





Development of an Implementation Strategy for Patient Decision Aids in Rheumatoid Arthritis Through Application of the Behavior Change Wheel

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Objective. Decision aids are being developed to support guideline-based rheumatology care in Canada. The study objective was to identify barriers to decision aid use in rheumatoid arthritis (RA) within a behavior change model to inform an implementation strategy.

Methods. Perspectives from Canadian health care providers (HCPs) and patients living with RA were obtained on an early RA decision aid and on perceived facilitators and barriers to decision aid implementation. Data were collected through semistructured interviews, transcribed, and then analyzed by inductive thematic analysis. The lessons learned were then mapped to the behavior change wheel COM-B system (C = capability, O = opportunity, and M = motivation interact to influence B = behavior) to inform key elements of a national implementation strategy.

Results. Fifteen HCPs and fifteen patients participated. The analysis resulted in five lessons learned: 1) paternalistic decision-making is a dominant practice in early RA, 2) patients need emotional support and access to educational tools to facilitate participation in shared decision-making (SDM), 3) there are many logistical barriers to decision aid implementation in current care models, 4) flexibility is necessary for successful implementation, and 5) HCPs have limited interest in further training opportunities about decision aids. Implementation recommendations included the following: 1) making the decision aids directly available to patients (O) and providing SDM education (C/M), 2) creating an SDM rheumatology curriculum (C/O/M), 3) using “decision coaches” or patient partners as peer support (C/O/M), 4) linking decision aids to “living” rheumatology guidelines (M), and 5) designing trials of patient decision aid/SDM interventions to evaluate patient-important outcomes (O/M).

Conclusion. A multifaceted strategy is suggested to improve uptake of decision aids.

INTRODUCTION

Shared decision-making (SDM) is essential to high-quality health care (1–3) and is of great importance to patients and physicians alike because it improves patient understanding of treatment options and helps patients make choices that are aligned with their values. Patient decision aids (PtDAs) are tools to facilitate

SDM (4,5). There have been more than 2 decades of research culminating in more than a hundred randomized clinical trials evaluating PtDAs in clinical practice, and the benefits of PtDAs are summarized in a recent Cochrane systematic review (5). Benefits of PtDAs include improving patients' knowledge, risk perception, and active participation in treatment decisions (5). Because of these benefits, the use of PtDAs is emerging as an indicator

Funding for this study was provided by a Canadian Initiatives for Outcomes in Rheumatology Care grant from the Canadian Rheumatology Association. The Alberta Strategy for Patient-Oriented Research (SPOR) SUPPORT Unit is supported by the Canadian Institutes for Health Research and Alberta Innovates (Dr. Zimmerman's primary affiliation). Development of the decision aid was co-funded through PRECISION: Preventing Complications from Inflammatory Skin, Joint, and Bowel Conditions (Canadian Institutes for Health Research team grant: THC-135235). Dr. Barber is recipient of an Arthritis Society's Stars Career Development award, funded by the Canadian Institutes of Health Research, Institute of Musculoskeletal Health and Arthritis (STAR-19-0611/CIHR SI2-169745). Dr. Hazlewood's work was supported by a Canadian Institutes of Health Research New Investigator Award.

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No potential conflicts of interest relevant to this article were reported.

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Submitted for publication February 24, 2021; accepted in revised form February 25, 2021.

of high-quality care, and they are recommended by the National Quality Forum in the United States to support SDM in clinical practice (2,3). Despite this research, there is a major gap in use of PtDAs in routine clinical practice (6).

The gap between the strong evidence for PtDAs and their poor uptake in clinical practice requires additional investigation to identify strategies to increase PtDA use. Potential barriers to use of PtDAs in practice have been previously identified by Zong et al (7) and include time and workflow disruption and physician lack of familiarity with available PtDAs and their role in the decision-making process. Understanding what drives current behavior can help inform what interventions will be helpful to change a behavior, such as uptake of PtDAs. In the field of implementation science, Michie et al (8) describe that behavior can be understood as a function of capability (“psychological and physical capacity to engage in the activity”), opportunity (“factors that lie outside the individual that make the behavior possible or prompt it”), and motivation (“brain processes that energize and direct behavior”) (COM-B). This framework (COM-B), and its behavior change wheel (BCW), has been extensively used to assess implementation problems and inform successful implementation plans for health interventions (9).

We are currently updating the Canadian Rheumatology Association treatment guidelines for rheumatoid arthritis (RA) and have started developing PtDAs aligned with treatment decisions in the guidelines to be used at the point of care to facilitate guideline

implementation and SDM. The objectives of this study were to obtain feedback on a PtDA developed for use in early RA, to understand potential barriers to the use of PtDAs as tools for SDM in RA within a behavior change model from both patient and provider perspectives, and to use this knowledge to develop a national implementation plan for encouraging PtDA use to facilitate SDM.

METHODS

This study was conducted in two phases. An overview of the methods is shown in Figure 1.

PtDA. The PtDA used in this study was codeveloped with patient partners (DPR and LP) from the Canadian Arthritis Patient Alliance according to criteria established by the International Patient Decision Aid Standards Collaboration and revised for clarity following feedback from participants in phase 1 (10). The PtDA outlined methotrexate-based choices of initial disease modifying antirheumatic drug (DMARD) therapy for early RA, namely the choice between methotrexate, methotrexate plus hydroxychloroquine (dual therapy) and methotrexate plus hydroxychloroquine plus sulfasalazine (triple therapy), as well as the option of no treatment. The attributes of treatment choices were derived from a Cochrane Network meta-analysis (11) and our prior work, including a patient preference study (12) and an electronic decision aid (13,14). The final 2-page, paper-based PtDA is shown in the Supplementary Material.

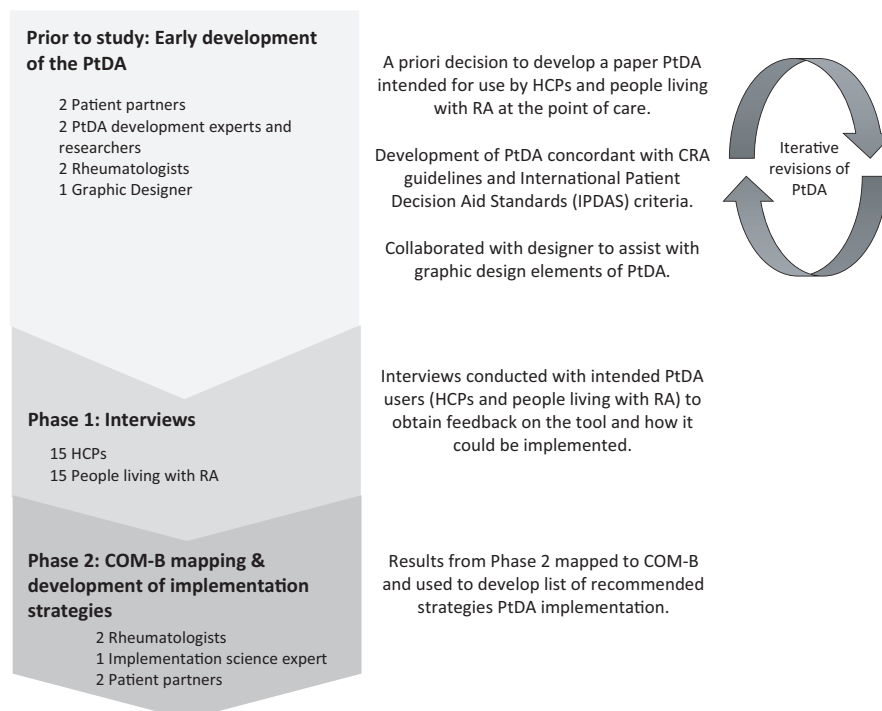


Figure 1. Overview of study phases and contributors. COM-B, capability, opportunity, motivation-behavior; CRA, Canadian Rheumatology Association; HCP, health care provider; IPDAS, International Patient Decision Aid Standards; PtDA, patient decision aid; RA, rheumatoid arthritis.

Phase 1 interviews. *Design.* Aligning with a postpositivist paradigm, we used Yin's (15) case study approach as our qualitative method of inquiry. Use of case studies is an appropriate method of inquiry for exploring "why" and "how" questions when it is assumed the answers likely involve important contextual considerations (16). Therefore, a case study design was ideal to meet the study objective: to develop an understanding of how to implement PtDAs in a clinic setting, with a focus on an early RA PtDA (the contemporary phenomenon), in Canadian rheumatology clinics (real-life context) from the perspectives of health care providers (HCPs) and people living with RA from across Canada in early 2020 (boundaries of the case).

Participants. We used purposive and snowball sampling to identify rheumatology HCPs and people living with RA from across Canada. We sought to recruit a diverse sample from which the breadth and depth of inquiry would help inform a future national implementation of PtDAs aligned with guideline-recommended treatments. Initial recruitment was through electronic communications (eg, emails, website posts, social media) distributed on behalf of the research team by professional and

patient RA organizations. HCPs, including nurses, physiotherapists, occupational therapists, and pharmacists, were recruited through the Canadian Rheumatology Association (CRA) and the Advanced Clinical Practitioner in Arthritis Care program (17,18). People living with RA were recruited through four patient organizations: the Canadian Arthritis Patient Alliance, the Arthritis Society, the Arthritis Patient Advisory Board, and Arthritis Consumer Experts. Data collection continued until data saturation had been achieved.

Data collection. Data were collected through semistructured interviews conducted from February to April 2020. All interviews were one on one except for one HCP interview in which two individuals participated. Two interview guides were developed (one for HCPs and one for people living with RA; available in the Supplementary Material) by NS and reviewed by multiple members of the research team, including clinicians, researchers, an implementation scientist, and patient partners. Interviews were conducted by a research assistant with qualitative research experience (NS). Participants were asked to provide feedback on the early RA PtDA. They were then asked about how PtDAs could be implemented in rheumatology

Table 1. Characteristics of HCPs and PLRA who participated in phase 1 interviews

Participant	Sex	Age	Occupation ^a	Years of experience	Years since RA diagnosis	PtDA experience
HCP01	Male	-	Rheumatologist	31	-	K
HCP02	Female	-	Rheumatologist	-	-	K
HCP03	Male	-	Rheumatologist	-	-	K, U, D
HCP04	Male	-	Other	-	-	K, D
HCP05	Female	-	Rheumatologist	9	-	K
HCP06	Female	-	Pharmacist	19	-	K
HCP07	Male	-	Rheumatologist	-	-	-
HCP08	Female	-	Nurse	15	-	K, TR
HCP09	Female	-	Physiotherapist	-	-	K, U
HCP10	Female	-	Physiotherapist	22	-	K
HCP13	Female	-	Physiotherapist	23	-	K
HCP14	Female	-	OT	25	-	N
HCP15	Female	-	Other	45	-	K
HCP16	Female	-	Rheumatologist	2	-	N
HCP17	Female	-	Rheumatologist	8	-	K
PLRA01a	Female	-	-	-	-	-
PLRA02	Female	22	-	-	8	-
PLRA03	Female	70	-	-	5	-
PLRA04	Male	44	-	-	40	N
PLRA05	Male	78	-	-	22	N
PLRA06	Female	66	-	-	26	K, TCH, U
PLRA07	Female	69	-	-	55	N
PLRA08	Female	44	-	-	29	N
PLRA09	Female	-	-	-	-	-
PLRA10	Female	34	-	-	5	N
PLRA11	Female	57	-	-	7	N
PLRA12	Female	27	-	-	4	N
PLRA13	Male	89	-	-	27	N
PLRA14	Female	24	-	-	2	N
PLRA15	Female	65	-	-	2	N

Numbers next to PLRA and HCP were used to keep track of quotations.

Abbreviations: D, development; HCP, health care provider; K, knowledge; N, no experience; OT, occupational therapist; PLRA, person living with rheumatoid arthritis; RA, rheumatoid arthritis; TCH, teaching; TR, training; U, use.

^a Some of the allied health professionals may have had advanced practice designations; this was not captured.

clinics (the questions were not specific to the early RA PtDA). HCPs were asked to comment on training and opportunities required to use the PtDA in clinical practice. All interviews lasted 20 to 70 minutes and were conducted via video conference or telephone, except for one in-person interview. The interviews were transcribed verbatim.

Data analysis. A single coder (NS) conducted an inductive thematic analysis using the process outlined by Braun and Clarke (19). We used multiple criteria to ensure trustworthiness (20), as outlined in the six phases of thematic analysis (21). First NS familiarized herself with the data, and then transcripts from four participants were reviewed in duplicate with CEHB, and potential codes and themes were discussed. NS then reviewed the remaining transcripts, generated initial codes, and maintained a reflexive journal and audit trail to provide transparency. Weekly peer debriefing meetings were held between NS, CEHB, and GSH throughout the interviewing and analysis process, and decisions were documented. NS generated tables to make sense of connections between themes, which were reviewed by CEHB and GSH throughout, with a return to raw data to review as appropriate. The final results were then reviewed with team members, including patient partners, for review and commentary. NVivo 12 software (QSR International) was used to manage the data.

Phase 2: COM-B mapping. The findings from phase 1 were mapped by team members (NS, CEHB, and GSH) according to the six domains of the COM-B system from the BCW (9). The results of the mapping were reviewed with the research team (including an implementation scientist [GLZ] and patient partners [DPR and LP]) and used to inform a list of recommended strategies to facilitate national implementation.

Ethics statement. Ethics approval was granted by the University of Calgary Conjoint Health Research Ethics Board (REB19-1080). All participants completed an electronic consent form and provided verbal consent.

RESULTS

A total of 15 of 21 HCPs and 15 of 16 people living with RA who contacted the research team participated in the interviews. Interview participants were from Quebec, Alberta, Ontario, Nova Scotia, and Newfoundland. HCPs (73% female) were from various professions and had an average of 20 years of experience working in their field (range 2-45 years; Table 1). The 15 people with RA (80% female) who completed interviews had wide ranges for both age and disease duration (Table 1).

The inductive thematic analysis yielded five major themes presented as lessons learned. The themes, subthemes, and their descriptions are presented in Table 2. Selected quotes from participants that are illustrative of the five main themes are displayed in Table 3.

Lesson 1: paternalistic decision-making is a dominant practice compared to SDM. The first key lesson was that initial DMARD treatment decisions in newly diagnosed RA are typically made in a paternalistic style (Table 3, quote 1). Many HCPs and people living with RA provided analogous descriptions of a decision-making process in which HCPs make a treatment recommendation on the basis of their clinical judgment, personal preference, and provincial reimbursement criteria. People living with RA are then given the choice to take the medication prescribed or not. Many people living with RA viewed HCPs as trusted experts and described deferring treatment decisions to their rheumatologists (Table 3, quote 2). Some HCPs and people living with RA expressed concerns about whether people with a new diagnosis of RA have the capability to participate in SDM about initial DMARD treatment. A few HCPs and people living with RA had participated in SDM for initial DMARD treatment decisions, diverging from the dominant paternalistic decision-making style.

Most HCPs (11 of 15) explained that they would consider using the PtDA with some, rather than all, persons newly diagnosed with RA. Specifically, HCPs said they would be unlikely to use the PtDA with people who deferred the decision to them and who accepted their treatment recommendations. Some HCPs described the possibility of using the PtDA to reinforce treatment decisions that align with their own views. However, other HCPs said they would not use the PtDA because the options presented do not reflect the treatments they currently offer patients (eg, hydroxychloroquine monotherapy). In contrast to the HCP perspective, 13 of 15 people living with RA expressed that they would have benefitted from using the PtDA at the time of their initial treatment decisions if it was available.

Lesson 2: people living with RA need emotional support and access to educational tools to facilitate participation in SDM, especially following initial diagnosis. Participants described how, following initial diagnosis, many people living with RA experience shock, denial, and/or fear and feel overwhelmed with their diagnosis, their prognosis, and the amount of information they receive (Table 3, quotes 3 and 4). Both HCPs and people living with RA believed that at the time of diagnosis, many individuals do not have the psychological capacity to make treatment decisions; however, this is when the initial treatment decision is most often made. Some people living with RA described a period of adjustment when they worked through their shock, after which they become better able to engage in their care. HCPs and people living with RA unanimously agreed that patient education is a necessary step before meaningful engagement in SDM; however, people living with RA expressed that the education received during the initial appointment is often insufficient, and many do not retain it because their heightened emotional state. As a result, they supplement this education with information from other sources, such as the Internet. Many people living with RA described the need for time to process information

Table 2. Summary of themes, subthemes, and lessons learned from phase 1 interviews

Theme	Subtheme	Description	Lesson learned
1. Decision-making	Paternalism	Many HCPs adopt a paternalistic decision-making style and make treatment recommendations on the basis of their clinical judgment, personal preference, and provincial reimbursement criteria.	Paternalistic decision-making is a dominant practice compared to SDM.
	Decisional responsibility	Many patients defer initial treatment decisions to HCPs because they feel ill equipped to participate in SDM.	-
	Mistrust	Some patients feel mistrust toward HCPs with paternalistic decision-making styles.	-
	PtDA (mis)use	Many HCPs described the possibility of using the PtDA with select patients to reinforce the HCPs preferred treatment option rather than to facilitate SDM.	-
	Practice pattern differences	HCPs with practice patterns inconsistent with the treatment options in the PtDA are unlikely to use it.	-
2. Patient needs	Psychological needs	Patient psychological needs are often unmet in the current arthritis model of care, negatively impacting patient participation in SDM.	People living with RA need emotional support and access to educational tools to facilitate participation in SDM, especially following initial diagnosis.
	Education	Patients view education favorably, and patients and HCPs believe it is necessary for SDM.	-
	Time	Patients want time and space for education, reflection, and deliberation during the SDM process, which most do not receive under the current model of care.	-
	Social support	Patients perceive the receiving of support from members of their social network as an important aspect of coping with an RA diagnosis and SDM.	-
	Communication	HCPs and patients believed the PtDA has the potential to facilitate communication and of SDM.	-
3. Implementation feasibility	Barriers	Participants believed that implementing the PtDA would be difficult because of the inherent challenges in changing behavior, perceptions of inability to integrate the PtDA within current models of care without significant disruption or impact, and the shortage of rheumatologists in Canada (ie, limited human resources).	There are many logistical barriers to SDM and PtDA implementation in current models of arthritis care.
	Facilitators	HCPs identified the possibility for the PtDA to complement existing patient resources (eg, medication information sheets). They also highlighted the value placed on evidence-based practice and the importance of demonstrating the benefits of using the PtDA to increase HCP motivation for uptake.	-
4. Flexibility	Practice variability	The variability of clinic structures, staff, and patient characteristics across Canada necessitates a PtDA implementation plan that is flexible and easily customizable.	Flexibility is a necessity for successful implementation of PtDAs.
	Team-based care	Participants believed team-based care would facilitate successful implementation of the PtDA by leveraging team member strengths and mitigating barriers, such as limited rheumatologist time.	-
5. HCP training	Confidence	Many HCPs believe the PtDA will be easy to use and are confident they already have the skills to implement SDM and the PtDA in their practices.	HCPs have limited interest in further training opportunities about PtDAs.
	Brevity	HCPs want training opportunities to be brief (ie, 10-15 min).	-

Abbreviations: HCP, health care provider; PtDA, patient decision aid; RA, rheumatoid arthritis; SDM, shared decision-making.

provided, conduct independent research, receive social support, and deliberate before making treatment decisions.

PtDAs were viewed by HCPs and people living with RA as patient-oriented tools that can facilitate communication and help meet some of the needs of people living with RA. Specifically, participants believed that PtDAs can scaffold conversations

and assist HCPs to communicate medical information clearly in lay language, encourage SDM, invite questions and concerns from people living with RA, help people living with RA express their needs and priorities, and facilitate communication between people living with RA and members of their support network. Both HCPs and people living with RA saw potential benefits of using

Table 3. Illustrative participant quotes from phase 1 interviews

Theme ^a	Quotes ^b
1. Decision-making	1. "I mean, whatever you decide as a physician, if you think triple therapy is the best, why would you give them dual therapy or monotherapy?" (HCP01) 2. "Like, he's the one with the medical degree and the years of experience. What is – and he did say, 'This is what I've found works best, so this is what I'm recommending.' He did, like, there wasn't an opportunity for me to say no or to change something." (PLRA03)
2. Patient needs	3. "Okay, so at that first visit somebody gets a new, brand new diagnosis of rheumatoid arthritis, and that in itself would be overwhelming. And then at that same visit, they're told that they have to start new medications, often which there's more than one, right? And it could even be by injection. And so I think that that first appointment is so overwhelming, right?" (HCP13) 4. "And there is a difference between the 'Oh my God, what's happened to me?' and the 'Okay, I get what's going on, and now what can we do? What do I need to understand?' That takes time to get from A to B." (PLRA06)
3. Implementation feasibility	5. "So, take [the PtDA] home, look at it, come up with some questions, think about where you're at, and then let's - and let's say [the patient] did not want to start, then I would say, you know, 'Let's chat in a couple of weeks over the phone, and then we can go over what your questions are.'" (HCP08) 6. "But it's almost like your first diagnosis and treatment options, it's almost like a two-part visit, I'd think. Though I know that's hard on the healthcare system, but I mean, I know how people feel the first time around." (PLRA07)
4. Flexibility	7. "Like, there's a bazillion ways that they could do things differently than me, so it is not only province-dependent, but then, like, centre- and clinic-dependent." (HCP16) 8. "I guess it depends on the individual. If they're comfortable, you know. Let's say, well, if they had mild-to-moderate RA, if they were comfortable with the doctor, maybe depending on the patient's reaction, the doctor could ask, you know, 'Would you like to discuss medications right now, or do you want to go home and absorb all this information?'" (PLRA01)
5. HCP training	9. "Because I think for the tool itself, it should be fairly straightforward, in terms of you probably wouldn't need a whole lot in terms of extra explanations and stuff, I would think." (HCP09) 10. "I mean, I feel like it's pretty straightforward. I would feel that probably, you know, a really clear email notification just introducing the decision aid and, you know, highlights and what your, what the anticipated benefits are and the goals. I feel like, for me, I think that would be sufficient." (HCP05)

Numbers next to PLRA and HCP were used to keep track of quotations.

Abbreviations: HCP, health care provider; PLRA, person living with rheumatoid arthritis; PtDA, patient decision aid; RA, rheumatoid arthritis.

^a Themes shown here correspond to descriptions and the associated lesson learned for each theme as shown in Table 2.

^b Quotations are numbered for reference in main results.

PtDAs that clearly differentiate between treatment options and include key information to guide people living with RA to make evidence- and value-based treatment decisions.

Lesson 3: there are many logistical barriers to SDM and PtDA implementation in current models of arthritis care.

HCPs and people living with RA unanimously agreed that the implementation of PtDAs is unlikely to be successful if models of RA care do not simultaneously evolve. Because SDM is not standard practice, most HCPs believed that PtDAs will be difficult to integrate within rheumatology clinics as they currently operate. Participants also discussed the inevitability of nonadopters. HCPs who were satisfied with their current practice said they would be unlikely to change. Even HCPs who were interested in using PtDAs anticipated that they would encounter difficulties in changing their practice patterns. The main factor decreasing HCPs' motivation to use the PtDA was the belief that implementing the tool would add time to appointments and the decision-making process (Table 3, quote 5). People living with RA shared this perception (Table 3, quote 6). Participants anticipated that use of the PtDA will add time for four main reasons: 1) it contains additional information than HCPs do not currently give patients; 2) it facilitates the generation of more questions and concerns, which will require additional time to answer; 3) some patients need time to process and reflect before they can generate meaningful questions; and 4) some patients need time to reflect and deliberate before deciding.

The shortage of rheumatologists in Canada was identified by some participants as another barrier. Given that some people living with RA travel far distances to receive care, a treatment decision often must be made at the time of diagnosis. Similarly, long waiting lists were viewed as a barrier because a delay in diagnosis increases the urgency to start treatment, leaving little time for reflection and deliberation.

In addition to barriers, participants also discussed facilitators to PtDA implementation. First, many HCPs discussed their current practice of using drug information handouts and saw the PtDA as a complementary tool. Some HCPs thought this practice could make it easier for them to remember to use the PtDA. Some HCPs thought that hearing about others' experiences with using the PtDA successfully would increase their confidence and motivation to use it. Finally, HCPs believed strongly in evidence-based practice; therefore, many HCPs discussed how national uptake of the PtDA would be facilitated by evidence from studies demonstrating successful implementation and benefits associated with its use (eg, improved patient outcomes, treatment adherence, patient satisfaction).

Lesson 4: flexibility is a necessity for successful implementation of PtDAs.

The variability of clinic structures, staff, and patient characteristics across Canada is such that HCPs and people living with RA thought a one-size-fits-all strategy is unlikely to succeed (Table 3, quote 7). HCPs discussed the need

for flexibility to tailor the implementation of PtDAs to best fit their clinic and adjust as appropriate for individual patients. Specifically, they thought this flexibility should apply to the PtDA format (paper or electronic [online, electronic medical record (EMR) integrated]), which member of the care team introduces it to patients, and the timing of PtDA introduction for each patient (Table 3, quote 8). Many people living with RA, as well as some HCPs, suggested that some aspects of the implementation may be determined by patient preferences and readiness for decision-making.

Team-based care was viewed by both HCPs and people living with RA as a facilitator to mitigate the barrier of limited rheumatologist time. There was a preference of many HCPs and people living with RA for allied HCPs to address questions and concerns because they were perceived as having the relevant

skills and more time for discussions. Team-based care was also believed to encourage people living with RA to review PtDAs with multiple HCPs, which could promote education, information processing, and deliberation. For this to be effective, however, HCPs highlighted the importance of consistent messaging across all members of the care team.

Lesson 5: HCPs have limited interest in further training opportunities about PtDAs. Many HCPs described the presented PtDA as straightforward, self-explanatory, user-friendly, and intuitive (Table 3, quote 9). Additionally, many HCPs believed they had already developed the skills they would need to be able to use PtDAs. As a result, they thought that minimal training would be necessary (Table 3, quote 10). Many HCPs said they would like

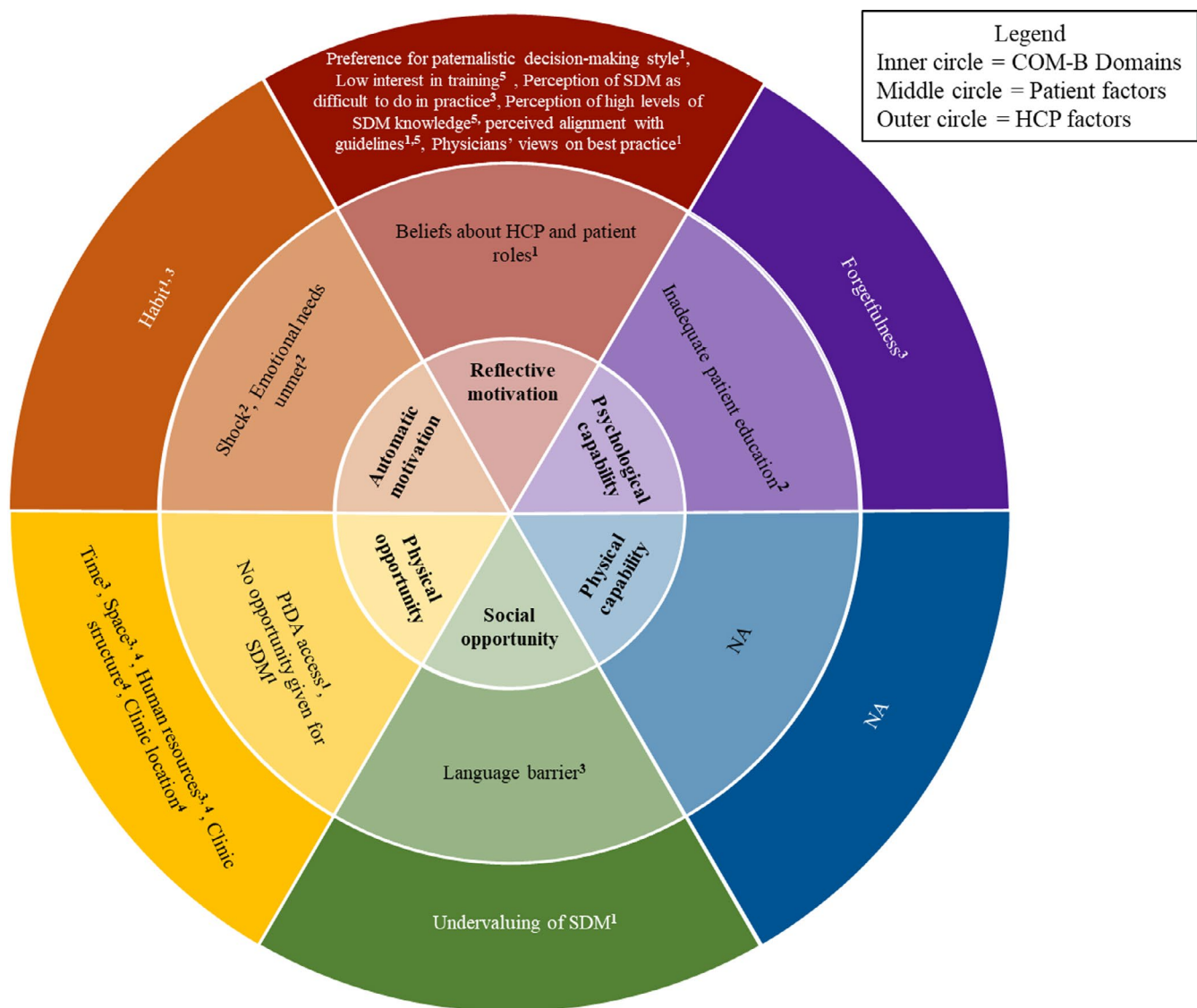


Figure 2. Results from phase 2, in which barriers to implementing shared decision-making (SDM) and the patient decision aid (PtDA) in rheumatology clinics across Canada were mapped to the capability, opportunity, motivation-behavior (COM-B) system (superscript numbers corresponds to the lesson number from phase 1 results). HCP, health care provider; NA, not applicable.

to learn about PtDAs through an email notification distributed by the CRA. Some HCPs had higher levels of openness to training opportunities and expressed interest in attending a presentation or workshop at a scientific conference. Some HCPs voiced the preference for a virtual option (eg, video, online module, webinar) because it would be more accessible for them.

Generally, HCPs wanted knowledge translation and training opportunities to be brief. They said they would be unlikely to engage in a presentation or video lasting longer than 10 to 15 minutes or read something longer than one page. Regarding content, HCPs expressed interest in receiving an overview of the key outcomes and evidence for PtDAs, information about how to use them, and a role-play scenario demonstrating use of the tool. Two HCPs talked about the idea of tiered training opportunities, such that there is something brief to introduce people to the tool and a follow-up opportunity for those who are interested in participating in more intensive training.

Phase 2: COM-B mapping. Results of the exercise mapping barriers to implementing PtDAs to facilitate SDM to the COM-B system are shown in Figure 2. Barriers fell under five of the six COM-B domains, and some related to use of PtDAs, whereas others related to SDM in general. The largest number of barriers for HCPs were classified under reflexive motivation, which included beliefs about preferred treatments, preference for paternalistic decision-making styles in an attempt to promote early and effective treatments, low interest in training on PtDAs and SDM, perception of SDM as difficult to do in practice, perception of existing high levels of SDM knowledge, and beliefs that current practices are aligned with guidelines. From a patient perspective, beliefs (including culturally influenced beliefs) about HCP and patient roles in SDM were key barriers in the reflexive motivation domain. Shock at initial diagnosis and unmet emotional needs were also significant patient barriers classified under automatic motivation; habit was a key HCP barrier in this domain. HCP barriers in the physical opportunity domain included perceived lack of time and resources to facilitate SDM in routine practice, whereas patients had difficulties with access to PtDAs and no opportunity given for SDM. Capability barriers fell under psychological, rather than physical, capability. This included inadequate patient education and HCP forgetfulness to use PtDAs. Social opportunity barriers from an HCP perspective included a culture of undervaluing SDM in favor of a more paternalistic decision-making style. From a patient perspective, language barriers impact social opportunity because PtDAs and other SDM resources may not be shared with patients if they are only available in English.

Recommendations for a national PtDA implementation strategy to facilitate SDM. Six recommendations, as they relate to interventions and policies as defined by the COM-B framework (8), for key elements in a national implementation strategy to enhance uptake of PtDAs to facilitate SDM in RA are

shown in Table 4. The recommendations address a breadth of barriers identified, and although some relate more specifically to implementation of an early RA PtDA, most can be applied to PtDA implementation in general. The first recommendation aims to empower people living with RA to participate in SDM (through educational initiatives about PtDAs as well as by making the PtDA widely available). A number of recommendations address the culture of paternalistic decision-making, for example, through education of trainees (curriculum development) and linkage of PtDAs to rheumatology guidelines to drive practice change. To address practice habits and concerns around ease of use, embedding SDM through the use of PtDAs within clinical care pathways, ideally within EMRs, is recommended. Leveraging allied health team members as “decision coaches” helps to address time challenges but may also better meet patients’ emotional needs. Similarly, peer support may help patients work through the shock and fear and provide needed emotional support. Finally, many HCPs felt their use of PtDAs might be motivated by evidence demonstrating improved patient outcomes with PtDA use, which led to a final recommendation to design future trials in the field of PtDAs and SDM in rheumatology and evaluate patient-important outcomes.

DISCUSSION

Although many PtDAs have been developed to enhance SDM in health care, uptake in routine care has been slow (6,22). This study applies lessons learned from HCPs and people living with RA through the lens of a behavior change model to inform recommendations about key elements of a national implementation strategy for PtDAs, with a focus on an early RA PtDA. Our results suggest that a multipronged approach would be necessary to target the multiple barriers identified. Short- to medium-term strategies include making PtDAs more available to both physicians and patients; linking to “living” treatment recommendations for RA, which have been recently launched in Australia (23) and are planned for the CRA; and embedding PtDAs within care pathways. Longer-term strategies would foster alternative models of care with allied HCP engagement and increased training in the use of PtDAs to foster SDM, which is currently lacking in post-graduate medical education.

Our study builds on earlier work of Zong et al (7), who conducted a mixed-methods study of rheumatologists’ views on and perceived barriers to using PtDAs. Similar themes include the potential disruption to workflow and unfamiliarity among rheumatologists with PtDAs as key barriers to implementation. Zong et al (7) also identified a concern that PtDAs could impair rheumatologist-patient communication through a variety of mechanisms (impairing flow, taking too much time, less factoring in of unique patient-specific factors).

A major learning of the present study was that a new model of care would be needed to implement SDM,

Table 4. Recommendations for implementation of PtDAs and link to the behavior change wheel intervention functions, policy categories, and domains

Recommendation	Intervention functions ^a	Policies ^a	Domain(s) addressed ^a	Barriers addressed	Rationale
Make PtDAs directly available to patients and provide education on SDM (eg, through websites, information provided by patient support programs, social media)	Education, Enablement	Communication/marketing	Psychological capability (PLRA)	Inadequate patient education	Helps address patient needs for education, including about their role in SDM and access to tools for SDM; aim is to empower patients
	-	-	Reflective motivation (PLRA) Physical opportunity (PLRA)	Beliefs about HCP and patient roles PtDA access	-
Creating a SDM curriculum in rheumatology	Education, training, modeling	Regulation (core competency)	Psychological capability (HCP)	Forgetfulness	Improves HCP knowledge about SDM and, overtime, makes SDM practices routine/automatic and fosters a culture of patient-centered care
	-	-	Reflexive motivation (HCP)	Preference for paternalistic decision-making style; perception of SDM as difficult to do in practice	-
	-	-	Automatic motivation (HCP)	Habit	-
Leveraging allied health team members as decision coaches or using patient partners as peer support	Enablement, environmental restructuring	Service provision	Social opportunity (HCP) Physical opportunity (HCP)	Undervaluing of SDM Time, human resources, clinic structure	Addresses time and human resources to facilitate SDM, provide adequate patient education, and address patients' emotional needs
	-	-	Psychological capability (PLRA)	Inadequate patient education	-
	-	-	Automatic motivation (PLRA)	Emotional needs unmet	-
Linkage of PtDAs to "living" rheumatology guidelines	Education	Guidelines	Reflective motivation (HCP)	Low interest in training, perception of alignment with guidelines Habit	Linkages with guidelines will align best practices with best evidence, which HCPs value highly
Embedding SDM through use of PtDAs within care pathways	Education, enablement, environmental restructuring	Service provision	Automatic motivation (HCP)		Embedding SDM through PtDA use in RA care pathways (eg, with EMR and/or clinic protocols) helps to ensure adequate resources to support SDM use, create a culture of best practices, and normalize SDM as a standard of care
	-	-	Reflective motivation (HCP)	Perception of SDM as difficult to do in practice	-
	-	-	Physical opportunity (HCP)	Time, space, human resources, clinic structure	-
	-	-	Social opportunity (HCP)	Undervaluing of SDM	-
	-	-	Psychological capability (HCP)	Forgetfulness	-

(Continued)

Table 4. (Cont'd)

Recommendation	Intervention functions ^a	Policies ^a	Domain(s) addressed ^a	Barriers addressed	Rationale
Designing future trials of PtDAs and SDM in rheumatology to evaluate patient-important outcomes	Education	N/A	Reflective motivation (HCP)	Perception of SDM as difficult to do in practice	High-quality trials will provide additional evidence of the benefits of SDM to help address HCP perceptions of benefits of SDM on important outcomes, including patient adherence, disease activity, and experience with care; this may help to improve HCP acceptance of SDM and improve patient-centered care
			Social opportunity (HCP)	Undervaluing of SDM	

Abbreviations: EMR, electronic medical record; HCP, health care provider; N/A, not applicable; PLRA, person living with rheumatoid arthritis; PtDA, patient decision aid; RA, rheumatoid arthritis; SDM, shared decision-making.

^a Intervention functions, policies, and behavior domains are from the behavior change wheel and are described in the study by Michie et al (8). Although there are nine intervention functions described, the ones relevant to the present recommendations include the following (definition in parentheses): education (increasing knowledge or understanding), persuasion (using communication to introduce positive or negative feelings or stimulate action), training (imparting skills), environmental restricting (changing the physical or social context), modeling (providing an example for people to aspire to or imitate), and enablement (increasing means/reducing barriers to increase capability or opportunity). The interventions of incentivization, coercion, and restriction were not felt to be appropriate for these recommendations. Seven policies are defined by Michie et al (8), and four were relevant (definition in parentheses): communication/marketing (using print, electronic, telephonic, or broadcast material), guidelines (creating documents that recommend or mandate practice; this includes all changes to service provision), regulation (establishing rules or principles of behavior or practice), and service provision (delivering a service). The remaining three policy types by Michie et al (8) (fiscal, legislation, and environmental/social planning) were not included in our recommendations.

leveraging existing multidisciplinary team roles to assist with decision coaching (24). Nurse-led decision coaching trials have been conducted or are ongoing (25–28) in oncology around preference-sensitive treatment or screening decisions but, to our knowledge, do not exist to date in RA and represent an area for future study.

SDM is a competency of training in the core domains of communication and collaboration (29). To our knowledge, there are no RA-specific SDM curricula, according to an updated environmental scan of resources (30) and a website-based inventory of HCP SDM programs (31). Furthermore, it is unclear to what extent any resources for SDM are incorporated into postgraduate medical education. A recent study of audio recordings of clinical encounters in RA also highlights the need for increased education around SDM (32). Evidence suggests that training physicians can improve their knowledge about risk communication and awareness of treatment options (33) and improve uptake of SDM (34). Such findings support the educational component of our implementation strategy.

Including the PtDAs as tools aligned with clinical guidelines and embedding them within care pathways has the potential to help address HCP implementation barriers. Similarly, developing and endorsing rigorous outcomes for trials of PtDAs and other SDM tools is key to their acceptability and uptake. A recent review of PtDAs in RA (35) highlights some of the key challenges and opportunities for research in SDM in our field, including a lack of large-scale trials, a need to incorporate strategies to share goals (36) and evaluate preference phenotypes (37) for SDM, and a need to develop core outcome domains for trials in SDM (38).

Although our study was undertaken with broad stakeholder input from across the country and developed along with patient partners, there remain some potential limitations. The participants in the study reviewed a particular early RA PtDA, and this may have influenced their responses to more general questions about the implementation of PtDAs. We believe that the early RA period is perhaps the most challenging because some of the barriers seen are not necessarily present at the time of other decisions (eg, choice of advanced therapy, in which the emotional burden of a new diagnosis may be lessened). There is a high variability of practice within rheumatology in Canada, and locally specific strategies for implementation will be needed to complement these national efforts. The study was undertaken before the coronavirus disease 2019 pandemic, and it is possible that additional barriers to implementation of PtDAs have arisen. Alternatively, the acceleration of virtual medicine during the pandemic may present new and unique opportunities for the delivery of SDM. The PtDA itself may have certain limitations in that it did not consider cost of treatments, which may be important for patient deliberation (39). Through testing, we determined that the literacy level of our PtDA was too high, and this was rectified, although further testing among a diverse population will be necessary, as has been described for other RA PtDAs (40). Lastly, the coding of the qualitative work was undertaken by a single coder, and it is possible

that having a secondary coder could have resulted in additional extracted themes, although we took multiple steps to ensure trustworthiness, as described in the Methods section.

In conclusion, our study highlights significant, but not insurmountable, implementation challenges for PtDAs in RA. Classifying the results of participant perspectives on a specific PtDA in early RA, as well as on PtDAs in general, and mapping these perspectives to a model of behavior change has generated multiple recommendations to consider during implementation. Future work will continue at a national level to address the recommendations as we build toward developing PtDAs aligned with our national treatment guidelines. Ultimately, we aim to improve SDM in rheumatology practices through increased use of PtDAs.

ACKNOWLEDGMENTS

We thank Judy Chiu for the development of the patient decision aid and Victoria Bohm for her assistance conducting phase 1 interviews.

AUTHOR CONTRIBUTIONS

All authors were involved in drafting the article or revising it critically for important intellectual content, and all authors approved the final version to be published. Dr. Barber had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study conception and design. Barber, Spencer, Bansback, Zimmermann, Li, Richards, Proulx, Mosher, Hazlewood.

Acquisition of data. Spencer.

Analysis and interpretation of data. Barber, Spencer, Zimmermann, Richards, Proulx, Hazlewood.

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