Rapid Decision Support

A product of the Contextualized Health Research Synthesis Program
Newfoundland & Labrador Centre for Applied Health Research

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Engaging Physicians in the Co-Design of a Learning Health and Social System (LHSS)

What strategies have been employed by healthcare organizations to meaningfully engage physicians in healthcare planning and system design?

Summary

- This report includes information on this topic from Learning Health System-related websites and organizations, feature research articles, expert opinion and grey literature, review articles, primary research, and finally, from toolkits and other resources.
- The available literature refers to "co-design" primarily as a participatory approach to designing solutions, in which community members are treated as equal collaborators in the design process" LINK. It appears that in the context of health system planning and design, co-design is most often in the context of public/patient-caregiver involvement rather than physician/health service provider involvement, as illustrated by a research brief produced by Trillium Health Partners and a guide published by PHN Western Victoria.
- The research-based evidence and expert opinion on engaging physicians in the design and implementation of health services generally, and health information systems more specifically as a category that includes learning health systems, appears to have several broadly accepted strategic considerations:
    - Early involvement of physicians in the co-design process is critical, as it fosters physician buy-in and ownership. This involvement also needs to consider physician incentives and recognition for taking part in the co-design while recognizing competing priorities.

- User interface and user experience (UI/UX) that center the physician are critical, so that the systems being designed align with physician objectives, practices, and preferences. UI/UX is improved when it recognizes that these factors differ across types of physicians.
- Leadership support and peer champions seem to be accepted as critical to facilitating adoption and minimizing resistance to change through organizational commitment and prestigious representation, respectively.
- Demonstrations in the development of co-designed systems are needed to show how the system responds to physician needs and drives improvement. Iterative approaches that integrate feedback mechanisms, in contrast to single consultation sessions, are likewise crucial to validate physician contributions, incorporate physician suggestions for improvements, and to drive physician support.

Learning Health System (LHS)- Related Websites and Organizations

Alliance for Healthier Communities

- Dr. Jennifer Rayner is the Alliance's Director of Research & Policy and the lead architect of our EPIC Learning Health System.

The Learning Healthcare Project

- "The Learning Health System (LHS) toolkit developed by The International Network for Activating Learning Health Systems (INACT-LHS) aims to provide guidance and tools for developing and implementing a LHS."
  - "We structured the toolkit around a framework for developing Learning Health Systems that was outlined in a report from the Learning Healthcare Project. Resources from different content areas were included, including quality improvement, knowledge translation, value based healthcare, informatics, implementation science, complexity science and team science."
  - See also: A Guide to Co-design Capability and Participatory co-design

George Washington University's Learning Health Systems Lab

- Partner organization in the Learning Healthcare Project
- Recommended resources:
  - McDonald PL, Phillips J, Harwood K, Maring J, van der Wees PJ. Identifying requisite learning health system competencies: a scoping review. BMJ Open. 2022 Aug 23;12(8):e061124. (see above)
  - Gremyr A, Andersson Gäre B, Thor J, Elwyn G, Batalden P, Andersson AC. The role of co-production in Learning Health Systems. Int J Qual Health Care. 2021 Nov 29;33(Supplement_2):ii26-ii32. (see above)
  - Dammery G, Ellis LA, Churruca K, Mahadeva J, Lopez F, Carrigan A, Halim N, Willcock S, Braithwaite J. The journey to a learning health system in primary care: a qualitative case

study utilising an embedded research approach. BMC Primary Care. 2023 Jan 19;24(1):22.

- Tom Foley writes in a personal communication:
  - "We did conduct an expert workshop on co-design in 2020. For some reason we don't seem to have written it up, but it was incorporated into this report: https://learninghealthcareproject.org/realising-the-potential-of-learning-health-systems/ (pages 68-71)."
  - "I think there are a number of papers on this topic. You might find some in this journal: https://onlinelibrary.wiley.com/journal/23796146"

Feature Articles

Gremyr, Andreas, et al. "**The role of co-production in learning health systems**." *International Journal for Quality in Health Care* 33.Supplement_2 (2021): ii26-ii32. LINK

- "There is increasing interest in how the LHS concept allows integration of different knowledge domains to support and achieve better health. Even if definitions of LHSs include engaging users and their family as active participants in aspects of enabling better health for individuals and populations, LHS descriptions emphasize technological solutions, such as the use of information systems. Fewer LHS texts address how interpersonal interactions contribute to the design and improvement of healthcare services."
- "Among 17 identified LHS conceptualizations, 3 qualified as most comprehensive regarding fidelity to LHS characteristics and their use in multiple settings: (i) the Cincinnati Collaborative LHS Model, (ii) the Dartmouth Coproduction LHS Model and (iii) the Michigan Learning Cycle Model. These conceptualizations exhibit all four types of value co-creation, provide examples of how LHSs can harness co-production and are used to identify principles that can enhance value co-creation: (i) use a shared aim, (ii) navigate towards improved outcomes, (iii) tailor feedback with and for users, (iv) distribute leadership, (v) facilitate interactions, (vi) co-design services and (vii) support self-organization."
- See also:
  - Tosteson ANA, et al. Harnessing the Collective Expertise of Patients, Care Partners, Clinical Teams, and Researchers Through a Coproduction Learning Health System: A Case Study of the Dartmouth Health Promise Partnership. J Ambul Care Manage. 2023 Apr-Jun 01;46(2):127-138.

Hudson, Darren. "**Physician engagement strategies in health information system implementations**." *Healthcare Management Forum*. Vol. 36. No. 2. Sage CA: Los Angeles, CA: SAGE Publications, 2023. LINK

- Abstract: "Health information system implementations are expensive and risky. They have the potential to transform healthcare when implemented successfully. Health leaders need to effectively engage physicians as an important constituent in the project. This can be accomplished by applying user-centred design principles, facilitating physician leadership, and

planning for training. When done effectively, a sense of shared ownership and allegiance between management and the physician group is created that will lead to a successful project."
    - Outcomes indicating success: "sense of shared ownership", "allegiance between management and physician group", "user-centred design", "physician leadership", "physician HIS training"
    - Based on model proposed by Kushniruk A, Nøhr C. Participatory design, user involvement and health IT evaluation. *Stud Health Technol Inform*. 2016;222:139-151.
- May broaden out to "health information system" as the area for engagement
    - See: Pettersen, Sissel, Hilde Eide, and Anita Berg. "The role of champions in the implementation of technology in healthcare services: a systematic mixed studies review." *BMC Health Services Research* 24.1 (2024): 1-16.
- Engagement strategies:
    - User-centred design (which means co-design for development/customization)
        - See: Kushniruk A, Nøhr C. Participatory Design, User Involvement and Health IT Evaluation. Stud Health Technol Inform. 2016;222:139-51. (available on request)
    - Leadership: most important is Chief Medical Informatics Officer
        - See: Laukka E, Huhtakangas M, Heponiemi T, Kanste O. Identifying the Roles of Healthcare Leaders in HIT Implementation: A Scoping Review of the Quantitative and Qualitative Evidence. Int J Environ Res Public Health. 2020 Apr 21;17(8):2865.
    - Training: key factor, before implementation, after/CME, as well as just-in-time
        - See: Longhurst CA, et al. Arch Collaborative. Local Investment in Training Drives Electronic Health Record User Satisfaction. Appl Clin Inform. 2019 Mar;10(2):331-335. doi: 10.1055/s-0039-1688753. Epub 2019 May 15.
        - See: Gui X, Chen Y, Zhou X, Reynolds TL, Zheng K, Hanauer DA. Physician champions' perspectives and practices on electronic health records implementation: challenges and strategies. JAMIA Open. 2020 Jan 7;3(1):53-61.
            - "Our physician champion participants reported multiple challenges, including insufficient training, limited at-the-elbow support, unreliable communication with leadership and the EHR vendor, as well as flawed system design".
    - "Our findings suggest factors that are crucial to the successful involvement of physician champions in HIT implementations, including the availability of instrumental (e.g., reward for efforts), emotional (e.g., mechanisms for expressing frustrations), and peer support; ongoing engagement with the champions; and appropriate training and customization planning."

Expert Opinion / Grey Literature

Aerde, J. V., and Graham Dickson. "**Accepting our responsibility: a blueprint for physician leadership in transforming Canada's healthcare system (white paper)**." *Ottawa, ON: Canadian Society of Physician Leaders* (2017). LINK

- "The purpose of this white paper is to stimulate dialogue and action: to facilitate the development of an environment that will create the energy and commitment needed for physicians to take charge of their own future — on their own and in collaboration with their partners in the health care system. For transformation of the Canadian health care system to be successful, physicians must play a central role in planning and implementing change. This necessitates collaborative and distributive leadership in cooperation with other groups, such as citizens, administrators, politicians, and allied health care professionals, particularly because of the current fragmentation of the system at many levels."
- "This paper is the first step toward systematically and strategically improving physician engagement and leadership in the Canadian health care system. The process begins with an argument for and articulation of the goal. However, that in itself is not enough. Such a change requires broader systemic engagement of partners who agree on the challenges and the solutions. We recommend actions to stimulate structural, cultural, political, and personal change. Those actions must be informed by a broader dialogue about whether they are appropriate and, more important, how to make them work. The goal is to generate energy to improve physician leadership at all levels and make physicians true partners in efforts to achieve meaningful large-scale change."
- "What health care service organizations should do: We recommend that health care organizations, including hospitals, primary care agencies, health regions, and long-term care organizations, either individually or collectively:
    1. Measure the current level of engagement of their physician population, both those working in house and those working in partnership as independent contractors.
    2. Gather data and information about the current state of physician leadership in their organization to understand roles, responsibilities, remuneration, time allocation, and contracts and determine a base line for improvement.
    3. Make changes in organizational structure and design, jointly advocated by the organization and physician representatives, to alter policies and practices toward involving physicians in informal and formal leadership roles.
    4. Engage in projects to ensure that the organizational culture is conducive to facilitating and supporting the engagement and leadership of physicians.
    5. Use informal and formal communications approaches to ensure that physicians are aware of organizational issues and priorities and are able to respond and provide feedback on such issues.
    6. Identify potential future physician leaders and ensure their mentorship and development."

Denis, Jean-Louis, C. Black, and A. Langley. "**Exploring the dynamics of physician engagement and leadership for health system improvement prospects for Canadian**." *Toronto: Institute of Health Policy, Management and Evaluation, University of Toronto* (2013). LINK

- Key Messages
    - "Physician leadership and physician engagement are essential elements of high-performing healthcare systems, contributing to higher scores on many quality indicators. Likewise, physician participation in hospital governance can improve quality and safety."
    - "Although much of the literature on healthcare reforms suggests the importance of physician engagement and leadership, this literature is less explicit about the processes by which health systems and organizations can convert physicians' autonomy, knowledge and power into resources for health system performance and improvement."
    - "Physician leadership is important at the apex of the organization, but leadership occurs at all levels of the system. Increasing attention is being paid to high-performing clinical microsystems as well as new leadership modalities (e.g. dyads of physician and manager leaders and other forms of distributed leadership) and processes (e.g. physician "compacts") that are fostering what some refer to as "organized professionalism."
    - "Physician engagement does not happen on its own. Organizations must use diverse strategies and initiatives to strengthen physician engagement and leadership, including (but not limited to):
        - physician compacts as mechanisms that help clarify roles, expectations and accountabilities between physicians and other system leaders
        - leadership that is linked to broader improvement strategies to create a receptive context for physician engagement in improving clinical outcomes leadership development—especially for collective and distributive leadership—to support physician engagement
        - teams and team leadership—especially inclusive leadership—as a favourable context for physician engagement and leadership and performance improvement"
    - "A key variable for success in these approaches to physician involvement is trust between physicians and organizations, which can develop around these elements: open communication, willingness to share relevant data, creating a shared vision and accumulating evidence of successful collaboration."
    - "True physician engagement and leadership begins with understanding and addressing the underlying characteristics and values of the engaged physicians."
    - "Organizationally, physician engagement depends on a mosaic of factors and can therefore be difficult to achieve. Physician leaders may experience obstacles in assuming leadership roles in organizations and systems. Such obstacles may be partly attenuated with purposeful changes to shape the organizational culture (called "cultural work")."

- "Successful strategies to engage physicians need to go beyond, but not ignore, appeals to their economic motives. In the same vein, formalized strategic leadership positions are important but are insufficient to effect high performance. Because of the major "cultural problems" posed by management–professional tensions, economic and symbolic solutions do not necessarily translate into greater physician engagement. The main challenge is to bridge and integrate cultures, not buy commitment."
- "Developing physicians' skills and competencies to support improvements in health systems means targeting a full range of physicians rather than only individual physicians. Key core competencies for engaging and fostering physician leadership include leadership, strategic planning, "systems thinking," change management, project management, persuasive communication and team building"

Doctors Nova Scotia. 2017. **Meaningful Engagement, Meaningful Change: Recommendations On Physician Engagement In Health-Care System Change**. LINK

- "WHAT DO WE MEAN BY PHYSICIAN ENGAGEMENT? "Physician engagement is not only about the appointment of a small group of leaders to roles such as medical or clinical director. It is recognition that leadership is a social function and not just defined by hierarchical reporting lines. Enhanced medical engagement should work towards a model of diffused leadership, where influence is exercised across relationships, systems and cultures. It should apply to all rather than a few" (Clark, 2008)
- "Physician engagement has many purposes, including to educate, consult, collaborate with and empower physicians in health-care delivery and health-care system transformation (LIHN Collaborative, 2010). Effective physician engagement occurs within a culture that respects and values physicians' autonomy, knowledge and ability to advocate for their patients and the communities in which they work. Organizations that seek physician input early and often through a variety of mechanisms contribute to a safe, high-quality patient experience within the health-care system."
- "BEST PRACTICES IN PHYSICIAN ENGAGEMENT IN HEALTH SYSTEM DESIGN: The physician engagement toolkit designed by the LHIN Network in Ontario identified a number of key principles for effective physician engagement based on experience and best available evidence, including:
    - Ensure engagement occurs early enough to make a difference
    - Dedicate resources to support effective engagement processes
    - Monitor the effectiveness of engagement activities
    - Ensure the purpose, expectations, constraints and decision-making processes are transparent
    - Eliminate barriers to participation
    - Engage with the full diversity of stakeholders (for example, a single physician asked to participate in an initiative cannot represent the diverse perspectives of his or her colleagues)
    - Promote a culture of participation (LIHN Collaborative, 2010)

- "No matter what process is used for physician engagement, the research is clear that trust between physicians and organizations is a key element of successful engagement (Denis, 2013). According to research conducted by Denis (2013), the ability to develop a trusting relationship for engagement comes from "open communication, willingness to share relevant data, creating a shared vision and accumulating evidence of successful collaboration." In their research on effective physician engagement, Atkinson et al. (2013) emphasized the necessity of effective communication. Two of their key findings were:
    - It is critical to communicate widely and effectively, using many different methods and persistence to ensure messages are both received and understood.
    - Frequent face-to-face communication from senior leaders is important. Facilitating "open, honest and frank discussion on a routine basis…with an emphasis on listening and responding, closing the feedback loop to confirm what actions had or hadn't been taken and why…effectively broke down barriers and guarded against a natural tendency to work in 'silos'" (Atkinson, 2013).

"Effective physician engagement is built upon a foundation of trust and is supported by regular and open communication. This communication includes making all physicians aware of the work being done by their colleagues on their behalf and the benefits of becoming engaged themselves."

Joshi, Atharv. ***Primary Care Physician Engagement in Health System Transformation: A case study***. MS thesis. The University of Western Ontario (Canada), 2023. Electronic Thesis and Dissertation Repository. LINK

- "This thesis explored physician engagement throughout the development of an organization known as the London Middlesex Primary Care Alliance (LMPCA). This thesis used a qualitative case study approach guided by a constructivist paradigm. The findings revealed six themes which contributed to the development of the LMPCA and provided insight into how physicians were engaged within health systems work. Unique to this study were two facilitators for engagement: the role of a transformation lead and the use of a grassroots approach to physician engagement."
- "2.4.1 Strategies for Engagement: Current physician engagement literature outlines physician strategies in the context of organizational behaviour literature (e.g., geared towards management, finance or corporate sectors) (Perreira et al., 2021) or in larger organizational and hospital settings (Denis et al., 2014; Snadden et., 2019; Spaulding et al., 2014). However, the limited literature available on the outcomes and sustainability of physician engagement strategies in primary care and health systems settings makes it challenging to integrate evidence-based practices effectively into health system work (Guo et al., 2021; Quinn & Manns, 2021). While there were several strategies in the literature for physician engagement, the prominent and recurring strategies in the literature were to create a positive organizational culture with good communication, providing incentives for physician engagement and opportunities for physicians to engage within the organization (McMurchy, 2018; Perreira et al., 2019). To date, there are limited frameworks for engaging physicians, particularly in systems-related work, as existing frameworks primarily focus on quality and safety improvements (Taitz

et al., 2011). More research is needed for physician engagement in health systems to understand strategies that can be effective and sustainable."

- "2.4.3 Implications for Physician Engagement: When physicians are engaged in the decision-making process, collaboration with their peers, they are more likely to feel invested in the success of the organization (Perreira, 2019; Skillman et al., 2017)."
- "2.5 Gaps in the Literature: The current literature highlights the importance of physician engagement (Everall et al., 2022; Waddell & Lavis; 2022) and suggests that effective physician engagement is an essential factor for improving physician satisfaction, quality of care, patient safety, efficiency, and lowering health care costs (Milliken, 2014; Perreira et al., 2019). Despite an overall awareness of the value of physician engagement, it is undetermined which physician engagement strategies have positive effects and how to implement such strategies in a sustainable way. The strategies that are identified in the literature are largely based on quality improvement work within organizational and hospital settings rather than primary care and health systems work. The strategies used for physician engagement are not always implemented by the physicians themselves but instead by the organization's leaders and administrative members (McMurchy et al., 2018; Rabkin et al., 2019; Spaulding et al., 2014). The challenge to this is it may not effectively address the true concerns of the physician needs (Rabkin et al., 2019; Spaulding et al., 2014)"
- "4.2.5 Drivers for Engagement: When asked about the best ways to engage physicians in leadership roles, organizational or systems work or primary care alliance initiatives, participants identified six drivers: recognizing value, intrinsic motivation, organized procedures, strong communication, grassroots approach, and the role of the primary care transformation lead."
- "4.2.6 Barriers to Engagement and Sustainability: When asked about the challenges to physician engagement, participants identified lack of funding or remuneration to compensate physicians for their involvement, inadequate administrative support, and insufficient representation and acknowledgement of physician voice as key barriers. Participants also highlighted the need for succession planning for the sustainability of the LMPCA."

North Highland Health. 2021. **Health System Transformation Through Physician Engagement**. LINK.

- The problem: Employees are an organization's greatest competitive advantage. In the healthcare industry, the stakes are even higher on physician engagement, largely as a result of changing reimbursement models and regulations.
- The analysis: As health systems increasingly shift to value-based care models, they have an opportunity to share the benefits of quality improvement and cost savings with their physicians. Health systems must develop a tactical plan to fully engage physicians and their teams in this effort. The delivery of a compelling physician experience is an untapped source of differentiation.
- The solution: Health systems have an opportunity to hone in on physician engagement at two critical junctures: onboarding and building community. Grounded in design thinking pillars, North Highland has identified four key steps to get it right:
    - 1. Start with people.
    - 2. Think holistically.

- 3. Align the organization.
- 4. Co-create the solution."

Perreira, Tyrone, et al. "**Physician engagement, well-being, and organizational culture**." *Dalla Lana School of Public Health, University of Toronto* (2022). LINK

- "This report provides critical insights into the engagement, culture and well-being of physicians working in Ontario hospitals. This report is intended to guide hospital leaders in having an open dialogue with physicians and help identify critical barriers in their organizations within their power to change. As a result, hospital administrators can more accurately understand physician expectations, areas of importance, and factors for success."
- "This report discusses the following:
  - The association between work environment, work attitudes and behaviours, and outcomes.
  - Physician engagement as defined in the literature
  - The importance of using consistent language and common measurements across hospitals
  - The distinction between work engagement and participation in more organizational leadership activities
  - Use of a 3-item scale for measuring work engagement in the Canadian context
  - Reasons identified by physicians for not participating in administrative leadership activities
  - Physician concerns regarding their working relationship with senior hospital leadership
  - Generational differences in perception of senior hospital leadership by physicians
  - Differences in well-being by biological sex
  - The relationship between work engagement and organizational culture
  - The relationship between self-care and well-being
  - Opportunities for improvement in self-care identified by physicians
  - The benefit of short, easy-to-view reports identifying critical areas of focus and how it is being used
  - Next steps to a better understanding"

Review Articles

Hastings, S. E., et al. "**Exploring the relationship between governance models in healthcare and health workforce transformation: A systematic review**." *Calgary (AB): Alberta Health Services* (2013). LINK

- "The objective of this systematic review funded by the Canadian Institutes of Health Research was to examine the relationship between health system governance and workforce transformation. Particular attention was paid to how specific governance elements facilitate transformational change in the workforce to ensure the effective use of all health providers."
- "Six governance types were identified in the empirical literature: shared governance, Magnet accreditation, professional development initiatives, quality improvement initiatives, organization of health care delivery, and funding models."

- "Key messages from our results are as follows:
    - "Governance initiatives aimed at improving provider engagement (i.e., shared governance, Magnet accreditation, and professional development) were successful in changing at least some of the targeted workforce outcomes, such as job satisfaction, retention, and collaborative practice.
    - "Clinical governance and other quality improvement initiatives were generally effective in improving provider behaviour such as using evidence to inform decisions and were usually well-received by providers. The research reviewed highlighted the importance of training providers to find, evaluate, and use research evidence.
    - "The evidence is mixed on the impact of the other governance types on workforce outcomes. Pay for performance and changes to the organization of health care delivery were effective for workforce transformation in certain contexts but there is limited research evidence on factors that limit their effectiveness and on unintended consequences.
    - "We identified a large number of studies reporting workforce-related topics. Few of them have an explicit focus on the relationship between governance structures or processes and workforce transformation. Workforce transformation is often reported without clear identification of the mechanisms for change. Overall, theoretical development is weak.
    - "The primary workforce transformation variables studied in relation to governance structures and processes were work attitudes (e.g., job satisfaction, engagement) and professional behaviour (e.g., performance). While these are important to study, researchers need to consider outcomes such as collaborative practice, recruitment, and retention given the increasing strains on the health system forecasted for the coming years.
    - "Organizational sponsorship, communication, and effective leadership appear to be important for successful implementation of any governance structure or process. Organizations that have a clearly stated mission and values, that provide appropriate leadership and management support, and that invest both time and human resources report better workforce engagement and positive outcomes after implementation of a new governance structure.
    - "There is a lack of research connecting patient outcomes with health workforce transformation as it relates to governance. Future research should consider whether and how workforce transformation initiatives improve the quality of patient care.
    - "The quality of the research in this domain is disappointing. Methodological weaknesses such as poor controls or lack of reporting of confounding variables were common."

McDonald, Paige L., et al. "**Identifying requisite learning health system competencies: a scoping review**." *BMJ open* 12.8 (2022): e061124. LINK

- "Our aim is to identify and describe the requisite individual competencies (knowledge, skills and attitudes) and system competencies (capacities, characteristics and capabilities) described in existing literature in relation to operationalising LHS."

- "Health system worker level: … Themes identified within this literature related to skills required of health system workers were skills in evidence-based practice, leadership and teamwork skills, analytical and technological skills required to use a 'digital ecosystem', data-science knowledge and skill and self-reflective capacity. Ten articles addressed practitioner-related competencies, with early work done in the field of nursing."
    - See also: Greenberg-Worisek AJ, et al. The learning health system competency appraisal inventory (LHS-CAI): a novel tool for assessing LHS-focused education needs. Learn Health Syst 2021;5.
- "System level: … Culture and climate of supportive learning: An important competency suggested by some authors is the need to create a culture and climate supportive of learning. A learning culture is supported through system competencies and allows for reflection and a practicing mindful organisation. It necessarily requires a culture of transparency and effective communication supporting a 'learning climate'. Several articles noted that enabling a learning culture requires the capability to build trust, respect and affective commitment within the organisation."

Perreira, Tyrone A., Laure Perrier, and Melissa Prokopy. "Hospital physician engagement: a scoping review." *Medical care* 56.12 (2018): 969-975. LINK

- Background: "Literature on health system transformation highlights the importance of physician engagement, suggesting that it is a critical factor for lowering costs while improving efficiency, quality of care, patient safety, physician satisfaction and retention. "Engagement" in health care is often defined as a positive, fulfilling work-related state of mind, which is characterized by vigor, dedication and absorption. The aim of this scoping review is to identify factors associated with, and tools used to measure physician engagement."

Pettersen, Sissel, Hilde Eide, and Anita Berg. "**The role of champions in the implementation of technology in healthcare services: a systematic mixed studies review**." *BMC Health Services Research* 24.1 (2024): 456. LINK

- "Champions play a critical role in implementing technology within healthcare services. While prior studies have explored the presence and characteristics of champions, this review delves into the experiences of healthcare personnel holding champion roles, as well as the experiences of healthcare personnel interacting with them. By synthesizing existing knowledge, this review aims to inform decisions regarding the inclusion of champions as a strategy in technology implementation and guide healthcare personnel in these roles."
- "Champions emerged as promoters of technology, supporting its adoption. Success factors included anchoring and selection processes, champions' expertise, and effective role performance."
- "Findings indicated a correlation between champion experiences and organizational characteristics. The role's firm anchoring within the organization is crucial. Limited evidence suggests that volunteering, hiring newly graduated health personnel, and having multiple champions can facilitate technology implementation. Existing studies predominantly focused on

client health records and hospitals, emphasizing the need for broader research across healthcare services."

Prenestini, Anna, et al. "**Exploring physician engagement in health care organizations: a scoping review**." *BMC Health Services Research* 23.1 (2023): 1029. LINK

- "Our research was intended to: 1) unravel the definition of physician engagement; 2) understand the factors that promote or impede it; 3) shed light on the implications of physician engagement on organizational performance, quality, and safety; and 4) discuss the tools to measure physician engagement."
- Has sections on:
    - Conceptualizing physician engagement
        - Analysis of definitions in the scholarly debate
        - Rationale for engagement
    - Features of physician engagement
        - Engagement practices and areas of involvement (see Table 4: Forms of engagement and Table 5: Areas of physician engagement)
        - Relationship between physician engagement and organizational performance
    - Methods and scales for evaluating physician engagement
    - Enablers and barriers of physician engagement
        - "The main issues concern individual attitudes and skills, conflict between managerial and clinical culture [56] mistrust toward managers [57, 117,118,119], and frustration from a sense of loss of autonomy [20, 110, 118] Due to these factors, physicians are reluctant to take on a management role [46, 120, 121]."
        - "Specialists (*e.g.*, surgeons) are less subject to managerial control because of their organizational cultures, being traditionally individualistic and adverse to competition and rationalization."
        - "Malby et al. [86] identified sources of tension that hinder engagement:
            - 1) a perception of leadership based on personal (credibility, respect, trust) and expert power (knowledge of clinical conditions) positional power;
            - 2) a focus on professionalization (knowledge, personal accountability, unilateral autonomy, decision-making) rather than on professionalism (reflection, interdependent decision-making, collective responsibility);
            - 3) illusion of expertise and evidence."
        - "In the report by Metrics@Work Inc., Grimes, and Swettenham (2012) systematized the most relevant drivers of physician engagement, grouped into five categories [125]:
            - 1) management and leadership (*e.g.*, governance, decision-making, communication, culture, mission, vision, values, organization and delivery of care and services, human resource management, individual relationships, and personal character);

        - 2) funding and financing (*e.g.,* payment systems, rewards, recognition, incentives);
        - 3) quality initiatives (*e.g.*, quality monitoring and improvement, metrics, standardization);
        - 4) regulation, legislation, liability (*e.g.,* self-regulation, accountability, credentialing, bylaws, codes of ethics, competencies);
        - 5) information and communication technologies (*e.g.,* electronic medical records, innovation, privacy, consent)."
    - "Leadership skills are among the most powerful tools to foster physician engagement. Hence, a lack of leadership attitudes, persuasion techniques, mentoring, conflict management, and coaching can all hinder involvement [30]. Conversely, factors facilitating engagement may be a future-focused and outward-looking culture, increased attention to recruitment and selection of doctors to be trained for leadership and management, development of leadership opportunities, and provision of support and effective communication [53]. Other barriers to engagement are the lack of managerial and technical skills and experience [126, 127], limited understanding of health care systems and management jargon [30] inadequate financial and accounting management skills [30, 56] and quality-improvement skills in specific projects [20]."
    - "Studies signal the need to expand the skill set for engagement"
        - See Table 6 Skills for physician engagement"
    - "From this standpoint, health care organizations can play a critical role in improving engagement (Table 7 Policies for engagement), which can be direct (e.g., supporting physicians' involvement) or indirect (e.g., enabling skills and competencies for engagement). There are policies for creating a work environment that actively supports involvement (n = 50; 28.7%), as well as training and coaching sessions helping to develop skills and attitudes useful for engagement (n = 40; 23%).

Zurynski, Yvonne, et al. "**Mapping the learning health system: a scoping review of current evidence. A white paper**." *Sydney: Australian Institute of Health Innovation and the NHMRC Partnership Centre for Health System Sustainability* (2020). LINK

- Important if not just for the case examples (see here)
- See Chapter 3: Barriers and Enablers to LHSs' Development and Implementation
- See Chapter 4. Case Examples of Systems on the Journey to an LHS

Primary Research Articles

Dickson, Graham, and John Van Aerde. "**Enabling physicians to lead: Canada's LEADS framework**." *Leadership in Health Services* 31.2 (2018): 183-194. LINK

- "The purpose of this paper is to provide a case study demonstrating that LEADS in a Caring Environment Capabilities Framework in Canada can assist physicians to be partners in leading health reform."
- "The Canadian LEADS framework enables physicians to lead by providing them with access to best practices of leadership, acting as an antidote to fragmented leadership practice, setting standards for development and accountability and providing opportunities for efficient and effective system-wide leadership development and change."

Grady, Colleen, et al. "**Effectively engaging physicians in system change**." *Healthcare Management Forum*. Vol. 34. No. 3. Sage CA: Los Angeles, CA: SAGE Publications, 2021. LINK

- "Participants in this mixed methods study in one Local Health Integrated Network (LHIN) in Ontario included clinical leaders and community physicians over a period of 14 months."
- "The original purpose of this study was to support the clinical leaders in one LHIN in engaging their peers to improve the system of care and better understand the optimal strategies for increasing engagement. Support for the leaders included in-house leadership group learning in leading change and systems transformation and based on LEADS framework[8] and CanMEDS 2015 Leader role.[9] What started as a prospective study, however, became an observational study of leadership and engagement of clinical leaders and community physicians in a critical healthcare system change, where the organizational structures changed externally and rapidly from LHINs to OHTs. As a result, this study adjusted its original focus and turned to examine the leadership and engagement of clinical leaders and community physicians in the climate of system change."
- "When asked what would influence their level of participation in the upcoming 12-month period, responses fell into three predominant themes: participation would increase if, there was remuneration for time spent, there was a clear mandate from the Ministry of Health regarding direction and, their participation was valued and they could see how it made a difference (Table 2). These themes were consistent at both time points."
- "The change from an LHIN clinical leadership role to a community leadership role served to emphasize four key differences over the 1-year period. Table 3 shows that the overall engagement level as perceived by clinical leaders increased, it became easier to engage peers in change, and that clinical leadership remained valuable."

Gray, Chancellor F., Hari K. Parvataneni, and Kevin J. Bozic. "**Value-based healthcare: "physician activation": healthcare transformation requires physician engagement and leadership**." *Clinical Orthopaedics and Related Research®* 478.5 (2020): 954-957. LINK

- "Additionally, we are seeing a growing crisis in our profession: increasing loss of physician engagement in the health system… This deactivation may be a form of physician burnout,

characterized as a chronic condition with loss of physical, mental, and/or emotional energy, and negative attitudes towards patients and colleagues."
    - "We propose a novel, analogous measure linked to the provision of high-value care: "physician activation.""
- "Several challenges are readily apparent for any system trying to embrace a culture of physician activation, the anticipation of which may help mitigate the negative impact of their challenges. First, in some health systems, the institutional hierarchy tends to favor non physicians as decision makers, essentially sidelining physicians. This phenomenon has resulted in people with nonclinical backgrounds serving in key health system leadership roles."
- "Physicians who attain leadership roles are also often put into the unenviable position of feeling that they must bridge a gap between two adversaries—the health system and their physician group."
- "Despite an increase in burnout and workplace disengagement in our modern health system, the trend can be reversed through many of the strategies outlined [below]" (see table on the following page)

Strategies for improving physician activation

Domain	Core Principle	Example
Professional education	System-wide emphasis on education in leadership, professionalism, and health policy	Medical School and GME curriculum
		Institutional support / requirements to attend CME and national leadership and health policy meetings
Organizational strategy	Emphasis on valuing outcomes over volume	Physician-led health systems
		Increased and optimized collaboration between health system administrators and practicing physicians
		Strategic, physician led pathways rather than logistically-driven pathways
Organizational structure	Improve the role of physicians in institutional decision making	Patient- and family-centered programs
		Quality initiatives with incentives tied to improvement
		Condition-based bundle payment programs
		Learning health system model influenced by outcomes, evidence, value of care metrics
Clinical care delivery	Inter- and multidisciplinary collaborations promoting problem solving, camaraderie, "top-streaming"	Integrated practice units
		Implementation of human-centered design program
		Top streaming—maximize clinical staff to work primarily at the top of their license
Clinical data delivery	Data-driven quality and outcomes measures reporting/integration of data readily into clinical operations	Surgeon dashboards and scorecards
		Physician-led, system-based quality improvement projects
		PROM tracking through all clinical episodes
		PROM-informed shared decision-making platform
Long-term professional development	Peer-review and mentorship to promote physician engagement and self-efficacy	Physician ownership of activation and leadership
		Activation score for every physician
		Peer review and mentorship of deactivated physicians as part of physician "wellness" programs

GME = graduate medical education; CME = continuing medical education; PROM = patient-reported outcomes measure.

Islind, Anna Sigridur, et al. "**Co-designing a digital platform with boundary objects: bringing together heterogeneous users in healthcare**." *Health and Technology* 9 (2019): 425-438. LINK

- "The aim of the paper is to analyze how the boundary objects are engaged in the design phases, both concerning what type of boundary objects as well as how they play a role in the different stages of design and we show how boundary objects in design can be used as a mediator for different users' needs and conditions. The research question that this paper explores is: what

type of boundary objects can be used, and how are those boundary objects engaged in different design phases during healthcare platform design? We show how different boundary objects come into play during different design phases, from rich narratives, to conceptual formulations and finally into concrete prototypes of the platform. We argue that using boundary objects actively as design tools can inform and forward the design of healthcare platforms and that the approach can guide future design processes, where co-designing with boundary objects can be especially useful as a design approach when doing design with heterogeneous user groups in complex settings, such as healthcare settings."

Kraft, Sally, et al. "**Building the learning health system: describing an organizational infrastructure to support continuous learning**." *Learning Health Systems* 1.4 (2017): e10034. LINK

- "Using an evidence-based framework, this article describes a series of organizational-level interventions implemented at an academic health center to create the structures and processes to support the functions of a learning health system."
- "How can an evidence-based framework be applied to accomplish a series of organizational interventions that support the creation of a learning health system with documented performance improvements related to patient satisfaction, population health screenings, improvement education, and patient engagement?"

Lee, Thomas H., and Toby Cosgrove. "**Engaging doctors in the health care revolution**." *Harvard business review* 92.6 (2014): 104-11. LINK

- "In this article, Dr. Thomas H. Lee, Press Ganey's chief medical officer, and Dr. Toby Cosgrove, the CEO of the Cleveland Clinic, describe a framework they've developed for encouraging buy-in.
- "Adapting Max Weber's "typology of motives," and applying behavioral economics and other motivational principles, they describe four tactics leadership must apply in concert: engaging doctors in a noble shared purpose; addressing their economic self-interest; leveraging their desire for respect; and appealing to their sense of tradition."
- "Leaders at all levels must draw on reserves of optimism, courage, and resilience. They must develop an understanding of behavioral economics and social capital and be ready to part company with clinicians who refuse to work with their colleagues to improve outcomes and efficiency."
- "Here we describe a new concept of physician engagement. Such engagement requires more than mere cooperation—an agreement not to sabotage—and strives instead for full collaboration in relentless improvement... But physician engagement can no longer be about short-term maximization of fee-for-service revenue; it must further the long-term strategy of improving outcomes and lowering costs—increasing value for patients. (See Michael E. Porter and Thomas H. Lee, "The Strategy That Will Fix Health Care," HBR October 2013.)"

- See Table outlining Motivational Tools on the following page

Motivational Tools That Improve Engagement

MOTIVATION	HOW TO APPLY IT	EXAMPLE
To engage in a noble shared purpose	Appeal to the satisfaction of pursuing a common organizational goal.	The Cleveland Clinic reinforced its commitment to compassionate care by launching a same-day appointment policy.
To satisfy self-interest	Provide financial or other rewards for achieving targets.	At Geisinger Health System, 20% of endocrinologists' compensation is tied to goals such as improving control of patients' diabetes.
To earn respect	Leverage peer pressure to encourage desired performance.	Patients' ratings of University of Utah physicians are shared both internally and on public websites to drive improvements in patient experience.
To embrace tradition	Create standards to align behaviors, and make adherence a requirement for community membership.	At the Mayo Clinic, a strict dress code and communication rules signal the "Mayo way of doing things."

(See also Nikola Biller-Andorno and Thomas H. Lee, "Ethical Physician Incentives—From Carrots and Sticks to Shared Purpose," *New England Journal of Medicine*, March 2013.)

- "Creating such a shared purpose starts with the same steps used to build consensus in any organization: listening, demonstrating respect for diverse views, and creating processes through which stakeholders can help shape the vision's implementation"
- **See also**: James, T. A. "Engaging Physicians to Lead Change in Health Care." *Harvard Medical School* (2020).

Schleyer, Titus, et al. "**The Indiana Learning Health System Initiative: Early experience developing a collaborative, regional learning health system**." *Learning Health Systems* 5.3 (2021): e10281. LINK

- Background: "We report our experiences and lessons learned during the initial 2-year phase of developing and implementing the Indiana Learning Health System Initiative"
    - "The primary objectives of this initial phase of the ILHSI were to instantiate the concept, establish collaborative partnerships, and pilot LHS activities in support of developing and implementing a regional, and eventually state-wide, trans-organizational LHS."
- "We also experienced organizational challenges, including changes in key leadership personnel and varying levels of engagement with health system partners, which impacted initial ILHSI efforts and structures. Reflecting on these early experiences, we identified lessons learned and next steps."
- "the [Planning Committee (PC)] engaged approximately 40 additional stakeholders to discuss key structures, foci, and goals for ILHSI development. These stakeholders included executive, clinical, and operational leadership at IUH, such as leaders in quality, patient safety, and clinical analytics; representatives from other health systems, such as the US Department of Veterans

Affairs VA); research leaders at the IUSM; and healthcare- and community-focused researchers, informatics researchers, and representatives from data analytics and business development at RI. Selection of these individuals was based on consensus of the PC, with the goal of involving potential partners and other interested parties in the design stage, to incorporate their interests and concerns, identify ongoing LHS-related activities and programs, and promote future buy-in. These stakeholders provided input through individual meetings and interviews, group meetings, sharing of documentation about existing local LHS efforts, and feedback on document drafts."

- "We also recognize the limitation of variable engagement across the operational partners. This caused the IHLSI to bring its new structure and partnerships to bear in selected projects to demonstrate the possibilities of LHS activities to new leaders not present at the time of the pre-implementation planning and to those less familiar with the potential benefits of the IHLSI to their overarching health system goals."
- "Engagement with frontline personnel and middle management: Our initial focus in engagement of health system leaders necessarily involved primarily IUH senior management in high-level visioning and strategic development of ILHSI core structures and partnerships to ensure support and alignment with organizational goals (top-down). However, we also purposely involved middle managers and some frontline personnel in project planning, prioritization, and execution steps (bottom-up). Our experiences to date have validated this approach as partnering with middle managers and staff is key to translating LHS goals to deep, sustainable, value-added progress. We also observed that IUH's organizational culture is such that internal needs and demands articulated by middle management drive much of its agenda, a core part of learning from the people "on the ground" that we want to foster and incorporate more formally into the ILHSI."
- "*Engagement of faculty and staff at RI more broadly*: The initial involvement of RI faculty and staff with the ILHSI was, necessarily, limited to very few individuals. We are now considering how to involve RI and IUSM faculty and staff in various aspects of the ILHSI—for example, increasing involvement of junior faculty and fellows, more explicitly linking educational and LHS activities, and learning from successful clinical implementation projects led by partners in areas not currently fully embedded in the LHS. In doing so, we are leveraging our intellectual resources more effectively and efficiently while also training and engaging more clinicians and researchers in LHS-focused work."
- Related:
    - Kilbourne AM, et al. Quality Enhancement Research Initiative Implementation Roadmap: Toward Sustainability of Evidence-based Practices in a Learning Health System. Med Care. 2019 Oct;57 Suppl 10 Suppl 3(10 Suppl 3):S286-S293.
        - "The QUERI Implementation Roadmap provides the implementation guidance beyond traditional research-to-practice frameworks by emphasizing collaboration and alignment of leadership support with frontline employee engagement and consumer needs."

Snadden, David, et al. "**Engaging primary care physicians in system change–an interpretive qualitative study in a remote and rural health region in Northern British Columbia, Canada**." *BMJ open* 9.5 (2019): e028395. LINK

- "**Objectives** To describe how physicians were engaged in primary healthcare system change in a remote and rural Canadian health authority."
    - "This research is part of a larger study, Partnering for Change I, which investigated the efforts of Northern Health, a rural regional health authority in British Columbia, to transform its healthcare system to one grounded in primary care with a focus on interdisciplinary teams."
- "**Results** Three major interconnected themes that depicted the process of engagement were identified: working through tensions constructively, drawing on structures for engagement and facilitating relationships."
- "In general, the literature focuses on how healthcare organizations engage with physicians as individuals and leaders in order to try to facilitate system change and health improvement within those specific organizations. Engaging physicians in primary care settings, and in particular remote and rural ones, to bring about health system change, remains relatively unexplored in the literature."

Tang, Terence, et al. "**Clinician user involvement in the real world: Designing an electronic tool to improve interprofessional communication and collaboration in a hospital setting**." *International journal of medical informatics* 110 (2018): 90-97. LINK

- "User involvement has resulted in improvement in user interface design, identification of software defects, creation of new modules that facilitated workflow, and identification of necessary changes to the scope of the project early on."

Toolkits & Other Resources

Canadian Primary Care Research Network has a Learning Series from **Evolving Practiced-Based Research and Learning Networks (PBRLNs) into Learning Health Systems Through Co-Design with All Stakeholders**". 2024 LINK

- "Practice-Based Research and Learning Networks (PBRLNs) are designed to bridge the gap between clinical practice, research and improvement by conducting studies that directly address real-world issues encountered in primary care. The growth and sustainability of PBRLNs is a perennial challenge. Generating research evidence and meaningful data that leads to improvement for primary care and the patients could demonstrate value to health systems and enable greater spread and scale. Sharing solutions to enable PBRLNs to mature across a range of dimensions related to data systems, trial coordination and quality improvement could create research that is relevant to primary care providers and system stakeholders. By taking a learning health system approach to the PBRLNs we can continually improve and ensure that each of us are working to our full potential."

Healthcare Financial Management Association. **Toolkit: Physician Engagement and Alignment**. 2022 LINK

- "This toolkit is a companion to HFMA's Value Project report, Strategies for Physician Engagement and Alignment"
    - "The report addresses the critical role of physicians in the transition to value-based payment and care delivery structures, focusing on alignment and employment options, compensation and incentives, financial support and sustainability, leadership and governance, and population management capabilities."
- "This toolkit offers resources for assessing the best alignment options for your organization and market, structuring compensation for employed physicians, and building a clinically integrated network. Case studies, based on the experiences of organizations interviewed for the Value Project, illustrate implementation of various physician engagement and alignment models."

Ferguson L, Dibble M, Williams M, Ferraro J. **Operationalizing a Learning Community for a Learning Health System: A Practical Guide**. 2020 Nov 16. LINK

- "Abstract: This guide is intended as a practical resource that can be used when forming and operationalizing a learning community as part of a learning health system. It was initially developed by contributors from the University of Michigan Department of Learning Health Sciences during the 2019 calendar year based on different experiences with planning and operationalizing LHS learning communities and should be. This guide is intended to be used as a starting point for those interested in forming an LHS learning community. Information and concepts included in this guide can be tailored and modified for use as needed. This guide will continue to be expanded upon as more is learned through future experiences with forming and maintaining learning communities as part of Learning Health System projects. We also envision this guide to eventually become a component of a larger toolkit that can be used for operationalizing entire LHS projects. Included in this guide are detailed descriptions of activities, best practices, challenges and approaches as well as sample tools, templates and resources for operationalizing a learning community for a Learning Health System. For reference and ease of use, this information has been segmented into a framework that represents a phased approach to operationalizing the learning community. As such, the materials in this guide have been organized by policy, technology, process and people components that correspond to each operational phase."