A Scalability Assessment of the Aging, Community and Health Research Unit (ACHRU) Community Partnership Program for Diabetes Self-Management for Older Adults with Multimorbidity and their Care Partners in Prince Edward Island

Final Report

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Executive Summary

This report summarizes the results of a scalability assessment of a self-management intervention for older adults with diabetes and multimorbidity and their caregivers in Prince Edward Island (PEI), Canada. Provincial working group members, including patient partners, health and social care providers and leaders, and researchers, actively contributed to the scalability assessment. The Intervention Scalability Assessment Tool (ISAT) guided data collection and analysis (Milat et al., 2019). Multiple methods were used to collect data, including an environmental scan, document review, and interviews with key informants. A provincial workshop was held to review and refine preliminary scalability findings developed by the research team, determine the intervention's scale-up readiness, and identify strategies to enhance scalability. In PEI, patient partners, health and social care providers and leaders, provincial decision-makers, and researchers gave the highest relative ratings to the priority of scaling-up ACHRU-CPP to address diabetes and multimorbidity among older adults in PEI, and the feasibility of obtaining the implementation infrastructure required to scale-up the program. Lower ratings were assigned to the evidence of effectiveness, delivery setting and workforce, and sustainability domains. Participants recommended: 1) starting scale-up of the intervention with priority populations, which would help to maximize its impact and add evidence of effectiveness; 2) initiating scale-up at sites where the intervention leverages the existing infrastructure to maximize cost-effectiveness, and 3) gathering more evidence on program effectiveness and implementation from these targeted scale-up efforts in order to motivate and sustain continued intervention scale-up efforts.

Most Critical Factors and Next Steps to Scaling-up the ACHRU-CPP in PEI

Provide provincial policymakers, providers, and community stakeholders with ***tailored messages that summarize the results of the scalability assessment***: - communicate the sense of urgency in addressing the problem. - highlight the intervention's strong alignment with the current provincial priorities (i.e., mental health, primary care renewal, virtual care, and human resources planning). - emphasize the potential benefits of the ACHRU-CPP (e.g., self-management, mental health) - demonstrate a need for this intervention over others - share patients' and providers' experiences with the intervention
Engage key stakeholders and leverage existing resources, such as ***Patient Medical Homes, Patient Medical Neighborhoods, and community (electronic) health records***, to: - identify the priority populations (i.e., those who may benefit the most) and sites (i.e., best test case) - determine strategies to reach the population(s) - develop the projected volumes.
Consider the strategy for scaling up the intervention within the context of the ***current provincial shortage of health human resources***. Determine the staff complement to optimize implementation and sustain the program, to avoid additional burden on existing resources, and allow for flexibility in team composition. Provide education, training, and support to build providers' capacity, ensure appropriate skill set to meet the needs of a high-risk target population, increase buy-in, and promote ownership.
Develop a ***phased horizontal approach to implementation and scale-up (i.e., across different sites or groups)*** that is co-designed in collaboration with key stakeholders including municipal councillors, provincial policymakers, primary care managers and interdisciplinary community health providers (e.g., physicians, nurses, dietitians, kinesiologists), social service providers, the provincial diabetes clinical lead, patient advisors and supporting organizations (e.g., Diabetes Action Canada), to further demonstrate effectiveness. Adapt the intervention to fit the needs and context of the community while ensuring delivery of core intervention components.
Embed key outcome measures in electronic health records to support ***continuous program monitoring and evaluation***.

Introduction

Diabetes is a significant global health concern. The World Health Organization reports that the number of people with diabetes worldwide was 422 million in 2014 (World Health Organization, 2016). Among Canadians, the prevalence of diabetes was estimated to be 14% (5,719,000) in 2022 and is expected to rise to 17% (7,277,000) by 2032 (Diabetes Canada, 2022). The prevalence of diabetes in Prince Edward Island (PEI) is 24.7% for people aged 65-79 years and 27.4% for those aged ≥ 80 years (Chief Public Health Office, 2018). The East and West Prince regions have a significantly higher prevalence of diabetes (13.4%) in adults aged ≥ 20 years compared to other regions of PEI (i.e., 10.1% in Queens Urban; Chief Public Health Office, 2018). Management of older adults with diabetes is particularly challenging. Multimorbidity is common for older adults with diabetes, with an estimated 40% to 50% having 3 or more comorbidities (Fisher et al., 2016). Older adults with diabetes and multimorbidity experience reduced function and quality of life, high mortality, and increased health service use (Gruneir et al., 2016). While education and exercise programs to support individuals with diabetes exist in PEI, these are not specific to older adults (Health PEI, 2021; Government of PEI, 2020). Older adults require tailored diabetes education and self-management support, considering their multiple chronic conditions, including mental health concerns (Miksch et al., 2009; Miklavcic et al., 2020).

The Aging, Community and Health Research Unit, Community Partnership Program (ACHRU-CPP), is a complex, integrated 6-month self-management intervention for community-living older adults with diabetes and multimorbidity and their caregivers. The ACHRU-CPP aims to improve self-management for older adults with diabetes and other chronic conditions by enhancing mental and physical functioning, and to support their family/friend caregivers. The ACHRU-CPP was co-designed by patients, caregivers, home and community-care providers, and researchers, in response to a gap identified by older adults in the self-management of their diabetes and other conditions. Markle-Reid et al. (2016) established the feasibility, acceptability, and preliminary effectiveness of the program through a pilot study conducted with a primary care-based Diabetes Education Program and a community seniors' centre. Subsequently, a pragmatic randomized controlled trial (RCT) in Ontario (ON) and Alberta found that older adults who received the ACHRU-CPP experienced greater improvements in quality of life, and self-management, and greater reduction in depressive symptoms compared to usual diabetes care, at no additional cost to society (Markle-Reid et al., 2018). The current multi-phase study aimed to examine the implementation and effectiveness of the ACHRU-CPP in diverse populations (e.g., high system users) and primary care and community settings, and to examine the program scalability in selected study provinces (Ploeg et al., 2022). A multi-site implementation-effectiveness RCT design (Curran et al., 2012), was used to evaluate ACHRU-CPP implementation and effectiveness, across three Canadian provinces (i.e., ON, Quebec and Prince Edward Island [PEI]), and six study sites (2 sites per province) (Ploeg et al., 2022). The trial was completed successfully in ON and PEI, but not completed in Quebec due to impacts of the COVID-19 pandemic.

As the final phase of the current research program, independent assessments of the scalability of the ACHRU-CPP were conducted concurrently in ON and PEI. This report outlines the methods, results and conclusions of the scalability assessment conducted in PEI. Scalability refers to the *ability* of a health intervention, demonstrated to be effective, to be expanded into routine practice to reach an eligible population while remaining effective (Milat et al., 2019). Scale up is the actual process of integrating the intervention into routine practice expansion (Milat et al., 2019). Assessing the scalability of promising programs is important as many are scaled up without supporting evidence (Indig, et al., 2017) and conversely, others with demonstrated effectiveness are not translated into the health care system (Ben Charif, 2017).

Methods

The Intervention

The ACHRU-CPP was collaboratively delivered in PEI by an intervention team comprised of primary care providers (a registered nurse [RN] and registered dietitian [RD]) and a community program coordinator (kinesiologist). Key components of the program included virtual or in-person home visits by the RN or RD; group wellness sessions by the RN, RD, and community program coordinator that provided health education, low-impact physical activity and peer support; team-based case conferences to discuss and individualized plans of care; caregiver support; interprofessional collaboration; and nurse-led care coordination and system navigation.

Charlottetown and Summerside served as study sites in PEI. The same intervention team delivered the program to participants at both sites. Due to staff shortages, Health PEI was not able to allocate an RN and RD from the provincial diabetes program to deliver the intervention. Therefore, all intervention team members (i.e., RN, RD, community program coordinator), were hired through the University of PEI. Since the RN and RD were not certified diabetes educators, the PEI intervention team received orientation and training related to diabetes care and resources in PEI, from Health PEI's Provincial Diabetes Clinical Lead, in addition to the standardized training program that was provided to all intervention teams.

Study Design for Scalability Assessment

Multiple methods were used to assess the scalability of the ACHRU-CPP. These included the analysis of publicly available documents, semi-structured interviews with key stakeholders, review of current trial results and evidence from prior ACHRU-CPP trials/studies, and feedback and recommendations arising from a provincial knowledge exchange workshop to discuss and rate the scalability of the ACHRU-CPP.

The Intervention Scalability Assessment Tool

The Intervention Scalability Assessment Tool (ISAT) (Milat et al., 2020) was used as a framework to guide data collection and analysis. The purpose of the ISAT is to support practitioners and policy makers in conducting systematic assessments of the suitability of health interventions for population scale-up within health and community settings of high-income countries.

The tool consists of 10 domains and a total of 19 readiness assessment questions. Investigators adapted the 19 questions to fit the current study. The first 5 domains in Part A of the ISAT examine the problem that is being addressed (diabetes among community-living older adults with multimorbidity); the intervention proposed to address the problem (the ACHRU-CPP); its effectiveness, costs, and benefits, and political/environmental contexts. The remaining 5 domains in Part B of the ISAT include questions about intervention implementation (e.g., reach, acceptability, delivery setting and workforce), and sustainability. Part C provides a summative assessment generated from the scoring of Readiness Assessment Questions in Parts A and B of the ISAT.

Data Collection and Analysis

Four main data sources were used to inform the ISAT questions: 1) input from members of the provincial scalability working group, 2) document analysis, 3) key informant interviews, and 4) feedback and recommendations arising from a provincial knowledge exchange workshop to share findings from the scalability assessment with stakeholders. A description of the methods for each component of the scalability assessment follows. Ethical approval for this study was obtained from the research ethics boards of all partner sites. Verbal informed consent was obtained from all participants, prior to their participation in the scalability assessment.

Scalability Assessment Working Group

Provincial working groups were formed to provide guidance to the core research team throughout the scalability assessment process. Participants included members of the study's steering committee and local community advisory board members, including patient and public research partners, researchers, primary care and community service providers and administrators, and policy- and decision-makers in each province. Working group members contributed to the scalability assessment by, a) identifying potential key informants, b) advising on relevant literature and policy documents, c) reviewing a summary of the scalability assessment of the ACHRU-CPP, and d) participating in a provincial knowledge exchange workshop to provide feedback on the findings of the scalability assessment and to rate the scalability of the ACHRU-CPP in their province.

Document Analysis

Data from several sources informed the scalability assessment, including: a) an environmental scan of current community-based diabetes programs and services within the province, b) a review of national, provincial and regional health policy documents regarding older adults with diabetes and multimorbidity and their caregivers, and current research initiatives relevant to community-based diabetes care for older adults, c) a review of published and grey literature on the prevalence and impact of diabetes and multimorbidity in community-living older adults and effective community-based programs for this population, and d) evidence from the foundational

studies on the ACHRU-CPP and the qualitative and quantitative findings from the current RCT of the program's implementation and effectiveness.

Scalability Key Informant Interviews

Individual semi-structured interviews (n=5) were conducted virtually with a purposeful sample of key stakeholders, including policy- and decision-makers at the local, provincial, and national levels, and senior practitioners and managers, to answer questions in the ISAT that could not be addressed using other sources. Content analysis was used to analyze the interview data to address the questions within each of the ISAT domains (Hsieh & Shannon, 2005).

Provincial Knowledge Exchange Workshop

A virtual provincial knowledge exchange workshop was held over 2 half-days, on December 9th and 14th, 2022. The purpose of the workshop was to, a) review and gather feedback on the preliminary findings of the scalability assessment performed by the research team, b) identify components of the intervention that need to be strengthened and barriers to be addressed to enhance the scalability of the program, and c) to finalize the rating of the program scalability and its readiness for scale-up. A comprehensive summary of the preliminary findings of the scalability assessment from the document review and the key informant interviews was shared with all workshop participants in advance of the event (see **Appendix A**).

Workshop participants included provincial scalability working group members, key informants who participated in individual interviews, as well as others who had expertise in policy or scale-up of interventions. Day 1 of the workshop focused on the questions in the domains in Part A of the ISAT (Setting the Scene) and Day 2 focused on Part B of the ISAT (Intervention Implementation Planning). The McMaster research team provided a brief overview of the preliminary findings of each domain and workshop participants were then encouraged to share their questions, feedback, and reflections on the findings. Lastly, participants were then invited to rate the readiness for scale-up for each ISAT domain, with an option to abstain from rating. Research team members did not participate in the rating exercise.

A facilitator led the workshop and used a software program to collect participants' anonymous responses to each ISAT question in real time. Questions were rated on a four-point scale; not at all (0), to a very small extent (1), somewhat (2), to a large extent (3), for each domain of the ISAT. Participants were encouraged to discuss the rationale for their ratings or to enter it anonymously into the software. Scores for each question in a domain were averaged across all scorers (except the research team) and averaged across the questions within a domain to create a final score for an ISAT domain, as per the ISAT guidance (Milat et al., 2019). A radar plot was used to create a visual representation of the average score for each ISAT domain. The radar plot helped to highlight differences in scalability across the 10 domains, to focus subsequent discussions on strategies to address domains where scalability was lower.

Scalability assessment results can be used to inform provincial recommendations about the appropriateness of developing a scale-up plan across various settings and populations, the need for further analysis, and actions to enhance intervention scalability. The workshop also facilitates the next phase of the scale-up process at the provincial level by providing opportunities to build meaningful partnerships.

Results

Participants

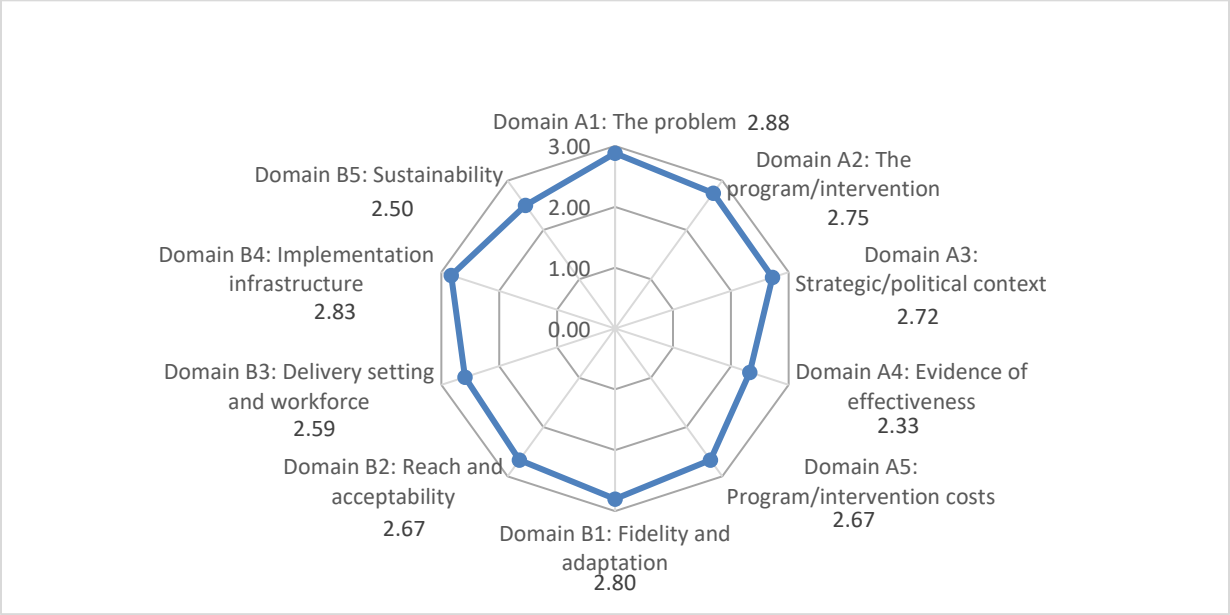
In total, 8 participants attended Day 1 of the knowledge exchange workshop and 6 attended Day 2. These included research team members from the University of PEI, as well as members of the PEI Department of Health and Wellness, Health PEI, and 2 patient and public research partners who were members of the PEI Scalability Assessment Working Group.

Assessment of Scalability

Overall, the potential scalability of the ACHRU-CPP was highly rated. Each readiness assessment question scored between 2.0 and 3.0 on average, on a 0-to-3-point scale. Domains that scored the highest relative ratings were, Domain A1, The Problem (2.88), Domain B4, Implementation Infrastructure (2.83) and Domain B1,

Fidelity and Adaptation (2.80). Domain A4, Evidence of Effectiveness, was rated the lowest relatively (M=2.33). **Figure 1** depicts the ISAT radar plot. Mean scores for each domain are summarized in **Appendix B.**

Figure 1. ISAT Radar Plot of the ACHRU-CPP Scalability Assessment Mean Scores for PEI



Scalability Assessment, Part A: Setting the Scene

Domain A1: The Problem

In Domain A1, workshop participants were asked if diabetes among community-living older adults with multimorbidity is of sufficient priority to warrant scale-up of the ACHRU-CPP to address the problem. This domain received the highest relative mean score in Part A of the ISAT tool, 2.88 (SD=0.11).

Participants commented that diabetes is a significant issue in PEI and that the province needs programs like the ACHRU-CPP. Participants recommended the following strategies to convey the priority of the problem:

a) emphasize the uniqueness and added benefit of the ACHRU-CPP compared to existing programs, i.e., its focus on multimorbidity among older adults with diabetes,

b) demonstrate the urgent need for the intervention.

Domain A2: The Intervention

Domain A2 asked participants to consider whether the intended outcomes of the intervention addressed the needs of the target population and/or the problem (i.e., supporting self-management for older adults with diabetes and multimorbidity). This domain received a mean score of 2.75 (SD=0.14).

Participants agreed that the intended outcomes of the intervention addressed the needs of the target population; however, also noted that the intervention may affect (prevent onset or worsening of) more than one chronic condition, suggesting the need to capture additional measures that reflect the broader potential impacts of the intervention, such as improved management of chronic conditions, reduced frailty, or reduced risk of institutionalization. Participants discussed the importance of including other patient relevant outcomes. Another suggestion was to include the Diabetes Distress Scale (Polonsky, et al., 2005; Fisher et al., 2012), as this is used in clinical practice in some settings in PEI to provide a comprehensive measure of the burden experienced by older adults in their day-to-day management of the condition.

Domain A3: Strategic/Political Context

Domain A3 asked participants to consider to what extent addressing the problem of diabetes and multimorbidity in community-living older adults is consistent with current policy/strategic directions or priorities,

and if scaling up the ACHRU-CPP would be strategically useful to potential funding agencies. This domain received an overall mean score of 2.72 (SD=0.03).

Participants agreed that the ACHRU CPP aligns nicely with a number of government priorities and initiatives. The intervention is consistent with the province's move toward integrated health care as outlined in the *Primary Care Road Map* (Government of PEI, 2021). It is also well aligned with key provincial strategies related to Diabetes and Mental Health and Addictions. The program is also congruent with the provincial Action Plan for Seniors (Government of PEI, 2018), in that it supports the priority of Home First, aging-in-place in home and community, by offering support to older adults in their home environment.

Similarly, participants largely agreed that there is an opportunity to integrate the ACHRU-CPP into the Patient Medical Homes and Patient Medical Neighbourhoods that are part of the province's current primary care renewal initiative. Participants emphasized the importance of identifying a target population for the program to ensure the greatest benefit, given that the program is resource-intensive (i.e., team-based care, home visits, group exercise led by a kinesiologist) and would require infrastructure (e.g., for group education sessions). However, it was also noted that, "it could be challenging to dedicate funding to a defined population group such as older adults, without impacting other identified priorities within the [Diabetes] strategy such as diabetes supplies (all ages), access to diabetes self-management for all ages." They suggested that successful models, such as the province's INSPIRED COPD program, and a working committee of key stakeholders could serve as a template for integrating and focusing the intervention. Participants also suggested that the establishment of Patient Medical Neighbourhoods, with links to health and social services, and the introduction of electronic health records (Telus Collaborative Health Record) in the province could provide valuable population data, to identify needs by region and facilitate the identification of older adults who could potentially benefit the most from the program.

Domain A4: Evidence of Effectiveness

Domain A4 asked participants to consider if the ACHRU-CPP will be effective in addressing the problem in the target population based on the evidence available. This domain received the lowest relative mean score in all 10 of the ISAT domains, 2.33 (SD=0.16).

Participants' scoring mainly reflected the findings from the most recent pragmatic RCT, which found no statistically significant differences between the intervention and control groups in any outcomes. These findings were thought to be attributable, in large extent, to implementation challenges encountered due to the COVID-19 pandemic. Results from the previous feasibility study in ON and the RCT run in ON and Alberta demonstrated the effectiveness of the ACHRU-CPP, which complement the positive findings from the qualitative interviews that accompanied the current RCT. Participants also suggested consideration needs to be given to other measures to assess the program's effectiveness, such as a global self-management measure and biological measures (e.g., glycostated hemoglobin, blood pressure). Participants wondered if the program targeted the right group (i.e., those in most need versus those who already demonstrated high self-efficacy in managing diabetes). The research team acknowledged that the current trial was not able reach older adults with diabetes and multimorbidity who are high users of health system, as originally intended.

Domain A5: Intervention Costs and Benefits

Domain A5 asked participants to consider the known costs of delivering the ACHRU-CPP and its quantifiable benefits, and to rate whether these benefits could outweigh the costs of implementing the program. This domain received a mean score of 2.67 (SD=0.16).

The results showed that participants receiving the intervention reported higher total health service use costs than those receiving usual care. This difference was primarily attributable to the cost of the intervention. The median per-person intervention cost for in-person or virtual delivery of the intervention was $559.20. One participant commented, "the qualitative benefits for participants are not insignificant, however, to justify the costs we would need to demonstrate further improvement in health outcomes such as quantitative measures."

Participants noted that given the finite financial resources available to support several competing priorities in diabetes care, it is important to carefully consider which evidence-based programs will provide the best outcomes for patients. Suggested strategies to support the adoption of ACHRU-CPP included delineating a clear target population and the potential associated volumes served by the program, expanding the reach of the program beyond those with diabetes (e.g., other chronic diseases identified as policy priorities), and leveraging available resources to collect outcome data (e.g., build referral prompts and outcome measures into the

Collaborative Health Record) that could be used by program providers and decision-makers in real time to support continuous learning and improvement of the program.

Scalability Assessment, Part B: Intervention Implementation Planning

Domain B1: Fidelity and Adaptation

Domain B1 asked participants if there were any changes/adaptations to the core components of the intervention to maximize its scalability. This domain received a mean score of 2.80 (SD=0.13).

Participants agreed that, based on results of the foundational studies of the ACHRU-CPP, and its similarities to the INSPIRED COPD program, the key components of the program are reasonable and meet the needs of older adults with diabetes and multimorbidity. Participants suggested that the program should be delivered in both in-person and virtual formats to offer participants flexibility in how they engage and to promote program accessibility. Participants again suggested that the eligibility criteria for the program should be refined to identify those older adults who will potentially benefit the most. Participants noted that the introduction of electronic health records in the province would facilitate continuous monitoring of program fidelity (i.e., the extent to which the program was delivered as intended), and the ongoing collection of feedback from both program recipients and providers about what is working well and areas for iterative program improvements.

Domain B2: Reach and Acceptability

Domain B2 asked participants to consider the program reach and acceptability of the ACHRU-CPP for community-living older adults with diabetes and multimorbidity. This domain received an overall mean score of 2.67 (SD=0.04).

Participants indicated that the ACHRU-CPP in its current form is likely to be acceptable to the target population at scale and has the potential to reach its intended target population. However, some participants suggested that eligibility for the program could be expanded to those 55 years of age and older. Another suggestion was made to leverage the introduction of electronic health records to automate case-finding (i.e., flag potential participants based on information in the electronic health record). Participants also emphasized the importance of maintaining close formal partnerships with the provincial health authority, Health PEI, and the PEI Ministry of Health, as well as the University of PEI, on next steps related to scaling up the program.

Domain B3: Delivery Setting and Workforce

In Domain B3, participants were asked to consider the setting within which the ACHRU-CPP is delivered and the workforce (i.e., the individuals who would be directly involved in implementing the program to the target population at scale). This domain received an overall mean score of 2.59 (SD=0.16).

Participants noted that, in the foundational studies of the ACHRU-CPP, the program was delivered by RNs and RDs who were certified diabetes educators. Participants indicated that if the target population involves medically complex older adults with diabetes and multimorbidity, then the intervention should be delivered by RNs and RDs who are certified diabetes educators. Significant nursing staffing shortages in the province was raised as a workforce challenge. While kinesiologists are not currently part of the diabetes workforce, experience from another provincial program has demonstrated that it is feasible to integrate kinesiologists into the care of those with chronic conditions.

Given the focus in the province on primary care reform, participants agreed that it may be feasible to start by implementing the program in one Patient Medical Home as a pilot site to establish proof of concept and gather more evidence on both its effectiveness and implementation. However, this would require the selected demonstration site to have the capacity and buy-in from providers to deliver the program. Participants advised that time and resources, support from leadership, and education and training, would be required to obtain buy-in from providers and other stakeholders, and to build a sense of ownership. The consensus from participants was that a phased horizontal approach to scaling up the program (i.e., across different groups or sites) was ideal (Milat et al., 2016).

Domain B4: Implementation Infrastructure

Domain B4 considered the feasibility of acquiring the implementation infrastructure that would be required to scale up the ACHRU-CPP. This includes the organizational and workforce support systems required

to implement the program at scale, such as training, accreditation and competency frameworks, and information and monitoring systems. The mean score for this domain was the relative highest among all domains in Part B of the ISAT, 2.83 (SD=0.12).

Demonstrating the program's fit with current provincial priorities, given the large number of initiatives competing for funding, was highlighted as important. It was also suggested that a program coordinator would be required to monitor program fidelity and that this role would need to be defined prior to implementing the program, but could include central intake and triage, and program evaluation responsibilities.

Domain B5: Sustainability

Domain B5 asked participants to consider the potential long-term outcomes of scaling up the ACHRU-CPP and how the program could become sustainable in the medium- and long-term, once it has been scaled-up. This domain received the lowest relative mean score of all 5 domains in Part B of the ISAT, 2.50 (SD=0.17). It was noted that monitoring program fidelity and key outcome measures, including advancing health equity, is essential to sustainability. This is often the role of the backbone (implementing) organization that provides oversight and funding to the program. Participants noted that the introduction of the province's electronic medical records would facilitate and support continuous monitoring and evaluation of the program.

Implications of the Scalability Assessment

Table 1 provides a summary of the most critical factors and next steps to scaling up the program in PEI, as identified by participants in the scalability assessment process.

Table 1. Most Critical Factors and Next Steps to Scaling-up the ACHRU-CPP In PEI

Provide provincial policymakers, providers, and community stakeholders with ***tailored messages that summarize the results of the scalability assessment***: - communicate the sense of urgency in addressing the problem - highlight the intervention's strong alignment with the current provincial priorities (i.e., mental health, primary care renewal, virtual care, and human resources planning) - emphasize the potential benefits of the ACHRU-CPP (e.g., self-management, mental health) - demonstrate a need for this intervention over others - share patients' and providers' experiences with the intervention.
Engage key stakeholders and leverage existing resources, such as ***Patient Medical Homes, Patient Medical Neighborhoods, and community (electronic) health records***, to: - identify the priority populations (i.e., those who may benefit the most) and sites (i.e., best test case) - determine strategies to reach the population(s) - develop the projected volumes.
Consider the strategy for scaling up the intervention within the context of the ***current provincial shortage of health human resources***. Determine the staff complement to optimize implementation and sustain the program, to avoid additional burden on existing resources, and allow for flexibility in team composition. Provide education, training, and support to build providers' capacity, ensure appropriate skill set to meet the needs of a high-risk target population, increase buy-in, and promote ownership.
Develop a ***phased horizontal approach to implementation and scale-up (i.e., across different sites or groups)*** that is co-designed in collaboration with key stakeholders including municipal councillors, provincial policymakers, primary care managers and interdisciplinary community health providers (e.g., physicians, nurses, dietitians, kinesiologists), social service providers, the provincial diabetes clinical lead, patient advisors and supporting organizations (e.g., Diabetes Action Canada), to further demonstrate effectiveness. Adapt the intervention to fit the needs and context of the community while ensuring delivery of core intervention components.
Embed key outcome measures in electronic health records to support ***continuous program monitoring and evaluation***.

Summary

This report summarizes the results of an assessment of the scalability and readiness for scale-up of the ACHRU-CPP, a six-month community-based self-management program for older adults with diabetes and multimorbidity and their caregivers, in PEI.

Overall, the potential scalability of the ACHRU-CPP was highly rated. Each readiness assessment question scored between 2.0 and 3.0 on average. Domains that scored the highest relative ratings were, Domain A1, The Problem (M=2.88), Domain B4, Implementation Infrastructure (M=2.83) and Domain B1, Fidelity and Adaptation (M=2.80). Participants agreed strongly that diabetes among older adults with multimorbidity is a significant problem in the province and warrants the scale up of the ACHRU-CPP (Domain A1). Participants agreed that integration with Patient Medical Homes and Patient Medical Neighbourhoods and strategic use of electronic data records could help to support introduction, integration, and ongoing evaluation of the program (Domain A3). They also emphasized the importance of demonstrating a need for this program over others, which could be linked to its strong alignment with the current provincial priorities, i.e., mental health, primary care renewal, virtual care, and human resources planning to build and maintain support among key stakeholders such as the Department of Health and Wellness, Health PEI, and the University of PEI, in addition to community service providers (Domain B2). Participants agreed that the key components of the ACHRU-CPP are reasonable and meet the needs of older adults with diabetes and multimorbidity. Participants also suggested that the eligibility criteria for the program should be refined from the study's inclusion criteria (aged 65+ years, diagnosis of type 1 or type 2 diabetes, and diagnosis of at least one other chronic condition) to identify older adults who would potentially benefit the most from the program. This process will require further research.

Evidence of effectiveness, Domain A4, received the relatively lowest score of all ISAT domains. This is not surprising given that quantitative findings from the current RCT showed no statistically significant differences between the intervention and control groups; however, participants did appreciate the implementation challenges presented by the pandemic and were encouraged by the consistent positive qualitative findings from older adults and the providers who delivered the program. Participants suggested that further consideration should be given to the outcomes used to measure the program's effectiveness.

Strengths and Limitations

The use of the ISAT provided a structured approach to the scalability assessment. Rating each domain in real time, followed by reflection and discussion, facilitated information sharing and idea generation. We had a diverse and knowledgeable group of participants, including decision-makers, providers, and patient and public research partners.

Due to the busy schedules of participants, not all participants could attend both days of the knowledge exchange workshop. Finally, given the on-going risks related to travel and in-person events, due to COVID-19, the workshop had to be held on-line, rather than in-person as originally planned. To ensure meaningful discussion and participation in the on-line format, the number of participants had to be smaller than could have been accommodated in-person.

Conclusions

Consensus among the participants in the scalability assessment process was that the ACHRU-CPP should be scaled-up in a phased, horizontal approach, beginning with a priority population within a single Patient Medical Home. Participants are committed to sustaining the collaborative working relationships developed during the trial and seeking further funding opportunities to address the limitations to scalability identified through this process. These include collecting further evidence of effectiveness, identifying subgroups of older adults who benefit most from the intervention, selecting program outcome measures, and addressing health-human resource challenges.

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Appendix A. Prince Edward Island Summary of Intervention Scalability Assessment:

ACHRU Community Partnership Program for Diabetes Self-Management for Older Adults with Multimorbidity and their Care Partners

Domain	Summary
A. Setting the Scene	
A1. The problem. Consideration of the problem that is being addressed. The questions in this domain seek a description of the problem, who it affects, what it affects and how it is currently being addressed (if at all).	Prominent issue with negative consequences. Older adults with diabetes and multiple chronic conditions (MCC) experience reduced function and quality of life, increased health service use, and high mortality. Highly prevalent problem. Over 40% of people with diabetes have three or more chronic conditions. The prevalence of diabetes in PEI for people aged 65-79 years is 24.7% and in those aged 80+ years is 27.4%. The East and West Prince regions have a significantly higher prevalence of diabetes (13.4%) in adults (20+) vs. other regions (10.1%). In the Current Pragmatic RCT, PEI study participants (n=132) were an average of 76 years of age (SD=5.91) and reported an average of 6 chronic conditions (SD=2.36). Over half of the participants were female (58%), 33% lived alone, 59% reported an annual household income of $20,000-$49,000 and 15% reported an annual household income of <$20,000 per year. How the problem is currently being managed. Education programs and drug coverage exist for adults of all ages with diabetes. In spring of 2022, Patient Medical Homes were implemented, which provide collaborative team-based care. No exercise programs tailored to older adults with diabetes exist in PEI, but there are generic community exercise programs for adults with chronic diseases. Qualitative evidence from the recent randomized controlled trial (RCT) of the ACHRU-CPP suggests that older adults face barriers to using existing community resources, such as transportation and exercise groups not being tailored to older adults. Older adults require diabetes education and support with health literacy that considers their other chronic conditions, including mental health concerns.
A2. The intervention. Description of the proposed service to address the problem.	The ACHRU-CPP was developed based on best practice guidelines, published research, and qualitative research with providers, older adults with diabetes and MCC, and their caregivers. The theory underpinning the intervention is Bandura's Social Cognitive Theory. The ACHRU-CPP is a 6-month program provided in addition to usual care (e.g., services offered by primary care or diabetes education programs) and delivered by an interprofessional team including Registered Nurses (RNs), Registered Dietitians (RDs)/Nutritionists, and a Program Coordinator (e.g., kinesiologist, exercise specialist) from a community partner organization. The program aims to improve self-management skills and physical and mental health functioning. Key program components include: (a) up to three in-person home or virtual visits (telephone, videoconferencing) by the RN and/or RD/Nutritionist; (b) up to six in-person or virtual monthly group wellness sessions that include health education, physical activity, and peer support; (c) tailored nurse-led care coordination and system navigation to link clients to other health and community services, as needed; (d) ongoing caregiver engagement and support during the visits and group wellness sessions; (e) monthly intervention team case conferences to discuss and evaluate clients' care plans; and (f) collaboration with primary care and specialists, as needed. A care plan is developed with the client at the beginning of the program to meet their individual needs and preferences. Progress towards achieving care plan goals is discussed at each visit and modified, as needed.

Domain	Summary
A3. Strategic / political context. Consideration of the current strategic/political/ environmental contextual factors that are potentially important influences on the service to be scaled up.	Alignment with provincial and national priorities. Addressing the problem of diabetes in older adults is consistent with both national and provincial priorities outlined in the 2022 Public Health Agency of Canada (PHAC) framework for diabetes, 2020-2024 PEI Diabetes Strategy, 2021 PEI seniors' health and wellness action plan, 2021 PEI Primary Care Road Map, and 2022 Patient Medical Homes. The PEI Diabetes strategy focuses on prevention, detection, and management of diabetes. Patient-centered programs and services, evidence-based decision-making, maximizing effectiveness of existing resources, and increasing access to self-management education and support are emphasized. Older adults are listed as a priority group for diabetes prevention. Opportunities identified in the PHAC framework are directly aligned with the ACHRU-CPP, including building capacity for diabetes care in different community contexts, including rural communities, increasing collaboration between interdisciplinary teams of professionals and services, providing person-centred diabetes care, targeting intervention research that addresses the social determinants of health, and health equity.
A4. Evidence of effectiveness. Consideration of the level of evidence available to support the scale-up of the proposed service, such as scientific literature and/or other known evaluations of the intervention.	Feasibility study. The feasibility and acceptability of the ACHRU-CPP were established in a study conducted with a primary care-based Diabetes Education Program and a community seniors' centre in Ontario (ON). Pragmatic RCT (ON and Alberta [AB]). The ACHRU-CPP was adapted based on patient and provider feedback from the feasibility study and tested in an RCT in four sites in ON and three in AB. ON participants receiving the ACHRU-CPP had significantly greater improvements in self-management and mental functioning, and a greater reduction in depressive symptoms, compared to those receiving usual diabetes care alone. AB intervention group participants showed greater improvements in mental functioning for participants with low baseline mental functioning. These improvements were achieved at no additional cost, from a societal perspective. Current Pragmatic RCT (ON, Quebec [QB], PEI). The ACHRU-CPP was further adapted and tested in a pragmatic, multi-site RCT in two ON sites, two PEI sites, and two QB sites. The primary outcome was mental functioning. Secondary outcomes were physical functioning, depressive symptoms, diabetes self-management, anxiety, physical activity, nutrition risk, social support, activities of daily living, and instrumental activities of daily living. No significant group differences were seen in the primary or secondary outcomes. No group differences were also seen in a range of sensitivity analyses, which included multiple imputation, delivery format (virtual vs. in-person), sites with strong fidelity (which included the two in-person PEI sites), sex-disaggregation, and different levels of baseline self-management. The COVID-19 pandemic impacted implementation across all sites. Qualitative Evidence (Perceived effects). Providers', managers', and older adult participants' experiences with the ACHRU-CPP were positive. Older adult intervention group participants credited the intervention plus usual care with several benefits (e.g., increased ability to self-manage diabetes, opportunities for socialization and sharing experiences at group sessions). Participants felt heard, understood, and respected, and appreciated receiving person-centred care and that providers were responsive to their questions/concerns. Key informants in PEI discussed positive benefits of the intervention, including the intervention's focus on self-management and providing ongoing support to older adults, especially during the pandemic. They also felt that the ACHRU-CPP could inform the design of a chronic disease management service model (beyond diabetes) that could be delivered in Patient Medical Homes. Providers shared they gained new knowledge and expertise related to community

Domain	Summary
	resources, assessment tools, home visits, and health conditions; improved their interprofessional teamwork, found the intervention rewarding to deliver.
A5. Intervention costs and benefits. Consideration of the known costs of the service delivery as well as any quantifiable benefits.	Pragmatic RCT (ON and AB). No difference between the intervention and control groups were seen in total health and social service costs. Current Pragmatic RCT (ON, QB, PEI). Participants receiving the ACHRU-CPP had significantly higher total health service use costs at 6-months, compared to usual care. This increase in costs was entirely attributable to the cost of delivering the intervention (interventionist training, delivering the in-person or virtual visits, monthly team case conferences, group wellness sessions, and the provision of a tablet and internet access for selected older adult participants). There were no significant differences between the groups in the cost of use of any other services.
B. Intervention Implementation Planning (scale up)	Considers both CURRENT SITUATION (existing trial) and SCALE-UP (what might change from current situation if the intervention is to be scaled up)
B1. Fidelity and adaptation. Consideration of whether there are any proposed changes to the service required for scale-up.	Adaptations: An RN, RD and kinesiologist were hired through the University of PEI, as Health PEI could not allocate staff from their diabetes education program to deliver the intervention due to staff shortages; the RN and RD were not certified diabetes educators; one team delivered the intervention in Charlottetown and Summerside (instead of one team per site); inclusion of local resources from provincial diabetes program in the online learning toolkit. Imposed changes due to COVID-19 pandemic. All in-person activity was put on hold as of March 16, 2020; phone visits were done by the RN/RD to finish intervention; group wellness sessions were stopped; monthly team case conferences were held by phone; certain assessments could not be completed virtually (e.g., home environment, mobility, Clinical Frailty scale, or mental status (confusion, cognition)). Virtual Cohort Adaptations. With the QB site unable to continue due to the pandemic, PEI recruited a new cohort of 44 older adults, starting in July 2021; half of whom were offered the ACHRU-CPP virtually. Visits and group wellness sessions were provided by videoconference or phone; participants were provided with an internet-enabled study iPad, as needed. Adaptations included: group wellness sessions were reduced from one to two hours; inclusion of clinical assessment tools that could be delivered virtually; participants received exercise (resistance) bands; the option of receiving a 1:1 call with program coordinator instead of attending a virtual group wellness session. Proposed changes to the CPP for scale up. Reduced number of standardized assessments (e.g., cognition, mood); home visit preferable to phone visit; access to medical records; sustain the program's benefits by identifying the next local program and/or resource.

Domain	Summary
B2. Reach and acceptability. Consideration of the reach and acceptability of the intervention for the target population.	Target population: older adults aged 65+ with type 1 or 2 diabetes and at least one other chronic condition. How recruited: From health records at the diabetes program, telephone eligibility screening. Intent to recruit older adults who were considered high emergency and hospital system users, but this did not materialize because few exist thus a more direct approach is needed to identify them. Reach: 132 older adults were enrolled in PEI, and 66 were randomized to receive the CPP. Engagement rate and dose: 58/66 (87.9%) received at least one visit and 8/66 (12.1%) did not receive any visits. For the in-person cohort, mean number of home visits was 2.27 and for the virtual cohort, mean was 2.23. For the in-person cohort, mean number of group wellness sessions attended was 1.86 and for the virtual cohort, mean number was 1.82. Fewer older adults attended virtual sessions compared to in-person sessions. Acceptability. Older adults expressed overall satisfaction with the care they received through the ACHRU-CPP and would recommend the program. Caregivers were not engaged as expected, only 18 participated. Home visits: older adults enjoyed the home visits noting that they were more relaxed and flexible than clinic visits. Older adults also found it easier to share more sensitive information during a visit compared to a group setting. Group wellness sessions: older adults, caregivers, and providers noted the sessions supported socialization and a sense of belonging. Participants found the educational content helpful, appreciated the light lunches, but the physical activity did not meet all participants' needs (i.e., pain). The virtual sessions were less acceptable for some older adults related to technology challenges, but others appreciated the virtual option (e.g., in bad weather). Potential target population for scale-up: adults 55 years+ with sociodemographic factors (social isolation, low income, new immigrants, racialized communities), no primary care provider, high ED and hospital usage, mobility limitations, mental health problems. Potential recruitment strategies for scale-up: connect with community-based services, identify risk-stratification process to identify those older adults who benefit most from the program.
B3. Delivery setting and workforce. Consideration of the setting within which the intervention is delivered as well as the delivery workforce.	Delivery setting. Primary care was suggested in the key informant interviews as the setting to provide this type of program. Existing programs within the province, including the Change program, delivered through the UPEI, and the Cardiopulmonary Rehabilitation Program through Health PEI, are examples of successful interprofessional group exercise programs from which to draw experience. Workforce. The significant shortage of health human resources (HHR) is the largest barrier to implement the ACHRU-CPP; these shortages impact the provincial diabetes program, primary care, and home care. An unprecedented loss of HHR in PEI has caused significant strain on current capacity to provide services, exacerbating an existing backlog in services and an increased demand for care resulting from the COVID-19 pandemic. To embed the ACHRU-CPP in PEI, providers indicated a need for additional training in mental health, community context and resources, and the social determinants of health. The most widely cited barrier to scaling up the program was limited HHR capacity. Implementation of the program would require additional staffing, including RNs, RDs, kinesiologists; an increased staff to patient ratio and improved staffing model; and the potential integration of other health professionals or volunteers to extend the program's reach. Key informants also noted that it would be valuable to ensure that existing diabetes educators have time to implement the program.

Domain	Summary
B4. Implementation Infrastructure. Consideration of the potential implementation infrastructure required for scale-up.	Train the trainer approach and a standardized online training curriculum. The training for the program must include program objectives, underlying principles and assumptions, roles, intervention components, patient-centred care and multimorbidity, clinical assessment, self-management, medication review, mental health, physical activity, healthy eating, cultural safety, caregiver support, team-based care, care coordination and system navigation. There is a need for on-going education as providers did not tend to return to online training site after orientation. Local community advisory board (i.e., community-based health and social services representatives and patient partners) and monthly outreach meetings with the research team were regarded as helpful structures to facilitate implementation. Organizational leaders (Martha St. Pierre, Carolyn MacPhail) also provided important support to providers. Partnerships with provincial decision- and policymakers, research groups (Diabetes Action Canada, CFHI, and the private sector) were identified as important for scale up. Cross-sectoral partnerships (shared resources) and clinical leadership support and buy-in were identified as necessary infrastructure to support the delivery of the program at scale. Other required infrastructure includes: a backbone organization with funding allocated to support the ACHRU-CPP, community space/facilities to deliver the group wellness sessions, linkages to community-based services and resources, an IT system for documentation by providers and on-going program monitoring, central office space and contact number and email.
B5. Sustainability. Consideration of the potential longer-term outcomes of the scale-up and how, once scaled up, the intervention could become sustainable over the medium to longer term.	The key consideration for sustainability is the alignment of the program with policy directions and initiatives (e.g., Primary Care Roadmap), shift in focus to chronic disease management among primary care providers, and need to develop a business case for scaling up the program. While the COVID-19 pandemic impacted the recent trial, previous evidence supports it effectiveness. Potential strategies for ensuring sustainability of the program include: (a) Integrate with Patient Medical Homes (PMH). The PMH would determine based on the needs of the patients they serve whether to implement, could implement using existing exercise programs for chronic conditions. (b) Integrate with Collaborative Health Centres. Five Collaborative Health Centres are being built that will integrate primary care with chronic disease, mental health and addictions care; potential infrastructure support for the CPP. (c) Integrate with Primary Care Renewal quality improvement activities. Priority PMH setting for implementation of CPP could be determined by PMH data on their patients and planning how to address identified patient issues. (d) Integrate with the Collaborative Health Record. Ideal place to share care plan with integrated team, could be used to track outcomes for quality improvement initiatives related to care of older adults with diabetes. PEI is reviewing care pathways and billing codes with an aim to improve quality in diabetes care. (e) Integrate with Patient Medical Neighbourhoods. Will provide community services to PMHs. Look for funding for evaluation. Funding from Healthcare Excellence Canada useful in scale-up of COPD program.

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Appendix B. PEI Scalability Assessment Mean Scores by ISAT Domain

ISAT DOMAIN Readiness Assessment Question(s)	**n**	**Mean**	**SD**
DOMAIN A1: THE PROBLEM	**8**	**2.88**	**0.11**
Q1. In your opinion, is diabetes among community-living older adults with multimorbidity of sufficient priority to warrant scale up of the ACHRU-CPP to address this problem?	8	2.88	0.11
DOMAIN A2: THE INTERVENTION	**8**	**2.75**	**0.14**
Q2. Do you think the outcomes intended by the ACHRU-CPP address the needs of the target group (and/or) problem (diabetes and multimorbidity)?	8	2.75	0.14
DOMAIN A3: STRATEGIC AND POLITICAL CONTEXT	**7**	**2.72**	**0.03**
Q3. To what extent is addressing the problem of diabetes and multimorbidity in community-living older adults consistent with policy/strategic directions or priorities?	7	2.86	0.12
Q4. Do you think scaling up the ACHRU-CPP would be strategically useful to funders/funding agency?	7	2.57	0.16
DOMAIN A4: EVIDENCE OF EFFECTIVENESS	**6**	**2.33**	**0.16**
Q5. Based on the evidence available, do you think the ACHRU-CPP will be effective in addressing the problem in the target population?	6	2.33	0.16
DOMAIN A5: INTERVENTION COSTS AND BENEFITS	**6**	**2.67**	**0.16**
Q6 Based on the evidence available, do you think that the benefits of the ACHRU-CPP could outweigh the costs?	6	2.67	0.16
DOMAIN B1: FIDELITY AND ADAPTATION	**5**	**2.80**	**0.13**
Q7. What changes/adaptations to the core components, if any, are recommended to maximize the scalability of the ACHRU-CPP? [a]	/	N/A	N/A
Q8. If the core components of the ACHRU-CPP are changed/adapted as recommended, are the impact(s) likely to be favourable?	5	2.80	0.13
Q9. To what extent can the changed/adapted ACHRU-CPP be monitored and/or maintained if it is implemented at scale?	5	2.80	0.13
DOMAIN B2: REACH AND ACCEPTABILITY	**6**	**2.67**	**0.04**
Q10. Do you think the ACHRU-CPP in its current form has the potential **to reach** the intended target population at scale?	6	2.50	0.17
Q11. Do you think the ACHRU-CPP will likely be **acceptable** to the target population at scale-up?	6	2.83	0.12
DOMAIN B3: DELIVERY SETTING AND WORKFORCE	**6**	**2.59**	**0.16**
Q12. Is the delivery setting(s) selected to deliver the ACHRU-CPP at scale consistent with that used in previous studies?	6	2.67	0.25
Q13. Is the workforce intended to deliver the program at scale consistent with that used in previous studies?	6	2.50	0.25
Q14. Is the ACHRU-CPP likely to be acceptable to the delivery workforce involved in its delivery at scale?	6	2.50	0.17
Q15. As the ACHRU-CPP requires integration into existing organizational or community structures, do you think this is likely to be feasible?	6	2.67	0.16
DOMAIN B4: IMPLEMENTATION INFRASTRUCTURE	**6**	**2.83**	**0.12**
Q16. Do you think the implementation infrastructure requirements for scale-up will be feasible to acquire?	6	2.83	0.12
DOMAIN B5: SUSTAINABILITY	**6**	**2.50**	**0.17**
Q17. In your opinion, is the level of integration of the ACHRU-CPP into delivery settings required for implementation at scale sustainable?	6	2.50	0.17
Q18. In your opinion, is the level of resourcing required to implement the ACHRU-CPP at scale sustainable?	6	2.50	0.17
Q19. In your opinion, is the delivery workforce required for implementation at scale sustainable?	6	2.50	0.17

a. Investigators modified readiness assessment question #7 for clarity. Participants abstained from scoring this question and provided open-ended feedback only.