Future Vision

Evidence-Informed, Health ITEnabled Care Delivery & Transformation

Creating LHSs at organization, national, and international scales is increasingly viewed as a core strategy to optimize health and care delivery and achieve the Quintuple Aim (57) (58). Computable knowledge is a key enabler for these LHSs(3). The ACTS Future Vision describes in great detail what this desired state looks like from a variety of perspectives. Below is an overview of this information, with links to much richer descriptions.
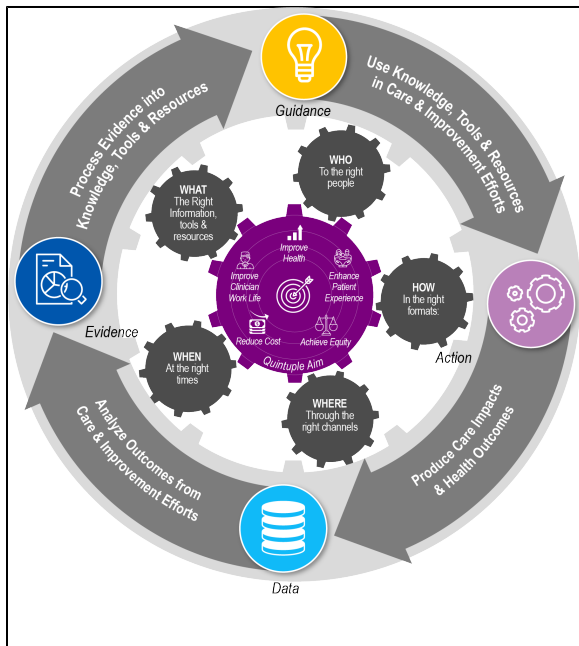
Extending the CDS 5 Rights Framework to the Entire LHS

The CDS 5 Rights Framework is a widely cited approach for putting evidence, guidance, and tools into practice better — that is, for optimizing the *guidance to action* portion of the knowledge ecosystem cycle. The framework, recommended by CMS as a health IT / QI best practice(30), asserts that optimizing a particular healthcare process or outcome requires getting the **right information** (e.g., evidence-based and actionable) to the **right people** (e.g., care teams and patients) in the **right formats** (e.g., registry reports, documentation tools, data display, care plans) **through the right channels** (e.g., electronic health record [EHR], personal health record [PHR], smartphones, smart home devices) **at the right times** (e.g., during a key decision or action). This framework can be extended to cover the *entire* LHS cycle by broadening each of the five dimensions to address *all* the pertinent who, what, when, where, how workflow and information flow options for *each* activity in the full cycle. The broadened framework is called the LHS Five Rights. The figure below illustrates how a continually improving LHS cycle requires addressing well each of those five dimensions throughout *all* activities in the cycle - not just putting guidance into action.
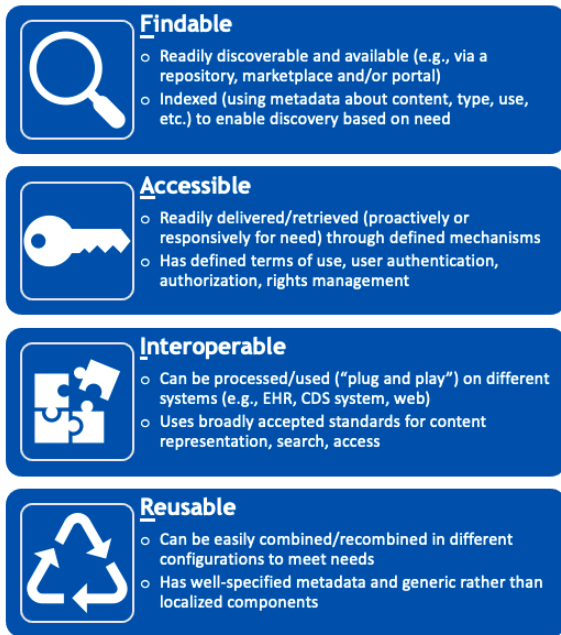

In this future vision, resources needed to support key decisions and actions throughout the knowledge ecosystem cycle are FAIR(59) , computable, useful, and widely used to great benefit.

Figure 14. Characteristics of FAIR Resources[1]

Findable
- Readily discoverable and available (e.g., via a repository, marketplace and/or portal)
- Indexed (using metadata about content, type, use, etc.) to enable discovery based on need

Accessible
- Readily delivered/retrieved (proactively or responsively for need) through defined mechanisms
- Has defined terms of use, user authentication, authorization, rights management

Interoperable
- Can be processed/used ("plug and play") on different systems (e.g., EHR, CDS system, web)
- Uses broadly accepted standards for content representation, search, access

Reusable
- Can be easily combined/recombined in different configurations to meet needs
- Has well-specified metadata and generic rather than localized components

Enhanced information flow in the knowledge ecosystem and LHS cycle should produce continuously improving public health, and care quality and outcomes. Evidence is effectively translated into resources that are widely and successfully used to guide actions, which generate useful data that inform more robust evidence in a virtuous learning cycle (see What a Digital Knowledge Ecosystem Will Enhance).

Stakeholders in each area of the cycle must have clear economic incentives naturally guiding local policies and behaviors toward this model. We refer to this overall cycle as a *national* **LHS** cycle when it encompasses efforts across an entire country. An ultimate Roadmap goal is data, evidence, knowledge, guidance, and tools that are computable and interoperable across national, geographic, policy, and other boundaries in ways that enable the virtuous cycle to encompass **everyone, everywhere**. The COVID19 pandemic reinforces the need for such a global learning and improvement cycle.
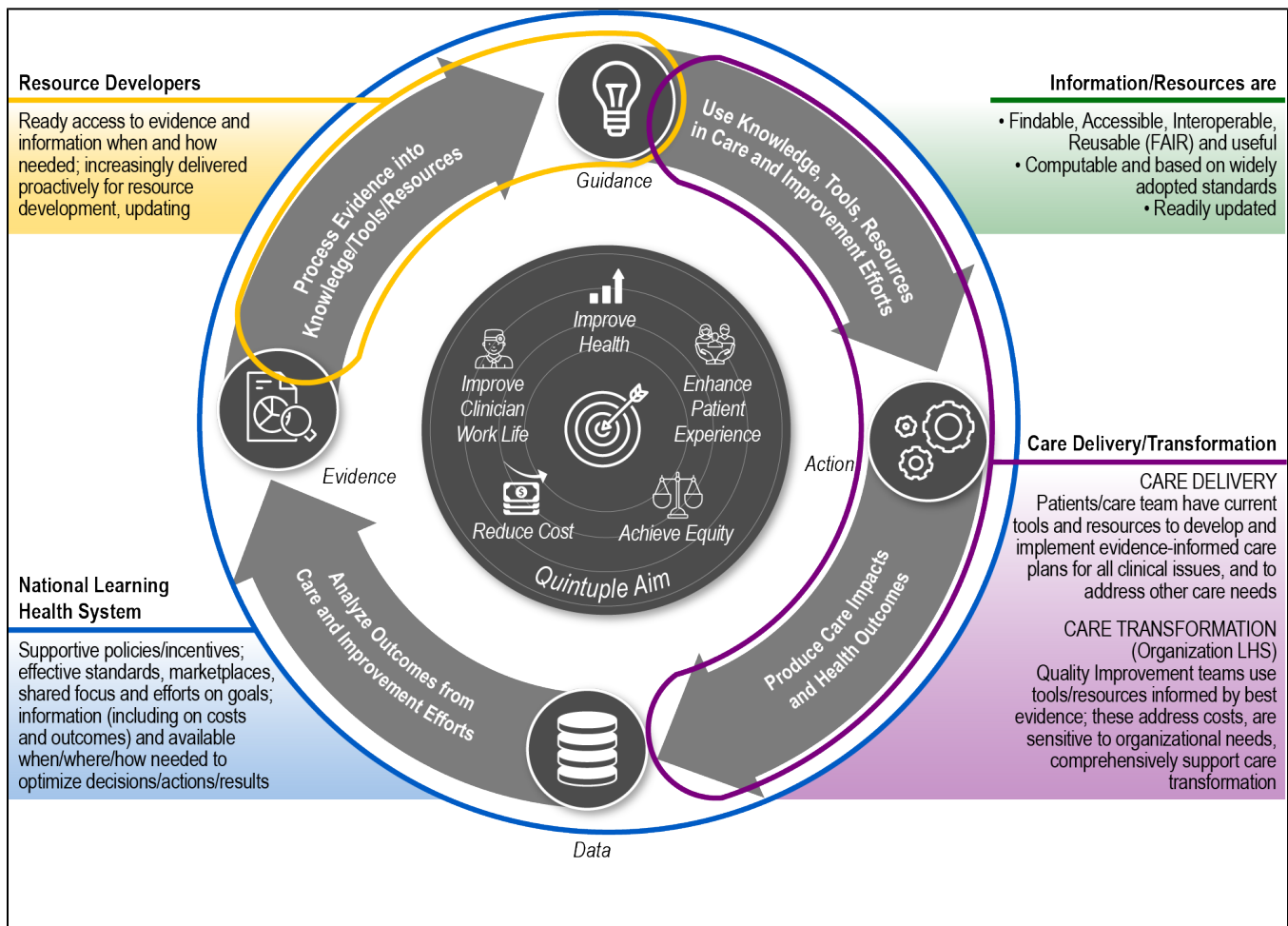
Individual CDOs can likewise become LHSs by supporting helpful evidence-based information and tools use in practice by care teams, quality teams and patients (e.g., through evidence-based, integrated care plans); systematically examining results from their care delivery and QI efforts; and using these results to enhance care and QI efforts continuously. We refer to this CDO-specific work as the *organizational* **LHS cycle**. CDOs and entities that support them typically refer to these activities as QI, continuous QI (CQI), or care transformation.

Early in the ACTS initiative, the ACTS Future Vision Workgroup described in detail desirable workflows and information flows that could occur in LHSs supported by a high-functioning knowledge ecosystem. Four knowledge ecosystem perspectives were selected for this visioning work: care delivery, LHSs at both the organizational and national level, and resource developers. The ACTS COVID Collaborative built on this initial future vision work by adding additional insights and tools related to patient, family and caregiver engagement, and patient journey optimization. Below are links to this material.

- **Care Delivery Perspective** – Those who are involved in receiving and giving healthcare. See what the future vision of care delivery looks like for both the individual and population care at Individual/Population Health Journey. Learn about a future vision for optimizing patient, the patient family and caregivers in LHSs and care transformation here: Patient, Family and Caregiver Engagement
- **Resource Developers' Perspective** – Those who produce the evidence, knowledge, and guidance resources that support public health, care delivery and other activities around the LHS cycle. Learn more about the future vision for Resource Developers.
- **Learning Health Systems Perspective** – Those involved in QI activities in CDOs and those involved in driving LHS implementation at the national level. Learn more about the future vision for Learning Health Systems from both these perspectives.
- **Improving Patient Journeys** – The ACTS COVID Collaborative developed a draft Patient Journey and Service Blueprint Template that defines desirable activities to support health can care delivery activities - and what's needed to enable these activities. Learn more about this tool at Patient Journey and Service Blueprint How Tos.

A Visual Overview

Figure 15. Future Vision for a Virtuous LHS Cycle includes a one-sentence future vision overview for each of these perspectives.

Resource Developers

Ready access to evidence and information when and how needed; increasingly delivered proactively for resource development, updating

National Learning Health System

Supportive policies/incentives; effective standards, marketplaces, shared focus and efforts on goals; information (including on costs and outcomes) and available when/where/how needed to optimize decisions/actions/results

Information/Resources are

• Findable, Accessible, Interoperable, Reusable (FAIR) and useful
• Computable and based on widely adopted standards
• Readily updated

Care Delivery/Transformation

CARE DELIVERY
Patients/care team have current tools and resources to develop and implement evidence-informed care plans for all clinical issues, and to address other care needs

CARE TRANSFORMATION
(Organization LHS)
Quality Improvement teams use tools/resources informed by best evidence; these address costs, are sensitive to organizational needs, comprehensively support care transformation

Guidance — Process Evidence into Knowledge/Tools/Resources — Use Knowledge, Tools, Resources in Care and Improvement Efforts — Evidence — Action — Analyze Outcomes from Care and Improvement Efforts — Produce Care Impacts and Health Outcomes — Data

Improve Health — Enhance Patient Experience — Improve Clinician Work Life — Reduce Cost — Achieve Equity — Quintuple Aim

Other future vision perspectives not addressed by the Future Vision Workgroup are also essential for driving a knowledge ecosystem that delivers LHSs. For example, defining desirable specifics for the data-to-evidence portion of the LHS cycle as depicted in Figure 15. Future Vision for a Virtuous LHS Cycle. The Roadmap is designed to support stakeholders in defining and addressing a consensus future vision for these key ecosystem components in ways that leverage and advance related initiatives to collect and analyze data to generate new evidence [60] [61] [62] [63] and for related LHS cycle activities. The LHS cycle—and the outcomes it should deliver such as the Quintuple Aim—will only be as successful as permitted by the least effective cycle component, so careful attention must be paid to **all** components.

[1] Adapted from [347] and (59)