

Appendices

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Putting evidence at the centre of everyday life: Helping health and social systems learn and improve rapidly and contribute to a society-wide transformation

8 December 2025

[MHF product code: LEP 9e]

Appendix 1: Methodological details

We use a standard protocol for preparing living evidence profiles (LEP) to ensure that our approach to identifying research evidence is as systematic and transparent as possible in the time we are given to prepare the profile.

Engaging subject matter experts and citizen partners

Citizen partners were engaged after drafts of the living evidence profile report were completed to offer feedback and propose changes that help with clarity.

Organizing framework

To structure our searches for evidence to include in this LEP and to structure our analysis and the presentation of our findings, we drew on an organizing framework developed through the efforts of the [Global Commission on Evidence to Address Societal Challenges](#) (the Global Evidence Commission) following consultations with subject-matter experts and citizen partners, guidance from the [Citizen Leadership Group](#), and from the views and experiences elicited through a [series of citizen panels held in October 2022](#). This organizing framework categorized the range of strategies for supporting citizens to use evidence in everyday life into five overarching strategies. This LEP focuses on one of those strategies, namely **helping health and social systems learn and improve rapidly and contribute to a society-wide transformation**.

Identifying research evidence

In April 2024, we searched for evidence syntheses (and protocols for evidence syntheses underway) and for single studies relevant to all five strategies developed by the [Global Evidence Commission](#) in six databases: [Health Systems Evidence](#), [Social Systems Evidence](#), [PubMed](#)/MEDLINE, EBSCOhost, ProQuest and Web of Science. The detailed search strategies for each of the sub-strategies are available upon request.

We retrieved 4,299 total studies across all databases searched. Covidence software was used to coordinate screening with our team of researchers. After duplicates were removed, we assessed 3,304 for eligibility based on a review of titles and abstracts and deemed 478 potentially eligible for inclusion. The detailed search strategies for each of the sub-strategies are available upon request.

For the 102 studies that were considered relevant to strategy 5, a single member of the research team assessed the full text of each study, which resulted in a further 84 being removed, and a final set of 18 studies deemed eligible for the

analysis. The team used a dedicated virtual channel to discuss and iteratively refine inclusion/exclusion criteria throughout the process, which provided a running list of considerations that all members could consult during the first stages of assessment. Several studies were removed during the final stages of analysis, which have been listed in Appendix 4.

We excluded documents that did not directly address the research question and the organizing framework. We were unable to extract key findings from documents that were written in languages other than Chinese, English, French, Portuguese or Spanish, or were not able to be translated to English via Google applications. We provided any documents that made it to full-text screening and did not have content available in these languages in Appendix 4 containing documents excluded at the final stages of reviewing.

Assessing relevance and quality of evidence

We assessed the relevance of each included evidence document as being of high or low relevance to the research question and sub-strategies of the organizing framework.

Two reviewers independently appraised the methodological quality of the included evidence documents using AGREE II. We used three domains in the tool (stakeholder involvement, rigour of development and editorial independence) and classified guidelines as high quality if they were scored as 60% or higher across each of these domains. Disagreements were resolved by consensus with a third reviewer if needed. AMSTAR rates overall methodological quality on a scale of 0 to 11, where 11/11 represents an evidence synthesis of the highest quality. High-quality evidence syntheses are those with scores of eight or higher out of a possible 11, medium-quality evidence syntheses are those with scores between four and seven, and low-quality evidence syntheses are those with scores less than four. It is important to note that the AMSTAR tool was developed to assess evidence syntheses focused on clinical interventions, so not all criteria apply to those pertaining to health-system arrangements or to economic and social responses. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, an evidence synthesis that scores 8/8 is generally of comparable quality to another scoring 11/11; both ratings are considered 'high scores.' A high score signals that readers of the evidence synthesis can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the evidence synthesis should be discarded, merely that less confidence can be placed in its findings and that the evidence synthesis needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1): S8.)

Preparing the profile

Each included document is cited in the reference list at the end of the LEP. For each included evidence synthesis and single study, we prepared a small number of bullet points and an overarching declarative statement of the findings, alongside additional study characteristics (e.g., date of last search, methodological quality, study jurisdiction). Findings from all the evidence documents are then used to summarize key messages in the profile report. Protocols and titles/questions have their titles hyperlinked, given that findings are not yet available.

Appendix 2: Details about each identified evidence synthesis

Dimension of organizing framework	Declarative title and key findings	Relevance rating	Living status	Quality (AMSTAR)	Last year literature searched	Availability of GRADE profile	Equity considerations
Help health and social systems learn and improve rapidly and contribute to society-wide transformation (n=10; two protocols)	Learning health systems require patients to have skills in sharing and understanding health information; healthcare workers to excel in evidence-based practice, leadership, teamwork and data analysis; and systems to integrate standardized data, streamline workflows and foster a culture of continuous learning (1)	High	No	3/9 (AMSTAR rating by McMaster Health Forum)	2020	No	None identified
	Academic health centres can enhance patient outcomes by implementing a Learning Health System (LHS) framework, which includes a coordinated system with seven organizational components, a research engine for evidence evaluation, and a learning engine for incorporating evidence into clinical practice, with leadership playing a key role in driving collaboration and ensuring ethical standards across components (2)	High	No	3/9 (AMSTAR rating by McMaster Health Forum)	2021	No	None identified
	Effective healthcare feedback relies on a cyclical process involving goal setting, data collection, feedback delivery, recipient interaction and acceptance, with success influenced by factors such as the feedback's design, the recipient's characteristics, and the organizational context (3)	High	No	4/9 (AMSTAR rating by McMaster Health Forum)	2016	Yes	None identified
	Canada has key strengths in rapid-learning health systems (e.g., data-sharing platforms and patient advisory networks) but also faces challenges (i.e., meaningful patient engagement, timely data sharing, aligning governance and funding, and fostering a culture of continuous learning) (4)	High	No	1/9 (AMSTAR rating by McMaster Health Forum)	2018	No	None identified
	Expanding the skills of volunteers and caregivers, increasing access to culturally appropriate care, and improving healthcare facilities (i.e., physical infrastructure and equipment) helped address challenges with timely access and continuity of care for underserved populations (5)	High	No	6/9 (AMSTAR rating by McMaster Health Forum)	2021	No	None identified
	Integrating social supports like housing assistance, employment programs, and food security initiatives into primary care not only improved access to mental health services but also enhanced treatment outcomes, reduced stigma and increased overall patient satisfaction, particularly for underserved and marginalized populations (6)	High	No	1/9 (AMSTAR rating by McMaster Health Forum)	2021	No	None identified
	While inter-institutional learning health networks (LHNs) in pediatric surgery, primarily based in North America, have successfully used real-time data sharing and quality improvement cycles to enhance outcomes, they face challenges in fully implementing LHS principles.	High	No	5/9 (AMSTAR rating by McMaster Health Forum)	2023	No	None identified

Dimension of organizing framework	Declarative title and key findings	Relevance rating	Living status	Quality (AMSTAR)	Last year literature searched	Availability of GRADE profile	Equity considerations
	such as standardized outcome reporting, leadership support and overcoming organizational and regulatory barriers (7)						
	Although care pathways are evolving toward patient-centred, holistic approaches that emphasize patient experience and social dynamics, some challenges remain, such as integrating updated guidelines, improving coordination, addressing social realities, and fostering sustainable practice transformations (8)	High	No	4/9 (AMSTAR rating by McMaster Health Forum)	2020	No	None identified
	While 21 Learning Health Systems in primary care were identified, most were integrated within larger health systems, with key challenges including data standardization, financial sustainability, embedding research into routine care, and limited primary care-specific initiatives (9)	High	No	5/9 (AMSTAR rating by McMaster Health Forum)	2020	No	None identified
	Between 2007 and 2020, there was an increase in empirical studies regarding LHSs; most studies were conducted in high-income countries and examined the implementation of relatively small-scale LHS initiatives (10)	High	No	4/9 (AMSTAR rating by McMaster Health Forum)	January 2021	Not available	None identified
Protocols (n=2)	Exploring the impact of evaluation on learning and health innovation sustainability: Protocol for a realist synthesis (11)						
	Implementation model for a national learning health system (IMPLEMENT-National LHS): A concept analysis and systematic review protocol (12)						

Appendix 3: Details about each identified single study

Dimension of organizing framework	Declarative title and key findings	Relevance rating	Study characteristics	Equity considerations
Help health and social systems learn and improve rapidly / society-wide transformation (n=1)	Successful large-scale health system changes relied on local champions, clear communication, adaptable strategies tailored to local contexts, strong leadership, consistent data systems, and addressing challenges like change fatigue and competing priorities (13)	Low	<i>Publication date:</i> 2014 <i>Jurisdiction studied:</i> Canada <i>Methods used:</i> Case study	None identified

Appendix 4: Documents that were excluded in the final stages of review

Document type	Hyperlinked title
Single study	The University of Alabama at Birmingham COVID-19 collaborative outcomes research enterprise: Developing an institutional learning health system in response to the global pandemic
Report	Recommendations on how to strengthen the Local Health System Integration Act, 2006 to enable a "People and Communities First" approach to health system transformation [Ontario]
Article	Accelerating health system transformation in Saskatchewan: Lessons learned from the Saskatchewan Surgical Initiative (SkSI) [Saskatchewan]
Article	Strengthening health systems through innovation: Lessons learned [Federal/national]
Commentary	A learning health system approach to the opioid crisis: Never let a good crisis go to waste

References

1. McDonald PL, Phillips J, Harwood K, Maring J, van der Wees PJ. Identifying requisite learning health system competencies: A scoping review. *BMJ Open* 2022; 12(8): e061124.
2. Anderson JL, Mugavero MJ, Ivankova NV, et al. Adapting an interdisciplinary learning health system framework for academic health centers: A scoping review. *Academic Medicine* 2022; 97(10): 1564-1572.
3. Brown B, Gude WT, Blakeman T, et al. Clinical Performance Feedback Intervention Theory (CP-FIT): A new theory for designing, implementing, and evaluating feedback in health care based on a systematic review and meta-synthesis of qualitative research. *Implementation Science* 2019; 14(1): 40.
4. McMaster Health Forum. Creating rapid learning health systems in Canada. Hamilton: McMaster Health Forum; 2018. <https://www.mcmasterforum.org/about-us/products/project/creating-rapid-learning-health-systems-in-canada> (accessed 7 May 2026).
5. Lim HC, Austin JA, van der Vegt AH, et al. Toward a learning health care system: A systematic review and evidence-based conceptual framework for implementation of clinical analytics in a digital hospital. *Applied Clinical Informatics* 2022; 13(2): 339-354.
6. Vaz N, Araujo CAS. Service design for the transformation of healthcare systems: A systematic review of literature. *Health Services Management Research* 2024; 37(3): 174-188.
7. Chua ME, Silangcruz JM, Kim JK, Koyle MA, Sriharan A. A scoping review on learning health networks available in pediatric surgical specialties. *Journal of Pediatric Surgery* 2023; 58(12): 2416-2428.
8. Gartner JB, Abasse KS, Bergeron F, Landa P, Lemaire C, Côté A. Definition and conceptualization of the patient-centered care pathway, a proposed integrative framework for consensus: A Concept analysis and systematic review. *BMC Health Services Research* 2022; 22(1): 558.
9. Nash DM, Bhimani Z, Rayner J, Zwarenstein M. Learning health systems in primary care: A systematic scoping review. *BMC Family Practice* 2021; 22(1): 126.
10. Ellis LA, Sarkies M, Churrua K, et al. The science of learning health systems: Scoping review of empirical research. *JMIR Medical Informatics* 2022; 10(2): e34907.
11. Bird M, Côté-Boileau É, Wodchis WP, et al. Exploring the impact of evaluation on learning and health innovation sustainability: protocol for a realist synthesis. *Systematic Reviews* 2023; 12(1): 188.
12. Gartner JB, Benharbit B, Layani G, et al. Implementation model for a national learning health system (IMPLEMENT-National LHS): A concept analysis and systematic review protocol. *BMJ Open* 2023; 13(10): e073767.
13. BC Patient Safety and Quality Council, Michael Smith Foundation for Health Research, InSource Research Group. BC's Clinical Care Management initiative: A case study for health system transformation. Vancouver, B.C.: BC Patient Safety & Quality Council; 2015.

Bain T, Ali A, Ciurea P, Dass R, Mishra S, Bhuiya AR, Whitelaw H, Chen K, Gauvin FP, Moat KA, Lavis JN. Living evidence profile #9e: Putting evidence at the centre of everyday life: Helping health and social systems learn and improve rapidly and contribute to a society-wide transformation. Hamilton: McMaster Health Forum; 8 December 2025.

Citizen partner acknowledgement: We are thankful to our citizen partners, Juanita Garcia and Patti Bryant, for their contribution to the living evidence profile by providing feedback that was incorporated into the final report. This living evidence profile was funded by the McMaster Health Forum and the Ontario SPOR SUPPORT Unit (OSSU). The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the living evidence profile are the views of the authors and should not be taken to represent the views of OSSU or McMaster University.

The authors wish to thank staff members who appraised the evidence syntheses: Jennifer Lee and Maureen Saha.



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