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1 MANAGED CLINICAL NETWORKS: SCOPE, EVIDENCES, AND FEASIBILITY
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For Peer Review Only

Deleted: Abstract¶
Objectives¶
Managed Clinical Networks (MCNs) are emerging internationally as an innovative organizational model of care for complex diseases, and are expected to achieve multiple, and in some cases contrasting, health policy goals. We provide a synthesis of expected network outcomes and discuss the evidence found in literature.¶
¶
Methods¶
We performed a systematic search in the databases PubMed and EBSCO-Business Source Complete, together with a large portion of grey literature on cancer MCNs. 17 relevant academic papers and grey literature documents were identified.¶
¶
Results¶
We propose the following synthesis of expected network outcomes: increase in the quality of health care services; in the equity of access; in knowledge transfer; in the cost effectiveness of health services; in patient centeredness of services. While intangible and intermediate outcomes were often reported, there is a paucity of evidence in favor of ultimate network performances, especially in terms of quality of care, cost effectiveness of services and patients' experiences. ¶
¶
Conclusions¶
Our findings on cancer MCNs suggest that there are promising signs of positive returns from MCNs, yet the picture is less enthusiastic than what described in the grey literature. We discuss policy implications and recommendations for health administrators, including the necessity to identify performance indicators and to analyze further the influence of pre-existing and context-related conditions on performance.

1 1. Introduction

2
3 Managed Clinical Networks (MCNs) are “hierarchically linked groups of health professionals and
4 organizations from primary, secondary and tertiary care working together in a coordinated
5 manner, unconstrained by existing professional (and organizational) boundaries to ensure
6 equitable provision of high quality effective services” (1). The ambitious goals of MCNs include:
7 the extension of access to care and the parallel reduction of waiting lists; the increase in the
8 qualitative level of services; and the better use of scarce resources, including finances,
9 technologies, and clinical expertise.

10 MCNs impact on multiple stakeholders — not only patients and healthcare organizations, but
11 also health professionals, for whom network outcomes are relevant in terms of individual
12 professional development, knowledge sharing with other professionals of the patient care
13 pathway, multidisciplinary ways of working, improved alignment between roles and content of
14 work, better working conditions, and more satisfaction and gratification. Many goals exist, but
15 there is little evidence to provide guidance. With this work we shall provide a first input to fill the
16 gap in the literature.

Deleted: since there are no meta-reviews of the effectiveness of MCNs

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20 2. The assessment of expected outcomes of MCNs

21 We investigated the evidence provided by the literature with reference to the expected benefits of
22 MCNs, focusing on cancer networks, which are a relevant type of MCN. We chose the case of
23 cancer networks because they are the earliest and most significant example of MCNs, and a
24 significant portion of the literature is consequently focused on them.

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25 Drawing from the analysis of 17 academic contributions and grey literature documents, we
26 propose the following synthesis of expected network outcomes¹ (Table 1):

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¹ Intermediate tangible impacts refer to outcomes such as the changes in clinical individual activity, process development, or practice reorganization, whereas intermediate intangible impacts refer to an increase in communication, collaboration, and conflict management.

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7 First of all, we see how investigations on MCN performance emerge as limited in quantity and
8 scope. In most cases, professionals' perceptions rather than objective performance outcomes
9 were examined, and single case studies rather than comparative analyses were often performed.
10
11 There is a paucity of evidence in favor of ultimate network performances, especially in terms of
12 improving patients' experiences and increasing the quality of care.
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15 Nevertheless, our focus on cancer networks has led to interesting findings. Beginning with the
16 intangible impacts of cancer networks, we find (2) that cancer networks increase the formal and
17 informal contacts among physicians. However, this trend is much less significant between GPs
18 and hospital physicians, for it is confined to those GPs that are part of tumor groups. In general, a
19 relevant problem of collaboration with primary care emerges (3, 4). Tangible intermediate
20 outcomes are also reported, in terms of both clinical specialization (3, 5) and the consequent
21 hospital network reorganization. Moreover, collaboration in clinical practice between cancer
22 centers and units emerges in terms of shared multidisciplinary teams, joint service planning,
23 protocol development, and audit initiatives (3, 4, 6, 7). Improved protocol development and
24 adoption is one of the major outcomes of networks (2, 6). Another relevant tangible intermediate
25 outcome is the degree to which the network management team is provided with administrative
26 support and controls the funding of the clinical activity. The absence of this intermediate
27 outcome, more so than others, is usually associated with reduced ultimate network effectiveness
28 (4, 5).
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41 Moving to the analysis of ultimate network performance, the increase in quality of care is
42 probably the most challenging dimension to be measured. If we consider the implementation of
43 state-of-the-art, evidence-based clinical guidelines as a proxy indicator of quality of care, there is
44 evidence that the rate of compliance with clinical guidelines is higher within a cancer network as
45 opposed to outside of it (8). Surprisingly enough, the relationship between cancer network
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Deleted: , thus leading to increased communication and improved capacity to solve the problems typical of inter-organizational collaboration. In particular, nonclinical members of tumor groups report more opportunities to have their opinions heard

Deleted: Moreover, thanks to the cancer network, professionals report being more involved in strategic decision-making, either individually (4) or through tumor groups (3, 5).¶

development and waiting-time reduction is scarcely addressed by existing research, raising questions of the effectiveness of MCNs in this relevant respect.

Equity is another major expected outcome of cancer networks: “networks have started to emerge as a way of sustaining vulnerable services and maintaining access where the requirements of training or subspecialization would otherwise mean complete closure of local services” (9). It was found that the establishment of a cancer network increases the access rate to specialized cancer care and clinical trials for patients living in rural areas (10). Despite the little evidence supporting the achievement of this goal, it could be assumed (5, 7) that it is correlated with increased adoption of clinical pathways, increased efforts toward meeting waiting time targets (yet to be demonstrated), and increased specialization at the local level.

Results are not straightforward under the perspective of knowledge transfer, either. In some cases, network members consider MCN meetings to be an importance source of knowledge-sharing regarding clinical practice, both formally and, importantly, informally (11). Paradoxically, problems emerge where informal long-standing relationships among doctors already exist and grant profitable knowledge transfer (12). With reference to these cases, which are reported in the UK, an “incompatibility between the goal of the initial technique (knowledge sharing) and the competitive nature of centralization and performance management” (11) appears. Moreover, there is a perception that cancer networks reduce the clinical expertise in cancer units in favor of cancer centers, where most complex cases are referred to (5, 11).

Lastly, increased cost-effectiveness — due to the achievement of economies of scale — and the reduction of transaction costs are further objectives, particularly when networks are policy lead.

However, since the presence of extra resources is indicated as a key success factor for effective network development and management (4, 5), the feasibility of this goal is problematic, at least in the short run.

3. Implications and recommendations

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Deleted: Therefore, MCNs are seen as the way to counterbalance the side effects of the ongoing specialization of clinical practice and facilities. There is

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Deleted: It was also found that the establishment of a cancer network increases the access rate to specialized cancer care and clinical trials for patients living in rural areas (10).

Deleted: In other cases, education and training activities are scarce and mostly developed by individual organizations on a specific professional basis, thus reducing the potential for knowledge-sharing.

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Deleted: . These problems occur because the existing relationships are hampered by the development of managed networks and their performance management systems

Deleted: that often take second place to the institution of networks

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1 Although there is significant agreement over the expected outcomes of MCNs, we still do not
 2 have enough evidence to perform a thorough assessment. We have identified the following
 3 several issues concerning the impacts of MCNs.

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 6 First, we need to better understand the role played by irrational drivers. In our analysis, the focus
 7 was placed on the investigation of evidence that supports the rational-technical determinants for
 8 the creation of MCNs. However, the defining features of the context (i.e., dominant ideology,
 9 legal and institutional framework, etc.) certainly play a fundamental role in determining the drivers
 10 of networking. Public pressure represents a very influential force when officials are deciding
 11 whether to consolidate MCNs, and another irrational force for consolidation can be recognized in
 12 the fact that some leading professionals seek control over MCNs to increase their power,
 13 prestige, and benefits in the professional community. Second, we should keep in mind that we
 14 need clear performance indicators allowing for the measurement of network effectiveness in
 15 terms of equity, efficiency, and clinical outcomes because, up to now, we have had a lack of
 16 significant evidence that can clearly support the expected benefits of MCNs.

Deleted: First, when looking at other network experiences, the context and the limits of the studies on MCNs should be taken care of. For example, MCNs can vary significantly in size and catchment area (i.e., geographical coverage). Optimal size and coverage though depend on multiple variables: the demographic and geomorphologic features of the territories, the diffusion of technologies and clinical expertise for the care of the specific disease, the complexity of the care process and the degree of required multidisciplinary, and the type of network that is in place. ¶
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 26 Third, as MCNs are under development in different fields (e.g., cancer, diabetes, neurosciences,
 27 cardiovascular, orthopedics), it will be important in the very near future to address possible
 28 conflicts that might develop between different MCNs. There is evidence of overlapping
 29 competence zones that must be managed with collaborative approaches.

Deleted: The relationship between the results of MCNs and their governance structure should also be considered. The same can be said for the collaboration mechanisms that they introduce and the extent to which these are influenced by pre-existing and context-related conditions. Furthermore, there is a potential "turf war" between health system institutions/organizations and scientific societies: who is responsible for developing and governing MCNs? Lastly, there is mixed evidence with regard to professional development and the knowledge-sharing experienced by clinicians that are integrated in MCNs.

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30 Finally, if MCNs grow in size and relevance, would it be possible and beneficial to directly
 31 allocate some resources to them for the "disease management" of some cohorts of patients?
 32 How would these fit in with current institutional boundaries set by organizations to which MCNs'
 33 members belong?

Deleted: . Some are very urgent as MCNs gain in popularity

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Questions for managers, policymakers, and academics are multiple, and it's extremely important
 to distinguish the rhetoric from the facts in order to avoid a waste of precious resources and time.
 The rising debate in the literature and the consolidated experiences developed in several
 countries show that the time may now be right for exploring the answers.

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Table 1: expected outcomes of MCNs

Intermediate outcomes	<ul style="list-style-type: none">• Intangible• Tangible
Ultimate outcomes	<ul style="list-style-type: none">• Quality of care• Equity of access• Knowledge transfer• Cost effectiveness• Patient centeredness

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