Evidence-based surgery: Dissemination, communication, decision aids
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Citation for published version (APA):
Knops, A. M. (2013). Evidence-based surgery: Dissemination, communication, decision aids

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Chapter 10
Summary and future perspectives
SUMMARY

Surgeons are expected to make treatment decisions that are based on the best available evidence. Moreover, they are called to recognise that important decisions should also be shared with patients. While dissemination of evidence-based surgery and communication of evidence to patients have been stressed for decades, not all surgeons actually use evidence-based surgery in daily practice.

The studies in this thesis were performed to explore the current dissemination of evidence-based care throughout surgical practice and the communication of evidence regarding treatment options to patients, in particular by using decision aids. Chapter 1 describes the outline and aims of this thesis.

Chapter 2 reports on the attitude, knowledge, and awareness among surgeons and surgical nurses concerning the paradigm of evidence-based surgery and the barriers experienced in practicing evidence-based surgery. At the Academic Medical Center, a university hospital in Amsterdam, participants were invited to complete the BARRIERS Scale and McColl et al. questionnaires. An evidence quiz was compiled for the surgeons. Attitudes towards evidence-based surgery were positive. Ninety-percent of surgeons were familiar with evidence-based surgery terms, versus 40% of the nurses. Common barriers for surgeons were conflicting results (79%; 23/29 respondents) and methodological inadequacies in research reports (73%; 21/29). For nurses the most important barriers were being unaware of the available evidence (67%; 49/73) and unclear reporting of research (59%; 43/73). Only about half of the evidence presented in the quiz was actually applied in daily practice. We advocate continual exposure to available evidence, through frequent critical appraisal meetings, and using pre-appraised sources of evidence. Nurses will probably benefit from evidence-based surgery training that focuses on basic skills.

Chapter 3 describes the adherence to two Dutch local hospital guidelines, developed and implemented in the year 2000, and explores the factors accounting for long-term adherence and non-adherence to them. Using patient file data, adherence to a fluid balance guideline and body temperature guideline was evaluated retrospectively. Focus groups were launched to explore nurses’ perceptions of barriers and facilitators regarding long-term adherence. The predominant statements from the nurses’ focus groups were put to clinicians in questionnaires. Nurses involved in the fluid balance guideline (overall adherence 100%) stated that adherence has immediate advantages in terms of safety and a gain in time. They thought that the unanimous support of nurses and clinicians for this guideline enhanced adherence. Conversely, opinions on the body temperature guideline differed, and adherence was judged to be complex (overall adherence 50%). Although the guideline discourages routine postoperative body temperature measurements, surgeons nowadays “believe” a considerable number of patients do not meet the guideline criteria and they continue to ask for regular body temperature measurements. To secure adherence to local hospital guidelines after their implementation, guidelines should preferably be...
Chapter 4 presents a scheme to help balance the benefits and harms of adjuvant therapy versus no adjuvant therapy for patients with intermediate risk stage I endometrial carcinoma. The scheme is illustrated by the available evidence on postoperative pelvic external beam radiotherapy to prevent recurrence of disease. The scheme represents a fictive cohort of 1,000 patients receiving adjuvant radiotherapy who are assigned to five possible outcomes. Three large randomised clinical trials were included. Recurrences will be prevented by adjuvant radiotherapy in 60 patients (groups 1 and 2), a majority of 908 patients will neither benefit nor suffer severe radiation-induced harm (group 3), but 28 patients will suffer severe complications due to adjuvant radiotherapy (group 4), and an expected 4 patients will die (group 5). We concluded that the scheme presented in this paper readily summarises the possible treatment outcomes and may be of practical value for clinicians and patients in making a shared decision about adjuvant therapies.

Chapter 5 systematically reviews the evidence available on the effects of decision aids in patients facing a decision about surgical treatment. We searched electronic databases for controlled studies that evaluated the use of a decision aid in patients offered both surgery and alternative treatment options and documented the effects on actual treatment choices made. In addition, we summarised the effects on knowledge, decisional conflict, anxiety, quality of life, patient involvement, satisfaction, mortality, morbidity and costs. Seventeen studies of good methodological quality were included. Patients in the decision aid group chose to undergo invasive treatment less often (RR 0.80; 95% CI 0.67 to 0.95), had more knowledge about treatment options (MD 8.99; 95% CI 3.20 to 14.78), and experienced less decisional conflict (MD -5.04; 95% CI -7.10 to -2.99). Levels of anxiety and quality of life were similar. We concluded that offering a decision aid typically increases the number of patients who choose conservative or less invasive treatment options. As decision aids generally also improve patient knowledge and lower decisional conflict without raising anxiety levels, they should have a place in surgery, to help surgeons and patients achieve well-considered and shared treatment decisions.

Chapter 6 describes the kind of information surgeons communicate to patients at the outpatient clinic concerning abdominal aortic aneurysm and its treatment options. Dutch vascular surgeons recorded consultations with their patients. These audio recordings were scored on five statutory categories of information on: (1) the disorder, (2) procedure and aim of surgery, (3) consequences and risks of surgery, (4) watchful observation, and (5) individual prognosis regarding state of health. A category was considered as being adequately addressed if at least one of its items was mentioned. In total, 35 patient consultations were recorded: 13 patients had an aneurysm with a diameter ≤5.5 cm, and 22 a diameter ≥5.5 cm. In only a minority of recordings were all five categories addressed: 1 of 13 in the first group and 9 of 22 in the second. None of the items of information was
discussed consistently at every consultation. Although most patients were informed about the proposed treatment options (11 of 13 and 19 of 22), the alternative treatment option was not always mentioned (4 of 13 and 14 of 22). We concluded that patients with an abdominal aneurysm are inconsistently informed about their disorder and the available treatment options. The information provided is often less than legally required. This may hinder shared decision making.

Chapter 7 reports on the development and evaluation of a decision aid for patients diagnosed with an asymptomatic abdominal aortic aneurysm. A multidisciplinary team defined criteria on design, medical content and functionality for use in the decision aid which focused particularly on elderly users. It was developed in accordance with an international standard (IPDAS). A group of 15 patients with an abdominal aortic aneurysm evaluated the decision aid which was distributed on a CD-ROM. Information about the disease, the risks and benefits of surgical treatment and watchful waiting were presented as well as the individual possibilities and threats, based on the patient’s aneurysm diameter and risk profile. The decision aid was favourably evaluated by doctors and patients. We concluded that the decision aid was a simple and practical tool to tell patients about the pros and cons of the various treatment options and to help surgeons share this information in an evidence-based, uniform format.

Chapter 8 describes a six-centre randomised clinical study comparing the decision aid for abdominal aortic aneurysm treatment options (chapter 7) with regular information from the surgeon. The primary outcome was patient decisional conflict measured at one month follow-up. Secondary outcomes were patient knowledge, anxiety, and satisfaction. In total, 178 patients were included. Decisional conflict scores did not differ significantly between the decision aid and the regular information group (22 versus 24 on a 0-100 scale; p=0.33). Patients in the decision aid group had significantly better knowledge (10.0 versus 9.4 on a 1-13 scale; p=0.04), while anxiety levels (4.4 and 5.0 on a 0-21 scale; p=0.73) and satisfaction scores (74 and 73 on a 0-100 scale; p=0.81) were similar in both groups. We concluded that it seems safe to use a decision aid in addition to regular surgeon-patient communication to share aneurysm treatment decisions, as the decision aid did not increase anxiety, nor did it affect health outcomes. Nevertheless, the effects of the decision aid on reducing decisional conflict or improving satisfaction are very limited at best.

Chapter 9 reports on how to interpret the scores of the numeric Decisional Conflict Scale (DCS). In a Dutch university hospital, we collected statements on behaviour and emotions that people experience during decision making. We invited patients and healthy hospital employees to rate the intensity of decisional conflict that each of these statements expresses on a 1 to 10 scale. Participants provided 363 statements on behaviours and emotions during decision making. Based on the precision of the median ratings of intensity of the decisional conflict nine of these were selected. Using logistic regression analysis, we then evaluated associations of the DCS scores of patients faced with decisions about treatment with whether or not they reported behaviour and emotions previously
associated with decisional conflict. In 100 patients facing a treatment dilemma, a higher DCS was associated with lower odds for “immediately making the decision” (OR 0.96 per DCS point; 95% CI 0.93 to 0.98), whereas the odds of “fretting regularly” (OR 1.05, 95% CI 1.02 to 1.08) and “feeling nervous when thinking of the decision” (OR 1.04, 95% CI 1.01 to 1.06) were higher. We concluded that future users of the DCS may be interested to learn that lower decisional conflict scores are associated with less fretting, nervousness, and decision postponing behaviour.
FUTURE PERSPECTIVES

Future challenges for the dissemination of evidence-based surgery

According to the change model as proposed by Prochaska,$^1$ the dissemination of evidence-based surgery presently seems to be in the penultimate stage because considerable “action” has been undertaken to disseminate the paradigm. The next stage of Prochaska’s model comprises either maintenance or relapse (see Figure). In order to continue practicing evidence-based surgery, we face the challenge of keeping up with the new and relevant studies that are published every day and to disseminate the evidence from them in daily clinical practice in the form of easily digestible care summaries and guidelines.$^2,3$ The second challenge is to incorporate evidence-based surgery into all aspects of care - in the operating theatre, the outpatient clinic, the wards and at handovers - rather than to limit it to educational activities only. As the upcoming generations of surgeons and nurses will have had structural education in evidence-based surgery during their training, they may experience fewer barriers to appraising scientific literature and applying its results in daily surgical practice than we found in this thesis.

Dissemination of the paradigm of evidence-based surgery is not enough to achieve actual implementation. A recent systematic review of the implementation of evidence-based practice found several organisational infrastructure solutions to promote evidence-based practice:$^4$ national and international organizations and management promoting the paradigm, undergraduate and postgraduate education, and individual support in the form of mentors or role models on the wards. As the solutions in this systematic review were self-reported by health care professionals, they probably satisfy the professionals’ needs.

![Figure](image.png)

**Figure.** Stages of Change Model according to Prochaska.$^1$
although evidence of the effect of the implementation interventions is lacking. Since valid and reliable tools to assess evidence-based behaviour are available, future studies should aim at measuring if healthcare professionals and healthcare organisations actually do work in an evidence-based manner.

Communicating evidence and decision aids to involve patients in decision making

This thesis also considered inconsistent communication of evidence to the patients. It may seem counterintuitive to involve patients in decision making as the surgeon is considered to be the expert who knows what to do. However, evidence does not guide decisions without considering values and preferences, so the right treatment choice is not a matter of science or expertise alone.

Patients are generally more than willing to participate in decision making after being thoroughly informed, and the appreciation of different treatment outcomes has been found to vary widely among patients as well as between clinicians and patients. Several authors have advocated explicitly including patient preferences in decision making in order to prevent preference misdiagnoses. For example, unnecessary surgery can be prevented in patients for whom surgery may seem indicated but who do not wish to run the risk of surgical complications or to go through the process of recuperating from surgery.

Future directions for communicating evidence and sharing treatment decisions

We reported that the use of decision aids in surgery seems to have beneficial effects for patients, but we need to learn more about the effects of communicating evidence in regard to daily surgical practice. Does it affect consultation time, or the number of consultations before reaching a decision? When would be the best time to provide the decision aid: directly after referral by the general practitioner, during the first visit at the outpatient clinic, or whenever patients ask for more information?

Decision aids are tools that go beyond regular patient information leaflets by explicitly exploring patient preferences and values. Yet tools are not sufficient: we need to achieve actual patient involvement in decision making. A limitation of the research in this thesis is that we investigated the communication of evidence in preference-sensitive decisions, assuming that both clinicians and patients were aware of the fact that multiple reasonable treatment options existed. We did not measure if this awareness was actually present, although this is a prerequisite for making shared treatment decisions. Our finding that alternative treatment options are only discussed incidentally may be a consequence of surgeons being biased by their own values concerning treatment options.

Future studies should evaluate if this awareness of the fact that there is a choice is present - particularly in patients. If this is not the case, interventions to share treatment
decisions and to promote the use of decision aids should first be aimed at alerting patients
to the presence of multiple treatment options.

In typical shared decision making, clinicians communicate the evidence on risks and
benefits of available options, and patients share their preferences and values in return.\textsuperscript{6,13}
Clinicians are advised to first introduce the choice, and then describe options, often by
integrating the use of patient decision support tools, and subsequently to help patients
explore their preferences; this is then followed by making the decision.\textsuperscript{11} The Salzburg
Statement on Shared Decision Making was designed to call on patients and clinicians to
 collaborate towards this goal.\textsuperscript{13} This suggests that in Prochaska’s model the implementation
of shared decision making has passed the stage of determination (see Figure).\textsuperscript{1} The next
stage - considering actions - is now being addressed through the development of decision
aids worldwide,\textsuperscript{14,15} but it has not yet reached the necessary stage of wide acceptance of
the paradigm of shared decision making, as can be said of evidence-based surgery.

To implement shared decision making in surgical practice, the mere development
of decision aids that are made freely accessible on a website has been shown to be insufficient.\textsuperscript{16}
Inviting patients to contemplate their treatment preference by means of a
decision aid is not the same as enticing them into shared decision making in the consultation
room. A culture has to be created in which professionals regard shared decision making as
a necessary skill. Moreover, barriers such as insufficient time, lack of fit into organisational
routines, and health care professionals’ perception that they already apply shared decision
making, have to be overcome.\textsuperscript{17-19} Some have advocated incorporating suggestions into
evidence-based guidelines on what evidence is to be communicated to the patient, or even
to include patient decision aids in every guideline.\textsuperscript{20-22} So far, prospective studies that
empirically document the effects of these interventions are lacking.

Patient scenario

At the end of this thesis, we would like to return to the scenario presented in Chapter
1. The patient was included in the randomised clinical trial described in Chapter 8, in
which he was allocated to the decision aid group. After having viewed the decision aid,
he understood there is no scientific support for operating on aneurysms of the same
diameter as his. He was reluctant to run the risk of complications associated with elective
surgery because of his work in his web store in wines. In the end, surgeon and patient
agreed upon a watchful waiting policy with six-monthly ultrasound follow-ups.

This case story exemplifies how dissemination of evidence-based surgery can be achieved,
through the communication of evidence about the disorder and the available treatment
options for asymptomatic abdominal aortic aneurysms, all presented in a decision aid.
Although this patient scenario took place in the scope of a study, communicating evidence
and sharing decision making with patients can already start in current clinical practice if
surgeons do not take their patients’ consent for granted.
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