

Review

What works in implementation of integrated care programs for older adults with complex needs? A realist review

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Abstract

Purpose: A realist review of the evaluative evidence was conducted on integrated care (IC) programs for older adults to identify key processes that lead to the success or failure of these programs in achieving outcomes such as reduced healthcare utilization, improved patient health, and improved patient and caregiver experience.

Data sources: International academic literature was searched in 12 indexed, electronic databases and gray literature through internet searches, to identify evaluative studies.

Study selection: Inclusion criteria included evaluative literature on integrated, long-stay health and social care programs, published between January 1980 and July 2015, in English.

Data extraction: Data were extracted on the study purpose, period, setting, design, population, sample size, outcomes, and study results, as well as explanations of mechanisms and contextual factors influencing outcomes.

Results of data synthesis: A total of 65 articles, representing 28 IC programs, were included in the review. Two context-mechanism-outcome configurations (CMOCs) were identified: (i) trusting multidisciplinary team relationships and (ii) provider commitment to and understanding of the model. Contextual factors such as strong leadership that sets clear goals and establishes an organizational culture in support of the program, along with joint governance structures, supported team collaboration and subsequent successful implementation. Furthermore, time to build an infrastructure to implement and flexibility in implementation, emerged as key processes instrumental to success of these programs.

Conclusions: This review included a wide range of international evidence, and identified key processes for successful implementation of IC programs that should be considered by program planners, leaders and evaluators.

Key words: integrated care, health and social care services, care coordination, older adults

Purpose

Worldwide, patient groups are emerging that have multiple chronic conditions and as a result, complex healthcare needs [1]. For example, most older adults experience multiple, chronic conditions as they age [2, 3]. In Canada, 25% of adults between the ages of 65 and 79 have four or more chronic conditions, and almost 40% of adults 80 and over have four or more conditions [4]. As the baby boomer cohort ages and older adults are generally living longer, these groups are presenting increased demands on the healthcare system [1, 3, 5]. Such disproportionate use of the healthcare system represents a lack of system coordination, an over-reliance on acute care, and duplication of services. These factors can result in not only high healthcare costs, but also patient safety incidents and poor client satisfaction [1, 6]. Integrated healthcare models are increasingly being implemented to increase health system coordination and reduce costs related to high service utilization using increased community interventions (e.g. home care) for populations with complex care needs. These models aim to create linkages between the health and social care systems to enhance service coordination across sectors, and improve the client and caregiver experience [1, 7–11]. The models involve multiple components reflective of service integration at the point of care including: a single point of entry; care coordination; multidisciplinary teams that span across sectors (including nurses, primary care physicians (PCPs), care coordinators, specialists); client self-management support; smooth transitions across care sectors (e.g. acute care and home care); and effective information management [3].

Existing studies have outlined the successes of these models for particular outcomes, including reductions in emergency department visits, hospitalizations and long-term care placements [3, 12–15]. They have also identified program strategies, such as common information technology (IT) solutions and care coordination that facilitate provider communication and patient access to services across partnering organizations, that may support the success of the integrated care (IC) approach [1, 3, 9, 13]. However, most of these reviews have been non-systematic and have not explained how those strategies promoted, or did not promote, the success of these models [16], or in which contexts the models are most successful. Limited information on the intervention mechanisms and contexts means that it is not possible to account for crucial processes (e.g. lack of provider understanding or enthusiasm for a program and its goals) and contextual factors (e.g. limited organizational support for a program) that can impede optimal implementation of programs, or identify those factors that support success. This study involves a rigorous, theory-driven realist review of the literature to address these gaps, and identify the relationship between context, mechanism and outcome in IC programs for older adults with multiple, chronic conditions [17]. This is the first realist review to identify key processes that lead to the success or failure of these programs in achieving outcomes, such as reduced healthcare utilization, improved patient health, and improved patient and caregiver experience.

Methods

The realist approach to systematic review is ‘an explanatory method of analysis aimed at discerning what works for whom, in what

circumstances, in what respects, and how’ [18]. The realist approach seeks to identify causal explanations of regularities and irregularities in social phenomena [17, 19]. The approach assumes that ‘no deterministic theories can always explain nor predict outcomes in every context’, and that particular contexts influence human choice so that semi-predictable reoccurring patterns of behavior will occur, known as demi-regularities [20] (p2). Realist reviews thus seek to identify middle-range theories that explain these demi-regularities by examining the interplay of different contexts, and mechanisms, and how they trigger the occurrence of specific program outcomes [17, 19–21]. Mechanisms refer to generative processes that lead to successful program outcomes, and often pertain to the reasoning of individuals involved in the program (e.g. providers and/or clients) and how these individuals use resources available to them [22]. Context refers to the setting in which a program operates (e.g. geographical location, program infrastructure), and can trigger or modify the behavior of a mechanism [22]. By observing repeated patterns or demi-regularities in empirical evaluation data, realist reviews thus reveal context-mechanism-outcome configurations (CMOCs) [17, 19]. Similar to traditional systematic reviews, there are a number of key stages in the realist review process that were followed in the review. These include: (i) defining the topic and scope of the review (involving theory building); (ii) identifying and collecting the evidence; (iii) appraising the evidence and extracting data; (iv) synthesizing the evidence; and (v) disseminating findings to stakeholders [17, 23].

Theory building

This review focused on evaluations of IC programs for older adults with complex care needs (e.g. high-risk seniors with multiple chronic conditions, frail elderly). In the first few months of the review, the research team refined the research question and identified initial middle-range theories of the potential mechanisms and contexts (or CMOCs) that facilitate IC program success [17, 20]. The theories were identified through an initial review of key literature and consultations with stakeholders. Given the complexity of IC programs, several broader theories [20] were identified, which can explain the successful workings of these programs. Specifically, the literature describes how the mechanism of trusting relationships in multidisciplinary teams facilitates effective interdisciplinary collaboration and communication, which allows teams to create continuity of care and coordinate care around the patient through regular team meetings and care planning, leading to better patient health outcomes and satisfaction [24]. Shared IT systems that link IC partners and multidisciplinary team members is a contextual factor that has been identified as effective for communication between providers, data management and transfer of patient information to improve patient care [25, 26]. A second theory identifies organizational readiness to change, involving organizational members’ shared commitment and the collective capacity to implement organizational changes, as another mechanism for the successful implementation of IC interventions [26, 27]. For example, physician engagement in change strategies has been identified as important for implementation since this engagement reinforces physicians’ commitment to and ownership of change programs, and supports changes in practice styles [25].

Another theory relates to the contextual factor of funding models (e.g. capitation models) that provide incentives for providers, promoting support for the IC model, by influencing participation in IC activities (e.g. multidisciplinary team meetings) thus supporting the implementation of IC programs [14, 25]. The role of leadership in establishing an organizational culture is a contextual factor that supports implementation of IC programs [25, 26, 28, 29]. Leadership has an important impact in establishing governance structures and processes that guide partnering organizations and support joint accountability and decision-making [25]. These theories informed two hypotheses: [1] IC programs involving multidisciplinary teams with trusting relationships (mechanism) will achieve positive outcomes of reduced healthcare service utilization, improved patient health and improved patient/caregiver experience; [2] multidisciplinary team members who are committed to implement the program (mechanism) will achieve positive outcomes. It was also hypothesized that contextual factors such as common IT solutions that support team communication, leadership that establishes an organizational culture in support of IC program implementation, governance structures that guide implementation, and funding models that involve provider incentives would support trusting and committed teams to implement and achieve desired outcomes.

Identifying the evidence—data sources

To test the initial theories and hypotheses, a systematic review of the scholarly and gray, unpublished literature was performed. The research team worked with two information specialists to develop a search strategy and to perform the search. The information specialists electronically searched through 12 indexed databases (Ovid Medline; Ovid Embase; Allied and Complementary Databases (AMED); PsychINFO; Cumulative Index to Nursing and Allied Health Literature (CINAHL); Ageline; Social Sciences Abstract; Applied Social Sciences Index and Abstracts (ASSIA); Social Services Abstracts; Sociological Abstracts; International Bibliography of the Social Sciences (IBSS) and Education Resources Information Center (ERIC)). In addition, Google Scholar and open Google searches were conducted to capture non-indexed articles and gray literature. The team developed a comprehensive list of search terms in collaboration with the information specialists. Combinations of the keywords related to IC, older adults and evaluation were used to perform the search, including: ‘health systems integration’, ‘integrated service delivery systems’, ‘health services integration’, ‘complex care’, ‘integrated patient care’, ‘patient-centered care’, ‘community-based care’, ‘care coordination’, ‘integrated networks’, ‘integrated healthcare delivery’, ‘health system fragmentation’, ‘case management’, ‘care planning’, ‘managed care’, ‘delivery system reform’, ‘integrated health and social care models’, ‘complex intervention’, ‘continuing care’, ‘frameworks of care’, ‘home health-primary care integration’, ‘integrated primary and community care’, ‘evaluation’ facilitators’, ‘barriers’, ‘implementation’, ‘demonstration programs’, ‘process evaluation’, ‘impact’, ‘factors’, ‘outcome’, ‘effectiveness’, and ‘elderly’, ‘frailty’, ‘older adults’, ‘seniors’ and ‘aging’. The searches were conducted in June and July of 2015 by the information specialists. Articles that were published after January 1980 were captured in the search.

All identified articles were independently screened based on their titles and abstracts by three members of the research team (J.I., T.B. and M.K.). Articles met the study inclusion criteria if they described integrated (health and social) community-based services, that employed multidisciplinary teams, were targeted to older adults with complex

needs, were long-stay programs (defined as providing patient care for longer than 60 days), were evaluative, published after 1980, and written in English. Descriptive, non-evaluative articles were also included if they were related to a program that had been formally evaluated and included in the review. Articles that were not program specific, focused on transitional programs, or focused on a single-disease were excluded. Any discrepancies in article eligibility were discussed at regular meetings until consensus was reached. Full-text copies of all relevant articles that were identified in the first round of screening, applying the inclusion/exclusion criteria were retrieved and screened. The articles that passed the full-text screening stage were included the review.

Quality appraisal and extraction

The quality appraisal process in realist reviews involves judgements of the rigor and relevance of the evidence [20]. Rigor assesses whether or not a study is methodologically strong from which to draw inferences, and relevance assesses a study’s ability to explain the theory being tested [18].

Two members of the research team (J.I. and M.K.) independently assessed the studies included in the review and later compared the ratings. Any discrepancies in the ratings were resolved through discussions and also by re-reviewing studies that received different ratings.

The methodological rigor of studies was rated on a continuum of ‘weak,’ ‘moderate’ or ‘strong’ depending on the study design, according to the hierarchy of evidence [22, 23, 30, 31]. The relevance of studies was rated as either ‘thick’ or ‘thin,’ depending on the depth of description that was provided to explain program workings. Studies that received ‘thick’ ratings provided detailed descriptions of the program mechanisms and contextual factors regardless of whether the program was successful or not. Studies that received ‘thin’ ratings typically provided descriptions of program components and outcomes but failed to discuss underlying factors that led to change in outcomes [30]. The quality appraisal process facilitated the identification of the strongest evidence on which to base the synthesis, but no evidence was excluded from the review based on appraisal ratings.

Two members of the research team (J.I. and T.B.) reviewed full-text copies of the included articles and extracted relevant information into a spreadsheet. Information regarding the study purpose, period, setting, design, population, sample size, outcomes and study results were extracted as well as any explanations of mechanisms and contextual factors.

Synthesis process

Once the extraction process was complete, the evidence gathered was sorted by program to begin the synthesis process. In this stage, the extracted information was examined for mechanisms and contextual influences in each program. Programs were analyzed by their outcomes to determine whether they yielded successful, mixed, or unsuccessful results, and then classified based on these categories. Programs that achieved a statistically significant change in study outcomes (i.e. system utilization, patient/caregiver experience and patient outcomes) were considered as successful programs—the outcome of cost savings was not included in the success criteria as only 12 studies examined this outcome. The review included eleven programs considered to be successful. Thirteen programs that yielded mixed results, were included where change was achieved in either system utilization but not patient/caregiver experience or patient outcomes, or vice versa. Four programs were considered unsuccessful as they failed to achieve positive change in system utilization, patient/caregiver

experience or health outcomes. Through the synthesis process, the initial theories were refined by focusing on authors' perceptions of mechanisms of success and contextual influences on outcomes in the successful and mixed results programs. The unsuccessful programs were then examined to see if the same CMOcs identified in the successful and mixed results programs were present or absent.

Results of the Data Synthesis

The electronic search of the gray and scholarly literature yielded a total of 3921 articles after removing duplicates. Upon reviewing the titles and abstracts of these articles, 259 articles were included for full-text review. Forty-one articles met the inclusion criteria and searching the reference lists of these articles combined with expert consultations yielded an additional 24 articles. Finally, a total of 65 articles, representing 28 IC programs, were included in the review (see Fig. 1). See Table 1 for a list of study types included in the review, and Table 2 for a description of program details.

Main findings

The strongest evidence supported two inter-related CMOcs, confirming many aspects of the study hypotheses: trusting multidisciplinary

team relationships and provider understanding of and commitment to the program model.

Trusting multidisciplinary team relationships (see Fig. 2): As discussed in hypothesis one, the first CMOc reflects the importance of the quality of multidisciplinary team relationships (mechanism) to effective team collaboration, and the impact of these factors on the success of IC programs. In programs that were successful, cross-sector multidisciplinary teams, that span different organizations, trusted each other, were clear in their roles, and could rely on each other to perform their respective roles. These teams collaborated closely and communicated effectively, shared knowledge about their work and patient information more effectively, which allowed for continuity of care and better coordination of care. These factors were related to better management of patient conditions resulting in reductions in healthcare utilization and/or improved patient health [8, 33, 37, 44, 47, 50, 68, 73, 84, 87] and, in some cases, patient and/or caregiver experience [7, 33, 52, 57, 58].

As in the hypotheses, strong leadership to guide teams in their work was a contextual factor that helped to build trust and support team collaboration [33, 39–41, 44, 47, 55, 58, 68]. Leadership that promoted an organizational culture that fostered a shared vision of IC programs, involved joint ownership and accountability across partnering organizations, supported trust building and collaborative

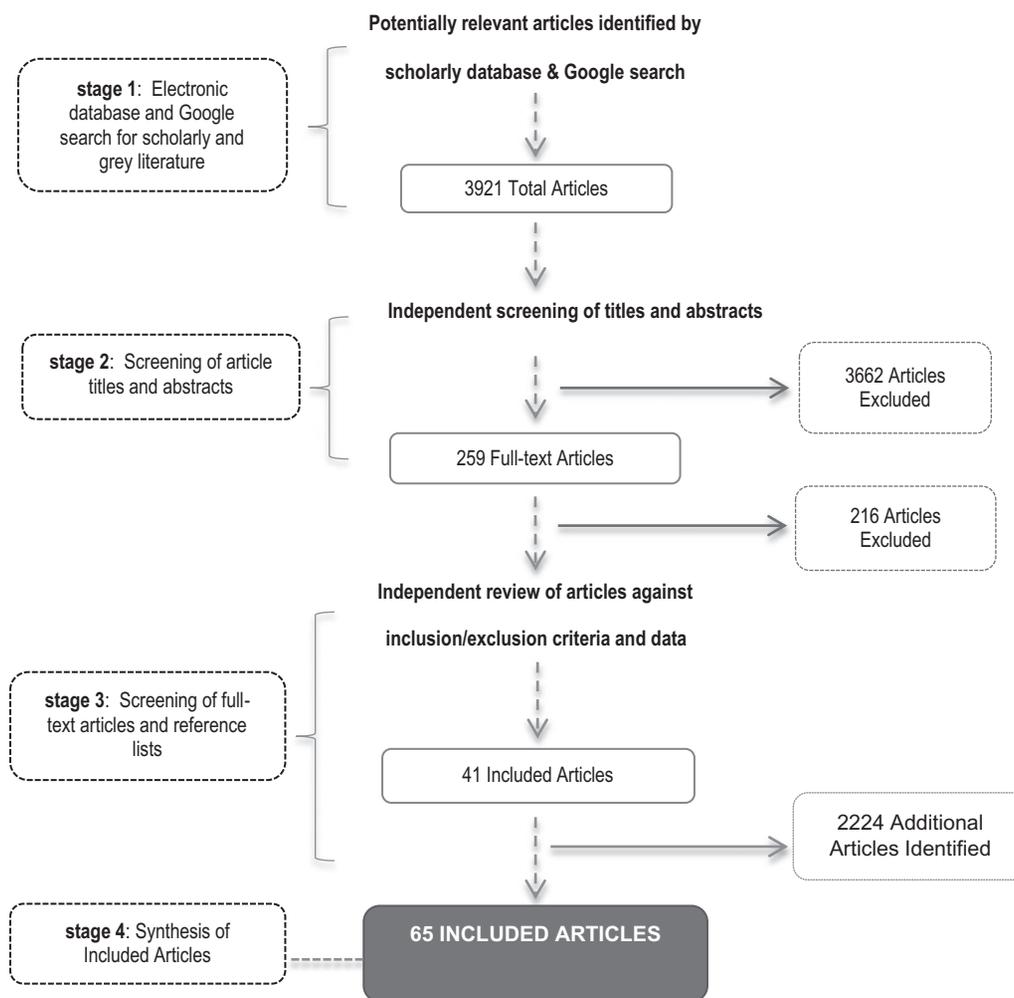


Figure 1. Search process.

Table 1 Description of types of studies included in the realist review

Countries included	United States [9], United Kingdom [6], Canada [4], Australia [2], the Netherlands [2], Italy [2], France [1], Sweden [1] and New Zealand [1]
Study designs	Randomized Controlled Trials [15], mixed-methods process evaluations [15], quasi-experimental [13], secondary analyses [9], case studies [6], qualitative [5] and pre/post [2]
Outcomes	<ul style="list-style-type: none"> • Healthcare utilization (e.g. emergency department visits, outpatient use, hospitalizations, hospital readmissions, length of stay, long-term care admissions) • Use of program services (e.g. social care services, care coordination and planning) • Patient health (e.g. functional status, cognitive status, quality of life) • Patient and caregiver experience (e.g. patient satisfaction, patient empowerment, caregiver burden and distress) • Provider experience • Cost

team functioning. For example, developing a shared vision supported by leadership was a key component of trust building between community nurses, allied health providers and general practitioners (GPs) in the Australian Health One Mount Druitt program. Leadership's efforts to instill a shared vision of the new IC model helped providers overcome suspicions of each other's professional groups and build trust in order to work together across disciplines [46, 47]. In the American Program for All-Inclusive Care for the Elderly (PACE) program, a significant relationship between multidisciplinary team performance and patient functional status, as well as other health outcomes such as long-term urinary incontinence, was found. Creating a culture of team participation supported by leadership generated a sense of ownership and strengthened relationships among team members. This made staff feel comfortable with the model, encouraging them to take an active role in team work [68]. Open team communication supported timely transfers of information between team members, and supported them in making informed, collaborative decisions regarding patient care [68]. In some programs, team co-location and/or clinical champions promoting the IC model facilitated relationship building, contributing to teams collaborating more effectively [37, 46, 52, 58, 64]. Furthermore, the provision by leadership of time and support for teams to build trusting relationships facilitated collaboration and communication [33, 40, 44, 47, 50, 52, 80, 85].

Provider commitment to and understanding of the program model (see Fig. 3): As articulated in hypothesis 2, provider commitment to the IC model was identified as key to achieving positive program outcomes [36, 42, 54, 57, 58]. However, provider understanding of and belief in this model, which were mechanisms not discussed in the initial theories and hypotheses, were also found to be important for program success. Providers' commitment to and belief in the model as a means to improve patient health was particularly important to motivate providers to make the effort to change their work practices and to work multi-disciplinarily [33, 41, 47, 57, 68, 89]. For example, in the English Department of Health's Integrated Care Pilots, GP engagement was critical to implementation due to their links with the rest of the healthcare system, but also because their commitment to and endorsement of the pilots served to build confidence among other team staff in implementing the model [41]. Providers having an understanding of the process of care under the model, their roles in this process, and the benefits of the model for patient care were also important for implementation [47, 50, 52, 54, 85].

Contextual factors that facilitated provider commitment and understanding included funding models that involved incentives for providers to implement IC. GPs in capitated programs and programs with salaried staff had more flexibility and resources to implement

IC, while GPs working under a fee-for-service model were less likely to become engaged and commit to the model because they were not compensated for time involved in multidisciplinary team meetings and other program activities [2, 47, 50, 64, 81]. The expertise of providers was also important for building an understanding of the model as well as team work, and subsequently program implementation [7, 8, 40, 47, 52, 55, 78]. In the Health One Mount Druitt program in Australia, the seniority and expertise of GP liaison nurses were instrumental in building partnerships across sites, and their credibility garnered respect and support from community health colleagues and GPs [47]. Investment in ongoing training of providers in model implementation and how to work together effectively in teams was also an important element in building provider expertise [8, 54, 55, 78]. As in the previous CMOc, the establishment of an organizational culture that involved a shared vision fostered by strong leadership, increased provider understanding of the model and subsequent collaborative team functioning, as well as providing guidance in implementation [33, 40, 47, 55, 68]. The creation of an organizational culture in support of the system and practice changes required by the IC model helped providers to understand and renegotiate professional boundaries for joint working in the English Department of Health Integrated Care Pilots [40]. Time to set up an infrastructure for program implementation, involving building team relationships, establishing coordination across partnering organizations, establishing information management systems, enrolling patients and developing appropriate care plans, was another important contextual factor that further fostered provider commitment to the model and motivation to implement [2, 7, 33, 40, 47, 50, 52, 54, 55, 79–81, 85]. Flexibility in implementation also supported provider commitment to the model. Programs that adapted to the local needs of the population by allowing operational changes, and generally aligning care with population needs over time served to build provider commitment, enthusiasm and confidence in implementing the model [36, 47, 54, 55, 58, 60, 84, 85]. For example, evaluation of the Te Whiringa Ora program in New Zealand attributed understanding the cultural context and value of the Maori population needs to the success of the program in increasing patient quality of life and reducing hospitalizations. The program included 'kaitautoko' (the Maori term for people with experience in community and mental health who provide support in the community) into the multidisciplinary team. Kaitautoko delivered care not only to patients but also to their 'Whanau' (family/informal caregiver), and delivered free care because the population they serve is among the lowest socio-economic status level [84, 85]. This flexibility to adapt to the local context contributed to providers' commitment to the model as it made providers, especially GPs, feel that it was an effective program for meeting their patients' needs [85].

Table 2 A description of programs included in the realist review of IC programs for older adults with complex needs

Program	Country	Articles	Program description	Study design	Results
The CareWell Program	The Netherlands	Ruikes <i>et al.</i> [32]	Multidisciplinary team meetings, geriatric assessment, proactive care planning, case management and medication review	Method: Cluster controlled trial Sample size: $N = 369$ Control group: Y	Intervention group participants experienced greater functional decline but no differences found after adjusting for clustering; no other program effect found on secondary measures (quality of life, mental health and mental health-related functioning, institutionalization, hospitalization and mortality)
Comprehensive Home Option of Integrated Care for the Elderly (CHOICE)	Canada	Truman [33]; Truman <i>et al.</i> [34]	Multidisciplinary team, case management, assessment, 24-h on-call access to program physician and registered nurse, home care, transportation and day program	Method: program theory evaluation —qualitative methods Sample size: $N = 47$ Control group: N	Program delayed institutionalization for patients and acted as a respite program for caregivers; patient health status was improved, and use of inpatient and specialist services decreased
Continuum of Care for Frail Older People	Sweden	Berglund <i>et al.</i> [35]; Eklund and Wilhelmson [15]; Hasson <i>et al.</i> [36]	Multidisciplinary team-based care, emergency ward assessment, discharge planning, in-home care planning, geriatric assessment, home visits, case management and follow-up	Method: RCT with implementation fidelity evaluation Sample size: $N = 161$ Control group: Y	At 3 and 12 months, intervention group had doubled their odds of improved ADL independence compared to control group; Intervention group participants expressed receiving higher quality of care and had better knowledge of their point of contact at 3 and 12 month follow-up periods; intervention implementation fidelity was high
CO-ordination Personnes Agees (COPA)	France	De Stampa <i>et al.</i> [37]	Multidisciplinary team-based care, in-home geriatric assessment, care planning, care coordination, follow-ups and IT system	Method: Quasi-experimental Sample size: $N = 428$ Control group: Y	Reduced risk of hospitalization, depression and dyspnea for intervention group participants; no other program effect found
The Darlington Project	United Kingdom	Challis <i>et al.</i> [38]	Geriatric multidisciplinary team, scheduled team meetings case finding, screening and referral, assessment, care planning and discharge, home support, monitoring and review	Method: Quasi-experimental Sample size: $N = 214$ Control group: Y	Intervention group participants experienced better quality of life without increasing caregiver distress or cost
English Integrated Care Pilots (ICPs)	United Kingdom	Lewis <i>et al.</i> [39]; Ling <i>et al.</i> [40]; RAND Europe, [41]; Roland <i>et al.</i> [42]	A mix of vertical and horizontal integration across sites (e.g. care coordination, integration across community-based services, nursing and social services, and across primary and secondary care). Interventions were not pre-defined and varied greatly across the 16 pilot sites	Method: Mixed-methods Sample size: Patient: $n = 3646$ intervention and $n = 17\,311$ matched controls (Roland <i>et al.</i> [42]); $n = 8691$ intervention and 42 206 matched controls (RAND [41]) Provider: $n = 138$ (Roland <i>et al.</i> [42]); $n = 350$ (RAND [41]) Control group: Y	Improved provider experience (e.g. team-working and communication within and across organizations); integration with social care services did not improve; mixed patient experience results (e.g. better coordination but challenging to see a provider of their choice following intervention); mixed service utilization results (e.g. increase in ED use but decrease in outpatient service use)
Evaluating the Impact of Integrated Health and Social Care Teams on Older People Living in the Community	United Kingdom	Brown <i>et al.</i> [43]	Integrated health and social care teams, weekly meetings, co-location, assessment and case management	Method: Quasi-experimental Sample size: $N = 207$ Control group: Y	Intervention group participants had more nursing home admissions but control group had higher mortality rate; no difference in physical or mental functioning; some evidence of quicker response to referrals and assessments

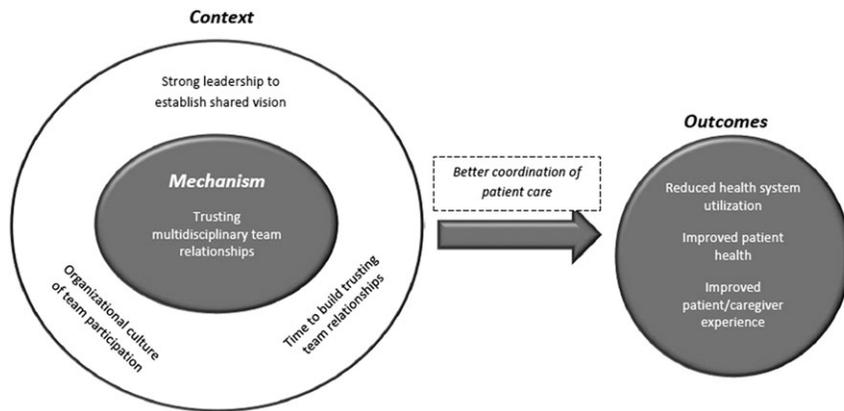
Geriatric Resources for Assessment and Care of Elders (GRACE)	United States	Counsell <i>et al.</i> [44, 45]	GRACE support team, GRACE interdisciplinary team, regular team meetings, geriatric assessment, home safety evaluation, care planning, care coordination, home visits, follow-ups and IT system	Method: RCT Sample size: $N = 951$ Control group: Y	Improved perceived health status and quality of life among intervention group participants than usual care; lower ED admissions in the intervention group; no difference found between groups on hospitalizations; no impact on ADL over 2 years
HealthOne Mount Druitt (HOMD)	Australia	McNab <i>et al.</i> [46]; McNab and Gillespie [47]	Community health organization with a hub and spoke model of care, multidisciplinary team, assessment, case management, care planning, care coordination, case conferencing and review, and IT system	Method: Mixed-methods Sample size: quantitative: $n = 125$ patients; qualitative: $n = 32$ participants Control group: N	Improved patient and provider experience (e.g. better communication, improved coordination, planning and quality of life); program reduced the use of ED and length of stay; use of allied health services increased but referrals to nursing homes decreased; less specialized community home nursing decreased
High-Intensity Care Management to Integrate Acute and Long-Term Care Services Demonstration	United States	Applebaum <i>et al.</i> [48]	Case management with enhanced clinical services, multidisciplinary team added to an existing home care management system, hospital discharge planning and periodic team meetings	Method: RCT Sample size: $N = 308$ Control group: Y	No intervention effect on mortality, physical functioning health status, care satisfaction or healthcare use under Medicare; intervention group had lower admission to nursing home
Home Health Care Team	United States	Zimmer <i>et al.</i> [49]	Multidisciplinary team, regular team meetings, case management, care planning, home visits and evaluations and 24-h telephone service	Method: RCT Sample size: $N = 167$ Control group: Y	Intervention participants had lower hospitalizations, outpatient visits, and nursing home admissions than controls; intervention group used more home care services; no differences in functional status; improved patient and caregiver satisfaction compared to controls
Integrated Community Care for Older People	Australia	Littleford <i>et al.</i> [50]	Multidisciplinary team, geriatric assessment, care coordination, care planning, home care and IT system	Method: Pre/post study Sample size: $N = 220$ Control group: N	Program reduced total number of bed days, ED visits, and ED admissions over time
Integrated System for the Frail Elderly (SIPA)	Canada	Beland <i>et al.</i> [7, 51]	Multidisciplinary team, geriatric assessment, intensive home care, group homes, 24-h on-call service, case management and application of care protocols	Method: RCT Sample size: $N = 1230$ Control group: Y	Intervention group had reduced number of patients with alternate level of care designations; program was cost neutral due to higher community-based service costs but lower total nursing home costs; SIPA participants had greater caregiver satisfaction; no difference in caregiver burden or out-of-pocket costs
Integrating Health and Social Care Teams in Salford	United Kingdom	Syson <i>et al.</i> [52]	Multidisciplinary teams, co-location, single assessment, care planning and shared systems	Method: Qualitative process evaluation Sample size: not available Control group: N	Progress towards delivery of holistic care, commitment to joint working, simpler and quicker access to services, improved staff satisfaction and understanding of roles and resources; no impact on healthcare utilization

Table continued

Table 2 Continued

Program	Country	Articles	Program description	Study design	Results
Integration of Social and Health Care Services for Older People in Cambridgeshire	United Kingdom	Hu [53]	Multidisciplinary teams, assessment, case management, care coordination, home care and Direct Contact Centre	Method: Mixed-methods Sample size: Survey: $n = 100$ patients; Qualitative interviews: $n = 27$ patients Control group: N	Some evidence of improved physical functioning of occupational equipment users; improved care satisfaction; lack of awareness of the Direct Contact Centre and low level of satisfaction with social care services
Massachusetts General Hospital's Medicare Care Management for High Cost Beneficiaries (MGH-CMHCB) Demonstration	United States	McCall <i>et al.</i> [54]; Kodner [55]	Multidisciplinary teams, case management, assessment, case reviews, medication review, telemonitoring and surveillance calls, IT system	Method: RCT Sample size: $N = 6800$ Control group: Y	Program reduced the rate of increase in acute care admissions and ER visits but not 90-day readmissions; reduced mortality; evidence of substantial cost savings; improved physical functioning, care satisfaction, quality of care for patients reported by providers; did not improve chronic illness self-management, mental health functioning, and rate of compliance of quality of care process measures
Model of Integrated Care and Case Management or Older People Living in the Community (Rovereto)	Italy	Bernabei <i>et al.</i> [8]	Multidisciplinary geriatric team, weekly meetings, assessment, case management, care planning and home care	Method: RCT Sample size: $N = 200$ Control group: Y	Intervention participants had less hospitalizations and admissions to nursing homes, and admissions occurred later than compared to the control group; improvements in physical functioning and reduction of cognitive decline found in the intervention group; evidence of cost savings
North-West London Integrated Care Pilots (NWL-ICP)	United Kingdom	Bardsley <i>et al.</i> [56]; Curry <i>et al.</i> [2]; Nuffeld Trust [57]; Pappas <i>et al.</i> [58]; Soljak <i>et al.</i> [59]	Multidisciplinary teams, case management, care planning and IT tool	Method: Mixed-methods Sample size: Quantitative: $N = 2472$ Control group: Y	Improved quality of care, patient and provider experience; no differences in hospital admissions between groups; some evidence of improved care processes
Program of All-Inclusive Care for the Elderly/ On-Lok	United States	Branch <i>et al.</i> [60]; Chatterji <i>et al.</i> [61]; Eng <i>et al.</i> [62]; Gross <i>et al.</i> [63]; Kane <i>et al.</i> [64]; Kodner <i>et al.</i> [65]; Meret-Hanke [66]; Meret-Hanke [67]; Mukamel <i>et al.</i> [68]; Segelman <i>et al.</i> [69]; Temkin-Greener <i>et al.</i> [70]; White [71]; Wieland <i>et al.</i> [72]; Yordi <i>et al.</i> [73]	Multidisciplinary team, case management, care planning, housing, transportation, day program and IT system	Method: Quasi-experimental Sample size: $N = 1098$ (Chatterji <i>et al.</i> [68]); $N = 5875$ (Meret-Hanke [66]) Control group: Y	Program reduced nursing home utilization and hospitalizations; intervention participants used ambulatory services more than the comparison group; PACE improved perceived health status and quality of life; enrollees with higher ADL dependence showed the greatest improvements
Prevention of Care Approach (PoC)	The Netherlands	Metzelthin <i>et al.</i> [74, 75]	Multidisciplinary team, team meeting, in-home assessment, case management and care planning	Method: Cluster-RCT Sample size: $N = 346$ Control group: Y	No intervention effect found on disability and physical functioning, depressive symptomatology, social support interactions, fear of falling or social participation

Program of Research to Integrate the Services for the Maintenance of Autonomy (PRISMA)	Canada	Dubuc <i>et al.</i> [76]; Hebert <i>et al.</i> [10, 77]; Hebert and Veil [16]; MacAdam [78]; Somme <i>et al.</i> [79]	Multidisciplinary team, single assessment, single entry point, care coordination, case management and service planning	Method: Quasi-experimental Sample size: $N = 920$ Control group: Y	Intervention group had lower prevalence and incidence rates of functional decline; evidence of care satisfaction and patient empowerment; program reduced unmet needs over time; use of ED stabilized
Senior Care Connections (SCC)	United States	Sommers <i>et al.</i> [80]	Multidisciplinary team, assessment, case management, care planning, home visits and follow-up, and monthly case review	Method: Cluster-RCT Sample size: $N = 543$ Control group: Y	Program stabilized hospitalizations over time, and reduced 60-day readmission rates among intervention group; intervention group had a lower mean number of physician visits than controls; intervention group participants engaged in more social activities than controls
Social/Health Maintenance Organization II (S/HMO II)	United States	Newcomer <i>et al.</i> [81]; Thompson [82]	Multidisciplinary geriatric team, care coordination, assessment and screening, care planning, formulary restrictions, home care, transportation, emergency response systems, respite care	Method: Quasi-experimental Sample size: $N = 22\ 631$ Control group: Y	No evidence of reduced hospitalizations or improved quality of life among S/HMO II members vs traditional risk plan members; no consistent evidence of improved physical functioning; and program participants were more likely to use nursing home and home care
South Winnipeg Integrated Geriatric Trial (SWING)	Canada	Montgomery <i>et al.</i> [83]	Multidisciplinary team, assessment, case management, care planning, home care	Method: RCT Sample size: $N = 152$ Control group: Y	Evidence of lower average length of stay in hospital, and nursing home admissions among intervention group; program patients had quicker access to services than controls; increased care satisfaction with promptness of service among intervention caregivers
Te Whiringa Ora (TWO)	New Zealand	Appleton-Dyer <i>et al.</i> [84]; Carswell [85]	Multidisciplinary team, assessment, case management, home visits, telemonitoring, self-management support, care planning and IT system	Method: Mixed-methods Sample size: Patient surveys: $n = 183$; Qualitative interviews: $n = 24$; Service utilization analyses: $n = 428$ Control group: Y	Program reduced the use of inpatient services, the number of bed days, and avoidable hospital admissions; evidence of improved patient quality of life over time
Team-Managed Home-Based Primary Care	United States	Hughes <i>et al.</i> [86]	Multidisciplinary team, home care, 24-h contact, discharge planning, planned readmissions	Method: RCT Sample size: $N = 1966$ Control group: Y	No impact on functional status; health-related quality of life improved among a subset of nonterminal patients; health-related quality of life for caregivers improved; increase in the overall cost of program
The Silver Network Project	Italy	Landi <i>et al.</i> [87, 88]	Multidisciplinary team, assessment, case management, care planning and home care	Method: Pre-post Sample size: $N = 115$ Control group: Y	Reductions in the number of hospitalizations, hospital days, average length of stay and total cost post implementation of the program
Wisconsin Partnership Project (WPP: a variation of PACE)	United States	Kane <i>et al.</i> [89, 90]	Multidisciplinary team, case management, service coordination and care planning	Method: Quasi-experimental Sample size: $N = 862$ Control group: Y	No evidence of program effectiveness in reducing hospital utilization, ED visits, avoidable hospitalizations, admission to nursing homes or mortality; WPP patients had more provider contacts than controls



¹ In the CMOc figures, 'better coordination of patient care' is in a box with a dotted line because this is a shorter term outcome that was rarely measured in the included evaluations, but is an implied change in the pathway to outcomes such as reduced health system utilization, improved patient health and improved patient/caregiver experience

Figure 2 CMOc1: Trusting multidisciplinary team relationships¹.

Comment on mixed results and unsuccessful programs

While several mixed results programs had a number of mechanisms of success identified in the CMOcs, they generally had fewer of these drivers than did successful programs. Both the Canadian Integrated Services for Frail Elderly (SIPA) and the American High-Intensity Case Management Demonstration Programs had minimal engagement by PCPs due to a lack of incentives for physicians to participate in IC program activities, presenting a barrier to achieving provider commitment to the model [7, 48]. Provider commitment to the model was also challenged in the High-Intensity Case Management Demonstration Program due to limited provider enthusiasm resulting from the significant changes in practice necessary for implementation, and limited flexibility for providers to make operational changes [48].

Unsuccessful programs experienced a number of barriers to enacting the mechanisms of success identified in the CMOcs. The Dutch Prevention of Care (PoC) program suffered from a lack of provider commitment to the model as providers viewed team meetings as time-consuming, and they did not fully understand how to use program protocols due to limited training [91]. The evaluators of the CareWell program noted that the 12-month trial period may not have been long enough for providers to build trusting relationships within multidisciplinary teams, challenging team collaboration [32]. The PoC evaluation and the Dutch CareWell primary care program evaluation both suffered from a number of methodological limitations, including baseline similarities between experimental and control arms, potential contamination between study arms, and loss of high-risk participants to follow-up [32, 91].

Conclusion

This review isolates key mechanisms and contextual factors (CMOcs) that may lead to the success of integrated health and social care programs for older adults. The review confirmed many aspects of the initial theories and hypotheses, in that it emphasized the importance of trusting multidisciplinary team relationships for effective collaboration, communication and knowledge sharing and their role in program success. Contextual factors such as strong leadership that sets clear goals and establishes an organizational

culture in support of the program, along with joint governance structures, supported team collaboration and subsequent successful implementation. Provider commitment to and understanding of the IC model, as fostered by strong leadership, clear governance, time to build an infrastructure to implement and flexibility in implementation, emerged as key processes instrumental to success of these programs. In several programs, the contextual factor of common IT solutions across partnering organizations (which was articulated in the initial theories) facilitated effective team communication and collaboration [10, 52, 54, 55, 78, 87], but some successful and mixed results programs achieved change in outcomes without common IT structures [46–48]. Thus, contrary to the initial theories, it was not a necessary condition for success included in the CMOcs.

A limitation of this review is one that is common to most realist reviews. There is generally a lack of detailed information in published evaluations on mechanisms and contextual factors that drive program success, which limits reviewers' ability to fully identify these processes [19, 20]. In the case of this review, several study authors had published separate, more detailed program descriptions. The inclusion of gray literature in the review also provided more information on certain programs. This information was lacking for a number of programs, thus limiting the research team's ability to fully test the initial theories. In order to advance our understanding of how and why programs are successful through realist review methods, journals should allow evaluators to report more detailed descriptions of program workings and contextual factors that may affect success [20, 92]. Another limitation is that in any complex realm such as the implementation of IC programs, identification of two important CMOcs does not rule out the further elaboration of these CMOcs or the existence of others.

The strengths of this review compared to traditional systematic reviews involve the inclusion of a range of types of evidence and a theory-driven process to refine theory as well as arrive at a detailed understanding of underlying program workings and their relationship to achieving successful outcomes. The review findings have supported theoretical constructs that were identified at the initial stages of the review and were found in other non-theory-driven reviews (e.g. team collaboration, organizational readiness, organizational culture and leadership, governance structures and financial incentives) [1, 3, 12, 14, 25, 26].

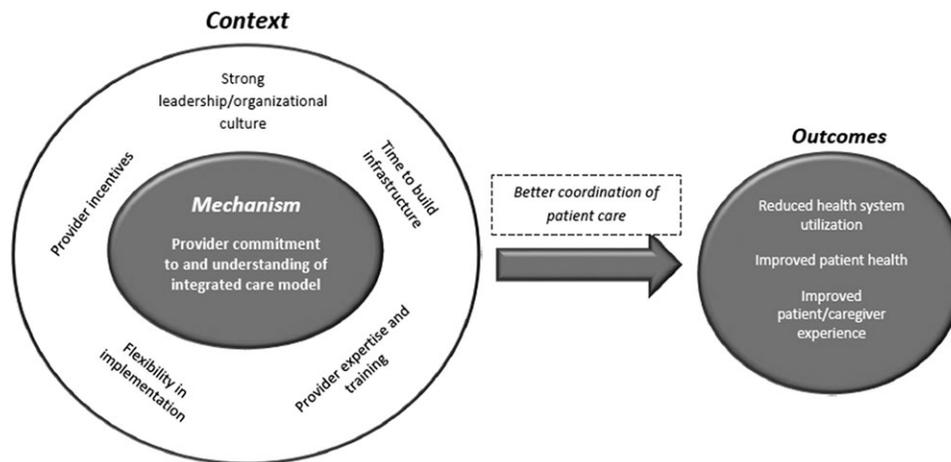


Figure 3 CMOc2: Provider commitment to and understanding of the IC model.

However, this review goes beyond findings in previous reviews with the identification of important mechanisms and contextual factors linked to program success. For example, other reviews have identified the importance of the role of providers like case managers, and PCPs, and the centrality of care coordination in the effective delivery of IC programs, but these statements simply underscore the relevance of program components for implementation, and do not necessarily explain why and how these components matter. Further examination through a realist approach allowed us to identify underlying mechanisms and contextual factors that facilitate program success or failure, beyond the presence of simple program components. This review also emphasizes the importance of processes that can be instrumental for IC program success that have not been mentioned in most of these reviews, including the investment in time to build trusting relationships between multidisciplinary team members, time to establish an infrastructure for implementation, as well as flexibility in implementation. While most of the evaluative literature was rather vague concerning the amount of time necessary for an appropriate infrastructure to be built for implementation, a few studies alluded to a more specific timeframe. Program planners, leaders and evaluators should note that given the complexity of IC programs, longer periods of implementation and evaluation (e.g. >12 months) [32, 44, 80, 82] may be needed to build the infrastructure necessary to support trusting team relationships and provider understanding of and commitment to the model, as well as allow for change in outcomes to be observed. Future evaluations should place greater focus on this developmental stage to shed further light on the length of time needed to support this important preliminary organizational work.

Using a systematic, theory-driven method, this review included a wide range of international evidence, and identified key processes for successful implementation of IC programs that should be considered for implementation by program planners and leaders, as well as by evaluators. These findings should inform the development of effective integrated programs that will support older adults to age at home successfully, and alleviate increasing costs to the healthcare system as this population ages.

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Conflict of interest statement

None declared.

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