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COMMUNICATION

Introducing the Strategy for Patient Oriented Research (SPOR) Evidence Alliance: a partnership between researchers, patients and health system decision-makers to support rapid-learning and responsive health systems in Canada and beyond

OPEN ACCESS

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Abstract

This is the introductory paper in a collection of four papers on the Strategy for Patient-Oriented Research (SPOR) Evidence Alliance, a pan-Canadian research initiative that was funded by the Canadian Institutes of Health Research in September of 2017. Here, we introduce the SPOR enterprise in Canada, provide a rationale for the creation of the SPOR Evidence Alliance, provide information on the mandate and approach, and describe how the SPOR Evidence Alliance adds to the health research ecosystem in Canada and beyond.

Key words: patient-oriented research, patient engagement, health research, knowledge translation

Introduction

This is the introductory paper of a collection of papers that focus on the Strategy for Patient-Oriented Research (SPOR) Evidence Alliance. The SPOR Evidence Alliance is a pan-Canadian research initiative to increase the engagement of patients and public in the design, development, and implementation of health research. It was funded by the Canadian Institutes of Health Research (CIHR) in September of 2017 (SPOR Evidence Alliance n.d.-g; Tricco 2017). The collection consists of the following papers: this introductory overview, an article outlining the governance structure of the SPOR Evidence Alliance (Lunny et al. 2021), an article providing information on the research services it has provided for decision-makers in Canada and beyond (Zarin et al. 2021), and a final article that focuses on evaluating patient engagement within this initiative (Li et al. 2021). This paper introduces the overall SPOR enterprise in Canada, provides a rationale for the creation of the SPOR Evidence Alliance within the SPOR enterprise with information on its mandate and approach, and describes how the SPOR Evidence Alliance adds to the health research ecosystem in Canada and beyond.

What is SPOR?

The SPOR enterprise is a national strategy facilitated by the CIHR and launched in Canada in September of 2011 (Collier 2011) with funding from the federal government to develop and implement the strategy. The vision and goals of SPOR were developed under the leadership of CIHR with guidance from a 12-member advisory board drawn from across Canada and a series of consultations with federal, territorial, and provincial government officials; academic and health care organizations; health charities; agencies; and professional associations and colleges as well as provincial health research funding agencies (Canadian Institutes of Health Research 2011). These extensive consultations revealed gaps and opportunities for improvement in the capacity, coordination, and funding of patient-oriented research in Canada. The SPOR initiative was "... designed to help provinces and territories meet the challenge of delivering high-quality, cost-effective health care by ensuring that the right patient receives the right treatment at the right time" (cihr-irsc.gc.ca/e/44000.html). CIHR's proposed definition of definition of a patient is "... overarching and inclusive of individuals with personal experience of a health issue and informal caregivers, including family and friends" (Canadian Institutes of Health Research n.d.-d). "Patient-oriented research" is defined as "... a continuum of research, from initial studies in humans to comparative effectiveness and outcomes research, and the integration of this research into the health care system and clinical practice" (Canadian Institutes of Health Research 2011).

SPOR consists of multiple collaborative research networks that exist nationally (**Supplementary Material S1**). Current networks include provincial and territorial SUPPORT Units (Support for People and Patient-Oriented Research and Trials) who to act as local conveners of researchers,

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policymakers, politicians, health care providers, and patients to address pressing health care issues (Canadian Institutes of Health Research n.d.-g); innovative Clinical Trials (iCT) platforms to increase Canadian competitiveness in iCT research (Canadian Institutes of Health Research n.d.-c), the SPOR Canadian Data Platform to improve access to health data for health services research in Canada (Health Data Research Network Canada n.d.), the SPOR National Training Entity to facilitate capacity-building in patient-oriented research across Canada (Canadian Institutes of Health Research n.d.-f), and the SPOR Evidence Alliance (SPOR Evidence Alliance n.d.-g); the latter is the focus of this paper. These entities were strategically funded to bolster patient-oriented research in Canada.

The SPOR initiative was designed to act as a catalyst to engage patients as partners in research through various mechanisms, such as facilitating research, funding research, and supporting synergies between patients and other decision-makers (such as health care providers, health care managers, policymakers) in research (Canadian Institutes of Health Research n.d.-a). The guiding principles of SPOR include involving decision-makers (such as patient and public partners, health care providers, health care managers, policymakers) in all aspects of research (e.g., from question formulation, through the research conduct to dissemination as a coauthor on the completed research); 1:1 matched funding with nonfederal government partners; use of a multi-disciplinary approach; and use of an outcome-driven, performance measurement, and evaluation approach. The SPOR contends that integrating patients, health care providers, and other decision-makers in research will ensure that research focuses on relevant questions and that results are used to inform changes in policy and practice (Canadian Institutes of Health Research n.d.-a) and initiate changes to improve health outcomes.

Why create the SPOR Evidence Alliance?

The SPOR Evidence Alliance was established in 2017 to address disparities in the production of decision-maker driven knowledge synthesis, as well as in the development, dissemination, and uptake of guidelines. It was revealed that a concerted, well-resourced, and collective approach was required for knowledge synthesis, knowledge translation, and guideline development and uptake in Canada. CIHR requested proposals in December of 2016 and 175 researchers, trainees, patient/public partners, and other decision-makers collaborated to co-create the SPOR Evidence Alliance vision and proposal, with 41 cash and in-kind sponsors secured as 1:1 matched nonfederal funding partners. The proposal was submitted to the CIHR in May of 2017 and, in September of 2017, it was announced that the SPOR Evidence Alliance (formerly known as the REACH network) was the selected proposal after a rigorous peer-review process involving eight international peer reviewers.

What are the SPOR Evidence Alliance's values and mandate?

The SPOR Evidence Alliance is grounded in the principles of equity, diversity, and inclusivity, as well as transparency and collaboration. The principles are conceptualized with a focus on the integrated knowledge translation approach (Kothari et al. 2017), whereby decision-makers become equal members of the research team, as well as the SPOR Patient Engagement Framework (Canadian Institutes of Health Research n.d.-h), which fosters a climate where patients are meaningfully engaged in all SPOR-related activities. These principles are embedded in all activities that are conducted by the SPOR Evidence Alliance, such as selecting members for committees within our governance structure, identifying members for peer-review panels for our annual seed grant competitions, and priority setting of patient-identified research topics. The SPOR Evidence Alliance leadership operationalizes these principles by always using a growth mindset (i.e., continuous learning) and abundance mindset (i.e., distributing funding and projects in an equitable manner) for all activities. For example, the funding, opportunities, and scientific recognition are shared widely across the SPOR Evidence

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Alliance. Researchers affiliated with the SPOR Evidence Alliance are expected to engage with decision-makers so that they become active and engaged members of the research team to co-produce research, generating high-quality information that is relevant, timely, and easy to use to support decision-making (**Fig. 1**).

Regarding the mandate, the specific aims for the SPOR Evidence Alliance are outlined in **Box 1**.

The SPOR Evidence Alliance welcomes interdisciplinary and diverse members, including knowledge users, patient/public partners, independent researchers, and research trainees. The SPOR Evidence Alliance defines knowledge users as individuals in positions to use research findings to make informed decisions about health policies, programs and (or) practices (e.g., policymakers, health care providers). Patient and public partners are types of knowledge users who play a critical role in the health research ecosystem as consumers of health care. Independent researchers are defined by the SPOR Evidence Alliance as individuals with an independent research appointment at an academic or research institution (e.g., scientist, assistant professor). Trainees are defined by the SPOR Evidence Alliance as graduate students or post-doctoral fellows who work under the formal supervision of an independent researcher. Trainees can become a member of the SPOR Evidence Alliance if their supervisor is also a member. Since inception, the SPOR Evidence Alliance has grown to 342 members at the time of writing this paper (**Figs. 2** and **3**).

Members of the SPOR Evidence Alliance are provided with opportunities to collaborate on research projects and funding competitions and build linkages with a wide network of researchers, research trainees, patients, and public and other knowledge users across Canada committed to evidence-informed health systems transformation (**Fig. 4**). They also have access to a monthly newsletter to stay up to date on our latest news, our activities, and various research opportunities. Members can join one of six governance committees and provide guidance on the progress and strategic direction of the SPOR Evidence Alliance (Lunny et al. 2021). Consistent with the SPOR Patient Engagement Framework (Canadian Institutes of Health Research n.d.-h), each committee includes at least two patients. Participants are provided the opportunity to lead research projects in response to decision-maker requests received through the query services; this process is outlined in depth in a later article in this collection (Zarin et al. 2021).

The SPOR Evidence Alliance aims to create a culture of learning and innovation that grows, supports, and sustains an environment for patient-oriented research using the SPOR Capacity Development Framework (Canadian Institutes of Health Research n.d.-b), which focuses on essential characteristics of training environments (e.g., multidisciplinary mentorship) and career support (e.g., balance and value of clinical and academic goals). Opportunities for professional development provided include access to online courses and learning modules, workshops, and other capacity-building activities. In addition, trainees and early career researchers (i.e., researchers in their first five years of appointment) can participate in an annual seed grant competition, which provides $10,000 CAD for each awarded project (two to four per year; six funded in total at the time of writing this paper) (**Supplementary Material S2**) (SPOR Evidence Alliance n.d.-a).

Our scientific approach and four core research methods

The SPOR Evidence Alliance specializes in four core research methods, which are described below: patient-oriented research, knowledge synthesis, guideline development, and knowledge translation. Using an integrated knowledge translation approach (Kothari et al. 2017) within each activity, investigators of the SPOR Evidence Alliance answer health-related research queries for policy-makers, health care providers, health care managers patients, and other types of decision-makers who request scientific evidence to inform relevant health policy and practice decisions. The SPOR Evidence

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Fig. 1. A visual profile of the SPOR Evidence Alliance.

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Box 1. Goals of the SPOR Evidence Alliance

1. Provide timely responses to the needs of decision-makers (including patients) for evidence to inform health policy and practice changes.
2. Strengthen partnerships with organizations and individuals who use research by meaningfully involving them in governance, priority setting, the conduct of research and the uptake of research findings.
3. Improve Canada-wide collaboration and coordination of health research to avoid duplication of research efforts.
4. Support new researchers and trainees by offering more collaboration, training, and mentorship opportunities.
5. Create meaningful partnerships with national and international organizations to increase the visibility and uptake of Canadian research.
6. Make research findings more easily accessible by publishing findings with open access.
7. Advance the science of four core research methods (knowledge synthesis, knowledge translation, guidelines, patient-oriented research).
8. Support and strengthen partnerships within the SPOR enterprise.

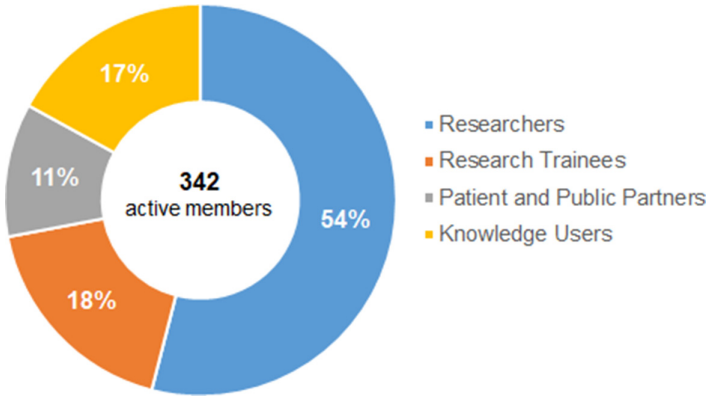

Fig. 2. Member distribution of the SPOR Evidence Alliance (N = 342).

Alliance also supports methods studies to advance the science of these core activities, such as through our annual seed grants, methods support that is provided across all queries, methods guidance on patient and public engagement across all activities, and evaluation of these engagements on an ongoing basis. Additionally, training and mentorship opportunities are provided in the four core research methods to new researchers, research staff, decision-makers, and other stakeholders in research.

Core method 1 – Patient-oriented research

The SPOR Evidence Alliance defines patient-oriented research as engaging patients as equal partners in research and focusing on patient-identified priorities to directly improve patient outcomes. Our work is conducted by multidisciplinary teams in partnership with relevant decision-makers and aims

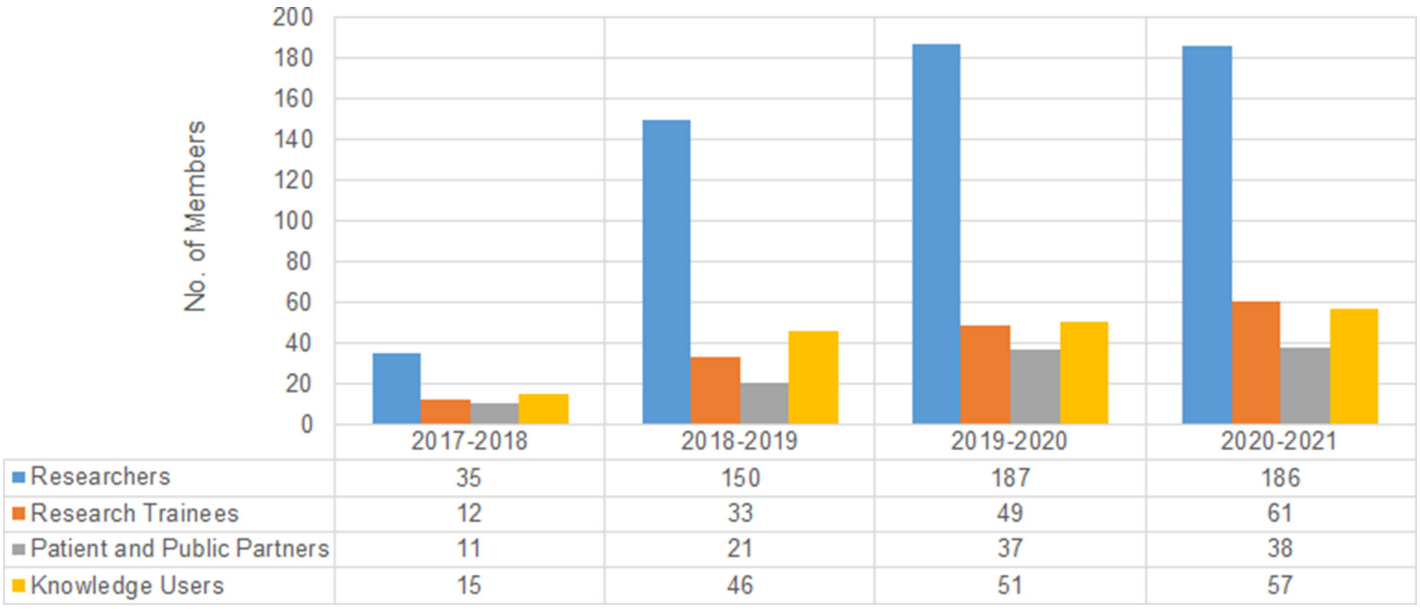

Fig. 3. Growth of membership by year.

to facilitate the ethical application of the evidence to improve health care systems and practices. The SPOR Evidence Alliance follows a robust and inclusive approach using the SPOR Patient Engagement Framework (Canadian Institutes of Health Research n.d.-h) that involves patients in all aspects of research, from prioritization of research queries to distribution and application of research findings. Patients and the public are included in all the SPOR Evidence Alliance's core research activities, leadership, and governance. The SPOR Evidence Alliance uses an evidence-based approach when developing patient and public engagement strategies to accommodate any known barriers and facilitators to participation and ongoing commitment (Tricco et al. 2016; Tricco et al. 2018b; Soobiah et al. 2019).

Core method 2 – Knowledge synthesis

The SPOR Evidence Alliance defines a knowledge synthesis as a systematic summary of important studies on a specific research question. All types of knowledge synthesis are eligible for conduct, such as scoping reviews, rapid reviews, systematic reviews, network meta-analysis, and overviews of reviews (Tricco et al. 2018a). An integrated knowledge translation approach is used for all knowledge syntheses (Kothari et al. 2017). Decision-makers are engaged throughout the entire research process. Engagement of knowledge users in the research project is planned based on the project timelines, available funds, and their interest and availability. Patient and public partners and research trainees/graduate students are always encouraged to be included as members on the project team.

Core method 3 – Guidelines

We define a guideline as an evidence-based statement prepared to help improve the quality and consistency of care for specific clinical conditions or situations. Guidelines incorporate the most current clinical information based on the best available scientific evidence, professional opinions, patient values and preferences, costs, and feasibility of the recommended interventions, into a framework of best practices to promote the best patient outcomes. The goal of the SPOR Evidence Alliance is to support the development of clinical practice guidelines that are more patient-centered and

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	Researchers	Research Trainees	Knowledge Users	Patient and Public Partners
Query Services	Lead research queries and involve your trainees to support as appropriate.	Support research queries your supervisor or mentor is leading.	Submit research queries.	Submit research topics, and/or engage as partners in the research process.
Governance	Join one of six standing committees of the governance structure.	Join one of six standing committees of the governance structure.	Join one of six standing committees of the governance structure.	Join one of six standing committees of the governance structure.
Training	Participate in free learning and training opportunities (e.g., courses, workshops, learning modules). Network with other learners.	Participate in free learning and training opportunities (e.g., courses, workshops, learning modules). Network with other learners.	Participate in free learning and training opportunities (e.g., courses, workshops, learning modules). Network with other learners.	Participate in free learning and training opportunities (e.g., courses, workshops, learning modules). Network with other learners.
Funding	Encourage your trainees to participate in the Annual Seed Grant competition and provide mentorship. Peer review applications.	Participate in the Annual Seed Grant competition. Peer review applications *(if not an applicant)*.	Encourage trainees in your organization/ team to participate in the Annual Seed Grant competition and provide mentorship. Peer review applications.	Peer-review applications submitted to our Annual Seed Grant Competition.
Newsletter	Receive monthly newsletters with the latest updates on research and opportunities.	Receive monthly newsletters with the latest updates on research and opportunities.	Receive monthly newsletters with the latest updates on research and opportunities.	Receive monthly newsletters with the latest updates on research and opportunities.
	Submit any news, opportunities, and success stories to be featured in the newsletter issue.			

Fig. 4. Members are engaged across the core functions of the SPOR Evidence Alliance.

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user-friendly using an integrated knowledge translation approach, while avoiding unnecessary duplication of guideline efforts nationally. This involves engagement with all patient and public partners, knowledge users, and stakeholders, such as professional societies, to identify the needs and preferences of the knowledge users by assessing the barriers and facilitators for recommendation uptake (Légaré et al. 2011). Barriers and facilitators are identified through qualitative interviews or focus groups of relevant knowledge users, including patients after the completion of each guideline, guided by theory and evidence (Michie et al. 2008; Phillips et al. 2015). The current best evidence is used to develop more implementable guidelines (Straus et al. 2013).

To facilitate sharing of guidelines across groups in Canada, as well as reduction in duplication, the SPOR Evidence Alliance created a guideline asset map (SPOR Evidence Alliance n.d.-b). This interactive asset map provides an inventory of more than 1,000 guidelines developed by more than 100 guideline developers across Canada. The database was recently used in a study exploring management of conflicts of interest in the development of health guidelines that was published in the *Canadian Medical Association Journal* (Traversy et al. 2021).

Core method 4 – Knowledge translation

The SPOR Evidence Alliance defines knowledge translation as the process of summarizing, distributing, sharing, and applying the knowledge uncovered by researchers to improve the health of Canadians and to strengthen the health care system using services and interventions proven to be effective. Our approach to knowledge translation is to use theory and evidence to tailor the specific dissemination or implementation approach according to the needs of the specific knowledge users. A range of dissemination strategies is used, such as posting preliminary results on preprint servers, publishing in open-access journals, conducting webinars and workshops, and presentations with key stakeholders and the user of tools such as our website, our monthly newsletter, and social media campaigns (e.g., Twitter, @SPORAlliance; LinkedIn). The SPOR Evidence Alliance also holds an annual general meeting to share learnings and foster collaboration.

Our core functions

Governance structure (Lunny et al. 2021)

The SPOR Evidence Alliance approach includes a governance structure, which is described in detail in the second paper in this collection (Lunny et al. 2021). The governance structure is fit-for-purpose; it includes six standing committees and currently consists of 64 members who are researchers, patient and public partners, individuals from other SPOR entities, policymakers, health system managers, and health care providers from across Canada and beyond. Each committee has a specific mandate that is revisited annually and works in a collaborative environment with cross-communication to the other committees. Diverse membership is encouraged based on several factors such as gender, geographic location, official language (English and French), and lived experience. Conflicts of interest are managed using a comprehensive policy that we developed and made available online (SPOR Evidence Alliance 2020).

Query services (Zarin et al. 2021)

The major activity of the SPOR Evidence Alliance is responding to queries from decision-makers at all levels of the health system, as described in detail in the third paper (Zarin et al. 2021). The SPOR Evidence Alliance specializes in supporting decision-makers' needs for purpose-driven and context-sensitive evidence to inform health policy, health practice, or a health service decision using the four core research methods. Research requests are accepted from decision-makers across Canada and internationally who are seeking evidence to address gaps in their health systems (**Table 1**). For a

Table 1. Methods used to support research requests

Research Approach	Definition
Knowledge synthesis	A knowledge synthesis systematically summarizes all important studies on a specific research question to help make sense of the varying evidence on the topic. It allows health policy and practice decisions to be made based on all available scientific information, rather than a single study or expert opinion, which can be misleading.
Guidelines	A clinical practice guideline is an evidence-based or consensus-based statement prepared to help improve the quality and consistency of care for specific clinical conditions or situations. They incorporate the most current clinical information based on all available scientific evidence and professional opinions into a framework of best practices to promote the best patient outcomes.
Knowledge translation	Knowledge translation is the process of summarizing, distributing, sharing, and applying the knowledge uncovered by researchers to improve the health of Canadians, and strengthen the health care system through the use of services and interventions proven to be more effective.

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research query to be eligible, it must fulfill a set of criteria. It must: (*i*) involve focused on an aspect of health or the health care system, as defined by the World Health Organization (World Health Organization 2006); (*ii*) be related to an existing or planned health policy, health practice, or health service decision; (*iii*) be made by or on behalf of a decision-maker (including health care providers, policymakers, patient partners), and (*iv*) be capable of being addressed with one of the four core research methods.

Over our first four years of full operation (following the time required to set up the research query service), 148 queries have been submitted to the SPOR Evidence Alliance, with 94 addressed, 30 in progress, six currently undergoing prioritization, and 24 withdrawn or ineligible. As COVID-19 emerged, we pivoted to help provide knowledge users with evidence on 22 pandemic-related queries in collaboration with COVID-END (COVID-END n.d.), another pan-Canadian, CIHR initiative. For every completed project, a questionnaire is sent to the decision-maker who commissioned the research, and their feedback is used to continuously improve our processes.

Patient and public engagement (Li et al. 2021)

A key tenet of the SPOR Evidence Alliance's approach is patient and public engagement, which has been evaluated in the fourth paper (Li et al. 2021). Patient and public partners are engaged in all levels of the SPOR Evidence Alliance. They are invited as co-chairs of governance committees, as well as members of the various committees. Patient and public partners are engaged as members of the research teams that answer the research queries. Any patient or member of the public from Canada can also submit queries for research topics that are prioritized annually. Adequate support and flexibility are provided to ensure patient and public partners can meaningfully contribute to discussions and decisions. This support system includes creating welcoming environments that promote honest interactions, cultural competencies, training, and education, as well as offering fair financial compensation for time and contribution based on a policy co-created with patient and public partners (SPOR Evidence Alliance n.d.-f; Hamilton et al. 2018). Several training opportunities are provided, such as a three-week course on the production of rapid reviews, and webinars with researchers on how to effectively engage on the relevance of the research proposals.

What does the SPOR Evidence Alliance add to the health research ecosystem?

The SPOR Evidence Alliance contributes to Canada's health research ecosystem by providing a service to decision-makers answering important health and systems related research questions

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through our four core research methods described above. Other similar types of pan-Canadian initiatives exist in Canada. Examples include those that are not as broad as the SPOR Evidence Alliance, each being predominantly focused on knowledge translation capacity-building (e.g., Knowledge Translation Canada (n.d.)), or systematic reviews (e.g., Cochrane Canada (n.d.)), or knowledge synthesis on drug safety and effectiveness topics for specific knowledge users (e.g., Drug Safety and Effectiveness Network Methods and Applications Group for Indirect Comparisons (n.d.)), or rapid inventories completed within 2–3 hours on health system topics (e.g., RISE (Rapid Improvement Support and Exchange n.d.)), or rapid reviews specific to COVID-19 (e.g., COVID-END (n.d.)). Internationally, research initiatives with similar principles include the Agency for Health Research and Quality (n.d.), Joanna Briggs Institute (n.d.), Cochrane (n.d.), the Campbell Collaboration (n.d.) and National Institute for Health Research Applied Research Collaboration (National Institute of Health Research n.d.). The SPOR Evidence Alliance is broad regarding the types of queries completed, research approaches, focus on capacity-building, connections between knowledge users and researchers, and the breadth of decision-makers who can access these services. The breadth of our collaborative approach can be seen as a major strength of the SPOR Evidence Alliance.

The SPOR Evidence Alliance also promotes team-based science and provides a model for collaboration and support. Seventeen main knowledge synthesis and knowledge translation teams are included across Canada, and linkages between these teams and our 58 knowledge user members are facilitated. Transparency in communicating the methods and results of projects, using reporting guidelines, is supported. Similarly, the SPOR Evidence Alliance advocates for best open science practices, such as prospective registration of protocols and making completed reports available in an open access platform. Furthermore, the SPOR Evidence Alliance adheres to CIHR's sex- and gender-based analysis policy (Canadian Institutes of Health Research n.d.-e) by ensuring sex and gender are considered in all activities, such as ensuring adequate representation of sex and gender across committees and ensuring that sex and gender is considered across all projects and is analyzed appropriately.

Impact of the SPOR Evidence Alliance

Across the 124 queries, knowledge users (e.g., policymakers, health care providers) were engaged in 194 occurrences, patient partners were engaged in 180 occurrences, and graduate students and research trainees were engaged in 95 occurrences (note: count data based on frequency of occurrences, as individual's names are not collected due to privacy concerns). The first query was completed in November of 2018. Patient partners were included in 39% and trainees were included in 51% of the 124 queries (SPOR Evidence Alliance n.d.-d). Multiple projects were coordinated across different geographic regions (e.g., nationally and multiple provinces), reducing duplication across Canada. This has resulted in 104 reports, 34 peer-reviewed publications/submissions, and 109 other knowledge products such as power point presentations, one-page briefs, blog posts, op-eds, and infographics. The goal is that all projects are made available on the SPOR Evidence Alliance website (SPOR Evidence Alliance n.d.-c; SPOR Evidence Alliance n.d.-e). Across our 34 capacity-building initiatives over the past 3 years, 1,338 learners were reached. This has also resulted in collaborations on an additional 40 peer-reviewed grants with investigators across Canada, 3 are awaiting a decision, and 27 of which were successfully funded.

After each query is completed, surveys are emailed to the decision-maker who submitted the query. Across the surveys completed, 100% agreed or strongly agreed that they received timely responses to their questions throughout the process from the research team, 80% agreed or strongly agreed that they received regular updates from the research team, 100% agreed or strongly agreed they were able to provide their feedback freely to the research team with 90% agreeing or strongly agreeing that their feedback was heard, 100% agreed or strongly agreed that the final deliverable was of high quality, and

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100% were overall satisfied with the query service overall. Additional impact stories of the SPOR Evidence Alliance are provided in Zarin et al. (2021).

In summary, the SPOR Evidence Alliance has achieved many successes since beginning its operations in September of 2017. The SPOR Evidence Alliance will be evaluated later in 2022 using a summative evaluation approach. The results of this evaluation will be used to further strengthen the SPOR Evidence Alliance, as well as to develop a strategy for sustainability beyond the grant funding period.

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Author contributions

ACT developed the outline and wrote the manuscript. WZ helped with the initial outline and revised the manuscript. ACT, FC, AMA-S, JAC, AL, LCL, CG, PM, DM, HC, IDG, IDF, WI, SB, and SES obtained funding, conceptualized the research initiative, provided guidance on the operation and direction of the initiative, and reviewed the manuscript. All authors contributed to the interpretation and narrative of the paper, reviewed, and revised the content, approved the final version, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of the work.

Competing interests

All authors have nothing to declare.

Data availability statement

The data and materials used and (or) analysed during this study are available from the corresponding author on reasonable request.

Supplementary material

The following Supplementary Material is available with the article through the journal website at doi:10.1139/facets-2021-0127.

Supplementary Material 1

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