

What impedes and what facilitates a quality improvement project for older hospitalized patients?

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Abstract

Objective. To gain insight into which factors impede, and which facilitate, the implementation of a complex multi-component improvement initiative in hospitalized older patients.

Design. A qualitative study based on semi-structured interviews. The three dimensions of Pettigrew and Whipp's theoretical framework, namely, Process, Content and Context, were used to undertake a structured data analysis.

Setting. The study was conducted in 19 Dutch hospitals implementing the Frail Elderly Project.

Participants. Sixty-five members of staff, including physicians, nurses and members of the policy team.

Intervention. The Frail Elderly Project, a Dutch quality improvement program, aims to decrease adverse events in frail older hospitalized people by implementing screening instruments and interventions targeting delirium, falls, malnutrition and physical impairment.

Main outcome measures. The management of the process of implementation, participants' opinions of the program elements and contextual factors which influence the implementation.

Results. Barriers to implementation included two process factors (insufficient involvement of clinicians and lack of time), two content factors (having divergent objectives and concerns about recommended program elements) and two contextual factors (a lack of knowledge of delirium and minimal insight into the purposes and effects of the program). Facilitating factors included one process factor (leadership), one content factor (flexibility in choosing methods) and two contextual factors (the program's guidance and the use of digital patient records).

Conclusion. We identified the barriers and the factors which facilitate implementing complex multi-component improvement programs concerning care for older patients. These barriers must be resolved in future improvement programs in order to ensure successful implementation.

Keywords: elderly, implementation, quality improvement

Introduction

Older persons are substantial consumers of hospital care. In Dutch hospitals in 2010, the proportion of people aged 75 years or older who were admitted to hospital was 16.9%, compared with 7.8% of the population aged 50–55 years, 9.5% of those aged 55–65 years and 13.0% of the patients in the age group 65–75 years [1]. However, the prognosis for functional recovery in daily activities is poor in many hospitalized older patients [2] and previous studies indicate that adverse events in hospitals are more common among older patients [3–6].

There is also evidence that adverse events in older inpatients are more often preventable than those in younger patients [5, 6]. What makes this even more dramatic is that older people represent a large proportion of the patient population worldwide. Furthermore, this is predicted to increase substantially within the next few decades [7]. In the Netherlands for example, the percentage of people aged 65 years or older increased from 13.6% in 2000 to 15.3% in 2010 [8] and is expected to reach almost 26% by 2040 [9]. Therefore, older patients are an important target group for initiatives to improve patient safety.

In recent years, many large-scale quality improvement programs were developed worldwide, such as the 100 000 Lives Campaign in the United States [10], the safer patients initiative (SPI) in the UK [11, 12] and the Better Faster program in the Netherlands [13]. Consequently, there has been extensive literature about the implementation of such programs [14]. However, these programs paid little specific attention to the older population and the implementation of complex multi-

component improvement projects for older hospitalized patients is hardly or poorly evaluated. Proper evaluations of such projects are important since previous studies have indicated a large gap between evidence-based knowledge and clinical practice [15, 16]. Although many projects have been developed to support hospitals to improve care, the implementation is often a task required of the hospitals themselves. In this article, we attempt to analyze, structurally, the implementation

Box I The Frail Elderly Project

The Frail Elderly Project is part of the Dutch national patient safety program, which aimed to achieve a 50% reduction in preventable adverse events in Dutch hospitals by the end of 2012. The national patient safety program was developed with reference to a large study identifying preventable adverse events in hospitals in the Netherlands [17]. That study showed, among other things, that large improvements could be made in the care of hospitalized older patients. Subsequently, an expert team has formulated advice, objectives and improvement interventions in order to achieve these, based on the available literature and existing national and international guidelines. The program is co-ordinated and supported by the Dutch Ministry of Health, Welfare and Sport and satisfies the requirements for performance evaluation indicators of the Dutch Health Care Inspectorate. Almost all hospitals in the Netherlands (95%) are participating in the program [18].

The Frail Elderly Project aims to decrease preventable loss of function in older patients [19] and focuses on multiple major geriatric problems associated with functional decline: delirium, falls, malnutrition and physical impairment. According to the project, all participating Dutch hospitals have to screen their hospitalized patients aged 70 years and older systematically for frailty in order to identify a high risk of suffering one or more of the four problems. Once a high risk is identified, appropriate interventions should be applied. An overview of the recommended scientifically based screening instruments and interventions for each of the four items is given in Table 1. To support hospitals implementing the Frail Elderly Project, a practical guide [19] and a website have been developed (www.vmszorg.nl). Additionally, regular meetings for hospital co-ordinators have been organized, providing hospitals with a platform to exchange experiences and what they perceive to be best practices.

Table 1 Overview of screening tools and interventions recommended by the Frail Elderly Project [19]

	Screening tool	Interventions
Delirium	Three questions: 1. Do you experience memory problems? 2. Have you needed help with self-care in the last 24 h? 3. Have you experienced periods of confusion during earlier hospital stay or illness?	Observation with the DOSS [20] Review medication Prevent dehydration, infections, electrolyte disturbances, etc. Adequate treatment of pain Preserve nutritional level Inform patients and their family Consider to stop using invasive interventions Interventions aimed at improving sensory perception Restrict restraining patients mechanically Provide a circadian rhythm Consult geriatrics
Malnutrition	SNAQ [21] or MUST [22]	Provide snacks Consult a dietician
Falls	One question: 1. Have you fallen in the past 6 months?	Review medication Optimize vision and hearing Improve mobility Take care of ADL (activities of daily living) and footwear Inform patients and their family
Physical impairment	KATZ-ADL [23]	Avoid unnecessary rest in bed Review medication Mobilize Use mobility resources Consult physiotherapist or occupational therapist

of the Frail Elderly Project, a current evidence-based, multi-component Dutch quality improvement initiative aimed at the older population (Box 1 and Table 1). In this way, we hope to gain insight into which factors impede, and which factors facilitate, implementation.

Our research questions are guided, therefore, by the three dimensions of Pettigrew and Whipp's theoretical framework: the 'Process', the 'Content' and the 'Context' of strategic change [24]. These have been used in health care research several times previously [25, 26]. The process dimension concerns how, and to what extent, implementation is achieved. In addition, the content dimension assesses the choice of program elements and evaluates which objectives are reached according to the stakeholders. Finally, the context dimension concerns how internal and external factors influence implementation. All three dimensions should be taken into account in order to achieve a good understanding of the implementation of a complex intervention.

We used this framework in this article in order to evaluate the implementation of the Frail Elderly Project. As a result, the research questions that will be answered are:

- (i) How did Dutch hospitals implement the Frail Elderly Project and to what extent did they succeed? (Process)
- (ii) What are the stakeholders' objectives and assumptions regarding the Frail Elderly Project, and what is their opinion of the different elements of the program? (Content)
- (iii) Which contextual factors influence the implementation? (Context)

Methods

Design and setting

A qualitative study was conducted in 19 Dutch hospitals which were implementing the national patient safety program. Qualitative methods are designed to yield participants' views

and to understand meanings and experiences, which can help to investigate the barriers and the factors facilitating practice change [27]. This study was approved by the Amsterdam Vrije Universiteit (VU) Medical Center Ethics Board and was conducted in addition to a stepped wedge cluster randomized trial examining the effect of a complementary e-learning course on the implementation of the Frail Elderly Project [28]. We invited 81 hospitals out of the 93 hospitals in the Netherlands to participate in the study. The 12 Dutch hospitals that were not invited were specialized hospitals such as eye clinics or cancer hospitals, or hospitals which were participating in another study concerning care for older patients. In order to be included hospitals had to be able to conduct the trial on two wards, preferably a surgical and an internal medicine ward, and had to be in the initial phase of implementation, that is they had just begun to implement the Frail Elderly Project at the start of 2011. Consequently, we did not include those hospitals which were slow to implement the project nor those which had adopted the project earlier, but the general majority. Twenty hospitals responded within the inclusion period and met the inclusion criteria. One hospital withdrew after the enrollment of these hospitals in the study but before data collection commenced due to practical reasons. The remaining 19 hospitals were a fair representation of hospital type in the Netherlands: 2 university, 6 tertiary teaching and 11 general hospitals. Participating hospitals were distributed throughout various regions of the country.

Data collection

Data were collected in each participating hospital by semi-structured interviews during the period from June to September 2011. The criteria for inclusion were that the participants were involved in implementing the Frail Elderly Project and they were employed by the hospital at the time of the interview. In each hospital, a project co-ordinator selected at least one physician, one nurse and one member of the policy staff for the interviews. A fourth interview was conducted in some hospitals.

Table 2 Topic list

Dimension	Topics	Questions
Process	Start of implementation	How was caring for older patients organized before the start of the frail elderly project?
	Methods of implementation	Which implementation activities were undertaken? How? Who were involved in the implementation process?
	Progress of implementation	What stage are you regarding the implementation of screening? What stage are you regarding the implementation of interventions?
Content	Assumptions	What were the hospitals' objectives and assumptions regarding the project?
	Opinions on content	What is your opinion of the recommended screening tools? What is your opinion of the recommended interventions (preventive or otherwise)?
Context	Experiences	Did you experience any change in caring for older patients during this project?
	Social context	To what extent did the management support the project? What was the attitude of the care professionals involved in the project?
	Organizational context	How do you value the support of the national patient safety program?
	Practical context	Were there practical circumstances in the hospital which influenced implementation?

A list of topics was developed based on a review of the literature relating to implementation in health care [29] and on the projects' practical guide [19]. The final list of topics contained open-ended questions about the implementation process, the content and context (Table 2). Two researchers conducted the interviews. Participants were prompted to give detailed answers. Interviews were audio-taped and transcribed. Confidentiality was guaranteed. All transcripts were sent to the interviewees for approval. Transcripts were adjusted before analysis using interviewees' comments or suggestions.

Data analysis

An initial code structure was developed based on data from the first few interviews and structured according to the dimensions of the Pettigrew and Whipp framework. The first three transcripts were coded by two researchers and discussed until agreement was reached, resolving differences in the assignment and interpretation of codes [30]. During the review of the transcripts, the code structure was refined by modifying and adding codes. The decisions made in the discussion sessions were registered in a log file in order to increase their reliability and verifiability. Each of the two researchers then used the final code structure to code 50% of the total number of transcripts independently, with help of the qualitative research program MAXQDA 2007 (VERBI Software). Finally, a random selection of 10 transcripts was also coded by the second researcher. The double-coded transcripts were then compared in order to verify if the researchers had interpreted the codes in the same way. Only a few relevant differences were identified and subsequently adjusted for. All the coded transcripts were analyzed, using the MAXQDA program, in order to identify recurrent themes and contradictions between staff members and hospitals. The selection of themes was based on qualitative reasoning and interpretation.

Results

In total, 65 interviews were conducted, which ranged in length from 30 min to 1 h and 15 min (Table 3). Most of the interviews took place at the hospital where the participant was employed ($N=62$). The remainder took the form of telephone interviews ($N=3$). Telephone interviews were conducted for practical reasons; the hospitals were in a different region of the Netherlands or there were difficulties in scheduling the interviews. Themes were identified on the basis of the three dimensions of Pettigrew and Whipp. Table 4 demonstrates how frequently these themes emerged.

The process of implementation

Existing routine. It was clear from the respondents' answers that even before the introduction of the national patient safety program in 2008, most hospitals already intended to improve their care for older patients. However, this intention may not have been embedded into the structure of the hospital's policy. For example, a team leader in one of the hospitals said:

Table 3 Staff interviews

Nurses (surgical or internal medicine ward)	18
Physicians (surgeon, internist or psychiatrist)	7
Geriatrician	11
Geriatric nurse	10
Policy	17
Research	1
Physiotherapist	1
Total	65

Table 4 Theme frequencies

Dimension	Theme	No. of hospitals	No. of passages
Process	Existing routine	16	41
	Leadership	19	54
	Screening	19	153
	Interventions	19	117
	Involvement	10	13
Content	Objectives	13	29
	Screening tools	16	42
	Benefits	12	27
Context	Insight into effects	18	82
	Knowledge	18	77
	Guidance	19	77
	Digital patient record	18	63

Topics such as delirium and malnutrition were already addressed... but these were all brought together within the Frail Elderly Project placing the emphasis on the older, more at risk patient. (Team leader)

Leadership. Since the start of the national patient safety program all the participating hospitals have formed a multidisciplinary 'Frail Elderly Project team' which was instructed to plan for the implementation of the Frail Elderly Project. Led by this 'Frail Elderly Project team', almost all participating hospitals integrated or added the new screening tools to their medical history forms. However, it was considered to be essential for the success of the project to have a leader who would act to ensure it was properly implemented and sustained.

The project has been slightly delayed because it took a long time before a responsible person was designated. (Policy co-ordinator patient safety)

Her active leadership is currently still required, but eventually it should also go well without her constant pressure. However, it stands or falls with a clinical leader. (Unit leader)

Screening. Six of the hospitals chose to start with a pilot on one or two wards, but most hospitals directly integrated the

screening questions into the medical history forms across the hospital. However, these forms had to be modified and everyone had to be informed so it took time before the nurses were accustomed to the new screening tools. Furthermore, due to their high workload, nurses regularly either forgot or tried to work around the screening.

In times of pressure, screening is sometimes skipped with the intention to screen later. Though, subsequently, screening is often forgotten. (Policy staff member)

It is the first thing you skip. Patient-related work always comes first. Then the computer work is done. (Nurse)

Interventions. Depending on the screening results, interventions needed to be applied. However, existing intervention protocols often did not correspond entirely to the content of the Frail Elderly Project. Therefore, hospitals started to revise their existing protocols or to write new protocols, mainly for delirium and the prevention of falls. Nevertheless, it was apparent that preventive interventions are still not common practice in the hospitals due to skepticism about their content or due to barriers arising from the context.

The protocols are there now, and nurses have the opportunity to use them, but they do not use them completely. (Nurse)

It is still not clear what nurses have to do in the case of a high risk score. More attention and training should be dedicated to that. The interventions that have to be carried out are in fact very basic things, but for one reason or another, nurses do not get to do this. In this, our hospital will not be unique. (Internist)

Involvement. Furthermore, nurses indicated that they were not always involved in launching the project. In a few hospitals, this has led to some resistance. In addition, medical specialists were often not entirely informed about the project or persuaded as to its value, with the exception of the geriatricians and the members of the Frail Elderly Project team.

They do not always ask for the opinion of the clinicians on the ward. In this hospital they are always very motivated towards making improvements, but sometimes innovations are implemented too fast. (Nurse)

Nurses are not really involved in the implementation process, but they are provided with relevant information, for example via information leaflets. (Nurse)

Thus, the next step was more problematic even though hospitals started to use the recommended screening tools and attention was paid to protocols. Now, a lack of time and insufficient involvement played a role.

The content: objectives, choices and benefits

Objectives. The staff members' assumptions of the objectives of the program generally differed, varying from improving the quality of care in the broadest sense or making nurses more

independent, to reducing costs. Nurses were often not aware of the stated purpose of the improvement project.

I certainly expect something from this project. First, the quality of care for older patients has to improve and, beside that, the length of hospital stay can be shortened. I can see the benefits. (Internist)

The purpose of the Frail Elderly Project, in geriatrics, is to ensure that departments can handle frail elderly patients independently, where a geriatric consultation is requested only for the complex patients. (Geriatrician)

It is hard to explain that it is sometimes necessary to invest in something which only has benefits in the long-term. I wonder if it is clear in this hospital that the most important motivation required to implement the Frail Elderly Project is not the potential financial benefit, but the improvement of the quality of care. (Internist, specialist in older patients)

Screening tools. Many staff members had concerns about the effectiveness of the screening tools recommended by the Frail Elderly Project, in particular the tool about delirium. Some hospitals chose to use a different screening tool, for example the GFI (Groningen Frailty Indicator) [31] or the ISAR (Identification of Seniors at Risk) tool [32]. The reasons given for not applying the recommended tools were a long-term experience with another method, the preference of the stakeholders or concerns about the appropriateness of the recommended tools which would label too many people as 'frail'.

The 'Frail Elderly Project team' decided not to use the recommended screening tools, but to employ the GFI throughout the hospital following the advice of our geriatric nurse and geriatrician. This is because we were already used to that instrument. (Process manager)

I think it is a weak point that not all the recommended screening tools are validated to identify frail older patients. (Geriatrician)

The three recommended questions about delirium that we use now might be grounded in theory, but in practice they do not make sense. So many patients receive help with self-care, but if that is the only 'yes' you have to use the DOSS (Delirium Observation Screening Scale) three times a day! That is not motivating! (Nurse)

Most hospitals, however, chose to implement the screening tools recommended by the Frail Elderly Project. They said that this is due to its simplicity and consistency with the national guidelines.

It's easier to entuse people to address three questions that require a simple answer than for a long list of questions and an excess of forms. So I would like to emphasize it again. I am really enthusiastic about the national patient safety program. (Geriatric nurse)

Benefits. In spite of the concerns cited earlier, the new screening tools can empower nurses in their collaboration with others.

The screening instruments make it easier for nurses to consult other disciplines in case of older at risk patients, because they can

refer to the high risk score of the patient. This makes a nurse stronger in her request. (Unit leader)

We do not have to enter into a discussion with the doctor anymore. When a patient meets certain criteria, medication can be started immediately. The protocol has made it a lot clearer and has led to fewer disagreements. (Nurse)

Staff have already noticed too, other positive effects of the Frail Elderly Project, especially concerning awareness and knowledge of delirium.

Nurses as well as physicians obviously have a lack of knowledge about delirium. The tendency toward delirium care is to prescribe haldol or to restrain the patient mechanically. Previously, no-one thought about taking preventive measures or non-pharmacological interventions. Therefore, we started training for nurses in March. Improvements definitely can be seen already. Patients suffering from delirium are becoming more mobile and their families are asked for help more often. We also want to offer training to the physicians as soon as the protocols are ready. (Geriatrician)

Knowledge of delirium is now a lot better than before. Previously every confused patient was demented. The awareness of symptoms, which are cues for developing delirium, is much better now. (Nurse)

The content of the Frail Elderly Project as a whole showed that there were some concerns about the recommended tools as well as purposes of the intervention. Another barrier to implementation concerned the different objectives of stakeholders. Nevertheless, in general, slight advantages such as easier collaboration and increased awareness of delirium were perceived by stakeholders, and this facilitated implementation.

Contextual factors

Insight into effects. A major barrier to the implementation of the Frail Elderly Project was that not all health professionals were familiar with what are promoted as the benefits of the project. Additionally, data on the effects of the program were often not available. Some participants believed that a lack of insight into the effect of the screening invoked a negative attitude towards the project.

Often, nurses do not see the importance of measuring immediately. Providing insight into the effect of an improvement project is really important. We can use that information to encourage the units to make progress, for example by showing one department performs worse than the other. (Geriatric nurse)

Often, people have to perceive the benefits first before they see the usefulness. (Nurse)

Knowledge. Another important barrier to implementation was nurses' and physicians' lack of knowledge about delirium. One general hospital, therefore, developed a successful training program for nurses consisting of interactive sessions with case discussions. An academic hospital introduced a curriculum for new nurses including a lesson about frail older patients. In

addition, many hospitals intended to appoint a nurse with 'care for older patients' as a special focus on each ward.

Guidance. Although several factors impeded implementation, facilitating factors also emerged from this study. For example, because of the ageing of the population, in general, the Frail Elderly Project was seen, clearly, to suit the needs of the hospitals and was considered as an aid and a stimulus to improve, structurally, elderly care.

The implementation has accelerated due to the national patient safety program. It really fitted well with the activities the hospital had already been taking. The project stimulates us to make improvements and besides the geriatrician it is now also the Health Care Inspectorate that asks for action. (Geriatrician)

The instructions for implementing the Frail Elderly Project, provided in the form of a practical guide, were generally appreciated. Furthermore, sharing experiences at conferences or networking events, encouraged implementation, although, according to most participants, these meetings should be more focused on a specific target group.

We certainly benefit from the practical guide. You can work seriously with the four subjects now and there is a starting point. (Policy staff member)

Digital patient record

Finally, the use of digital patient records instead of paper patient records was another facilitating factor identified in this interview study. A digital patient record system in which the screening tools were included was used by 42% of the participating hospitals at the time of the interviews. Digital patient records made tools more accessible and easier to score.

In conclusion, insufficient insight into the intended benefits of the program and a lack of knowledge of delirium care were important factors impeding implementation. On the other hand, the guidance that hospitals received from the Frail Elderly Project and the increase in use of digital patient records were facilitating contextual factors.

Discussion

We reflected here on the process, content and context of the implementation of the Frail Elderly Project. First, we investigated how Dutch hospitals implemented the project and to what extent they succeeded. It appeared that the implementation process mainly consisted of forming a project team and adjusting registration forms. Although hospitals certainly made progress, there was still much room to improve the degree of screening and the application of preventive interventions. Second, we aimed to address the opinions of stakeholders. It was noted that not everyone was as satisfied with the content of the Frail Elderly Project, in particular with the recommended screening tools. Third, we examined the contextual factors which influenced implementation. Impeding as well as facilitating contextual factors were found and the context in which an

improvement project for older patients is implemented proved to be fairly important.

Several important factors which impeded implementation were identified in this study. These included: the insufficient involvement of nurses and physicians and a lack of time (Process factors), having different objectives and concerns about the recommended elements of the program (Content factors) and the lack of knowledge from health professionals, especially about delirium care and a minimal insight into the purposes and effects of the program (Contextual factors). Facilitating factors also emerged from this study. These included: leadership (Process), flexibility in choosing methods (Content), and the program's guidance and the use of digital patient records (Context).

Although our study evaluated a multi-component program, the results focus mainly on the delirium part because this was the topic most discussed in the interviews. Several results in this study correspond to a study in US hospitals implementing an improvement project for older hospitalized patients which focuses on delirium: the Hospital Elder Life Program. That study identified the challenges to overcoming the barriers to implementation such as the need to gain internal support for the program, the need to integrate with existing geriatric programs, and the need to document and publicize positive outcomes [16]. We propose to give a structured overview of the barriers as well as the facilitating factors concerned with implementing improvement programs for the hospitalized older patients. This provides opportunities for evaluating future improvement projects which could also be structured using the dimensions of Pettigrew and Whipp, thus making it easier to compare research.

In general, nurses were less positive about the Frail Elderly Project than policy members and physicians. We believe that this is significant and therefore recommend that when developing future improvement projects attention should be drawn to the involvement of the particular profession whose behavior is intended to be influenced. Furthermore, the instruments about delirium and fall prevention recommended by the Frail Elderly Project were based on existing literature and guidelines, but were not all validated in clinical practice. This could have contributed to some resistance to using them and to the preference of some hospitals to use another validated instrument which they were familiar with. Flexibility in choosing methods seems to be an important facilitating factor in implementation. Furthermore, the lack of knowledge about delirium impeded successful implementation. Providing stakeholders with thorough training in the issues surrounding implementation would, we hope, solve this in future quality improvement projects. Finally, providing simple, well-structured support, for example the Frail Elderly Projects' practical guide and persuading staff of the value of particular elements by emphasizing their benefits and outcomes are important factors in order to ensure success in improving care for older hospitalized patients.

Limitations

The themes that emerged from the interviews may not be representative of all members of staff, both in the hospitals participating and in hospitals outside of the study. This is because the inclusion of hospitals and participants could have been

biased. In order to be included, the hospitals were required to indicate if they were in the initial phase of implementation. However, the actual implementation phase was not determined objectively, which implies that there might be variations in the baseline position in the participating hospitals.

Furthermore, the selection of participants was performed by a Frail Elderly Project co-ordinator in the hospital. This could have contributed to selection bias. For example, the physician we interviewed could be a geriatrician, a surgeon or an internist, depending on the choice of the project co-ordinator, but they were all directly involved in the program.

The study described the implementation of the project and reflected on the barriers and the factors which facilitated implementation. Consequently, it provided insight into the advantages and difficulties of implementing such a quality improvement project for older patients, which can contribute to the development of future projects both in the Netherlands and abroad. More insight into the effectiveness of the Frail Elderly Project will be gained by quantitative studies of outcomes.

Lessons learned

- Any project leader is required to be enthusiastic in order to ease the implementation process.
- For implementation to succeed, it is necessary to inform all stakeholders about the purpose and the intended effects of the project.
- Structured support in the form of, for example, a practical guide with recommendations encourages implementation.

Conclusion

We identified the barriers and the factors facilitating the implementation of complex multi-component improvement programs concerning care for older patients. It is necessary to take these barriers and facilitating factors into account in order to achieve a successful implementation of future improvement programs for hospitalized older people.

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