Development and content of a community-based reablement programme (I-MANAGE): a co-creation study

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ABSTRACT

Objectives As age increases, people generally start experiencing problems related to independent living, resulting in an increased need for long-term care services. Investing in sustainable solutions to promote independent living is therefore essential. Subsequently, reablement is a concept attracting growing interest. Reablement is a person-centred, holistic approach promoting older adults' active participation through daily, social, leisure and physical activities. The aim of this paper is to describe the development and content of I-MANAGE, a model for a reablement programme for community-dwelling older adults.

Design The development of the programme was performed according to the Medical Research Council framework as part of the TRANS-SENIOR international training and research network. A co-creation design was used, including literature research, observations, interviews, and working group sessions with stakeholders.

Setting and participants The interviews and working group sessions took place in the Dutch long-term home care context. Stakeholders invited to the individual interviews and working group sessions included care professionals, policymakers, client representatives, informal caregiver representatives, informal caregivers, and scientific experts.

Results The co-creation process resulted in a 5-phase interdisciplinary primary care programme, called I-MANAGE. The programme focuses on improving the self-management and well-being of older adults by working towards their meaningful goals. During the programme, the person’s physical and social environment will be put to optimal use, and sufficient support will be provided to informal caregivers to reduce their burden. Lastly, the programme aims for continuity of care and better communication and coordination.

Conclusion The I-MANAGE programme can be tailored to the local practices and resources and is therefore suitable for the use in different settings, nationally and internationally. If the programme is implemented as described, it is important to closely monitor the process and results.
remaining capacity to maintain QoL and independent living.10 11 Rather than performing tasks with their clients, care professionals often tend to take over.11 Failing to properly tackle these challenges could increase the use of health and social care and related costs.12 In addition, this could lead to unnecessary (re)hospitalisations or permanent nursing home placement, which each have their own risks (eg, increased mortality)13 and at a time when financial and workforce resources are shrinking.7 12 14 It is therefore essential to invest in sustainable solutions to promote independent living.15–17

A concept attracting growing interest in promoting independent living among older adults is reablement. This is a person-centred, holistic approach promoting active participation of older adults in daily activities through social, leisure and physical activities chosen by the older adult in line with their preferences, either at home or in the community.18 Instead of creating dependency by taking over tasks, care professionals identify the capabilities and opportunities of individuals to maximise their independence by supporting them to achieve their goals, through participation in daily activities, home modifications, assistive devices and involvement of their social network.11 18–20 Current evidence on the effectiveness of reablement interventions is inconclusive.11 however, several systematic reviews have indicated the positive results of reablement relating to activities of daily living (ADL) functioning and health-related QoL.21–23 Due to the promising results, interest in implementing reablement into everyday care is growing internationally. In Denmark, New Zealand and the UK, reablement has more-or-less been successfully implemented across the whole country.1 For example, in Denmark reablement in long-term care for older adults was legally introduced in 2015, meaning that all municipalities must offer reablement interventions and all applicants for home care are assessed for potential for reablement before being offered conventional home care.2

Despite the promising results and successful implementation abroad, contextual differences mean this is no indication that it would necessarily be effective in its current format in the Dutch home care setting.24 Implementing reablement is a complex process and influenced by multiple factors, such as organisational factors, individual and social attitudes towards a new form of care, technological factors related to communication and financial factors.25 26 It is crucial to critically consider these factors in the design, delivery and evaluation of reablement.27 Moreover, to implement reablement in the Dutch home care setting, existing programmes need to be revised and adapted to suit the current context, which is crucial when developing and delivering complex healthcare interventions.28 However, the development and content of community care programmes, such as reablement programmes, are often insufficiently described in the scientific literature.19 28–30 There are only limited articles available that describe either the development of the programme or its content in detail31–33 and these descriptions are often included as part of a feasibility or pilot study.29 This offers little guidance to replicate or build on the previous findings of such programmes, despite this being essential for the development of new and implementation of existing programmes in different settings.29 30 34

This paper therefore describes the development, using a co-creation process, and content of I-MANAGE, a reablement programme for community-dwelling older adults to improve older adults’ self-management and participation in daily life, while also increasing QoL and decreasing informal caregivers’ burden. By describing the development and content of the programme in detail, we increase the replicability and prevent other researchers from reinventing the wheel. The programme is specifically suitable for the Dutch community care setting, however, due to its extensive description, this manuscript may also provide a model for implementation in other countries.

METHODS
To describe the development process of the programme and ensure completeness of reporting, we used the guidance for reporting for intervention development studies in health research (online supplemental file 1).29 This checklist provides a clear and structured basis for the reporting of programme development, as well as the description of the content of the programme.

Design
I-MANAGE was developed between September 2019 and June 2021 using a co-creation design. The programme was developed following the first phase (development) of the Medical Research Council (MRC) framework for the development and evaluation of complex interventions.35 36

Patient and public involvement
Co-creation was initiated by the researchers as a response to the challenges that are caused by an ageing society (eg, increasing care needs, decreasing staff). To deal with these challenges the Dutch government stimulates an ageing in place policy and promotes another way of (home) care delivery moving from ‘doing for…’ towards ‘doing with…’ clients, or in the best case to enable clients to do things by themselves again. These developments are also adopted by Dutch care organisations, which hope to improve the quality and sustainability of their care services.37 All end users (care professionals who would be implementing and delivering the programme, as well as the target population) were represented and involved during the development process of the programme as members of the working groups and by participating in the individual interviews. However, they were not involved in the development of the study design of dissemination of the findings.
Setting and participants

I-MANAGE is based on international evidence and tailored to the Dutch home care context. Home care in the Netherlands includes personal care (ie, assistance with ADL), nursing care (ie, medical assistance) and domestic support (ie, assistance with instrumental ADL (IADL)). Usually home care is funded by two statutory forms of insurance cover care: the Health Insurance Act (ZVW) and the Social Support Act (WMO). Clients often use a combination of ZVW (eg, general practitioner care, therapists, hospital care or medication), and WMO (eg, domestic support, home adaptations). The programme was developed for community-dwelling older adults, irrespective of age or cognitive and functional status.

The programme was developed in co-creation with stakeholders who participated in observations, individual interviews and working groups. Online supplemental file 2 provides an overview of all stakeholders involved and the research activities they participated in. Participants were recruited from the professional network of the researchers. They were informed about the study and asked to participate via email. When participants agreed to participate, verbal or written informed consent was provided before the start of each interview or working group session.

Data collection

First, a logic model was created. A logic model is a tool to illustrate how a programme will create change. The logic model systematically visualises the aim and subaims of the programme, the programme components and the intended outcomes. The logic model was developed using six iterative programme development steps: (1) identifying the problem, (2) identifying the evidence, (3) identifying or developing a theory, (4) determining needs, (5) examining current practices and the context and (6) modelling processes and outcomes. The logic model was then translated to practice (step 7). Data collection was performed following a non-linear and iterative process as described by Bleijenberg et al, and by using a variety of data collection methods, including literature research, observations, individual interviews and working groups. Figure 1 illustrates the development process in detail.

Development of a logic model (steps 1–6)

All steps were guided by literature research, especially steps 2 and 3 of the development process. To gain insight into current evidence-based practices (step 2), the relevant scientific literature on reablement programmes was reviewed. The methodology and results of this literature research is described elsewhere. To identify a theoretical foundation for the programme (step 3), a literature review was performed on the concept of disability and its underlying causal mechanisms.

Furthermore, a working group was composed and invited to three sessions (1.5 hours each). Members of the working group included physiotherapists (PT), occupational therapists (OT), registered nurses (RN), a domestic support worker (DSW), a policymaker of the local municipality, a psychologist, a client representative, informal caregiver representatives and a geriatric rehabilitation expert. The first session focused on the identification of the problem (step 1) and the examination of the current practice and context (step 5). The second session focused on the previously identified evidence, which participants could complement with practices from their own field of work (step 2), and the determination of needs (step 4), closely related to the previously identified problems. The third session focused on modelling the process and outcomes (step 6), during which a preliminary logic model was presented, on which participants could provide feedback. Between sessions, working group members were consulted for additional input and clarification if needed. The researchers processed the results from each session and the additional information in order to be used as a starting point for the next session. The working group sessions were led by the first and last author (IM and SM).

We then interviewed two PTs, a policymaker of the local municipality, a client and informal caregiver representative and three experts in the field of geriatric rehabilitation research. In total, eight interviews were conducted, all focusing on identifying the problem (step 1), determining the needs (step 4) and gaining insight into current practice and context (step 5). In addition, we interviewed two informal caregivers. Topics addressed during these interviews included their role as informal caregiver, how involved they were in the care process, how they were or felt supported and by whom and what they would like to change in the process.

Lastly, observations were performed by the researchers. Observations were conducted in the traditional community care setting to examine current practice and context of home care services (step 5) and to identify problems (step 1). Six observations, each lasting half a day, were conducted by shadowing a DSW, an RN and a nursing assistant, and 3 days were spent with allied health professionals. Field notes were taken throughout the observation periods.

Translation to practice (step 7)

For each of the six programme components in the logic model, we invited members of the working group, a geriatrician, informal care consultant, reablement researcher, informal caregiver and a community care teams’ manager to a session to translate components into practice (step 7). Based on the programme component, the most relevant stakeholders were invited. For example, on informal caregiver support, we invited an informal care consultant, an informal caregiver and a psychologist; resulting in three to four members per working group. Each working group attended one session lasting 1 hour. Each session began with an introduction to the goal of the programme, the logic model and the results of steps 1–6 related to the programme component. Afterwards,
Figure 1  The development process over time. This figure presents the development process over time from September 2019 until June 2021. The whole process is guided by scientific literature. The figure presents the two parts of the development process each with their related activities. The dark grey rectangles present the (intermediate) result of each part of the process. The number in between brackets represent the seven steps of the development phase as described by Bleijenberg et al. DSW, domestic support worker; GR, geriatric rehabilitation; PT, physiotherapist; RN, registered nurse.
The following section presents the final model of the I-MANAGE programme in detail, starting with the developed logic model, and eventually the translation to practice, which contains a detailed description of all programme components. A detailed description of the results from the first five programme development steps is provided in online supplemental file 3.

**Development of a logic model**

The logic model starts with the aim and subaims of the programme based on identified problems and needs (result from development steps 1 and 4), which are derived mostly from the working group sessions and individual interviews. To fulfil these aims, six programme components were determined: (1) improving assessment and goal-setting; (2) stimulating self-management during meaningful daily activities; (3) optimising the use of the physical environment; (4) optimising the use of the social environment; (5) improving interprofessional collaboration; and (6) supporting the informal caregiver. These originate from both the input from stakeholders (result from development steps 2, 4, 5 and 6) and evidence-based practices from the literature (result from development step 2). The intended client outcomes of the programme are reducing (1) ADL disability, improving self-management skills, increasing QoL of both the client and informal caregiver and reducing healthcare usage and expenditures (proximal outcomes), which are common outcome measures in reablement programmes abroad. Eventually, improving these proximal outcomes would help the older adults to remain living at home independently and avoid unnecessary transitions to institutional care (distal outcomes). Figure 2 presents the logic model.

**Translation to practice: description of the I-MANAGE programme**

The I-MANAGE programme, as described here, is the result of input from stakeholders and literature research during the last step of the development process (step 7). The following sections describe the programme in detail. The programme, as described, may serve as a model for the use in different local settings and leaves room for tailoring to the specific needs and resources of the organisation.
To achieve the intended outcomes presented in the logic model, the programme should intend to apply a two-tiered approach: (1) focusing on the capabilities of the client and (2) paying attention to environmental factors (ie, physical, social and organisational). I-MANAGE should be intended for community-dwelling older adults who are still able to (re)learn new skills and apply them in daily life without an indication of terminal illness or planned nursing home admission. The average duration of the programme is preferably 8 weeks according to the members of the working groups.

Interdisciplinary collaboration

I-MANAGE aims to facilitate interdisciplinary collaboration by encouraging intensive collaboration between the reablement team, client, informal caregiver and other care professionals delivering care and support to the client and informal caregiver. The programme should be delivered by an interdisciplinary reablement team, generally consisting of an RN, an OT and, depending on the local context, supplemented with a PT, social worker, DSW or other disciplines. The reablement team should initiate the programme and be responsible for the direct support of the client and informal caregiver. A care coordinator should be appointed, which in most cases, is the OT. Depending on the necessary care and goals set by the client, the reablement team may consult other care professionals (eg, usual home care team, psychologist or general practitioner); for example, during the intake phase for advice or while working on the client’s goals. They should be informed and coached by the reablement team.

Furthermore, regular team meetings should be organised (eg, (bi-)weekly) to discuss the intake of new clients and informal caregivers, the progress made by clients and the final evaluation of clients’ personal goals. Additionally, team meetings could provide the opportunity to discuss specific cases with other team members and to organise training. All members of the reablement team should have access to access the care plan, report progress and follow-up on each other’s work, preferably through a shared electronic care file (ECF) of the client. Lastly, when discharged from another care facility (eg, hospital or rehabilitation facility), a smooth handover of client information should be initiated so no necessary details of the client’s care process are lost.

Practice-oriented training

Preceding the programme, the reablement team should receive practice-oriented training focusing on adequately delivering I-MANAGE. Within this training, care professionals should receive a detailed manual beforehand, consisting of background information and a description of the programme, including the goal, key components and I-MANAGE’s care process. The manual was developed by the researchers and revised by working group members to make sure it is suitable for practice. Additionally, a toolkit for achieving individual client goals should be provided (eg, exercise booklet based on the OTAGO exercise programme (a programme aimed at reducing fall incident in older people),45 social map including welfare initiatives and tools to assess needs and wishes of the caregiver). The training should consist of multiple sessions, preferable in the following structure; the first is a kick-off meeting for the reablement team, focusing on the goal and content of I-MANAGE. Second, specific training sessions occur for OT and PT concerning the use of the Canadian Occupational Performance Measure (COPM)46 to set personal goals with the client and the OTAGO exercise booklet, respectively. Finally, the reablement team receives a booster session to practice and discuss challenging situations and focus on motivational and conversation skills. The kick-off and booster sessions each last 2 hours and the specific sessions for OT and PT last 1 hour. Additionally, the programme should stimulate training on the job, meaning that members of the reablement team can coach each other and external care professionals based on their own expertise.

I-MANAGE care process

The I-MANAGE care process consists of five consecutive phases: (1) initiation; (2) intake; (3) care plan; (4) care delivery; and (5) evaluation. Each phase is described in detail below and presented in figure 3. The five phases are a result of the practical translation of the previously described logic model.
Referral of the client to I-MANAGE programme:
- Community nurses
- General practitioner
- Institutional care facilities

Phase 1: Initiation
1. Provide information to client (and informal caregiver)
2. First visit by OT
   - Exploratory conversation based on Positive Health
3. If discharged from other care facility; initiate smooth handover

Phase 2: Intake
1. Environmental assessment by OT
2. Set meaningful goals by using COPM
   - Guided by exploratory conversation from phase 1
3. Intake with informal caregiver to assess burden and needs

Phase 3: Care plan
1. Determine interventions and actions to reach goals
   - Guided by preferences of client/informal caregiver
   - Specific attention for client’s capabilities, social network and physical environment
2. Recorded in electronic care file

Phase 4: Care delivery
1. Care provided as described in care plan
2. Follow-up on the care process by reablement team
3. If needed, initiate additional support for informal caregiver

Phase 5: Evaluation
1. Continuous evaluation during care visit and team meetings
   - Continue, adjust or terminate care plan
2. Formal evaluation after 8 weeks by using COPM

Aftercare
1. Continue programme for maximum of 2 weeks
2. Referral to usual care

Figure 3  Detailed presentation of the I-MANAGE care process. I-MANAGE has a 5-phase care process (initiation, intake, care plan, care delivery and evaluation), preceded with the referral of the client through different routes. After an average duration of 8 weeks, clients are referred to aftercare. Interdisciplinary collaboration is a continuous element of the programme. COPM, Canadian Occupational Performance Measure; OT, occupation therapist.
Phase 1: initiation
Programme referrals could be done through community nurses, general practitioners or institutional care facilities. Community-dwelling older adults eligible for I-MANAGE should receive information about the programme. The care coordinator has to plan a first visit to present the programme to the client and, if applicable, their informal caregiver to provide the opportunity to ask additional questions. The care coordinator should initiate an exploratory conversation based on the principles of positive health to gain insight into the client’s needs and wishes.47

Phase 2: intake
Within the first week after the initiation phase, the OT should perform an environmental assessment, identifying necessary home modifications and assistive devices to ensure a safe environment. The environmental assessment is not limited to the inside environment but does also include the entrance and outside environment. Additionally, the care coordinator, or an assigned social worker, should perform an intake with the informal caregiver assessing their needs and wishes. Furthermore, the OT must set meaningful goals with the client using COPM46 (maximum of five goals). This instrument requires the clients to score both their performance and satisfaction when performing these activities.46 Goal setting is guided by the exploratory conversation held in phase 1. The ultimate goal is to improve the client’s participation and well-being; therefore, goals should not merely be (I)ADL-related (eg, meeting friends at the local café, or painting in the hobby room on the first floor). Goals should be recorded in the client’s ECF.

Phase 3: care plan
Possible interventions and actions to achieve the client’s goals and provide the informal caregiver with the right support should be discussed within the reablement team. These interventions and actions are derived from the available toolkit. Afterwards, the care coordinator should determine the final interventions and actions with the client and informal caregiver, guided by their preferences and capabilities, possibilities of the social network and the physical environment. Subsequently, the care plan should be recorded in the client’s ECF and shared with all members of the reablement team. The intensity of the programme depends on the care needs of the client and their preset goals, which may require a higher intensity in the beginning but less at the end when (sub-)goals are (partly) reached.

Phase 4: care delivery
The reablement team should deliver care and support as described in the care plan. Care delivery should be coordinated by the OT, who is also responsible for assisting with (re)learning and practicing meaningful daily activities. The RN is responsible for supporting managing the client’s personal care needs. The PT, when part of the reablement team, is responsible for functional training and stimulating participation in daily life. The client’s environment should be adapted (eg, home modifications, assistive devices and care technology), to support them in (re)learning activities. While supporting meaningful activities, the client’s self-management should be stimulated by practicing activities and ensuring that tasks are not taken over by care professionals or informal caregivers. If necessary, a social worker should provide the informal caregiver with additional support to decrease their burden (eg, respite care).

Phase 5: evaluation
The evaluation of the care process should be structurally embedded in interdisciplinary team meetings. Based on conclusions drawn during these meetings, the care coordinator can decide whether the care plan is continued, adjusted or terminated. This must be discussed with the client and informal caregiver. At the end of the programme, a formal evaluation of the client’s goals should take place using COPM,46 including scoring the performance and satisfaction within activities. Afterwards, the care coordinator decides with the client and informal caregiver if the programme should be extended (maximum 2 weeks) to ensure all goals are sufficiently reached or if the client needs referral to usual care.

DISCUSSION
This manuscript describes the development and content of I-MANAGE, a community-based reablement programme. The programme was developed for community-dwelling older adults to improve their self-management and participation in daily life and ensure that they can remain living at home independently as long as possible and avoid unnecessary transitions to institutional care, while also increasing QoL and decreasing informal caregiver burden.

The programme contains several key elements that are considered essential and should be present when implementing the programme in any care setting. First, in line with the conceptual definition of reablement,18 interdisciplinary collaboration is important in I-MANAGE. However, how this element is implemented in practice depends on the contextual circumstances of a country or region and the resources available. In this study it was recommended by the Dutch stakeholder to appoint a care coordinator, schedule (bi-)weekly meetings and implement a shared ECF. Recent literature indicates that investing in interdisciplinary collaboration stimulates patient-centred care by ensuring a holistic view of the client’s situation and creates shared responsibility.48-50 This is achieved by good communication and coordination within the team but also with the client and informal caregiver.51 Moreover, delivery of the programme by an interdisciplinary team, including allied health, such as OTs, is deemed valuable because of their educational background.30 52 It also stimulates continuous learning and is experienced as exciting.
and constructive by care professionals. Additionally, the integrated practice-oriented and on the job training, where care professionals can learn from other disciplines, help to invest in the self-efficacy of care professionals. This is essential, because successfully changing behaviours remains a challenge. The training entails several key topics as mentioned before, however, depending on the local context the extent of the training may vary, for example, due to previously received education or training. Second, at the start of the programme (phase 1 and 2), we implemented a standardised goal-setting tool, COPM, preceded by an extensive intake based on the principles of positive health. Previous research has indicated that using standardised assessment or goal-setting tools can increase the effectiveness of reablement interventions, and is therefore considered an essential element of the programme. This is an important addition to most reablement programmes because, although making use of the clients’ social network is a strategy to reach their goals and can either stimulate or hinder a person’s participation in meaningful activities with the client. Third, when delivering care (phase 4), the programme integrates several important aspects. First, supporting informal caregivers is assumed to contribute to the effectiveness of I-MANAGE. Previous research found that providing informal caregivers with the right psychosocial and educational support strengthens their ability to cope with their new role. This is an important addition to most reablement programmes because, although making use of the clients’ social network is a strategy to reach their goals according to the internationally accepted definition, this is often overlooked. Additionally, I-MANAGE promotes optimal use of the social and physical environment, which is essential since a demanding environment can either stimulate or hinder a person’s participation in meaningful activities. Lastly, the programme stimulates self-management through participation in meaningful daily activities, which is a core element within reablement (‘doing with...’ rather than ‘doing for...’ the client).

The described programme serves as a model and leaves room to tailor the intervention to a specific context and the needs of the organisation. For example, the programme leaves room for the organisation to choose which target group would benefit most. Additionally, delivering the programme by an interdisciplinary team is a prerequisite. However, depending on available resources, the organisation can decide on the composition of the reablement team. Moreover, I-MANAGE is a multicomponent programme in which organisations can integrate their own innovative practices, especially when working towards and reaching clients’ meaningful goals. Also, the duration and intensity of the programme may vary according to the needs of the local context and chosen target population. Moe and Brinchmann confirmed the necessity of tailoring reablement services to local conditions by arguing that establishing reablement in an existing organisational structure is a complex process. Apart from available resources, during the co-creation process, some influencing factors for implementation were identified. For example, different information technology (IT) systems, which make communication and information transfer less evident. Moe and Brinchmann mentioned that, next to communication and IT systems, habitual ways of offering health services, a lack of knowledge about the rehabilitation potential of older adults and active ageing benefits are also experienced as barriers. A recent scoping review identified several factors that act as barriers and facilitators during the implementation of care innovations, among which, available resources and communication were listed as possible barriers to implementation. It is critical to consider these factors when implementing I-MANAGE in practice. In order to overcome several barriers to the implementation of I-MANAGE, it could be useful to set up advisory boards and working groups to discuss the implementation process and adjust where needed. Additionally, investing in the management of care organisations on board to support the implementation within their organisation and setting up knowledge exchange between sites where reablement is being implemented to share experiences and best practices could be beneficial. Investing in a suitable organisational structure is essential because it remains a challenge to successfully change existing organisational structures. Regarding future research, further knowledge is needed to explore feasibility and (cost-)effectiveness of I-MANAGE, as it has not yet been proven. Since the programme is very context specific and can be tailored according to the needs and resources of an organisation, it would be beneficial to investigate what works for which target group and under what circumstances, for example, by means of a realist evaluation. The programme is currently being implemented and evaluated at different Dutch care providers. The systematic reporting of the development of the programme provides useful insight for future research looking to develop complex health interventions or to implement a similar programme.

A strength of I-MANAGE and its development is that it is both theory and evidence-based, which has proven to be advantageous when developing effective interventions. Moreover, Thuesen et al highlight the demand for making theory explicit in reablement interventions and in addressing the physical, psychological and sociocultural perspectives of ageing within these interventions. Another strength of the development process was the co-creation process, which gave a voice to multiple stakeholders and made the programme suitable for practice. We used the development approach described by Bleijenberg et al, which combined a range of published approaches to intervention development to enrich the MRC framework. This approach was chosen because using the MRC framework further assists us in evaluating and adapting the programme. However, we are aware that multiple approaches to intervention development exist as described by O’Cathain et al. These different approaches share many similarities (eg, stepwise approach or involvement of stakeholders), but there are also significant differences (eg, the focus on implementation or
theory). It is important to acknowledge these differences and always choose an approach best suited to the purpose of the research. Additionally, most of these approaches are not set in stone and leave room for the researcher's own interpretation. It must also fit the setting and timing of the development process. There are also some limitations related to this co-creation process. First, during the process, we always informed management to obtain their support, but they were not included in the working groups, which could have blocked important insight. Second, we aimed to include all end users of the programme during the development process (care professionals, clients and informal caregivers). However, we only included client and informal caregiver representatives in the working groups and interviewed only two informal caregivers between sessions. Additionally, care professionals were recruited from the professional network of researchers and were recruited in a convenient way. We therefore did not ensure variation among these participants in terms of, for example, gender, age or years of experience. Lastly, we obtained data from many different sources (ie, scientific literature, individual interviews, working groups and observations), which made it difficult to find common ground throughout all the sources and forced compromise. However, this use of data triangulation is also a strength of the development of the programme as findings could be checked multiple times with different sources, increasing the validity of the results.

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Contributors All authors—IM, HV, GJLMK, JCMHV, EV, GG, SFM—were involved in the development of the I-MANAGE programme. IM wrote the first draft of the article. All authors reviewed the manuscript and approved the final version. IM and SFM act as guarantor for the manuscript.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

Ethics approval As participants were not being subjected to actions and no rules of behaviour were imposed on them no ethical approval was needed according to the Dutch ‘Medical Research Involving Human Subjects Act’ (WMO). Nevertheless the study was carried out in accordance with the principles of ethical research and all participants involved in the working group sessions and interviews provided either written or verbal informed consent prior to the start of each session. Participants gave informed consent to participate in the study before taking part.

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**Supplementary file 1. GUIDED checklist. A guideline for reporting for intervention development studies.**

| Item description                                                                 | Explanation                                                                                                                                                                                                                                                                                                                                 | Page in manuscript where item is located | Other*
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<td>Report the purpose of the intervention development process.</td>
<td>Clearly describing the purpose of the intervention specifies what it sets out to achieve. The purpose may be informed by research priorities, for example those identified in systematic reviews, evidence gaps set out in practice guidance such as The National Institute for Health and Care Excellence or specific prioritisation exercises such as those undertaken with patients and practitioners through the James Lind Alliance.</td>
<td>P 6 – 7</td>
<td></td>
</tr>
<tr>
<td>Report the target population for the intervention development process.</td>
<td>The target population is the population that will potentially benefit from the intervention – this may include patients, clinicians, and/or members of the public. If the target population is clearly described then readers will be able to understand the relevance of the intervention to their own research or practice. Health inequalities, gender and ethnicity are features of the target population that may be relevant to intervention development processes.</td>
<td>P 8 – 9</td>
<td></td>
</tr>
<tr>
<td>Report how any published intervention development approach contributed to the development process.</td>
<td>Many formal intervention development approaches exist and are used to guide the intervention development process (e.g. Squid or The Person Based Approach to Intervention Development). Where a formal intervention development approach is used, it is helpful to describe the process that was followed, including any deviations. More general approaches to intervention development also exist and have been categorised as follows: Target Population-centred intervention development; evidence and theory-based intervention development; partnership intervention development; implementation-based intervention development; efficacy-based intervention development; step or phased-based intervention development; and intervention-specific intervention development. These approaches do not always have specific guidance that describe their use. Nevertheless, it is helpful to give a rich description of how any published approach was operationalised.</td>
<td>P 8</td>
<td></td>
</tr>
<tr>
<td>Report how evidence from different sources informed the intervention development process.</td>
<td>Intervention development is often based on published evidence and/or primary data that has been collected to inform the intervention development process. It is useful to describe and reference all forms of evidence and data that have informed the development of the intervention because evidence bases can change rapidly, and to explain the manner in which the evidence and/or data was used. Understanding what evidence was and was not available at the time of intervention development can help readers to assess transferability to their current situation.</td>
<td>P 10</td>
<td>Supplementary file 3 + [1]</td>
</tr>
<tr>
<td>Report how/if published theory informed the intervention development process.</td>
<td>Reporting whether and how theory informed the intervention development process aids the reader’s understanding of the theoretical rationale that underpins the intervention. Though not mentioned in the e-Delphi or consensus meeting, it became increasingly apparent through the development of our guidance that this theory item could relate to either existing published theory or programme theory.</td>
<td>P 10</td>
<td>Supplementary file 3 + [2]</td>
</tr>
<tr>
<td>Report any use of components from existing interventions in the current intervention development process.</td>
<td>Some interventions are developed with components that have been adopted from existing interventions. Clearly identifying components that have been adopted or adapted and acknowledging their original source helps the reader to understand and distinguish between the novel and adopted components of the new intervention.</td>
<td>P 10</td>
<td>Supplementary file 3 + [1]</td>
</tr>
<tr>
<td>Report any guiding principles, people or factors that were prioritised when making decisions during the intervention development process.</td>
<td>Reporting any guiding principles that governed the development of the application helps the reader to understand the authors’ reasoning behind the decisions that were made. These could include the examples of particular populations who views are being considered when designing the intervention, the modality that is viewed as being most appropriate, design features considered important for the target population, or the potential for the intervention to be scaled up.</td>
<td>P 9 – 11</td>
<td>Supplementary file 3</td>
</tr>
<tr>
<td>Report how stakeholders contributed to the intervention development process.</td>
<td>Potential stakeholders can include patient and community representatives, local and national policy makers, health care providers and those paying for or commissioning health care. Each of these groups may influence the intervention development process in different ways. Specifying how differing groups of stakeholders contributed to the intervention development process helps the reader to understand how stakeholders were involved and the degree of influence they had on the overall process. Further detail on how to integrate stakeholder contributions within intervention reporting are available.</td>
<td>P 9 – 11</td>
<td></td>
</tr>
<tr>
<td>Report how the intervention</td>
<td>Intervention development is frequently an iterative process. The conclusion of the initial</td>
<td>P 13 – 18</td>
<td></td>
</tr>
<tr>
<td>changed in content and format from the start of the intervention development process.</td>
<td>phase of intervention development does not necessarily mean that all uncertainties have been addressed. It is helpful to list remaining uncertainties such as the intervention intensity, mode of delivery, materials, procedures, or type of location that the intervention is most suitable for. This can guide other researchers to potential future areas of research and practitioners about uncertainties relevant to their healthcare context.</td>
<td></td>
<td>P 20 – 21</td>
</tr>
<tr>
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</tr>
<tr>
<td>Report any changes to the intervention required or likely to be required for subgroups.</td>
<td>Specifying any changes that the intervention development team perceive are required for the intervention to be delivered or tailored to specific sub groups enables readers to understand the applicability of the intervention to their target population or context. These changes could include changes to personnel delivering the intervention, to the content of the intervention, or to the mode of delivery of the intervention.</td>
<td></td>
<td>P 20 – 21</td>
</tr>
<tr>
<td>Report important uncertainties at the end of the development process.</td>
<td>Intervention development is frequently an iterative process. The conclusion of the initial phase of intervention development does not necessarily mean that all uncertainties have been addressed. It is helpful to list remaining uncertainties such as the intervention intensity, mode of delivery, materials, procedures, or type of location that the intervention is most suitable for. This can guide other researchers to potential future areas of research and practitioners about uncertainties relevant to their healthcare context.</td>
<td></td>
<td>P 21 – 22</td>
</tr>
<tr>
<td>Follow TiDier guidance when describing the developed intervention.</td>
<td>Interventions have been poorly reported for a number of years. In response to this, internationally recognized guidance has been published to support the high quality reporting of health care interventions and public health interventions. This guidance should therefore be followed when describing a developed intervention.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief name.</td>
<td>Provide the name or a phrase that describes the intervention.</td>
<td>P 1</td>
<td>Title page</td>
</tr>
<tr>
<td>Rationale, theory and aim of the elements essential to the intervention.</td>
<td>Describe any rationale, theory, or goal of the elements essential to the intervention.</td>
<td>P 13</td>
<td>Supplementary file 3 + [2]</td>
</tr>
<tr>
<td>Materials used in the intervention delivery or in the training of intervention providers.</td>
<td>Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (e.g. online appendix, URL).</td>
<td>P 13 – 18</td>
<td></td>
</tr>
<tr>
<td>Procedures, activities and/or processes used including enabling</td>
<td>Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities.</td>
<td>P 13 – 18</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Page(s)</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>or support activities.</td>
<td>For each category of intervention provider (e.g. psychologist, nursing assistant), describe their expertise, background and any specific training given.</td>
<td>P 14 – 18</td>
<td></td>
</tr>
<tr>
<td>Expertise and background of intervention providers.</td>
<td>Describe the modes of delivery (e.g. face-to-face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.</td>
<td>P 13 – 18</td>
<td></td>
</tr>
<tr>
<td>How the intervention was provided.</td>
<td>Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.</td>
<td>P 8 – 9</td>
<td></td>
</tr>
<tr>
<td>Location where the intervention occurred (incl. necessary infrastructure or relevant features).</td>
<td>Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose.</td>
<td>P 13 – 18</td>
<td></td>
</tr>
<tr>
<td>When and how much the intervention was delivered.</td>
<td>If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.</td>
<td>P 20 – 21</td>
<td></td>
</tr>
<tr>
<td>Tailoring – what, why, when and how.</td>
<td>If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Modifications. †</td>
<td>If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.</td>
<td>P 20 – 21</td>
<td></td>
</tr>
<tr>
<td>Strategies to improve or maintain fidelity.</td>
<td>If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Adherence and fidelity. †</td>
<td>Unless reports of intervention development are available people considering using an intervention cannot understand the process that was undertaken and make a judgement about its appropriateness to their context. It also limits cumulative learning about intervention development methodology and observed consequences at later evaluation, translation and implementation stages. Reporting intervention development in an open access (Gold or Green) publishing format increases the accessibility and visibility of intervention development research and makes it more likely to be read and used. Potential platforms for open access publication of intervention development include open access journal publications, freely accessible funder reports or a study web-page that details the intervention development process.</td>
<td>Aim of this manuscript</td>
<td></td>
</tr>
<tr>
<td>Report the intervention development process in an open access format.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note.** * e.g. if item is reported elsewhere, then the location of this information can be stated here. † If completing the TIDier checklist for a protocol, these items are not relevant to the protocol and cannot be described until the study is complete.
References


## Supplementary file 2. Overview of the different stakeholders involved per research activity.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Observations</th>
<th>Individual interviews</th>
<th>Development of a logic model</th>
<th>Translation to practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Domestic support worker</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Registered nurse (n = 3)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Nursing assistant</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist (n = 4)</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Expert in the field of GR research (n = 3)</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal caregiver (n = 3)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Policy maker of the local municipality (n = 2)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Client representative</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Informal caregiver representative</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Occupational therapist (n = 2)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Psychologist</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Geriatrician</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Reablement researcher</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager community care team</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Consultant informal care</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

GR = geriatric rehabilitation

Note: a if n > 1, not all stakeholders participated in every indicated research activity for that group; b observations were performed by the researchers; c indicates the three consecutive working group sessions throughout which the logic model was being developed following step 1 to 6 as described by Bleijenberg et al. [1]; d indicated the 6 working groups related to each programme component described in the logic model (1 = improving assessment and goal-setting, 2 = stimulating self-management during meaningful daily activities, 3 = optimising the use of the physical environment, 4 = optimising the use of the social environment, 5 = improving interprofessional collaboration, and 6 = engaging the informal caregiver).

## References

### Programme development step | Results
---|---
1. Problem identification | The identified problems were situated in three main areas:

1. A lack of attention to meaningful daily activities. According to the working group, older persons were mainly focused on functional goals related to (I)ADL tasks rather than meaningful daily activities that increase their well-being. Additionally, the focus of care is often on eliminating diseases and symptoms instead of maintaining quality of life [1, 2];

2. There appeared a gap between the person’s abilities, needs, and wishes, and the environment they reside in. When older people experience a deterioration in health status, their environment is often not adapted, i.e. the necessary home modifications and assistive devices are not always in place [3, 4];

3. Communication and coordination within the care trajectory of an older person. There is insufficient communication amongst different care professionals but also with older persons and informal caregivers [4-7].

2. Identifying the evidence | The identification of the evidence-based practices was mainly based on literature research. A literature review was performed to gain insight into current evidence on effective reablement programmes aimed at improving the independent living of older persons [8]. We specifically sought to gain a general understanding of different reablement programmes, their characteristics (e.g. duration), content, outcome measures, and effectiveness. Thirteen programmes were identified, all intended for (I)ADL-impaired community-dwelling older adults. The most common features were: 1) delivery by a trained and coordinated multidisciplinary team and 2) implementation of an intake assessment and goal-setting tool. The applied interventions focused on supporting (I)ADL and physical functioning, and improving home safety. Nine programmes showed a statistically significant improvement on at least one of the outcome measures (e.g. (I)ADL functioning).

3. Identifying or developing theory | A literature review was performed on the concept of disability and its working mechanisms [9] to identify a solid theoretical foundation for our programme (step 3). We concluded that by optimising the use of personal, as well as environmental, resources and focusing on health and functioning, rather than disability, an older person’s independence and wellbeing could be improved, especially while performing meaningful daily activities in accordance with the person’s needs and preferences.

4. Determine the needs | The determined needs are closely related to the identified problems. Stakeholders expressed the need for:

1. Standardised goal-setting at the beginning of the care process. Goals should be meaningful, embedded in the older person’s own environment, and not solely focused on (I)ADL;

2. Timely assessment and, if necessary, adaptations to the home environment of the older person. This concerns adaptations to the built environment, as well as the availability of assistive devices. Additionally, the social environment of the older person needs to be assessed in order to make optimal use of it or provide additional support if the social network is rather weak;

3. Improved communication and coordination within the care trajectory of the older person. For example, a smooth handover of information between care professionals and organisations, involvement of the informal caregiver when discussing a client’s care needs, multidisciplinary collaboration with clear roles for each provider, and the appointment of a care coordinator.

5. Examining current practice and context | When examining the current practice and context we focused on positive aspects and possible barriers for implementation. Possible barriers could be different financial arrangements and different communication systems within a multidisciplinary team. Positive aspects include the comprehensive assessment by community nurses at the start...
of receiving community care, a signalling role for domestic support workers, and the presence of various welfare initiatives in the Netherlands. A suggestion was made to include the principles of Positive Health [10] in the programme, a best practice that is already known and applied by some care professionals.

References


