



HAL
open science

Development of an evidence-based reference framework for care coordination with a focus on the micro level of integrated care: A mixed method design study combining scoping review of reviews and nominal group technique

Francoise Colombani, Gaelle Encrenaz, Matthieu Sibe, Bruno Quintard, Alain Ravaud, Florence Saillour-Glenisson

► To cite this version:

Francoise Colombani, Gaelle Encrenaz, Matthieu Sibe, Bruno Quintard, Alain Ravaud, et al.. Development of an evidence-based reference framework for care coordination with a focus on the micro level of integrated care: A mixed method design study combining scoping review of reviews and nominal group technique. *Health Policy*, 2022, 126 (3), pp.245-261. 10.1016/j.healthpol.2022.01.003 . hal-03597329

HAL Id: hal-03597329

<https://hal.science/hal-03597329>

Submitted on 22 Jul 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

Title

Development of an evidence-based reference framework for care coordination with a focus on the micro level of integrated care: a mixed method design study combining scoping review of reviews and nominal group technique.

Authors names and affiliations

Françoise Colombani ^{a,b} (francoise.colombani@chu-bordeaux.fr)*, Gaëlle Encrenaz ^a (gaelle.encrenaz@u-bordeaux.fr), Matthieu Sibé ^{b,c} (matthieu.sibe@u-bordeaux.fr), Bruno Quintard ^d (bruno.quintard@u-bordeaux.fr), Alain Ravaud ^{a,e,f} (alain.ravaud@chu-bordeaux.fr), Florence Saillour-Glénisson ^{b,g} (florence.saillour@chu-bordeaux.fr), and the EPOCK expert group ^h.

a. CHU Bordeaux, Centre de Coordination en Cancérologie (3C), F-33000 Bordeaux, France.

b. INSERM, Centre INSERM U1219-Bordeaux Population Health, EMOS (Economie et Management des Organisations de Santé), F-33000 Bordeaux, France

c. Univ. Bordeaux, ISPED (Bordeaux School of Public Health), F-33000 Bordeaux, France

d. INSERM, Centre INSERM U1219-Bordeaux Population Health, HACS (Equipe Handicap, Activité, Cognition, Santé), F-33000, Bordeaux, France

e. CHU Bordeaux, Service d'oncologie médicale, Pôle de cancérologie, F-33000 Bordeaux, France

f. Univ. Bordeaux, F-33000 Bordeaux, France

g. CHU Bordeaux, Unité méthodes évaluation en santé (UMES), Service d'Information Médicale, Pôle de santé publique, F-33000 Bordeaux, France

h. The EPOCK expert group : Marie Noëlle BILLEBOT, Agence Régionale de Santé (ARS) Nouvelle-Aquitaine, F-33000 Bordeaux, France ; Yann BOURGUEIL, Ecole des Hautes Etudes en Santé Publique (EHESP), Institut de Recherche et de Documentation en

Economie de la Santé (IRDES), Paris, France ; Frédérique COLLOMBET-MIGEON, Direction générale de l'offre de soins (DGOS), sous-direction de la régulation de l'offre de soins (bureau R3), Paris, France ; Raymond MERLE, Laboratoire LBFA-U1055, Univ. Grenoble Alpes, Univ. des patients de Grenoble, France ; Elodie OLIVIER, Centre de coordination en cancérologie (3C), CHRU Tours ; Mathieu ORIOL, Health Services and Performance Research, Univ. Claude Bernard, Lyon, France ; Dominique POUGHEON, Laboratoire éducations et pratiques de santé (LEPS EA 3412), Ecole Doctorale ERASME, Univ. Paris 13, F-75013 Paris, France ; Eric SALAT, Univ. des patients Univ. Pierre et Marie Curie (UPMC), Faculté de médecine, Sorbonne Université, F-75013 Paris, France ; Matthias WAELLI, Equipe management des organisations de santé (EA 7348 MOS), École des hautes études en santé publique (EHESP School of Public Health), F-35000 Rennes, France.

***Corresponding author:** Françoise Colombani, CHU Bordeaux, Centre de coordination en cancérologie (3C), Groupe hospitalier Saint André, 1 rue Jean Burguet, 33075, F-33000 Bordeaux, France; Tel: +33 (0)557820661 e-mail: francoise.colombani@chu-bordeaux.fr

CRedit authorship contribution statement

Françoise Colombani: term, conceptualization, investigation, data curation, writing original draft, visualization, project administration, funding acquisition. **Gaëlle Encrenaz:** investigation, resources, data curation. **Matthieu Sibé:** term, conceptualization, methodology, funding acquisition. **Bruno Quintard:** term, conceptualization, methodology, funding acquisition. **Alain Ravaud:** term, conceptualization, funding acquisition. **Florence Saillour-**

Glénisson: term, conceptualization, methodology, writing-review & editing, supervision, project administration, funding acquisition.

Acknowledgements

We would like to thank Marie-Aline Bloch, Franck Chauvin, Etienne Minvielle and Catherine Tourette-Turgis for their support in this research and assistance in identifying experts for the nominal group.

We would also like to acknowledge the contributions of all participants in the nominal group:
The EPOCK expert group : Marie Noëlle BILLEBOT, Agence Régionale de Santé (ARS) Nouvelle-Aquitaine, F-33000 Bordeaux, France ; Yann BOURGUEIL, Ecole des Hautes Etudes en Santé Publique (EHESP), Institut de Recherche et de Documentation en Economie de la Santé (IRDES), Paris, France ; Frédérique COLLOMBET-MIGEON, Direction générale de l'offre de soins (DGOS), sous-direction de la régulation de l'offre de soins (bureau R3), Paris, France ; Raymond MERLE, Laboratoire LBFA-U1055, Univ. Grenoble Alpes, Univ. des patients de Grenoble, France ; Elodie OLIVIER, Centre de coordination en cancérologie (3C), CHRU Tours ; Mathieu ORIOL, Health Services and Performance Research, Univ. Claude Bernard, Lyon, France ; Dominique POUGHEON, Laboratoire éducations et pratiques de santé (LEPS EA 3412), Ecole Doctorale ERASME, Univ. Paris 13, F-75013 Paris, France ; Eric SALAT, Univ. des patients Univ. Pierre et Marie Curie (UPMC), Faculté de médecine, Sorbonne Université, F-75013 Paris, France ; Matthias WAELLI, Equipe management des organisations de santé (EA 7348 MOS), École des hautes études en santé publique (EHESP School of Public Health), F-35000 Rennes, France.

Furthermore, we would like to thank Emmanuel Corbillon (French National Authority for Health, *Haute autorité de santé* [HAS], *service évaluation de la pertinence des soins et amélioration des pratiques et des parcours*), Lorenza Luciano (Directorate for Research, Studies, Evaluation and Statistics, *Direction de la recherche, des études, de l'évaluation et des statistiques in French* [DREES], *sous-direction «observation de la santé et de l'assurance maladie»*) and Mouloud Yahmi (General Directorate for Healthcare Services, *Direction générale de l'offre des soins* [DGOS], PF1 office) for their contribution to the dissemination of the results.

Conflict of Interest statement

The authors declare that they have no competing interests.

Ethics and consent form

The EPOCK study protocol was approved on 26 July 2017 by institutional review boards and Ethics Committees (Comité de Protection des Personnes [CPP] du Sud-Ouest et Outre-Mer III number: **2017-A02049-44**) and registered in *clinicaltrials.gov* (registration number: **NCT03350776**).

Funding sources and protocol registration

This work was supported by the French Ministry of Health, France (through a Health Services Research Grant – PREPS Program, 2016, n°PREPS-16-241) and registered in *clinicaltrials.gov* (registration number: NCT03350776).

The EPOCK study protocol has been peer-reviewed (expert jury) by the funding body (originality of the study, study design, data collection, type of analysis planned) and published by Colombani *et al.* in BMC HSR 2019.

The English in this document has been checked by at least two professional editors, both native speakers of English. For a certificate, please see:

<http://www.textcheck.com/certificate/nmN9Wx>

ABSTRACT

Background: Because of the limits in conceptualisation of care coordination linked to the large array of care coordination models and definitions available, a care coordination framework is needed with a particular focus on the *micro* level.

Objective: To develop an evidence-based reference framework for person-centred care coordination interventions based on international validated definitions.

Methods: This two-step mixed-methods study included first, a scoping review of reviews focus on the impact of care coordination interventions and then, a nominal group technique. The scoping review aimed at identifying the components of the four dimensions of the framework (contexts, activities, actors and tools, and effects). The nominal group technique was to select the relevant components of the dimension ‘activities’ of the reference framework.

Results: The scoping review selected 52 articles from the 1,407 retrieved at first. The nominal group selected the 66 most relevant activities from the 159 retrieved in the literature (28 activities of care organisation, 24 activities of care, and 14 activities of facilitation).

Conclusion: This operational framework focused on care coordination at the micro level, is a useful and innovative tool, applicable in any clinical condition, and in any health care system for describing, implementing and evaluating care coordination programmes.

Highlights

- This review provides a new operational evidence-based framework for care coordination.
- Comprehensive and specific characterisations of care coordination activities were performed.
- Interventions effects were evaluated using patients', caregivers', professionals', and healthcare system perspectives.
- Innovative tools were used to describe, implement and evaluate care coordination interventions.

Classification and keywords

Care coordination

Continuity of patient care [MeSH term]

Theoretical framework

Consensus [MeSH term]

Models, Organisational [MeSH term]

Scoping review

INTRODUCTION

Care coordination: a worldwide public health priority

Because of the growing ageing population and the increasing number of people diagnosed with chronic conditions, coordination of care has become a crucial issue in care systems worldwide (1–4). Lack of care coordination has been associated with poor symptom control, medical errors, and high costs (5–9). Therefore, care coordination has been recognised as a key element of high-quality health care delivery and a global priority for improving patient healthcare (10,11). However, trials evaluating the impact of care coordination interventions have shown discordant results, highlighting the heterogeneity of the interventions tested (12–16) and revealing high variability of interventions components, related to a lack of underlying conceptualisation (17,18). In addition, interventions are rapidly evolving with new technologies.

Care coordination: a poorly defined complex concept

During the past decade, various models of coordinated care have been widely applied and documented across a variety of settings, which has resulted in an array of care coordination definitions and conceptual frameworks (19,20). These models provide conceptual support for many types of care coordination interventions, ranging from individual case management (21), through disease management population-based programmes (22–24), to fully integrated care systems (*i.e.* chronic care model) (25–27). This model evolution has led to a more comprehensive integration of patient context, environment, capacity and involvement in care, as well as population-based issues (28). Based on these models, care coordination was considered at three levels (29): the *micro* level (clinical) refers to the delivery of health care to individual patients (coordination of person-focused care); the *meso* level (organisational)

refers to inter-organisational relationships to deliver comprehensive service to a defined population (coordination of population-based care and health care services); and the *macro* level (system) refers to health and social system (governance, financing and policy) (22,29–31).

The core reference model is case management, focused on individual patient-centred care needs (19). The case management model was first described in the 1950s and was designed for people with complex needs (*e.g.* people with mental disorders or elderly dependent people) (24). This model introduced a new profile for professionals as ‘case managers’, consisting mainly of specialised nurses. Case management is schematically based on the quality improvement cycle (*i.e.* ‘plan-do-check-act’) (21). Each step corresponds to a specific stage of patient case management (23): detection of a complex situation, assessment of the situation, consultation between professionals and the patient to consider care planning intervention priorities, identification of stakeholders and implementation interventions, monitoring of the effectiveness of interventions, and reassessment of the situation. The level of management for each case is adapted according to the complexity of the patient’s condition, as well as the duration and intensity of the need for support (24).

From the concept of case management, the disease management model was developed in the 1980s for patients with a well-defined disease (32). This approach is based on coordination tools (*e.g.* decision making algorithms, a structured information system, and patient education) and professional networks adapted to the specific disease (33). Subsequently, the population health management model emerged, integrating both concepts of case management and disease management. This originated from a population-based health programme that aimed to improve care at a lower cost (*i.e.* Kaiser Permanente model) (34,35). Using an information system, people are classified into three distinct groups according to their clinical situation and the importance of their care needs (*Kaiser Pyramid*).

The chronic care model was developed specifically for chronic diseases. Considering the context of care, this model is aimed at integrating informed and active patients into the management of their disease with a proactive and multidisciplinary team of healthcare professionals (36,37). New generations of chronic care models consider broad determinants of health and focus on a system of coordinated interventions across different levels of care (19) through the Innovative Care for Chronic Conditions Framework (World Health Organisation) that is focused on health policies and organisations, as well as resources in the community (38).

In addition to the diversity of these models, several definitions of care coordination coexist. A literature review conducted by Armitage *et al.* revealed approximately 175 overlapping definitions and concepts of care coordination, indicating the absence of a consensus definition (19,39,40). Furthermore, the Agency for Healthcare Research and Quality (AHRQ) has identified more than 40 definitions of care coordination, which has been used to establish a common definition of care coordination (40). Currently, the diversity of existing models, considerable variability among practices, lack of working definitions and shifts in underlying concepts have led to increasing difficulty with regard to the standardisation, replication, transposition and evaluation of coordinated care (41,42). Many authors have acknowledged the lack of effective care coordination and the need to standardise interventions (43–45).

Several integrated care coordination frameworks for multimorbidity (*i.e.* the Integrated Team Effectiveness Model [ITEM], the Development Model for Integrated Care [DMIC], the Rainbow Model of Integrated Care [RMIC], the SELFIE framework or JA-CHRODIS) (46,47,29,31,48–50) have been developed and have provided useful tools concerning care coordination conceptualisation. They cover all dimensions of care coordination but one of the main gaps of these care coordination frameworks is the limited guidance provided on how to

implement care coordination in health systems (50). These models explore the *macro* and *meso* levels, but do not provide sufficient information concerning the *micro* level regarding detailed activities to be carried out with patients, detailed information on actors and tools used to perform person-centered care coordination, or the overall effects of care coordination. In addition, some frameworks tend to combine care coordination activities with tools and actors in the same component, whereas it would be appropriate to individualise them. To the best of our knowledge, there is no comprehensive care coordination framework at the *micro* level that accurately integrates coordination activities.

The EPOCK research programme

In the context of increasing cancer incidence and cancer survivorship (51,52), many national strategic cancer plans have identified cancer care coordination as a priority for health service improvement. In the United States, Canada, and Northern Europe, *cancer navigation* programmes were introduced in the 1980s and 1990s by Freeman, with the initial aim of reducing health inequalities (53), then reducing cancer-related morbidity and mortality (54) and finally offering patients a complete continuum of support in terms of care throughout their lifespan (55). For 20 years, France has implemented a cancer care coordination national programme. There are two distinct levels regarding the structure of cancer care in France: a collective level focused on the organisation and structuration of care coordination, and an individual level focused on patient-centred care. At the collective national level, the French National Cancer Institute (56) has been created to implement National Cancer Plans (*macro* level). At regional and local collective levels (*meso level*), Regional Cancer Networks and Cancer Care Coordination centres are responsible for organising, structuring, and evaluating cancer care in healthcare facilities with regard to the authorisation of, and delivery system for, cancer treatments (57). In addition, at the individual level (*micro level*), various new

professions involved in the coordination of patient care have been implemented empirically since the 2000s without underlying conceptualisation. Some have been focused on healthcare pathways from hospital to ambulatory care and others on treatments. This heterogeneity, particularly among nurses involved in coordination from hospital to ambulatory care, hampers readability, action comprehension, and mission definition, thus causing difficulty in the evaluation of cancer care coordination intervention (20).

Although there is a widely recognised need to improve care coordination for people with cancer (8,9,20), efforts have been hampered by the lack of a common conceptual framework concerning care coordination, information regarding the diversity of professional practices and descriptions of care coordination contexts (58).

Thus, we are carrying out the EPOCK mixed-methods research project in France (funded by the Ministry of Solidarity and Health) (59). This project is aimed at developing a reference framework for care coordination interventions, as well as evaluation of practices and working contexts concerning hospital-based cancer care coordination nurses within this reference framework. This project is being carried out in three phases: (1) building a reference framework for care coordination at the patient level in any clinical situation; (2): describing practices, perceptions, and job attitudes related to care coordination models in the context of oncology treatment in France, while considering diversity and heterogeneity; (3) comparing the expected theoretical framework (developed in phase 1) to professional practices for use in proposing a measurement framework for cancer care coordination nursing intervention in France.

This paper presents the results of the first phase of the EPOCK project, which is aimed at building an evidence-based comprehensive framework of care coordination for all types of diseases, focused on the *micro* level of integrated care models (22,29). We focused on the *micro* level to compensate for the lack of a current standard referral system for care

coordination at this level, and to respond to the need for the EPOCK project phase 2 to investigate cancer care coordination activities of delivered by nurses.

MATERIALS AND METHODS

The framework developed within the EPOCK project is based on the main dimensions of care coordination that has emerged from the AHRQ care coordination definition (40,60), which encompasses all the underlying models studied in the McDonald *et al.* review and have identified four dimensions: a) contexts; b) care coordination interventions activities (at *macro, meso, and micro* levels); c) actors and tools; and d) outcomes, classified from three perspectives: patients, professionals, and health system.

Study design

We conducted a two-step mixed-method study, overviewed by an interdisciplinary research team (EPOCK team) composed of epidemiologists with expertise in health services research, researchers in management sciences, and researchers in human and social sciences. In Step 1, an international scoping review was performed (according to the PRISMA guidelines for Scoping Reviews) (63) involving reviews that evaluated the impact of care coordination interventions to clarify the concept and identify key components of the four dimensions of the framework. This review of reviews was performed to construct a comprehensive and structured inventory of a wide variety of interventions and their components. We used a scoping review to identify as broadly as possible the components of the care coordination framework (64). In Step 2, a nominal group technique (NGT) (65,66) was implemented to select and prioritise the activities of care coordination interventions most relevant to the AHRQ definition of care coordination and applicable to the healthcare systems of high-income countries, particularly France.

Step 1: Identification of key components of framework dimensions (scoping review)

The research strategy explored reviews publications in *PubMed*, *Scopus*, and *PsycInfo* databases using keywords focused on ‘care coordination’, ‘coordination of care’, or ‘coordinated care’ without additional selection criteria regarding the type of disease (see search strategy on *PubMed* data base in supplementary materials Figure 1).

In Supplementary Materials
Figure 1: Electronic search strategy in PubMed Database

After removal of duplicates, the titles and abstracts were hand-screened for relevance by two reviewers (GE and FC). Screened articles were English and French language reviews published between 1990 and September 2017 that evaluated the impact of care coordination interventions, irrespective of clinical condition, patient population or specific outcomes. Articles were excluded if they did not describe care coordination interventions. Then, the full-text publications were reviewed manually by two reviewers (FC and GE). Furthermore, a number of articles were added using a snowball approach (articles selected from the reference lists of included publications). Publications considered relevant only by one of the two reviewers were discussed until consensus was reached. The process of synthesising the literature was iterative. Data were extracted from eligible articles according to the scoping review characteristics (year of publication, authors, journal, number and design of included studies and care coordination interventions tested), population, health conditions. The lead author (GE) and the second author (FC) catalogued the different care coordination theoretical models, activities, actors, tools and type of outcomes (by patient, caregivers, health care professional and system perspectives) according to the AHRQ definition. During five meetings of approximately two hours a discussion was held on the synthesis of the essential

elements of care coordination activities to be rated by the NGT. Based on these discussions we refined the framework.

The outcomes of care coordination interventions were assessed on the basis of impact evaluation criteria in retrieved studies. The selected effects of 'outcome' dimensions were those with statistically significant positive results ($p < 0.05$ was considered statistically significant). Effect criteria were not retained if the review did not indicate the level of significance. In addition, a meta-analysis effect was not recorded if its pooled result was not globally statistically significant. Finally, effect criteria were classified according to the four perspectives of the AHRQ (patients, caregivers, healthcare professionals, and healthcare system).

Step 2: Selection of the components of the dimension 'activity' (nominal group technique)

The interdisciplinary expert group represented various roles, missions, positions and projections for and in the coordination of care in France, in any clinical setting. We defined three categories of needed experts and chose to select three experts in each category. A total of nine experts were selected including: 1) researchers who have published on care coordination (three experts); 2) policy makers and regulators who have organised care coordination at local, regional and national levels (three experts); 3) patients as experts (67,68) who were trained to support patients (three expert patients). The additional selection criteria for experts were volunteering, absence of conflicts of interest, geographic diversity and parity.

According to the NGT's reference methods (69,70), the three steps of the nominal group meeting were conducted as follows: 1) Group discussion (discussion of items and suggestion of new items) to reach an agreement concerning the activity items proposed by the literature review. 2) Individual ratings of activity items, where each expert anonymously rated

the relevance of each individual item, using a score ranging from 0 (not relevant at all) to 4 (very relevant). A care coordination activity was considered relevant if it met the care coordination definition (60). 3) Collective discussion of results and suggestions for rewording or regrouping, further proposals of priorities and reconsiderations of previous discussions. Consensus was reached when everyone around the table was in agreement, comments had been exhausted and everyone agreed on the choices made. We ran two full days NGT at one-month interval in a central and neutral location.

RESULTS

Step 1: Identification of key framework components (literature review)

Review selection

Our literature search yielded 1,407 potentially relevant publications (609 in *PubMed*, 734 in *Scopus* and 64 in *PsycInfo*). After removal of duplicates ($n = 400$), as well as exclusion of editorials, opinions, articles in other languages than English or French and publications that did not refer to the impact of care coordination interventions ($n = 857$), 150 publications were screened on the basis of their title and abstract. Among these 150 articles, 77 revealed an absence of information concerning many basic elements of care coordination, while 24 full-text articles were not accessible. The screening process resulted in 52 unique full-text reviews ($n = 49$ articles from database searches and $n = 3$ articles added by the snowball approach) (see Figure 2 in supplementary materials).

In Supplementary Materials
Figure 2: Scoping review flow chart. EPOCK research project.

The 52 publications were mainly published in the US (n = 17), Europe (n = 15), Canada (n = 10), and Australia (n = 6). Of the 52 publications, 36 (69%) were systematic reviews, 15 were other reviews (narrative, scoping, integrative or focused), and one was a meta-analysis. Articles identified from the scoping literature review were published during the period from 2000 to 2017, and more than half of the reviews were published after 2013. For each included review, the target populations were outlined (*e.g.* mental health, chronic illness, emergent disease, paediatrics and/or elderly), as were the care coordination conceptual models (*i.e.* models either described in the articles or qualified in accordance with the description of interventions in the article) and the nature of interventions tested (**Table 1**).

Table 1: Listing of reviews included in the scoping literature review.

EPOCK Research Project

Components of the framework dimensions

The literature review identified the following components within the four selected dimensions of the framework.

a) Contexts

The literature review reported several contexts of care coordination intervention implementation, characterised by the target populations, which differed according to the nature of disease, stage of care process, sociodemographic characteristics of the patients, and type of healthcare system (71):

- Diseases and multimorbidities managed by care coordination

Care coordination interventions appeared necessary in the context of complex medical pathways involving many providers in the management (72,73) of people with multiple comorbidities (73) (including chronic diseases (74–78)) and having frequent use of the health

system (79). The retrieved care coordination interventions most frequently concerned the following diseases: cancer at different points in management (*i.e.* screening, announcement, post-treatment phase (80) and link between primary care and oncology services (81,82)); after a cardiovascular accident (76,83–85); in the context of dementia (86–88), diabetes (76,83,89), asthma (83,90), rheumatoid arthritis (76,83), or chronic obstructive pulmonary disease (76); after a spinal cord injury(91); and in the context of mental health and addictions (83,92,93).

- At each step of the care process

The retrieved interventions were required at specific stages of the care pathway and care transitions, regardless of the health problem encountered, such as in emergency departments (90,94) and to provide transitions between general and specialised medicine (95). Thus, many articles concerned transitions of healthcare services within the hospital, from intensive care units to general wards (79,90,96), including city-hospital transitions (79,84,95,97,98).

- Sociodemographic and economic characteristics of patients benefitting from care coordination

These interventions had also been tested or implemented in patients with different life-stage situations such as paediatric patients (90,99–101), pregnant patients (73,102,103), elderly patients (97,104–106), or those in end-of-life care (83,107). In addition, these interventions could have been implemented for specific population groups such as those from resource-limited countries (108), refugees (109), or those living in rural areas (102).

- Healthcare system characteristics

These contexts included variables related to the organisation and funding of health systems and their regulation across different countries: funding and financial incentives (79,83) and system re-design (83,90,110), flexible general practitioners funding (102), investments in practice infrastructures (102), pay for performance approaches with new rules for scope of practice (*e.g.* involving non-traditional providers in patient care) (83), physician payment for

time spent coordinating (83), reduction of patient financial barriers (109), and lack of insurance or under-insurance (83).

b) Activities of care coordination interventions

Care coordination interventions consisted of several types of activities that have been grouped by EPOCK team into three main categories: a) organisation of care, b) care, and c) facilitation. Each major category was divided into several types of activity as presented in **Table 2**.

Table 2: Classification and description of care coordination activities identified in the literature review. EPOCK Research Project

c) Actors of care coordination

The retrieved care coordination interventions could be implemented by several types of actors: dedicated professionals, multidisciplinary teams and other actors.

Dedicated professionals

Many terms retrieved in the review referred to individuals dedicated to the coordination of care: *care coordinators* (79,101,103,111), *care coordination counsellors*, *nurse care coordinators* (111), *nurse coordinators* (85), *key workers* (71,92), *patient navigators* (79), *care navigators* (83,97), *care managers* (111), *case managers*, *nurse case managers* (79,90,111,112), *nurse practitioners* (111), *lay navigators*, *liaison nurses* (84,113), *counsellors* (88), *hospital-based case managers* (97), *social workers or community health workers* (78,79,88,111,114), *care networks* (106), *nursing homes* (91,110,114) or *municipality home visitors (intervention-focused municipality employees)* (115).

Multidisciplinary teams (79,83)

These teams generally involved two or more professionals from different specialties or professions who provided care to a patient or a group of patients. Teams consisted of health care personnel from different fields (*i.e.* mixed skills) (116). Examples included a *case management team approach (79) with local community mental health teams that integrated health and social care professionals; a case management team with a registered nurse and physiotherapist who performed a comprehensive patient assessment and developed a goal-directed, individualised care plan in consultation with the patient, health professionals, family and caregivers (79); a senior social worker and a chief professional nurse who acted as main care coordinators (79); care coordinators and clinical pharmacists working with study teams who interacted with patients daily throughout their hospital stay and following discharge (via post-discharge phone call) (79); a typical group meeting (with primary care physician and nurse) that patients attended monthly as needed (79); an intensive case management approach involving a social worker, psychologist, psychiatrist, nurse, and occupational therapist (79); and patients in an assertive community rehabilitation programme who received support from a team including a psychiatrist, nurse, social workers, vocational counsellor and a support worker for those with mental illness who were available 24 hours per day, 7 days per week (79,83,95).*

A multi-disciplinary team of medical staff members from various fields were likely to manage all aspects of patient care, share information and thus provide more coordinated care (79,83). Other types of teams were also retrieved, including a *peer-support group*, commonly described for patients with type 2 diabetes or for children and families (71,117). Additionally, general practitioners in multidisciplinary teams were identified as a specific actors in the coordination of care (82). Collaboration of case managers with general practitioners is a key component of *case management* (110). Regular communication between case managers and

family physicians is essential for patient-centred care targeting vulnerable populations (110,118).

d) Tools

Care coordination actors use numerous tools to perform their activities. They have been classified according to their contributions to care coordination activity facilitation (*e.g.* information communication technology tools, medical services, and long-term support services), decision making (*e.g.* multidisciplinary meetings, case conferences, referral systems, care plans and guidelines) and evaluation (*e.g.* professional feedback methods) (**Supplementary Materials Table A**).

In Supplementary Materials

Table A: Presentation of care coordination tools retrieved in the literature review:

EPOCK Research Project

e) Effects of care coordination (Table B in supplementary materials).

Effects of care coordination interventions could be assessed in 39 international reviews from among the 52 publications. Notably, 45 types of effects (165 outcomes) were statistically significant. The following effects were retrieved: a) patient perspective (*e.g.* patient engagement, patient satisfaction, patient experience, quality of life, patient knowledge, social integration, morbidity and mortality), b) caregiver perspective (*e.g.* family burden, caregiver satisfaction and caregiver quality of life), c) professional perspective (*e.g.* communication among healthcare providers, communication between patients and professionals, guideline

adherence, care appropriateness, decision support, referral and professional quality of life), and d) health care system perspective (*e.g.* health services use, primary care use, transitions between primary care and hospital, costs and efficiency) (**Table B in Supplementary Materials**).

In Supplementary Materials

Table B: Statistically significant effects of care coordination interventions identified by the scoping review. EPOCK research project

Step 2: Selection of activities (nominal group technique)

In total, 66 activities in three categories were finally selected by the experts after voting and final discussion phases: category 1 (care organisation activities) included 28 activities; category 2 (care activities) included 24 activities; and category 3 (facilitation) included 14 activities (**Table 3**).

Table 3: Final selection of activities items after voting and discussion by the nominal group technique: EPOCK research project

Among the 159 types of care coordination intervention activities initially retrieved in the scoping review, 29 were removed from the framework and 10 others were added to the framework by the experts after the first step of the nominal group process (**in Supplementary materials Table C**).

In Supplementary Materials

Table C: Nominal group technique selection process of activities items retrieved in the scoping review. EPOCK Research Project

The main categories of care coordination activities excluded by the experts in the first round of the nominal group were related to:

- Care implementation activities (such as *monitoring delivery services, executing care plans and implementing care packages*) and activities related to medical treatment such as (*prescription of medication, reviewing drugs and medication conciliation*), which were not specific to care coordination functions, but were focused on provision of care;
- Outdated terminologies found in the literature, such as ‘*Advocacy, advocate for the patient, or speak on behalf of families in an advocacy manner*’ (71,75,93,97,103,115,119), ‘*doctor-patient relationship*’ and ‘*patient engagement*’ (a preferred phrase was ‘*establish liaison or collaboration with the patient*’);
- Activities not strictly specific to care coordination interventions such as activities related to specific categories of professionals (such as *triage, transportation assistance and making travel arrangements*) or activities related to health care providers (such as *psychological support*). By unanimous agreement, the experts also recommended exclusion of activities related to ‘*psychological support*’, ‘*emotional support*’, ‘*family support*’, and ‘*proactive support*’. They considered these activities to be related to the specific roles of health care professionals (including nurses) and not as specific care coordination intervention tasks. The experts considered ‘*psychological support*’ to be a consequence of the regular link created by care coordination

- interventions. The experts preferred *'assist in the transition from hospital to home'* and *'act as a point of reference for all enquiries related to the patient'*;
- Activities related to *'gatekeeper funds'* or *'considering the costs of different care options'* were regarded as a *'societal issue to be addressed by social security institutions'*. These activities were replaced with *'consider the excess to be paid by the patient during care planning'*;
 - Evaluation activities as clinical *audits* because these were considered *'collective coordination'*, rather than *'individual or clinical coordination'*.

Among the remaining 130 activities, the experts further discussed changing the terminology for 44 activities, then ranked and combined 76 activities into 15 grouped categories (**Table 3** and all experts' choices in **Supplementary materials Table C**). The experts emphasised the importance of identifying the most complex situations at all levels (*e.g.* medical, social, psychological and environmental) and the patients with the least access to primary care. They also highlighted the importance of including two other stakeholders in the care process: *'patients as care providers'* (patients could be trained to support patients; expert discussions focused on the importance of considering patients' *experiential knowledge* and the *'lay know-how'*) and relatives who *are often excluded*. During the discussion of care planning activities, the concepts of *'consent to care'* and the *'right to oblivion'* were addressed. Experts therefore prioritised patient involvement activities and shared decision making.

Experts combined medical, cognitive, behavioural and psychosocial patient needs assessment. They emphasised the importance of assessing care coordination needs. In addition, the experts recommended adding activities related to the assessment of relatives' personal and environmental resources. Experts ranked the concept of *'empowerment'* as the most important element of care activities. They indicated that care coordination activities should focus on *'assessing education need or suggesting patient education'* rather than

'educating patients'. In addition, the experts changed the phrase *'enhancing adherence'* to *'support and monitor patient adherence'*. The expert group considered *'communication as the core of the coordination professions'*. They combined 23 elements related to communication, information management, and information sharing into seven activities. They also proposed adding three activities related to analysis of practices, analysis of the patient experience of care coordination and participation in the evaluation of the traceability of information.

The final constitutive elements of the care coordination framework (**Figure 1**) were: a) contexts (individual, organisational and collective); b) 66 care coordination activities at an individual level (28 care organisation activities, 24 care activities, and 14 facilitation activities); c) actors (dedicated professionals or multidisciplinary teams) and tools (facilitation, decision support, and evaluation tools); d) 165 effects of care coordination (grouped into 45 categories) classified according to patients, caregivers, professionals and healthcare system perspectives.

Figure 1: Overall reference framework structure for care coordination interventions.

EPOCK research project

DISCUSSION

Result synthesis

Our study proposes an innovative and operational framework of care coordination at the *micro* level, applicable in any clinical condition (*e.g.* multimorbidity, multiple chronic conditions, physical or mental illness and long-term care) and many organisational contexts. The EPOCK framework provides new knowledge concerning the components of all dimensions of the coordination of care at the patient level (*i.e.* contexts, activities, actors and

tools, and effects). In particular, the dimension ‘activities’ constitutes major information for the operationalisation of the framework, as well as the effective and efficient implementation of care coordination. To the best of our knowledge, this framework provides a structured synthesis of the overall effects of care coordination that has not been previously published and answers many questions concerning the effectiveness of care coordination.

In the absence of a current standard referral system for care coordination intervention at the *micro* level, the EPOCK framework could be a very useful and innovative tool for describing, implementing, and evaluating care coordination intervention programmes. It could facilitate effective implementation of care coordination, preparation of teaching materials for training in care coordination, and robust development and evaluation of care coordination interventions. This framework can be implemented in high-income countries and re-examined in the context of local organisations, because care coordination intervention is based on key universal elements that extend beyond the characteristics of a specific country’s healthcare system.

Comparison with the literature

As suggested by Peterson *et al.* (50,120), more than 35 frameworks on care coordination have been developed but remained mostly theoretical. Few of them have been implemented in health care systems and few have led to the implementation of interventions to improve care coordination. In addition to AHRQ’s care coordination framework (40), a number of these integrated care models consider the micro level: the Integrated Team Effectiveness Model (ITEM) (46), the Development Model for Integrated Care (DMIC) (47,121), the Rainbow Model of Integrated Care (RMIC) (29,122,123), the Sustainable intEgrated chronic care modeLs for multimorbidity: delivery, FInancing, and performancE (SELFIE) (49) and JA-CHRODIS (concerning chronic diseases and healthy ageing across the life cycle) (48). However, the EPOCK framework focuses on the details of care coordination activities (what

Peterson *et al.* call the ‘type of coordination’) allowing for greater precision and ability to implement coordination interventions on-the-ground. Our classification provides a more specific and operational approach by differentiating activities (practices), actors, tools and effects. Few other models provide such detailed analysis at micro level and for some frameworks, we can observe a mix between components (activities, tools and effects). For example, some frameworks have suggested ‘Case management’ at the micro level, but without detailing what this encompasses (in cluster 2 ‘delivery system’ of DMIC, in the *micro* level of RMIC). Or, they consider ‘continuity of care’ (listed in SELFIE and in RMIC) and ‘Client satisfaction’ (RMIC) at the micro level, whereas these elements seem to refer to the effects of care coordination. Other frameworks such as DMIC provide very detailed elements for each of its components (89 elements grouped in a nine cluster-model) (121). However, the three levels of the integrated care models seem to be mixed among the nine clusters and activities of care coordination retrieved in EPOCK seem to overlap several clusters. This could make the implementation of such a model quite difficult in practice. For example, clusters '1: patient-centeredness', '4: quality care' and '7: roles and tasks' could correspond to the micro level of the integrated care models and to some EPOCK activities; other clusters mix the different macro, meso and micro levels (clusters 6, 8 and 9).

The AHRQ framework (*Care Coordination Measures Atlas*) has been developed mainly to identify and evaluate the effects of care coordination. This framework is organised through key domains (*i.e.* goals, mechanisms and effects) involving the combination of coordination activities and broad approaches in the domain ‘mechanisms’. The AHRQ framework does not focus on a complete listing of care coordination activities, but considers broader approaches to understand more fully variations in the effects of care coordination. While the AHRQ grouped together ‘case management’ and ‘disease management’ into a single dimension (‘care management’), EPOCK regards care coordination at the individual

level as ‘case management’. The EPOCK framework proposes a complete and specific list of care coordination activities, excluding activities that can be carried out by other professions (*e.g.* patient education, medication management, reconciling discrepancies in medication use and psychological support).

The SELFIE framework has been built around the *micro*, *meso* and *macro* levels and grouped according to six World Health Organisation components used to describe and compare health systems: service delivery, leadership and governance, workforce, financing, technologies and medical products, and information and research (49). The JA-CHRODIS identified 16 components of integrated care in four domains (delivery of system design, decision support, self-management support, and clinical information system) for patients with multiple chronic conditions or frailty, all of which are covered in the SELFIE framework (48,49).

The existing models are mainly oriented toward the *macro* and *meso* levels of integrated care, and combine actors, tools and activities into similar dimensions with a more global approach. These models underline the ‘*need for care coordination*’ and ‘*having a named coordinator*’ without providing a precise description of the specific care coordination activities to be carried out. Similar to the existing models, the EPOCK framework is applicable to multimorbidity. By providing accurate information concerning the ‘activity’ dimension of care coordination, the EPOCK framework complements these two models at the *micro* level. For example, regarding the component ‘*Coordination tailored to complexity*’ listed in the SELFIE *micro* level, EPOCK provides more details in activity categories ‘*1.1 Case identification*’ (*identify patients with complex needs who are not in contact with health services*)’ and ‘*2.2 Comprehensive needs assessment and patient monitoring*’.

In addition, all activities identified in the EPOCK framework consist of pragmatic and practice-oriented actions, which can be translated into measurable care coordination indicators

(124). The EPOCK framework separates the dimension ‘activities’ from the dimensions ‘actors’ and ‘tools’ of care coordination, as in the AHRQ model, although this separation is absent from other frameworks (47–49,122). Thus, the EPOCK framework could provide greater clarity with regard to the description of coordination intervention, and more precise information to ensure careful evaluation of care coordination interventions. In their latest review, Duan-Porter *et al.* recommend for future research to better define the ‘core’ intervention components and describe local adaptations, particularly in multi-site studies, which is in line with the objective and results of the EPOCK project (129). Furthermore, the EPOCK framework development process led to an evidence-based list of care coordination effects. This selection was based on systematic criteria applied in the selected studies and resulted in the selection of solely statistically significant effects. These short-listed outcomes could be used to evaluate more accurately the impact of care coordination, independently of clinical or organisational contexts.

Strengths and limitations

In contrast to other thematically related articles on building theoretical frameworks, our study used an evidence-based consensus method (including expert patients) to produce structured and explicit outputs, combined with a scoping review of interventions reviews. These methods helped to identify, broadly and comprehensively, existing dimensions of care coordination interventions (activities, actors and critical outcomes). We opted to carry out a scoping review as we sought to be more sensitive than with a systematic review (which is more specific) in order to clarify working definitions and conceptual boundaries of care coordination interventions, to describe fully all the detailed elements of the framework, and to inform and guide the process of selection and prioritisation ensured by the nominal group technique (125,126). However, our scoping review did not explore all sources of data (grey

literature, conference abstracts, or consulting of experts) that may have increased our risk missing relevant studies. In addition, independent data extraction by two review authors was not feasible due to the large number of included reviews (and is not recommended in methods guidance for scoping reviews) (127). Nevertheless, two authors independently screened and selected reviews, thus minimising the likelihood of omitting eligible reviews. Furthermore, the retrieval process was sufficiently broad to ensure collection of a large and comprehensive body of description of care coordination interventions related to complex contexts, activities, actors, tools and outcomes. To address any variation or investigate any conflicting results, further analyses of the care coordination effects would probably require a systematic review or even a meta-analysis.

Because the term 'care coordination' was not identified as a Medical Subject Headings (MeSH) term, care coordination was often approached by combinations of other terms such as 'comprehensive care', 'care integration', 'continuity of care', or 'integrated care'. However, these terms were not specific to care coordination and might have introduced confusion concerning the definition of care coordination. To avoid making any *a priori* assumptions regarding the definition of care coordination, we chose (for the research equation) to include only terms that specifically contained the word 'coordination' or 'coordinated'. Therefore, some articles may have been missed. Moreover, this first step was a prerequisite for conducting a structured consensus method that allowed refinement of the results and completed notions that could not have been identified by the literature review. The review team included a researcher with methodological expertise in conducting systematic reviews, policy makers, and care coordination practitioners. We limited the search to the period from the early 1990s onwards, which enabled us to identify all but the very small minority of reviews conducted prior to that time (59). In addition, we limited our research to the end of September 2017 because the EPOCK project phase one had to be completed in 2018 in order

to keep the project on schedule. The same search and selection process was reproduced between October 2017 and June 2021. We then selected 23 eligible articles for full-text analysis. This extension did not identify any new emerging themes but highlighted the importance of the issue of ‘relationship in coordination’ or ‘relational coordination’ (mode of communication, informal relationships, mutual respect, relationships built on trust) (20,50,123,128). This component was in line with the following activities previously retrieved in the scoping review, selected and modified by the experts and selected by the experts: ‘1.3.a. Engage/involve patient (shared decision making)’, ‘2.1.a. Establish and sustain collaboration with patient’, ‘2.1.d. Sustain relationship with patient for better therapeutic adherence’, ‘2.2.a. Determine patient's decision-making capacity’, ‘2.2.c. Consider patient preferences, expectations, and resources to assist in adjustment of care delivery’, ‘2.3.a. Patient empowerment’, ‘2.3.h. Support patient in expressing needs’.

Several consensus methods were considered by the EPOCK research group. We chose the NGT rather than the Delphi technique because this method was the most appropriate for achieving our objectives. Direct verbal exchanges between experts were encouraged to facilitate addition of elements, enable discussion of possible rewording, and allowance of idea generation. The NGT provides group dynamics on the basis of direct interactions among experts, and yields a *consensus* by giving equal weight to each participant’s input. This process yields more ideas than a conventional unstructured group meeting in which normal group interactions constrain the freedom of expression or in a Delphi technique which uses self-completed e-mailed questionnaires with individual feed-backs (130). The NGT group size should not exceed five to nine participants to minimise the risk of a dominant participant influencing the discussion (69,70). In addition, the profiles of the experts were sufficiently varied to allow each to express his or her skills. In addition, four researchers were in charge of moderating and facilitating the group to ensure equitable distribution of speaking time.

Moreover, the multidisciplinary composition of the expert group (*i.e.* patients, researchers, professionals, policy makers and payers) and a broad geographical representation (five French regions) of experts ensured a high level of consensus.

The participation of expert patients in the nominal group was a major advantage. Based on their personal experience, those experts selected more specific care coordination activities by removing activities related more to other professions than to coordination. For example, ‘emotional support’ (75) was retrieved from the literature search, but was excluded from the reference framework because care coordination was presumed to refer patients to dedicated supportive care professionals.

In addition, patient contributions (based on the Montreal model developed in 2010) (131–133) in this research enriched the discussion so that patient needs could be accurately addressed. Patient contributions provided considerable guidance in the discussions and strengthened the role of patients in the ‘activities’ dimension of the framework. The experts emphasised the need to include the Patient Engagement Capacity Model (110) in any care coordination framework because identifying elements within interconnected domains (*i.e.* person, environment, or behaviour) may improve health workers’ abilities to facilitate patient engagement and patient access to integrated care systems.

Finally, the experts suggested involving patient experts as much as possible in healthcare organisation transformation initiatives, in accordance with the Collaborative chronic care network model (134).

Implications

The EPOCK reference framework could be used in several domains. First, it could be used in care coordination practices to develop position profiles, job descriptions and best practice guidelines for care coordination workers, and to develop criteria for evaluating practices

among care coordination professionals and work environments. It could also be used to build a wide range of teaching materials and training programmes, from undergraduate to post-graduate programmes and lifelong learning courses. Second, it could be used in public health and health system organisation (measurable indicators) to develop care coordination evidence-based clinical and performance measurable indicators. In addition, care coordination activities identified in the reference framework could be used to design specifications for the development of care coordination tools (*e.g.* information communication tools) and their evaluation. Third, it could be used in health services research to build qualitative study tools needed to analyse the practices of care coordination nurses in various clinical contexts, and could help in comparisons of care coordination intervention programmes among contexts.

Conclusions

This study contributed to the conceptualisation of care coordination interventions from a patient-centred care perspective, in the absence of an existing evidence-based reference framework for care coordination interventions at the *micro* level. The EPOCK reference framework could reduce variability in practices by developing job descriptions and training programmes for future care coordination professionals, thereby increasing the quality and safety of care. This framework could provide key elements for effective implementation of care coordination intervention, and for designing further medico-economic evaluation of the impact of coordination interventions.

REFERENCES

1. Kripalani S, LeFevre F, Phillips CO, Williams MV, Basaviah P, Baker DW. Deficits in communication and information transfer between hospital-based and primary care physicians: implications for patient safety and continuity of care. *JAMA*. 2007 Feb 28;297(8):831–41.
2. Osborn R, Moulds D, Squires D, Doty MM, Anderson C. International survey of older adults finds shortcomings in access, coordination, and patient-centered care. *Health Aff (Millwood)*. 2014 Dec;33(12):2247–55.
3. Borgermans L, Marchal Y, Busetto L, Kalseth J, Kasteng F, Suija K, et al. How to Improve Integrated Care for People with Chronic Conditions: Key Findings from EU FP-7 Project INTEGRATE and Beyond. *International Journal of Integrated Care*. 2017 Sep 25;17(4):7.
4. World Health Organization. WHO | Global status report on noncommunicable diseases 2010 [Internet]. WHO. 2010 [cited 2018 Nov 17]. Available from: http://www.who.int/nmh/publications/ncd_report2010/en/
5. Young JM, Walsh J, Butow PN, Solomon MJ, Shaw J. Measuring cancer care coordination: development and validation of a questionnaire for patients. *BMC Cancer*. 2011 Jul 15;11:298.
6. Guthrie B, Saultz JW, Freeman GK, Haggerty JL. Continuity of care matters. *BMJ*. 2008 Aug 7;337:a867.
7. Nazareth I, Jones L, Irving A, Aslett H, Ramsay A, Richardson A, et al. Perceived concepts of continuity of care in people with colorectal and breast cancer--a qualitative case study analysis. *Eur J Cancer Care (Engl)*. 2008 Nov;17(6):569–77.
8. Walsh J, Young J m., Harrison J d., Butow P n., Solomon M j., Masya L, et al. What is important in cancer care coordination? A qualitative investigation. *European Journal of Cancer Care*. 2011 Mar 1;20(2):220–7.
9. Haynes K, Ugalde A, Whiffen R, Rogers M, Duffy M, Packer C, et al. Health professionals involved in cancer care coordination: Nature of the role and scope of practice. *Collegian*. 2018 Aug 1;25(4):395–400.
10. Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. *BMJ*. 2003 Nov 22;327(7425):1219–21.
11. Bodenheimer T. Coordinating care--a perilous journey through the health care system. *N Engl J Med*. 2008 Mar 6;358(10):1064–71.
12. Moore S, Corner J, Haviland J, Wells M, Salmon E, Normand C, et al. Nurse led follow up and conventional medical follow up in management of patients with lung cancer: randomised trial. *BMJ*. 2002 Nov 16;325(7373):1145.
13. Young JM, Butow PN, Walsh J, Durcinoska I, Dobbins TA, Rodwell L, et al. Multicenter randomized trial of centralized nurse-led telephone-based care coordination to improve outcomes after surgical resection for colorectal cancer: the CONNECT intervention. *J Clin Oncol*. 2013 Oct 1;31(28):3585–91.
14. Chen Y-C, Chang Y-J, Tsou Y-C, Chen M-C, Pai Y-C. Effectiveness of nurse case management compared with usual care in cancer patients at a single medical center in Taiwan: a quasi-experimental study. *BMC Health Serv Res*. 2013;13:202.
15. Aubin M, Giguère A, Martin M, Verreault R, Fitch MI, Kazanjian A, et al. Interventions to improve continuity of care in the follow-up of patients with cancer. *Cochrane Database Syst Rev*. 2012;(7):CD007672.
16. Basu M, Linebarger J, Gabram SGA, Patterson SG, Amin M, Ward KC. The effect of nurse navigation on timeliness of breast cancer care at an academic comprehensive cancer center. *Cancer*. 2013 Jul 15;119(14):2524–31.

17. Yates P. Cancer Care Coordinators: Realising the Potential for Improving the Patient Journey. *Cancer Forum*. 2004;28(3):128–32.
18. McDonald KM, Sundaram V, Bravata DM, Lewis R, Lin N, Kraft SA, et al. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies (Vol. 7: Care Coordination). Rockville (MD): Agency for Healthcare Research and Quality (US); 2007. (AHRQ Technical Reviews).
19. World Health Organization. Integrated care models: an overview [Internet]. Denmark: WHO Regional office for Europe; 2016 Oct [cited 2019 Jan 4] p. 42. Available from: http://www.euro.who.int/__data/assets/pdf_file/0005/322475/Integrated-care-models-overview.pdf?ua=1
20. Gorin SS, Haggstrom D, Han PKJ, Fairfield KM, Krebs P, Clauser SB. Cancer Care Coordination: a Systematic Review and Meta-Analysis of Over 30 Years of Empirical Studies. *Ann Behav Med*. 2017 Aug;51(4):532–46.
21. Case Management Society UK. CMSUK Standards and best practice guidelines. [Internet]. 2009 [cited 2016 Sep 3]. Report No.: 2nd Edition. Available from: <https://www.cmsuk.org/uploads/page/000standards-2nd-ed-hoZc.pdf>
22. Leutz WN. Five laws for integrating medical and social services: lessons from the United States and the United Kingdom. *Milbank Q*. 1999;77(1):77–110, iv–v.
23. Fisher HM, McCabe S. Managing Chronic Conditions for Elderly Adults: The VNS CHOICE Model. *Health Care Financ Rev*. 2005;27(1):33–45.
24. Huxley P. Case Management and Care Management in Community Care. *Br J Soc Work*. 1993 Jan 8;23(4):365–81.
25. Wagner EH. Managed care and chronic illness: health services research needs. *Health Serv Res*. 1997 Dec;32(5):702–14.
26. Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving chronic illness care: translating evidence into action. *Health Aff (Millwood)*. 2001 Dec;20(6):64–78.
27. Dunbar J, Reddy P. Integration and coordination of care. *Aust J Rural Health*. 2009 Feb;17(1):27–33.
28. Health Services Delivery Programme Division of Health Systems and Public Health. Strengthening people-centred health systems in the WHO European Region: A Framework for Action towards Coordinated/Integrated Health Services Delivery. Copenhagen: WHO Regional Office for Europe [Internet]. 2016; Available from: https://www.euro.who.int/__data/assets/pdf_file/0006/186756/Towards-people-centred-health-systems-an-innovative-approach-for-better-health-outcomes.pdf
29. Valentijn PP, Schepman SM, Opheij W, Bruijnzeels MA. Understanding integrated care: a comprehensive conceptual framework based on the integrative functions of primary care. *Int J Integr Care*. 2013 Mar;13:e010.
30. Plochg T, Klazinga NS. Community-based integrated care: myth or must? *Int J Qual Health Care*. 2002 Apr;14(2):91–101.
31. Van Houdt S, Heyrman J, Vanhaecht K, Sermeus W, De Lepeleire J. An in-depth analysis of theoretical frameworks for the study of care coordination. *Int J Integr Care* [Internet]. 2013 Jun 27 [cited 2019 Mar 23];13. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3718267/>
32. Schrijvers G. Disease management: a proposal for a new definition. *International Journal of Integrated Care* [Internet]. 2009 Mar 12 [cited 2020 Jul 20];9(1). Available from: <http://www.ijic.org/article/10.5334/ijic.301/>
33. Epstein RS, Sherwood LM. From outcomes research to disease management: a guide for the perplexed. *Ann Intern Med*. 1996 May 1;124(9):832–7.

34. Ketner L. Population management takes disease management to the next level. *Healthc Financ Manage*. 1999 Aug;53(8):36–9.
35. Pines J, Selevan J, McStay FA, George M, McClellan M. Kaiser Permanente–California: a model for integrated care for the ill and injured. The Brookings Institution. 2015.
36. Wagner EH. Chronic disease management: what will it take to improve care for chronic illness? *Eff Clin Pract*. 1998 Sep;1(1):2–4.
37. Coleman K, Austin BT, Brach C, Wagner EH. Evidence on the Chronic Care Model in the new millennium. *Health Aff (Millwood)*. 2009 Feb;28(1):75–85.
38. World Health Organization, editor. *Innovative care for chronic conditions: building blocks for action: global report*. Geneva: World Health Organization; 2002. 112 p.
39. Armitage GD, Suter E, Oelke ND, Adair CE. Health systems integration: state of the evidence. *Int J Integr Care* [Internet]. 2009 Jun 17 [cited 2018 Nov 15];9. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2707589/>
40. Mc Donald KM. AHRQ updates on primary care research: care coordination measures atlas and database. *Ann Fam Med*. 2014 Oct;12(5):484.
41. Hisashige A. The Effectiveness and Efficiency of Disease Management Programs for Patients with Chronic Diseases. *Glob J Health Sci*. 2013 Mar;5(2):27–48.
42. RAND Europe. National Evaluation of the DH Integrated Care Pilots [Internet]. RAND Corporation; 2012 Mar [cited 2019 Jan 4] p. 131. Available from: https://www.rand.org/content/dam/rand/pubs/technical_reports/2012/RAND_TR1164.pdf
43. Bates DW. Health Information Technology and Care Coordination: The Next Big Opportunity for Informatics? *Yearb Med Inform*. 2015 Aug 13;10(1):11–4.
44. Tomasone JR, Brouwers MC, Vukmirovic M, Grunfeld E, O’Brien MA, Urquhart R, et al. Interventions to improve care coordination between primary healthcare and oncology care providers: a systematic review. *ESMO Open*. 2016;1(5):e000077.
45. Tomasone JR, Vukmirovic M, Brouwers MC, Grunfeld E, Urquhart R, O’Brien MA, et al. Challenges and insights in implementing coordinated care between oncology and primary care providers: a Canadian perspective. *Curr Oncol*. 2017 Apr;24(2):120–3.
46. Lemieux-Charles L, McGuire WL. What do we know about health care team effectiveness? A review of the literature. *Med Care Res Rev*. 2006 Jun;63(3):263–300.
47. Minkman MMN. Developing integrated care. Towards a development model for integrated care. *Int J Integr Care*. 2012 Oct 12;12:e197.
48. Palmer K, Marengoni A, Forjaz MJ, Jureviciene E, Laatikainen T, Mammarella F, et al. Multimorbidity care model: Recommendations from the consensus meeting of the Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS). *Health Policy*. 2018;122(1):4–11.
49. Leijten FRM, Struckmann V, van Ginneken E, Cypionka T, Kraus M, Reiss M, et al. The SELFIE framework for integrated care for multi-morbidity: Development and description. *Health Policy*. 2018;122(1):12–22.
50. Peterson K, Anderson J, Bourne D, Boundy E. Scoping Brief: Care Coordination Theoretical Models and Frameworks. In: VA Evidence Synthesis Program Evidence Briefs [Internet]. Washington (DC): Department of Veterans Affairs (US); 2011 [cited 2019 Mar 23]. (VA Evidence Synthesis Program Reports). Available from: <http://www.ncbi.nlm.nih.gov/books/NBK525002/>

51. Ferlay J, Colombet M, Soerjomataram I, Mathers C, Parkin DM, Piñeros M, et al. Estimating the global cancer incidence and mortality in 2018: GLOBOCAN sources and methods. *Int J Cancer*. 2018 Oct 23;
52. Arnold M, Rutherford M, Lam F, Bray F, Ervik M, Soerjomataram I. ICBP SURVMARK-2 online tool: International Cancer Survival Benchmarking. [Internet]. 2019 [cited 2020 Jul 20]. Available from: <https://gco.iarc.fr/survival/survmark/about/>
53. Freeman HP. Patient navigation: a community based strategy to reduce cancer disparities. *J Urban Health*. 2006 Mar;83(2):139–41.
54. Freeman HP. Patient navigation: a community centered approach to reducing cancer mortality. *J Cancer Educ*. 2006;21(1 Suppl):S11-14.
55. Hopkins J, Mumber MP. Patient navigation through the cancer care continuum: an overview. *J Oncol Pract*. 2009 Jul;5(4):150–2.
56. The French National Cancer Institute - www.en.ecancer.fr [Internet]. [cited 2020 Jul 20]. Available from: <https://en.e-cancer.fr/>
57. Circulaire DHOS/SDO no 2005-101 du 22 février 2005 relative à l'organisation des soins en cancérologie. [Internet]. Bulletin Officiel N°2005-3: Annonce N°34; [cited 2016 Sep 3]. Available from: <http://social-sante.gouv.fr/fichiers/bo/2005/05-03/a0030034.htm>
58. Wells KJ, Battaglia TA, Dudley DJ, Garcia R, Greene A, Calhoun E, et al. PATIENT NAVIGATION. *Cancer*. 2008 Oct 15;113(8):1999–2010.
59. Colombani F, Sibé M, Kret M, Quintard B, Ravaud A, Saillour-Glénisson F. EPOCK study protocol: a mixed-methods research program evaluating cancer care coordination nursing occupations in France as a complex intervention. *BMC Health Serv Res*. 2019 Jul 12;19(1):483.
60. Schultz EM, McDonald KM. What is care coordination?: *International Journal of Care Coordination* [Internet]. 2014 Aug 27 [cited 2020 Jun 3]; Available from: <https://journals.sagepub.com/doi/10.1177/2053435414540615>
61. Gardner K, Banfield M, McRae I, Gillespie J, Yen L. Improving coordination through information continuity: a framework for translational research. *BMC Health Serv Res*. 2014;14:590.
62. Fishman-Bosc A, Leveau E, Crelerot-Klopfenstein S, Gentile S, Colson S. Clarification de concept : la coordination appliquée au domaine des soins. *Revue francophone internationale de recherche infirmière*. Elsevier Masson France. 2016;77—86.
63. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018 Oct 2;169(7):467–73.
64. Colquhoun HL, Levac D, O'Brien KK, Straus S, Tricco AC, Perrier L, et al. Scoping reviews: time for clarity in definition, methods, and reporting. *Journal of Clinical Epidemiology*. 2014 Dec 1;67(12):1291–4.
65. Van de Ven AH, Delbecq AL. The nominal group as a research instrument for exploratory health studies. *Am J Public Health*. 1972 Mar;62(3):337–42.
66. Rankin NM, McGregor D, Butow PN, White K, Phillips JL, Young JM, et al. Adapting the nominal group technique for priority setting of evidence-practice gaps in implementation science. *BMC Medical Research Methodology*. 2016;16:110.
67. Rashid A, Thomas V, Shaw T, Leng G. Patient and Public Involvement in the Development of Healthcare Guidance: An Overview of Current Methods and Future Challenges. *Patient*. 2017;10(3):277–82.
68. Tattersall RL. The expert patient: a new approach to chronic disease management for the twenty-first century. *Clin Med (Lond)*. 2002 Jun;2(3):227–9.

69. McMillan SS, Kelly F, Sav A, Kendall E, King MA, Whitty JA, et al. Using the Nominal Group Technique: how to analyse across multiple groups. *Health Serv Outcomes Res Method*. 2014 Sep 1;14(3):92–108.
70. Bourrée F, Michel P, Salmi LR. Méthodes de consensus : revue des méthodes originales et de leurs grandes variantes utilisées en santé publique. *Revue d'Épidémiologie et de Santé Publique*. 2008 Dec 1;56(6):415–23.
71. Hillis R, Brenner M, Larkin PJ, Cawley D, Connolly M. The role of care coordinator for children with complex care needs: A systematic review. *International Journal of Integrated Care*. 2016;16(2).
72. Ehrlich C, Kendall E, Muenchberger H, Armstrong K. Coordinated care: what does that really mean? *Health Soc Care Community*. 2009;17(6):619–27.
73. Kroll-Desrosiers AR, Crawford SL, Moore Simas TA, Rosen AK, Mattocks KM. Improving Pregnancy Outcomes through Maternity Care Coordination: A Systematic Review. *Womens Health Issues*. 2016;26(1):87–99.
74. Joo JY. Effectiveness of Web-Based Interventions for Managing Diabetes in Korea. *Comput Inform Nurs*. 2016;34(12):587–600.
75. Lukersmith S, Millington M, Salvador-Carulla L. What is case management? A scoping and mapping review. *International Journal of Integrated Care*. 2016;16(4).
76. Ouwens M, Wollersheim H, Hermens R, Hulscher M, Grol R. Integrated care programmes for chronically ill patients: a review of systematic reviews. *Int J Qual Health Care*. 2005;17(2):141–6.
77. Powell Davies G, Williams AM, Larsen K, Perkins D, Roland M, Harris MF. Coordinating primary health care: an analysis of the outcomes of a systematic review. *Med J Aust*. 2008;188(8 Suppl):S65–68.
78. Rigby M, Georgiou A, Hyppönen H, Ammenwerth E, de Keizer N, Magrabi F, et al. Patient Portals as a Means of Information and Communication Technology Support to Patient- Centric Care Coordination - the Missing Evidence and the Challenges of Evaluation. A joint contribution of IMIA WG EVAL and EFMI WG EVAL. *Yearb Med Inform*. 2015;10(1):148–59.
79. Tricco AC, Antony J, Ivers NM, Ashoor HM, Khan PA, Blondal E, et al. Effectiveness of quality improvement strategies for coordination of care to reduce use of health care services: a systematic review and meta-analysis. *CMAJ*. 2014;186(15):E568–578.
80. Ganz PA, Casillas J, Hahn EE. Ensuring quality care for cancer survivors: implementing the survivorship care plan. *Semin Oncol Nurs*. 2008 Aug;24(3):208–17.
81. McDonald KM, Sundaram V, Bravata DM, Lewis R, Lin N, Kraft SA, et al. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies (Vol. 7: Care Coordination) [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2007 [cited 2016 Aug 24]. (AHRQ Technical Reviews). Available from: <http://www.ncbi.nlm.nih.gov/books/NBK44015/>
82. Tomasone JR, Brouwers MC, Vukmirovic M, Grunfeld E, O'Brien MA, Urquhart R, et al. Interventions to improve care coordination between primary healthcare and oncology care providers: a systematic review. *ESMO Open*. 2016;1(5):e000077.
83. McDonald KM, Sundaram V, Bravata DM, Lewis R, Lin N, Kraft SA, et al. Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies (Vol. 7: Care Coordination) [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2007. (AHRQ Technical Reviews). Available from: <http://www.ncbi.nlm.nih.gov/books/NBK44015/>
84. Beswick AD, Rees K, West RR, Taylor FC, Burke M, Gribsch I, et al. Improving uptake and adherence in cardiac rehabilitation: literature review. *J Adv Nurs*. 2005;49(5):538–55.

85. Snarterse M, Dobber J, Jepma P, Peters RJG, Ter Riet G, Boekholdt SM, et al. Effective components of nurse-coordinated care to prevent recurrent coronary events: a systematic review and meta-analysis. *Heart*. 2016;102(1):50–6.
86. Britton A, Russell R. Multidisciplinary team interventions for delirium in patients with chronic cognitive impairment. *Cochrane Database Syst Rev*. 2004;(2):CD000395.
87. Knapp M, Iemmi V, Romeo R. Dementia care costs and outcomes: a systematic review. *Int J Geriatr Psychiatry*. 2013 Jun;28(6):551–61.
88. Koch T, Iliffe S, Manthorpe J, Stephens B, Fox C, Robinson L, et al. The potential of case management for people with dementia: A commentary. *International Journal of Geriatric Psychiatry*. 2012;27(12):1305–14.
89. Shojanian KG, Ranji SR, McDonald KM, Grimshaw JM, Sundaram V, Rushakoff RJ, et al. Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. *JAMA*. 2006 Jul 26;296(4):427–40.
90. Martin MA, Press VG, Nyenhuis SM, Krishnan JA, Erwin K, Mosnaim G, et al. Care transition interventions for children with asthma in the emergency department. *J Allergy Clin Immunol*. 2016;138(6):1518–25.
91. Bloemen-Vrencken JHA, de Witte LP, Post MWM. Follow-up care for persons with spinal cord injury living in the community: a systematic review of interventions and their evaluation. *Spinal Cord*. 2005;43(8):462–75.
92. Huffman JC, Niazi SK, Rundell JR, Sharpe M, Katon WJ. Essential articles on collaborative care models for the treatment of psychiatric disorders in medical settings: a publication by the academy of psychosomatic medicine research and evidence-based practice committee. *Psychosomatics*. 2014;55(2):109–22.
93. Joo JY, Huber DL. Community-based case management effectiveness in populations that abuse substances. *Int Nurs Rev*. 2015;62(4):536–46.
94. Katz EB, Carrier ER, Umscheid CA, Pines JM. Comparative effectiveness of care coordination interventions in the emergency department: a systematic review. *Ann Emerg Med*. 2012;60(1):12-23.e1.
95. Holland DE, RN, PhD MRH, RN. Discharge Planning, Transitional Care, Coordination of Care, and Continuity of Care: Clarifying Concepts and Terms from the Hospital Perspective. *Home Health Care Services Quarterly*. 2007;26(4):3–19.
96. Van Sluisveld N, Hesselink G, van der Hoeven JG, Westert G, Wollersheim H, Zegers M. Improving clinical handover between intensive care unit and general ward professionals at intensive care unit discharge. *Intensive Care Med*. 2015;41(4):589–604.
97. Manderson B, McMurray J, Piraino E, Stolee P. Navigation roles support chronically ill older adults through healthcare transitions: a systematic review of the literature. *Health Soc Care Community*. 2012;20(2):113–27.
98. Burke RE, Guo R, Prochazka AV, Misky GJ. Identifying keys to success in reducing readmissions using the ideal transitions in care framework. *BMC Health Serv Res*. 2014 Sep 23;14:423.
99. Cohen E, Jovcevska V, Kuo DZ, Mahant S. Hospital-based comprehensive care programs for children with special health care needs: A systematic review. *Archives of Pediatrics and Adolescent Medicine*. 2011;165(6):554–61.
100. Edelman H, Schippke J, Sheffe S, Kingsnorth S. Children with medical complexity: a scoping review of interventions to support caregiver stress. *Child Care Health Dev*. 2017;43(3):323–33.

101. Wise PH, Huffman LC, Brat G. A Critical Analysis of Care Coordination Strategies for Children With Special Health Care Needs. Rockville (MD): Agency for Healthcare Research and Quality (US); 2007. (AHRQ Technical Reviews).
102. Olds S. Designing a care pathway for a maternity support service program in a rural health department. *Public Health Nurs.* 1997;14(6):332–8.
103. Straub H, Qadir S, Miller G, Borders A. Stress and stress reduction. *Clin Obstet Gynecol.* 2014 Sep;57(3):579–606.
104. Baysari MT, Westbrook JI. Mobile Applications for Patient-centered Care Coordination: A Review of Human Factors Methods Applied to their Design, Development, and Evaluation. *Yearb Med Inform.* 2015;10(1):47–54.
105. Eklund K, Wilhelmson K. Outcomes of coordinated and integrated interventions targeting frail elderly people: a systematic review of randomised controlled trials. *Health Soc Care Community.* 2009;17(5):447–58.
106. Veras RP, Caldas CP, Motta LB da, Lima KC de, Siqueira RC, Rodrigues RT da SV, et al. Integration and continuity of Care in health care network models for frail older adults. *Rev Saude Publica.* 2014;48(2):357–65.
107. Gardiner C, Gott M, Ingleton C. Factors supporting good partnership working between generalist and specialist palliative care services: a systematic review. *Br J Gen Pract.* 2012 May;62(598):e353-362.
108. Ciapponi A, Lewin S, Herrera CA, Opiyo N, Pantoja T, Paulsen E, et al. Delivery arrangements for health systems in low-income countries: an overview of systematic reviews. *Cochrane Database Syst Rev.* 2017;9:CD011083.
109. Joshi C, Russell G, Cheng I-H, Kay M, Pottie K, Alston M, et al. A narrative synthesis of the impact of primary health care delivery models for refugees in resettlement countries on access, quality and coordination. *Int J Equity Health.* 2013;12:88.
110. Khanassov V, Vedel I. Family Physician-Case Manager Collaboration and Needs of Patients With Dementia and Their Caregivers: A Systematic Mixed Studies Review. *Ann Fam Med.* 2016;14(2):166–77.
111. Lion KC, Mangione-Smith R, Britto MT. Individualized plans of care to improve outcomes among children and adults with chronic illness: a systematic review. *Care Manag J.* 2014;15(1):11–25.
112. Joo JY, Liu MF. Case management effectiveness in reducing hospital use: a systematic review. *Int Nurs Rev.* 2017;64(2):296–308.
113. Mehrotra A, Forrest CB, Lin CY. Dropping the baton: specialty referrals in the United States. *Milbank Q.* 2011;89(1):39–68.
114. Salter K, Foley N, Teasell R. Social support interventions and mood status post stroke: a review. *Int J Nurs Stud.* 2010;47(5):616–25.
115. Huntley AL, Thomas R, Mann M, Huws D, Elwyn G, Paranjothy S, et al. Is case management effective in reducing the risk of unplanned hospital admissions for older people? A systematic review and meta-analysis. *Fam Pract.* 2013 Jun;30(3):266–75.
116. Kringos DS, Boerma WGW, Hutchinson A, van der Zee J, Groenewegen PP. The breadth of primary care: a systematic literature review of its core dimensions. *BMC Health Serv Res.* 2010;10:65.
117. Heisler M. Different models to mobilize peer support to improve diabetes self-management and clinical outcomes: evidence, logistics, evaluation considerations and needs for future research. *Fam Pract.* 2010 Jun;27 Suppl 1:i23-32.

118. Sisler J, Chaput G, Sussman J, Ozokwelu E. Follow-up after treatment for breast cancer: Practical guide to survivorship care for family physicians. *Can Fam Physician*. 2016 Oct;62(10):805–11.
119. Joo JY, Huber DL. An integrative review of nurse-led community-based case management effectiveness. *Int Nurs Rev*. 2014;61(1):14–24.
120. Peterson K, Anderson J, Bourne D, Charns MP, Gorin SS, Hynes DM, et al. Health Care Coordination Theoretical Frameworks: a Systematic Scoping Review to Increase Their Understanding and Use in Practice. *J GEN INTERN MED*. 2019 May 1;34(1):90–8.
121. Minkman M, Ahaus K, Fabbriotti I, Nabitz U, Huijsman R. A quality management model for integrated care: results of a Delphi and Concept Mapping study. *Int J Qual Health Care*. 2009 Feb;21(1):66–75.
122. Valentijn P, Boesveld I, Klauw D van der, Ruwaard D, Struijs J, Molema J, et al. Towards a taxonomy for integrated care: a mixed-methods study. *International Journal of Integrated Care* [Internet]. 2015 Mar 4 [cited 2021 Jun 13];15(1). Available from: <http://www.ijic.org/articles/10.5334/ijic.1513/>
123. Valentijn PP, Pereira F, Sterner CW, Vrijhoef HJM, Ruwaard D, Hegbrant J, et al. Validation of the Rainbow Model of Integrated Care Measurement Tools (RMIC-MTs) in renal care for patient and care providers. Chiesi F, editor. *PLoS ONE*. 2019 Sep 19;14(9):e0222593.
124. Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Serv Res*. 2017 26;17(1):88.
125. Peters MDJ, Godfrey CM, Khalil H, McInerney P, Parker D, Soares CB. Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc*. 2015 Sep;13(3):141–6.
126. Munn Z, Peters MDJ, Stern C, Tufanaru C, McArthur A, Aromataris E. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol*. 2018 Nov 19;18(1):143.
127. Khalil H, Peters M, Godfrey CM, McInerney P, Soares CB, Parker D. An Evidence-Based Approach to Scoping Reviews. *Worldviews Evid Based Nurs*. 2016 Apr;13(2):118–23.
128. Garvin LA, Pugatch M, Gurewich D, Pendergast JN, Miller CJ. Interorganizational Care Coordination of Rural Veterans by Veterans Affairs and Community Care Programs: A Systematic Review. *Medical Care*. 2021 Jun;59(Suppl 3):S259–69.
129. Duan-Porter W, Ullman K, Majeski B, Miake-Lye I, Diem S, Wilt TJ. Care Coordination Models and Tools: A Systematic Review and Key Informant Interview. 2020 [cited 2021 Jun 28]; Available from: <https://www.ncbi.nlm.nih.gov/books/NBK566155>
130. McMillan SS, King M, Tully MP. How to use the nominal group and Delphi techniques. *Int J Clin Pharm*. 2016;38:655–62.
131. Pomey M-P, Flora L, Karazivan P, Dumez V, Lebel P, Vanier M-C, et al. [The Montreal model: the challenges of a partnership relationship between patients and healthcare professionals]. *Sante Publique*. 2015 Feb;27(1 Suppl):S41-50.
132. Sieck CJ, Walker DM, Retchin S, McAlearney AS. The Patient Engagement Capacity Model: What Factors Determine a Patient’s Ability to Engage? *NEJM Catalyst* [Internet]. 2019 Mar 13 [cited 2020 Jun 11]; Available from: <https://catalyst.nejm.org/doi/abs/10.1056/CAT.19.0001>
133. Carman KL, Dardess P, Maurer M, Sofaer S, Adams K, Bechtel C, et al. Patient and family engagement: a framework for understanding the elements and developing interventions and policies. *Health Aff (Millwood)*. 2013 Feb;32(2):223–31.
134. Margolis PA, Peterson LE, Seid M. Collaborative Chronic Care Networks (C3Ns) to Transform Chronic Illness Care. *Pediatrics*. 2013 Jun;131(Suppl 4):S219–23.

135. Au M, Simon S, Chen A, Lipson D, Gimm G, Rich E. Comparative effectiveness of care coordination for adults with disabilities. Washington, DC : Center for Studying Disability Policy [Internet]. 2011 Jul [cited 2020 Jul 22]; Available from: <https://collections.nlm.nih.gov/catalog.nlm.nlmuid-101573520-pdf>
136. Health Quality Ontario. Electronic tools for health information exchange: an evidence-based analysis. *Ont Health Technol Assess Ser.* 2013;13(11):1–76.
137. Hollowell J, Oakley L, Kurinczuk JJ, Brocklehurst P, Gray R. The effectiveness of antenatal care programmes to reduce infant mortality and preterm birth in socially disadvantaged and vulnerable women in high-income countries: a systematic review. *BMC Pregnancy Childbirth.* 2011;11:13.
138. Gurses AP, Xiao Y. A systematic review of the literature on multidisciplinary rounds to design information technology. *J Am Med Inform Assoc.* 2006;13(3):267–76.

TABLES and FIGURES

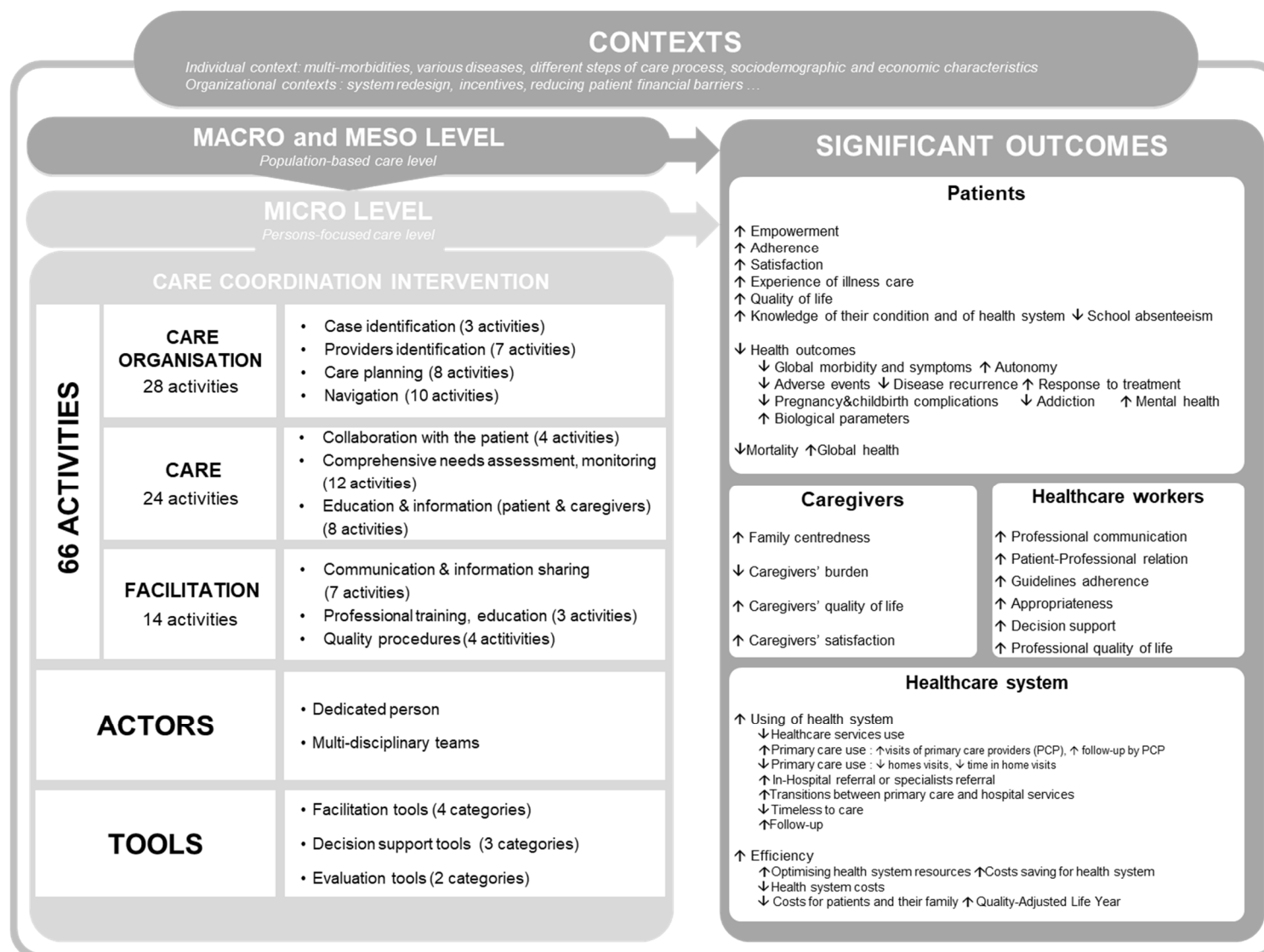


Figure 1: Overall reference framework structure for care coordination interventions. EPOCK research project

Table 1: Listing of reviews included in the scoping review. EPOCK Research Project

Author	Year	Journal	Country	Method	No. of reviews	Target population	Interventions tested
Au	2011	Mathematica Policy Research	US	<i>Systematic review</i>	46	Adults with disabilities	CM (community-based) by nurses or MDT
Baysari	2015	IMIA Yearbook of Medical Informatics	Australia	<i>Systematic review</i>	34	Elderly; mental illness (young patients)	CM
Beswick	2005	Journal of Advanced Nursing	UK	<i>Systematic review</i>	23	Cardiac rehabilitation	CM (community and hospital based) by nurses or social workers or lay volunteers
Bloemen-Vrencken	2005	Spinal Cord	Netherlands	<i>Systematic review</i>	24	Spinal cord injury	CM (community and hospital-based) by nurses or MDT
Borycki	2015	IMIA Yearbook of Medical Informatics	International	<i>Focused review</i>	na	Emergent disease (Ebola)	DM
Britton	2004	The Cochrane Collaboration	Australia	<i>Systematic review</i>	1	Elderly patients with delirium	CM with multidisciplinary teams
Burke	2014	BMC Health Services Research	US	<i>Systematic review</i>	66	Transition of care from hospital to community/all conditions	CM (community and hospital-based) by nurses or transition coach or MDT
Ciapponi	2017	Cochrane Database of Systematic Reviews	International	<i>Systematic review</i>	51	Low-income countries	CM (community and hospital-based) by nurses or midwives or lay health workers or physicians or MDT
Cohen	2011	Archives of Pediatrics and Adolescent Medicine	Canada	<i>Systematic review</i>	35	Children with special health care needs	CM (community and hospital based) by nurse or physician or MDT
Edelstein	2016	Child: Care, Health and Development	Canada	<i>Scoping review</i>	49	Children with complex needs	CM (community-based) by nurse or social workers
Ehrlich	2009	Health and Social Care in the Community	Australia	<i>Conceptual review</i>	20	Chronic disease	CM (community based) with MDT; DM
Eklund	2009	Health and Social Care in the Community	Sweden	<i>Systematic review</i>	9	Frail elderly people living in the community	CM (community and hospital based) by nurse or social workers or MDT
Ganz	2008	Seminars in Oncology Nursing	US	<i>Review of reports</i>	na	Childhood cancer survivors	CM (hospital based) by nurse; DM
Gardiner	2012	British Journal of General Practice	UK	<i>Systematic review</i>	22	Palliative and end-of-life care	CM (community and hospital based) by nurse
Gardner	2014	BMC Health Services Research	Australia	<i>Review</i>	na	Diabetes	CM (community and hospital based) with MDT
Gurse	2006	Journal of the American Medical Informatics Association	US	<i>Systematic review</i>	44	Surgical oncology, internal medicine, general surgery, trauma residents	CM (hospital-based) with MDT
Health Quality Ontario	2013	Ontario Health Technology Assessment Series	Canada	<i>Systematic review</i>	11	Transitions in care/outpatients with chronic disease in the community	CM (community and hospital based) with MDT
Hillis	2016	International Journal of Integrated Care	Ireland	<i>Systematic review</i>	37	Children with complex care needs	CM (Community and hospital-based) by nurse or MDT
Holland	2007	Home Health Care Services Quarterly Journal	US	<i>Review</i>	6	Transitions in care/any conditions	No intervention tested
Hollowell	2011	BMC Pregnancy and Childbirth	UK	<i>Systematic review</i>	36	Antenatal care programmes for	CM (community and hospital-based) by nurse or midwives or MDT

Huffman	2014	Psychosomatics	US	<i>Systematic review</i>	67	deprived and vulnerable women Psychiatric disorders	CM (community and hospital-based) by nurse or depression care manager or intervention internist or MDT
Huntley	2013	Family Practice	UK	<i>Systematic review</i>	11	Elderly	CM (community and hospital-based) by nurse or MDT
Joo	2014	International Nursing Review	US	<i>Integrative review</i>	18	Any conditions	CM (community-based) by nurse
Joo	2015	International Nursing Review	US	<i>Systematic review</i>	7	Substance abuse population	CM (community-based) by non-specific case managers
Joo	2017	International Nursing Review	Korea	<i>Systematic review</i>	10	Chronic illness	CM (community and hospital-based) by nurse or community health workers or pharmacist case manager or MDT
Joshi	2013	International Journal for Equity in Health	Australia	<i>Narrative review</i>	25	Refugees	CM (community-based) by nurse or other health professionals or MDT (included interpreters and bilingual staff, health visitors, students and ethnic health workers)
Katz	2012	Annals of Emergency Medicine	US	<i>Systematic review</i>	23	Emergency department	CM (community and hospital-based) by nurse
Khanassov	2016	Annals of Family Medicine	Canada	<i>Systematic review and meta-analysis</i>	54	Dementia	CM (community-based) by nurse or MDT
Knapp	2013	International Journal of Geriatric Psychiatry	UK	<i>Systematic review</i>	85	Dementia	CM (community-based)
Koch	2012	International Journal of Geriatric Psychiatry	UK	<i>Review</i>	7	Dementia	CM (community-based) by nurse or social worker or counsellor
Kringos	2010	BMC Health Services Research	Netherlands	<i>Systematic review</i>	85	Primary care	No intervention tested
Kroll-Desrosiers	2016	Women's Health Issues	US	<i>Systematic review</i>	33	Pregnancy	CM (community and hospital-based) by nurse or MDT
Lion	2014	Care Management Journals	US	<i>Systematic review</i>	15	Chronic illness in adults and children	CM (community and hospital-based) by nurse or MDT
Lukersmith	2016	International Journal of Integrated Care	Australia	<i>Scoping and mapping review</i>	79	Brain injury, diabetes, mental health conditions, spinal cord injury	CM (community-based)
Manderson	2012	Health and Social Care in the Community	Canada	<i>Systematic review</i>	15	Chronic disease in older adults (transitional care)	CM (community and hospital-based) by nurse or case manager
Martin	2016	Journal of Allergy and Clinical Immunology	US	<i>Review</i>	9	Children with asthma care transitions in emergency department	CM (community-based and hospital-based)
Mcdonald	2007	Agency for Healthcare Research and Quality Publication	US	<i>Systematic review</i>	75	Any conditions	CM (community and hospital-based) with MDT
Mehrotra	2011	The Milbank Quarterly	US	<i>Narrative review</i>	na	Any conditions	CM (community and hospital-based) with MDT
Olds	1997	Public Health Nursing	US	<i>Review</i>	na	Pregnancy and post-partum in rural area	CM (community-based)
Ouwens	2005	International Journal for Quality in Health Care	Netherlands	<i>Systematic review</i>	13	Chronic illness	CM (community and hospital based) by nurse or MDT
Powell Davies	2008	The Medical Journal of Australia	Australia	<i>Systematic review</i>	80	Primary care	CM (not specified) with MDT

Rigby	2015	IMIA Yearbook of Medical Informatics	EU and Australia	Review	na	Any conditions	Population health management (Kaiser Permanente)
Salter	2010	International Journal of Nursing Studies	Canada	Systematic review	10	Post-stroke	CM (community-based) by nurse or social worker or family support organiser
Shojania	2006	JAMA	Canada	Meta-analysis	69	Type 2 diabetes	CM (hospital-based) by nurse or MDT
Sisler	2016	Canadian Family Physician	Canada	Systematic review	na	After treatment breast cancer	CM (community and hospital-based) with MDT
Snaterse	2016	Heart	Netherlands	Systematic review	18	Secondary prevention of cardiovascular disease	CM (community and hospital-based) by nurse or MDT
Straub	2004	Clinical Obstetrics and Gynecology	US	Systematic review	47	Pregnancy	CM (community and hospital-based) by nurse or midwife or social worker or family worker
Tomasone	2016	ESMO Open	Canada	Systematic review	22	Breast and colorectal cancer	CM (community and hospital-based) by nurse or MDT
Tricco	2014	Canadian Medical Association Journal	Canada	Systematic review	50	Mental illness, chronic medical conditions, homeless	CM (community and hospital based) by nurse or social worker or 'key worker' or bilingual community health worker or MDT
Van Sluisveld	2015	Intensive Care Medicine	Netherlands	Systematic review	11	Intensive care unit (clinical handover between ICU and general wards)	CM (hospital-based) by nurse or MDT
Veras	2014	Revista de Saúde Pública	Brazil	Systematic review	12	Frail older adults	CM (community and hospital-based) by nurse or social workers or GP or MDT
Wise	2007	AHRQ Publication	US	Review	16	Children with special health care needs	CM (community and hospital based) by nurse or MDT

CM: case management; GP: general practitioner; MDT: multidisciplinary team (with case managers, nurses, physicians, general practitioner, social workers, midwives, pharmacists, community health providers, psychologists, and psychiatrists); na: not available

Table 2: Classification and description of care coordination activities identified in the literature review. EPOCK Research Project

Activity categories	Activity specifications
1. Organisation of care	<p>1.1 Case identification All activities that identify people for whom the pathway should be coordinated</p> <p>1.2 Specify roles and responsibilities Activities that identify stakeholders involved in patient care and define their specific roles and responsibilities</p> <p>1.3 Care planning and development of care plans Activities that help to define the care plan and monitor its implementation</p> <p>1.4 Navigation Activities that provide connections among care providers or refer patients to appropriate services</p>
2. Care activities	<p>2.1 Relationships with the patient Activities that focus on the link developed between the person involved in the coordination of care and the patient</p> <p>2.2 Needs assessment, follow-up, and patient monitoring Initial and ongoing assessment of patients' needs (health and social needs).</p> <p>2.3 Patient and family education Patient empowerment, a process through which people gain greater control over decisions and actions affecting their health</p> <p>2.4. Patient and family support Activities related to patient/family support, advocacy activities for patients, and decision-support activities</p> <p>2.5. Implementation of care plans and services Activities related to care plan execution, medical prescriptions, and supportive care interventions</p>
3. Facilitation activities	<p>3.1. Communication Communication (formal and informal communication) among healthcare stakeholders</p> <p>3.2 Information management All activities related to collection/recording and traceability/historisation of medical information</p> <p>3.3 Sharing information All activities related to transmission and reception of information</p> <p>3.4. Professional training/education Training of coordination professionals and guidance of other professionals by the coordination professional</p> <p>3.5 Quality procedures Use of evidence-based guidelines and practice evaluations</p>

Table 3: Final selection of activities items after voting and discussion by the nominal group: EPOCK research project

Framework component heading	Final ranking selected elements	Final Ranking priorities*	Votes Mean (SD)	Number of respondents
1. Care organisation				
1.1. Case identification	1.1.a. Case finding	1	3.71 (0.49)	7
	1.1.b. Identify patient with complex needs	2	3.71 (0.49)	7
	1.1.c. Identify patients not in contact with services	3	2.86 (1.07)	7
1.2. Provider identification	1.2.a. Identify participants in care (health and social workers, including patients involved in care)	1	3.86 (0.38)	7
	1.2.b. Specify providers' roles and responsibilities	2	3.86 (0.38)	7
	1.2.c. Negotiate responsibilities	3	2.83 (1.17)	6
	1.2.d. Identify resources (e.g. tools, devices, structures, and financial resources)	4	3.67 (0.52)	6
	1.2.e. Define scope of caregiver engagement	5	3.43 (0.79)	7
	1.2.f. Participate in assessment of patient engagement and its evolution throughout the care pathway	6	3.14(0.69)	7
	1.2.g. Specify fields of competence for each stakeholder	7	3.29 (1.50)	7
1.3. Care planning	1.3.a. Engage/involve patient (shared decision making)**	1	3.75 (0.46)	8
	1.3.b. Contribute to creation of individual care plans	2	2.75 (1.39)	8
	1.3.c. Contribute to creation of individual health plans	3	2.86 (1.35)	7
	1.3.d. Arrange content of care plan and its implementation with patient	4	2.88 (1.36)	
	1.3.e. Plan interventions for patient	5	3.63 (0.74)	8
	1.3.f. Assist and ensure effective intervention planning for patient	6	3.60 (0.55)	5
	1.3.g. Consider excess to be paid by patient during care planning	7	3.50 (0.53)	8
	1.3.h. Contribute to organisation of collective case discussion	8	<i>Item added by experts after voting</i>	
1.4. Navigation	1.4.a. Liaise with all stakeholders involved in care (including support care professionals) to facilitate appropriate access to medical services and community services	1	4.00 (0.00)	9
	1.4.b. Support family doctor/general practitioner involvement	2	3.78 (0.67)	9
	1.4.c. Liaise with social services	3	3.78 (0.44)	9
	1.4.d. Ensure effective management of transitions throughout care continuum	4	3.75 (0.46)	8
	1.4.e. Support patient in accessing social rights and facilities.	5	3.67 (0.50)	9
	1.4.f. Refer to community resources	6	3.61 (0.49)	9
	1.4.g. Assist in transition from hospital to home	7	3.67 (0.71)	9
	1.4.h. Anticipate barriers to care	8	3.38 (0.74)	8
	1.4.i. Act as a point of reference for all enquiries related to patient	9	3.33 (0.87)	9
	1.4.j. Alert and respond in case of an unexpected event (crisis intervention)	10	<i>Item added by experts</i>	

* Final ranking after voting and final discussion; SD: standard deviation ; ** Proposals reworded by the experts

Table 3: Final selection of activities items after voting and discussion by the nominal group: EPOCK research project

(continued)

Framework component heading	Final selected elements	Final ranking priorities*	Votes Mean (SD)	Number of respondents
2. Care				
2.1 Collaboration with patient	2.1.a. Establish and sustain collaboration with patient	1	3.78 (0.67)	9
	2.1.b. Mobilise patient resources	2	3.67 (0.50)	9
	2.1.c. Establish therapeutic alliance	3	2.78 (1.30)	9
	2.1.d. Sustain relationship with patient for better therapeutic adherence	4	3.67 (0.50)	9
2.2 Comprehensive needs assessment and patient monitoring	2.2.a. Determine patient's decision-making capacity	1	3.57 (0.53)	7
	2.2.b. Comprehensive understanding of patient and caregiver needs (multidimensional needs assessment: health and social needs)	2	3.57 (0.79)	7
	2.2.c. Consider patient preferences, expectations, and resources to assist in adjustment of care delivery**	3	3.57 (0.53)	7
	2.2.d. Assess patient's personal and environmental situation**	4	3.43 (0.79)	7
	2.2.e. Assess family's and caregivers' personal and environmental situations	5	<i>Item added by expert after voting</i>	
	2.2.f. Evaluate available resources and community services	6	2.71 (0.76)	7
	2.2.g. Estimate level of case management support required throughout patient's care pathway	7	3.14 (1.57)	7
	2.2.h. Symptom monitoring	8	3.29 (0.76)	7
	2.2.i. Identify intermediate and adverse events throughout patient's care pathway	9	<i>Item added by expert after voting</i>	
	2.2.j. Ongoing evaluation and reassessment of needs	10	3.14 (1.57)	7
	2.2.k. Ongoing comorbidity screening	11	3.00 (0.82)	7
	2.2.l. Evaluate quality, relevance, effectiveness, and efficiency of care**	12	2.43 (1.13)	7
2.3 Education and information for patient and caregivers	2.3.a. Patient empowerment (<i>reinforce patient's ability to take care of themselves, not simply their illness or treatments</i>)**	1	3.71 (0.49)	7
	2.3.b. Provide patient with information about the disease and its management	2	3.71 (0.49)	7
	2.3.c. Assess education needs	3	3.57 (0.79)	7
	2.3.d. Suggest patient education and self-management programmes	4	3.29 (0.76)	7
	2.3.e. Support and monitor patient adherence to treatment	5	3.71 (0.49)	7
	2.3.f. Provide individualised prevention recommendations	6	3.29 (0.76)	7
	2.3.g. Provide caregivers and family with information**	7	3.29 (0.76)	7
	2.3.h. Support patient in expressing needs	8	3.14 (0.69)	7

* Final ranking after voting and final discussion; SD: standard deviation ** Proposals reworded by the experts

Table 3: Final selection of activities items after voting and discussion by the nominal group: EPOCK research project

(continued)

Framework component heading	Final selected elements	Final ranking priorities*	Votes Mean (SD)	Number of respondents
3. Facilitation				
	3.1.a. Identify, collect and record information (e.g. medical information, individual preferences, and personal and social circumstances) from patients and their families**	1	4.00 (0.00)	6
	3.1.b. Relay/transfer information to all stakeholders (e.g. healthcare professionals and social workers)**	2	4.00 (0.00)	6
	3.1.c. Inform stakeholders about risk of disruption of patient's journey	3	4.00 (0.00)	6
3.1 Communication and information sharing	3.1.d. Share information with patients and family (ensure information continuity)	4	3.83 (0.41)	6
	3.1.e. Provide information on coordination of care throughout the journey (collect information, traceability)**	5	3.50 (0.55)	6
	3.1.f. Participate in the updating of information	6	3.50 (0.55)	6
	3.1.g. Follow the updating of information	7	3.33 (0.82)	6
3.2 Professional training/education	3.2.a. Assist and inform care professionals and others concerning necessary care and its coordination**	1	4.00 (0.00)	7
	3.2.b. Contribute to the transmission of knowledge, know-how and experiential knowledge required for appropriate care to all care professionals and others involved in care**	2	3.86 (0.38)	7
	3.2.c. Identify training needs required to ensure coordination of care and health pathways	3	3.71 (0.49)	7
3.3 Quality procedures	3.3.a. Encourage and support professionals in the use of evidence-based guidelines**	1	3.57 (0.79)	7
	3.3.b. Participate in evaluations of practices (e.g. audits and work practice focus groups)	2	3.71 (0.76)	7
	3.3.c. Participate in analysis of patient experience during coordination	3	3.71 (0.49)	7
	3.3.d. Contribute to evaluation of information traceability	4	3.57 (0.79)	7

* Final ranking after voting and final discussion; SD: standard deviation ** Proposals reworded by the experts