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A nurse-led interdisciplinary primary care approach to prevent disability among community-dwelling frail older people: A large-scale process evaluation

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ABSTRACT

Background: The complex healthcare needs of frail older people and their increased risk of disability require an integrated and proactive approach. In the Netherlands, an interdisciplinary primary care approach has recently been developed, involving individualized assessment and interventions (tailor-made care), case management and long-term follow-up. The practice nurse as part of a general practice is case manager and plans, organizes and monitors the care process and facilitates cooperation between professionals. The approach has shown positive indications regarding its feasibility in a small pilot, but its implementation on a large scale had not hitherto been investigated.
Objectives: To examine the extent to which the interdisciplinary care approach is implemented as planned and to gain insight into healthcare professionals' and frail older people's experiences regarding the benefits, burden, stimulating factors and barriers.
Design: A process evaluation was conducted using a mixed methods design.
Settings: Six GP practices in the south of the Netherlands.
Participants: Practice nurses ($n = 7$), GPs ($n = 12$), occupational therapists ($n = 6$) and physical therapists ($n = 20$) participated in the process evaluation. Furthermore, 194 community-dwelling frail older people ($\geq$70 years) were included using the Groningen Frailty Indicator. People who were terminally ill, were confined to bed, had severe cognitive or psychological impairments or were unable to communicate in Dutch were excluded.
Methods: Quantitative data (logbooks and evaluation forms) were collected from all the participating frail older people and 13 semi-structured interviews with a selection of them were conducted. In addition, data from healthcare professionals were collected through 12 semi-structured interviews and four focus group discussions.
Results: Although some parts of the protocol were insufficiently executed, healthcare professionals and frail older people were satisfied with the care approach, as it provided a useful structure for the delivery of geriatric primary care and increased the attention to preventive treatment. Frail older people felt acknowledged by healthcare professionals and experienced support in handling their problems and fulfilling their wishes.

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Conclusions: The findings of the study revealed several positive aspects of the interdisciplinary primary care approach. Given its complexity, the implementation of the nurse-led interdisciplinary care approach is challenging and some parts of the protocol need special attention.

What is already known about the topic?

- The complex healthcare needs of frail older people require an integrated and proactive primary care approach to prevent disability.
- To ensure integrated care, nurses in the role of case manager may facilitate interdisciplinary cooperation between professionals by planning, organizing and monitoring the care process.
- In the Netherlands, a nurse-led interdisciplinary care approach to prevent disability among community-dwelling frail older people has been developed and has shown feasibility in a small-scale pilot study.

What this paper adds

- The nurse-led interdisciplinary care approach under study is experienced as complex, as it combines a number of relatively new elements in geriatric primary care.
- Although some parts of the protocol were insufficiently executed, healthcare professionals and frail older people were satisfied with the care approach, as it resulted in increased interdisciplinary collaboration and pro-active care.
- Given its complexity, the implementation of the nurse-led interdisciplinary care approach needs special attention, especially with regard to client-centred interdisciplinary care, behavioural change and engagement in meaningful activities.

1. Background

Frail older people often suffer from a combination of acute and chronic diseases (multimorbidity) and functional impairments leading towards disability and dependency on long-term care (Fried et al., 2004). In general, older people prefer to stay at home for as long as possible (Henderson and Caplan, 2008). However, community-based care is challenging, due to the complex healthcare needs of frail older people, which have to be addressed by various healthcare professionals (Markle-Reid and Browne, 2003).

Beswick et al. (2008) have shown in their meta-analysis that complex interventions like community-based geriatric assessment and follow-up have the potential to support older people to live independently, although there is no clear evidence yet that one specific format is better than another. In the Netherlands, several recent studies on proactive home visits for vulnerable older people showed conflicting results. These visits did not turn out to be effective (Bouman et al., 2008; van Hout et al., 2012), or showed only modest short-term effects (Melis et al., 2008). Despite the strong emphasis on primary care in the Dutch healthcare system, it may be assumed that the implementation of complex interventions is hampered by a fragmented and reactive approach and a lack of intense collaboration between healthcare professionals (Daniels et al., 2011). Fragmented care is also a problem in other western countries. For example in the US the PACE programmes have been introduced in many states to unite the fragmented healthcare financing and delivery system. PACE programmes are comprehensive community-based care models for frail older people, who are eligible for nursing home admission. All needed preventive, primary, acute and long-term care services are delivered by an interdisciplinary team in the community care setting focusing on the individual needs of community-dwelling frail older people and their families (Hirth et al., 2009; National PACE Association, 2002). There is consensus in the Netherlands that a shift has to be made towards a more integrated and proactive approach to prevent disability in community-dwelling frail older people successfully (Nederlandse Huisartsen Genootschap & Landelijke Huisartsen Vereniging, 2011).

A narrative review by Daniels et al. (2010) offers a comprehensive overview of interventions studies focusing on disability prevention in community-dwelling frail older people. There is a large diversity in content, disciplines involved, duration, intensity, and setting. The reported effectiveness of interventions is not consistent, but elements such as interdisciplinary cooperation, individualized assessment and interventions (tailor-made care), case management and long-term follow-up seem to be promising with regard to disability prevention. In addition, self-management support and stimulating engagement in meaningful activities were recommended by the authors (Daniels et al., 2010). Consequently, these elements were combined in an interdisciplinary primary care approach for community-dwelling frail older people, called "Prevention of Care" (PoC).

The PoC approach starts with a postal screening for frailty followed by an extended multifactorial assessment conducted by a practice nurse (and, if needed, other professionals). Based on the assessment phase the team of involved professionals formulate a preliminary treatment plan. Consequently, the practice nurse discusses this plan with the frail older person and his/her informal caregiver resulting in a final treatment plan. A flexible toolbox of interventions, organized around five topics such as 'enhancing meaningful activities' or 'stimulating health' is available to guide the treatment. The toolbox is described in more detail elsewhere (Daniels et al., 2011) Finally, the treatment plan is coordinated, monitored and evaluated by the practice nurse, who acts as case manager (Daniels, 2011). The strength of the PoC protocol is that all elements mentioned above were combined in one

comprehensive and interdisciplinary approach. The protocol offers healthcare professionals a useful structure for healthcare delivery (consisting of six steps) and practical tools for interdisciplinary, client-centred care, case management, behavioural change and self-management support.

The implementation of the PoC approach in daily practice is challenging due to the combination of a number of elements, which are based on literature (Daniels et al., 2010), but are relatively new in geriatric primary care practice. A pilot study among 41 frail older people and 10 healthcare professionals has shown positive indications regarding its feasibility, but implementation on a large scale has not been investigated yet (Daniels, 2011). This article presents a comprehensive process evaluation of the PoC approach on a larger scale, among 194 frail older people and 45 healthcare professionals. The aim of the process evaluation was to provide insight into the extent to which the interdisciplinary PoC approach is implemented as intended (Harachi et al., 1999). Furthermore, healthcare professionals' and frail older people's experiences regarding benefits, burden, stimulating factors and barriers were evaluated. More insight into these factors may increase the understanding of its implementation and may lead towards an improved interdisciplinary care approach for frail older people in daily practice (Linnan and Steckler, 2002).

2. Methods

2.1. Study design

Between February 2010 and December 2011 the PoC approach was evaluated in a large-scale process evaluation among six GP practices in the south of the Netherlands. Several process evaluation components from Baranowski and Stables (i.e. reach, dose delivered, fidelity, dose received (exposure and satisfaction), and barriers) were chosen as theoretical base for the process evaluation (Baranowski and Stables, 2000; Linnan and Steckler, 2002; Saunders et al., 2005). Table 1 shows an overview of these components, their definition and the related research questions.

2.2. Setting and participants

2.2.1. Professionals

Six GP practices in the region of Sittard and its surroundings (in the south of the Netherlands), involving 12 GPs and seven practice nurses implemented the PoC approach and were invited to participate in the process evaluation. The GP practices had no current active and systematic policy for the detection and follow-up of frail older people. Furthermore, six occupational therapists and 20 physical therapists, working in the same region, participated.

2.2.2. Frail older people

Frail older people have an increased risk of adverse health outcomes, such as falls, hospitalization, disability, and death (Fried et al., 2001). The reserve capacity of frail older people is reduced to a critically low point. Consequently, even small disturbances can lead to a series of complications (Oude Voshaar et al., 2010). Despite the growing interest for frailty, there is an on-going debate of its definition. In general, there are two perspectives on frailty. On the one hand, a physical perspective describing frailty as a clinical syndrome characterized by multiple physical characteristics such as weight loss, fatigue or slow motor performance (Fried et al., 2001). On the other hand, from a multifactorial perspective frailty is explained by an accumulation of physical, psychological and social characteristics (e.g. physical problems, mood, and cognition) (Mitnitski et al., 2002; Rookwood et al., 1999). With regard to disability prevention a multifactorial approach to frailty seems to be more suitable (Daniels et al., 2011). As a consequence, the PoC approach takes a multifactorial perspective on screening, assessment and treatment. The Groningen Frailty Indicator (GFI), a self-report instrument that measures frailty from a multifactorial perspective, is used to identify community-dwelling frail older people

Table 1
Components of the process evaluation and related research questions.

Theoretical element Definition	Research question(s)
Reach	
Proportion of the intended target population that participated in the care approach	- Does PoC reach the target group (frail older people)?
	- What were the numbers of and reasons for refusals and drop-outs?
Dose delivered	
'Amount' of delivered care	- To what extent was PoC performed according to protocol?
Fidelity	
Extent to which care approach was delivered in intended manner and spirit	- To what extent was PoC implemented consistently with its core principles?
Exposure (*dose received*)	
Extent of active engagement in and receptiveness to the care approach	- What was the frail older people's and informal caregivers' ability to understand and implement the principles of PoC?
Satisfaction (*dose received*)	
Satisfaction of older people and health care professionals with the care approach	- What are the experiences of healthcare professionals and frail older people regarding PoC in terms of benefits, satisfaction and stimulating factors?
Barriers	
The extent to which problems were encountered while applying the care approach	- What are the experiences of healthcare professionals and frail older people regarding PoC in terms of barriers?

(≥70 years) (Steverink et al., 2001). Those older people scoring five or higher (range 0–15) were assumed to be frail and were included for the study ($n = 194$) (Metzelthin et al., 2010). People who were terminally ill, were confined to bed, had severe cognitive or psychological impairments or were unable to communicate in Dutch were excluded in advance, based on the advice of their GP.

2.3. Ethical approval

The study protocol and procedures were approved by the Medical Ethics Committee of the University Hospital Maastricht/Maastricht University (#09-3-067). Written informed consent from all participating frail older people was obtained.

2.4. The interdisciplinary care approach "Prevention of Care"(PoC)

The core team of the interdisciplinary care approach PoC consists of a practice nurse and a GP. In the Netherlands, GPs have the role of a gatekeeper, who coordinates access to specialized and hospital care. The profession of practice nurses was introduced in 2001 to reduce the workload of Dutch GPs (Derckx, 2006). They often work, under supervision of the GP, on disease prevention, chronic care management, mental health services, frail elderly assessments, and care of families with young children (van Weel et al., 2012). To fulfil the role of case manager adequately, practice nurses need at least a bachelor degree, sufficient clinical expertise, effective communication and problem-solving skills, and a broad knowledge of the healthcare system, including financing, regulations, and resources (White and Hall, 2006). Nurses are well suited to provide this role of case manager, as the nursing process is similar to the process of case management including tasks such assessment of client needs, planning of care, and on-going coordination, monitoring, and evaluation of delivered care. However, principally other professionals, for example a physiotherapist, an occupational therapist or a social worker may fulfil this role as well (Fraser and Strang, 2004). However, nurses in primary care are often the linking pin between patient and specific healthcare professionals (V&VN Beroepsverenigingen van Zorgprofessionals, 2010).

Within the PoC approach the practice nurse and the GP cooperate closely with occupational and physical therapists. If needed, other inpatient and outpatient healthcare professionals, for example, a pharmacist or a geriatrician can be involved as well. The PoC approach focuses on existing problems in performing daily activities and on risk factors for developing disability, and consists of six steps (see Table 2). The core principles of the approach are interdisciplinary cooperation, tailor-made care, self-management support, and a focus on meaningful activities. The interdisciplinary care approach has been described in more detail elsewhere (Daniels et al., 2011). An adapted version of the PoC approach has been developed for hospitals to increase the cooperation between primary and hospital care. However, its evaluation is not a part of the current study.

2.4.1. Interdisciplinary cooperation

Frail older people often have complex healthcare needs, which have to be addressed by various healthcare professionals (Markle-Reid and Browne, 2003). To ensure integrated care, the PoC protocol encompasses tasks, decision criteria, and working procedures for the healthcare professionals involved. A common care philosophy, defined roles, open and clear communication, regular

Table 2
Steps of the interdisciplinary care approach "Prevention of Care" (PoC).

Steps	Content
Step 1: Frailty Screening	A postal questionnaire, including the 15-item Groningen Frailty Indicator (GFI) (Steverink et al., 2001) is used to identify frail older people based on a GFI score ≥ 5
Step 2: Assessment	The practice nurse of the GP visits frail older people for a multidimensional assessment in the presence of the main informal caregiver (if available). The focus is on existing problems in performing daily activities and on risk factors for developing disability. After the home visit, the practice nurse and the GP discuss whether additional assessment by other inpatient or outpatient healthcare professionals is needed
Step 3: Analysis and preliminary treatment plan	Based on the assessment phase, a preliminary treatment plan is formulated, whether in a bilateral meeting (practice nurse and GP) or in an extended team meeting consisting of practice nurse, GP, occupational and physical therapist and, if necessary, other healthcare professionals. The treatment plan includes goals, strategies and responsibilities
Step 4: Agreement on treatment plan	During a second home visit, conducted by the practice nurse, a final treatment plan is formulated together with the frail older person and, if available, the informal caregiver. The plan involves goals, strategies and responsibilities that fit their needs. The practice nurse involves them in decision-making and establishes a cooperation, in which a learning process begins, leading to new insights and possibly to new goals and actions
Step 5: Executing the treatment plan	The intervention protocol offers recommendations and guidelines for the execution of the treatment plan. For example, a flexible toolbox of interventions is available which focuses on five topics: • Meaningful activities • Adapting the environment, activities or skills • Social network and social activities • Daily physical activity • Stimulating health
Step 6: Evaluation and follow-up	During and after the treatment the practice nurse evaluates with the frail older person (and, if available, the informal caregiver) the achievement of goals, the implementation of strategies in daily life and the need for support in the following period. The professionals involved will be updated about the agreements

structural communication, shared decision-making and goal setting are important determinants to enhance team cooperation (Jayadevappa and Chhatre, 2011; Orchard et al., 2005).

2.4.2. Tailor-made care and self-management support

Self-management support is based on the 5A's Behaviour Change Model (Glasgow et al., 2006), which combines a client-centred approach, a model of behavioural change (Stages of Change model (Prochaska and DiClemente, 1983) and motivational interviewing techniques (Miller and Rollnik, 2002). Motivational interviewing provides practical tools for professionals to support self-management, which has been shown to be effective in improving clinical outcomes (Bodenheimer and Grumbach, 2007; Chen et al., 2012). Use of the 5A's Behavioural Model implies that goals and strategies are individually determined and will depend strongly on the frail older people's (self-perceived) problems, motivation and capabilities. The self-management skills of older people will influence whether goals are focused on the client or more on (support of) the social and physical environment (Daniels et al., 2011).

2.4.3. Meaningful activities

As the PoC approach aims to support frail older people in continuing to do those activities they enjoy or need to do, meaningful activities have to be at the core of the approach. Healthcare professionals need to explore the concerns or problems of older people regarding the performance of meaningful activities, need to understand the older people's priorities, and need to use meaningful activities, where possible. Examples of meaningful activities are gardening, visiting family/friends, reading a book, taking a walk, playing games or joining religious activities. The experience of 'doing' may increase insight and beliefs in one's own capabilities (self-efficacy) (Kielhofner, 2008), which is central to self-management. Graff et al. (2006) showed the effectiveness of a focus on meaningful activities in a programme for older people with dementia.

2.5. Training healthcare professionals

The healthcare professionals involved (practice nurses, GPs, occupational therapists and physical therapists) were trained for a 3-month period before the implementation of the PoC approach. They attended several meetings about the steps and core principles of the intervention, such as interdisciplinary cooperation (e.g. team meetings), tailor-made care, self-management support, meaningful activities and toolbox parts. These meetings were more general and were held for all healthcare professionals. Discipline-specific meetings were also organized regarding the conduct of assessments and treatment by the different healthcare professionals. In addition, a meeting about geriatric syndromes (e.g. incontinence, malnutrition, falls) was organized.

During the implementation period, healthcare professionals had the opportunity to ask for supervision by the project group members (training on the job), if they experienced difficulties in implementing the PoC protocol. If healthcare professionals took little initiative towards support, members of the project group approached them more directly offering supervision. Project staff gave feedback and advice with regard to the new working methods and procedures and how to implement them in their daily routines. One issue, for example, was how to organize a team meeting. In addition, ten lunch meetings for practice nurses and two evaluation meetings with all the healthcare professionals involved took place to exchange information and experiences.

2.6. Data collection

Quantitative and qualitative data collection methods were applied in a mixed methods design. The focus of the quantitative data collection (logbooks and evaluation forms) was on reach, dose delivered and frail older people's exposure to PoC. Qualitative data methods (semi-structured and focus groups interviews) were used to investigate the fidelity of PoC and healthcare professionals' and frail older people's experiences with PoC. Insight into their experiences is useful to explain the extent of reach, exposure and delivery of the care approach (dose delivered and fidelity). A combination of methods is useful to broaden the scope of the data (triangulation) (Verbeek et al., 2012).

2.6.1. Logbooks and evaluation forms

During the evaluation period, practice nurses were asked to fill in logbooks and evaluation forms for all the participating frail older people. The logbooks contained information about the 'amount' of care delivery (dose delivered), for example, the number of team meetings or referrals to other disciplines. The numbers of and reasons for refusals and drop-outs were registered here as well (reach). In the evaluation forms, practice nurses were asked to judge on an individual level the frailty status of the participating older people (reach) and their ability to understand the goal and the working method of the care approach and their adherence to commitments (exposure) (Baranowski and Stables, 2000; Linnan and Steckler, 2002; Saunders et al., 2005).

2.6.2. Semi-structured and focus groups interviews

Semi-structured and focus groups interviews were used to assess the fidelity of the interdisciplinary care approach. Fidelity refers to whether the care approach was carried out in the intended manner and spirit (interdisciplinary cooperation, tailor-made care, self-management support, and meaningful activities). Furthermore, the experiences of healthcare professionals and frail older people in terms of benefits, burden, stimulating factors and barriers were investigated and recommendations regarding future implementation of the approach were collected (Baranowski and Stables, 2000; Linnan and Steckler, 2002; Saunders et al., 2005).

The semi-structured interviews with the practice nurses and the GPs were conducted at practice-level at two moments, half-way through the evaluation period (December 2010) and near the end (September 2011). A list of quality indicators, including the steps and key

Table 3
Summary of evaluation aspects data collection methods.

Theoretical element	Operationalization	Measurement				
		PN Logbook	PN Evaluationform	PN, GP Interview	PN, GP, OT, PT Focus group	Older people Interview
Reach target group	- Extent of reaching frail older people		X			
	- # and reasons for refusals and drop-outs	X				
Dose delivered	- Extent of following steps of PoC	X				
	- # Contacts with practice nurse					
	- # Referrals to other professionals					
	- # Team meetings					
	- # Toolbox parts used					
	- # Evaluation/follow-up meetings					
Fidelity	- Extent of applying core principles of PoC		X	X		
	- Interdisciplinary cooperation					
	- Tailor-made care and self-management support					
	- Meaningful activities					
Exposure (*dose received*)	- Ability to understand and implement principles of the intervention		X			
	- Adherence to commitments		X			
Satisfaction (*dose received*)	- Experiences in terms of benefits, burden, stimulating factors; recommendations			X	X	X
Barriers	- Barriers			X	X	X

PN, practice nurses, GP, general practitioner, OT, occupational therapist, PT, physical therapist.

elements of the intervention, was used as a guideline for these interviews. At the end of the evaluation period (from October until December 2011), four focus group interviews with healthcare professionals were conducted. They were organized separately for GPs, practice nurses, and allied healthcare professionals (occupational therapists and physical therapists). The semi-structured interviews with frail older people ($n = 13$) were conducted half-way through the evaluation period (May and June 2011). Each practice nurse was asked to select several older people based on the following criteria: ability to do an interview (e.g. sufficient cognition and hearing capacity), recent contact with the practice nurse (<two months ago), received at least one part of the toolbox (see Table 2), seen by at least one other discipline than the practice nurse. A self-developed and pre-tested topic list was used as a guideline for the interviews. Table 3 shows an overview of how the components of the process evaluation were operationalized and measured.

2.7. Data analysis

For the analysis of quantitative data, descriptive statistics (frequencies, means, and percentages) were calculated using software package SPSS for Windows, version 17.0. Qualitative methods were used for research questions that quantitative research cannot deal with. The focus group interviews and semi-structured interviews with older people were audio-taped and transcribed verbatim. To analyse qualitative data an integrated approach developed by Bradley et al. (Williamson et al., 1964) was applied. This approach combines the principles of inductive reasoning using predetermined code types. A coding list, based on the theoretical components derived from Baranowski and Stables (2000), was used to code the collected data. While all participating GPs and practice nurses were visited for a semi-structured interview, the amount of interviews with frail older people was established by applying the principal of theoretical saturation. This means that data saturation is reached, when no new insights are obtained, no new themes are identified, and no issues arise regarding a category of data (Strauss and Corbin, 1990). Saturation of all categories signifies the point at which to end the research (Morse, 1995). Through the coding process and constant comparison, theoretical saturation occurred after 13 interviews. This choice can be considered as legitimate as there is some evidence in the literature that saturation often occurs within the first twelve interviews (Guest et al., 2006). The use of both, semi-structured and focus group interviews, increased the richness and trustworthiness of qualitative data. Researcher triangulation was used to increase the credibility and validity of the results (Boeije, 2010). First, data were analysed independently by three members of the research group followed by a collaborative discussion about the data. Secondly, quantitative and qualitative data was integrated to confirm and cross-validate findings and resulted in an overall interpretation of the results (methods triangulation). The model of Baranowski and Stables (2000) was used as a structure to present the results.

3. Results

3.1. Reach

On behalf of the six GP practices, 1825 screening lists were sent to community-dwelling frail older people

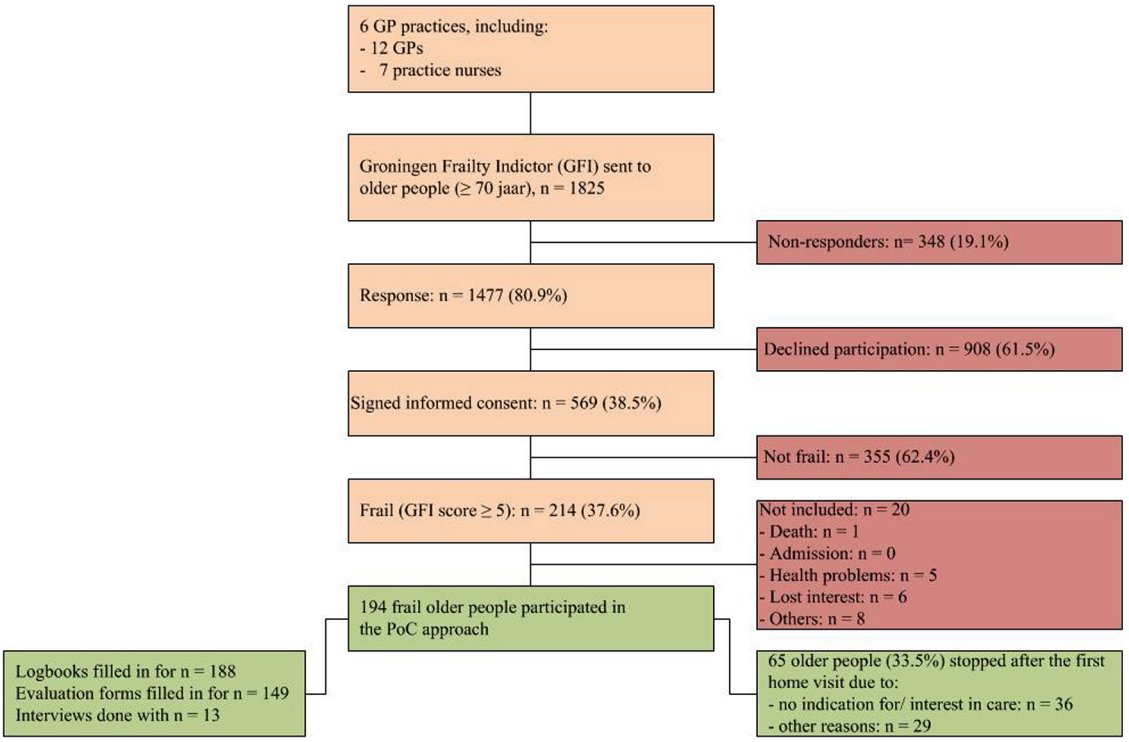

Fig. 1. Flowchart process evaluation.

(≥70 years) (see Fig. 1). The response rate was 80.9% ($n = 1477$). Of those, who have signed the consent form ($n = 569$) 37.6% ($n = 214$) were frail according to the GFI score ≥ 5. Finally, 194 frail older people were included in the study. Of these, 44.8% ($n = 87$) were male and 46.4% ($n = 90$) lived alone (versus living together, $n = 104$). Most people (60.3%, $n = 117$) had no or lower than average education (28.9%, $n = 56$) or higher education (10.8%, $n = 21$). The mean age of the sample was 77.7 years (sd = 5.2) and the mean GFI score was 7.1 (sd = 1.9).

After a multifactorial assessment, conducted by the practice nurse during a home visit, practice nurses and GPs concluded that 36 older people (18.6%) had no indication for/no interest in care. These older people stopped with the PoC approach and received only the usual care if needed. They were significantly younger ($p = 0.017$) than the rest of the sample (on average 75.9 vs. 78.2, respectively) and scored significantly better ($p = 0.004$) on the GFI (on average 6.3 vs. 7.3, respectively). Furthermore, 29 out of 194 older people (14.9%) stopped earlier with the PoC approach, due to health-related problems such as a decline in health or long-term admission ($n = 13$), a change-over to another GP practice ($n = 12$) or for other reasons ($n = 4$). They received usual care as well. These people were slightly older ($p = 0.563$) (on average 78.6 vs. 77.6, respectively) and significantly frailer ($p = 0.047$) (on average 7.7 vs. 7.0, respectively) than the rest of the sample.

The practice nurses filled in evaluation forms for 166 older people. For the analysis only complete evaluation forms were taken into account ($n = 149$). According to the practice nurses, 108 out of 149 older people (72.5%) were frail and the PoC approach was appropriate for 68.5% of the older people identified ($n = 102$).

3.2. Dose delivered

Practice nurses filled in the logbook for 188 frail older people (six logbooks were missing). All frail older people received an extended assessment conducted by the practice nurse during a home visit, except for two individuals who died before the assessment could be arranged. Out of the 188 people, 82 (43.6%) were seen by their GP during the assessment phase. Referrals to an occupational therapist ($n = 36$), a physiotherapist ($n = 28$) or other disciplines ($n = 17$) such as nutritionist, pharmacist, speech therapist or geriatrician were less frequent. The amount of referrals ranged from zero ($n = 88$) to four ($n = 3$). Most of the older people ($n = 64$) were referred to one other discipline. The preliminary treatment plan was formulated by the practice nurse and GP ($n = 121$) in an extended team meeting ($n = 42$) or by the practice nurse alone ($n = 23$). Some frail older people were discussed in a later phase in a bilateral meeting between the practice nurse and GP ($n = 9$) and/or in an extended team meeting in which other disciplines were involved as well ($n = 23$). In 51.6% of the cases, the practice nurse formulated a plan together with the frail older person (and if available the informal caregiver) during a second home visit. The use of the toolbox parts ranged from 14.4% (Social network and social activities) to 25.5% (adapting environment, activities and skills). The number of toolbox parts received ranged

Table 4
Dose delivered of interdisciplinary care approach "Prevention of Care" ($N = 188$).

Steps of Prevention of Care	*N* (%)
Screening	
Send questionnaires	1825
Response	1477 (80.9)
Signed informed consent	569 (38.5)
Frail according to GFI (≥5)	444 (30.1)
Participated in PoC approach	194 (90.7)
Assessment	
Practice nurse	186 (98.9)
Additional assessment	
GP	82 (43.6)
Occupational therapist	36 (19.1)
Physiotherapist	28 (14.9)
Other disciplines	17 (9.0)
Analysis and preliminary treatment plan	
Practice nurse	23 (12.2)
Bilateral meeting (practice nurse, GP)	121 (64.4)
Extended team meeting (practice nurse, GP and others)	42 (22.3)
Agreement on treatment plan	
Practice nurse	97 (51.6)
Executing the treatment plan	
Use of toolbox parts	
Meaningful activities	32 (17.0)
Adapting the environment, activities or skills	48 (25.5)
Social network and social activities	27 (14.4)
Daily physical activity	36 (19.1)
Stimulate health	41 (21.8)
Other interventions	27 (14.4)
Evaluation and follow-up	
Practice nurse and frail older person	94 (50.0)
Bilateral meeting (practice nurse, GP)	35 (18.6)
Extended team meeting (practice nurse, GP and others)	54 (28.7)

from zero ($n = 89$) to four ($n = 5$). Some older people received one ($n = 38$) or two ($n = 39$) toolbox parts. Appointments for evaluation and follow-up were often (50.0%) made between practice nurses and frail older people. In addition, in some cases evaluation and follow-up was discussed between healthcare professionals (in a bilateral or team meeting), but this occurred less often. Some older people were seen for evaluation and follow-up by the practice nurse, but were also discussed in a bilateral and/or in an extended team meeting. Table 4 presents the extent to which the PoC protocol was delivered (dose delivered).

3.3. Fidelity

3.3.1. Interdisciplinary cooperation

One dominant topic during the semi-structured and focus group interviews was the substantial improvement of interdisciplinary cooperation. Before the implementation of PoC, there was only occasionally contact between disciplines, mainly by telephone. According to all the healthcare professionals interviewed the frequency of contacts, by telephone, email and in person, increased substantially by applying the principles of the PoC approach. Furthermore, interdisciplinary team meetings took place to discuss the (preliminary) treatment plan. Whether meetings were executed according to protocol depended strongly on the chair of the meeting (usually the practice nurse, otherwise the GP). Due to the open communication in the team, all the healthcare professionals interviewed felt free to share their own expertise. Practice nurses and GPs reported that they learned particularly more about the expertise of occupational therapists resulting in a rise in referrals. In contrast, the physiotherapists involved seemed disappointed as they experienced less increase in referrals as expected.

The roles in the team were clearly defined according to the healthcare professionals interviewed. Overlapping tasks were minimized by formulating an integrated treatment plan, involving collaborative goals and specified tasks for each discipline. Sometimes, other healthcare professionals, such as a social worker, homecare provider or pharmacist, were also invited to the team meetings. The role of the practice nurse was considered important by all the healthcare professionals interviewed. The practice nurse was case manager and responsible for the coordination and organization of care. Also, monitoring and follow-up of frail older people and their informal caregivers was one of the tasks of the practice nurse. Evaluation and follow-up occurred via home visits or telephone contacts.

3.3.2. Tailor-made care and self-management support

All the healthcare professionals interviewed reported that the PoC approach encouraged frail older people to think about their concerns and problems, their motivation and capabilities and their wishes for the future. The information was used to develop a preliminary treatment plan, including individual goals, strategies and responsibilities. The preliminary treatment plan was supposed to be discussed by the practice nurse with the frail older person (and informal caregivers if available) during a second home visit. The aim was to involve them in decision-making and to establish a cooperation, in which a learning process begins, leading to new insights and possibly to new goals and actions. However, some of the practice nurses interviewed reported that the treatment plan was often not discussed with the frail older person and some of these home visits were replaced by telephone contacts, which does not conform to the protocol.

Some of the healthcare professionals interviewed mentioned that they were not aware of applying the 5A's Behaviour Change Model (Glasgow et al., 2006), but the semi-structured and focus group interviews indicated that healthcare professionals considered the frail older peoples' readiness to change in their counselling style, adapted information and advice to their individual needs and respected their decisions. Furthermore, the principles of Motivational Interviewing were applied, which is also part of the 5A's Behaviour Change Model.

3.3.3. Meaningful activities

During the semi-structured and focus group interviews all the practice nurses interviewed reported that the concerns or problems of frail older people regarding the performance of meaningful activities were assessed during the assessment phase. According to the healthcare professionals interviewed, an integrated treatment plan

was developed to fit the individual needs and preferences of older people.

3.4. Exposure

Based on the complete evaluation forms ($n = 149$) filled in by practice nurses, 75.8% ($n = 113$) of the older people included understood the goal and the procedure of the PoC care approach. Their adherence regarding the commitments made with the practice nurse was assessed as (very) good for 72 older people (48.3%), sufficient for 46 people (30.9%) and poor for 30 people (20.1%). For 11 people (7.4%) this question was not applicable, as no commitments were made.

3.5. Satisfaction and barriers experienced by healthcare professionals

3.5.1. Benefits

According to all the healthcare professionals interviewed, the PoC approach provided a useful structure for the delivery of geriatric primary care and increased the attention to preventive treatment of frail older people. One of the greatest benefits of the approach was the improvement of interdisciplinary cooperation. Sharing information during the team meetings led towards a better understanding of concerns, problems and wishes of frail older people. The information acquired was relevant for the delivery of tailor-made care. Healthcare professionals also learned much about each other's expertise, which led to more consultations of involved healthcare professionals and more frequent referrals (occupational therapy). The clearly defined roles and tasks led to more efficient healthcare delivery. The possibility of expanding the team with other healthcare professionals was also appreciated by those interviewed.

3.5.2. Burden

Despite their usefulness, team meetings were experienced as time-consuming and sometimes difficult to organize and required good organization. Before the PoC approach, healthcare professionals were used to act immediately after identifying a problem. According to the PoC protocol, healthcare professionals had to finish the assessment phase first, resulting in a collaborative treatment plan. Before they could start the treatment, the frail older person had to agree on this plan. This change in the culture of healthcare delivery was initially difficult for healthcare professionals, but after a while they recognized the added value of formulating a collaborative treatment plan.

3.5.3. Stimulating factors

In general, the PoC protocol provided a useful structure and tools for integrated community-based care of frail older people. According to all the healthcare professionals, the implementation of the protocol depended strongly on the professional skills of the practice nurse. GPs and allied professionals mentioned that an empathic capacity of the practice nurse and good organization and communication skills had positive effects on the implementation of the PoC approach, while a lack of education, experience and capacities was considered as a barrier. Practice nurses reported that frail older people expressed much gratitude for the attention they received, which gave them a feeling of work fulfilment.

3.5.4. Barriers and recommendations

During the semi-structured and focus group interviews, doubts about the screening method were expressed by all practice nurses and GPs interviewed. In their opinion, the screening method worked insufficiently in identifying the appropriate target group for the PoC approach. On the one hand, the health status of some older people was too poor to participate. On the other hand, some older people were considered to be not (yet) frail. Practice nurses and GPs recommended a higher cut-off score on the Groningen Frailty Indicator (Steverink et al., 2001) or at least a cut-off score that is less sensitive to psychosocial problems. In their opinion, frail older people with a low score on the Groningen Frailty Indicator (GFI = 5) often suffer from psychosocial problems, but have no indication for care. Practice nurses and GPs also indicated during the interviews that some frail older people might have been missed by the chosen screenings approach due to non-response or the exclusion criteria. They thought that case-finding based on the judgement of the practice nurse and GP would enable the identification of a more appropriate target group.

Some parts of the PoC protocol were time-consuming (e.g. assessment, team meetings) or difficult to apply (e.g. toolbox). The toolbox provided healthcare professionals with guidelines for assessment and treatment organized by different topics, but they did not know, how to put these guidelines into practice. Also, how to use the theoretical models such as the 5A's Behaviour Change Model (Glasgow et al., 2006) remained unclear to them. According to the healthcare professionals interviewed, barriers to implementing the protocol were due to an overload of information during the training activities and a lack of training on the job. They recommended more supervision and opportunities to exchange experiences with other healthcare professionals. Furthermore, a digitalization of forms was recommended by practice nurses and GPs to avoid double registration and to facilitate an exchange of data with other disciplines.

3.6. Satisfaction and barriers experienced by frail older people

3.6.1. Benefits

Frail older people reported in the interviews that they greatly appreciate their independence. They prefer to take their own decisions and to find solutions by themselves. These norms and values fit the self-management character of the PoC approach. Frail older people saw one of the greatest benefits of the PoC approach in becoming aware of their needs and (potential) problems. Healthcare professionals listened carefully and spent much attention to the topics introduced by the frail older person. Frail older people felt acknowledged by healthcare professionals and experienced support in fulfilling their needs and handling their problems. A good relationship with the healthcare

professionals involved was perceived as a safety net with regard to future problems.

3.6.2. Burden

There were hardly any burden mentioned by frail older people, except for the intensity and complexity of the PoC approach. For a few older people, participation was too time-consuming. Others experienced difficulties in distinguishing the disciplines involved.

3.6.3. Stimulating factors

In general, frail older people did not have many expectations regarding participation, but felt that there was no harm in trying it. Some frail older people expected to find a solution for their problems. The fact that the invitation to participate was sent by their GP enhanced their willingness to participate. For most of them, the GP is still an important and respected person and his or her advice was followed most of the time. A few older people mentioned that they were no longer used to get so much attention from their GP and they appreciated their initiative very much.

3.6.4. Barriers and recommendations

Frail older people did not experience specific barriers to the PoC approach. However, they made the general recommendation that older people want to be taken seriously by healthcare professionals. Furthermore, healthcare professionals should consider that older people often struggle with irreversible losses such as the death of a dear person, which may result in frustration, loss of motivation and neglect of advice regarding care in general.

4. Discussion

The aim of the process evaluation was to provide insight into the extent to which the interdisciplinary care approach PoC is implemented as planned. Furthermore, healthcare professionals' and frail older people's experiences regarding its feasibility were evaluated. From the perspective of the healthcare professionals, the PoC approach provided a useful structure for the delivery of geriatric primary care and increased the attention to preventive treatment. Frail older people were satisfied, as they felt acknowledged by healthcare professionals and experienced support in handling their problems and fulfilling their needs. While frail older people experienced hardly any burden or barriers regarding the PoC approach, healthcare professionals made several recommendations for its improvement.

Firstly, they experienced barriers regarding the screening approach and recommended either a higher cut-off score on the Groningen Frailty Indicator or a case-finding approach based on the clinical judgement of the practice nurse and the GP. According to the literature (De Lepeleire et al., 2009), clinical judgement in itself seems insufficient to identify frail older people. Frailty can be easily overlooked by GPs, who are used to focus on specific medical diseases, whereas frailty is multidimensional in nature and results from a complex interplay of physical, psychological, social, and environmental factors. In addition, it is not feasible given the large populations, which have to be screened. Therefore a two-step approach consisting of a short screening integrated in the daily practice of the GP as the first step, and a more complex assessment as the second is assumed to be most promising (De Lepeleire et al., 2009). Such a two-step approach is included in the PoC approach, but the screening method for frailty (step 1) needs some improvement regarding its specificity (Daniels et al., 2012). Secondly, some parts of the PoC protocol were (initially) time-consuming or difficult to apply (e.g. interdisciplinary team meetings, toolbox, 5A's Behaviour Change Model). Healthcare professionals recommended more training on the job and opportunities to exchange experiences with each other. How to improve the training with regard to the implementation of the PoC approach in daily practice needs special attention.

The evaluation of the logbooks showed that some parts of the PoC protocol were insufficiently executed. Firstly, the problem analysis and the development of a preliminary treatment plan were often not done in a bilateral or an extended team meeting (step 3) and only half of the treatment plans were discussed with the frail older person (step 4). Secondly, the toolbox parts were not frequently used in the treatment of frail older people (step 5). Thirdly, the extent of evaluation and follow-up, especially among the healthcare professionals, was limited (step 6). With regard to behavioural change, discussion of the treatment plan in the interdisciplinary team and between healthcare professionals and frail older people (steps 3 and 4) is essential to reach collaborative agreement about treatment goals. Furthermore, regular follow-up and feedback is important for behavioural change (Bodenheimer and Handley, 2009). Continuous collaboration, from the assessment (step 2) until evaluation and follow-up (step 6), is also an important element in patient-centred interdisciplinary care. It recognizes and values the expertise and perspectives of a variety of different healthcare professionals and enables a partnership between the healthcare professionals involved and the patients' participation in decision-making (Orchard et al., 2005).

It is well-known that a gap exists between research and the translation of findings into practice, especially in the field of preventive and behavioural change interventions. Glasgow and Emmons (2007) focus on four categories of barriers. These include characteristics of (a) the intervention, (b) the target settings, (c) the research or evaluation design, and (d) interactions among the first three categories. With regard to intervention characteristics (a) it may be assumed that PoC particularly required too much time and expertise from healthcare professionals. Furthermore, some parts of the protocol may be not packaged or "manualized" enough to provide the care according to the protocol principals. The primary care setting (b) may also have had an impact on the extent of implementing the PoC approach. For example the structures of a predominantly reactive healthcare system in the Netherlands (European Commission, 2011) may work against a proactive approach in community-dwelling frail older people. Barriers regarding the research design (c) may be that the target group was not adequately identified.

As we discussed earlier, some older people were not (yet) frail. More research should be done into the complexity and context of an intervention to increase the success of implementation into daily practice (Glasgow and Emmons, 2007).

Interdisciplinary collaboration is one of the core principles of the PoC approach and the healthcare professionals reported improved collaboration, but the limited extent of discussing and evaluating the treatment plan and using the toolbox parts is not in line with this finding. This may be explained by the structure of the healthcare system, in which most decisions regarding care are taken by the GP or practice nurse (Orchard et al., 2005). It seems questionable, whether always the right decisions were made with regard to the involvement of other healthcare professionals. When implementing interdisciplinary care, the cultural change of professionals' attitudes and organizational structures need to be considered further (Orchard et al., 2005). Furthermore, factors related to team structure (e.g. team size and composition, organizational support) or team processes (e.g. goal setting, regular team meetings) may work as barriers or facilitators. More attention should be paid to these factors to reach effective and efficient interdisciplinary collaboration (Xyrichis and Lowton, 2008).

The semi-structured and focus group interviews with healthcare professionals and frail older people gave some indication that engagement in meaningful activities, another core principle of the PoC approach, is insufficiently applied in healthcare delivery. They reported that meaningful activities were part of the assessment and treatment, but most of the time they talked about existing problems in performing daily activities and risk factors for developing disability instead of enhancing meaningful activities. Although frail older people suffer from a combination of physical, social and psychological losses the focus of care should be on their capacity to maintain quality of life instead of eliminating specific diseases or complaints (Nicholson et al., in press). Maybe healthcare professionals undervalue the importance of meaningful activities, because of their 'everyday' nature, and the assumption that the desire to engage in activity is an in-built physiological mechanism that drives and satisfies people to meet basic needs and develop potential (Harmer and Orrell, 2008). Furthermore, the term 'meaningful activities' is an inherently difficult construct to define and assess, although it is rather important for healthcare professionals for the development of interventions (Eakman, 2012). In future, more attention has to be paid to the identification of and participation in meaningful activities, as they contribute strongly to the sense of purpose and fulfilment in life, with significant implications for health, well-being and ageing successfully (Eakman et al., 2010).

This process evaluation has some limitations. Firstly, previous studies (Dorresteijn et al., in press; Heinrich, 2012) have shown that healthcare professionals have difficulties in reflecting adequately on their functioning, as they perceive themselves as performing better than they actually do, maybe due to a lack of awareness of their own behaviour or socially desirable answers. The current study also shows some conflicting results. Healthcare professionals involved were very positive about the implementation of the PoC approach during the semi-structured and focus group interviews. However, the logbooks showed that not all the steps of the PoC approach were applied. Video- or audiotaping would have been useful to add to the data collection methods to provide more valid information about the actual performance of healthcare professionals. Secondly, frail older people participating in the semi-structured interviews were selected by practice nurses. These frail older people may not be representative, as there is a risk that only 'success cases' were selected for the interviews. Selection bias may also have played a role in the focus groups with the healthcare professionals, as their participation was not mandatory and possibly only the most motivated and satisfied professionals joined the group. However, this study has some strengths as well. One of these is the use of a theoretical framework (Baranowski and Stables, 2000; Linnan and Steckler, 2002; Saunders et al., 2005) for the design of the process evaluation and the data collection and analysis. Thirdly, the use of a mixed methods approach, combining quantitative and qualitative data collection methods, improves the quality of the study. Both methods have their strengths and limitations; consequently an integration of different methods provides better findings than either a quantitative or qualitative approach alone (Boeije, 2010).

The PoC approach is very complex in nature, as it combines a number of relatively new elements in geriatric primary care. The more complex an intervention is, the more difficult its implementation in clinical practice may be. Even if healthcare professionals are aware of the need to change and willing to do so, it is difficult to modify well-established patterns of care, especially if the clinical environment is not conducive to change. Barriers can arise at the level of the patient, the individual professional, the healthcare team, the healthcare organization, or the wider environment (Grol and Grimshaw, 2003). Consequently, more research into the implementation of the PoC approach is needed, especially with regard to client-centred interdisciplinary care, behavioural change and engagement in meaningful activities.

5. Conclusion

To prevent disability in community-dwelling frail older people, complex interventions conducted by an interdisciplinary primary care team are needed, involving individualized assessment, tailor-made interventions and long-term follow-up. With regard to integrated care, nurses are recommended as case managers to plan, organize and monitor the care process and to facilitate cooperation between professionals. The PoC approach is appreciated by healthcare professionals and frail older people and provides a useful structure for the delivery of geriatric primary care. However, given its complexity, the implementation of the protocol needs special attention, especially with regard to client-centred interdisciplinary care, behavioural change and engagement in meaningful activities.

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