Evidence based decisions in nursing and their effect on quality of care
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Citation for published version (APA):

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Epilogue
EPILOGUE

Three main key tools in quality of care

Evidence based practice (EBP), continuous quality improvement (CQI) and clinical research may be considered essential tools to bridge the chasm between actual and desired quality of health care, as illustrated in the figure.\textsuperscript{1-5} The first, EBP, integrates the best available scientific evidence into clinical practice. This should improve patient safety and patient-centered outcomes, and foster CQI.\textsuperscript{4,5} EBP focuses on “doing the right things at the right time for the right patient,” based on evidence and on improving evidence-based decision making, whereas CQI aims at “doing things right” based on local processes.\textsuperscript{6} EBP, CQI and research can be seen as a triangle of three main tools to solve clinical problems and deficiencies in quality of health care and to promote knowledge circulation.\textsuperscript{7} Only if proper research has been done the right thing to do for the patient becomes clear. And only if there is evidence for effectiveness, it can become clear how these right things can be done correctly (CQI). Understanding and applying these three tools empowers health care professionals to detect clinical issues related to quality of care, to develop new knowledge needed to address these issues, and to implement the results of research in daily practice and education.\textsuperscript{7} Thus, the combination of these three main tools should eventually help to bridge the quality chasm.

The studies described in this thesis contribute to narrowing the chasm by enlarging knowledge development and knowledge use through the promotion of evidence-based decision making (Chapters 2 to 6). The effect of the generated evidence should be to improve quality of care by means of timely and patient-centered care (Chapter 7), valid efficiency parameters (Chapter 8), and effective implementation (Chapters 9 and 10). The latter studies show we may have contributed to narrowing the chasm, but knowledge implementation needs ongoing attention in the future.

Current nursing issues hindering knowledge implementation and evidence based decision making

For nurses, two main issues may hinder knowledge implementation and evidence-based decision making: first, interdisciplinary collaboration and communication; second, shortcomings in the delivery of evidence-based care.

Patient care environments have become more complex; therefore, interdisciplinary collaboration and coordination of care is a prerequisite to the delivery of high-quality patient care.\textsuperscript{8-10} The cornerstone of interdisciplinary collaboration is effective, skilled communication and understanding and appreciating each other’s professional role\textsuperscript{11} when setting joint priorities in patient care goals. Unfortunately, priorities in patient care tend to differ between doctors and nurses.\textsuperscript{12} In setting joint priorities, nurses should be proficient in reasoning skills in order to discuss the professional and moral arguments of their priorities, otherwise nurses’ contributions will be neglected. Thus, nurses should be proficient not
only in communication and collaboration, but also in clinical reasoning skills. At present, nurses still tend to rely on personal experience and communication with colleagues rather than on scientific sources of knowledge and rigorous quality evaluation. This is mainly due to a lack of a thorough and quantitative scientific basis for many nursing decisions and a deficit in academic training. Structured evidence-based tools, such as the triage systems (Chapters 2 and 3), as well as knowledge about the clinical relevance of monitoring vital signs (Chapter 5), may supplement personal experience and preferences with externally validated criteria, leading to an objective judgment. In addition, improving nurses’ knowledge of scientific jargon and reasoning based on research findings, something to which doctors are already more accustomed, will facilitate communication between multiple disciplines. Furthermore, a joint effort by nurses and doctors appears essential in order to arrive at a uniform care policy based on evidence and guidelines (Chapters 9 and 10). Several chapters in this thesis showcase the fact that conducting research in which nurses and doctors collaborate and in which the priorities of both are addressed stimulates inter-disciplinary collaboration and communication.

The second nursing issue concerns the actual delivery of evidence-based care in practice. At present, EBP and CQI are gradually integrated in initial nursing curricula and post-graduate education for nurses. The upscaling of the current nursing education to a more academic level, to facilitate deliverance of evidence-based care by nurses, is promising. Today’s nurses have a positive attitude towards EBP and agree that practicing EBP improves quality of care. Therefore, the ground seems fertile to promote the delivery of evidence-based care. Still, in practice there are a number of barriers present to employment of EBP and CQI, for example time constraints, knowledge gaps, awareness or availability of evidence, and management support. We encountered similar difficulties in our attempt to achieve lasting adherence to a local guideline on postoperative temperature measurements (Chapter 9) and when studying knowledge and use of evidence in national wound care (Chapter 10). Although adherence could be achieved in the short-term (Chapter 9), awareness could not be maintained without strong management support. Also, disseminating results of research does not naturally result in more awareness and use of the evidence (Chapter 10).

Promoting EBP and CQI in clinical practice
To overcome the barriers mentioned above, healthcare and educational organizations should encourage intertwinement of EBP, CQI, and research, and stimulate interdisciplinary collaboration using all three key tools. This requires a facilitating organizational culture, in which changes and novel findings from research can flourish to employ CQI, and in which CQI triggers an EBP cycle to check for evidence. In turn, both CQI and EBP can result in ideas or even need for further research, as we have shown in this thesis. For example, from a CQI perspective an accurate triage system was warranted to improve quality of care. By following the EBP steps, the literature showed a lack of evidence. This generated
Using the results of our research, we decided which system to implement and contributed to CQI (Chapter 7). This cyclic and iterative process can and should also start with clinical reasoning about routine clinical procedures. This is exemplified by our studies in Chapters 5 and 6, in which all available evidence on routinely performed vital sign measurements and the use of silver dressings in preventing wound infection was summarized. The results are now being used for CQI. These examples show that disciplines involved should reflect on and question their daily professional actions and decisions, to detect discrepancies between present-day and desired quality of care.

Suggestions of ways to achieve intertwinement of these tools are, in the first place, the encouragement of an interdisciplinary rather than multidisciplinary collaboration by the current management. While “multidisciplinary” collaboration entails the mere involvement of different professionals, e.g. doctors and nurses, in patient care, “interdisciplinary” collaboration means all health-care professionals involved realize that decision-making depends on sharing information and formulating common patient-centered goals. This is exemplified in this thesis by the tasks nurses perform in an interdisciplinary setting in the areas of triage (Chapter 2 and 3), behavioral interventions (Chapter 4), patient monitoring (Chapter 5), and wound care (Chapter 6). Additional aspects investigated here are the evaluation of patient flow and satisfaction after implementing a triage system (Chapter 7) and the efficiency and feasibility of screening programs by quantifying the (nursing) effort needed (Chapter 8).

Second, collaboration between the medical and nursing discipline is not only necessary in patient care and education, but also in research programs. At present, research organizations and programs still focus on medical models, while nurses tend to focus more on distinct patient-centered outcomes. In general, the medical model usually lacks nursing care outcomes. Given the many areas of nursing research and the limited academic nursing capacity, research by nurses should be embedded in existing research groups using the existing research organization and infrastructure. Management and leadership interventions and approaches should facilitate this. Chapters 4 and 8 are examples of interdisciplinary collaboration in existing research groups in medical psychology, clinical vascular, cardiology, and nursing care.

Third, to create or strengthen an academic culture of evidence-based CQI, academic thinking and ongoing organizational support is needed. Furthermore, research capacity and capability building is necessary to conduct research that facilitates evidence-based decision-making in nursing. To make this possible in daily clinical practice, a balance needs to be achieved between the workload of daily activities for the primary process and the academic or research activities. A joint venture of role-modeling by different stakeholders is desirable, but is not yet available, to really make EBP work and to enhance the quality of care of patients as became clear from our research on guideline adherence described in Chapter 9.
Fourth, we learnt from Chapter 10, but also from previous studies,\textsuperscript{31,32} that clinical nurses are generally less aware of sources of existing evidence than doctors. This calls for knowledge translation and circulation, which is a dynamic and iterative process and moves along a continuum from awareness of, and adherence to, available evidence to improvement of the patients’ health. Knowledge translation can be used in CQI initiatives and may be helpful to close the evidence-practice gap.\textsuperscript{33} To facilitate the use of evidence in practice, practical tools such as clinical pathways and evidence-based recommendations can be used.\textsuperscript{34}

Fifth, in this thesis research utilization efforts were studied among a range of disciplines and stakeholders involved in health care (Chapters 9 and 10). Implementing new knowledge and changing clinical practice should be done in an interactive, dynamic way, in which personal experiences are valued and attitudes and beliefs are addressed.\textsuperscript{35-37} The effect of these team interventions should be assessed in different models of care delivery to determine how these interventions can induce the desired change. Identification of new evidence, and assessment of whether it offers new information that might change the latest standards in clinical practice, should be accelerated. Several higher impact research journals address this by explicitly stating what a new publication adds to the present body of knowledge. Updating of current practice implies a critical evaluation of this new knowledge and what that means for all stakeholders in clinical practice (Chapter 7 and 8).\textsuperscript{38} With this in mind, we studied patient satisfaction and effects on waiting time after the implementation of a triage system (Chapter 7). Furthermore, the NNS statistic can help to quantify the efforts needed to evaluate the usefulness and efficiency of interventions (Chapter 8). This evaluation cannot be done without collaboration and professional discussion on the consequences of the proposed change.\textsuperscript{39}

Finally, the studies described in this thesis illustrate the value of collaboration between nurses and doctors, without which none of these research projects would have succeeded. The results are relevant to both disciplines, as well as to managers and educators. Furthermore, the interdisciplinary character of the studies fosters the implementation process. From Chapters 9 and 10 we can conclude that the success of implementing such evidence depends on the ability of a team which functions in a coordinated, effective manner and communicates scientific arguments and findings. This seems fitting in the current era, in which the creation of a culture of continuous change and the determination of effective strategies to inform and engage all stakeholders in ways that help ensure the delivering of safe, cost-effective, and high-quality care are becoming prerequisites.

**Future research**

In the coming years, research in the nursing realm will require prioritization of patient-oriented research topics on the cutting edge of various disciplines involved. This can be realized by using explicit criteria to determine its societal priority, for example based on the mnemonic of the 8 D’s: Death, disease, disability, drug effects, discomfort, dysfunction,
dissatisfaction and dollars.\textsuperscript{40} A high score on one or more of these items implies a higher priority of the research topic. Another tool with which to assess priority are the criteria formulated by the scientific advisory board of the Dutch Association for Nurses and Caregivers.\textsuperscript{41} Research topics should be distinguishable from other research programs; should concern general patient care problems; and should have an impact on nursing care or care problems for specific patient groups. We agree on these additional criteria, but the criterion of uniqueness to some extent conflicts with our idea of interdisciplinary collaboration. Nursing research themes can be derived from current (inter)national perspectives, organizational research spearheads, and patient associations, but also from questions formulated by clinical nurses on the wards. The latter will enable demand-driven research and ensure the delivery of useful scientific knowledge for the nursing professions. From this interaction between bottom-up and top-down processes, themes can be included in interdisciplinary research programs, in which nurses need to have their own role, focus, and research budget.

The absence of a long-term national research agenda with set priorities leads to fragmented research themes. To avoid fragmentation, these national research programs should set out the (long-term) framework and programs based on explicit societal and scientific criteria, as mentioned above. Currently, patients, who are the actual consumers of research findings, are not included in the prioritization process. They should be encouraged and involved to do so in the future. The general scope of the currently prioritized research themes for nursing comprises self-management and limitations in daily activities and self-care.\textsuperscript{42} However, this is at odds with the medical way of prioritization, which is mostly illness-specific. With the arguments given in this thesis, we discourage mono-disciplinary prioritization and offer a passionate plea for interdisciplinary, evidence-based care and research.

\textit{Figure:} Relationship between CQI, EBP and research

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure.png}
\caption{Relationship between CQI, EBP and research}
\end{figure}
CQI: continuous quality improvement. Based on the six sigma philosophy, in which the PDCA (Plan, Do, Check, and Act) cycle has expanded to the DMAIC (Kumar 2010).\footnote{1}

- D define opportunity
- M measure performance
- A analyze opportunity
- I improve performance
- C control performance

EBP: Evidence Based Practice (Sackett 2000).\footnote{2}

- ask an answerable question
- acquire: find the best evidence
- critically appraise and evaluate the evidence
- apply the evidence in combination with clinical experience and patient values
- assess and evaluate outcomes

Research

- Based on the empirical cycle (De Groot 1981).\footnote{3}
- observation: collecting and organization of empirical facts: forming hypothesis
- induction: formulating hypothesis
- deduction: deducting consequences of hypothesis as testable predictions
- testing: testing the hypothesis with new empirical material
- evaluation: evaluating the outcome of testing or else.
REFERENCES


