Alliance for Healthier Communities
*Advancing Health Equity in Ontario*

EPIC
Equity, Performance, Improvement, and Change

# Towards a Learning Health System:

Better Care Tomorrow When We Learn from Today

## Contents

## Introduction

The Alliance for Healthier Communities and its member organizations have long been committed to continuous learning and evidence-informed practice. Until now, the work to support this commitment has been weighted towards data collection and technical infrastructure building. These elements are important foundations for the Learning Health System, but in themselves, they are not sufficient to complete the cycle of learning. Combining this foundation with new processes of learning and improvement will result in a complete system, a Learning Health System. Making this small but significant shift will better empower our member organizations to turn information and insights into meaningful improvement. This in turn will lead to better health and wellbeing for the people and communities we all serve.

---

*We have a moral imperative to use the information we collect to improve care.*
*If we are truly champions of health equity, but we do not identify gaps or use the information and insights we have to improve care and services, we are short-changing our communities.*

Dr. Jennifer Rayner, PhD, Director of Research and Evaluation

---

## What is a learning health system?

A Learning Health System (LHS) is characterized by continuous learning and growth. It brings together information from practice and research and feeds it back to teams in ways that are meaningful and useable to them. This in turn leads to practice change that improves care. The participants in a learning health system collect, share, and use information in real time to guide care and improve decision-making. This cycle of continuous improvement results in better client experiences; better health and wellbeing for individuals, communities, and populations; more satisfaction and joy in work for health care teams; and a more effective and sustainable health system. Around the world, this approach to learning and improvement has been increasingly recognized as a key enabler of better health care.

All learning health systems follow a similar learning cycle: relevant data is assembled and analyzed; results are interpreted and delivered with tailored feedback; and action is taken to change or improve practice. This generates new data, and the cycle continues. This is illustrated in Figure 1.[1]

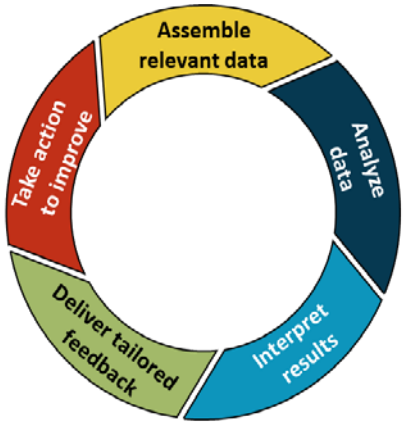


*Figure 1: The Learning Health System expressed as a continuous cycle of learning and improvement.*

Despite these common elements, there is no single LHS framework. Rather, there are many different manifestations at different scales.[2] What is unique about Alliance member organizations will also be unique to the LHS we build together: it will be grounded in our common commitment to health equity and the principles and attributes of the Model of Health and Wellbeing. The implications of this are described in more detail in a subsequent section, in the context of the vision and guiding framework that shape the LHS.

[1] This figure reimagines the learning cycle as described in "Toward Complete & Sustainable Learning Systems" (Friedman & Macy, 2014). The original depicted a two-sided circle, with data-gathering and analysis on the left and knowledge use on the right. The version presented here emphasizes that learning is a single, continuous cycle.

[2] The most commonly used definition (IOM, 2001) describes an LHS as "science, informatics, incentives and culture all aligned for continuous improvement and innovation, with best practices seamlessly embedded in the delivery process and new knowledge captured as an integral product." As LHSs have evolved, definitions have advanced to acknowledge the importance of behaviour change and practice. The University of Michigan Department of Learning Health Sciences states that "in a Learning Health System (LHS), organizations or networks continuously self-study and adapt using data and analytics to generate knowledge, engage stakeholders, and implement behavior change to transform practice".

***There is no "one-size-fits-all" way to be part of a learning health system. Here are some of the ways your team can participate.***

- *Equip clients to be partners in their care.*
- *Collect sociodemographic data.*
- *Conduct client surveys (PREMs, PROMs). This can help your team understand how well programs and services are working from the client perspective.*
- *Share your data with the Alliance and our research partners (CIHI, ICES, and UTOPIAN). This can help us and our partners identify opportunities and see what's working at the population level.*
- *Engage with your data through dashboards and tailored reports.*
- *Work with your team and Regional Decision Support Specialist (RDSS) to find opportunities to improve.*
- *Engage with practice facilitation and professional development.*
- *Share your learnings – for example, through reports, conference presentations, and webinars.*
- *Collaborate with peers through communities of practice.*
- *Support clinician/provider participation in our Practice-Based Learning Network (PBLN).*
- *Foster a culture of curiosity and inquiry in the workplace.*

## Benefits of a Learning Health System

Becoming a true learning health system will enable us to advance person-centred care as we better understand what works, why, and for whom. In applying that knowledge, the LHS will better address client and community needs (Friedman & Macy 2014), and it will empower clients and providers to make better decisions about care. The result is higher-quality care that leads to better health and wellbeing for the people and communities we serve.

For clinicians and other providers, the LHS will guide and help answer research questions. They will also have access to real-time data and the latest innovations in care. They may see improvements in medication safety, be better enabled to identify

clients who would benefit from a different care path, and more efficiently monitor care and outcomes for people with chronic conditions or complex health needs.

At the sector and system level, the Alliance and its members will be better able to demonstrate the value of our model and its impact on population health, quantify health inequities and their pathways, and forge partnerships to create a more integrated health system. This will result in better health and wellbeing for everyone.

---

*If we complete the entire loop, we can impact health equity.*

Cliff Ledwos, Board Director

---

## Vision and Guiding Framework

The vision statement developed by the LHS Steering Committee is as follows:

> *To support our commitment to comprehensive primary health care and health equity, the Learning Health System will:*
>
> 1. *Embrace and promote a culture of learning and improvement,*
> 2. *Integrate internal performance data and experiences with external evidence, and*
> 3. *Produce meaningful knowledge.*
>
> *...that when put into practice will result in equitable and improved health outcomes, improved client experience, improved care team wellbeing and value for money.*

Based on a literature review, discussions with expert advisors, input from the members of the LHS steering committee, and feedback from Alliance members, the work of the LHS has become clearer. The diagram in Figure 2 illustrates the guiding framework of the Alliance's Learning Health System.

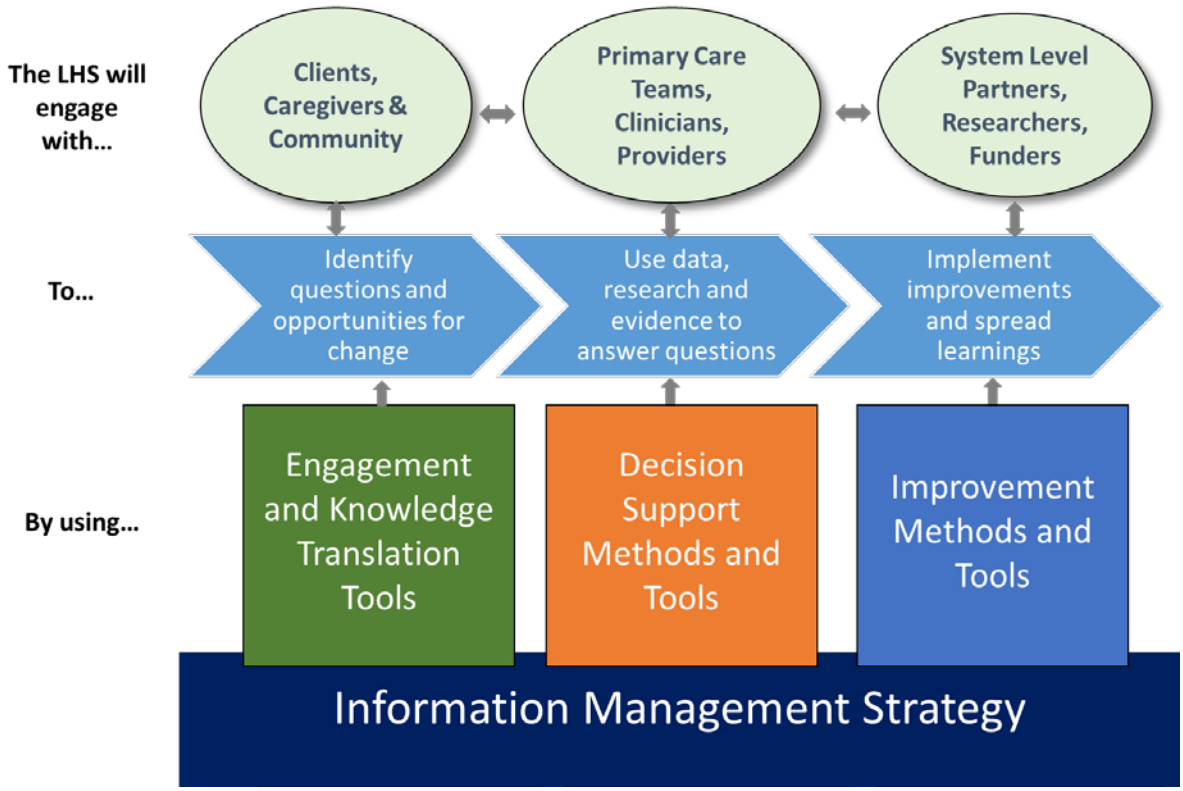


*Figure 2: Alliance LHS Guiding Framework*

This framework sets out, at a high level, a vision of who the participants in our learning health system are and how they will use available tools to advance client-centred research and incorporate the findings into practice.

## A "Real-Life" Example of the LHS in Action

The Alliance's recent Mental Health and Addictions (MHA) study provides an example of what this new system could mean for Alliance members. Generally, what has been missing in the learning cycle in the past has been the application of new evidence to act and improve practice in a systematic, sector-wide way. The MHA study provides an example of the full learning cycle in practice.

***Assemble relevant data:*** At the beginning of the study, a dataset was built that contained CHC clients' EMR data. The EMR data was linked to health system utilization data at the Canadian Institute for Health Information (CIHI) for one year.

***Analyze data:*** The MHA client data was then analyzed to examine the prevalence of mental health and addictions conditions and comorbidities, primary care visits, emergency department visits, and hospital admissions.

***Interpret results:*** The study identified increased risk in MHA clients of Hepatitis C and COPD. High levels of poverty and isolation were also found in the study population.

Historically, this is where many studies tend to stop on the learning cycle. Some teams would have used this information to create their own reports and develop local improvements. However, these efforts would have been local in scope. There would not have been a sector-wide improvement strategy or capacity for meaningful comparison of different teams' initiatives.

***Deliver tailored feedback:*** The MHA study continued to "go around" the learning cycle by producing a customized spreadsheet that enabled centres to see their own data in a user-friendly format and to have access to other centres' data for comparison and benchmarking.

***Take action to improve:*** To complete the learning cycle, centres can take action, using the MHA study findings to drive improvement and help clients with MHA disorders experience less isolation and comorbidity. For example, they could:

- Develop targeted Hepatitis C prevention programs for MHA clients.
- Target social prescribing to address isolation in the study population.
- Further stratify their data by race and other determinants of health, to identify gaps and inequities that come from systemic racism, colonialism, and other forms of discrimination.
- Access improvement coaching to engage and support providers and teams in developing practice improvements.

The cycle would continue as individual centres, a practice-based learning network, or another group of researchers study the impacts of the above practice changes on health outcomes for clients receiving care for MHA disorders. Those researchers would gather and analyze new data and use it to deliver updated feedback and inform the next steps of improvement.

## Elements of the Alliance Learning Health System

### Information Management

The Alliance LHS will be built on a foundation we have already established: our Information Management Strategy (IMS). IMS is a program created and directed by Alliance members and supported by Alliance staff. It provides tools and supports to help each organization to collect, manage, analyze, and share their data. Our members collect high-quality, individual-level data through our common electronic medical records system (EMR). This data is compiled in our Business Intelligence Reporting Tool (BIRT), a data warehouse that allows high-quality, practice-based data from Alliance member organizations across Ontario to be aggregated and analyzed without added burden to providers or teams. Through BIRT, our members share sector-wide, practice-based information with research partners such as ICES and CIHI. The IMS protects clients' personal information by providing tools and training for privacy and security.

Both collectively and at the individual team level, the Alliance and our member organizations analyze the information gathered in BIRT to generate new insights into the quality and effectiveness of the care our sector provides. Data Management Coordinators, clinicians, and managers in each team analyze and interpret their local practice information to identify strengths and opportunities. This comprises the first three segments of the circle in Figure 1: Assemble relevant data. Analyze data. Interpret results.[3] To complete the continuous cycle of learning, our sector must commit to using the knowledge we generate through tailored feedback and meaningful quality improvement.

[3] In earlier presentations of the Alliance LHS, this was conceptualized as the "blue side" of Friedman & Macy's (2014) learning cycle.

## Strategic Guidance

Equity, Performance Improvement, and Change (EPIC) is the committee formerly known as the Performance Management Committee (PMC). As part of the shift to a learning health system, EPIC will be supported by the Alliance's Director of Research and Evaluation, Dr. Jennifer Rayner. Dr. Rayner has a PhD in epidemiology from Western University and has a long history of working in the community primary healthcare sector. Prior to working for the Alliance, she was a data analyst at London Intercommunity Health Centre for 13 years and provided decision support to Ontario CHCs for 8 years.

EPIC, a member-led committee, will provide guidance for the work of the LHS. Its primary focus will be to support meaningful quality improvement activities. EPIC will work closely with the Research Advisory Council to choose research based on their potential to result in more equitable care. EPIC will also support clinical engagement in learning and quality improvement through a practice-based learning network (PBLN).

Drawing from the Model of Health and Wellbeing and our Evaluation Framework, EPIC will develop strategies, questions, and indicators for measuring the effectiveness of the LHS. EPIC will promote and guide the production of tailored reports and dashboard content, and it will provide high-level guidance for quality improvement work. For 2020-21, all aspects of the committee's work plan have been revisited so that its activities relate more directly to learning and quality improvement.

The Information Management Committee (IMC) will continue to oversee the development and maintenance of the foundation of the LHS – the Information Management Strategy – to meet the needs of the Alliance members and supports the LHS. IMC will monitor and support BIRT, the EMR, privacy, data standards, data quality, technical specifications, and IT development.

***EPIC in Action[4]***

*As part of the process of transforming PMC into EPIC, the committee's work plan was revised to be more focused on support for quality improvement and population needs-based planning. Here are a few examples:*

- *To improve completeness of relevant equity data, EPIC will develop a centre-specific data-quality dashboard and provide this data every other month to your organization.*
- *To enhance capacity for local quality improvement, EPIC will develop a QI training strategy for Alliance members in collaboration with partners such as the Institute for Health Improvement, the Canadian College of Family Physicians, or other regulatory colleges.*
- *To support population health planning in Ontario Health Teams, EPIC will create a report on mental health care provided to unattached clients and advocate for population data to include social determinants of health.*
- *To improve access to care, EPIC will provide targeted panel-size quality improvement support, including helping to identify explanatory measures, for centres whose current panel size is below 70% of target.*
- *To foster a culture of curiosity and inquiry that leads to new knowledge, EPIC will support and provide guidance to the Alliance's Practice-Based Learning Network (PBLN).*

## Primary Care Teams

A learning health system cannot be driven from the top. It requires committed and engaged front-line staff who will participate in learning and knowledge-sharing as well as staff who will implement and evaluate tools and processes. Primary care teams, clinicians, and other healthcare providers will tell us what matters to them. They will

[4] For more about the steps we've taken on our journey to becoming a Learning Health System, see Appendix I: Our Journey towards a Learning Health System.

identify questions the LHS can help answer, and in return, they will receive feedback and improvement ideas they may incorporate into the care they provide.

There are multiple ways for clinicians and other providers to participate in the learning health system. For example, they may also wish to participate in a practice-based learning network (PBLN) (see Appendix II), a group of primary healthcare clinicians and other providers who work together to answer community-based healthcare questions and translate research into practice. This PBLN, which is being developed through EPIC, will be a source of rapid learning and improvement for Ontario Health Teams.

The Ontario PLBNs use client data to identify needs, measure the impact of interventions, and share these insights with Ontario Health Team (OHT) partners and at other decision-making tables. The Alliance PBLN will also advocate for OHTs to use data in their decision-making that includes people who are marginalized or experience social and clinical complexity, and for data to be collected that sheds light on the determinants of health. This will mean that equity is at the forefront when needs are being identified or interventions are being evaluated.

### Health Promotion and Community Teams

Staff who work in community development, health promotion, or outreach have essential community knowledge and connections. They can support client participation in research, help identify client and community research priorities, and share research findings back to the community in accessible ways. Like their peers in the primary care teams, they can participate in quality improvement activities based on practice-based, sociodemographic, and population health data, and they can enrich the team's understanding of the data through their knowledge of people's lived experience.

### Executive Leaders

Executive leaders can participate by fostering curiosity and encouraging continuous learning and growth. As leaders within their teams, they need to adopt and live this vision. This will include freeing up time and space for staff to participate in LHS activities such as research and quality improvement. It will also involve collaborating with their teams, RDSSs, DMCs, clinical managers, clients, and system partners to identify needs and opportunities and to measure the effectiveness of each change. These changes might require doing things differently, but the result will be higher-quality, safer, and more efficient care, and our member organizations will become better places to work.

### Regional Decision Support Specialists

The role of Regional Decision Support Specialists (RDSSs) will undergo a shift echoing that of our LHS. Whereas the role currently focuses on collecting and analyzing data, it will incorporate more quality improvement and change management work. RDSSs will use data to produce tailored reports, work with staff at member centres to identify opportunities to improvement, and provide support to help teams develop and implement solutions.

### Clients, Caregivers, and Community Members

To advance equity, research must be relevant to the needs and interests of the community. Clients, caregivers, and community members will be engaged throughout the learning cycle to help us understand their experiences, both within and beyond the health system, and how the care they receive should be responsive to those experiences. Clients may help us identify ways to measure what matters to them and to communicate research and improvement stories in clear and accessible ways.

## References


Friedman, Charles and Josiah Macy Jr., 2014. Toward Complete & Sustainable Learning Systems. Presentation. Available at https://medicine.umich.edu/sites/default/files/2014_12_08-Friedman-IOM%20LHS.pdf.

Hughes, Ronda G., 2008. Tools and Strategies for Quality Improvement and Patient Safety. In: Ronda G. Hughes, editor, *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Rockville (MD): Agency for Healthcare Research and Quality (US). Chapter 44. Available at https://www.ncbi.nlm.nih.gov/books/NBK2682/

IOM (Institute of Medicine), 2001. *Crossing the quality chasm: A new health system for the 21st century.* Washington, DC: National Academy Press.

University of Michigan Medical School Department of Learning Health Sciences, n.d. Learning Health Systems. Web page. https://medicine.umich.edu/dept/lhs/service-outreach/learning-health-systems

## Appendix I: Our Journey towards a Learning Health System

- **2015:** Dr. Jennifer Rayner and her research partner, Dr. Merrick Zwarenstein, PhD, a professor of epidemiology at the University of Toronto, recognize the opportunity for our sector to become an LHS, enabled by our technical and data infrastructure.
- **2016:** The Alliance research program is redesigned. Partnerships with primary healthcare providers, external academic departments, and other researchers result in in multiple research projects (e.g., Team Care, COPD study) that generate new pragmatic knowledge for the sector.
- **2018-2019:** The Alliance undertakes a review of its decision support program. As part of this, a Design Day is held to re-imagine the performance management system and develop a vision for a system of excellence for data, evaluation and quality. Representatives from across the members recommend that the Alliance shift to an LHS.
- **2019:** Strategy Group, the Alliance Board of Directors, and the Executive Leaders' (EL) Network endorse the shift to an LHS, and the EL Network approves the Terms of Reference for an LHS Steering Committee.
- **2019-2020:** The LHS steering committee refines the LHS vision and establishes the necessary structure and governance required to operationalize it.
- **October 2020:** A practice-based learning network (PBLN) for Alliance members is established.
- **October 2020:** The EL Network is expected to approve the steering committee's vision and operational plan.
- **November 2020:** LHS communications will be launched, including a monthly newsletter and an expanded presence for learning and research on the Alliance website.
- **Ongoing:** Evaluating and iteratively improving the LHS structure and activities in response to member and stakeholder feedback.

## Appendix II: An Equity-Driven Practice-Based Learning Network

An essential component of the Alliance's LHS will be the formation of a practice-based learning network (PBLN) for our sector. A PBLN is a group of primary healthcare clinicians, other providers, and practices who work together to answer community-based healthcare questions and translate research into practice.[5] Members support each other through mentorship and knowledge-sharing, and they participate in collective and independent research and quality improvement projects. Members of the Alliance's PBLN will also have the opportunity to participate in clinical trials, ensuring that new innovations are tested for their impacts on health (in)equity.

Facilitated by our Director of Research, Jennifer Rayner, this PBLN will consist primarily of providers working in community-governed primary healthcare teams. It will be the seventh PBLN in Ontario, joining forces with six regionally-based PBLNs, under the umbrella of the Canadian Primary Care Sentinel Surveillance Network (CPCSSN). [6] Like the others, it has the potential to provide knowledge and decision support to Ontario Health Teams.

One of these PBLNs, the University of Toronto Practice-Based Research Network (UTOPIAN), will function as a data safe haven. This is a secure, researchable database of de-identified patient records extracted from EMRs. It allows participating clinicians to view de-identified data in aggregate. They may also "drill down" to the individual level in their own clients' data and re-identify those clients as needed for targeted improvements in care. This service will be provided at no cost to members.

Forming a PBLN and joining this network will allow our sector's data to be included in a provincial repository of primary health care data, and for us to access primary healthcare data from across the province for research and evidence-based decision making. It will also enable clinicians in our sector to access the Data Presentation Tool (DPT) from the CPCSSN, a decision-support tool that provides visual representation of

[6] For a current list of the six Ontario PBLNs, see this webpage: https://cpcssn.ca/regional-networks-2/ontario/ontario-primary-care-practice-based-learning-network/.

EMR data, prepared reports, and in-depth search capabilities. Like that of Alliance members and our LHS, the work of our PBLN will be grounded in a commitment to advancing health equity.