

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

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**To cite:** Hudon C, Chouinard M-C, Lambert M, *et al*. Key factors of case management interventions for frequent users of healthcare services: a thematic analysis review. *BMJ Open* 2017;**7**:e017762. doi:10.1136/bmjopen-2017-017762

► Prepublication history for this paper is available online. To view these files please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2017-017762>).

Received 15 May 2017  
Revised 11 September 2017  
Accepted 15 September 2017



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## 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. Chaudoir’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.<sup>1–3</sup>

## Strengths and limitations of this study

- The 13 studies included in this paper were identified by a rigorous search strategy used in a previous review of case management (CM) interventions for frequent users of healthcare services.
- Material from qualitative studies was not included in the analysis.
- Little description of CM interventions was provided in the included studies.

They use healthcare services for complex health needs,<sup>4–6</sup> combining multiple chronic conditions with psychosocial or mental health comorbidities.<sup>5 7 8</sup> Frequent use of services is often considered inappropriate<sup>7 9</sup> and may be a symptom of gaps in accessibility and coordination of care.<sup>10 11</sup> These patients are more at risk for incapacity, poorer quality of life and mortality.<sup>12–15</sup> 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.<sup>16 17</sup>

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’.<sup>18</sup> Reviews reported positive outcomes associated with CM interventions among frequent users of healthcare services such as decreases in ED use and cost.<sup>16 17 19–21</sup> They also concluded that CM interventions resulted in a better use of appropriate existing resources<sup>22</sup> and a reduction in social problems such as homelessness and drug and alcohol abuse.<sup>22–24</sup>

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 Klein<sup>19</sup> 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.*<sup>25</sup> 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.

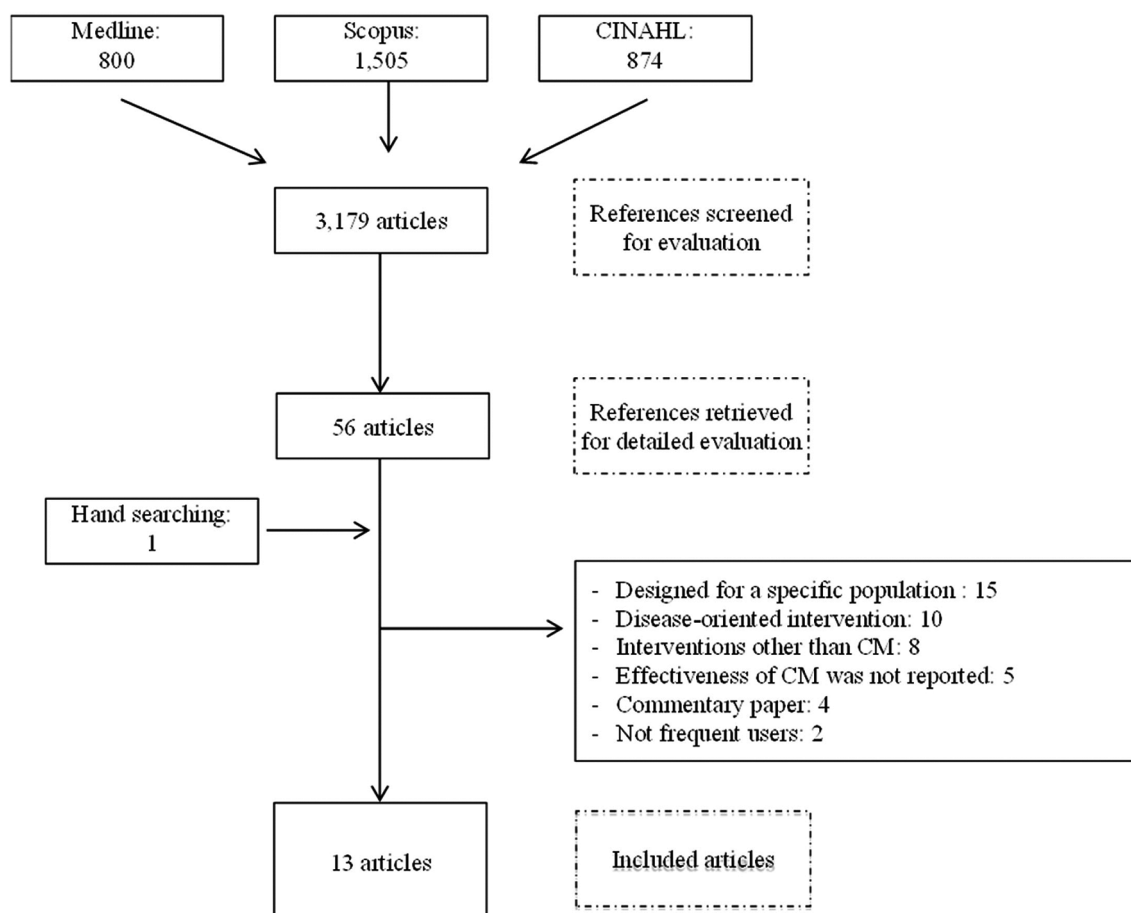
The aim of this paper was to identify the key factors of CM interventions among frequent users of healthcare services found in empirical studies of effectiveness.

## 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’.<sup>20</sup> 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.<sup>20</sup> 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<sup>26–28</sup> using a framework proposed by Chaudoir *et al.*<sup>29</sup> 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



**Figure 1** Scoping review flow chart of search results (2004–July 2017). CM, case management.

**Table 1** Description of the studies evaluating CM interventions among frequent users of healthcare services

Source (location)	Design	Definition of frequent users	n	Intervention	Outcomes
Bodenmann <i>et al</i> <sup>33</sup> (Switzerland)	Randomised controlled trial	5 ED visits and more in a year	I=125 C=125	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.	No change on ED use
Crane <i>et al</i> <sup>32</sup> (USA)	Non-randomised controlled study	6 ED visits and more in 1 year	I=36 C=36	A care plan was developed by a multidisciplinary team and offered individual and group medical meetings, counselling group sessions and telephone access to a case manager.	Reduction in ED use and in total healthcare cost
Grover <i>et al</i> <sup>38</sup> (USA)	Before–after study	5 ED visits and more in 1 month.	199	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.	Reduction in ED use
Lee and Davenport <sup>8</sup> (USA)	Before–after study	3 ED visits and more in 1 month associated with symptoms of unresolved pain, drug seeking or lack of primary care physician	50	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.	No change on ED use
Peddie <i>et al</i> <sup>42</sup> (New Zealand)	Non-randomised controlled trial	10 ED visits and more in 1 year	I=87 C=77	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.	No change on ED use
Phillips <i>et al</i> <sup>22</sup> (Australia)	Before–after study	6 ED visits and more in 1 year	60	A multidisciplinary team offered hospital-based care, community healthcare, primary healthcare and short-term and long-term CM.	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
Pillow <i>et al</i> <sup>34</sup> (USA)	Before–after study	Top 50 chronic ED frequent users	50	A care plan was developed by a multidisciplinary team and offered psychosocial and psychiatric assessments, pain contract, radiology and urinary toxicology studies, outpatient and managed care referrals. An ED tracking system was implemented to identify frequent users while facilitating access to the care plan.	Reduction in ED use, but no change in number of admissions.
Rinke <i>et al</i> <sup>35</sup> (USA)	Before–after study	Top 25 frequent EMS users	10	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.	Reduction in EMS use and cost*
Segal <i>et al</i> <sup>40</sup> (Australia)	Randomised controlled trial	More than US\$4000 of healthcare costs over a 2-year period	I=2074 C=668	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.	Increase in total healthcare costs and hospital-based outpatient costs. No change on admission costs, medication costs, quality of life and mortality
Shah <i>et al</i> <sup>33</sup> (USA)	Non-randomised controlled study	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	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.	Reduction in ED use and cost as well as admission cost, but no change on no of admissions.
Sledge <i>et al</i> <sup>41</sup> (USA)	Randomised controlled trial	2 admissions and more in 1 year	I=47 C=49	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.	No change on no of admissions, ED use, total healthcare costs, quality of life and patient satisfaction

Continued

Table 1 Continued

Source (location)	Design	Definition of frequent users	n	Intervention	Outcomes
Tadros <i>et al</i> <sup>36</sup> (USA)	Before–after study	10 EMS transports and more in a 1 year, or referred by fire and EMS personnel	51	A coordinator helped patients with access and coordination of needs. He offered investigation for factors underlying the excessive use of healthcare services, coordination of care with other health and social services and patient education.	Reduction in EMS use and cost* as well as total healthcare cost*, but no change in no of admissions and cost, ED use and cost.
Wetta-Hall <sup>37</sup> (USA)	Before–after study	3 ED visits and more in 6 months	492	A multidisciplinary team helped patient's access to community resources, navigate the healthcare system, and find primary care resources. They offered goal setting, coordination of care, referrals for healthcare needs, patient education and supporting patient connections with informal support networks.	Reduction in ED use and improved quality of life, but no change in health locus of control.

C, Control group; CM, case management; ED, emergency department; EMS, emergency medical services; I, Intervention group.

\* Not stated if the outcome was significant or not.

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.<sup>29–31</sup>

## RESULTS

### Description of the studies

The 13 studies are described in [table 1](#). Seven studies (two non-randomised controlled studies<sup>32–33</sup> and five before–after studies<sup>34–38</sup>) reported positives outcomes on healthcare usage or cost. Wetta-Hall<sup>37</sup> 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 al*<sup>32</sup> 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 al*<sup>33</sup> 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 al*<sup>34</sup> 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 al*<sup>35</sup> 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 al*,<sup>36</sup> 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 al*<sup>38</sup> 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 trials,<sup>39–41</sup> two before–after studies<sup>8–22</sup> and one non-randomised controlled study.<sup>42</sup> The study by Bodenmann *et al*<sup>39</sup> on the effectiveness of a multidisciplinary CM intervention including a care plan and the pilot study by Lee and Davenport<sup>8</sup> on a nurse CM intervention reported no change on ED use. Peddie *et al*<sup>42</sup> came to the same conclusion in a study evaluating the impact of a management plan on the frequency of ED visits. Sledge *et al*<sup>41</sup> conducted a study to evaluate a clinic-based ambulatory CM intervention and



**Table 2** Characteristics of case management studies reporting positive findings, presented according to Chaudoir's framework

	Environment/organisation	Practitioner	Patient	Programme
Crane <i>et al</i> <sup>32</sup>	<ul style="list-style-type: none"> <li>▶ Access to medical, social and community resources</li> </ul>	<ul style="list-style-type: none"> <li>▶ Experienced, calm and trusted case manager</li> </ul>		<ul style="list-style-type: none"> <li>▶ Multidisciplinary care plan</li> <li>▶ Life skills counselling.</li> <li>▶ Frequent and long visits</li> <li>▶ No limit on the number of encounters</li> </ul>
Grover <i>et al</i> <sup>38</sup>	<ul style="list-style-type: none"> <li>▶ Access to medical, social and community resources</li> <li>▶ Involvement of the diverse providers and services in a comprehensive approach to the patient</li> </ul>			<ul style="list-style-type: none"> <li>▶ Multidisciplinary care plan</li> <li>▶ Review of the care plan</li> </ul>
Shah <i>et al</i> <sup>33</sup>	<ul style="list-style-type: none"> <li>▶ Access to medical, social and community resources</li> <li>▶ Connectivity to social resources</li> <li>▶ Close relationships between care managers, local hospitals and providers in clinics</li> </ul>			<ul style="list-style-type: none"> <li>▶ Care plan by the case manager</li> <li>▶ Health navigation.</li> <li>▶ Frequent in-person contacts</li> <li>▶ Patients graduated from the programme when they understood how to make appointments, receive medication and follow-up on goals</li> </ul>
Pillow <i>et al</i> <sup>34</sup>	<ul style="list-style-type: none"> <li>▶ Partnerships within hospital and with local partners</li> <li>▶ Well-funded and well-supported programme</li> </ul>	<ul style="list-style-type: none"> <li>▶ Practitioners felt buy-in for the process</li> <li>▶ Highly qualified interdisciplinary care team</li> <li>▶ Well-trained case manager</li> </ul>	<ul style="list-style-type: none"> <li>▶ Implementation of a care plan for patients who needed it the most</li> <li>▶ Patient with full care plan in place</li> </ul>	<ul style="list-style-type: none"> <li>▶ Multidisciplinary care plan</li> <li>▶ Review of the care plan</li> <li>▶ Easy access to key healthcare information</li> <li>▶ Care plan integrated into the ED tracking system (interface)</li> <li>▶ Practitioner can edit care plan and refer patient to get care plan</li> </ul>
Rinke <i>et al</i> <sup>35</sup>		<ul style="list-style-type: none"> <li>▶ Dedicated and experienced case manager</li> </ul>		<ul style="list-style-type: none"> <li>▶ Care plan by the case manager</li> <li>▶ Review of the care plan</li> <li>▶ Health navigation</li> <li>▶ Care coordination</li> <li>▶ Confirmation of patient attendance at referrals</li> <li>▶ Frequent contacts</li> <li>▶ Care coordination</li> </ul>
Tadros <i>et al</i> <sup>36</sup>	<ul style="list-style-type: none"> <li>▶ Access to medical, social and community resources</li> </ul>			
Wetta-Hall <sup>37</sup>	<ul style="list-style-type: none"> <li>▶ Access to medical, social and community resources</li> </ul>			<ul style="list-style-type: none"> <li>▶ Patient education</li> <li>▶ Funding support for prescription medication</li> <li>▶ Involvement of patient in goal setting and decision making</li> </ul>

ED, emergency department.

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

	Environment/organisation	Practitioner	Patient	Programme
Bodenmann <i>et al</i> <sup>23</sup>			<ul style="list-style-type: none"> <li>▲ Most patients were not highest ED users (only five to six ED visits in 1 year)</li> <li>▲ Many patients were immigrants</li> <li>▲ Patients in the intervention group were of lower education</li> </ul>	<ul style="list-style-type: none"> <li>▲ Multidisciplinary care plan</li> </ul>
Lee and Davenport <sup>8</sup>	<ul style="list-style-type: none"> <li>▲ No close collaboration with the PCP</li> </ul>			<ul style="list-style-type: none"> <li>▲ Not aligned with prescription programme</li> <li>▲ No (or not enough) patient education activities</li> </ul>
Peddie <i>et al</i> <sup>42</sup>				<ul style="list-style-type: none"> <li>▲ Multidisciplinary care plan</li> <li>▲ Not a consistent use of care plan</li> </ul>
Phillips <i>et al</i> <sup>22</sup>		<ul style="list-style-type: none"> <li>▲ Staff turnover</li> </ul>	<ul style="list-style-type: none"> <li>▲ Most participants had substance abuse or psychosocial issues without chronic conditions</li> </ul>	<ul style="list-style-type: none"> <li>▲ Variation of the programme model during the project</li> </ul>
Segal <i>et al</i> <sup>40</sup>			<ul style="list-style-type: none"> <li>▲ Many patients were not very ill or had non-complex healthcare needs</li> </ul>	<ul style="list-style-type: none"> <li>▲ Care plan by the case manager</li> <li>▲ Review of the care plan</li> </ul>
Sledge <i>et al</i> <sup>41</sup>	<ul style="list-style-type: none"> <li>▲ The CM intervention was not integrated into a systemic approach to care</li> </ul>	<ul style="list-style-type: none"> <li>▲ Difficulty in finding a well-trained and experienced case managers</li> </ul>		<ul style="list-style-type: none"> <li>▲ Multidisciplinary care plan</li> </ul>

CM, case management; ED, emergency department; PCP, primary care provider.

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*<sup>22</sup> 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*<sup>40</sup> 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<sup>29</sup> 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.<sup>8 33 34 38</sup> 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.<sup>8 41</sup>

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.<sup>32 34 35</sup> Conversely, authors of two studies highlighted the difficulty of finding a well-trained case manager as a main limitation of their study.<sup>22 41</sup> 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.<sup>34</sup>

Pillow *et al*<sup>34</sup> 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,<sup>39 40</sup> or had substance abuse or psychosocial issues without a chronic condition.<sup>22</sup>

Coordination of care,<sup>35 36</sup> patient education and self-management support,<sup>8 32-34</sup> and assistance to navigate in the healthcare system<sup>33 35 37</sup> 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,<sup>32-35 38</sup> whereas four reported no benefit.<sup>39-42</sup> 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.<sup>34 35 38</sup> Frequent contacts with the patient, either by telephone or in person, were also useful.<sup>32 33 35</sup>



## DISCUSSION

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*<sup>43</sup> 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<sup>44</sup> 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,<sup>45</sup> 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.<sup>46 47</sup> 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,<sup>48</sup> 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.

**Acknowledgements** The authors thank Ms Susie Bernier for her editorial assistance.

**Contributors** CH and M-CC developed the study and participated in its design and coordination. ML conducted the data collection and drafted the manuscript under the supervision of CH and M-CC. All authors were involved in drafting and editing the manuscript.

**Competing interests** All authors have completed the ICMJE uniform disclosure form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) and declare: no support from any organisation for the submitted work; no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

**Patient consent** None.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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*BMJ Open* 2017 7:

doi: [10.1136/bmjopen-2017-017762](https://doi.org/10.1136/bmjopen-2017-017762)

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