Key factors of case management interventions for frequent users of healthcare services: a thematic analysis review

Catherine Hudon,1,2 Maud-Christine Chouinard,3,4 Mireille Lambert,4 Fatoumata Diadiou,4 Danielle Bouliane,4 Jérémie Beaudin3

ABSTRACT

Objective The aim of this paper was to identify the key factors of case management (CM) interventions among frequent users of healthcare services found in empirical studies of effectiveness.

Design Thematic analysis review of CM studies.

Methods We built on a previously published review that aimed to report the effectiveness of CM interventions for frequent users of healthcare services, using the Medline, Scopus and CINAHL databases covering the January 2004–December 2015 period, then updated to July 2017, with the keywords ‘CM’ and ‘frequent use’. We extracted factors of successful (n=7) and unsuccessful (n=6) CM interventions and conducted a mixed thematic analysis to synthesise findings. Chaudor’s implementation of health innovations framework was used to organise results into four broad levels of factors: (1) environmental/organisational level, (2) practitioner level, (3) patient level and (4) programme level.

Results Access to, and close partnerships with, healthcare providers and community services resources were key factors of successful CM interventions that should target patients with the greatest needs and promote frequent contacts with the healthcare team. The selection and training of the case manager was also an important factor to foster patient engagement in CM. Coordination of care, self-management support and assistance with care navigation were key CM activities. The main issues reported by unsuccessful CM interventions were problems with case finding or lack of care integration.

Conclusions CM interventions for frequent users of healthcare services should ensure adequate case finding processes, rigorous selection and training of the case manager, sufficient intensity of the intervention, as well as good care integration among all partners. Other studies could further evaluate the influence of contextual factors on intervention impacts.

INTRODUCTION

Frequent users of healthcare services are a small group of patients accounting for a high number of healthcare visits, often emergency department (ED), and important costs.1–3

They use healthcare services for complex health needs,4–6 combining multiple chronic conditions with psychosocial or mental health comorbidities.3,7–9 Frequent use of services is often considered inappropriate7,9 and may be a symptom of gaps in accessibility and coordination of care.10 11 These patients are more at risk for incapacity, poorer quality of life and mortality.12–15 Regardless of healthcare setting, case management (CM) is the most frequently implemented intervention to improve care for frequent users of healthcare services and to reduce healthcare usage and cost.16 17

CM is a ‘collaborative process of assessment, planning, facilitation and advocacy for options and services to meet an individual’s health needs through communication and available resources to promote quality cost-effective outcomes’.18 Reviews reported positive outcomes associated with CM interventions among frequent users of healthcare services such as decreases in ED use and cost.16 17 19–21 They also concluded that CM interventions resulted in a better use of appropriate existing resources22 and a reduction in social problems such as homelessness and drug and alcohol abuse.22–24

A small number of systematic reviews briefly addressed enabling factors of successful CM interventions in the discussion section...
of their paper. In a review on the effectiveness of CM among frequent ED users, Kumar and Klein19 noted that frequency of follow-up, availability of psychosocial services, assistance with financial issues and active engagement of the case manager and the patient were important characteristics of CM interventions. Oeseburg et al.25 evaluated the effects of CM for frail older people (not necessarily frequent users) and highlighted that well-trained case managers with competent skills in designing care plans and coordinating services, effective communication and collaboration between the members of the healthcare team, as well as the acceptance of the case manager as the coordinator for care delivery, were key factors of CM. However, the identification of key factors of CM interventions was not a primary objective of these reviews, although this information would be useful to inform researchers and decision makers on the implementation of CM.

The aim of this paper was to identify the key factors of CM interventions among frequent users of healthcare services found in empirical studies of effectiveness.

METHODS

We first conducted a scoping review that aimed to report the effectiveness of CM for frequent users of healthcare services, using the Medline, Scopus and CINAHL databases covering the January 2004–December 2015 period, with the keywords ‘CM’ and ‘frequent use’. To be included in the review, studies had to report on the effects of a CM intervention on healthcare usage and/or cost. We excluded studies limited to a specific group of patients and interventions targeting a single disease. The review included 11 articles and concluded that CM could reduce healthcare use and cost. A detailed description of the articles included and the CM interventions is provided in the published review.20 For the purpose of this paper, the search strategy was updated to July 2017, therefore, two additional articles were added (figure 1), for a total of 13 studies.

We then extracted factors of successful (n=7) and unsuccessful (n=6) CM interventions to conduct a mixed thematic analysis to synthesise findings across the studies using a framework proposed by Chaudoir et al.29 This framework was developed to reflect factors hypothesised to impact outcomes and was used to capture the characteristics of CM interventions, while allowing comparisons among the studies included. According to this framework, the relevant factors were organised into four broad levels to address in the implementation of a health innovation: (1) environmental/organisational level: setting and structure in which CM is being implemented, including physical environmental, public features of the healthcare setting, the integration of CM services, the role of CM in the healthcare system, and the cultural and social context in which CM is being implemented; (2) programmatic level: the design and implementation of CM interventions, including interventions other than CM, the population targeted by CM, and the delivery and coordination of care, as well as the methods used to evaluate the effectiveness of CM interventions; (3) patient-level: the characteristics of patients targeted by CM, including age, gender, and medical history; and (4) contextual level: the characteristics of the healthcare system, including the availability of healthcare services, the level of collaboration between healthcare providers, and the accountability of healthcare providers.
Table 1 Description of the studies evaluating CM interventions among frequent users of healthcare services

<table>
<thead>
<tr>
<th>Source (location)</th>
<th>Design</th>
<th>Definition of frequent users</th>
<th>n</th>
<th>Intervention</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bodenmann et al.</td>
<td>Randomised controlled trial</td>
<td>5 ED visits and more in a year I=125 C=125</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team and offered counselling on substance abuse, patient navigation, referral to social, mental and health services and assistance in resolving income, housing, health insurance, education and domestic violence issues.</td>
<td>No change on ED use</td>
</tr>
<tr>
<td>Crane et al.</td>
<td>Non-randomised controlled study</td>
<td>6 ED visits and more in 1 year I=36 C=36</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team and offered individual and group medical meetings, counselling group sessions and telephone access to a care manager.</td>
<td>Reduction in ED use and in total healthcare cost</td>
</tr>
<tr>
<td>Grover et al.</td>
<td>Before-after study</td>
<td>5 ED visits and more in 1 month. 199</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team and was entered into the ED electronic system. They offered referrals to healthcare and social services and limitation of narcotic prescriptions (if needed). A review of the care plan was done if changes occurred in a patient's condition or use of ED services.</td>
<td>Reduction in ED use</td>
</tr>
<tr>
<td>Lee and Davenport</td>
<td>Before-after study</td>
<td>3 ED visits and more in 1 month associated with symptoms of unresolved pain, drug seeking or lack of primary care physician 50</td>
<td></td>
<td>With the collaboration of primary care providers, a nurse case manager offered referrals to healthcare and social services, assistance with insurance issues and limited narcotic prescriptions.</td>
<td>No change on ED use</td>
</tr>
<tr>
<td>Peddie et al.</td>
<td>Randomised controlled trial</td>
<td>10 ED visits and more in 1 year I=87 C=77</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team (including the patient) and was entered into the ED electronic system. The CM intervention also offered free visits with a general practitioner and CM meetings with a multidisciplinary team for the patients with the most complex needs.</td>
<td>No change on ED use</td>
</tr>
<tr>
<td>Phillips et al.</td>
<td>Before-after study</td>
<td>6 ED visits and more in 1 year 60</td>
<td></td>
<td>A multidisciplinary team offered hospital-based care, community healthcare, primary healthcare and short-term and long-term CM.</td>
<td>Increased ED use, improved primary and community care engagement, improved housing stability, no change on number of admissions, ED disposition, ED length of stay, ED triage category, drug and alcohol use and EMS use</td>
</tr>
<tr>
<td>Pillow et al.</td>
<td>Before-after study</td>
<td>Top 50 chronic ED frequent users 50</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team and offered psychosocial and psychiatric assessments, pain contract, radiology and urinary toxicity studies, outpatient and managed care referrals. An ED tracking system was implemented to identify frequent users while facilitating access to the care plan.</td>
<td>Reduction in ED use, but no change in number of admissions.</td>
</tr>
<tr>
<td>Rinke et al.</td>
<td>Before-after study</td>
<td>Top 25 frequent EMS users 10</td>
<td></td>
<td>A care plan was developed by a case manager and offered coordinated care referrals to psychosocial services, patient education and telephone access to healthcare support.</td>
<td>Reduction in EMS use and cost</td>
</tr>
<tr>
<td>Segal et al.</td>
<td>Randomised controlled trial</td>
<td>More than US$4000 of healthcare costs over a 2-year period I=2074 C=668</td>
<td></td>
<td>A care plan was developed by the care coordinator and the patient. CM intensity was determined by patients' likely future risk of hospital admission; Low risk: care plan reviewed every 12 months; Medium risk: care plan reviewed every 6 months and telephone contact to monitor implementation of the care plan and address emergent problems; High risk: care plan reviewed every 3 months and traditional intensive CM services including an advocacy role.</td>
<td>Increase in total healthcare costs and hospital-based outpatient costs. No change on admission costs, medication costs, quality of life and mortality</td>
</tr>
<tr>
<td>Shah et al.</td>
<td>Non-randomised controlled study</td>
<td>4 ED visits or admissions and more, or three admissions and more, or two admissions and more as well as 1 ED visit and more in 1 year I=98 C=160</td>
<td></td>
<td>A care manager helped patients access and coordinate services needed. He offered goal setting and assistance, health navigation, access to support services, care transitions and communication with providers.</td>
<td>Reduction in ED use and cost as well as admission cost, but no change on no of admissions.</td>
</tr>
<tr>
<td>Sledge et al.</td>
<td>Randomised controlled trial</td>
<td>2 admissions and more in 1 year I=47 C=49</td>
<td></td>
<td>A care plan was developed by a multidisciplinary team and offered follow-up to the patient in primary care by promoting coordination of care, self-care patterns, coping skills, and providing assistance with referrals and appointments.</td>
<td>No change on no of admissions, ED use, total healthcare costs, quality of life and patient satisfaction</td>
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</table>
policies, infrastructures, economical, political and social contexts and different features of the organisation (eg, leadership effectiveness, organisational culture and staff satisfaction towards the organisation); (2) practitioner level: characteristics and experience of the provider who is in contact with patients for the purpose of CM, including attitudes and beliefs towards CM, professional role and capacities; (3) patient level: characteristics and experience of the patient, including motivation, perception, personality traits, risk factors, skills and abilities and (4) programme level: aspects of CM, including characteristics and activities (evaluation, patient education, self-management support, referrals, transition, etc) as well as compatibility of the intervention with the organisation and adaptability.29–31

RESULTS
Description of the studies
The 13 studies are described in table 1. Seven studies (two non-randomised controlled studies32 33 and five before–after studies34–38) reported positives outcomes on healthcare usage or cost. Wetta-Hall37 evaluated a multidisciplinary CM intervention among frequent ED users and demonstrated a decrease in ED use as well as an improvement in physical quality of life. Crane et al32 assessed a multidisciplinary CM intervention including a care plan among frequent ED users and observed a decrease in ED use and healthcare cost. Shah et al33 conducted a study with low-income, uninsured patients on the implementation of a care plan by a case manager and demonstrated that ED use, as well as cost, had significantly decreased. Pillow et al34 conducted a before–after study with the top ED frequent users to measure the impact of a multidisciplinary CM intervention including a care plan and reported a trend towards a decrease in ED use. Rinke et al35 in a study evaluating the impact of the implementation of a care plan by a case manager for the most frequent emergency medical services (EMS) users, as well as Tadros et al36 in a study evaluating a CM intervention conducted by a case manager among frequent EMS users, observed a decrease in EMS cost and use. Finally, Grover et al38 evaluated the effectiveness of a multidisciplinary CM intervention including a care plan among frequent ED users and reported a reduction in ED use and radiation exposure, improved efficacy of referral, but no change in number of admissions.

Six studies reported no benefit on healthcare usage or cost, including three randomised controlled trials39–41 two before–after studies8 22 and one non-randomised controlled study.42 The study by Bodenmann et al49 on the effectiveness of a multidisciplinary CM intervention including a care plan and the pilot study by Lee and Davenport8 on a nurse CM intervention reported no change on ED use. Peddie et al42 came to the same conclusion in a study evaluating the impact of a management plan on the frequency of ED visits. Sledge et al41 conducted a study to evaluate a clinic-based ambulatory CM intervention and

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<table>
<thead>
<tr>
<th>Source location</th>
<th>Design</th>
<th>n</th>
<th>Intervention</th>
<th>Definition of frequent users</th>
<th>Description of the studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study</td>
<td>Environment/organisation</td>
<td>Practitioner</td>
<td>Patient</td>
<td>Programme</td>
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</tr>
<tr>
<td>Crane et al.</td>
<td>Access to medical, social and community resources</td>
<td>Experienced, calm and trusted case manager</td>
<td></td>
<td>Multidisciplinary care plan, Life skills counselling, Frequent and long visits, No limit on the number of encounters</td>
<td></td>
</tr>
<tr>
<td>Grover et al.</td>
<td>Access to medical, social and community resources, Involvement of the diverse providers and services in a comprehensive approach to the patient</td>
<td></td>
<td></td>
<td>Multidisciplinary care plan, Review of the care plan</td>
<td></td>
</tr>
<tr>
<td>Shah et al.</td>
<td>Access to medical, social and community resources, Connectivity to social resources, Close relationships between care managers, local hospitals and providers in clinics</td>
<td></td>
<td></td>
<td>Care plan by the case manager, Health navigation, Frequent in-person contacts, Patients graduated from the programme when they understood how to make appointments, receive medication and follow-up on goals</td>
<td></td>
</tr>
<tr>
<td>Pillow et al.</td>
<td>Partnerships within hospital and with local partners, Well-funded and well-supported programme</td>
<td>Practitioners felt buy-in for the process, Highly qualified interdisciplinary care team, Well-trained case manager</td>
<td>Implementation of a care plan for patients who needed it the most, Patient with full care plan in place</td>
<td>Multidisciplinary care plan, Review of the care plan, Easy access to key healthcare information, Care plan integrated into the ED tracking system (interface), Practitioner can edit care plan and refer patient to get care plan</td>
<td></td>
</tr>
<tr>
<td>Rinke et al.</td>
<td>Dedicated and experienced case manager</td>
<td></td>
<td></td>
<td>Care plan by the case manager, Review of the care plan, Health navigation, Care coordination, Confirmation of patient attendance at referrals, Frequent contacts</td>
<td></td>
</tr>
<tr>
<td>Tadros et al.</td>
<td>Access to medical, social and community resources</td>
<td></td>
<td></td>
<td>Care coordination</td>
<td></td>
</tr>
<tr>
<td>Wetta-Hall</td>
<td>Access to medical, social and community resources</td>
<td></td>
<td></td>
<td>Patient education, Funding support for prescription medication, Involvement of patient in goal setting and decision making</td>
<td></td>
</tr>
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</table>

ED, emergency department.
reported no significant change on number of admissions, ED use, total healthcare cost, quality of life and patient satisfaction. In a study evaluating the effectiveness of multidisciplinary CM, Phillips et al. observed an increase in ED use and no change on admissions. Similarly, in a study on a care coordination programme including care planning by a general practitioner and CM intervention, Segal et al. reported an increase in total healthcare and outpatient costs and no change on admissions and medication costs, as well as quality of life.

### Key factors of CM intervention

Successful and unsuccessful factors of CM interventions are shown in tables 2 and 3, classified according to Chaudoir et al.'s framework.

Most authors reported that access to, and close relationships between, case managers and their partners (healthcare providers at the hospital and clinics, staff from community organisations, etc) were key factors of CM interventions as well as engagement and involvement of healthcare and community partners. Two studies reported lack of collaboration between the case manager and primary care providers and lack of integration into a systemic approach to care as major flaws.

The selection and training of the case manager was also mentioned as a key factor. A dedicated, trusting and experienced case manager could improve patient engagement in CM and foster better patient involvement in self-management. Conversely, authors of two studies highlighted the difficulty of finding a well-trained case manager as a main limitation of their study. Engagement of the case manager, as well as all the healthcare providers involved in the intervention, and their capacity to motivate the patient were also important, highlighting the need of having practitioners who feel buy-in in regard to the intervention.

Pillow et al. emphasised the importance of recruiting patients with greatest needs, namely very high ED users with complex healthcare needs. In three studies that did not demonstrate benefit, many patients did not have complex needs and/or were not the highest users of healthcare services, or had substance abuse or psychosocial issues without a chronic condition.

Coordination of care, patient education and self-management support, and assistance to navigate in the healthcare system were key activities of successful CM interventions. Most of the studies included a care plan based on an evaluation of patient needs; five observed a reduction in healthcare use, whereas four reported no benefit. Revision of the care plan by a multidisciplinary team during the CM intervention, in response to a better understanding of patient needs or to a change in patient health condition seemed an important factor.

Frequent contacts with the patient, either by telephone or in person, were also useful.

### Table 3 Characteristics of CM studies reporting no benefit, presented according to Chaudoir’s framework

<table>
<thead>
<tr>
<th>Programme</th>
<th>Patient</th>
<th>Practitioner</th>
<th>Environment/organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-disciplinary care plan</td>
<td>Many patients were not very ill or had non-complex healthcare needs</td>
<td>Staff turnover</td>
<td>Multidisciplinary care plan</td>
</tr>
<tr>
<td>No (or not enough) patient education activities</td>
<td>No (or not enough) patient education activities</td>
<td>No close collaboration with the PCP</td>
<td>No close collaboration with the PCP</td>
</tr>
<tr>
<td>Multidisciplinary care plan</td>
<td>Care plan by the case manager</td>
<td>Review of the care plan</td>
<td>Review of the care plan</td>
</tr>
<tr>
<td>Not aligned with prescription programme</td>
<td>Many patients were immigrants</td>
<td>Not a consistent use of care plan</td>
<td>Not a consistent use of care plan</td>
</tr>
<tr>
<td>Variation of the programme model during the project</td>
<td>Patients in the intervention group were of lower education</td>
<td>Multidisciplinary care plan</td>
<td>Multidisciplinary care plan</td>
</tr>
<tr>
<td></td>
<td>Multidisciplinary care plan</td>
<td>Difficulty in finding a well-trained and experienced case manager</td>
<td>Difficulty in finding a well-trained and experienced case manager</td>
</tr>
<tr>
<td></td>
<td>Many participants had substance abuse or psychosocial issues without chronic condition</td>
<td>The CM intervention was not integrated into a systemic approach to care</td>
<td>The CM intervention was not integrated into a systemic approach to care</td>
</tr>
<tr>
<td></td>
<td>Many participants had substance abuse or psychosocial issues without chronic condition</td>
<td>Care plan by the case manager</td>
<td>Care plan by the case manager</td>
</tr>
<tr>
<td></td>
<td>Many patients were not highest ED users (only five to six ED visits in 1 year)</td>
<td>Many patients in the intervention group were lower educated</td>
<td>Many patients in the intervention group were lower educated</td>
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</table>
This paper is the first thematic analysis review synthesising key factors of CM interventions among frequent users of healthcare services. Access to, and close partnerships with, healthcare providers and community services resources were key factors of CM interventions that should target patients with the greatest needs and promote frequent contacts with the healthcare team. The selection and training of the case manager was also an important factor to consider in order to foster patient engagement in CM. Coordination of care, self-management support and assistance with care navigation were key CM activities. The main issues with unsuccessful CM interventions were problems in case finding or lack of care integration.

In a series of reports from The King’s Fund about the implementation of CM for people with long-term conditions, Ross et al. stressed the role and skills of the case manager, appropriate case finding and caseload, single point of access for patients, continuity of care, self-management support, interprofessional collaboration and development of information systems for the effective use of data and communication processes. Convergent findings were reported in a synthesis by Berry-Millett and Bodenheimer that aimed to examine the impact of CM to improve care and reduce healthcare costs for frequent users with complex needs. They identified six factors of successful CM, namely selecting high-risk patients, promoting face-to-face meetings, training case managers with low caseloads, creating multidisciplinary teams where physicians and case managers work in the same location, involving peers and promoting self-management skills. Our review, which aimed to identify key factors of CM as a primary objective, corroborates and completes these results, by a rigorous thematic analysis of 13 empirical studies on the topic.

As already noted by other authors, context description was lacking in most studies. As a complex intervention, CM includes various components interacting in a nonlinear way to produce outcomes that are highly dependent on context and variables across settings. Special attention should be paid to contextual factors of CM. Indeed, further studies could analyse not only if and how CM works for frequent users of healthcare services but also in what contexts.

LIMITATIONS
Description of CM interventions was a limit of many studies included. According to the International Classification of Health Interventions, the coordination target for what was done was different in the studies. Including material from qualitative studies could enrich results in further steps.

CONCLUSIONS
CM interventions for frequent users of healthcare services should ensure adequate case-finding processes, rigorous selection and training of the case manager, sufficient intensity of the intervention and good care integration among all partners. Other studies could further evaluate the influence of contextual factors on intervention impacts.

REFERENCES


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