Evidence-based practice guidelines: A burden and a blessing

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Introduction

In the year 2004 it has become common practice for Dutch healthcare workers to work with clinical practice guidelines which primary goal is quality improvement. Based on good evidence, practice guidelines should be applied in combination with individual clinical expertise. But some professionals feel that guidelines supress clinical freedom. Clinicians and nurses may feel restricted by the fact that they are expected to comply with guidelines. They can question the underlying evidence or have difficulties with letting go of old routines. Others find that guidelines are helpful tools in making justified decisions, as well as working in an evidence-based way. One can question if clinical practice guidelines are a burden or a blessing to professionals?

General background

Clinical practice guidelines are an increasingly common element of clinical care throughout the world. They have been developed to improve the process of health care and health outcomes, decrease practice variation, and optimize resource utilization. The term 'guideline' has been used for a variety of expressions and is used in many different situations. There are several definitions of what clinical practice guidelines are but they all come down to more or less the same description. Clinical practice guidelines are 'systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific clinical circumstances'.

Although physicians and nurses in the Netherlands were already familiar with protocols and guidelines, most of these were based on consensus. In the beginning of the nineties the evidence-based medicine paradigm came oversea from Ontario to Holland. Evidence-based medicine is 'the conscientious, explicit and judicious use of current best practice in making decisions about the care of individual patients'. This method implies that an observed clinical problem first will be translated in a well-formulated question. Accordingly a careful search will be performed in several databases in order to find the best evidence on the basis of which one tries to formulate an answer to the clinical question. The methodological quality of the identified articles needs to be judged in a systematic way by the use of validated appraisal criteria. The results will be summarised, again in a systematic way. Then they are ready to be translated in the form of a clinical practice guideline. This is the most optimal way of developing guidelines.
Ideally guidelines are developed using the 'explicit approach' that has been promoted in a series of articles published in JAMA in the nineties by the American surgeon David Eddy. In short this means that the goals of the guideline are explicitly formulated (cons and pros) from the perspective of the patient. Guidelines developed according to the explicit approach contain details about different options, costs, benefit and risk for the individual patient. All in all, evidence-based guidelines have the potential to improve the care for patients, by promoting interventions of proven benefit and by discouraging ineffective interventions.

Merely the development of clinical practice guideline in itself does not change daily practice as such. After they have been developed systematically, guidelines need to be implemented in an active way. The phenomenon of implementing knowledge has become subject of scientific research itself. Although we still do not know what type of implementation strategy is most powerful in order to create change, in the meantime we have learned a lot from studies on implementation about what does and does not work in general terms. To date we know that just passive dissemination of a guideline is unlikely to lead to change, whereas the combination of several active interventions is more likely to be successful. The necessary characteristics of clinical practice recommendations themselves have been studied. It has been found that compliance goes up when recommendations are clearly worded, compatible with clinician norms and not disruptive to routine practice. Also, clinicians prefer short manuals of major recommendations and a synopsis of the underlying evidence. In line with this type of research, Grol and colleagues have developed an implementation model. It can serve well as a tool for those who want to implement recommendations into daily practice. The model advises to write guidelines in a compact and transparent manner, to keep them short and to make them easy to use. The model can serve as a useful instrument but is no guarantee for successful implementation.

Due to the results of studies on implementation we know more about how to create behavioral changes in healthcare professionals or in clinical practise in general. In time we are getting better at anticipating on the type of problems that will accompany certain guidelines. We are more capable of predicting where and when we will meet resistance from professionals or otherwise. We know for instance that guidelines demanding a substantial change in professional's behaviour or needing organisational adjustments, definitively will meet a lot of resistance before being adopted (if at all). Despite the
amount of studies on effective implementation strategies, we are still in need of knowledge on how to establish 'evidence-based implementation'.\textsuperscript{18}

**Outline of this thesis**

The topic of this thesis is the development and implementation of evidence-based clinical practice guidelines. It describes how the evidence-based paradigm has been anchored within the Academic Medical Center in Amsterdam and gives examples of scientific studies on this subject. These studies include both systematic literature searches as well as studies on effectiveness of several procedures performed by nurses and doctors, and studies that focus on implementation. Overall, positive as well as negative aspects of guidelines and/or their process of implementation are highlighted throughout the thesis.

In *Chapter 2* it is described how the evidence-based paradigm was introduced in the Netherlands in the nineties and especially how this train of thoughts was established within the Academic Medical Center. One element of this development was the introduction of an internally financed guideline programme which history and structure are explicated.

Within the guideline program it is conspicuous that due to a lack of good scientific studies, many of the locally developed guidelines have been based on own data collection. Other guidelines have been developed primarily on the basis of existing evidence. Ideally, systematic reviews should be the cornerstone of guidelines.\textsuperscript{19-20} Systematic reviews can aid in guideline development since they entail searching for, selecting, critically appraising, and summarizing the results of primary research. An example of this classic preliminary trajectory in which a systematic review has been written to serve as the foundation of a guideline, is described in *Chapter 3*. The initial question here was whether there was good evidence on dressings or topical agents for postoperative wounds healing by secondary intention with respect to rate of healing since many different dressings and topical agents were used to cover surgical wounds. On the basis of 13 randomized clinical trials a Cochrane Review was written about the most optimal way of treating postoperative wounds healing by secondary intention.
Clinicians were the first to get used to the evidence-based paradigm. A few years later they were followed by the nurses and paramedics. Especially those who had been trained in doing scientific research welcomed this new development. They regularly evaluated the way in which they and their colleagues used to work, their routines and traditions. An example of such a critical question about the effectiveness of a nursing proceeding came from the department of oncology in the AMC. For some time there had been a discussion about the best way of measuring fluid input/output in case of intravenous hyperhydration during treatment with nephrotoxic chemotherapy. Usually bodyweight as well as fluid input/output as parameters were monitored for checking the fluid balance. In the discussion the reliability of measuring the fluid input/output was questioned. In general it was judged to be redundant, complex and labor-intensive. As had happened before, there was no literature to be found on this subject. Therefore a prospective cohort study was set up to determine the concordance between bodyweight and fluid intake/output and to make a conscious choice on which of the two parameters should be preferred. This design and results of this study are described in Chapter 4.

Partly on the basis of the results of the study described in the former chapter we became more and more aware of the fact that guidelines, in which certain procedures are abolished, were rather easily accepted by professionals. Especially when the professionals already questionned those actions as in the case of the double registration of fluid intake during chemotherapy. On the other hand, merely the abolition of a procedure or of ‘extra work’ is no guarantee for successful implementation. Chapter 5 entails a study in which the effectiveness of lactulose syrup after cardiac surgery has been studied. Dutch cardiac surgery centers lack consistency in management with respect to the prevention of postoperative constipation. Although not based on any evidence, the administration of laxantives is widely used. Since it often causes intestinal discomfort such as abdominal pain, bowel cramps and feelings of distention, a study was performed in postoperative cardiac surgery patients who were given either standard care (routine administration of lactulose syrup twice daily) or laxatives on indication. Although the nurses are the ones who give the laxatives to the patients, the doctors have to write the prescription. The nurses strongly believed that the laxatives could be abolished. The cardiothoracic surgeons were very skeptic towards a possible new policy. This guidelne concerned two disciplines whose views were rather opposite. Despite the fact that part of their routine work could be omitted, and a guideline would be developed on the basis of
sound evidence, more time and energy had to be invested to convince the clinicians of the validity of the new guideline compared to the time invested in gathering the evidence.

It can also be the case that not all the nurses on one ward share the same ideas about the adoption of a new guideline. In these circumstances there is a risk that after the implementation phase compliance will go down rapidly. Those who do apply the guideline may find it difficult to continue this if they are in the minority. After a while several nurses will have fallen back to their old routines. In the study described in *Chapter 6* we have tried to find evidence for the question about the diagnostic value of temperature measurement in the postoperative period. Some nurses believed that this was an old-fashioned, not evidence-based routine whereas others believed the thermometer to be a valuable diagnostic instrument. However, temperature measurement is routinely performed widely. Physicians are more likely to order additional diagnostic tests if fever is present as well as to consider an infection less probable if body temperature is normal. The few studies that had investigated the clinical value of postoperative temperature measurement contained important methodological flaws. Therefore a blinded prospective diagnostic cohort study was set up. The aim of the study was to prospectively assess the clinical value of routine postoperative temperature measurements by comparing them with the presence or absence of postoperative infection in a general surgical population. After completion of the study we implemented the guideline on the surgical wards. Many physicians and nurses were very sympathetic to the idea and stopped routine temperature measurement. Initially there was a high compliance (91%) but this did tail off slowly. It probably is rather difficult to change the deeply rooted tradition of routine temperature measurement. In order to maintain compliance, this guideline will need regular attention.

After the introduction of the evidence-based paradigm and the production of many clinical practice guidelines, researchers, policymakers and clinicians became aware that recommendations were not automatically effectuated.\textsuperscript{22-23} A discussion on how to implement knowledge at best got off the ground. Implementation is the procedural introduction of renewals and/or changes (ideally based on research findings) with the aim to position them structurally in an organisation. Although many studies have been performed to gather knowledge on how to best implement research findings, there still are many things we do not know about changing professionals' behaviour. In *Chapter 7* our efforts are described to implement an existing but neglected nursing guideline on fall
prevention. It concerned a guideline developed within the hospital in 1993. In the period in which the research was done for this guideline, a reduction of fall incidence of 30% was reached, measured on two wards. In 1999 we started a project to update the guideline with new available evidence and to re-introduce the guideline on two voluntary cooperating wards. Because, among other things, the guideline did demand some extra work from the nurses to prevent a possible negative outcome, the implementation of this guidelines turned out to be a rather complex project.

Chapter 8 describes an evaluative study on the general outcomes of the guideline program in the AMC. It contains data on the extent to which grants have led to actual development of clinical guidelines and the extent to which they have been implemented in practice. The reasoning behind this project was twofold. In recent years the government had become less keen on subsidizing research on effectiveness, and the the local guideline program celebrated its 10th anniversary. All projectleaders of the past period were asked to fill in a questionnaire. We ourselves read all applications and final reports. We measured several outcomes such as how many projects had failed, how many projects had led to a publication in a peer reviewed journal and how many of the successfully developed guidelines had also been successfully introduced into practice.

The literature on implementation is ambiguous about the effectiveness of interventions. Interventions that do work in a certain environment, such as the use of reminders, can turn out not to be effective at all in another situation. Despite the identification of generally effective strategies for implementation, we still can be puzzled as to why certain implementation projects fail. The introduction of change seems to be a complex process. It is necessary to maintain the search for new methods and practical determinants of effective implementation in order to be able to close the gap between science and daily practice. To learn more about the pitfalls of implementation we performed a vignette study which is described in Chapter 9. With this design we used a decision-making approach to study guideline adoption processes in individual clinicians and nurses. What do they focus on, what aspects of guidelines do they find important and do doctors and nurses differ in this respect? By applying conjoint analysis we created 16 fictive case descriptions (vignettes) in which we varied six aspects of guideline (e.g. cost reduction, level of evidence etc.). These were presented to doctors and nurses. For every case they had to express on a 7-point scale to which extent they
were willing to adopt that guidelines. Knowledge about willingness to adopt a guideline can be useful in order to choose an implementation strategy with an enhanced fit.

Chapter 10 concludes this thesis with a Dutch summary.
References


