Scaling-up Shared Decision Making in Multidisciplinary Osteoarthritis Care Teams: A Qualitative Study Using the Consolidated Framework for Implementation Research With Three Demonstration Sites

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Research

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Abstract

Background

Despite the development of theory-driven frameworks to guide implementation strategies, their application thus far has largely been limited to evaluating effectiveness within specific contexts. This study describes the use of these frameworks to inform a scale-up strategy for shared decision making (SDM) implementation across a state-wide government-funded health program.

Methods

Tailored SDM strategies were implemented in three multidisciplinary osteoarthritis care teams over a 3-6 month period during 2019-20 in New South Wales, Australia. Staff interviews occurred across 3 timepoints based on the Organisational Readiness for Change Scale, the Theoretical Domains Framework and the Preparation for Decision-Making (PreP-DM) Scales. Patient interviews based on the PreP-DM were also completed. A hybrid inductive-deductive thematic analysis was followed by mapping the results to the Consolidated Framework for Implementation Research (CFIR) and the OMERACT core domains for SDM. Finally, a ranked list of Expert Recommendations for Implementing Change (ERIC) was derived using a published tool.

Results

47 interviews were conducted with 18 staff along with 20 interviews with patients. We identified 39 themes for SDM implementation across the five CFIR domains: *1) Interventions* need to be flexible to align with different clinical workflows and busy clinics; *2) Outer Settings* such as senior managers should formally endorse SDM and clinical protocols and standards need to better align with an SDM approach; *3) Inner Setting* teams need early engagement, role clarification and communities of practice in SDM; *4) Individuals* are strongly motivated by better patient outcomes and need SDM training and support; and *5) Processes* such as patient-reported measures and feedback along with adequate resourcing were key. Recommended strategies therefore focussed on Stakeholder Engagement, Evaluative and Iterative Strategies, Education and Training and Adaptation/Tailoring to the Context. Skills in the identification of decision points, values clarification and deliberation were particularly challenging for staff.

Conclusions

Theory-driven scale-up strategies can be developed using qualitative research within demonstration sites. By combining the CFIR and TDF frameworks and prior mapping to the ERIC strategies, health system and program planners can obtain a relevant and evidence-informed roadmap for implementation across complex health systems.

Contributions To The Literature

- This paper describes a novel theory-driven approach to developing a scale-up strategy for shared decision making in multidisciplinary osteoarthritis care teams. We used a combination of the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF) to identify organisational and individual barriers and facilitators to implementation
- We extended previous work that had mapped the theoretical frameworks to each other and to evidence-based implementation strategies by applying them to a 'real world' example. This was possible over a range of team sizes and composition, models of care and geographical settings
- The partnership between government, clinical teams and academic researchers facilitated this approach to developing a theory-driven scale-up strategy from demonstration sites. We believe this method could be used in other settings and lead to more targeted and effective use of resources and uptake.

Background

Shared decision making (SDM) is a process where a healthcare professional and patient participate jointly in making a health decision, having discussed the options, their benefits and harms, the patient's values and preferences and also their personal circumstances. [1,2]

Although SDM is firmly embedded within health policy in many countries worldwide, [3-6] there is less evidence for how to convert this policy sustainably into practice at a system-level. [7] An Australian case study of implementation barriers conducted in 2017 recommended that initial efforts should focus on workforce skills development, motivation, communication and marketing, service provision and creating receptive work environments. [8] Furthermore, an analysis of SDM implementation in nine countries completed in 2018 proposes a framework for system-wide implementation that includes policy, professional and patient leadership, development of basic infrastructure (including training, tools and public campaigns), practical support and learnings from demonstration projects, standardised measurement and feedback, together with practical support and coordination of implementation efforts. [9]

There has been increasing interest in the implementation of SDM with most research focussing on specific SDM strategies and/or particular clinical decisions. They have highlighted the importance of embedding SDM within the clinical workflow, importance of staff understanding the purpose and effect of SDM strategies, the need for clinical champions, a team-based organisational culture and positive social and implementation supports. [10,11] An analysis of SDM in aged care also highlighted capacity and organisational readiness as important. [12]

However, very few studies have used a theoretical foundation to drive the process of implementing SDM in clinical practice, [13] despite theory being important for overcoming implementation barriers and providing structure for evaluation. [14,15] The Consolidated Framework for Implementation research (CFIR) provides a pragmatic structure for identifying potential influences on implementation. [14,16,17] It is based on 19 implementation models and has most recently been aligned with 73 implementation

strategies called the Expert Recommendations for Implementing Change (ERIC). [18] Within the current policy context of healthcare, there is an urgent need to develop an evidence-base for the implementation of SDM in clinical practice. This paper reports on a study that used the CFIR to develop recommendations for scaling up the implementation of SDM across government-funded health services in the state of New South Wales (NSW), Australia. It also used a set of core domains for SDM in osteoarthritis care [19] to document staff and patients' experiences of SDM during implementation.

Methods

Setting and Research Context:

The study was conducted in three Osteoarthritis Chronic Care Program (OACCP) clinics in the state of New South Wales (NSW), Australia, spanning three separate Local Health Districts. The sites were identified by expression of interest in 2018 through the Agency for Clinical Innovation (ACI) and agreed to participation in the SDM Demonstration project over a 3–6 month period. The ACI is a pillar organisation of NSW Health and leads health innovation and improvement across the health system (https://aci.health.nsw.gov.au/about/about-us). The research was conducted for and funded by the ACI with the aim of evaluating the process and outcomes of SDM implementation in a small number of demonstration sites. The results were to inform strategies for scaling up SDM implementation across the NSW government-funded health system.

Each of the sites had unique features. One was within a large Sydney teaching hospital, one was in a large rural town and the third was split across two sites in a large urban centre. The size and composition of the clinical service teams varied, as did their models of care (e.g. time between follow-up visits, treatments available, etc) and clinic facilities (e.g. waiting room spaces). All site teams were multidisciplinary in nature and included one or more physiotherapists, dieticians, and administrative support staff, with some sites also including one or more occupational therapists, psychologists, and/or nurses.

Intervention Selection and Development

Given a modest and fixed budget and focus on 'real world' implementation**,** SDM strategies at the sites were based, where possible, on the adaptation and implementation of existing resources in consultation with the clinical service teams.

Initial face-to-face visits to each site were conducted by representatives of the research team (LT, DM, OM) to discuss the project, learn about team composition and model of care, and engage in preliminary discussion about SDM and potential SDM strategies and tools. Each site was asked to select two strategies for a more focussed implementation effort. As a result of these discussions, sites were also given access to a larger suite of resources via a website. Since all three sites had indicated the need for a concise, locally-relevant, paper-based patient decision aid (PtDAs), the University team developed a new set of PtDAs. These were designed for use within the consultation and provided a single page for each

category of non-surgical interventions (exercise, weight loss, physical and psychological, medical). In addition, one site requested a brief consumer training tool for use in their initial group-based consultation. Although the development of new tools was beyond the original scope of the project, the team decided that this was necessary to support implementation. It was clear from the consultation process that the existing resources (see Supplementary File 1) were not entirely fit for purpose and the teams expressed a need for additional tools. We therefore chose a pragmatic approach to adapting our own consumer training materials [20] and developing brief decision aids on tear-off pads, for use within consultations.

Each site selected slightly different SDM strategies for implementation and all reported some adaptation during the implementation period. The selection of strategies was heavily influenced by the model of care and workflows (e.g. patient groups, average time spent in waiting area etc), the configuration of the clinic space (e.g. waiting area with TV) and staff reflection on their own needs. The adaptation of tools and strategies was completed by the clinical teams themselves, usually after a trial period. Some adaptations were shared between sites, both at the team- and professional discipline-level. The researchers became aware of these adaptations during follow-up site visits and also through the telephone interviews. (See Table 1)

(Insert Table 1)

Study Design and Overarching Theoretical Framework:

We studied the implementation process using qualitative interviews with both site staff and patients. The Consolidated Framework for Implementation Research (CFIR) was the overarching theoretical framework for our analysis. [16] This framework allowed us to capture key barriers and facilitators in the processes of SDM implementation and linked them to Expert Recommendations for Implementing Change (ERIC) recommendations for scale up. [18] The CFIR has five domains: 1) Intervention Characteristics, 2) Outer Setting, 3) Inner Setting, 4) Characteristics of Individuals and 5) Processes. We also measured staff and patients' experiences of SDM across a set of seven core domains for osteoarthritis care. [19]

Staff Interviews

Participants and Recruitment

All clinical and non-clinical staff (including reception and team managers) working in the OACCP teams at the three participating clinics were sent an invitation email by their hospital managers. Consent forms were then sent to the University research teams to preserve confidentiality.

Data Collection

Staff interviews were conducted via telephone by MB from the Bond University team to allow for some independence from the implementation process. Participants were interviewed on up to three occasions: baseline, midpoint, and completion. Interviews were audio-recorded and transcribed verbatim by a commercial transcription company.

For the baseline and completion interviews, we adapted questions from the Organisational Readiness for Implementing Change (ORIC) scale which has been mapped onto the CFIR previously. [21,22] For the midpoint interview, we adapted questions from the Theoretical Domains Framework (TDF) [23] to explore 'Individual' barriers and facilitators. For the midpoint and completion interviews, we also adapted the Preparation for Decision Making (PrepDM) scale to qualitatively capture staff experiences of SDM. [24]

Analysis

We used a hybrid inductive and deductive approach to our thematic analysis of the data. [25,26] Since we were exploring different aspects of SDM implementation across three timepoints, the data from each timepoint was analysed separately. In other words, the verbatim transcripts from all baseline interviews were analysed first, followed by the midpoint and then final interviews.

The process we took with each timepoint dataset was as follows. One researcher (MB) had conducted all of the interviews and was familiar with the whole dataset. The transcripts were also allocated across five researchers (OM, LT, RT, MB, HS) ensuring that each person received data from a range of sites and staff roles within the timepoint dataset. Codes and themes were derived inductively as the first step. These were collated and discussed amongst the researchers. A second round of analysis was completed by the researchers on the same data, this time applying the theoretical frameworks outlined above as a template. Each theoretical construct was discussed over a series of meetings to reach consensus on the key themes for that dataset. This process was then repeated for the midpoint and finally the completion datasets, resulting in themes across the ORIC framework at baseline and completion as well as themes across the TDF at the midpoint. We also collated and reported separately on staff experiences of SDM using OMERACT group's core domains of SDM as the theoretical template. [19]

The TDF, ORIC and CFIR frameworks have previously been mapped to each other [22,27] and we used this published work to align our results with the five CFIR domains and its constructs. [17] Furthermore, to assist in policy development and provide recommendations for scale-up, we used the CFIR mapping tool [17] to derive a ranked list of recommended implementation strategies to address our identified barriers and facilitators for SDM implementation. [18]

Patient Interviews

Participants and Recruitment

New patients who received care at one of the three participating sites during the implementation period were recruited by the clinical teams at their first visit. Each month, up to two patients per site were randomly selected and invited to complete a once-only interview, following their second visit to the clinic.

Data Collection

All patient interviews were conducted by OM via telephone, were recorded and transcribed verbatim. The PrepDM scale [24] was adapted for the patient interviews, allowing for a detailed description of SDM

experiences.

Analysis

Patient interview transcripts were also analysed using a hybrid inductive-deductive thematic approach. Two researchers (OM and LT) inductively derived codes and themes across the entire patient interview dataset as an initial step. The same data was analysed a second time using the SDM core domains published by the OMERACT group. [19] By using the same framework for staff and patients' SDM experiences these could be reported side-by-side allowing for inferences about alignment and mismatches.

Results

During the implementation study, eighteen staff members from the three sites participated in at least one of the baseline, midpoint, and completion interviews conducted with staff (Site A: n=7, Site B: n=5, Site C: n=6). Overall, there were 47 staff interviews available for analysis and twenty patient interviews (Site A: n=12, Site B: n=6, Site C: n=2). See Tables 2 and 3.

Key themes for SDM implementation

We identified 39 themes for SDM implementation across the five CFIR domains. These are described below and summarised with supporting quotes in Table 4.

*CFIR Domain 1: Intervention characteristics*SDM interventions should have a clear alignment to health professionals' scope of practice and have endorsements from relevant professional disciplines. Concerns about the efficacy of SDM tools and strategies are likely to be mitigated if positive outcomes are seen for their patients, as this was a strong motivator for implementation. Interventions need to be easy to use for time-poor clinicians and not too burdensome for patients. They should be adaptable and able to accommodate individual clinicians' communication styles, workflows, team compositions, available resources, options and models of care. The design and packaging of SDM interventions should include a substantive SDM training component, as tools alone were seen to be a potential 'hindrance'.

*CFIR Domain 2: Outer Setting*The creation of an authorising environment for SDM implementation by higher authorities such as senior hospital management and the ministry of health were important to staff. Importantly, there was concern that SDM implementation may impact negatively on key performance indicators and benchmarks if patients chose an intervention that was outside the current protocols. Clinical standards and protocols are frequently focussed on clinician recommendations based on best pratice rather than shared decisions and this was seen to be a potential barrier to implementation.

*CFIR Domain 3: Inner Setting*SDM implementation within teams requires an enthusiastic and supportive team coordinator/manager and a concerted effort from the outset to involve all team members. This can be challenging with frequent changeover of staff and part-time employment. A culture of patient-centred

care and good team communication with sharing of experiences and 'troubleshooting' can be effective facilitators of implementation. Communication across the team, consideration of workflows and structural prompts such as reminders can all be helpful. SDM-specific support from outside the team with access to relevant information and training was seen to be highly beneficial. There also appeared to be benefit from peer-support discussions between sites at the professional discipline level, similar to an informal community of practice.

CFIR Domain 4: Characteristics of Individuals At the outset, most clinicians believed that they were already practising SDM but their understanding of the term evolved during the project. In many cases, this evolution shifted from good patient-centred communication with goal setting, to a more explicit discussion of options and the evidence for their benefits. There was some ongoing discomfort discussing the potential harms of treatments but a developing awareness of individual patients' variable preferences for involvement in decisions. For some team members, there was a move away from clinician-directed recommendations as the norm, towards a greater empowerment of patients in decisions. The confidence of team members appeared to increase with SDM practice, with the sustainability and development of skills enhanced by SDM-specific support and site visits by experts.

*CFIR Domain 5: Process*There needs to be clear roles and responsibilities for SDM coordination, resource support and engagement of all team members. Structured team meetings for troubleshooting, the ability to log SDM within health records and the integration of patient-reported measures with feedback were also seen to be helpful for implementation.

Staff and patient experiences of SDM

Table 5 summarises the staff and patient experiences across core domains for SDM in osteoarthritis care. [19] It was clear that staff skills in SDM were evolving and that patients' experiences were variable. Core SDM domains were missing from this limited sample of patients' narratives. Better clarity around SDM decision points within clinical workflow and across the team was needed and greater development of deliberation and values clarification skills.

Systems-level Recommendations for Scaling Up SDM:

Table 6 shows the top 30 recommended ERIC strategies that were generated using the CFIR-ERIC mapping tool after it was populated with our results. These are shown within their ERIC clusters to illustrate the relatively large number of recommended strategies relating to 'Develop stakeholder interrelationships', 'Use evaluative and iterative strategies' and 'Train and educate stakeholders'. The ranking provided through this method also allows health services to select a smaller number of strategies for initial scale-up (See Figure 1)

Similarly, the results in Table 3 could be used to inform training during SDM scale-up with particular attention to the core domains that were not as easily implemented - identifying decisions, values clarification and deliberation.

Discussion

This study illustrates a theory-driven approach to developing scale-up strategies for SDM implementation in a government-funded multidisciplinary osteoarthritis care progam. The partnership between a government agency, SDM researchers and clinical demonstration sites enabled existing SDM resources to be adapted for implementation and evaluated, and for an evidence-based approach to planning and resourcing to occur. Thirty nine themes were identified for SDM implementation across the five domains of the CFIR and our use of the CFIR-ERIC mapping tool generated a ranked list of recommended strategies that had a strong emphasis on developing stakeholder interrelationships, using iterative and evaluative strategies and training and educating stakeholders.

We believe this methodology could be replicated in other settings with different implementation examples. Whilst others have used the CFIR to guide and evaluate implementation of various interventions, [28-30] more recent thinking in implementation science has argued for the combined use of the CFIR and TDF [27] and the linkage of these to evidence-based implementation strategies from the ERIC framework, which we have also found to be a useful approach. [18,31]

A recent scoping review of SDM implementation specifically found 22 published projects, most of them in the USA, with many focussed on the implementation of patient decision aids. [32] Although organisation and system-level characteristics appeared to play a substantive role in the failure to implement SDM, they found it to be infrequently studied. Nevertheless, their preliminary results align well with our own, highlighting the importance of organisational leadership, culture, teams, workflows, clinical guidelines, and education. One study used the CFIR quantitatively to 'score' clinics as low, medium and high adopters of SDM in an effort to measure the effectiveness of implementation. [33] Unlike this study, ours was interested in developing scale-up strategies rather than evaluating effectiveness.

Whilst this project ran on a limited budget across only three sites, it represents a pragmatic, 'real world' attempt at SDM implementation across multidisciplinary teams of different compositions, resources and models of care. In particular, this study was novel in that it evaluated SDM implementation in a multipdisciplinary, allied health team environment.

In addition, this study was impacted somewhat by the Covid-19 pandemic. Interviews were completed at baseline, midpoint and completion but two staff had left the teams and two were redeployed before the completion interviews. The requirements of the Ethics Committee impacted significantly on the recruitment of patients for the consumer component of the evaluation. Consent was only permitted at the second visit to allow time for consideration of the study and could only be obtained by a trained health professional. Some sites had long time periods between initial and subsequent visits (sometimes months) and this created significant delays and low patient participation rates, particularly with the additional impact of COVID-19. In March 2020, the outpatient clinics were closed due to the COVID-19 pandemic. At that point in time, one site had completed the full six months of implementation, one had completed four months and the third had only completed two months. This impacted on the number of

patients recruited. It is also likely to have impacted on the staff experiences, particularly at the site that only had 2 months of implementation.

Conclusions

With the combined use of the CFIR and TDF, alongside a mapping tool to ERIC, a theory-driven approach to developing a scale-up strategy from a small number of demonstration sites was feasible. We used this method with three multidisciplinary osteoarthritis care teams to inform a wider scale-up framework, with implementation strategies particularly focussing on developing stakeholder interrelationships, using iterative and evaluative strategies, training and educating stakeholders, and adapting and tailoring to the local context. This method could potentially be used in other settings with other implementation programs.

Declarations

Ethics approval and consent to participate

Ethics approval was obtained from NSW Health (#ETH09793) along with site-specific clearances. For the staff interviews, invitations were sent to all team members by hospital managers and written consents were returned to the researchers to preserve confidentiality. For the patient interviews, staff at each site obtained patient participants' written consent to participate in an interview during their visit and periodically forwarded completed consent forms to the University of Sydney research team.

Consent for publication

Not applicable

Availability of data and materials

Materials are jointly owned by the Universities and ACI and are copyrighted. Copies can be obtained for non-commercial purposes by contacting the authors.

Competing interests

LT, and OM, and RT are authors of the patient decision aids used in this implementation research. LT and SH are authors of the AskShareKnow questions and DM developed the patient training intervention used at one site. RT is an editor of a book on shared decision-making and receives royalties from the sale of this book. TDB and RO are employees of the agency that funded this research.

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Authors' contributions

LT: Lead investigator, conceptual design of study and interventions, site visits and support, staff training, governance committee engagement, data analysis, manuscript and report writing as lead author. OM: Intervention development, conducted patient interviews, data analysis and interpretation, revision of manuscript. DMM made substantial contributions to the study design and planning, led the development of the brief SDM training intervention for patients, and was involved in conducting staff training at the implementation sites. DMM has critically reviewed and revised the manuscript for important intellectual content and has approved the final version to be published. MB: conducting staff interviews, analysis of staff interviews, revision of manuscript. HS: Study development and data collection design, data analysis and interpretation, revision of manuscript. TDB: Conceptual development, governance committee and revision of manuscript. RO: Conceptual development, governance committee and revision of manuscript. NB: To reduce any conflicts of interest, TDB and RO were not involved in the intervention development, implementation or any data collection and anlaysis simce they were employed by the funder. TH: Initial study development and design, data interpretation, revision of manuscript. RT: intervention development, design of data collection approaches and materials, analysis and interpretation of data, revision of manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Initial SDM Strategies by Site and Adaptations Made Over Time

Site A (Metropolitan teaching)	Site B (Rural)	Site C (Urban dual location)
(Six months of implementation)	(Four months of implementation)	(Three months of implementation)
SDM Strategies Implemented: · *ASK prompt cards and video in waiting room · Printed Patient Decision Aids on tear-off pads (PDAs) · Website resources (online versions of PDAs, brief training video on SDM Three-Talk model [34] and PDA use, Aust Govt decision support tool on Knee **OA, AskShareKnow questions)	**SDM Strategies Implemented:** · Three- hour SDM staff training · Printed Patient Decision Aids (PDAs) on tear-off pads · Website resources (online versions of PDAs, brief training video on SDM Three-Talk model [34] and PDA use, Aust Govt decision support tool on Knee OA, AskShareKnow questions)	**SDM Strategies Implemented:** · Brief SDM training for patients delivered in group · Printed Patient Decision Aids (PDAs) on tear-off pads · Website resources (online versions of PDAs, brief training video on SDM Three-Talk model [34] and PDA use, Aust Govt decision support tool on Knee OA, AskShareKnow questions)
Enabling Strategies: · Three site visits by University of Sydney SDM researchers prior to intervention implementation to deliver materials and provide 'top-up' orientation to staff **and feedback on patient-reported measures** · Proactive and reactive telephone, email, and face-to-face assistance and encouragement by University of Sydney researchers	**Enabling Strategies:** · Two site visits by University of Sydney SDM researchers prior to intervention implementation to deliver materials **and training** and provide 'top-up' orientation to staff · Proactive and reactive telephone and email assistance and encouragement by University of Sydney researchers	**Enabling Strategies:** · Two site visits by University of Sydney SDM researchers prior to intervention implementation to deliver materials and provide 'top-up' orientation · Proactive and reactive telephone and email assistance and encouragement by University of Sydney researchers
Adaptations: · Poster added to waiting room · Developed own adapted PDAs · Informal community of practice	**Adaptations:** · Developed a Question Prompt List based on ASK given to patients in waiting room · Informal community of practice	**Adaptations:** · Used one of the PDAs from Site A · Informal community of practice

* ASK = AskShareKnow questions for patientsto ask (www.askshareknow.com.au) ** OA = osteoarthritis

Table 2: Characteristics of interviewed staff (n=18)

Characteristics	n
Age range	
18-39	9
40-49	9
Gender	
Male	5
Female	13
Role	
Physiotherapist	7
Dietician	3
Nurse or other allied health	4
Non-clinical or administrative	4
Years since training (if clinical role)	
Less than five years	2
5-9 years	2
10-14 years	0
15 years or more	10

Table 3: Characteristics of interviewed patients (n=20)

Characteristics	n
Age range	
55-64	5
65-74	12
75-84	2
85 or older	1
Gender	
Male	7
Female	13
Type of osteoarthritis	
Hip	1
Knee	16
Hip and knee	3
Years since diagnosis	
0-6 months	3
6 months to 1 year	6
1-4 years	5
5 years and over	7
Don’t know	1

Table 4: SDM Implementation Themes Mapped to the CFIR

CFIR Domain & Constructs	SDM Implementation Themes	Supporting Quotes
Intervention Characteristics		
Intervention Source	Tools may not be accepted if perceived as external to professional scope of practice	*'it might be a little bit of change in practice for some to have to use a tool that they haven't created themselves'* *'perhaps look outside the GP guidelines'* *'[a team member] didn't really engage...because there wasn't anything provided for them.'* *'the main problems are some of the therapies on the sheets, the clinicians don't think they should be on there, some of them, I think.'*
Evidence Strength & Quality	Mixed views about efficacy of the tools Concern that patients' decisions may differ from their usual recommendations (loss of clinician autonomy)	*'Actually with the patients, what I have found sometimes if [they] are really stressed or anxious...having something to go through with the shared decision making can actually help…actually sitting down and going through what it is you have control over'* *'For some patients it's really helpful to have that in a written format that they can look at and be involved.'* *'…as a clinician we have an idea of what we think may be best for the patient…that can be quite a challenge if somebody's opted for hydrotherapy and we know that might give them some benefit but at the back of our minds we know that land-based will give them much more benefit'*
Relative Advantage	Strongly motivated by improved patient outcomes	*'We were all genuinely keen to give it a trial and see whether it was effective, whether it's something we can use with our patients to provide a better quality service. We were initially quite nervous, but I think as time went on we could see there were some benefits with some patients.'* *'I think the incentive is to get the most benefit for your patient to make sure they feel empowered and listened to'*
Adaptability	Variable models of care and team composition require flexibility Need to personalise implementation to own style of practice Concern if options not available within the service	*'I guess from the weight loss point of view, just working out how to fit that with my actual practice at the moment'* *'let that clinician work out how they work and not dictate that they have to use that approach`'* *'the options might not be in line with what we are able to provide the patients.. .the politics around what type of interventions are being sort of recommended on the cards'*

		'I think the barrier or sort of the resistance comes up when maybe tools don't match practitioners' viewpoints or it lacks options or isn't aligned to what a service offers' *'I didn't feel it fitted how our program ran, but once we were able to make an adjustment to that and have something that was a bit more appropriate and a bit more realistic with our level, then I felt fine'*
Trialability	N/A	
Complexity	Concern SDM too burdensome for some patients Discomfort with discussing evidence and uncertainty	*'would it confuse the patients? I'm not sure.. .finding something that's very easy for the patient to digest and understand'* *'one of the issues that sometimes comes up is overwhelming the patient'* *'it's been a bit unfamiliar sometimes for the elderly population…they wouldn't naturally ask questions or they may not tell you so much about themselves.'* *"Our shared decision making tool has a lot of reference to the evidence from clinical trials in there and the strength of evidence in a lot of these trials is very poor, and that seems to be the nature of a lot of things involving exercise, for example, and weight loss. It's very hard to have a very strong paper, a strong evidence clinical trial being done. So a lot of the evidence that we have in there is poor quality. So poor quality evidence is difficult to put a lot of weight behind. However, our tools are full of all this evidence, which is of poor quality. I guess we don't want the patients to be looking at this evidence - level of evidence seeing that it's poor quality evidence and have that as a main determining factor of whether or not they choose one treatment over the other because evidence itself, that's one thing that we can go off. But the other thing we can go off is clinician experience and what we see in clinical practice which doesn't necessarily get captured in a paper. So that was one of the things that was a bit of a difficulty, is that it's so heavily reliant on the evidence rather than what we do as clinicians and expert clinicians in the field."* *"This is difficult for us to show people that, yes, you might try and do a strengthening exercise but the evidence is poor."* *'So when we use a decision-making tool, for example, the hydrotherapy pool, we can't really use that with confidence, because we feel a bit embarrassed to show it to the patient because the evidence is not strong. But we still recommend it.'*
Design Quality & Packaging	Training was perceived as useful and possibly more than tools	*'the actual physical tools were maybe a hindrance, boxing you in on what you could offer, but the face-to-face support and contact was helpful'*

		'my colleagues felt that the training did help them to understand the process a lot more. For me, I haven't had that training so I'm not quite sure'. *'They seem much more confident now after the initial training. I think that was quite positive. They are confident to be able to do that'.* *'the training and information we've had to date, I feel had probably been – it's been quite positive'*
Cost	Concern about time constraints of implementing SDM	*'the only stress that I would have is time' ' it's just a time-poor thing' ' there's always a time challenge in the clinic, just trying to get through the patients within the allocated time'* *' I still do feel, as I said, a little bit ambivalent about how am I going to make that fit within the process and not find myself short on time?'* *'you might only have 15 to 20 minute appointments and obviously that's going to affect how you deliver shared decision-making, purely because you have so many other duties of care to that patient during that time'*
Outer Setting		
Patient Needs	Believe patients' values are core to their hospital Concern that patients' choices may misalign with own KPIs	*" [The hospital] want patient centred care to be one of the main - it's like a driving force of the hospital, patient centred care."* *"So the negative things are that some of the things that we are offering in the decision aids we don't advocate as therapists. So we might have something on there that we really probably don't – wouldn't recommend in our usual practice. So there's the risk and chance that patients are selecting something that wouldn't normally be part of our practice."* *"[Shared decision-making is disadvantageous] when the patient has very different beliefs to what we feel should happen. If they are not realistic about what they want to achieve, or not realistic about what they should be doing."* *'One of our standards for accreditation is consumer engagement and a patient centred mode. So this kind of [aligned] with our own values and objectives'*
Cosmopolitanism	N/A	
Peer Pressure	Discussion with colleagues at other sites helpful (discipline-based opinion leaders)	*'perhaps if it was all dietitians working together, that might be a bit different, but because we are all separate, we're all different types of clinicians, then that's probably why we didn't support each other as much'* *'I have liaised a little bit with some of the other dieticians…in terms of establishing what we could use*

		as a – giving the options. That was an influence of working together; that made it a bit easier, talking about it with someone else'
External Policy and Incentives	Support by hospital leadership and health ministry perceived as important	*'I don't think there was any extra support per se. It was just allowed.'* *'I don't think the hospital would give us any more time. I would be willing to put in whatever hours are required, but I understand there's a budget'.* *"… because we still have KPIs and numbers that we are trying to get through, the issue is going to be the time in terms of if - how much extra time is this going to take. So, I think that's where management hopefully will continue to support us."*
Inner Setting		
Structural Characteristics	Changing team composition and part-timers is challenge Smaller teams make it easier to change Physical environment & model of care impacted on strategy selection	*'Unfortunately not all team members were available at the time that was set'* *'It's a very small team, so we're talking about three, four team members. In that way, yes, they have their own little culture and being part of a small team it's easier to control.* *'So, we're a little bit limited in terms of the physical environment and the messaging that we want to put around the waiting room. I think we're limited just with our resources, anyway. We are a part-time small team'*
Networks and Communications	Team support and communication are important	*'I think we've all been a little bit separate or siloed into each of our approach to SDM. ..we do have clinicians where their profession haven't been included so I wouldn't talk to them about it either'* *'it was again a group effort so we were all engaged on that and in terms of I guess we were encouraged to ask one another things if we needed to or discuss any concerns we had amongst the team.'*
Culture	Strong commitment to patient-centred care	*'they want good outcomes for the patients. They're very patient-centred.'* *'our goal obviously is in patient care and ensuring that they have the outcome'*
Implementation Climate (Tension for Change, Compatibility, Relative Priority, Organisational Incentives & Rewards, Goals and Feedback, Learning Climate)	Needs to fit within daily workflow and practice It takes time to adapt and change Reminders and prompts can be helpful	*'at the beginning I did forget a few times, but found if I had my tool out on my consult desk the day of new patients it was a visual reminder for me to use it. Then that's just a habit I've got into, is just to make sure that I've got it out so that I can see it and it reminds me to use it.'* *'so trying to keep the clinic flow and still including something new'* *So from when we first started, just working out the best way to include it in our current practices and how we*

		can fit that in?
Readiness for Implementation (Leadership engagement, available resources, access to knowledge & information)	Team coordinator/manager commitment important Physical space, time & training all impacted Access to SDM-specific support and information beneficial	*'the coordinator of the team is an important person to drive the implementation, and also the consultant from a hierarchy point of view' 'so he directs what the rest of the team does or how the team functions. So if he's on board ..then [that] encourages the rest of the team to do it'* *"just [feeling] the competing interests around time and they're a small team with a three to four month waiting list. So, there is I guess, some nervousness and stress how to fit another thing in and learn to use the tools and incorporate them.'* *'Work environment the space-wise is a bit tricky; we haven't always got always got a lot of space to have all the tools out and sort of showing them to patients as well. So that can be challenging in certain work areas anyway'* *'We may be a little bit limited in our waiting room…we share the facility with other services. It's a part time service shared with other part-time services. So we probably can't use the waiting room exclusively for us'* *'We have had the support from those who are running the process. So that's helpful to have a run through on what the expectations are with the process and to really understand there's no right or wrong way of doing it.*
Characteristics of Individuals		
Knowledge & Beliefs about the Intervention	Belief they already practiced SDM Understanding of SDM components improved over time	*'I think most if not all staff were already providing shared decision making'* *'the concept of shared decision-making is probably something I feel we support anyway. We just probably don't do this in a very formal way.* *'I know for sure that we do already our, sort of own version of shared decision-making if you like, and we do provide options tailored to the individual'* *'I had assumed we were using shared decision-making by asking, but I have learned from that workshop that there's a few more steps involved'* *'But now I feel that we have a clear understanding of what constitutes shared care decision-making, and I feel that we're able to implement that, using the language and using the – a small number of the tools'*
Self-efficacy	Confidence improves with practice Reinforcement and training assists implementation	*'[I'm] definitely more confident than when I first started… I guess it's just practice and familiarity with the tool and getting comfortable with certain questions about it.'* *'I think once we had that interaction more and had that training and discussed what we thought with the*

		resources that we had and all of that, I did feel more confident to implement that'
Individual Stage of Change	Sustainability and skills development helped by external SDM-specific supports and site visits	*'the nurse said, oh, this isn't going to work for us, then we spoke to [University team member] and it was good, they gave us a good idea, you know, don't be tied down to what we've handed you…it was up to us to decide how we were going to do it, how we were going to implement it'.* *'we wouldn't have then got to the stage we did without the personal effort ourselves then to fit it with our organisation'*
Individual Identification with Organisation	N/A	
Other Personal Attributes	N/A	
Process		
Planning	Need clear role and responsibility for SDM coordination in team Ensuring SDM resources always available helps implementation	*'it was part of our documentation that we would be engaging in that process and as far as we structured our opening spiel that was -we had different written information, we had the resources ready to issue'*
Engaging (Opinion leaders, Formally appointed internal implementation leaders, Champions, External change agents)	Importance of all team members being involved Team champion is helpful Senior medical endorsement perceived as important	*'some of our team members their professions haven't been included, so probably [they] won't feel committed and that might have an effect on the team and working together on the project'* *'it's the same sort of thing, isn't it, it's shared decision-making, we're being shared in the decision of how to get it going. It just empowers you to get it done'* *'…with the tool, there will be people who don't feature on it are not going to engage with it because of that reason'* *'I believe that the physiotherapist as the coordinator and lead for the team, has a leadership role and is perhaps the most important'* *[The OACCP coordinator] is a champion in this role. If I need any information, I go to her. So I think she is modelling it and reinforcing it, and expressing it. That certainly has a positive impact on the team'*
Executing	Troubleshooting within the team is helpful	*'I would note down things like what worked or what didn't work or if something I didn't utilise with a patient, the rationale behind why it didn't work…which helps you track your progress along the way'*

	A mechanism for recording SDM in health records helps team	*' working as a team as we do, if we're having difficulties or anyone is having particular challenges, it's something we will try and work on or resolve'* *'there was troubleshooting things and working through things…we were probably a little less confident but then as we got to the point of starting and we worked through any concerns we had'* *'there's no formal mechanism for me to document it in my notes to keep track of…perhaps if I logged it in the notes..'*
Reflecting & Evaluating	Patient-reported measures would be helpful	*'I'd be keen to see if it is helpful for the patient and I'd be quite keen to see how that's measured actually.'*

Table 5: Staff and Patients' Experiences of SDM

SDM Core Domains	Staff Themes	Supporting Staff Quotes	Patient Themes	Supporting Patient Quotes
Identifying the decision	Assumptions that decision preparation occurred with other team members or through ASK prompts and group training Making it part of the routine helps	*'because they've already seen the coordinator they've probably already come to the realisation that decisions need to be made (staff)'* *'I usually just come to a point in the consult where there's a segue in to say there's a number of ways that people can lose weight (staff)'*	N/A	N/A
Exchanging information	Options are made more explicit through use of PDAs, visual cues are helpful Presenting the evidence can be reassuring for some patients	*'having that visual tool in front and using it as part of guiding discussion of working towards where they might want to go and therefore it could help stimulate well, what actions they might take to work towards that' (staff)* *'sometimes it [PDA] really helps to reinforce that they're not making things worse for themselves by doing these activities' (staff)*	Felt they could ask questions Don't recall seeing any of the tools	*Staff were 'open', 'approachable', 'encouraging' (patient)* *'they always ask if you wanted to ask any questions' (patient)*
Clarifying patients' views	Feel less directive when using PDAs Helpful to elicit patient preferences	*'so before it would be more guided by us, but with the tool it became clearer for the patient (staff)* *'what they consider with the exercise component is what they enjoy, actually what they like to do' (staff)*	N/A	N/A
Deliberating	Less comfortable discussing the cons of options	*'so I think the cons, I haven't gone into a lot' (staff)* *'I think the benefit side of things, where it stated about pain and function, that was quite helpful' (staff)*	N/A	N/A
Making the decision	Tend to guide and recommend certain options with	*'I think it probably did give them some ownership' (staff)* *"I guess one of the things I've found is that some of the patients still want me to give*	Mixed reports on decision making role Trusted the advice and	*'I just did what I was told to do (patient)'* *'they checked along the way*

	patient involvement Some patients don't seem to want involvement	*them the answer, rather than them choosing themselves." (staff)* *'I think sometimes patients prefer to be told or to be led through treatment and I think that for some, it can be overwhelming or confusing' (staff)* *"So I think as a clinician we have an idea of what we think may be best for the patient and obviously don't force that on them but I think obviously that can be quite a challenge if somebody has opted for hydrotherapy and we know that might give them some benefit but in the back of our minds we know that land-based will give them much more benefit. It's sort of I guess encouraging a patient to really consider those options, making sure they're informed and accepting even though we think we might know what might be best for a patient, it is up to them to decide at the end of the day" (staff)* *"I think our role as clinicians is to guide patients. While they might see that something might have a low level of evidence, but it's something they're attracted to, I think our role is to guide patients more toward something that's going to help them" (staff)* *"Of course, the biggest challenge is going to be a lot of patients don't want to make a decision, they just want to be told what to do" (Staff)*	recommendations of health professionals	*that I was happy to do things' (patient)* *'there was nothing forced on me that I didn't want to do' (patient)* *'I was really quite happy to follow the advice' (patient)* *'I was more or less coming to those conclusions by myself and they were supporting me in my decisions' (patient)* *'I feel like I've been involved in the decision making, I just don't feel like I've had the knowledge to contribute a great deal to' (patient)* *'They actually gave me a choice and let me make the final decision and recommended the best decisions to be making which I agreed with (patient)'*
Putting into practice	Planning and goal setting feature strongly		Goal setting	*'we talked about what my goal is for the next year' (patient)* *'I had to sort of think about*

				what I really wanted to achieve and the timeframes I was hoping to achieve them in and they'd provide whatever support needed to try and achieve them' (patient)
Impact of the decision	Some patients less stressed Options revisited at follow-up and decisions possibly revised	*'What I have found, sometimes if you've got patients that are really stressed or anxious, they may often be stressed about their pain, and actually having something to go through with the paper work, and the shared decision making, I think it can actually help' (staff)* *'They have the opportunity to express their needs and their wants and therefore, they'll get a better outcome. If nothing else, they'll feel happier because someone's listening to them.' (staff)* *The other strategy is acknowledging that things can change for them over time, so it would be different, we might be looking at different things when they come back as a review appointment' (staff)* *"there might have been some times when patients have picked options that might not have been my first choice, but then that's their decision. Then in later reviews if we did relook at options, they could think, okay, well, I've tried that one and it didn't work, I might move onto this one now" (staff)*	Very positive about their care	*'I think the information is really, really good and the team that worked there seem to be really enthusiastic and keen' (patients)*

Table 6: Top 30 ERIC Implementation Strategies by Cluster (rank in brackets; top 10 underlined)

1. Develop stakeholder interrelationships

Identify and prepare champions (1);

Conduct local consensus discussions (3);

Inform local opinion leaders (4);

Capture and share local knowledge (6);

Build a coalition (7);

Identify early adopters (11);

Facilitation (13);

Involve executive boards (16);

Use advisory boards and workgroups (17);

Organise clinician implementation meetings (18);

Recruit, designate and train for leadership (20);

Visit other sites (26);

Use an implementation advisor (27);

Promote network weaving (29);

Model and simulate change (30).

2. Use evaluative and iterative strategies:

Assess for readiness and identify barriers and facilitators (2);

Conduct local needs assessment (10);

Develop a formal implementation blueprint (14);

Conduct cyclical small tests of change (19);

Obtain and use patients/consumers and family feedback (25);

Audit and provide feedback (28).

3. Train and educate stakeholders:

Conduct educational meetings (5);

Create a learning collaborative (8);

Develop educational materials (22);

Conduct educational outreach visits (23);

Provide ongoing consultation (24).

4. Adapt and tailor to context:

Promote adaptability (9)
5. Utilise financial strategies: Alter incentive/allowance structures (12)
6. Engage consumers: Involve patients/consumers and family members (21).

Figures

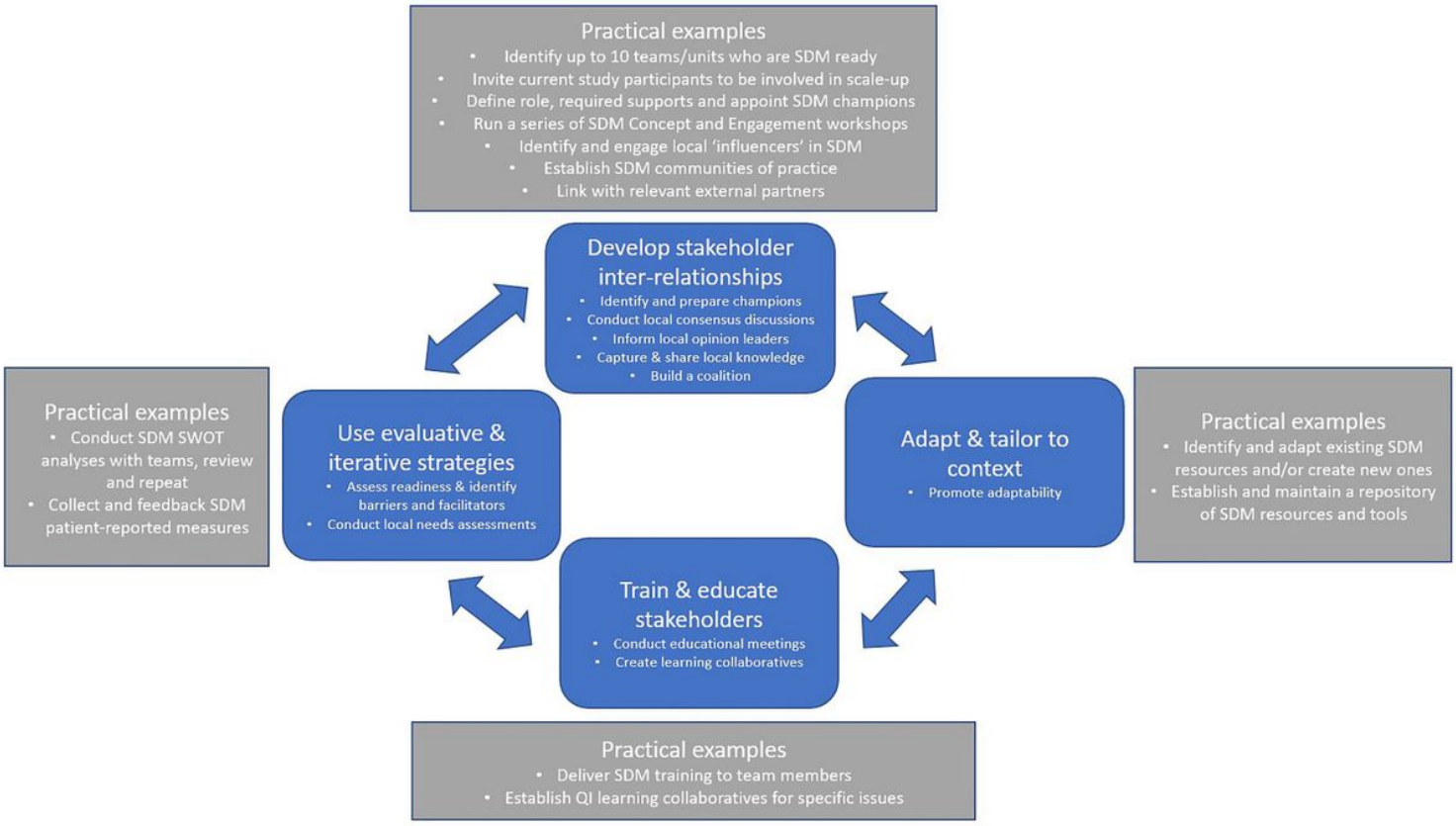

Figure 1

Example of Scale-up Strategy

Supplementary Files

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- JointDecisionsISpaperSupplementaryFile1.docx
- StaRIchecklistforauthorcompletion.docx