

BRIEF REPORT

Assessment of learning health system science competency in the equity and justice domain

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Abstract

Seven knowledge domains were originally defined for the learning health system (LHS) scientist. To assess proficiency in each of these domains, we developed and published an assessment tool for use by emerging LHS scientists and training programs. (LHS, October 2022). In mid-2022, the AHRQ adopted an eighth LHS knowledge domain, Equity and Justice. The addition of this eighth domain emphasizes the importance and centrality of equity in the LHS and improvement science. To extend our prior LHS competency assessment, we developed a proficiency assessment for the new equity and justice domain. Content experts and trainees iteratively defined, reviewed, and edited the assessment criteria. The items were developed by trainees and experts at one LHS training center with experience conducting research focused on healthcare inequities among marginalized populations. The proficiency assessment criteria for the Equity domain apply the same four levels of mastery: “no exposure,” “foundational awareness,” “emerging,” and “proficient” as were used for original competencies. LHS training programs can use these proficiency criteria to monitor skills among emerging scientists across the eight domains, with particular attention to equity and justice.

KEYWORDS

competency assessment, curriculum, learning health systems

1 | INTRODUCTION

Learning health systems (LHS) science is transdisciplinary by nature. The Agency for Healthcare Research and Quality (AHRQ) initially defined seven domains that are foundational to LHS science.¹ The initial LHS domains include defining research questions, research methods, informatics, ethics, systems science, improvement and implementation science, and leadership skills to engage stakeholders and implement change initiatives. In 2022, an eighth LHS domain, Equity and Justice, was added to the initial seven domains to underscore the principle that health system

transformation must assure equity and justice in health care delivery and health outcomes.²

In October 2022, this team and the AHRQ-funded ACCELERAT K12 training program published an LHS Competency Assessment to support emerging and existing LHS scientists in assessing, prioritizing, and monitoring LHS proficiency development.³ The LHS Competency Assessment addresses the initial seven domains and 42 competencies of a successful LHS scientist as defined by AHRQ and national experts. The tool supports clinicians, researchers, educators, and leaders who are new to the LHS field to identify proficiency, design programs and experiences to facilitate competency development, and

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TABLE 1 Learning health systems competency assessment for equity and justice.

Domain 8: Health and Healthcare Equity and Justice			
Definition: To know how to assess health equity and apply LHS science methods to advance equity and justice in healthcare delivery systems and health of individuals and populations.			
Competencies			
Assess how existing health inequities affect population-level health, individual health, and healthcare delivery systems with methods grounded in an awareness of the multi-level factors contributing to such inequities.			
No exposure	Foundational skills	Emerging skills	Proficient skills
	Define potential external and internal factors that influence inequities in health and healthcare using multi-level models and framework(s).	Identify external and/or internal factors and their contribution to inequities in specific health and healthcare delivery settings.	Using an appropriate conceptual model, identify and test possible solutions to address external and/or internal factors contributing to health and healthcare inequities.
	Aware of models and frameworks that identify external and internal factors that influence inequities in health and healthcare.	Apply models and frameworks that identify external and internal factors that influence inequities in health and healthcare in a research plan.	Using an appropriate conceptual model, measure external and internal factors that influence inequities in health and healthcare while conducting research.
Apply methods to optimally engage diverse participants (including clinicians, staff, patients, community members, and caregivers) in LHS initiatives throughout each initiative, from priority-setting to design to implementation through evaluation.			
No exposure	Foundational skills	Emerging skills	Proficient skills
	Define diverse participants to invite to participate in research and QI planning, conduct, and analyses.	Invite and solicit input from diverse participants in research and QI planning, conduct, and analyses.	Engage diverse participants as co-investigators or change agents in each step from setting priorities and defining study protocols to analyzing data and disseminating lessons learned.
Demonstrate awareness of the value and limitations of sub-group analyses in LHS research and improvement activities to understand heterogeneity of health system effectiveness.			
No exposure	Foundational skills	Emerging skills	Proficient skills
	Aware of potential need for analyses of study outcomes in key sub-groups of patients (or clinical settings) in whom health and healthcare outcomes may vary.	Identify key patient or clinical setting sub-groups in whom health and healthcare outcomes may vary and plan sub-group analyses and interpretations.	Conduct studies designed to understand both overall health and healthcare impact as well as the experience of key sub-groups of patients or clinical settings in whom health and healthcare may vary.
	Aware of limitations of sub-group analyses when interpreting data for key sub-groups of patients.	Write an analysis plan with informed interpretation of sub-group analyses to promote equitable health and healthcare.	Design studies with attention to heterogeneity of potential impact and outcomes among patient sub-groups while fostering equitable care.
Demonstrate awareness of measurement tools related to health equity at the population, community, healthcare practitioner, and individual patient and community member levels.			
No exposure	Foundational skills	Emerging skills	Proficient skills
	Aware of tools to measure health equity at population, health delivery system, clinical practitioner, and individual levels.	Include measures of health equity in QI and research at the population, clinical practitioner, or individual levels.	Create new measures of health equity and test in QI and research and related analyses.
Apply LHS knowledge and methods to translate, implement, and scale research innovations to advance equity and justice in health and healthcare delivery.			
No exposure	Foundational skills	Emerging skills	Proficient skills
	Define or refine an intervention or system innovation to improve equity and justice in health and healthcare with attention to heterogeneity of patient and system needs.	Design and conduct a study to evaluate the uptake and impact of an innovation to improve equity and justice in health and healthcare.	Design a study to scale an innovation to multiple settings with attention to adaptations for diverse patient and system cultures and strengths, while improving equity in health and healthcare.

make strategic decisions about competency development. This LHS Competency Assessment is designed to guide trainee and mentor planning across many years of an early LHS science career, so scholars are not expected to be or become expert in every domain or in every competency. Trainees may elect to develop foundational knowledge for some competencies, while in others they may aspire to become expert; they may fall somewhere in between for other domains and competencies.

In this report, we describe the development and content of proficiency criteria for competencies within the eighth domain, Health and Healthcare Equity and Justice. The five new competencies in this domain (see Table 1, Domain 8) reflect the ability to assess health equity and apply LHS science methods to advance equity and justice in healthcare delivery systems and health of individuals and populations.

2 | METHODS

The proficiency assessment for the Health and Healthcare Equity and Justice domain was developed using the same educational framework, methods, and procedures as were used for the previous domains. The authors partnered with the two priority user communities (1) LHS researchers who serve as educators and mentors with domain content expertise and (2) LHS trainees. These content experts and trainees iteratively defined, reviewed, and edited the assessment criteria. Both established and emerging LHS and disparity researchers who participated lead LHS research within health systems serving marginalized communities in Chicago's network of federally-qualified health centers or within health centers serving LGBTQ+ individuals participated in defining proficiency assessment criteria. The additional assessment criteria for domain eight apply the same four levels of mastery: "no exposure," "foundational awareness," "emerging," and "proficient." A full discussion of the methods can be found in Franklin et al.³

3 | RESULTS

We developed assessment criteria for the five competencies within the Health and Healthcare Equity and Justice domain. For each domain and competency, the assessment lists examples of evidence to support expertise within the particular level of proficiency: no exposure; foundational (awareness/understanding); emerging (early application); and proficient (application with a high level of skill). The number of assessment criteria varied for each domain, with seven criteria for the Health and Healthcare Equity and Justice domain.

The LHS Competency Assessment can be used as a self-assessment or in conversation with a mentor or supervisor. The goal is not for trainees to become proficient in every competency, but to identify a few competencies that they want to become proficient in and some that they want to have skills in at the emerging or foundational levels. Therefore, users can indicate no exposure or mark the foundational and emerging skills with which they have competence.

For domains where foundational and emerging skills have been achieved, users can review the criteria of proficiency.

4 | DISCUSSION

We are committed to the LHS competency assessment tool evolving as experience deepens with both the concept and application of learning health systems science in real-world healthcare delivery settings. The addition of assessment criteria for AHRQ's recently defined eighth domain, Equity and Justice, is a first modification. The assessment development process and the four-level proficiency structure parallel the original work.

While the addition of the Equity domain highlights the critical consideration of health equity in LHS science, the initial seven domains of the LHS Competency Assessment currently include 13 equity-related competencies (see Table 2, existing equity competencies). These existing criteria reflect that equity is a consideration in all training goals and activities in LHS science.

To train emerging researchers to address healthcare inequities through LHS science will necessitate transdisciplinary experts to foster understanding of conceptual models of multi-level (systemic, structural, and individual-level) determinants of inequities in healthcare and health; the impact of racism and inequities among diverse communities; principles of community-based partnerships, co-design, and patient engagement to center the voice of vulnerable communities; and strategies for skillful researcher self-reflection. We previously defined proficiency assessment criteria for the equity-focused competencies among the original domains and provide additional criteria for the new competencies.

As with the previous LHS competency domains, we acknowledge conceptual critiques of competency-based assessment, including epistemological critiques such as "competence is not solely individual, but also collective," along with behaviorist critiques such as "competency cannot be broken down into discrete elements," and "not all aspects of competencies are observable and measurable."⁴ However, the transdisciplinary nature of LHS science, and its training requirements, benefit from explicit examples of proficiency evolution. As with the first seven domains of the LHS competency assessment, the items were developed by LHS trainees and experts at one training center. It is possible that this may have resulted in an uneven focus on components of LHS science and that experts from other training programs may define and weigh assessment criteria differently. In addition, involving a greater number of experts may have resulted in different assessment criteria. For example, in the Equity domain, greater focus on model selection or frameworks for evaluation may be prioritized by other researchers. Obtaining feedback from a wider range of LHS experts is an appropriate next step in the evolution of the LHS competency assessment development. As with the addition of the Equity and Justice LHS competencies, it is possible that future LHS competencies will be added necessitating ongoing revisions of these proficiency assessment criteria.

TABLE 2 Existing equity-focused competencies embedded in LHS Domains 1-7.

Domain 1: Systems science
1.4. Demonstrate the ability to assess the extent to which research activities will likely contribute to the quality, equity, or value of health systems.
Domain 2: Research questions
D1. Understand how health policies and clinical practices can differentially affect diverse populations.
D2. Identifies variation in clinical or policy impact among diverse populations.
D3. Designs research that will anticipate and minimize variation through adaptation to diverse populations in real world populations and health care delivery settings.
Domain 2.2
H1. Aware that roles and decision-making authority of research partners need to be defined.
H2. Roles and decision-making authority of all research partners, including the patient and other stakeholder partners, are defined and clearly stated by the researcher. ⁵
H3. Roles and decision-making authority of all research partners, including the patient and other stakeholder partners, are defined <i>collaboratively</i> and clearly stated.
Domain 3: Research methods
J1. Understands how patient and system factors influence outcomes at multiple levels (eg, genetic, patient, family, health system, and societal levels).
J2. Designs a study that includes identification of patient and system factors that influence outcomes at multiple levels (eg, genetic, patient, family, health system, and societal levels) and methods to measure them.
L1. Aware that multi-level factors may influence health care disparities.
L2. Recognizes and explains disparities in the mechanisms through which multi-level factors influence outcomes among diverse populations.
Domain 3.5
M2. Designs a study that acknowledges diverse factors influencing health outcome measure capture and that reflects diverse stakeholder engagement.
Domain 5: Ethics
B2. Recognizes and responds to most ethical issues when prompted, including issues that occur from engaging diverse stakeholders. Defines solutions for issues that are gray.

5 | CONCLUSION

AHRQ's addition of an eighth LHS competency domain devoted to equity and justice in healthcare underscores the importance of training LHS scientists to recognize and address inequities in healthcare delivery and outcomes. LHS training programs can encourage emerging scientists to achieve proficiency across these domains with attention to equity and justice at each stage.

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CONFLICT OF INTEREST STATEMENT

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