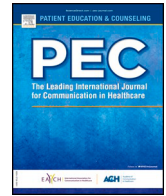




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Patient-centered innovation

Evaluation of a multilevel implementation program for timeout and shared decision making in breast cancer care: a mixed methods study among 11 hospital teams

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ABSTRACT

Objective: Evaluation of a multilevel implementation program on shared decision making (SDM) for breast cancer clinicians.

Methods: The program was based on the 'Measurement Instrument for Determinants of Innovations-model' (MIDI). Key factors for effective implementation were included. Eleven breast cancer teams selected from two geographical areas participated; first six surgery teams and second five systemic therapy teams. A mixed method evaluation was carried out at the end of each period: Descriptive statistics were used for surveys and thematic content analysis for semi-structured interviews.

Results: Twenty-eight clinicians returned the questionnaire (42%). Clinicians (96%) endorse that SDM is relevant to breast cancer care. The program supported adoption of SDM in their practice. Limited financial means, time constraints and concurrent activities were frequently reported barriers. Interviews (n = 21) showed that using a 4-step SDM model - when reinforced by practical examples, handy cards, feedback and training - helped to internalize SDM theory. Clinicians experienced positive results for their patients and themselves. Task re-assignment and flexible outpatient planning reinforce sustainable change. Patient involvement was valued.

Conclusion: Our program supported breast cancer clinicians to adopt SDM.

Practice Implications: To implement SDM, multilevel approaches are needed that reinforce intrinsic motivation by demonstrating benefits for patients and clinicians.

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1. Introduction

Shared decision making (SDM) is a collaborative process in which patients and clinicians make decisions together, integrating patient

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values and preferences with clinical evidence about available options and their risks and benefits, to arrive at patient-centered decisions [1]. SDM is regarded as the pinnacle of patient-centered care [1,2], but adoption by clinicians is slow [3–5]. The application of SDM is relevant and challenging in breast cancer care as: a. many treatment options are available [6–9]; b. patients face treatment decisions with varying short- and long-term (side) effects, affecting their quality of life [6,7] and c. different clinicians are working within a team [8,10,11]. As a result, the adoption of SDM in (breast) cancer consultations shows considerable room for improvement [6,8,12,13].

Breast cancer patients prefer sharing decisions and this has increased over time [14–16]. Clinicians in oncology care are generally

positive towards SDM [17,18], and many national policies have been designed to enhance the implementation of SDM [19–21]. SDM has been advocated to be an essential part of the clinical role [21–23]. Several barriers to implement SDM have been reported, including: a lack of SDM-skills [24], a failure to recognize that SDM differs from current practice [22], practical problems [25,26], a lack of trust in the patient's willingness to participate in decision-making [27], and the difficulty of embedding SDM into the workflow [22,4,28].

Potentially effective strategies to enhance SDM in clinical practice involve: training clinicians and the use of patient decision tools to help patients engage in SDM [7,29–33], feedback to clinicians on performance in consultations [25,33–35]. On the organizational level, incorporating timeouts in care pathways [21,36], and the use of incentives have been proposed [21,22,4]. However, the approaches used to implement SDM in routine practice are seldom grounded in implementation theory, and often fail to anticipate the change determinants associated with a specific clinical setting [4]. Although a multilevel approach using a combination of clinician- and patient-mediated interventions is likely to be most effective [21,30,37], to date, only a few SDM implementation projects have used multilevel strategies to facilitate SDM [22,34,38–40].

We evaluated a multilevel implementation program that was developed to enhance the adoption of SDM [40], by investigating the perceived barriers and facilitators by participating breast cancer clinicians in the program.

2. Methods

The COREQ checklist was used to optimize the reporting of this study [41].

2.1. Study design

A convergent parallel mixed-method study was conducted utilizing questionnaires and semi-structured qualitative interviews. The program was implemented twice: 1. from April 2016 till September 2017, for early-stage breast cancer (surgical) treatments and 2. from May 2018 till September 2019, for later-stage (systemic) treatments. At the end of each phase, an evaluation was carried out. The outcomes of the evaluation of phase 1 were used to adapt the program in phase 2.

2.2. Study setting

For each phase, a different geographical area was chosen for selection of the study population from which six candidate breast cancer outpatient clinics were invited (Phase 1: Utrecht, Phase 2: around Amsterdam). Three teams declined. One team outside the region registered voluntarily in each phase, allowing us to reach the desired number of teams. All clinicians involved in the decision-making process were invited to participate, i.e. breast cancer surgeons, oncologists, and (specialized) nurses. No financial compensation for participation was offered.

In the Netherlands, fast track diagnostics is applied: patients visit the clinic in the morning for diagnostic assessments and receive the diagnosis at the end of the day [42]. This approach reduces the average diagnosis time to 3.0 workdays within 1.4 hospital visits [42]. In some clinics, breast cancer surgery is planned straight away, while in others this can take several days/consultations.

2.3. Implementation program

The implementation program is described in Table A.1, including the adaptations made after phase 1. The program is based on the MIDI-model (Measurement Instrument for Determinants of Innovations) containing four implementation levels [43,44]. Key

factors for effective SDM-implementation were included in the program [7,22,26,30,45–47].

2.3.1. Innovation (the implementation of SDM)

Evidence about the effectiveness of SDM in routine practice was incorporated, including the 4-step model for applying SDM [5]. A 'timeout' was defined as specified time for patients to think and reflect and was considered to be a precondition for integrating the SDM-steps into the clinical pathway [21,47]. An evidence summary of SDM in clinical practice - and handy cards with example sentences - were offered to the clinicians.

2.3.2. Users of the innovation (clinicians and patients)

To support behavior useful for clinicians to apply SDM, individual and team feedback on the audio-recorded consultations were provided, followed by a 3-hour interdisciplinary team training [31]. Recordings were made by the clinician(s) of one or more consultation(s) with the patient. Clinicians were instructed to record consultation(s) in which a decision had to be made. They were free to choose a decision process for which they wanted feedback, to stimulate intrinsic learning. The feedback was provided on paper and verbally. Individualized feedback was available for each clinician by providing the score per OPTION-item per patient [48], corresponding self-used quotes, and suggestions for improvements. Written feedback on team performance was provided, including the overall scores, a description of their team qualities, and suggestions for improving SDM. In a meeting, the team listened to, and talked about, their audio-recordings.

The team training session consisted of an explanation of theory, including the 4-step model, discussion about the relevance of SDM and examples of how to apply SDM in practice. In phase 2 of the study, role-play with an actor was included in the training and it was preceded by a 45-minute e-learning.

By suggesting the teams to use activation tools, such as Ask-Three-Questions and decision aids, patients were empowered to participate in the consultation [49]. In phase 2, the teams were provided with a booklet and an animation explaining SDM to patients.

2.3.3. Organizational context

Teams considered allocating time (timeouts) for SDM in their care pathways and evaluated the organization of their multidisciplinary team meetings. They were helped by the results of a poll assessing patient opinions about the amount of time they would like to have for the decision-making process. Key moments for informing patients and timeouts in the clinical pathway were made explicit. They used the feedback from their audio-recordings to reflect on the allocation of tasks among team members. The program was tailored to the local context: each team defined its own goals within the scope of the program and selected tools to support SDM.

2.3.4. Socio-political context

As concurrent activities and external factors can influence the level of SDM, teams were asked to monitor their implementation activities via a logbook. Teams were also encouraged to involve hospital management in the project and to inform healthcare insurers, professional bodies, and other stakeholders about the program.

2.3.4.1. Patient involvement. Patient involvement has been added to the framework and plays a role in all four levels: Participation of one patient advocate (a trained patient) and two patient representatives in the research team, and by ad hoc participation of at least one patient advocate in training sessions and meetings with the hospital teams. Results of a poll among patients and the perceived involvement in decision-making of the recorded patients (via the SDM-Q9) were fed back via the team meeting and the written feedback report.

2.4. Participants

All clinicians who actively participated in the program were invited to complete the questionnaire (Table A.2). Distribution and collection of the electronic questionnaire were done by the team coordinators to ensure anonymity. Based on previous literature, 5–6 participants per clinical group per phase is required to capture the majority of themes [50]. For the interviews (Table A.3) a purposive sample was drawn from the 11 participating teams to recruit clinicians with different clinical roles. The team coordinator ((specialized) nurse) of each team was asked to participate in a semi-structured interview and to recruit one physician from the team.

Recruitment and data collection for the questionnaires and interviews were conducted from April to June 2017 (phase 1) and April to June 2019 (phase 2), immediately after the implementation program has ended. The team coordinator was asked to send two reminders to non-responding team members, after 3 and 6 weeks.

2.5. Questionnaires and interviews

The MIDI-model describes 29 determinants that can enhance or hinder the implementation of an innovation, divided into the four levels mentioned above [44]. The validated example questions provided by the MIDI-model were rephrased in a questionnaire (Table A.2) and a semi-structured interview guide (Table A.3) into 25 items relevant to our program, to be rated on a five-point Likert scale ranging from “entirely disagree” to “entirely agree” [44]. Three open questions were added to the questionnaire so respondents could list what they thought were the most prominent facilitators of and barriers to the implementation of SDM. The survey was reviewed for content and face validity by authors with expertise in the field of SDM and patient involvement (by LK, HvV, HVo, MS, EV) and tested in a previous pilot program [51]. The face-to-face interviews were conducted by one researcher. Each interview lasted approximately 45 min and was recorded with permission from the interviewee. Two experienced researchers (HvV, HVo) trained the other researchers (LK, MS, JO, EvW) and discussed their first interview afterward, to ensure consistency between interviewers.

2.6. Data analysis

Data analysis consisted of content analysis (surveys) and thematic analysis (interviews). All results were analyzed anonymously. The data obtained from the questionnaire were exported from an Excel file in SPSS Statistics version 25 to calculate descriptive statistics. All interviews were transcribed (verbatim) using Express Scribe Transcription software (Free Version 2017) and analyzed. Respondent validation was achieved by sending interviewees their transcript to approve the content. Each transcript was independently coded by two of four researchers (LK, HvV, HVo, EvW) [41]. Deductive thematic analysis was carried out on the dataset by marking text excerpts in the transcripts reflecting a ‘barrier to’ or a ‘facilitator of’ the application of SDM [52]. We used the four implementation levels and the 29 determinants of the MIDI-model as a coding scheme, supplemented with ‘project support’ [44]. Text fragments were charted in a table for each of the determinants and then deliberated by the coders until thematic saturation and variation were confirmed [53].

3. Results

3.1. Participating hospitals

Six hospitals agreed to participate in phase 1 (1 university, 2 teaching, and 3 general hospitals) and 5 agreed to participate in phase 2 (4 teaching and 1 general hospital). One hospital (phase 1) declined to participate, as they were not convinced that the

implementation would further improve their level of SDM. Two hospitals (phase 2) did not want to invest the time needed to participate in the study.

3.2. Study population

Twenty-eight (42%) of the clinicians who received the questionnaire responded (phase 1: 15, phase 2: 13 clinicians) (Table A.4), representing all relevant clinical professions: nurses, nurse specialists, surgeons and oncologists. Interviews were held with 21 clinicians (Table A.5): the coordinator (a nurse (specialist)) and one physician of each team. In one team, only a nurse specialist was interviewed, as surgeons had delegated SDM to the nurse specialists.

3.3. Evaluation of the SDM implementation program

3.3.1. 1. Innovation

Questionnaires: Clinicians agreed with the scientific justification and relevancy of SDM and timeout for breast cancer care (Table A.2). The process of SDM corresponded well with their vision of high-quality care. Moreover, 96% indicated that SDM is (highly) relevant to breast cancer care.

Interviews: Clinicians confirmed that applying SDM corresponded well with what they consider to be good healthcare and that SDM is relevant to breast cancer care (Table A.5). Using a 4 step-model helped clinicians to translate the SDM-theory into practice and integrate it into their consultations. For example, video-examples (along with handy cards with example sentences and summaries of relevant theory) were provided to explain to clinicians how SDM is different from their current approach, and to help them apply it during consultations. However, a potential barrier is that some clinicians expressed that the 4 step-model did not fit with all their patients. Discussing the option of ‘watchful waiting’ as an alternative to pharmaceutical or surgical interventions was considered more complex than presenting several medically feasible options. Interviewees indicated that the effects of SDM were visible in practice, as illustrated by the following quotes:

“We have always been eager to learn new things and I find SDM interesting. But I did not expect the effect to be so significant.”

“SDM is right for the times. That we approach patients as independent individuals, and they do not blindly follow what the doctor says.”

“What I really liked, I put it on a post-it on my computer, the doctor knows everything about the treatment, but the patient knows everything about her life.”

3.3.2. 2. Users

Questionnaires: Respondents, especially clinicians involved in decisions about systemic therapy, indicated that SDM fits with their role. Responses showed that they had gained enough knowledge about the theory of SDM to support implementation within their practice. A greater number of respondents involved in providing systemic therapy (54%) indicated difficulty in fully applying SDM as compared to those involved in providing surgical therapy (13%).

Interviews: Interviewees pointed out that change requires continuous (team) effort, practice, and time. They indicated that patients appreciated the application of SDM by their clinicians. Clinicians reported positive effects for themselves (better structured and less hurried consultations, better-informed decisions and more ‘person-centered’ rather than ‘patient-centered’, better-shared responsibility for the decision, and enthusiasm about the theory of

SDM and timeout), for their patients (patients are more satisfied, are sure about their decision and their consultations are more at an equal level and individualized), and for the team (the feeling of teamwork increased, learning together as a team was appreciated, there was a better alignment of tasks). These advantages enhanced their intrinsic motivation. For some patients, for example palliative patients, discussing what matters to them in life may already be a natural process. However, clinicians indicated that implementing SDM with patients who are emotional, anxious, indecisive, have lower health literacy, or show an unsatisfied hunger for information, requires specific skills. Some clinicians viewed these patients as annoying, or as unmotivated/unable to share decisions. These clinicians remained doubtful as to whether all patients could - or wanted to - participate in SDM. Implementation was fostered by support from colleagues (a consequence of the team approach of the program and observation of (new) communication skills applied by colleagues).

“Ultimately, you want to help patients as best as you can, that’s why you became a doctor. The advantage of SDM is that it helps to better structure the consultation. That brings more joy in your work.”

“No, I always tell patients we make decisions together. Some of them are anxious to choose. They ask, ‘doctor what would you do?’ Then I say: ‘I don’t have to live with it. Think about what is important in your life. We have time to think, we will work it out.’”

“This method helps you to get closer to patients, it puts you in a listening mode rather than a talking mode. If the patient feels you are interested, you get more information out in the open.”

3.3.3. 3 and 4. Organizational and Socio-political context

Questionnaires: Most reported barriers to the implementation of SDM included: limited (financial) means, and, to a lesser extent, a lack of time. Of the clinicians providing systemic therapy, 15% indicated that enough time is available to implement SDM and 23% felt that enough means and facilities are available. The simultaneous implementation of projects, which decreased focus and time for this project, was also perceived as a barrier (79%). Few difficulties arose from rules and laws that hamper the implementation of SDM (29%), except the criterion of the Dutch patient organization that instructs hospitals to perform surgery within 5 weeks following diagnosis. This criterion was adjusted during the course of the project.

Interviews: Training and feedback on the recorded consultations were considered essential for gaining the skills needed to improve SDM. The interprofessional team training was thought to provide high added value: feedback was discussed, audio-recordings were used for reflection and actor role-play was used. Feedback on consultations should be as individual as possible, and connecting the feedback to the SDM-steps helped clinicians to understand how to apply SDM-theory in their practice.

The belief that SDM might cost more time (while the experience of many was that it did not cost extra time), was, at least for complex patients, felt to be a hurdle. However, interviewees reported that the duration of consultations could either be longer (e.g. with critical patients who keep asking questions and/or cannot decide) or shorter (e.g. if the care pathway has already involved several visits, better diagnostic information can save time) as a result of implementing SDM. The complexity of redesigning care pathways to integrate SDM and timeout in consultations - and the logistical planning process required - should not be underestimated. However, if accomplished, clinicians indicated that this is a reinforcer and supported sustainable change. Implementation of SDM was facilitated

by task re-assignment, especially the delegation and substitution of tasks to nurses (specialists). Clinicians indicated that their full agenda hindered them to discuss the improvements they wanted to make: ‘Many other things are going on’ in their hospital. The availability of an implementation coordinator can therefore be helpful to ensure that progress is maintained as well as offering tools to help patients engage in SDM. Clinicians did not indicate that guidelines or laws had hindered the application of SDM.

“Especially the feedback from the recorded conversations, you do pick out a lot of things there and then you realize how useful that is.”

“Actually, no one can make a decision having only received information once.”

3.3.4. 5. Role of the research team

Questionnaires: Both the program itself and the support provided by the research team was appreciated, and scores were higher in phase 2 than in phase 1. Respondents were pleased with the materials and the customized support provided by the research team. The collaborative meetings were less appreciated.

Interviews: Appreciation for the program and the research team was high. In particular, the accessibility of the team, the practical examples provided, the feedback, and the training that included actor role-play were appreciated. Interviewees were also positive about the involvement of patient (representatives) in the program.

3.4. Adaptations to the implementation program

The program was adjusted based on the feedback provided by participating clinicians in phase 1 (Table A.1). The major adaptations to the program were: fewer collaborative meetings (in response to clinicians’ busy schedules), personalization of the feedback provided to clinicians (achieved by individually marking consultation quotes), the addition of role-play as part of the training, and improvement of the tailored support provided by the research team. This included the provision of information about the project for both clinicians and patients, but also the appointment of an account manager per team who offered customized support to the team (coordinator) to help overcome any local barriers and practical problems.

4. Discussion and conclusion

4.1. Discussion

In this study, we evaluated how clinicians involved in breast cancer care perceived a multilevel implementation program to accelerate the adoption of SDM. Clinicians rated the program as feasible and valuable. They appreciated that the program: (1) covered an important topic (SDM) of benefit to themselves and patients, (2) contained feedback and training that was both theory-based and practical, (3) included a focus on the team and care pathway, and (4) involved patients in the program.

The program was feasible to implement in routine breast cancer care, despite the generally high workload of clinicians. Our study participants consider SDM very relevant to breast cancer care, and feel that SDM is compatible with their views on what constitutes good healthcare. Aside from the personal investment and the extra time needed for critical, indecisive, or low health literate patients, clinicians experienced positive benefits of SDM for their patients, for their teamwork and their conversational skills. Clinicians’ positive attitudes towards SDM are increasingly being reported [7,18], but our study adds knowledge on how this can be reinforced. This offers opportunities for future implementation.

Team training, individual and team feedback, combined with a theory-based 4-step model to structure consultations and the provision of practical examples [5], supports the translation of theory into practice. Clinicians perceived that this led to better-structured and more person-oriented consultations, and a more comprehensive communication approach of the team as a whole. It was considered important that the theory is reinforced by feedback and training. Clinicians were positive about the modern learning principles applied in the program: Clinicians appreciated that *individual* feedback is given, and is shared with the team both in writing and face-to-face. They confirm that repetition of training, feedback and (team) reflection will be needed even when SDM has become part of routine care, in line with other findings [21,25,33–35,54,55]. The challenge appears to be to strengthen intrinsic motivation by inviting clinicians to embrace SDM as an essential part of their clinical role [21,56].

The integration of SDM and the inclusion of timeouts as part of their care pathway was also valued and requires that the team aligns the logistical processes and team tasks accordingly. This demands the cooperation of many colleagues, and management, and involves the reallocation of tasks and financial resources. They appreciated that the implementation approach focused on the multidisciplinary team: it is fun to learn about and work on SDM together, and involving management helps to overcome financial or organizational (i.e. logistical planning) problems, or counterproductive incentives. These findings are important for the design of SDM implementation programs as they have been recommended – but they have hardly been put into practice [4,11,19,21,22,40,57,58,47].

Clinicians indicated that co-creation with patients helps to focus on enhancing SDM as part of the patient-clinician interaction, utilizes patient knowledge and ensures that what matters most to their life is taken into account. Patient involvement as part of implementation activities has been advocated before [21,31]. From our evaluation, it must be considered as a key implementation strategy.

4.1.1. Strengths and limitations

A strength of this study was the active participation of clinicians from different backgrounds, and patient representatives in designing, testing and evaluating the program, based on theoretical implementation framework. The evaluation was carried out shortly after the intervention, which lowered the risk of recall bias. However, the limited response rate of the questionnaires might have led to sampling bias. Moreover, 13 of the 21 interviews were not conducted by an independent researcher but by members of the research team. This might have influenced the responses but may also have helped to collect more in-depth information. Another limitation is that the participants were more motivated to implement SDM than clinicians in general or that barriers or facilitators were missed due to the limited number of interviewees. The study results might therefore reflect the views of early adopters in this field. Nevertheless, this is valuable as it will help to attract the next group of followers and accelerate the implementation of SDM.

4.2. Conclusions

In this study, an implementation program for SDM in breast cancer care was evaluated favorably. Our multilevel approach helped to reinforce clinicians' intrinsic motivation to apply SDM. Highly valued aspects of the program design were: the provision of feedback on consultations, interprofessional training incorporating actor role play, the team-focus, and the process of redesign to create time for SDM. Patient involvement should be an essential part of any SDM implementation effort. Finally, clinical teams benefit from a co-creating and accessible research team in overcoming practical barriers and supporting change at different levels in the organization.

4.3. Practice implications

Key elements for implementing SDM in clinical practice are process redesign and improving conversational skills as part of professional behavior. By taking the clinician-patient interaction as the starting point for the design of the care process, clinicians can be intrinsically motivated to adopt SDM and barriers related to the multidisciplinary context of the workplace and the workload can be overcome. Standardization of the program lowers costs for the clinical and/or research (support) team and makes this approach scalable.

Ethics approval and consent to participate

Approval for the study was obtained from the medical ethics review board (W16.019) and informed consent from the interviewees was received for making audio-recordings.

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CRediT authorship contribution statement

Two investigators (HvV, CH) designed the study. HvV, CH and EV obtained funding. HvV coordinated the research activities: selection of the study participants and study design, data collection, data analysis, data interpretation, and writing of the manuscript. LK, HVo, JO, EvW conducted interviews and collected questionnaires. HvV, HVo, LK, EvW and HvV performed the data analysis. JO, EV and MS coordinated patient involvement in the design of the study and the interpretation of the results. All authors contributed to the interpretation of the data and had full access to all of the data (including notes from interviews, questionnaires and tables), and can take responsibility for the integrity of the data and the accuracy of the data analysis. All authors contributed to the concept versions of this manuscript and approved the final version for publication. HvV is the guarantor.

Data sharing

De-identified data can be requested from the corresponding author at haskevanveenendaal@gmail.com.

Transparency

The corresponding author (HvV) affirms that the manuscript is honest, accurate, and a transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned and registered have been explained.

Conflict of interests

The views presented in this publication are solely the responsibility of the authors. The funders of the study were informed about the study progress during the course of the project and approved the study concept and the final results of the study. The funders were not allowed to propose participants for the interviews or questionnaires.

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Appendix A

See [Table A1–A5](#).

Table A1

Content of the multilevel program using a 4-level framework for designing an effective implementation strategy [42].

Level of implementation	Working mechanism	Form in Phase 1 (breast cancer surgery, 6 teams)	Timeline /months (M)	Adaptations made in Phase 2 (systemic therapy breast cancer, 5 teams)
1. Innovation (the implementation of SDM)	Discuss what SDM means and what kind of behavior is effective during a breast cancer consultation	<ul style="list-style-type: none"> ● A clear overview of the practical 4-step model for applying SDM was given to the clinicians. They were asked to mirror the model to their current communication behavior during consultations (sense-making). ● Background information about the theory of SDM, presentations summarizing the working sessions, etc. were also made available to the teams via a website. 	M1	<ul style="list-style-type: none"> ● We provided the teams with more concrete examples of sentences - and discussed lessons learned from Phase 1 – to enhance the implementation of SDM.
	Encourage the use of effective decision tools to support SDM in daily practice	<ul style="list-style-type: none"> ● Teams were provided with an overview of tools (made available via a website) that can enhance SDM, especially concerning breast cancer surgery and systemic therapy (i.e. 'Ask-3-questions' handy cards outlining the 4 SDM-steps). 	M1	<ul style="list-style-type: none"> ● We asked each team to experiment with a decision aid.
	Provide individual and team feedback on actual SDM behavior (before & after implementation)	<ul style="list-style-type: none"> ● Each team collected audio-recordings from 15 patients pre-intervention ● Feedback was provided on the performance regarding SDM and timeout, both in a team meeting and a via a report containing feedback for the team as a whole. Individual feedback was also provided. Characteristic audio fragments were selected and listened to; these provided examples of ways in which the SDM process could be improved to discuss issues that could enhance the SDM process. 	M1–4 M5–7 M12–15	<ul style="list-style-type: none"> ● We explicitly assigned quotes to individual clinicians by color-coding quotes per clinician in the individual report.
2. User (clinician and patient)	SDM training via team training & e-learning	<ul style="list-style-type: none"> ● Each team collected audio-recordings from 15 patients post-intervention ● An inter-professional team training session addressed the application of SDM and timeout in consultations, using audio fragments recorded from members of the team. The training session was tailored to the needs of the team, and the results of the pre-intervention measurement. ● A (45-minute) e-learning session explained the theory of SDM and outlined how to apply the 4-step model in practice. 	M6–8 M6–8	<ul style="list-style-type: none"> ● Actor role-play was added to the content of each training session, based on a recognizable case (extracted from the recorded consultations). ● The content of the e-learning session was updated to better align with the theory and tools used in the implementation program.
	Peer learning via collaborative working sessions for teams	<ul style="list-style-type: none"> ● Two or more team members were asked to participate in a total of 4 collaborative working sessions designed to facilitate the process redesign, the application of SDM, timeout, and the selection of tools for SDM. Topics: responding to barriers to and facilitators of implementation, sharing team actions, integrating the 4 steps for SDM in the care path, the use of tools and patient information, coping with implicit normativity during consultations, patient perspectives on timeout & SDM. 	M1, M5, M10, M14	<ul style="list-style-type: none"> ● The number of collaborative sessions was reduced to two sessions (and one session in between for only the team coordinator of each hospital team).

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Table A1 (continued)

Level of implementation	Working mechanism	Form in Phase 1 (breast cancer surgery, 6 teams)	Timeline /months (M)	Adaptations made in Phase 2 (systemic therapy breast cancer, 5 teams)
3. Organizational context	Redesign the pathway to include SDM and timeouts, using rapid cycle improvement	<ul style="list-style-type: none"> Teams were asked to include timeout & decision-tools in the pathway (support was provided). The Plan-do-check-act cycle was explained to teams and teams were encouraged to experiment with new ways of working that can better accommodate SDM and timeout. First visit: discuss test results, prognosis, treatment options, the process of SDM. Give patients information to read at home. Second visit: discuss pros and cons of options and ask patients what matters to them. Encourage patients to take extra time over the decision or schedule an extra visit to help with decision making (or, if the patient is ready, a decision can be made). 	M5–14	<ul style="list-style-type: none"> No major changes were made. More emphasis was placed on teamwork and on how multidisciplinary team discussions can facilitate SDM.
	Reconsider working process including SDM	<ul style="list-style-type: none"> Teams were asked to adapt multidisciplinary team consultations & reassign communication tasks (support was provided). 	M5–14	<ul style="list-style-type: none"> Emphasis was given to the feedback provided (in the evaluation of Phase 1), that this seems to be a promising strategy.
4. Socio-political context	Facilitate a context that supports the implementation of SDM in daily practice	<ul style="list-style-type: none"> Commitment to invest time in the process was obtained at the start of the project. Barriers to and facilitators of implementation in the hospital were identified, and ways to respond to them were discussed with the team coordinator at the start of the project. Two team members per hospital were interviewed about experienced barriers to and facilitators of the implementation program. This information was fed back to the teams. 	M0 M1 M11	<ul style="list-style-type: none"> A better overview of the activities involved in the project and estimated time investment of personnel were provided before teams confirmed their participation. From the project team, an 'account manager' was appointed for each hospital team to improve communication. No changes were made.
	Access to implementation expertise on request	<ul style="list-style-type: none"> Expertise in the implementation of SDM, timeout, and quality improvement was offered, via telephone, face-to-face, or via an (extra) meeting with (members of) the team. Each team was visited at least once in between every collaborative working session (minimum 3 visits) and focused on: <ul style="list-style-type: none"> Putting theory into practice: 4 steps of SDM Process redesign 	M1–14	<ul style="list-style-type: none"> An 'account manager'/implementation expert was assigned to each hospital to facilitate communication within the team.
Added to the levels: patient involvement	Partnering with patients and collecting patient perspectives on SDM and timeout	<ul style="list-style-type: none"> We ensured that patient representation was systematically embedded, by having 3 patient representatives in the research-team, the collaborative working sessions, at least one patient representative in local team sessions and all other meetings. Teams were provided with the views of (ex-) breast cancer patients on the preferred number of consultations and the number of days they would like in between consultations (via website surveys). Each team collected the questionnaire (SDM-Q9) of 15 patients pre-intervention and 15 patients post-intervention. The scores were presented in the local team session and the written feedback report. 	M1–14 M7 M1–4 and M12–15	<ul style="list-style-type: none"> Additional website surveys were carried out asking about patient views about systemic treatment. Also, whether - and how - they would like to discuss the wait & see option.

Table A2

Questionnaire data: clinicians' experience with the SDM implementation program.

Statement	Phase 1 (N = 15)				Phase 2 (N = 13)			
	Disagree ^a	Neutral	Agree	Average ^b	Disagree	Neutral	Agree	Average
Innovation (the implementation of SDM)								
1 SDM ^c is easy to understand.	7%	0%	93%	3,3	0%	0%	100%	3,1
2 SDM is easy to apply in practice.	20%	7%	73%	2,8	23%	8%	69%	2,8
3 The theory of SDM is scientifically justified.	13%	7%	80%	2,7	23%	15%	62%	2,7
4 The approach corresponds to my opinion about what constitutes good health care.	0%	0%	100%	3,4	0%	0%	100%	3,4
5 The effects of SDM are clearly visible in practice.	13%	7%	80%	2,7	38%	8%	54%	2,8
6 SDM is relevant to breast cancer care.	0%	0%	100%	3,5	0%	8%	92%	3,3
7 SDM corresponds with the way I was used to working ^d . User (clinician & patient)	7%	7%	87%	3,1	31%	8%	62%	2,8

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Table A2 (continued)

Statement	Phase 1 (N = 15)				Phase 2 (N = 13)			
	Disagree ^a	Neutral	Agree	Average ^b	Disagree	Neutral	Agree	Average
8 I possess enough knowledge about the theory of SDM to be able to properly implement it ^d .	7%	7%	87%	3,0	15%	23%	62%	3,1
9 Implementation of SDM has advantages for me ^d .	20%	7%	73%	2,7	15%	15%	69%	3,0
10 Implementation of SDM has disadvantages for me ^d .	53%	0%	47%	2,4	46%	15%	38%	2,6
11 Patients generally cooperate in SDM ^d .	7%	7%	87%	2,7	0%	15%	85%	3,1
12 Patients appreciate SDM ^d .	0%	0%	100%	3,1	8%	15%	77%	2,9
13 I receive sufficient support from colleagues ^d .	7%	7%	87%	3,0	15%	23%	62%	2,9
14 I receive sufficient support from my direct supervisor ^d .	27%	0%	73%	3,0	8%	31%	62%	2,9
15 My colleagues apply SDM in their way of working ^d .	13%	7%	80%	2,9	38%	23%	38%	2,4
16 I apply SDM in my way of working.	13%	7%	80%	2,8	31%	23%	46%	2,6
17 I can completely implement all 4 steps of SDM during my consultations.	13%	0%	87%	3,0	54%	23%	23%	2,3
18 SDM is suitable for my role as a doctor/nurse (practitioner). Organizational & sociopolitical context	0%	27%	73%	2,8	0%	15%	85%	3,3
19 Sufficient financial means are available to implement SDM.	33%	27%	40%	1,9	23%	23%	54%	2,8
20 There is enough time available.	20%	13%	67%	2,5	62%	23%	15%	2,2
21 There are enough means and facilities available ^d .	33%	13%	53%	2,3	54%	23%	23%	2,3
22 One or more people are designated to coordinate the implementation of SDM.	13%	7%	80%	2,9	38%	8%	54%	2,7
23 Other projects and changes are being implemented in the hospital at the same time ^d .	7%	7%	87%	3,1	15%	15%	69%	2,9
24 There is enough feedback for participants about the progress of the project.	27%	13%	60%	2,7	31%	0%	69%	2,7
25 Rules and laws inhibit the implementation of SDM ^d . Support of research team	67%	7%	27%	2,1	38%	31%	31%	2,3
26 Enough materials are provided by the research team.	0%	7%	93%	3,0	0%	0%	100%	3,4
27 Enough support is provided by the research team.	7%	20%	73%	2,7	0%	15%	85%	3,4
28 The meetings are helpful for the implementation of SDM.	0%	7%	93%	2,9	8%	23%	69%	3,0
29 Easy access to information is provided by the research team.	7%	20%	73%	2,7	23%	23%	54%	2,7
30 Enough feedback has been received from the research team.	20%	7%	73%	2,8	15%	8%	77%	2,8
31 The collaboration with the research team is good.	0%	13%	87%	2,8	8%	0%	92%	2,9
32 The collaboration between participating hospitals is good.	13%	27%	60%	2,2	31%	31%	38%	2,7

Open questions about TO & SDM and the support you experienced from the project team:

1. According to you, what are the three most important success factors for applying TO & SDM in daily practice? And what are the three most hindering factors for applying SDM?
2. What differences did you experience in applying timeout and applying SDM? "Is applying the one easier or more difficult than the other"?
3. What aspect of support from the research team was most valuable for you? (e.g. the training, meetings, visits, materials, learning environment, interactions between participating teams). What suggestions do you have to improve the support provided by the research team?

^a Agree is the sum of the answer categories strongly agree & agree, and disagree is the sum of strongly disagree and disagree.

^b The average is calculated from 5 answer categories, range 0–5.

^c SDM = shared decision making.

^d Does not add up to 100% because of rounding.

Table A3

Interview guide shared decision making (SDM).

We would like to evaluate the TO and SDM project in this interview, in order to gather your personal experiences with the project and develop an overview of the barriers to and facilitators of implementation. The information from the interviews will be used to improve the implementation program. This interview will take a maximum of 45 min.

All responses collected will be anonymous and treated confidentially

A. Innovation

1. What do you think about the description of the four steps of SDM and the distribution of these steps over 3 visits to account for timeout? Is it clear? Complete? Feasible?
2. How does the application of SDM compare to your way of working before? In what way was it or was not it the same?
3. Do you believe that SDM is an effective intervention? Why? What did you expect? What was the effect you experienced?
4. Is SDM applicable to patients with breast cancer? Why?

A. User

5. What is the greatest advantage in applying SDM for you personally? And what is the greatest disadvantage?
6. Do you feel TO & SDM are relevant to your occupation? Does applying SDM affect your feelings of autonomy, responsibility? Are there conflicts between SDM and your own beliefs?
7. What influence did applying SDM have on the relationship with your patients? How do you feel about making joint decisions with your patient? How do you feel about sharing (more) responsibility with patients in making a choice?
8. What effect did the application of SDM have on your relationship with colleagues (in general, in meetings)?
9. What knowledge and skills do clinicians need to apply SDM successfully? In what way do you demonstrate this knowledge and these skills?

A. Organizational context

10. Barriers

- a. What barriers were you confronted with in the implementation of SDM (i.e. in relation to working together, planning, breaking with own patterns)?
 - b. How did you or your team react to these barriers?
 - c. What is your reflection afterwards on acting in this way?
11. Since the beginning of the project, what has changed in your care process? (i.e., more consultations? more time in between consultations? dosing of information, use of decision tools?)

12. Do you think there is enough information, time and resources available for you and your team to implement SDM?

13. Did it take more or less time than expected to implement SDM?

14. How often did your team give feedback to the hospital about applying SDM?

A. Socio-political context

15. Are there any laws or regulations that hindered you in the application of SDM? Which ones?

16. Did national indicators or any guidelines obstruct the implementation of SDM?

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Table A3 (continued)

- A. Project team**
17. Support of the project team
- What were the positive elements of the support provided by the project team (training, meetings, web portal etc.)? And why?
 - What should be improved? Why?
 - What kind of support did you miss?
18. What do you think about the timeframe of the project? Would you do this differently?
19. You have completed all of our questions, do you have anything else to add?

Table A4
Study participants.

	Phase 1 (breast cancer surgery)	Phase 2 (breast cancer systemic therapy)	Total (%)
Number of questionnaires	33	34	67
Number of returned questionnaires	15	13	28 (42)
Nurse	7	0	7 (25)
Nurse specialist	5	5	10 (36)
Surgeon	3	0	3 (11)
Oncologist	0	6	6 (21)
Other (project support)	0	2	2 (7)
Response rate (%)	45	38	42
Number of interviews	11	10	21
Nurse	3	0	3 (14)
Nurse specialist	3	4	7 (33)
Surgeon	5	0	5 (24)
Oncologist	0	6	6 (29)

Table A5
Experiences with SDM in breast cancer care extracted from clinician interviews.

Innovation (the concept of SDM and timeout)		
Determinant	Facilitators (& phase):	Barriers (& phase):
1 Procedural clarity	<ul style="list-style-type: none"> Frequent visualization of the 4 steps of SDM, explained in many ways, to understand what it entails in daily practice (examples, audio-fragments handy cards) (1,2) Receiving concise information about SDM (Handouts) (1) Exploitation of 4 steps of SDM for structuring consultations/pathway (2) Gaining insight into how SDM differs from what you already do (2) 	<ul style="list-style-type: none"> Lack of understanding of the 4 steps of SDM by clinicians (1) Low interest in nature of the subject or theory of SDM (1) Lack of experienced added value of 4 steps of SDM (2) Conflict between theory and own ideas about communication (2)
2 Correctness	<ul style="list-style-type: none"> There is confidence in the theory behind the concept, especially for breast cancer (1) Evidence for effectiveness for SDM (1) 	<ul style="list-style-type: none"> Doubt whether the theory applies to all patients (1) Doubt whether the option of wait & see should be offered (1) Doubt whether SDM leads to better care for palliative patients (2) Doubt regarding evidence about the effectiveness of SDM and/or 4-step model (2)
3 Completeness	<ul style="list-style-type: none"> Having an implementation program covering all information needed (1) Theory fits with other actions to make care more patient-oriented (1) Implementation program covers whole process and clinical team (2) 	
4 Complexity	<ul style="list-style-type: none"> Providing examples of sentences, words and questions (for value clarification) that can be used (1) Clinicians' Perceived risk of information overload for the patient (2) Learning how to time the steps of SDM during consultations (2) 	<ul style="list-style-type: none"> Experienced difficulty in translating SDM theory to daily practice (1, 2) High number of available options (in specific situations) (1) Disconcordance between the available number of consultations and the wish to divide steps over several consultations (1) Conflict between applying the 4-step SDM model and customizing a consultation to an individual's situation (2) Applying wait & see option in the consultations (2)
5 Compatibility	<ul style="list-style-type: none"> Gaining understanding about how SDM is made explicit during your consultation (1) Comparing your way of working with the way the theory of SDM ask you to work (2) Taking time to reflect on what behavior is already supporting for SDM and how this can be better utilized (2) 	<ul style="list-style-type: none"> Team differences in the way of working and communicating (1) Wanting to hold on to the 'old'/usual way of working and communicating (2) Perceiving SDM as not applicable in all settings/situations (2)

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Table A5 (continued)

Innovation (the concept of SDM and timeout)		
Determinant	Facilitators (& phase):	Barriers (& phase):
6 Observability	<ul style="list-style-type: none"> Perceiving positive effects for themselves: think out loud together with the patient, asking in-depth questions, have a better eye for the patient's unique situation, planning an extra consult for the decision, better interaction with patients, ability to present options in a neutral way (1) Perceiving positive effects for patients: more autonomy, asking more questions, increased awareness about options, more participation of patients and less anxiety (1) Additional positive effect perceived for the organization: Creating spinoff in the team or organization regarding SDM or patient-centered care (2) 	<ul style="list-style-type: none"> Perceiving that SDM delivers no harsh/measurable effects but only (lower appreciated) effects on the experience of clinicians (1) Perceiving that patient's feedback to clinicians does not change as a result of SDM (1) Experiencing no concrete improvements of applying SDM (2) Having other expectations from participation in the program (2)
7 Relevance for client	<ul style="list-style-type: none"> Breast cancer involves several comparable treatment options (1) Breast cancer patients are relatively information seeking (1) Breast cancer is a relevant group for applying SDM (2) Perceiving that SDM helps to better align treatment with an individual situation (2) 	<ul style="list-style-type: none"> SDM is less relevant for early-stage breast cancer patients (1) Perceiving that SDM is not relevant for patients having only 1 legitimate option (1) Having inadequate differentiation in patient groups/ types (2) Doubt whether all patients can/want to participate in SDM (2)
Users of the innovation (clinicians and patients)		
Determinant		
8 Personal benefits/ drawbacks	<ul style="list-style-type: none"> Becoming enthusiastic about the theory of SDM (1) Perceiving positive effects in consultations: better structured, calmer, better fit with the person, more time to decide (1) TO helps to have all relevant diagnostic information available (1) SDM makes it easier to discuss options for inclusion in studies (1) Learning from colleagues, team-learning and better teamwork (2) Perceiving more satisfaction from consultations (2) Applying SDM fits with personal ambitions & individual learning (2) Perceiving that patients are making more well-considered decisions (2) 	<ul style="list-style-type: none"> Having to give more information as more options need to be discussed (1) Perceiving that involving critical patients lead to longer consultations (1) Perceiving decision conflict or anxiety by patients (1) Implementing SDM & TO demands a personal investment (2) Change requires effort, attention, practical exercise and time (2)
9 Outcome expectations	<ul style="list-style-type: none"> Patients become more aware about options, what is important to them and make well-considered decisions (1) Patients have less regret and become more satisfied with their decision (1) Patients will experience more control in the consultations and base decisions on facts and personal values (1) Decision aids will support the process of reflection (1) Patient involvement and autonomy will increase (2) Patients will better understand the importance of taking time and use decision tools (2) Improvement of the cost-effectiveness of breast cancer care (2) 	<ul style="list-style-type: none"> Having no expectations about the effect of SDM (1) Patients do not want SDM (1) Underestimating the time needed for applying SDM (1) Other factors than SDM & TO are more important for the result (2) SDM & TO will lead to process delay (2) Having problems creating overview in the information needed for decision making (2)
10 Professional obligation	<ul style="list-style-type: none"> Viewing SDM as key to your clinical role (1) Feeling the responsibility to apply SDM in consultations with patients (1) Feeling it as an obligation to provide more than 1 option to patients, especially in case of equipoise (1) Finding it a challenge to apply SDM tailored to each individual (2) Perceiving that applying SDM is part of how the clinical role is changing (2) Feeling that it is a good thing to share the responsibility for the decision (2) 	<ul style="list-style-type: none"> Failing to see that discussing the wait & see option is part of their role (1) Not being positive about the concept of SDM & TO (2) Feeling that there are many tasks for a surgeon, so also applying SDM is difficult (1)
11 Client/patient satisfaction	<ul style="list-style-type: none"> SDM and offering flexibility in surgical options makes patients more satisfied (1) Audiotaping of consultations makes patients more satisfied (1) More reflection on and more time for the decision makes patients more satisfied (1) Patients are sure about their decision (2) Patients experience equality in consultations (2) Higher added value as SDM makes a decision process more individualized (2) 	<ul style="list-style-type: none"> Not giving advice to patients makes them less satisfied (1)

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Table A5 (continued)

Innovation (the concept of SDM and timeout)		
Determinant	Facilitators (& phase):	Barriers (& phase):
12 Client/patient cooperation	<ul style="list-style-type: none"> • The majority of patients is suitable for SDM (1) • Breast cancer patients are assertive and want to be involved, high educated patients even more (1) • Patients want to better understand the impact of decisions (2) • Changes made in professional skills and in the approach to patients, in encouraging and preparing them to participate in SDM (2) 	<ul style="list-style-type: none"> • Applying SDM is difficult in patients with low health literacy, lack of disease insight, from a different cultural background and emotional, anxious, passive (1) • Some patients have unrealistic expectations (1) • Too much (online) information causes uncertainty by patients (2) • Some patients do not take part in the process of SDM (have already chosen or want the doctor to choose) (2)
13 Social support	<ul style="list-style-type: none"> • Support for and enthusiasm for SDM in the team (1) • Changing the multidisciplinary team meetings' advice from one to more options (1) • A positive team climate that stimulates improvement and professional reflection (1) • Learning from colleagues, as a team, makes implementation successful (2) • Viewing the project as added value by the entire clinical team (2) • The project encourages the participation of the whole team and even other departments (2) 	<ul style="list-style-type: none"> • A colleague that does not participate in the project (1) • Lack of team meetings to work on and discuss the project activities (1) • Lack of team support or room for internal professional reflection (2)
14 Descriptive norm	<ul style="list-style-type: none"> • Team that collaborates to apply SDM (1) • Other teams that working on the implementation of SDM (1) • Integrating SDM in patient records, handovers, etc. (2) • The fact that scaling up SDM outside the own team (in the organization or on a national level) is possible (2) 	<ul style="list-style-type: none"> • Having team members that do not apply SDM (1) • Experiencing different levels of adoption of SDM in the team (2)
15 Subjective norm	<ul style="list-style-type: none"> • Government, patient organizations and professional bodies support SDM (1) • SDM fits with general changes of the society (1) • SDM will become part of standard curricula medical students (2) 	<ul style="list-style-type: none"> • Guidelines of professional bodies sometimes conflict with SDM & TO (1) • National standard that surgery is to be carried out within 5 weeks hinders the implementation of SDM (1) • Protocolled care hinders the implementation of SDM & TO (2) • Differences in interests of different stakeholders hinder the implementation of SDM (2)
16 Self-efficacy	<ul style="list-style-type: none"> • Experience in communication makes applying SDM easier (1) • If more consultations are already built-in in the pathway, applying SDM is easier (1) • Trust in your skills and using visual support makes applying SDM easier (2) • Motivation to improve your performance stimulates applying SDM (2) 	<ul style="list-style-type: none"> • If clinicians are not capable of letting go of the own opinion, applying SDM is hard (1) • Communication in breast cancer is already challenging, so applying SDM is extra hard (1) • Lack of trust in your skills makes applying SDM difficult (2) • If you do not know your patient well, applying SDM is difficult (2)
17 Knowledge & skills	<ul style="list-style-type: none"> • Knowledge that facilitates SDM: medical knowledge about breast cancer, treatment options with pros and cons, side-effects, risks, communication and SDM knowledge (1); knowing the 4 steps of SDM and awareness of your attitudes/opinions (2) • Skills that facilitate SDM: Listening, general communication skills, in-depth questioning, empathy, patience, explaining on different levels of understanding, reflexive behavior during consultations, involving patients who ask for advice, sensitivity for non-verbal signals, teach-back, solution-based thinking (1); tailoring to the individual, using practical examples, action-oriented behavior (trying new things), being visionary (2) • Practicing SDM skills with an actor (2) 	<ul style="list-style-type: none"> • Confusing another opinion or feeling of a patient with the ability to understand the information (1) • Inability to recognize implicit normativity and differences in how patients process information and cope with thoughts and feelings (1) • Not being capable of coping with patients who process information slow (2) • Not letting go of old habits makes adoption of new behavior difficult (2)
18 Awareness of content of innovation	<ul style="list-style-type: none"> • Integrating the new theory about SDM in knowledge that is already available in the team (1) • Providing information about SDM throughout the project repeatedly (2) 	<ul style="list-style-type: none"> • Lack of time or priority for discussion of theory and information with the team (1) • Unclear communication about involvement of team in project hindered team commitment to project (2)
Organizational context Determinant	Facilitators (& phase):	Barriers (& phase):
19 Formal ratification by management	<ul style="list-style-type: none"> • Support from hospital management (1) • General promotion of SDM in hospital or nationally (2) 	<ul style="list-style-type: none"> • Lack of cooperation and support from hospital management (2)
20 Replacement when staff leave	<ul style="list-style-type: none"> • Participation of a manager in the team (1) • New team members that express enthusiasm about SDM (1) 	<ul style="list-style-type: none"> • No replacement of manager in the team after move out (1)
21 Staff capacity	<ul style="list-style-type: none"> • Hiring more nurse specialists (1) • Availability of surgeons and nurse specialists to offer the same clinician for each visit (1) • Splitting tasks to handle new activities (2) 	<ul style="list-style-type: none"> • No replacement of colleagues that have left (1) • Crowded outpatient visits caused by low staff capacity (1) • High workload caused by low staff capacity hinders implementation (2)

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Table A5 (continued)

Innovation (the concept of SDM and timeout)		
Determinant	Facilitators (& phase):	Barriers (& phase):
22 Financial resources	<ul style="list-style-type: none"> Applying SDM can be done with the same staff capacity (1) Implementation via a project generates adequate resources for implementation (2) 	<ul style="list-style-type: none"> Extra consultations for TO and using decision tools may cost more (1)
23 Time available including redesign of care pathway and task reassignment	<ul style="list-style-type: none"> Delegation of tasks to nurses (specialists) (1) Not offering one same clinician for each visit makes planning easier (1) Schedule an operation subject to change prevents delay (1) Advanced planning to make the outpatient visits more flexible (1) Regular team meetings for implementing SDM (1) Extra time to schedule patient appointments (1) Being realistic about medical urgency simplifies scheduling (1) Utilize expertise to help in process redesign (1) Allocation of adequate time for implementation (2) Developing a smooth logistical planning process is an important requirement (2) Saving time in the procedure is possible (2) Awareness about the impact of everyone's role in the communication with patients (2) 	<ul style="list-style-type: none"> SDM takes more time, especially for complex patients (1) More or longer consultations do not fit with current logistical process in clinic (1) Deciding later on (through timeout) influences planning of surgery (1) Getting the team together for discussing plans is tough (1) Underestimating the complexity of applying the theory in practice and logistical planning process (1) Workload in general makes it hard to make time for implementation(2) Implementing SDM demands change in logistical planning process (2)
24 Material resources and facilities	<ul style="list-style-type: none"> Organizing training session on location of the team (1) Availability of supporting tools (handy cards, Ask-the- three-questions, educational materials) (1, 2) Making tools available for patients to stimulate them to be involved SDM (2) 	<ul style="list-style-type: none"> (long) Training session does not fit in busy schedule (1) Lack of tools for patients to stimulate them to be involved SDM (1, 2) Malfunctioning of audio-recorders was demotivating (2)
25 Coordinator	<ul style="list-style-type: none"> Availability of coordinator who is allowed to schedule team meetings (1) Use of an experienced clinician to support the implementation of SDM (1) Availability of a team leader for the clinical team (1) Having somebody available to include patients (audio-recordings) (2) 	<ul style="list-style-type: none"> Not having a team start at the beginning of a working day (hinders audio-recording) (1) Lack of time for the coordinator of the team (1) Lack of help for inclusion of patients (audio-recordings) (2) Having no coordinator for the implementation (2)
26 Unsettled organization	<ul style="list-style-type: none"> Flexibility to react adequately on turbulence in the organization (2) 	<ul style="list-style-type: none"> Lack of attention for the project caused by many other projects and studies that are carried out (1) A merger of hospitals distracts attention for the project (1) Too many tasks in little time hinder the implementation of SDM (2)
27 Information accessible about use of the innovation	<ul style="list-style-type: none"> Availability of expert in change management and implementation (1) Providing training that supports the application of knowledge & theory (1) Exchanging information about the implementation with other teams (1) (Follow-up) sessions providing examples of how to implement SDM (2) Having meetings and providing information and decision tools (2) 	<ul style="list-style-type: none"> Lack of clarity about how expertise of patient advocates can be utilized (1) Lack of concrete examples of how to apply SDM in daily practice (1) Lack of detailed planning of the implementation project (1) Some interventions being too experimental, lack of proven interventions (2) Suboptimal exchange of information in collaborative team meetings (2)
28 Performance feedback	<ul style="list-style-type: none"> Offering adequate personal feedback to clinicians (1, 2) Connecting feedback on consultations with the 4 steps of SDM/theory (1) Reflection on the feedback on consultation with the team (1) Timing of feedback with the next steps to make in implementation (2) Feedback that also offers insight into organizational improvements (2) 	<ul style="list-style-type: none"> Bad (late) timing of giving feedback on consultations (1) Offering feedback in an unsafe setting, i.e. not giving anonymous feedback when wanted (1) No feedback session organized in the hospital (2)
Socio-political context		
Determinant	Facilitators (& phase):	Barriers (& phase):
29 Legislation and regulations	<ul style="list-style-type: none"> The ability to align the application of SDM with externally imposed rules and norms (1) User-friendly process for administrating deviate choices of patients (1) Hope that working on implementing SDM will have a positive impact on the policy of health care insurers (2) SDM being important themes in society (2) 	<ul style="list-style-type: none"> Felt time pressure caused by imposed external guidelines of patient - and professional bodies (1) Negative results in hospital performance scoring systems (1) Too many demands by hospital management, health care insurers, etc. and too little time for adequate implementation (2)

SDM = shared decision making; TO = timeout.

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