [6].

**Methodological considerations and further research**

This survey cannot give an in-depth picture of the utilization of the guidelines but, by using detailed questions and achieving
a high response rate, we believe that the results are useful. Some confounding factors were identified. The high non-
respondent rate in reporting accomplished QI projects could be interpreted to mean that the question was too demanding
and that the responders experienced problems in distinguishing QI. We concluded, on the basis of further analysis,
that most of the reported projects were related to guideline application. This assumption could be questioned as it is
doubtful if all the nurse managers were able to clearly separate experiences from the different phases of development and
implementation of the guidelines.

Fifteen months between the introduction of the guidelines and the follow-up study might have been too short an interval
for a valid evaluation of the application, for example, in relation to the finding that only four units were auditing clinical practice. Measurement and data collection, however, seem to be difficult areas and something that often fails. We offer two considerations concerning these difficulties. Firstly, explicit requests from management for measurable results on nursing care would presumably be a positive pressure for producing process and outcome information. Secondly, the measures related to the guidelines need to be developed further to provide valid, easy to apply and outcome-focused measures with explicit methods for data collection.

Further work is needed to understand the relationship between developing, disseminating and promoting the use and evaluation of guidelines in daily practice. Further work to explore the views of clinicians on the benefits and drawbacks of guidelines would be helpful. The impact of guideline implementation, on both the infant and the parents, remains to be tested.

Conclusion

The neonatal nursing guidelines were successfully disseminated and diffused, but there was less impact in terms of implementation of the guidelines and evaluation of practice against guideline recommendations. Practitioner involvement in guideline development did not guarantee implementation. Downsizing, leadership and facilitation seem to be crucial factors when transforming evidence into practice. The development of user-friendly, standardized measures appears to be important in enhancing the auditing of clinical practice against guideline recommendations.

Acknowledgements

The Swedish Nurses Association principally funded the work for developing and evaluating national guidelines. Grants from the Swedish Institute for Health Services Development (Spr), Dalarna Research Institute, Ebba Danelius Foundation, the Foundation Tornspiran, National Association of Paediatric Nurses and the University of Uppsala also supported the work.

References

National nursing guidelines


Appendix: Overview of neonatal nursing guidelines

The original seven subject fields in the project framework were split resulting in 13 guidelines for neonatal nursing care. Recommendations in each guideline are described briefly.

General nursing care

Family-centred care

- Adjustments of environment to meet family needs.
- Interventions supporting the attachment process between parents and infant:
  - prenatal information to parents;
  - early contact between parents and infant after delivery;
  - parent involvement in care planning and performance;
  - kangaroo mother care;
- Support to parents in interpreting signs and needs of the infant;
- Individual discharge planning.

Developmental supportive care

- Developing individual care plans based on detailed behavioural observations of the infant (Newborn Individualized Development Care and Assessment Programme) [18].

- Interventions, based on the infant’s cues and communication, including:
  - structuring of the infant’s 24-hour day;
  - pacing of caregiving;
  - appropriate positioning;
  - a quiet and soothing environment.

Breastfeeding/nutrition

- Information on the benefits of breast milk and breastfeeding to the parents.

- Individual assessment of breastfeeding and parental involvement in nutrition planning.

- Support and facilitation of breastfeeding moments including comfort and privacy.

- Creating security for an alternative way of feeding if breastfeeding does not work.

Support to the family in crises

- Individual assessment of the family’s situation.

- Openness for specific needs and desires, privacy.

- Staff continuity and sufficient time for staff to be with parents in serious situations.

- Adequate information.
Parents’ nearness to their infant.
Respect for religious faith and family integrity.
Contacts with other professionals such as social worker, psychologist or priest.

Special nursing care

Emergency cases
- Neonatologist and neonatal nurse attends all risk deliveries.
- Infant assessment and relevant medical interventions.
- Infant’s father, and mother if possible, accompanying to the neonatal unit after delivery.
- Adequate information.

Transportation
- Stabilization of infant before transport.
- Information to parents.
- Parent–infant meeting, if possible skin-to-skin contact, before transport.
- Infant assessment and relevant medical interventions during the transport.
- Appropriate positioning and safety measures.
- Staff collaboration and communication between involved units.

Interventions in intensive care
- Recommendations for weighing, suctioning, X-ray, and transferring the infant from incubator to parent, while the infant is on CPAP or ventilator treatment: assessment of infant; nursing and co-ordination of safe and gentle performance; stabilizing infant during procedure; parent information and involvement.

CPAP-treatment (continuous positive airway pressure)
- Assessment of vital parameters, need of ‘nose care,’ adaptation of CPAP-facilities to infant’s face.
- Control of the CPAP-system.
- Support for appropriate body positioning and reducing discomfort.

Pain management
- Recognition and assessment of infant pain.
- Planning and co-ordination of painful procedures to minimize stress and the number of painful events.
- Utilization of non-pharmacological and pharmacological interventions.
- Parent information and encouragement to support their infant during painful interventions.

Skin care
- Skin assessment.
- Avoidance of skin traumatizing materials.
- Treatment plan if skin lesion.
- Parent information about treatment and hand hygiene.

Hygiene routines and management of central and peripheral lines
- Hand washing and hand disinfection according to local protocols.
- Assessment of appropriate type of cannulae/line before placement.
- Firm fixation of cannulae/line, marked and arranged for inspections.
- Assessment of puncture location and functioning of cannulae/line.
- Administration of infusion fluids and units according to local protocols.
- Parent information on how to handle the infant who is connected to a line.

Medication administration
- Prescriptions of medications documented according to current regulations.
- Nurse assessment of dose relevance and attention to vague prescriptions.
- Pharmacy preparation from original prescriptions and in accordance with local protocols.
- Undisturbed environment for preparations.
- Checking of calculations by colleague.
- The same nurse preparing the pharmacy administers it after identity control.

Medical–technical safety
- Staff information on actual regulation.
- Education about materials and equipment.
- Risk management and reporting of accidents.
- Up-dated and correct manuals.
- Maintenance and control of equipment.

Accepted for publication 8 June 2000