



National learning systems to sustain and scale up delivery of quality healthcare: a conceptual framework

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ABSTRACT

All around the world, health systems fail to provide good quality of care (QoC). By developing learning systems, health systems are able to better identify good practices and to explain how to sustain and scale these good practices. To facilitate the operationalisation of national learning systems, the Network for Improving Quality of Care for Maternal Newborn and Child Health (the Network) developed a conceptual framework for national learning systems to support QoC at scale. The Network facilitated an iterative process to reach consensus on a conceptual framework for national learning systems to sustain and scale up delivery of quality healthcare. Following a landscape analysis, the Network Secretariat and WHO convened two consultative meetings with country partners, technical experts and stakeholders. Based on these inputs, we developed a conceptual framework for national learning systems to support QoC at scale. National learning systems use a variety of approaches to identify practices that have improved QoC at the patient and provider levels. They also facilitate scale up and sustain strategies used successfully to support quality improvement. Despite growing consensus on the importance of learning for QoC, no one has yet detailed how this learning should be operationalised nationally. Our conceptual framework is the first to facilitate the operationalisation of national learning systems so that health systems can begin to develop, adapt and implement mechanisms to learn about what works or fails and to scale up and sustain this learning for QoC.

INTRODUCTION

All around the world, health systems fail to provide good quality care. This failure impacts populations unequally. While healthcare is often suboptimal in most countries, people in low-income and middle-income countries are especially likely to receive poor-quality care.¹

Specific populations are likelier to receive poor-quality care: mothers may experience disrespectful treatment and abuse during childbirth, and health providers may incorrectly diagnose newborn asphyxia.²

SUMMARY BOX

- ⇒ While good quality of care (QoC) practices exist, they are often unsuccessfully implemented or scaled up because health systems lack the knowledge and ability to implement them.
- ⇒ Our conceptual framework expands on existing best practices and the National Academy of Sciences' five components of a learning healthcare system (ie, assembly of data, analysis, interpretation, feedback and change) by starting to assign roles and responsibilities to individuals and teams at different levels of the health system.
- ⇒ By using actual country experiences developing and implementing national learning systems to support QoC at scale, the framework addresses needs and challenges raised by country implementation teams (eg, clearer terminology, more concrete guidance on how to identify which QoC learning is relevant and at which levels to share this learning).
- ⇒ Ministries of Health interested in developing learning systems to identify and support sustainable quality improvement at scale can use this conceptual framework to initiate the process.

Health-related investments cannot reduce inefficiencies and save lives if health services are delivered without quality.^{1 3} Improving population health requires health systems to embrace and deliver high-quality care, particularly in low-income and middle-income countries where high-quality care could save more than eight million lives annually.² Supporting health systems and health providers in delivering high-quality care is especially crucial to improving maternal and newborn healthcare, as improved quality of care (QoC) could prevent half of maternal deaths.²

Practices delivering good QoC are often developed as unsustainable projects. Practices delivering good QoC may exist in specific facilities, but are not scaled and sustained.² Facilities and providers operating in similar conditions may deliver different QoC.

Districts operating in similar conditions with similar resource levels may achieve different quality results. While good QoC practices exist as projects, these projects are often unsuccessfully implemented or scaled up because health systems lack the knowledge and ability to implement them.^{4 5} If a health system is learning, there should be no gap between problems like these and their solutions. The health system should be able to adapt and adjust its delivery of QoC based on learning.

Improving QoC requires people to continuously learn from the successes and failures of implementing quality improvement (QI) and QoC processes. This learning aims to improve patient care; the management of QoC programmes; and programmes' ability to sustain, scale up and replicate success.⁶ Learning about failures and sharing this learning is particularly valuable, as it prevents duplication of efforts that could waste valuable resources. By developing national learning health systems, health systems can better identify good practices (the 'what') and explain how to sustain and scale these good practices (the 'how'). Learning healthcare systems are necessary for improving QoC, sustaining and scaling QI and achieving universal health coverage (UHC).^{3 7}

Learning health systems contribute to greater self-reliant health systems, improved health system functioning and more adaptive and innovative health systems.⁸ Discussions and research on the need for learning health systems have focused primarily on high-income countries and clinical care contexts.⁸ Existing learning system frameworks generally address topics such as architecture,^{9 10} value creation,¹¹ technological structures (eg, real-time clinical analytics),¹² operationalisation of health data¹³ and work and enabling conditions required for learning health systems (eg, QI practices are standard practice).¹⁴

Much is yet to be learnt and understood about effectively deploying, learning from and sustaining practices that deliver quality care at the facility, district or national levels in low-income and middle-income countries. Most health systems in low-income and middle-income countries lack mechanisms to learn what works or what does not work and share this learning. Countries seeking to implement learning health systems to sustain and scale up the delivery of quality care actively seek more tangible guidance, clearer terminology and concrete examples of how to operationalise national learning systems.⁴

Developing effective learning systems should be a goal for national health systems seeking to improve QoC; for this reason, learning for QoC is embedded throughout calls to action and a high-quality health systems research agenda.⁴ Health systems need to recognise, facilitate and integrate lessons from QoC learning throughout the health system.

In 2016, the WHO prioritised improving QoC for women and children. In support of this vision, 10 countries led by WHO, UNICEF and United Nations Population Fund, as well as collaborating partners, joined forces and established the Network for Improving Quality

of Care for Maternal Newborn and Child Health (the Network).¹⁵ The Network countries aim to halve the number of maternal and newborn deaths and stillbirths in participating health facilities within 5 years. This goal calls for identifying transformative responses that will support sustainable QI at scale. Under the leadership of Ministries of Health of the participating countries, the Network supports the implementation of national strategies for QoC in the health sector by pursuing four strategic objectives: leadership, action, learning and accountability.¹⁵

Learning is a core component within the Network due to the complexity and importance of learning for implementing sustainable quality care. Countries within the Network are actively developing and activating national learning systems that include mechanisms for sharing and facilitating the exchange of learning and processes for evidence-based analysis and synthesis of knowledge and sharing.⁴ Establishing learning systems is critical to facilitating documentation and sharing of learning within and across countries. This learning will inform systemic changes that encourage the application of QI sustainably and bring evidence-based best practices to scale for sustaining the implementation of QoC.¹⁶ The Network is looking beyond provider motivation by focusing on institutionalising continuous review, feedback and improvement processes based on analyses of data, including QI. The aim is to build a learning system that values continuous improvement, where learning is supported and sustained. The system will then encourage and enable QI and learning to facilitate adaptation, innovation and continuous improvement. To help operationalise national learning systems, we present an emerging conceptual framework for learning systems to support QoC at scale.

THE FRAMEWORK DEVELOPMENT PROCESS

The Network facilitated an iterative process to reach a consensus on a conceptual framework for national learning systems to sustain and scale up the delivery of quality healthcare. WHO initiated this process by commissioning a landscape analysis on global learning systems that enable cross-country knowledge generation and transfer.¹⁷ This landscape analysis drew on 13 identified studies, in-depth interviews with key informants representing 9 global learning systems and 4 stakeholder interviews. Based on the findings from these data, the report highlights key issues and attributes for consideration when designing global learning systems.

Following the landscape analysis, the Network Secretariat and WHO convened two consultative meetings with country partners, technical experts and stakeholders.⁵ The first meeting in June 2017 involved members of the Network's working group on learning who discussed the development of fundamental principles of learning systems and learning platforms. These principles included:

- ▶ Remembering that learning is local.
- ▶ Starting fast to get a win.
- ▶ Allowing for failures.
- ▶ Motivating members.
- ▶ Coproducing goods.
- ▶ Applying low-tech solutions.

Participants also discussed processes for developing systems to facilitate learning, including obtaining high-quality data; implementing knowledge management and communication systems; providing clinical and managerial learning opportunities; obtaining financial resources and information technology solutions; managing a safe space for data sharing, confidentiality and trust; and establishing a dedicated human resource team with the skill mix necessary to manage this system. Based on the principles and processes agreed on at this meeting, Network countries began developing and implementing government-led national learning systems.

Country partners, technical experts and stakeholders reconvened in April 2018 to examine the experiences of four countries (Ethiopia, Ghana, Malawi and Uganda) that adapted the Network's guidance and capitalised on partners' support for QoC to actively implement national learning systems.⁵ These country case studies addressed implementation experiences and lessons learnt that could inform the development of a national learning system. In addition to sharing experiences from country-based learning systems, the April 2018 technical consultation sought consensus on a framework to guide Network countries in developing national learning systems, including aspects of implementation documentation, operational research and information sharing.⁵

Based on these inputs, Network members codeveloped a conceptual framework for national learning systems to support QoC at scale. This framework and the experiences of Network countries contributed to new guidance on how to set up and use national learning healthcare systems to sustain and scale up delivery of quality maternal, newborn and child healthcare (2022).¹⁶ Ensuring sustainability of such learning is embedded in the Handbook for National Quality Policy and Strategy¹⁸ and its related planning guide.¹⁹

Before we present the conceptual framework that resulted from this development process, 'learning' warrants an upfront definition since the concept is central to our framework. The literature on learning frequently describes 'learning' as a process:

A process that leads to change, which occurs as a result of experience and increases the potential of improved performance and future learning (p. 3).²⁰

We define learning as the transformative process of taking in information that, when internalized and mixed with what we have experienced, changes what we know and builds on what we can do. It's based on input, process, and reflection. It is what changes us (p. 19).²¹

'Learning' can also be conceptualised as an outcome:

Learning is the relatively permanent change in a person's knowledge or behavior due to experience. This definition has three components: 1) the duration of the change is long-term rather than short-term; 2) the locus of the change is the content and structure of knowledge in memory or the behavior of the learner; 3) the cause of the change is the learner's experience in the environment rather than fatigue, motivation, drugs, physical condition or physiologic intervention (p. 1040).²²

Therefore, learning for QoC could be considered both a process and an outcome.

THE CONCEPTUAL FRAMEWORK

In total, 149 experts from 20 countries participated in the consultative process to develop a conceptual framework for national learning systems to sustain and scale up the delivery of quality healthcare. Based on the landscape analysis, discussions, case studies and reports from this process, we identify and group concepts thematically. We first present the conceptual framework for a national learning system to support QoC at scale, and then describe the individual components that comprise each column of this learning system.

What is a national learning system that supports QoC?

Implementing partners have started to develop national learning systems to focus on topics such as QoC and QI in surgery,²³ child health²⁴ and SARS-CoV-2 exposure of healthcare personnel.²⁵ The purpose of a national learning system that supports QoC is to: (1) use a variety of programmatic and implementation research approaches to identify practices that have improved QoC at the patient and provider levels, thus contributing to a robust health system; and (2) scale up and sustain strategies that district-level and national-level stakeholders have successfully used to support QI at the patient and provider levels, thus achieving the agreed-upon quality standards.

QoC-supportive national learning systems (table 1) address:

- ▶ Where learning about QoC occurs in the health system.
- ▶ Who is involved in learning about QoC.
- ▶ What learning is important for QoC.
- ▶ How learning about QoC is collected, analysed and synthesised.
- ▶ How learning about QoC is shared within the health system.
- ▶ What additional support QoC-related learning might require.

When all the above components of learning for QoC are combined, the result is a national learning system (figure 1; countries H and I).

For a national learning system to effectively support QoC, it must:

- ▶ Have a dedicated learning centre to support the learning system.

Table 1 Components of a national learning system that supports QoC

Where is learning about QoC occurring in the health system?	Who is involved in learning about QoC?	What learning is important for QoC?	How is learning about QoC collected, analysed and synthesised?	How is learning about QoC shared within the health system?	What additional support might QoC-related learning require?
National level	Policy-makers Managers	What is needed to scale up (support) Problem-solving Direction and guidance	Data monitoring	Management systems New communication platforms	Synthesis and analysis Understanding the health system's support for learning Operational research Communication platforms Responsive governance, policy and management
District/regional level	District leadership	New practices or programmes for implementation How to improve implementation and replication	Data monitoring Stories (how to)	Management systems Learning sessions Communication platforms	Change in district management practices and learning Communication platforms Operational research
Facility/community level	Facility leadership Individual practitioners and teams involved in QoC Community and patient representatives	New practices	Data monitoring Stories (how to)	Management system Learning sessions Communication platforms	Optimisation and use of existing management processes quality improvement coaching

QoC, quality of care.

- ▶ Develop or strengthen data systems to integrate and use QoC data for improved care.
- ▶ Develop and strengthen mechanisms to facilitate learning and to actively share knowledge through a learning system.
- ▶ Actively analyse and synthesise data and practices for an evidence base on QI.
- ▶ Allow information to flow freely (not be a bottleneck).
- ▶ Build a learning culture that encourages transparency when things go wrong and focuses on understanding causes rather than ‘blaming and shaming’.

Learning centres actively work with national governments, districts and facilities to support documentation and sharing of learning related to QoC. These centres could be academic organisations or implementation partners. In Uganda, the Ministry of Health engaged Makerere University School of Public Health to provide

learning sites with routine technical support, develop a community of practice, and pilot a district-level system to strengthen the collection and management of facility-level QoC data for maternal and newborn health.⁴ In turn, Makerere developed a Center of Excellence for Maternal, Newborn and Child Health to facilitate learning, generate evidence and build capacity of researchers and implementers. The centre runs a regional QI collaborative consisting of 12 districts that generate most of the learning.²⁶ It also engages healthcare workers in real time to solve challenges such as referral, consult in managing difficult cases and disseminate new evidence.

In Bangladesh, the Ministry of Health and Family Welfare partnered with the National Institute of Preventive and Social Medicine to develop its national learning platform for supporting QoC implementation.⁴ Existing platforms in countries, such as annual national quality

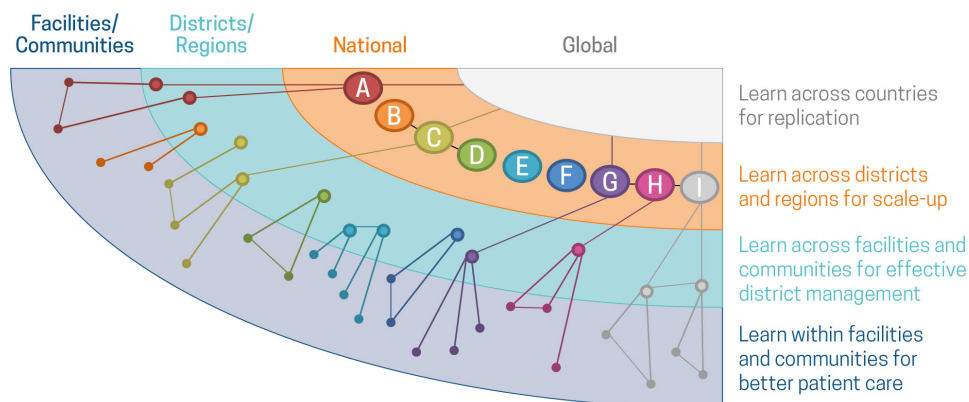


Figure 1 Opportunities for learning within a learning system.

forums, may also be harnessed to provide this support while Ministries of Health work to identify learning centres.⁴

The role of national learning centres is to:

1. Support QoC data generation and communities of practice to facilitate learning within and between countries.
2. Build capacity, including the capacity to conduct operational research.
3. Conduct implementation research.
4. Contribute to the development of new standards and policies.
5. Provide technical support to develop critical questions and how to answer them.
6. Help synthesise evidence in support of scale up and implementation of best practices.

Learning centres should aim to develop capacity at various levels to facilitate learning and should promote the use of technological advancement in documenting learning.

Where is learning about QoC happening in the health system?

Learning opportunities occur at all health system levels and in both the public and private health sectors (figure 1). Within a facility, learning happens while implementing activities to reach a specific QoC aim. Any facility team or individual involved in improving QoC is learning from their experience. For example, staff trying to improve skin-to-skin contact for newborns learn what works and what does not.

Some of this knowledge for better patient care may be useful to staff at other facilities. For example, a team may learn how to improve the use of uterotonics to prevent postpartum haemorrhage during the third stage of labour. This learning is often of interest to other facilities operating under similar conditions and with similar challenges (figure 1; communities/facilities in countries A, C, D, F, H and I); however, this learning between facilities is often lost, leading to waste and inefficiency (figure 1; communities/facilities in countries B, E and G). Enabling facilities to share this learning can facilitate QoC improvement efforts and improve the efficacy of district management.

Learning occurs between districts (figure 1; districts/regions in countries E and I), when facility learning has the potential to be scaled up and sustained nationally. Scaling up this type of learning requires a national learning system to facilitate the identification, documentation and sharing of this learning throughout the health system (figure 1; country I). At the global level, learning across countries (figure 1; countries B, C and D; countries G, H and I) leads to the identification and development of evidence-based global goods (eg, guidelines, standards of care) that can be replicated globally when the goods are pushed back into national learning systems. This learning contributes to optimal patient care and helps close the evidence-to-practice gap.⁶ Learning

at the global level also results in the identification of issues requiring additional research.

Who is involved in learning about QoC?

People at all levels of the health system are involved and responsible for learning to bring evidence-based best practices to scale for sustaining the implementation of QoC (table 2). Active learning is a crucial responsibility among front-line health workers involved in QoC, as clinical care is complex and requires quality at the front line. Active learning is also a crucial responsibility among managers and implementers. QI teams must explore innovative measures to promote the QI message and should remember that leadership is key. QoC champions are critical in the learning process, and leaders at all health system levels must be held accountable to improve QoC. National learning systems must specifically target leadership and management groups to support the documentation of learning.

In Ethiopia, the Ministry of Health financed QI projects, QI coaching and mentoring and conducted learning collaborative sessions in 48 learning facilities.⁴ However, workforce turnover necessitated ongoing training to prevent skills gaps and ensure the necessary QI skill development among new staff.

What learning is important for QoC?

Changing service delivery for QoC can be difficult. It requires providers to use both quantitative and qualitative data to learn if the changes they are making lead to better patient care. This process requires providers, managers and QI teams to:

1. Gather information on what worked and what did not work.
2. Synthesise the information.
3. Share information in the right way at the right level with the right person.
4. Channel/act on the information shared.
5. Learn if the actions work.

Table 3 summarises some key questions for learning about QoC throughout the health system. The appendices provide detailed examples of learning in a facility that wanted to improve early initiation of breastfeeding (online supplemental appendix S1) and in a district that wanted to improve early initiation of breastfeeding in six facilities (online supplemental appendix S2).

How is learning about QoC collected, analysed and synthesised?

Learning requires data (on the process and patient-level outcomes) and stories. Without both components, there is no learning. How to package this information requires people to use their judgement about the purpose or expectations of learning at each health system level. At the facility level, data are the most important ingredient for learning about how facility staff changed patient care. Data help illustrate the impact of these QI activities. Without data on what happened to patients, there

Table 2 Roles and responsibilities for improving QoC within the health system

Health system level	Role in learning for QoC
Facility	<p>Staff involved in QoC should:</p> <ol style="list-style-type: none"> 1. Participate in peer-to-peer learning activities. 2. Be open to sharing and learning with other facilities. 3. Seek support, when needed, in learning how to: <ol style="list-style-type: none"> 1. Use various methods and tools to identify the causes of poor care in their setting. 2. Systematically make changes in how they provide care. 3. Use data to learn how effective those changes are. 4. Adapt changes until care has improved. <p>The QI team should:</p> <ol style="list-style-type: none"> 1. Share its experience of improving QoC with peers, facility leadership and other facilities (eg, in-person meetings, exchange visits, webinars, emails, instant messaging). 2. Document how they are improving their services, their challenges and the results of their improvement efforts. Facilities should document which solutions worked and which did not and share them with the coach and the district support team. Such documentation can be shared with other facilities and used to understand what works and what does not. <p>Facility leadership should:</p> <ol style="list-style-type: none"> 1. Provide QI teams regular mechanisms and opportunities to share learning (eg, routine facility meetings). 2. Facilitate staff learning. 3. Communicate improvement work and the results to mothers, families and communities. 4. Participate in district-level events (collaboratives) where the facility can compare and discuss its indicators and QI activities with other facilities. Larger facilities with multiple departments should use this opportunity to introduce QoC activities to other departments.
District	<p>District leadership should:</p> <ol style="list-style-type: none"> 1. Provide public and private facilities with opportunities to share their experiences in improving care (eg, integrate QoC into existing meetings; organise new meetings focused on improving QoC; create new forums for sharing such as WhatsApp; exchange visits). These sessions should not be training or monitoring sessions. Ideally, facility staff working on QoC will have a chance to meet and share every two to 3 months. 2. Ensure that facility staff can discuss challenges and successes without fear of being reprimanded by senior staff. 3. Plan how to help collect learning from facilities and how to organise meetings that encourage sharing. 4. Develop a district-level QI team.
National	<p>National leadership should:</p> <ol style="list-style-type: none"> 1. Recognise that QoC and learning at the national leadership level are crucial to ensure the sustainability of learning health systems and prioritisation of QoC in policies and mandates. 2. Develop a national-level QI team. 3. Foster collaboration by connecting facilities, leaders and managers around the country. 4. Proactively seek out information from efforts to improve QoC (eg, case studies, stories that combine data with details of the context and how improvement was achieved). 5. Facilitate documentation of improvement activities. 6. Create opportunities for evidence sharing and learning (eg, websites, online resource libraries, webinars, communities of practice, virtual or face-to-face meetings). 7. Disseminate QoC implementation knowledge and tools (eg, newsletters, national forums, podcasts). 8. Identify and respond to any learning needs in districts and facilities. 9. Foster a positive, sustainable environment for learning and sharing. 10. Use implementation science to learn and generate evidence for scale up. 11. Update government policies based on QoC learning outcomes. 12. Connect with other countries on QoC. 13. Stay up to date on global developments in QoC. 14. Integrate the national learning centre into the budget and advocate for the learning centre. 15. Not become a bottleneck.

QI, quality improvement; QoC, quality of care.

is no evidence that QI activities had any effect. The most compelling forms of facility-level QI data: (1) are objective; (2) show patient outcomes; (3) have multiple data points over time; (4) have frequent measurement; and (5) are reliable and validated.^{27 28}

It is not always possible to obtain these types of data in facilities. Still, facilities should try to measure outcomes and processes, collect and review data frequently (daily or weekly for process measures, weekly or monthly for outcome measures) and have systems to validate their data. In Bangladesh, the QI Secretariat is establishing a set of uniform QoC indicators since these indicators are

absent in current facility-level data collection through the District Health Information Software. The inclusion of uniform QoC indicators will support the Ministry of Health and Family Welfare in better understanding health system performance. It will also encourage learning and greater transparency. While facility-level data tell us if something changed or not, one must learn how these changes happened. Stories are the best way of describing what led to changes and influenced behaviour change.²⁹ Stories come from the facility leaders and staff involved in changing patient care.

Table 3 Key questions required for learning about quality of care within the health system

	Facility level	District level	National level
Internal learning (eg, within a facility, within a district, within a nation)	<ul style="list-style-type: none"> ▶ What activities did we conduct? ▶ How did we conduct them? ▶ What was the effect on patient care? 	<ul style="list-style-type: none"> ▶ What support did we provide to facilities? ▶ What activities did we use to provide this support? ▶ How did these activities change provider behaviour and patient care? 	<ul style="list-style-type: none"> ▶ What support did we provide to districts and facilities? ▶ What activities did we use to provide this support? ▶ How did these activities change district or provider behaviour and patient care?
Horizontal learning (eg, learning across facility to facility, learning across district to district)	What did other facilities do to improve care?	What did other districts do to support facilities to improve care?	What did other countries do to support districts and facilities to improve care?
Vertical learning (eg, learning between facility and district, learning between district and national)	<ul style="list-style-type: none"> ▶ How effective was the guidance and support from the district? ▶ What other guidance and support is required from the district? 	<ul style="list-style-type: none"> ▶ How effective was the guidance and support from the national level? ▶ What other guidance and support is required from the national level? ▶ What have we learnt that can support other facilities to improve care? 	<ul style="list-style-type: none"> ▶ How effective was the guidance and support from the global level? ▶ What other guidance and support is required? ▶ What have we learnt that can support other districts to improve care?

At the district level, data and stories generate learning about how districts support QI. Learning about a district's efforts to improve quality requires data on patient care and data on the activities that a district conducted to support facilities. For example, if the district provided on-site clinical mentoring to support facilities, then data on the number of monthly clinical mentoring visits would be helpful. However, data solely on the number of clinical mentoring visits per month is unhelpful. Stories provide practical details about what the district did and how the facility staff adapted based on the district-led activities. For example, when telling the story of how district staff involved in developing and implementing QoC programmes supported facility-based staff to establish skills practice sessions, it is essential to describe what skills the practice sessions included and what methods or models the session used. It is also important to report the logistical details (eg, the optimal time for the district staff to visit to set up and support the initial practice sessions, where district staff found space for these sessions, and how they organised the sessions to ensure that all staff participated). These details are critical for other districts that would like to replicate this approach.

Once data and stories are collected at the facility and district levels, they must be organised and packaged. Information may be packaged by specific clinical topics (eg, preconception, immunisation) or how best to use the different quality interventions (eg, skills training, quality assurance). As the documentation process in Malawi revealed, health workers require user-friendly templates and tools to successfully organise and package the learning from their QI projects.⁴

How is learning about QoC shared within the health system?

Within the health system, learning is shared in multiple directions (online supplemental appendix S3). Learning can be shared internally (eg, within a facility, within a

district), or it can be shared between similar groups (eg, facility to facility, district to district, nation to nation) as horizontal learning. Ideally, horizontal learning will allow other groups to apply the lessons from the original group to their own setting. Online supplemental appendix S4 illustrates different types of learning that groups might share horizontally. The mechanisms for sharing this learning will vary and may include, for example, face-to-face or virtual learning communities, review and supervision processes built within or outside the existing structures, and support mechanisms. In Malawi, district-level teams use social media platforms and WhatsApp groups to share QI-related learning and information between districts.⁴

Learning is also shared across different levels of the health system (eg, facility to district level, district to national level). This vertical learning involves transferring learning to other levels of the health system. Vertical learning can be shared upwards (eg, facility to district, district to national) or downwards (eg, national to district, district to facility). The type of learning shared and the direction in which it is shared depends on the purpose of the learning (table 4).

In Bangladesh, the QI Secretariat and other government entities share best practices from facilities (eg, from district hospitals, upazila health complexes and union health and family welfare centres) at district-level QI committee meetings, where improvement is discussed and learning is shared. The QI Secretariat also hosts quarterly development partner coordination meetings. These meetings bring together international and local development partners to share their learning from the implementation of various QoC interventions. This mechanism is effective for learning from one another, avoiding duplication of activities and supporting national efforts to extend QI in a coordinated manner.

Table 4 Examples of learning that could be shared vertically within the health system

Vertical learning direction	Purpose of learning	
	Learning for programme management or programme implementation	Learning to improve implementation and replication
Upwards (eg, facility to district, district to national)	Describe activities <ul style="list-style-type: none"> ▶ Aim selected ▶ Team to improve care formed ▶ Team meeting and taking action Process results <ul style="list-style-type: none"> ▶ Patient-level process data Outcome results <ul style="list-style-type: none"> ▶ Patient-level outcome data Request support needed <ul style="list-style-type: none"> ▶ What additional support is needed from the district or national level 	Interventions and results <ul style="list-style-type: none"> ▶ What activities were implemented? ▶ What happened to patient care? ▶ Community perspective of the QoC programme Direction <ul style="list-style-type: none"> ▶ What worked and what did not in setting the direction Support and communication <ul style="list-style-type: none"> ▶ What types of support and communication did facility staff receive? ▶ What worked? ▶ What did not? ▶ What adaptations were made or should have been made? ▶ What type of support was missing (facility and district perspective)?
Downwards (eg, national to district, district to facility)	Clarify direction/guidance <ul style="list-style-type: none"> ▶ District-level goals ▶ What facilities are supposed to do Clarify support <ul style="list-style-type: none"> ▶ What support is available to facilities to reach the goals Clarify problem-solving <ul style="list-style-type: none"> ▶ What should facilities do if they need additional support 	Clarify problem-solving <ul style="list-style-type: none"> ▶ What should facilities do if they need additional support ▶ How can the system help solve implementation/replication problems at facilities?

CONCLUSION

QoC happens only if the mixed health system can sustain workforce capabilities to apply QI methods and then learn from these activities.⁴ Although learning is crucial to improve QoC and achieve UHC,⁷ current health systems fail to take learning seriously. Health systems rarely detail how this learning should be operationalised nationally, despite growing consensus on the importance of learning for QoC.¹³⁷ Our conceptual framework is the first to facilitate the operationalisation of national learning systems for QoC so that health systems can begin to develop, adapt and implement mechanisms to learn about what works or fails and to scale up and sustain this learning for QoC. Learning must be used to improve QoC and make health systems more effective and responsive.

Prior efforts to describe learning healthcare systems and to suggest best practices highlight the roles played by technological tools, financing and the systems' cultural environments.¹⁴ Our conceptual framework expands on these practices and the National Academy of Sciences' five components of a learning healthcare system (assembly of data, analysis, interpretation, feedback and change) by starting to assign roles and responsibilities to individuals and teams at different levels of the health system.^{3 16} In this regard, the conceptual framework for learning systems to support QoC at scale complements calls to action for improving QoC and furthers the high-quality health systems research agenda.¹⁵

Reports and frameworks conceptualising learning health systems and discussing what is required to build them provide a valuable start.⁸ But countries seeking to implement learning health systems seek more tangible

guidance, clearer terminology and concrete examples of how to operationalise national learning systems.⁴ One of this conceptual framework's strengths is that actual countries' needs and experiences shaped its development. These case studies and the experiences of the Network as a whole revealed that (1) strengthening coordination between knowledge generation and knowledge sharing and (2) policy-making and programme management processes are essential for institutionalising national learning systems.⁴ Another strength is the Network's global reach in obtaining consensus on this conceptual framework. In conceptualising how national learning systems would operate in different contexts, we have distilled the primary components based on feedback from partners and experts across the globe.

This conceptual framework also has several limitations. All 10 Network countries could not develop and implement national learning systems by the April 2018 technical consultation. The four case studies used to develop this conceptual framework come from African countries. Case studies from country partners in Asia and elsewhere may possibly have resulted in a slightly different framework, particularly regarding the language we used to describe national learning networks and their implementation. Currently, Ethiopia and Ghana are the only two Network countries to have established functioning district learning networks.⁴ As Network members share new learning and guidance, the Network Secretariat will update this guidance on developing national learning systems to sustain and scale up delivery of quality maternal, newborn and child healthcare.¹⁶ Another limitation is that the Network's consultations were

limited to Network partners and bilateral organisations. Though we are unaware of national efforts to implement national learning systems outside the Network, we may have missed non-Network efforts to develop and implement national learning systems.

Developing and successfully implementing learning systems will require engaged and motivated leadership as well as a cultural shift by which health systems create and foster a culture of continual learning throughout the public and private health sectors.^{3 24} Cultural change occurred in Bangladesh following the application of the Maternal and Perinatal Death Surveillance and Response (MPDSR), an essential QI intervention. Now that the Directorate General of Health Services has trained most districts, the MPDSR platform and facility-level MPDSR committees support learning and sharing of information about where improvements are required. QI learning programmes at the community level are also integral to a culture of continual learning.

As others have noted, scaling up improvements requires sustainable solutions and not only financial sustainability or resilience.⁸ Network countries have approached the development of a learning health system as an integral part of implementing QoC in the health system. The learning health system is part of the implementation of the national quality policy and strategy (NPQS)¹⁸ and its implementation handbook.¹⁹ Implementing the NPQS across all levels requires resources that are or should be part of the national health budgets. Support for learning centres must be part of these efforts.

Practical questions remain as to how national health systems can develop and foster this needed cultural shift in learning and which institutions are best suited to serve as national learning centres to sustain and scale up good practices. Despite these unanswered questions and others, health systems must address the role of learning in sustaining existing and future QI efforts. This attention requires urgent action if countries are serious about achieving UHC and the Sustainable Development Goals by 2030.

QI efforts will continue to fail if health systems are not learning or fail to support and build capacity for learning at all health system levels. As countries begin to develop national learning systems and share their experiences developing them, we envision refining the conceptual framework to reflect new evidence and best practices. Using the conceptual framework as a foundation, the Network has developed technical guidance on how countries can operationalise national learning systems that support and scale up learning for QoC.¹⁶ This guidance provides concrete examples of how national learning systems can collect and share learning and how countries can establish national learning centres. It is time for Ministries of Health to renew their commitment to QoC and lead national efforts to develop learning systems to identify transformative responses that will support sustainable QI at scale.

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