A brief primer on rapid-learning health systems

A rapid-learning health system has **seven characteristics** (see the **table** below for more details):
1) engaged patients;
2) digital capture, linkage and timely sharing of relevant data;
3) timely production of research evidence;
4) appropriate decision supports;
5) aligned governance, financial and delivery arrangements;
6) a culture of rapid learning and improvement; and
7) competencies for rapid learning and improvement.

Rapid learning and improvement can take place at all **levels** of a health system:
1) self-management;
2) clinical encounter;
3) program;
4) organization;
5) local and provincial health authority; and
6) government.

Rapid learning and improvement can **focus** on:
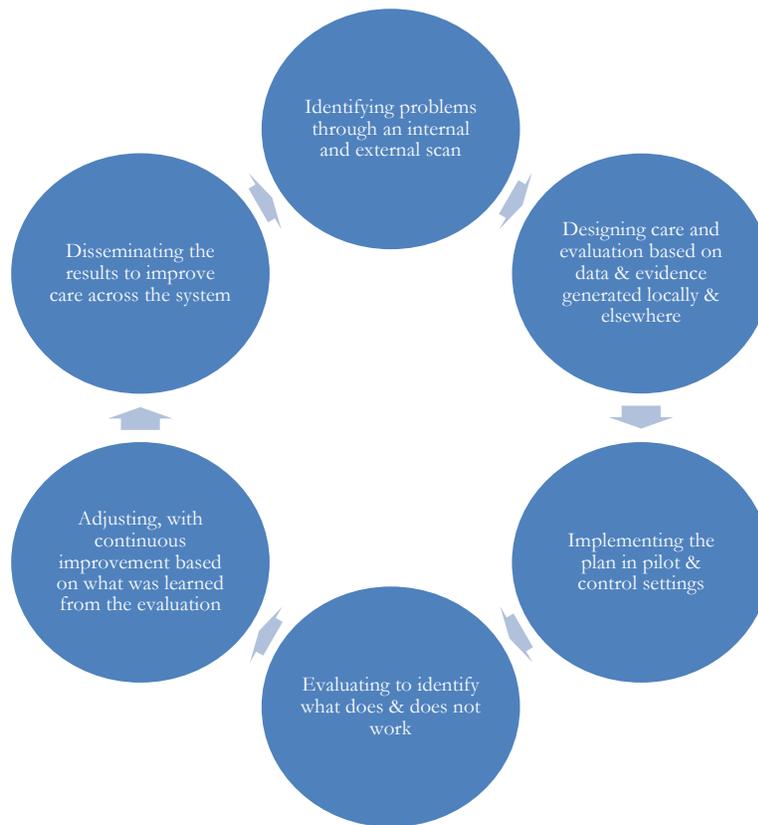1) a local area (e.g., the 300,000-500,000 residents served by an accountable-care organization);
2) a local problem, which can be defined with respect to:
    a) a sector (e.g., a lack of capacity in long-term care),
    b) a condition or category of conditions (e.g., chronic pain),
    c) a treatment of category of treatments (e.g., perioperative medicine),
    d) a population (e.g., elderly); or
3) both (as is likely to be optimal).

Characteristics of a rapid-learning health system	Prompts (to spur reflection about how fulsomely the characteristic is embodied in a given health system)
1. Engaged patients Systems are anchored on patient needs, perspectives and aspirations (at all levels) and focused on improving their care experiences and health at manageable per capita costs and with positive provider experiences	1. Set and regularly adjust patient-relevant targets for rapid learning and improvement (e.g., improvements to a particular type of patient experience or in a particular health outcome) 2. Engage patients, families and citizens in: a. their own health (e.g., goal setting; self-management and living well with conditions; access to personal health information, including test results) b. their own care (e.g., shared decision-making; use of patient decision aids) c. the organizations that deliver care (e.g., patient-experience surveys; co-design of programs and services; membership of quality-improvement committees and advisory councils) d. the organizations that oversee the professionals and other organizations in the system (e.g., professional regulatory bodies; quality-improvement bodies; ombudsman; and complaint processes) e. policymaking (e.g., committees making decisions about which services and drugs are covered; government advisory councils

Characteristics of a rapid-learning health system	Prompts (to spur reflection about how fulsomely the characteristic is embodied in a given health system)
	f. that set direction for (parts of) the system; patient storytelling to kick off key meetings; citizen panels to elicit citizen values) g. research (e.g., engaging patients as research partners; eliciting patients' input on research priorities) 3. Build patient/citizen capacity to engage in all of the above
2. Digital capture, linkage and timely sharing of relevant data Systems capture, link and share (with individuals at all levels) data (from real-life, not ideal conditions) about patient experiences (with services, transitions and longitudinally) and provider engagement alongside data about other process indicators (e.g., clinical encounters and costs) and outcome indicators (e.g., health status)	1. Data infrastructure (e.g., interoperable electronic health records; immunization or condition-specific registries; privacy policies that enable data sharing) 2. Capacity to capture patient-reported experiences (for both services and transitions), clinical encounters, outcomes and costs 3. Capacity to capture longitudinal data across time and settings 4. Capacity to link data about health, healthcare, social care and the social determinants of health 5. Capacity to analyze data (e.g., staff and resources) 6. Capacity to share 'local' data (alone and against relevant comparators) – in both patient- and provider-friendly formats and in a timely way – at the point of care, for providers and practices (e.g., audit and feedback), and through a centralized platform (to support patient decision-making and provider, organization and system-wide rapid learning and improvement)
3. Timely production of research evidence Systems produce, synthesize, curate and share (with individuals at all levels) research about problems, improvement options and implementation considerations	1. Distributed capacity to produce and share research (including evaluations) in a timely way 2. Distributed research ethics infrastructure that can support rapid-cycle evaluations 3. Capacity to synthesize research evidence in a timely way 4. One-stop shops for local evaluations and pre-appraised syntheses 5. Capacity to access, adapt and apply research evidence 6. Incentives and requirements for research groups to collaborate with one another, with patients, and with decision-makers
4. Appropriate decision supports Systems support informed decision-making at all levels with appropriate data, evidence, and decision-making frameworks	1. Decision supports at all levels – self-management, clinical encounter, program, organization, local health authority and government – such as a. patient-targeted evidence-based resources b. patient decision aids c. patient goal-setting supports d. clinical practice guidelines e. clinical decision support systems (including those embedded in electronic health records) f. quality standards g. care pathways h. health technology assessments i. descriptions of how the health system works
5. Aligned governance, financial and delivery arrangements Systems adjust who can make what decisions (e.g., about joint learning priorities), how money flows and how the systems are organized and aligned to support rapid learning and improvement at all levels	1. Centralized coordination of efforts to adapt a RLHS approach, incrementally join up assets and fill gaps, and periodically update the status of assets and gaps 1. Mandates for preparing, sharing and reporting on quality-improvement plans 2. Mandates for accreditation 3. Funding and remuneration models that have the potential to incentivize rapid learning and improvement (e.g., focused on patient-reported outcome measures, some bundled-care funding models) 4. Value-based innovation-procurement model 5. Funding and active support to spread effective practices across sites

Characteristics of a rapid-learning health system	Prompts (to spur reflection about how fulsomely the characteristic is embodied in a given health system)
	6. Standards for provincial expert groups to involve patients, a methodologist, and use existing data and evidence to inform and justify their recommendations 7. Mechanisms to jointly set rapid-learning and improvement priorities 8. Mechanisms to identify and share the 'reproducible building blocks' of a rapid-learning health system
6. Culture of rapid learning and improvement Systems are stewarded at all levels by leaders committed to a culture of teamwork, collaboration and adaptability	1. Explicit mechanisms to develop a culture of teamwork, collaboration and adaptability in all operations, to develop and maintain trusted relationships with the full range of partners needed to support rapid learning and improvement, and to acknowledge, learn from and move on from 'failure'
7. Competencies for rapid learning and improvement Systems are rapidly improved by teams at all levels who have the competencies needed to identify and characterize problems, design data- and evidence-informed approaches (and learn from other comparable programs, organizations, local areas about proven approaches), implement these approaches, monitor their implementation, evaluate their impact, make further adjustments as needed, sustain proven approaches locally, and support their spread widely	1. Public reporting on rapid learning and improvement 2. Distributed competencies for rapid learning and improvement (e.g., data and research literacy, co-design, scaling up, leadership) 3. In-house capacity for supporting rapid learning and improvement 4. Centralized specialized expertise in supporting rapid learning and improvement 5. Rapid-learning infrastructure (e.g., learning collaboratives)

Rapid learning and improvement is about harnessing **assets** from each of the seven characteristics in 'rapid learning and improvement' cycles (e.g., teams that support robust patient- and public-engagement mechanisms and a one-stop shop for pre-appraised synthesized research evidence), but the language used in these cycles often varies by level (see the **figure** below where the language is more in keeping with the clinical encounter, program and organization levels than with the patient or government levels, where different language is often used).

Identifying problems through an internal and external scan

Designing care and evaluation based on data & evidence generated locally & elsewhere

Disseminating the results to improve care across the system

Implementing the plan in pilot & control settings

Adjusting, with continuous improvement based on what was learned from the evaluation

Evaluating to identify what does & does not work

While a remarkable array of assets exist in many health systems, some common **gaps** include:

1) patients are not being meaningfully engaged in prioritizing what 'needles to move' (in terms of the care experiences and outcomes that are priorities for rapid learning and improvement), and have few mechanisms beyond complaints and voting to register their frustration when 'needles don't move;'
2) data about patient experiences (with services, transitions and longitudinally) are often not being linked and shared in a timely and understandable way to support rapid learning and improvement;
3) research evidence about priority problems and improvement options is often not produced, synthesized, curated and shared in a timely and locally contextualized way to support rapid learning and improvement;
4) decision supports are often not sufficiently oriented to meeting local needs;
5) alignments in governance, financial and delivery arrangements to support rapid learning and improvement are often inadequate or not yet fully in place in key areas (e.g., primary care);
6) a culture of rapid learning and improvement is not yet widespread across levels and across areas of focus (particularly the 'rapid' part); and
7) competencies are often not sufficiently well distributed to support rapid learning and improvement across levels and across local areas or problems (e.g., in smaller communities or outside hospitals).

The greatest challenge (and opportunity) for many health systems is creating the structures and processes to **connect assets** in timely and responsive ways.

Additional background on rapid-learning health systems is available in the following **free online resources**:
1) Rapid synthesis: Creating a rapid-learning health system in Ontario
2) Rapid synthesis: Creating rapid-learning health systems in Canada
3) Evidence brief (coming soon): Supporting rapid learning and improvement across Ontario's health system
4) Dialogue summary (coming soon): Supporting rapid Learning and improvement across Ontario's health system

Lavis JN. A brief primer on rapid-learning health systems. Hamilton, Canada: McMaster Health Forum, 2019.

Last updated on 5 September 2019

McMaster University

HEALTH FORUM

>> **Contact us**
1280 Main St. West, MML-417
Hamilton, ON, Canada L8S 4L6
+1.905.525.9140 x 22121
forum@mcmaster.ca

>> **Find and follow us**
mcmasterforum.org
healthsystemsevidence.org
socialsystemsevidence.org
mcmasteroptimalaging.org
🐦 📘 ▶ mcmasterforum

FORUM+

McMaster University