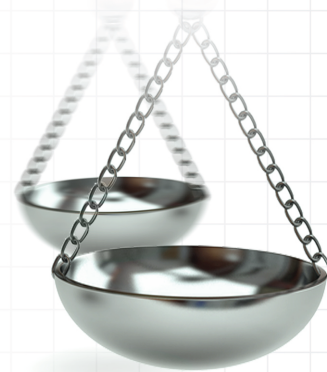




# Transitioning from learning healthcare systems to learning health care communities

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The learning healthcare system (LHS) model framework has three core, foundational components. These include an infrastructure for health-related data capture, care improvement targets and a supportive policy environment. Despite progress in advancing and implementing LHS approaches, low levels of participation from patients and the public have hampered the transformational potential of the LHS model. An enhanced vision of a community-engaged LHS redesign would focus on the provision of health care from the patient and community perspective to complement the healthcare system as the entity that provides the environment for care. Addressing the LHS framework implementation challenges and utilizing community levers are requisite components of a learning health care community model, version two of the LHS archetype.

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## The evolution of a learning healthcare system model

A learning healthcare system (LHS) model, as defined by the Institute of Medicine, now the National Academy of Medicine, is one that 'generates and applies the best evidence for the collaborative healthcare choices of each patient and provider; drives the process of discovery as a natural outgrowth of patient care; and ensures innovation, quality, safety and value in healthcare' [1]. A successful LHS draws from best scientific evidence, while tailoring optimal care to a local healthcare setting and to each individual patient. An LHS embodies learning throughout the delivery of care to ultimately improve health and reduce wasteful spending at the individual, community and national level [1]. The LHS framework has three core components: foundational elements; care improvement targets; and a supportive policy environment [2]. LHS foundational elements, such as harnessing contemporary technology and data support structures, enhances capacity to collect and use data and evidence to measure, evaluate and improve patient and public health. Care improvement targets also assist learning and health through clinical decision-making activities such as decision support tools at the point of care, patient-centered care and clinician–community links. A supportive policy environment includes financial incentives that reward high value care, increased health system performance transparency and buy-in from LHS leadership, healthcare providers, policy makers and patients.

More than ever, healthcare delivery systems across the USA are seeing incentives to participating in an LHS model. Federal agencies such as the Agency for Healthcare Research and Quality (AHRQ) are funding studies to evaluate and demonstrate effectiveness in LHS models [3], notwithstanding the continuous battle in the executive and legislative branches of the US government to reduce health care spending.

## The challenges of implementing the LHS model

Despite tremendous advances sparked by the LHS model, there are major obstacles to implementing an LHS and an urgent need to bring together all participants, especially patients and the public to leverage community engagement and resources into the LHS model. Early findings suggest that implementation of the LHS has varied considerably

Future  
Medicine

across geographic, socioeconomic and political arenas. Among primary care practices, rural localities and those that serve Medicaid patients still lag behind other types of practices in the adoption of information technology [4]. While the vast majority of hospitals eligible for Health Information Technology for Economic and Clinical Health funding were able to implement a basic electronic health record (EHR), fewer than 30% of hospitals that were ineligible for the funding were able to implement EHRs [5]. Furthermore, even among those that have managed to implement some form of health information technology, it is doubtful that many of the practices have the advanced infrastructure requisite to sharing data in a manner that engages patients and allows for data management across populations as required by an LHS [6].

Clinicians and hospitals outside the system will continue to care for patients and the operational resources, such as EHRs for patients seeking care outside the integrated delivery system, or the inclusion of patients who are under- and uninsured, produce gaps in the evaluation and interventions to be achieved in a truly inclusive and transformational healthcare delivery system [7]. Community participation is especially important among lower-resourced neighborhoods to advocate for improving health and reducing health disparities, while addressing and respecting community concerns, norms and values. The current model fails to take into account the continued lack of access for resource-poor communities and those patients that do not access the health care system on a regular basis. Recent evidence indicates that approximately 45% of individuals under the age of 65 who had no health insurance had seen any type of health provider during the past year, and over 15% had not seen a health provider within the past 5 years [8]. This issue may be exacerbated with the repeal of the individual mandate for insurance coverage.

### The vision of a learning health care community

The development of a learning health care community (LHCC) model would combine the core elements of an LHS with a fourth core component: active and continuous stakeholder and community engagement to improve the quality and value of health care within a community [9]. The vision incorporates a deliberate focus on health care beyond a healthcare system, and the use of two words, health care as a noun, as opposed to one word, healthcare as an adjective. Health care is defined as a set of activities performed by care providers and patients to improve health. A healthcare system is defined as the entity that supports the provision of health care with the shared goal to improve patient health.

A community approach to health education, learning and healthy communities includes recognition of the fact that collaboration from multiple community sectors is required to have the greatest impact on individual, community and population health [10,11]. This premise is supported by the Robert Wood Johnson Culture of Health framework [12]. This framework asserts that achieving and maintaining healthy, equitable communities is the shared responsibility of communities and the people and families that reside there. Attainment of healthy communities can only be achieved by collaborations that cross multiple sectors and greater collaboration between public health and traditional health care providers. This framework is founded on strong evidence as it is well documented that multiple factors including the environment influence health at a population level [13]. Accordingly, although an LHS can have substantial benefits for patients fortunate enough to participate in systems with the advanced technology to implement it, focusing on health systems alone does not address all areas required to achieve optimal impact on health [10,11].

### LHS to LHCC core element challenges & levers

The LHS model describes the need for patient centeredness and community involvement; however, the transformational changes that need to take place to capitalize on evidence-based approaches to engagement have not occurred. LHS approaches have attempted to address major concerns regarding privacy, transparency, trustworthiness and poor customer service. The value to patients and their communities is not obvious and most patients, particularly those from lower-resourced settings do not feel they are heard. There is still a prevailing notion that the control within health systems needs to be moved so that patients and those in the community at large are empowered to make decisions rather than having to always defer to the decisions of health professionals [14]. Accordingly, one patient shares “... *we-patients, parents, spouses and family caregivers must be prepared to understand and manage our own medical care as never before*” [15]. Unfortunately, the greatest disparities between low and high income patients as relates to differences in the degree of engagement with the health system and providers are seen in the USA [16]. The fundamental question, “*what is in it for me and my community?*” has not been clarified to many patients and their communities. Instead of feeling as though they are engaged partners within the healthcare system, there are

many patients that feel as though they are not at the table but rather ‘on the menu’ [17]. Using best practices of the LHS model along with evidence-based approaches of community engagement could lead to an enhanced learning model.

The LHCC model would be version two of the LHS archetype. A LHCC would allow learning to begin and occur outside the LHS and would not just be patient centered, but co-developed with patients and communities to assure relevant and trustworthy implementation of the LHS model in a broader context.

### *Data & foundational elements*

One of the foundational elements of an LHS is enhancement of the digital infrastructure so that data can be collected regarding patient outcomes and experiences with health care providers and systems to improve clinical care [2]. An LHS process for collecting health-related data on individuals must address individuals’ concerns regarding privacy as well as historical atrocities such as the Tuskegee experiments and ethical misconduct [18]. Nonetheless, there are evidence-based methods across multiple community institutions that could proactively be involved in collecting data and disseminating information regarding patient and public health. Involving stakeholders within the community in gathering health data allows more robust data collection as most Americans visit the physician less than three-times within an year [19]. In contrast, many individuals visit the grocery store multiple-times in a given month [20] and men see a barber about once per month [21]. Accordingly, mounting evidence demonstrates that environments such as workplaces, schools, community colleges, barbershops and faith-based organizations may be suitable community-based locations to collect health data [22–24].

To ensure that the LHCC model addresses the diversity of Americans, evidence-based outreach programs should focus on underserved populations, including minorities. As an example, barbershops are one type of community stakeholder that have been successfully utilized to reduce the occurrence of risky sexual behaviors [25], conduct health screenings and provide health education for diseases such as prostate cancer [26]. Importantly, within the context of a LHCC, partnerships such as community–clinical linkages would become more widely adopted (Table 1) [27]. These mutually beneficial relationships have been used to facilitate bidirectional communication between the digital interfaces of healthcare systems and organizations within the community to enhance the care of patients in several areas such as smoking cessation, obesity management and hypertension. Patients in clinical settings are able to be referred to useful community resources, or conversely patients may be referred to a healthcare provider after receiving screenings in localities such as a church or corner store [28–31]. Additional places identified as possible localities where health promoting activities could take place but are currently underutilized include gyms, malls, faith-based organizations, recreation centers and fast food restaurants [32].

### *Care improvement targets*

Another core component within an LHS is care improvement targets, which involves three facets: decision support tools at the point of care delivery; patient-centered care; and clinician–community links. There is now more capability than ever to provide decision support for health related behaviors in the community, in particular with the advent of advanced mobile smartphone applications and ‘smart watches’. These mobile applications may be particularly useful in under resourced and minority communities. Data from national surveys show that African–Americans and Hispanics use smart phones more often than majority of the populations in general to access information about health related conditions [33], and individuals with higher incomes are less likely to download and use some type of mobile applications developed for health related purposes [34].

Recently, mobile applications have been developed that provide patients with diabetes personalized information regarding what will happen to their blood glucose levels as a result of eating certain types of foods based upon the individual’s specific physiological profile [35]. Within a LHCC framework, the natural extension of this application is to allow these data to be transmitted to the patient’s primary care provider so that their health status can be monitored. If used in the proper manner, these applications have the potential to confer substantial benefits to patients by providing healthcare providers with more information to support optimal clinical decisions [36]. Emerging evidence indicates the clinical and economic benefits of transmitting data routinely collected by patients while self-managing chronic diseases to health providers. The Health Buddy system is an in-home telehealth monitoring system that collect data on patient’s vital signs while relaying these data to remote health providers and providing the patient with educational feedback [37]. Use of these devices has been associated with a 57% reduction in mortality and a significantly lower risk of hospitalization in observational studies utilizing Medicare patients with heart failure and significantly lower hospital admissions among Medicare patients with chronic obstructive

**Table 1. A learning health system version 2: building toward a learning health community.**

| Components                              | Learning health system                                                                                                                                                                              | Learning health community                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Foundational elements</b>            |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Digital infrastructure and data utility | Upgrades capability of digital technology used within the healthcare system to collect data and promotes a regulatory environment to facilitate sharing of these data within the healthcare system  | Adds: establishment of formalized community-clinical linkages [19] and integrated data systems facilitating bidirectional communication between healthcare systems and community organizations; facilitates referrals of patients from clinicians to community resources such as a smoking quitline [20] or guidance on obesity management [21] as well as referral of patients to the clinical setting after health promoting activities such as blood pressure screenings conducted in corner stores [22] or churches [23] |
| <b>Care improvement targets</b>         |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Clinical decision support               | Availability of the most current clinical knowledge to healthcare providers so that they can make the most informed decision while treating patients during encounters within the healthcare system | Adds: integration of the patient's day to day health status into the clinical decision making process such as data captured through the Health Buddy remote telehealth monitoring system that is transmitted to health providers to facilitate more informed clinical decision making, leading to reduced mortality and hospitalizations [29–33]                                                                                                                                                                             |
| Patient centered care                   | Involvement of patient and family in deciding what medical therapies may be best for an ill patient                                                                                                 | Adds: emphasis on availability of individualized data digital interfaces, and mobile applications that engage patients in customized programs that help improve their health status such as those used for mental health and depression [34–37]                                                                                                                                                                                                                                                                              |
| Community links                         | Encourage stronger relationships with community agencies and entities within the health care system such as a public health agency                                                                  | Adds: moves toward an integrated state where community and health system entities share information and resources to a point where they operate in unison [19,28]                                                                                                                                                                                                                                                                                                                                                            |
| Continuity of care                      | Emphasizes sharing of data between hospitals and physician based practices during transition of care                                                                                                | Adds: sharing of data between hospitals and nonphysician providers such as pharmacists that has resulted in enhanced clinical outcomes and mean savings of approximately \$900–4400 per patient and accordingly is promoted by agencies such as the CDC [40]                                                                                                                                                                                                                                                                 |
| Optimized operations                    | Use operations management principles to facilitate optimal delivery of health care                                                                                                                  | Adds: recognition that clinicians do not have sufficient time to provide all recommended services during limited interactions with patients, particularly those of a preventive nature, and integrates referral to community based resources to address concerns such as tobacco use, eating habits and alcohol abuse to expand the services available to patients and achieve significant gains in health [59,60]                                                                                                           |
| <b>Supportive policy environment</b>    |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Financial incentives                    | Provide incentives within the health care system to promote optimal outcomes and health care and primarily relies upon payments from insurance companies or individual patients                     | Adds: able to benefit from innovative funding sources such as the CMS accountable health communities model program to connect patients with community resources that can assist in meeting social needs [45]                                                                                                                                                                                                                                                                                                                 |
| Performance transparency                | Encourages availability of transparent measures to evaluate performance of health care system                                                                                                       | Adds: encourages availability of evaluation measures to evaluate community stakeholder efforts to promote health such as workplace wellness programs that have a demonstrated impact in reducing healthcare costs [49–51]                                                                                                                                                                                                                                                                                                    |
| Broad leadership                        | Depends on commitment from vested leaders within the health care system                                                                                                                             | Adds: depends on commitment from vested leaders within the health care system and community at large and most likely requires an 'integrator' that successfully engage stakeholders from several sectors and maintains trust with the community [28]                                                                                                                                                                                                                                                                         |

CMS: Centers for Medicare and Medicaid Services.

pulmonary disease (COPD) [38,39]. These devices are primarily used in the Medicare and Veteran's Administration populations currently [38–41], but expansion of their use to vulnerable populations such as those in under-resourced communities that may have a difficult time routinely reaching a physical provider may serve to improve health.

Another tenet of an LHS is the promotion of patient-centered care where patients and families are given active voice in the decision making process concerning how to care for a specific disease. A LHCC extends these same principles to a larger population, namely those currently not engaged in the health care system and/or those who are not under the direct supervision of a healthcare provider for an acute or chronic disease. There is potential for health messages to be tailored specifically to the patient. Multiple mobile applications are available to help individuals with mental health symptoms such as depression or anxiety by using modalities tailored to the patient's preferences. Many of these applications operate without the user having to see a health care professional [42,43]. A randomized controlled trial indicated that use of the iPST mobile application was associated with a significant reduction in depressive symptoms compared with a control group among those with at least moderate depression.

The application has patients exercise their problem solving skills by work through an action plan for a goal that they personally select [43]. Moreover, there is data to suggest that these applications can serve as a means of motivating individuals who have unmet mental health needs to connect with a health care provider to obtain care for their previously unrecognized condition [44].

Although patients may be given a discharge summary when exiting the hospital, patients often do not present this information to health providers at the patient's follow-up visit [45,46]. Furthermore, the discharge summary may lack important information [47]. A LHCC expands upon the LHS by recognizing that patients discharged from hospitals may achieve continuity of care by connecting not only with physicians but other community-based institutions such as pharmacies (Table 1) [48]. Some studies have demonstrated that community pharmacists actively engaged in caring for patients recently are able to have a positive impact on clinical outcomes [49,50]. Patients meeting a community pharmacist within 1 week of discharge had a 6.9% chance of being readmitted within 30 days compared with 20% for those in a usual care group ( $p = 0.019$ ). The pharmacists were able to make several types of changes including initiation of new therapy where indicated, discontinuation of unnecessary therapy and alterations in dose [51].

Churches, libraries, farmer's markets and fire stations are important community resources when clinicians need to build trust. These community spaces can also help improve care improvement targets [31]. Partnerships between physicians, health departments and community stakeholders have the ability to connect individuals to appropriate health care even without advanced technology and these types of efforts are promoted by the CDC and AHRQ [27,28]. The partnership between public health and clinical sector servers is a synergistic partnership. There are several examples of such programs. The Health Department in Summit County, Ohio (USA) has established a coordinated program between physicians, public health agencies and fire departments to screen refugees for hypertension in local fire halls and refer them for care as appropriate [31]. Community stores in Philadelphia (USA) offer screenings for patrons and those with high blood pressure were referred to primary care physicians. Upon rescreening, over 40% of the patrons had improved their diastolic blood pressure by at least 5 mmHg [30].

### *Supportive policy environment*

The third core component of an LHS is to have a supportive policy environment. As a part of promoting a policy environment, recommendations are given to provide financial payments that align with an incentive to provide continuous learning and improvement in clinical care. Within a LHCC, financial incentives could also be provided to community stakeholders that engage with community members to promote their health and provide health services to them. Similar programs have been successfully implemented in limited cases [51,52]. The Cash and Counseling Demonstration and Evaluation (CCDE) program allows qualified individuals needing assistance at home with basic tasks such as household chores and preparing meals to compensate family members or other well-known acquaintances for providing these services using funds received from Medicaid (Table 1) [51]. Some of the strongest evidence regarding the benefits of these programs is seen in the evaluation of CCDE programs in Florida (USA), Arkansas (USA) and New Jersey (USA), where patients were more satisfied with their care and were less likely to have unmet needs [52].

Community health workers have commonly been engaged in providing health screening, and they are acknowledged to have an especially close relationship with the community as individuals who reside therein [53]. In recognition of the important contributions that community workers provide to individuals and communities at large, Medicaid has implemented policies that allow for reimbursement of community health workers for providing preventive services that have been recommended by a licensed provider. Community health workers are also funded by health plans, foundations, state and local agencies [54]. Within the framework of a LHCC, consideration could be given to funding for community organizations providing health promotion or screening activities that demonstrate value in impacting clinical and economic outcomes in locales such as churches, barbers, grocery stores, workplaces, schools and gyms. Funds could also be made available to developers of technology or tools that enable patients to engage in health behaviors that lend themselves to better health outcomes.

Evaluation transparency is the second factor of a supportive policy environment. In an LHS, transparency leads to well defined, publicly accessible measures for evaluating the performance of the health care system. Public reporting of measures is believed to contribute to greater accountability among participating entities and a corresponding improvement in fidelity to established standards. Public reporting of measures related to the care of myocardial infarctions in the early 2000s is credited with helping to achieve at least a 45% increase in hospital compliance with

several recommendations such as appropriate administration of antibiotics during surgery, prescribing appropriate medications for left ventricular systolic dysfunction, and prescriptions for beta blockers upon discharge [55].

Within a LHCC framework, evaluation transparency is expanded to include measures evaluating the contribution of multiple stakeholders in the community toward the promotion of health (Table 1). Measures could include metrics co-developed with patients and community members, in order to enhance interest and active participation in a LHCC. Although metrics would ideally be developed with input from community stakeholders, an initial starting point for relevant measures could be derived from existing measures designed to assess the strength of partnerships between clinicians and the community such as those in the AHRQ atlas [56]. Among other items, this atlas provides questions to evaluate how often clinicians refer patients to a local community agency and the clinician's confidence in being able to properly instruct patients on how to utilize community agencies. Evaluation of how well schools, workplaces and grocery stores are doing to promote healthy behaviors could also be implemented. Every dollar invested in workplace wellness programs is associated with \$1.65 to over \$3.00 in future medical savings [57,58], and the Affordable Care Act has specific provisions to encourage greater use of workplace wellness programs [59]. Public reporting of the type of workplace wellness programs made available to employees could help to encourage greater participation.

Another facilitator in developing a supportive policy environment within an LHS is to have buy-in from leadership. Although a LHCC will incorporate additional types of leaders in comparison to those seen in an LHS, strong guidance is critical for the formation and sustained success of a LHCC (Table 1) [28]. Leaders within a LHCC would include corporations where community members' work, officials within school systems, executives within companies where community members shop and exercise and other well respected community members such as barbers and pastors in addition to the heads seen within an LHS such as providers, payers and executives within the health care system. With involvement from all of these leaders working collectively, it is likely that more community members will participate [10].

### Establishing trust through continuous engagement

Establishing trust is a key factor in the decision making process of 'harder-to-reach' (e.g., certain minorities, individuals with physical or mental impairments and low literacy, etc.) individuals considering participation in research. Undergirding the entire process of engagement from start to finish is building and maintaining trust, which is an iterative process involving pre-engaging, relating, communicating and supporting. Pre-engaging is the process of understanding both individual considerations (e.g., emotional and information needs) as well as the community and the environmental context in which people live.

Administrators in a LHCC must be equipped to address these trust issues. This process requires cultural sensitivity and culturally appropriate and compelling interventions to address health disparities in the larger community [60]. Clinicians and researchers should not see themselves at a 'higher' level than the study participants. Clinicians should be genuinely willing to partner with the community and understand the cultural context and needs of underserved participants [60].

### Designing a LHCC

In order to effectively address the diverse needs of patients, a LHCC should be co-developed with patients and community members and embrace the patient-centric concept of the Institute of Medicine LHS [61]. Okun and Goodwin describe this process most eloquently: "Might the very essence of a learning community be the moment when a member of the community embraces the role of both teacher and learner. As more members evolve into those roles, all members of the community, new and seasoned, empower each other to continuously contribute to an ever-expanding knowledge base" [62].

Ultimately, the implementation of a LHCC can be divided into three distinct phases as shown in Figure 1 below. Within the first phase, an initial assessment is made to identify both the barriers and facilitators to implementing a LHCC that may already be in place within the community. A LHCC requires input from local leaders within the community and key external stakeholders. During phase II, planning toward implementing a LHCC is conducted by collaboration between community partners, external stakeholders and members of the administrative team, including but not limited to healthcare system leaders, clinicians and researchers. The stakeholders work together to prioritize barriers and facilitators to implementing a LHCC. The output from these meetings should assist documentation of the existing barriers that impede implementation of a LHCC along with potential strategies that may be deployed to ameliorate barriers to seeking and receiving care. An example is provided for possible



**Figure 1. Assessment, planning and implementation of a learning health care community.**  
LHCC: Learning health care community.

obstacles and solutions with regards to having useful online information available within underserved communities. Some strategies can be deployed using existing resources, however successful implementation of a LHCC requires innovative and community driven strategies that likely require additional resources.

The third phase in developing a LHCC concerns evaluation. Evaluation of the interventions as they are implemented will determine the intervention's impact, and whether the area previously identified for intervention remains a priority.

### Significance of developing a LHCC

The significance of developing a LHCC is not only to advance public health and health equity, but also to build sustainability and mutual accountability between health systems and the community [63]. Community asset mapping is one method that builds linkages between communities and health professionals in order to develop a LHCC. Patients need access to tools and resources to map their community assets: assets that are pillars in empowering communities toward health are often not seen as assets by health systems [63]. An example of asset mapping is found in the work of Dr Lindau [64] and associates from south Chicago (IL, USA). The team developed a computer application that engages local high school students to capture community resources via the Global Positioning System (GPS). The information is uploaded to the health care system assets database and linked to the patient medical records. The final product builds trust, offers job training and produces a resource that contains up-to-date referral sources. King and associates from Shelby County, TN, USA, built a community-owned health record tool that identifies assets associated with local stakeholders [65]. This electronic record is tracked to zip codes. Ownership of the tool builds collaboration and trust among community and health professionals in Shelby County.

In Maryland (USA), the Community Health Resources Commission and Maryland Department of Health and Mental Hygiene devised the Health Enterprise Zone (HEZ) initiative [66]. The HEZ initiative was a 4-year pilot program from 2013 to 2017 with a budget of \$4 million per year that allowed each individual zone to develop interventions to increase health care access through incentives to healthcare providers and participating organizations. The Maryland HEZ Initiative received the Association of State and Territorial Health Officials 2016 Vision Award for Innovation, Effectiveness and Replicability.

### Conclusion

The LHS model defines a strong framework for enhancing health care through collaboration, innovation, quality, safety and value. The vision of a LHCC includes the incorporation of active and continuous stakeholder and community stakeholder views in order to reach the broader community and impact communities often underserved in current LHS. We have provided practical suggestions on how to build upon the LHS to implement a LHCC and the framework for assessment, planning and implementation of the LHCC model. The guidance may assist payers, providers, policymakers and community leaders to more actively and collaboratively focus on patient-drive health care.

### Future perspective

The elements necessary for a robust LHCC are in place, however, they are not widely adopted and utilized in a manner that serves to optimize population health. A successful transition from an LHS requires cooperation from multiple parties including payers, providers and community leaders to successfully engage all community members, including those that do not traditionally participate in the health care system. While the investment may be large, a focus on patients and not solely health care systems is necessary for the achievement of optimal health. An acknowledgement must be made that the ultimate aim is *"not better hospitals. Not better physician practices. Not more sophisticated electronic medical systems. [But] happier, healthier patients"* [15].

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### Disclaimer

The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.

## Executive summary

**The evolution of a learning healthcare system model**

- A learning healthcare system (LHS) integrates the best evidence and patient care and drives discovery, safety and value in healthcare.
- An LHS learns throughout the delivery of care to ultimately improve health and reduce wasteful spending.
- Community participation advocates for improving health and reducing health disparities, while addressing and respecting community concerns, norms and values.

**The vision of a learning health care community**

- A learning health care community (LHCC) will incorporate the core elements of an LHS with active and continuous stakeholder and community engagement to improve the quality and value of health care within a community setting.

**LHS to LHCC core elements challenges & levers**

- The three foundational elements include data and digital infrastructure, care improvement targets and a supportive policy environment.

**Designing a LHCC**

- A LHCC needs to be co-developed with patients and community members and embrace the patient-centric concept.

**Significance of developing a LHCC**

- A LHCC advances public health and health equity by building sustainable partnerships and mutual accountability between health systems and the community.

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