

Medical leadership competencies for physicians: a systematic scoping review

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ABSTRACT

Introduction The concept of ‘medical leadership’ has emerged as a critical issue in healthcare, prompting numerous countries to adopt measures toward enhancing leadership competency among physicians. This includes the development of medical leadership competency models. This scoping review aims to map and systematise the existing literature on generalised medical leadership competency models and context-specific leadership competencies for physicians, providing a comprehensive framework for future research.

Methods This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for the scoping review framework. A comprehensive search was conducted across peer-reviewed academic databases and grey literature sources.

Results 16 generalised medical leadership models and 13 context-specific competency studies were identified. While most models have been developed in North America and Europe, context-specific competency studies have expanded globally. Frequency analysis highlights the significant influence and application of medical leadership competency models from the UK, the USA, Canada and Switzerland.

Conclusion A comparative analysis across countries emphasises the importance of considering contextual and cultural factors when developing and implementing medical leadership competencies. Over the last three decades, medical competency development has reflected a shift towards collective leadership within healthcare, with a focus on team-based, patient-centred approaches in the increasingly complex healthcare systems. Additionally, there is a growing need for competencies that address emerging challenges in healthcare, such as cultural sensitivity, crisis management, business skills and digital literacy.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Several Western countries have initiated efforts to enhance physician leadership, including the development of medical leadership competency models.

WHAT THIS STUDY ADDS

⇒ This review provides a comprehensive overview of the existing literature on generalised medical leadership competency models and context-specific leadership competencies for physicians. It covers the timeframes and geographical regions involved, the organisation responsible for generating the models and competencies, the methodologies employed, the focus areas of the identified models and the implications of the results.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The results of this review could influence future research by providing a structured framework for investigating medical leadership competencies. In practice, understanding contextual and cultural factors in competency development may lead to the establishment of more effective models and training programmes tailored to specific healthcare settings. Additionally, this study highlights the importance of the ongoing support from various stakeholders for the development and integration of leadership competencies that address emerging healthcare challenges, potentially advancing healthcare delivery to become more efficient, culturally responsive and patient-centred.

INTRODUCTION

As the healthcare industry becomes increasingly complex and shifts globally towards patient-centred care, the concept of ‘medical leadership’, also referred to as ‘clinical leadership’ or ‘physician leadership’, has become significant. Several studies have demonstrated that medical leadership is essential for the enhancement of organisational performance, including the quality of care, patient safety and cost-efficient care.^{1–4}

A widely accepted definition of leadership comes from Northouse’s *Leadership: Theory and Practice*, which describes leadership as ‘a process whereby an individual influences a group of individuals to achieve a common goal’.⁵ According to Northouse, ‘When leadership is defined in this manner, it becomes available to everyone. It is not restricted

to the formally designated leader in a group’.⁵ In line with this, Berghout *et al* posited that medical leadership encompasses both physicians in formal managerial positions and those who act as informal ‘leaders’ in their daily practice.⁶ Even without formal managerial roles, physicians must assume leadership by organising clinical workflows and fostering cross-departmental collaboration, all aimed at delivering high-quality and cost-efficient care.⁶ As defined by Aylott *et al*, ‘Medical Leadership describes an additional set of skills and knowledge in leadership and management for doctors, who are then expected to apply and integrate this new learning into their everyday practice’.⁷

To help physicians enhance their leadership abilities in everyday practice, a comprehensive set of competencies or competency models is essential.



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In recent years, many Western countries have taken steps to improve physician leadership by developing competency models and designing physician leadership training programmes. Initially, medical leadership competency programmes focused on formal leaders in the healthcare system and were largely management oriented. With the rise of collective leadership trends and the growing complexity of healthcare systems, there has been a growing interest in leadership development programmes for physicians in informal managerial roles. Despite this, systematic reviews focusing on medical leadership competency models specifically for physicians are insufficient.

In this review, we use the term 'medical leadership' to include both frameworks explicitly designed for physicians and those applicable to physician roles in healthcare organisations. Our primary focus is to identify the core competencies essential for physician leadership, while recognising the interdisciplinary and context-specific nature of leadership in healthcare.

The primary aim of this study is to identify, map and organise the existing literature concerning generalised medical leadership competency models and context-specific medical leadership competencies for physicians through a scoping review. This study seeks to answer several key research questions (RQs): What types of findings are available? What timeframes and geographical regions are covered? Who develops these models and competencies? What methodologies are employed to create them? What is the focus of the identified models and competencies?

METHODS

The study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews,⁸ serving as the framework to identify relevant competency models and leadership competencies.

Identification of the relevant sources

Five peer-reviewed databases were selected for this study: three from the medical and healthcare fields (Embase, PubMed and Medline) and two from the management field (Business Source Ultimate, American Psychological Association (APA)). To supplement the available peer-reviewed literature, we conducted a grey literature search to identify additional leadership competency frameworks. This search focused on official websites of influential healthcare organisations, professional associations, academic institutions, policy agencies and consultancy groups known for contributing to leadership development. Sources were identified through a combination of reviewing prior literature references and expert suggestions. A total of 26 websites were reviewed, including the American College of Healthcare Executives, the National Center for Healthcare Leadership (NCHL), the International Hospital Federation (IHF) and WHO (see online supplemental appendix 1 for the full list).

Inclusion and exclusion criteria

The inclusion criteria were designed to encompass both generalised medical leadership competency models (also referred to as 'frameworks'), as well as context-specific leadership competencies. These models were either explicitly designed for physicians or applicable to healthcare leaders, including practising physicians. This approach ensured the coverage of core competencies essential for physician leadership while acknowledging the interdisciplinary nature of healthcare. Additionally, the review incorporated literature that presented context-specific leadership competencies such as the country of origin, medical specialties or situations such as the COVID-19 pandemic. This inclusion

highlighted the adaptability required in medical leadership to address the evolving healthcare challenges.

Conversely, the exclusion criteria focused the review by excluding articles or models that are not directly related to physician leadership, such as those centred on nursing, public health, psychotherapy, pharmacy or hospital management, unless they specifically addressed physician roles or competencies. Systematic reviews were excluded to avoid redundancy, ensuring that primary research was the basis of the analysis. Literature discussing medical leadership in general terms without a specific focus on competencies was also excluded.

Search strategy

The five databases (Embase, PubMed, Medline, Business Source Ultimate, APA) used the following search queries: ('physician*' OR 'doctor*' OR 'healthcare*') AND ('leadership competenc*' OR 'leadership model' OR 'leadership framework') NOT ('nurse*' OR 'pharmac*' OR 'social worker*') AND [english]/lim AND [2010–2023]/py. The grey literature search mirrored the criteria used in peer-reviewed databases and focused specifically on the generalised physician leadership competency models. The search used organisation-specific websites and targeted keywords such as 'healthcare leadership competencies', 'physician leadership models' or 'medical leadership frameworks'. Non-English sources and documents that were not publicly accessible were excluded. The search of the five databases and grey literature sources was conducted from October to November 2023.

Screening process

The screening process involved multiple stages. For the peer-reviewed databases, duplicates were removed, and titles and abstracts were screened to identify studies that met the inclusion criteria. This was followed by full-text screening to exclude irrelevant articles. For the grey literature, a similar process was applied, ensuring that the screening criteria matched those used for peer-reviewed studies.

The first author conducted the screening of titles and abstracts using the predefined inclusion and exclusion criteria, with repeated reviews to ensure consistency and reduce potential bias. The screening strategy was developed in consultation with coauthors, who also reviewed the screening results to validate relevance and accuracy.

Data integration

This study categorised its results into two main areas: generalised medical leadership models and context-specific competencies, effectively mapping the evolution and diversity of leadership across various healthcare settings. The RQs defined at the beginning of the study guided the analysis approach. The key extracted data included the publication year, geographical origin, methodologies used and specific competencies outlined in each leadership model. The data charting process was meticulously carried out to guarantee a thorough and impartial data collection approach.

RESULTS

Search results

The scoping review identified 714 unique articles across five databases. After screening the titles, this number was refined to 208 articles. Following an abstract review, 31 articles were selected, all of which proposed either generalised medical leadership competency models or context-specific competencies. By 'generalised' we refer to mature, structured frameworks

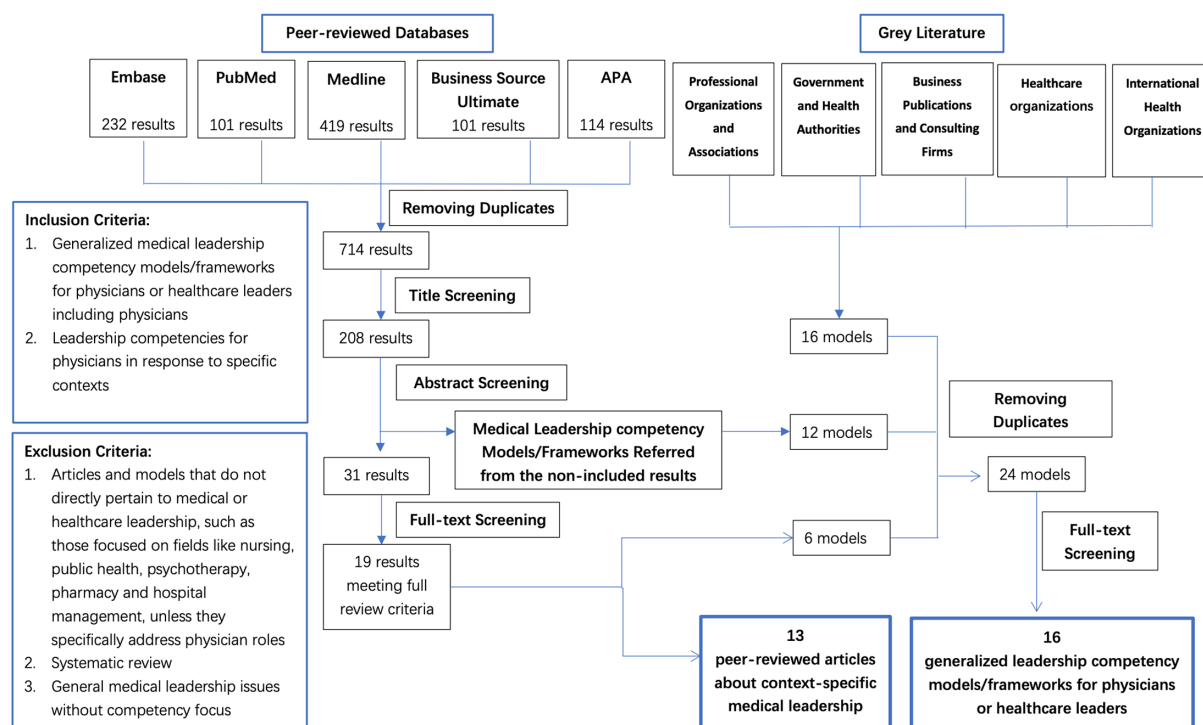


Figure 1 Diagram of search and review process. APA, American Psychological Association.

developed for broad applicability across various healthcare settings and specialties. ‘Context-specific’ refers to sets of individual competencies tailored to reflect the particular needs, structures or cultural dynamics of a specific healthcare system or specialty, but which are not yet integrated into a comprehensive model. A full-text review, considering accessibility and language constraints, further narrowed the selection to 19 articles. Among these, 6 described generalised medical leadership competency models, and 13 focused on context-specific medical leadership competencies.

In addition to the six generalised competency models identified from peer-reviewed articles, the grey literature search identified 16 models that met the inclusion criteria. During the abstract screening of peer-reviewed articles, 12 additional models were identified among 51 articles that did not meet the final inclusion criteria. These articles, for instance, designed physician leadership curricula or evaluated leadership levels in specific contexts. After integrating all the models from the peer-reviewed papers and grey literature and removing duplicates, 16 medical leadership competency models were identified for further analysis (figure 1).

Analysis of the results

Types of results available

Two types of findings emerged from this review. The first, generalised medical leadership competency models (table 1) included models, such as CanMEDS 2015,⁹ the Medical Leadership Competency Framework,¹⁰ the Dutch Medical Leadership Competency Framework¹¹ and the Duke Healthcare Leadership Model,¹² which were designed specifically for physicians. Broader frameworks, such as the Healthcare Leadership Competency Model 3.0¹³ and the Healthcare Leadership Model,¹⁴ which apply to healthcare leaders or all healthcare staff, were also identified. Context-specific medical leadership competencies

identified from peer-reviewed articles that respond to emerging trends and challenges in healthcare leadership (table 2) are the second models we identified.

Research period

The peer-reviewed literature on medical leadership competencies spanned from 2013 to 2023, based on the inclusion criteria of articles published from 2010 onward. In contrast, the identified medical leadership competency models and frameworks dated back to 1996 but remained relevant and are widely applied. This reflects the growing recognition of the leadership role in healthcare, especially in the context of rapid technological advancements,¹⁵ evolving patient care models and the impact of the COVID-19 pandemic¹⁶ on healthcare systems globally.

Geographic coverage

The geographic distribution of the two types of leadership models revealed a primarily Western focus. Generalised models originated from the USA, the UK, Canada and Switzerland, followed by Australia and the Netherlands (figure 2, table 1). Context-specific medical leadership competencies, however, have broader international representation, with studies emerging from Japan, China, India, Indonesia, as well as Australia, Canada and the USA (figure 3, table 2).

During the abstract screening process, 12 generalised medical leadership competency models were identified from 51 articles that did not meet the inclusion criteria, as detailed in figure 1. These models were employed for specific purposes such as assessing leadership levels or designing leadership training curricula. The most frequently employed models were the NHS Medical Leadership Competency Framework, CanMEDS Framework, LEADS Framework and the NHS Healthcare Leadership

Table 1 Generalised medical leadership competency models for physicians

Model name	Organisation	Publication year origin version/current version	Original country	For whom
CanMEDS 2015 Physician Competency Framework ⁹	Royal College of Physicians and Surgeons of Canada	1996/2015	Canada	Physicians
Healthcare Leadership Competency Model 3.0 ¹³	National Center for Healthcare Leadership	2004/2018	USA	Health sector leaders
Healthcare Leadership Alliance (HLA) Competency Directory ¹⁷	Healthcare Leadership Alliance	2005/2010	USA	Healthcare leaders
LEADS Framework ²⁸	Canadian College of Health Leaders	2009	Canada	All leaders in the health system
Medical Leadership Competency Framework ¹⁰	NHS Institute for Innovation and Improvement and the Academy of Medical Royal Colleges	2008/2010	UK	Doctors of all disciplines
Clinical Leadership Competency Framework ³⁸	NHS Leadership Academy	2011	UK	All clinicians
NHS Leadership Framework ³⁹	Secretary of State	2011	UK	All health staff
Leadership and Management for All Doctors ⁴⁰	General Medical Council	2012	UK	All doctors
Healthcare Leadership Model ¹⁸	NHS Leadership Academy	2013	UK	All staff who work in health and care
Health LEADS Australia framework ¹⁹	Health Workforce Australia	2013	Australia	Leaders in all areas of the health system
Global Healthcare Management Competency Directory 2015 ⁴¹	International Hospital Federation	2015	Switzerland	Healthcare managers
Dutch Medical Leadership Competency framework ^{11 20}	Foundation Platform Medical Leadership (PML) and the University of Twente (UT)	2016	Dutch	Medical physicians and students
Duke Healthcare Leadership Model ¹²	Dean C. Taylor, MD	2017	USA	Medical students, residents and fellows
Clinical Leadership Development Competencies Domains and Skills/Tasks ⁴²	National Association of Community Health Centres	2019	USA	Clinical leaders
Physician Leadership: More Valuable Than Ever (AAPL) ⁴³	American Association for Physician Leadership	2014/2022	USA	Physician leaders
Global Healthcare Leadership Competency Model 2023 ³⁶	International Hospital Federation	2023	Switzerland	Healthcare executives

Model, demonstrating the significant influence of the UK and Canadian medical leadership competency models.

Sources of generalised medical leadership competency models

The development of medical leadership competency models represents a substantial systematic effort often underpinned by national-level initiatives involving governments or industry associations. The entities responsible for generating these models vary, encompassing national professional organisations such as the Royal College of Physicians and Surgeons of Canada,⁹ the IHF of Switzerland,¹⁷ government and health authorities such as the NHS Leadership Academy,¹⁸ and academic initiatives represented by the US NCHL.¹³ This diversity of sources underscores the collaborative efforts across healthcare sectors to define and refine leadership competencies that address the complex demands of modern healthcare delivery globally.

Methodology to generate medical leadership competencies

The methodology used to generate the medical competency models included in this review typically involved rigorous research processes, stakeholder engagement and iterative refinement. For instance, the CanMEDS framework was developed through a process that included ‘countless hours of consultation with physicians, educators and patients to ensure holistic representation of the competencies required for medical practice’.⁹ The UK team that developed the Medical Leadership Competency Framework reviewed the literature, conducted a comparative analysis of leadership competency frameworks and analysed medical curricula to inform their product.¹⁰

The development of national-level competency models in various countries often draws inspiration from early explorations in the UK, Canada and the USA. For instance, the LEADS in a Caring Environment framework from Canada has inspired similar initiatives globally, including Australia’s Health LEADS framework¹⁹ and the Dutch Medical Leadership competency framework,^{11 20} illustrating the cross-border applicability and impact of these models in enhancing healthcare leadership at the national level.

Recent studies on context-specific medical leadership competencies typically employ qualitative methodologies such as phenomenological research,¹⁶ Delphi processes^{21 22} and semi-structured interviews or focus groups^{23–25} to capture the nuanced realities of leadership in healthcare.

Focus of medical leadership models

To better understand the thematic focus of existing leadership models, we analysed the domains of competencies outlined in each framework (online supplemental appendix 2). Among the 16 identified models, three originated from the UK NHS system and shared nearly identical domain structures. To avoid redundancy, we consolidated them into one, resulting in 14 unique models for analysis.

Rather than comparing individual competency items—which vary greatly in phrasing and specificity—we focused on the domains, which represent higher-level categories of related competencies (eg, ‘Communication’, ‘Professionalism’). These domains offer a consistent basis for cross-model comparison.

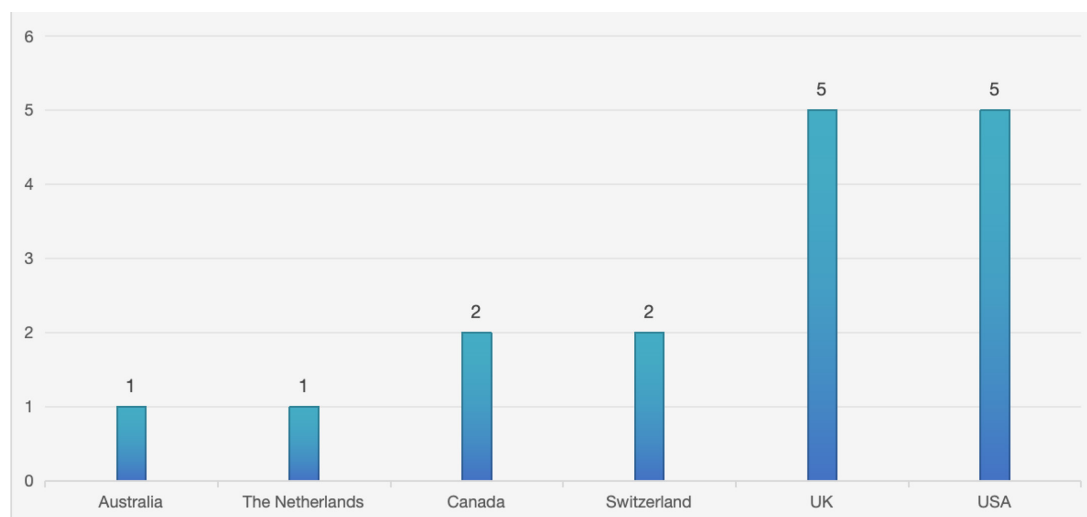
Table 2 Context-specific medical leadership competencies for physicians

Paper title	Author(s)	Publication	Year	Country
Achieving organisational competence for clinical leadership: the role of high performance work systems ²³	Sandra G. Leggat and Cathy Balding	Journal of Health Organisation and Management	2013	Australia
Developing a leadership pipeline: the Cleveland Clinic experience ¹⁵	Caryl A. Hess, Christina Barss, James K. Stoller	Perspectives on Medical Education	2014	USA
Distinguishing competencies of effective physician leaders ⁴⁴	Margaret M. Hopkins, Deborah A. O'Neil, James K. Stoller	Journal of Management Development	2015	USA
Competencies physicians need to lead ³¹	Scott Comber, Kyle Clayton Crawford, Lisette Wilson	Leadership in Health Services	2018	Canada
Contribution of short-term global clinical health experience to the leadership competency of health professionals: a qualitative study ²⁴	Mikio Hayashi, Daisuke Son, Hirotaka Onishi, Masato Eto	BMJ Open	2019	Japan
Leadership characteristics for interprofessional collaboration in China ²⁵	Yun Hu, Marion Broome	Journal of Professional Nursing	2020	China
Establishing competencies for leadership development for postgraduate internal medicine residents ²¹	Sarah B. Merriam, Scott D. Rothenberger, Jennifer A. Corbelli	Journal of Graduate Medical Education	2021	USA
Leadership training in paediatric residency programmes: identifying content, characterising practice and planning for the future ²²	Steven M. Loscalzo <i>et al</i>	Academic Paediatrics	2021	USA
Adaptive leadership of doctors during COVID-19 ¹⁶	Sayoni Santra, Priya Alat	Leadership in Health Services	2022	India
Identifying leadership in medical trainees: evaluation of a competency-based approach ⁴⁵	Samantha K. Jones, Ka Hong Chan, Joshua S. Bourdage, Aleem Bharwani	BMJ Leader	2022	Canada
Key healthcare leadership competencies: perspectives from current healthcare leaders ³³	Parker G., Smith T., Shea C., Perreira T.A., Sriharan A.	Healthcare Quarterly	2022	Canada
What business competencies are needed for the modern physician leader and when ³²	Appelbaum <i>et al</i>	American Association for Physician Leadership	2022	USA
Investigating physician leadership competencies in rural and remote areas of the province of Aceh, Indonesia ³⁰	Fury Maulina, Mubasysyir Hasanbasri, Fedde Scheele, Jamiu O Busari	BMJ Leader	2023	Indonesia

A manual thematic analysis was conducted to cluster similar domains into broader categories (eg, grouping 'Teamwork', 'Working with Others' and 'Personnel Management' under 'Collaboration & Communication'). The initial mapping was conducted by the first author and subsequently reviewed and refined by the coauthors. The full mapping table is provided in online supplemental appendix 4, with frequency results in figure 4. The results revealed several widely shared priorities. Collaboration & Communication appeared in all 14 models (mentioned 16 times), indicating near-universal recognition of their importance in medical leadership. Self-Awareness & Development, including competencies like role model, emotional intelligence and leading self, appeared 11 times, emphasising

the foundational nature of introspective leadership. Core Leadership Skills, Professionalism & Ethics, Strategic Thinking & Vision and Business Acumen & Operations each appeared more than eight times.

Other frequently occurring domains included Healthcare System Literacy, Quality & Safety, Results Orientation, Critical Thinking & Decision-Making, Patient-Centred Care and Resource Management (each featured more than four times). Less frequent but still noteworthy were domains related to Clinical Expertise, Innovation & Change Leadership, Education & Mentorship, Systems Thinking & Integration and Values.

**Figure 2** Origin countries of the generalised medical leadership models.

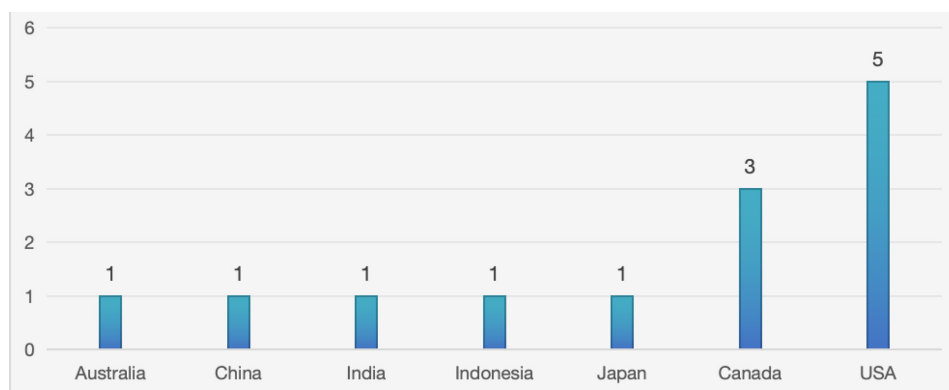


Figure 3 Study regions of the context-specific medical leadership competencies.

DISCUSSION

Why physician leadership matters

The growing emphasis on physician leadership in recent decades can be attributed to the increasing focus on collective leadership. Over two decades ago, leadership in healthcare was not confined to a few managerial or clinical leaders. Since then, healthcare organisations have embraced a more collective approach to leadership, fostering integrated collaboration across various healthcare settings.²⁶

Simultaneously, healthcare systems have become more complex and team-based. Navigating this environment demands not only clinical expertise but the ability to work across traditional boundaries separating clinicians, administrators, regulators and other stakeholders. Physicians, by virtue of their clinical authority and decision-making responsibilities, are in a unique position to influence both healthcare quality and resource utilisation. Therefore, physicians must continuously develop their non-clinical skills, including leadership, management, quality improvement and health system transformation.⁷

Research has shown that when high-performing clinicians are placed in formal leadership roles, hospital performance significantly improves.²⁻⁴ This underscores the need for the healthcare community

to equip physicians with both clinical and leadership competencies to assume such dual-skilled roles.

Another factor underscoring the importance of physician leadership is the growing focus on improving healthcare performance in patient-centred systems. Successful healthcare systems are increasingly prioritising patient engagement and involvement to drive quality improvement.²⁷ Given their proximity to patient care, physicians are uniquely positioned to lead these efforts. The integration of quality improvement and system transformation, in partnership with patients and other stakeholders, highlights the importance of leadership in shaping the future of healthcare.⁷

Collective leadership in healthcare system

As healthcare systems become more team-based and complex, the evolution of medical competency models over the past three decades also reflects the healthcare industry's shift toward collective leadership.

Canada, the UK, the USA and Switzerland have pioneered the development of physician leadership competency models, each reflecting distinct approaches shaped by differences in healthcare

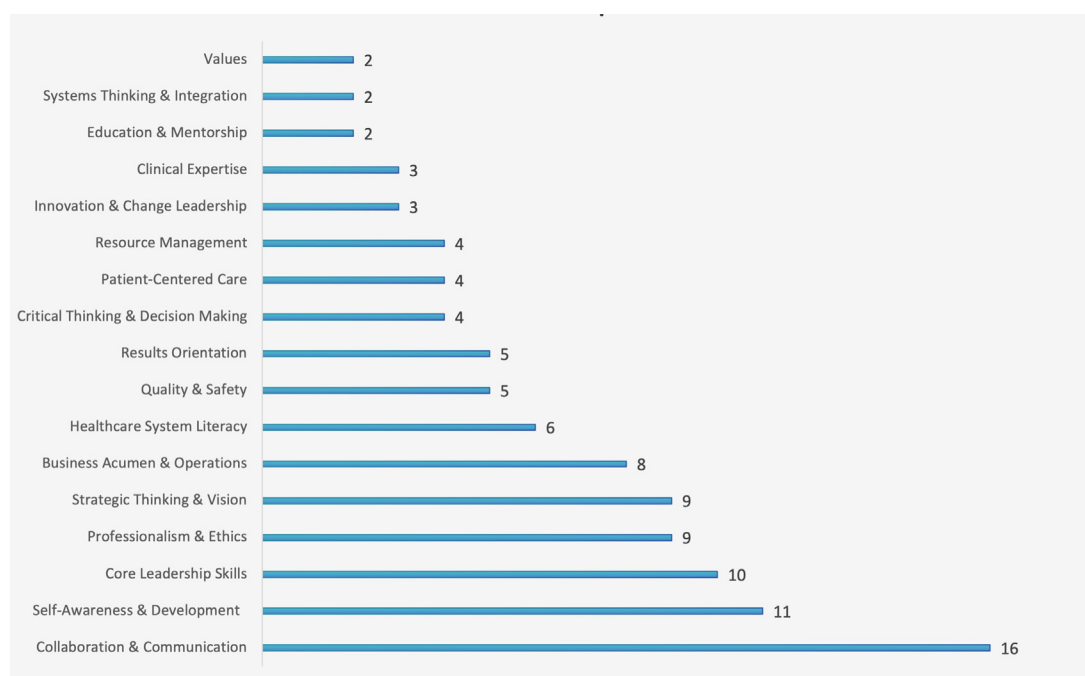


Figure 4 Frequency distribution of clustered competency domains identified in generalised medical leadership models.

systems, cultural contexts and leadership priorities. In Canada, as early as 1996, the CanMEDS physician competency framework included 'Leader' as one of the essential roles of physicians. Leadership has since become essential for medical students and practising doctors. The Canadian LEADS Framework, formally launched in 2009, emphasises distributed leadership across all healthcare professionals, advocating for competencies in five domains: leading self, engaging others, achieving results, developing coalitions and system transformation. This inclusive model aims to foster a culture of leadership that is transformative and collaborative.²⁸

Similarly, the Medical Leadership Competency Framework by the NHS (UK), introduced in 2008, advocates for shared leadership, prioritising competencies such as 'demonstrating personal qualities, working with others, managing services, improving services and setting direction'.¹⁰ These competencies align with the core values of the NHS and aim to develop leaders capable of navigating the complexities of a publicly funded healthcare system with equitable access for all.

In contrast, US leadership models, such as those developed by The Healthcare Leadership Alliance in 2005, emphasise competencies such as 'communication and relationship management, leadership, professionalism, healthcare environment knowledge and business skills and knowledge'.¹⁷ These competencies are crucial in a system in which healthcare leaders must navigate a competitive, multi-payer system, highlighting the need for operational efficiency and strategic foresight. However, stressing the competitive part of the US healthcare system does not contradict advocating for shared leadership, which is also central. When the NCHL released the first version of the Health Leadership Competency Model in 2004, its intent was 'to provide a method of measuring the skills necessary for effective performance for all types and levels of management, including first-line clinical managers as well as the senior management team'.²⁹

Another example of shared and collective leadership in the USA is the *Duke Healthcare Leadership Model*. As described by the authors, the Duke Model was 'not designed to prepare individuals for specific leadership roles'. Instead, it aimed to facilitate individuals' learning and the development of leadership skills that would prepare them to influence many facets of life, including healthcare.¹² Combining the results from the hierarchical cluster analysis with qualitative data, the Duke healthcare leadership model was based on the core principle of patient-centredness and the core competencies of integrity, teamwork, critical thinking, emotional intelligence and selfless service.

Emerging themes of medical leadership competencies

Peer-reviewed studies published in the last decade have revealed a growing recognition of the need for competencies that address the evolving challenges in healthcare, such as cultural sensitivity,^{25 30} crisis management,¹⁶ business skills^{31 32} and digital literacy.³³ These emerging competencies reflect the dynamic nature of healthcare leadership and the need for leaders to adapt to new technologies, diverse patient populations and the ever-changing healthcare environment.

Research has also demonstrated the integration of leadership competencies with local cultural values. For instance, a study from China emphasised competencies such as serving as a role model of 'Junzi' (the ideal person in Confucianism), fostering collaboration and demonstrating benevolence.²⁵ This illustrates the importance of cultural context in defining effective leadership and underscores the potential for leadership models to be

tailored to local traditions and values, enhancing their relevance and impact.

Another emerging trend reflecting the values of different medical systems is convergence. A Canadian study demonstrated the increasing emphasis on 'business skills' among general doctors, which signals a recognition of the multifaceted role of modern physicians, who must navigate clinical, financial and administrative complexities.³¹ While the shift from the NCHL's Healthcare Leadership Competency Model 3.0, released in 2020¹³ to Model 2.0 released in 2005³⁴ is noteworthy for the greater emphasis on collaboration, ethical leadership, system-wide understanding and personal development of leaders.³⁵

In 2023, IHF of Switzerland updated its competency model (Global Healthcare Leadership Competency Model 2023)³⁶ and made structural changes that stress the competitive nature of the healthcare industry. This revision was prompted by a series of major global changes following the release of the original 2015 IHF model, including the Paris Climate Accord, the WannaCry ransomware attack, the COVID-19 pandemic and the rise of large language models and artificial intelligence. The revised model reflects these shifts by emphasising new competencies such as preparedness and crisis management, digital technologies in healthcare and sustainability leadership. The updated structure affirms how global trends are reshaping the expectations of healthcare leaders.³⁷

LIMITATIONS

Several limitations should be acknowledged when interpreting the findings of this review. First, despite a comprehensive and systematic search strategy, selection bias owing to limitations such as language restrictions, publication date cut-offs and database selection may affect the generalisability of the findings. Second, the heterogeneity of the analysed models and frameworks poses challenges for comparison and synthesis, as each model may have been developed using distinct methodologies and contextual factors. Third, the synthesis relied on the information provided within the models and frameworks themselves, which may not fully reflect the application and effectiveness of these competencies in real-world healthcare settings. Lastly, the screening process relied on the author's individual efforts, which could influence the selection and interpretation of the studies.

Future research should aim to include a more diverse range of studies, particularly those that examine non-English models. Additionally, future studies should explore the direct impact of leadership competencies on healthcare outcomes and assess the effectiveness of leadership development interventions. As healthcare systems continue to evolve and leadership roles grow more complex, the ongoing refinement and evaluation of medical leadership competencies will be crucial to ensure they remain relevant and effective in addressing the challenges of modern healthcare.

CONCLUSION

Variations in focus, approach and target audiences across generalised models and context-specific competencies deepen the understanding of effective medical leadership. This review highlighted the global shift towards recognising and institutionalising collective leadership in healthcare. As healthcare systems continue to navigate complex challenges, developing leadership competencies is critical to ensure effective, responsive and adaptable leadership within the medical profession. The influence of national-level initiatives in shaping these models also underscores the importance of coordinated efforts among diverse healthcare

stakeholders, including physicians, policymakers, educators and patients, whose contributions enhance the relevance and effectiveness of the models.

The comparative analysis of medical leadership models from various countries, alongside insights from peer-reviewed and grey literature, emphasised the importance of contextual and cultural considerations in the development and application of physician leadership competencies. The differences among the models from Canada, the UK, the USA and Switzerland highlighted how distinct healthcare systems and societal values shape expectations for medical leadership. This diversity points to the need for leadership competency models to be adaptable and responsive to the unique demands of each healthcare system. However, despite these differences, recent updates in leadership models reflect global trends shared across healthcare sectors, such as the shift towards value-based care, a growing emphasis on patient-centred care, technological integration, cross-organisational collaboration and a heightened focus on social responsibility.

This review sheds light on the current state of medical leadership competencies and sets a foundation for future research and advancement in this vital area of healthcare.

Contributors LD designed and conceptualised the study and wrote the initial manuscript draft. She also designed the review strategy in collaboration with SF and CGM. LD conducted the literature search and led the review process. SF, CGM and CD critically reviewed the manuscript and provided substantial revisions to the conceptual framework and organisation of the review. They also closely edited the text. All authors approved the final submission. LD acted as guarantor. Since English is not LD's first language, certain sentences of the manuscript were polished using ChatGPT 4, an AI language model, to enhance the clarity and fluency of the text. Specific sentences polished by the AI are not distinctly identifiable due to multiple revisions. The authors maintained oversight and control over the final content to ensure its accuracy and integrity.

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Patient consent for publication Not applicable.

Ethics approval According to the IRB Determination Notice of Johns Hopkins Bloomberg School of Public Health sent on Sep 21st 2023, this study 'does not qualify as human subjects research as defined by DHHS regulations 45 CFR 46.102, and therefore does not require IRB oversight'.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information. For this scoping review, no new datasets were generated or analysed. The review is based on a synthesis of existing literature, which has been compiled from publicly available sources. As such, there are no datasets to share. However, to ensure transparency and reproducibility, we have provided a comprehensive list of references and sources in the review, which can be accessed through the citations within the document. The data presented in the tables and figures are derived from the information contained within these cited sources. Readers interested in the specific data points or additional details from the studies reviewed can refer to the original publications for further information.

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REFERENCES

- Sarto F, Veronesi G. Clinical leadership and hospital performance: assessing the evidence base. *BMC Health Serv Res* 2016;16 Suppl 2:169.
- Veronesi G, Kirkpatrick I, Vallascas F. Clinicians on the board: what difference does it make? *Soc Sci Med* 2013;77:147–55.
- Kaiser F, Schmid A, Schlüchtermann J. Physician-leaders and hospital performance revisited. *Soc Sci Med* 2020;249:112831.
- Tasi MC, Keswani A, Bozic KJ. Does physician leadership affect hospital quality, operational efficiency, and financial performance? *Health Care Manage Rev* 2019;44:256–62.
- PG. N. *Leadership: Theory and practice*. SAGE Publication, 2021.
- Berghout MA, Fabbriotti IN, Buljac-Samardžić M, et al. Medical leaders or masters?—A systematic review of medical leadership in hospital settings. *PLoS One* 2017;12:e0184522.
- Jill Aylottea. *Medical Leadership: A toolkit for service development and system transformation*. Taylor & Francis Group, 2018.
- Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018;169:467–73.
- Frank JR SL, Sherbino J, editors. In: *CanMEDS 2015 Physician competency framework*. Ottawa: Royal College of Physicians and Surgeons of Canada, 2015.
- Academy of Medical Royal Colleges Nifal. *Medical leadership competency framework, enhancing engagement in medical leadership*. 3rd edn. NHS Institute for Innovation and Improvement, 2010.
- Twente PMUo. Dutch framework medical leadership competences. 2016.
- Hargett CW, Doty JP, Hauck JN, et al. Developing a model for effective leadership in healthcare: a concept mapping approach. *J Healthc Leadersh* 2017;9:69–78.
- NCHL. Health leadership competency model 3.0. 2020.
- Academy NL. Healthcare leadership model. 2013. Available: <https://www.leadershipacademy.nhs.uk/healthcare-leadership-model/explore-the-healthcare-leadership-model>
- Hess CA, Barss C, Stoller JK. Developing a leadership pipeline: the Cleveland Clinic experience. *Perspect Med Educ* 2014;3:383–90.
- Santra S, Alat P. Adaptive leadership of doctors during COVID-19. *LHS* 2022;35:246–66.
- HLA. Overview of the hla competency directory. 2010.
- Academy NL. The healthcare leadership model, version 1.0. Leeds: NHS Leadership Academy; 2013.
- Australia HW. Health leads Australia: the Australian health leadership framework. 2013.
- Keijser WA, Handgraaf HJM, Isfordink LM, et al. Development of a national medical leadership competency framework: the Dutch approach. *BMC Med Educ* 2019;19:441.
- Merriam SB, Rothenberger SD, Corbelli JA. Establishing Competencies for Leadership Development for Postgraduate Internal Medicine Residents. *J Grad Med Educ* 2021;13:682–90.
- Loscalzo SM, Seimears T, Spector ND, et al. Leadership Training in Pediatric Residency Programs: Identifying Content, Characterizing Practice, and Planning for the Future. *Acad Pediatr* 2021;21:772–6.
- Leggat SG, Balding C. Achieving organisational competence for clinical leadership: the role of high performance work systems. *J Health Organ Manag* 2013;27:312–29.
- Hayashi M, Son D, Onishi H, et al. Contribution of short-term global clinical health experience to the leadership competency of health professionals: a qualitative study. *BMJ Open* 2019;9:e027969.
- Hu Y, Broome M. Leadership characteristics for interprofessional collaboration in China. *J Prof Nurs* 2020;36:356–63.
- Baker GR, Denis J-L. Medical leadership in health care systems: from professional authority to organizational leadership. *Public Money & Management* 2011;31:355–62.
- Berwick D. A promise to learn – a commitment to act: improving the safety of patients in England. In: *2013;National Advisory Group on the Safety of Patients in England*.
- LEADS. LEADS is a caring environment capabilities framework. 2022 Available: <https://cchl-ccls.ca/pld-leads/the-leads-framework>
- Calhoun JG, Dollett L, Siniors ME, et al. Development of an interprofessional competency model for healthcare leadership. *J Healthc Manag* 2008;53:375–89.
- Maulina F, Hasanbasri M, Scheele F, et al. Investigating physician leadership competencies in rural and remote areas of the province of Aceh, Indonesia. *BMJ Lead* 2023;7:122–7.
- Comber S, Crawford KC, Wilson L. Competencies physicians need to lead – a Canadian case. *LHS* 2018;31:195–209.
- Appelbaum N, Liang C, Whitney S, et al. What Business Competencies Are Needed for the Modern Physician Leader and When. *PLJ* 2022;9:39–45.
- Gillian Parker TS, Shea C, Perreira TA, et al. Key Healthcare Leadership Competencies. *Healthc Q* 2022;1.
- NCHL. National center for healthcare leadership health leadership competency model summary. 2005.

- 35 Garman AN, Standish MP, Wainio JA. Bridging worldviews: Toward a common model of leadership across the health professions. *Health Care Manage Rev* 2020;45:E45–55.
- 36 Federation IH. Global healthcare leadership competency model 2023. 2023.
- 37 Basterrechea S, Frich JC, Garman AN. Future-ready healthcare leadership: the revised International Hospital Federation competency model. *BMJ Lead* 2025;9:e000925:80–2.
- 38 Academy NL. Clinical leadership competency framework. NHS Institute for Innovation and Improvement; 2011.
- 39 Academy NL. Leadership framework. NHS Institute for Innovation and Improvement; 2011. Available: <https://www.leadershipacademy.nhs.uk/wp-content/uploads/2012/11/NHSLeadership-Framework-LeadershipFramework.pdf>
- 40 Council GM. Leadership and management for all doctors. General Medical Council; 2012.
- 41 Federation IH. Leadership competencies for health services managers. 2015.
- 42 NACHC. Clinical leadership development competencies domains and skills/tasks. National Association of Community Health Centers; 2019.
- 43 Angood PB. Physician leadership: more valuable than ever — a white paper from the American association for physician leadership. 2022. Available: <https://www.physicianleaders.org/>
- 44 Hopkins MM, O'Neil DA, Stoller JK. Distinguishing competencies of effective physician leaders. *J Manag Dev* 2015;34:566–84.
- 45 Jones SK, Chan KH, Bourdage JS, *et al*. Identifying leadership in medical trainees: evaluation of a competency-based approach. *BMJ Lead* 2022;6:20–9.