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Lessons learnt from quality improvement collaboratives in Cambodia

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ABSTRACT

Currently, Cambodia uses performance-based financing (PBF) and a national quality enhancement monitoring system as key components of its strategy to achieve universal health coverage and the health-related Sustainable Development Goals. PBF is one among many strategies to improve the quality of healthcare services and its effects and limitations have been widely documented. We share lessons learnt from the use of quality improvement collaboratives, a facility-based quality improvement strategy, to amplify and complement PBF to address specific service delivery gaps, improve provider competency, and increase patient trust and satisfaction in the health system, a driver of healthcare utilisation.

Summary box

- Improving healthcare quality is a priority for many countries on the road to universal health coverage as recent publications have demonstrated. A combination of quality improvement interventions is necessary to maximise impact through their synergistic effects.
- This article demonstrates the catalytic effect of quality improvement collaboratives on performance-based financing schemes, which has rarely been studied.
- This article demonstrates that facility-based quality improvement collaboratives are an effective mechanism for accelerating progress towards universal health coverage in Cambodia when combined with performance-based financing schemes.

INTRODUCTION

While the Royal Government of Cambodia increased equitable access to healthcare by expanding financial coverage, progress toward universal health coverage is stalled by suboptimal service quality.[1 2] Cambodia's vision for a health system capable of achieving the health-related Sustainable Development Goals requires a comprehensive approach to quality improvement (QI).[3]

To strengthen the quality of service delivery, through the health equity and QI project, the Ministry of Health is implementing a national quality enhancement monitoring (NQEM) system in all public hospitals and health centres.[4] NQEM is an external quality assessment of facilities using a score as the basis of a performance-based financing (PBF) scheme where facilities and providers receive additional funds when they achieve certain scores. Established at different levels of Cambodia's primary and secondary public health system, NQEM is associated with creating positive momentum toward improving healthcare quality.[4 5] NQEM, conducted on a quarterly basis in provincial and district referral hospitals and health centres, assesses three dimensions of healthcare quality—structural, process and client satisfaction.[4] The approach has some limitations, such as the exclusion of tuberculosis (TB), HIV/AIDS and gender-based violence services within public health facilities and that it does not equip health providers with a systematic method to address quality of care issues identified through NQEM assessments.

Recent studies indicate that a combination of interventions at all levels of the health system is more likely to improve quality of care.[3] However, in Cambodia, no other QI intervention has been institutionalised. Since 2018, the Enhancing Quality of Healthcare Activity project (hereafter referred to as 'the project') has engaged public and private health systems to improve the quality and safety of services through design and implementation of QI collaboratives (QICs), accreditation and competency-based education systems. Although evidence on the effectiveness of QICs in low-income and middle-income countries (LMICs) is mixed,[6] the project implemented them as a systems-based, locally owned, facility-led approach to complement national QI approaches

Table 1 Complementarity of the national quality enhancement monitoring (NQEM) system and the quality improvement collaborative

	External NQEM and performance-based financing	Facility-led QIC
National level	Coordinate quality assurance and provision of fixed lump sums and performance-based grants for all public facilities	Address TB, HIV and maternal child health issues by including national programme tools to complement NQEM processes at public facilities to promote more comprehensive care for patients
Subnational level	Build capacity of provincial health departments and operational district assessor teams to use NQEM tools	Work with referral hospitals, health centres, and assessors to interpret NQEM scores, identify gaps as areas for improvement, and use the Model for Improvement to set improvement aims and generate change ideas in health facilities
	Provide fixed lump sum grants to referral hospitals and health centres to implement structural and process improvement activities and performance-based grants to provincial health departments, operational districts, referral hospitals, and health centres to assess and incentivise referral hospital and health centre staff	Coach referral hospital and health centre staff to work as teams, develop QI plans, collect QI process indicators and test change ideas to increase NQEM scores. Build provincial health department and operational district assessor capacity in coaching, team building, data analysis and QI tools use
	Produce individual health facility-based QI plans quarterly, based on NQEM assessment findings	Promote the exchange of best practices between hospitals and health centres in areas that are identified as gaps in NQEM (waste management, infection control, triage, etc). Facilitate a community of practice to disseminate best practices

QIC, quality improvement collaborative; TB, tuberculosis .

of NQEM and PBF. QICs were implemented with the following features that have proven effective globally: the potential for scale-up from the outset, combined clinical and QI capacity building, use of the Plan-Do-Study-Act (PDSA) Model for Improvement, engagement of organisational leaders to support QI efforts, facilitation by local actors (eg, provincial and district supervisors as QI coaches), and use of systems thinking and tools.[7–10]

QICs have been used widely, though published systematic reviews on QICs have primarily included studies based in high-income countries[6 11 12]; and to our knowledge, there is no literature that discusses a combination of QICs and PBF. In Cambodia, PBF served as a financial incentive for health facility staff while QICs and QI mechanisms equipped them with a locally owned methodology to improve quality, hence indirectly increasing their motivation and satisfaction; because of these synergistic effects, PBF-QIC integration was vital for subnational QI. The Institute for Healthcare Improvement's collaborative improvement model was contextualised for Cambodia to accelerate achievement of its health priorities outlined in the Ministry of Health's third Health Strategic Plan 2016–2020[1 13] and to serve as a catalyst that complements, builds on, and amplifies the effects of PBF (table 1).

In this Practice paper, we share our rationale for implementing QICs in Cambodia as a catalytic mechanism that complements PBF to address service delivery gaps and increase patient trust. We also report challenges and lessons learnt and argue that a comprehensive QI approach within learning health systems is needed to progress toward national QI objectives.

QUALITY IMPROVEMENT COLLABORATIVE EXPERIENCE

QICs used the PDSA Model for Improvement[14] to address recurrent issues identified in NQEM assessments and other gaps identified by health facility staff who were then empowered to lead the improvement process. Teams from multiple hospitals and health centres were trained on systems analysis and improvement tools such as Ishikawa diagrams and system and process mapping to generate change ideas that were then tested using the PDSA cycle. Teams focused on TB, maternal child health and family planning services as well as infection prevention and control—areas prioritised by health facility staff based on NQEM scores and to date missing from the NQEM process. In a QIC, teams from various health facilities underwent an iterative cycle of testing their identified interventions and sharing what they learnt on processes and outcomes with other teams.[11] QICs promoted collaboration and learning, engagement of stakeholders at varying levels (patient, facility, district and provincial), and contributed to an improvement dynamic,[3 15] hence increasing health facility staff NQEM scores and corresponding PBF revenues.

QICs were implemented in 22 operational districts across six provinces in Cambodia, consisting of 26 referral hospitals (from January 2019 to June 2021) and over 264 health centres (from June 2019 to June 2021).

Results to date demonstrate that a larger proportion of health centres enrolled in the QIC intervention achieved NQEM scores of at least 80%, considered an acceptable level of quality, compared with health centres that did not implement QICs. Project support included hosting trainings on PDSA, QI tools, and clinical topics, developing an improvement plan with monthly measurement and change ideas, coaching QI teams in testing and implementing changes and interpreting measures, and fostering peer-to-peer learning through exchange visits and learning sessions with multiple teams. During QIC trainings, health facility staff and district and provincial NQEM assessors and coaches developed QIC roadmaps and identified priority areas based on NQEM score analysis and staff perception of service delivery gaps within their facilities. These efforts and continued stakeholder engagement enabled QICs to foster a culture of continuous improvement and collaboration within and among public and private health facilities—features crucial to attaining high quality health services.[15]

Change ideas synthesised and implemented by QI teams contributed to increases in NQEM scores and related financial rewards and the improvement of TB, maternal child health and family planning service areas (table 2).

LESSONS LEARNT FROM QUALITY IMPROVEMENT COLLABORATIVE IMPLEMENTATION

Lessons learnt regarding QIC implementation are mentioned below and summarised in figure 1 for potential adaptation in other LMICs. These findings were based on project quarterly and annual reports, briefs and informal interviews with stakeholders.

Key lessons learnt include:

- Alignment of QIC design with Cambodian context and health system allowed for smooth QIC implementation. The QIC structure followed the health system's traditional hierarchy, with national, provincial, and district supervisors trained to serve as QI coaches to ensure that, in addition to supportive supervision, they empowered health facility staff to make positive changes. Such an approach combined people-centred clinical leadership with regional authority, fostering system-wide engagement with support from organisational leadership.[7] Furthermore, while QICs traditionally have one common aim with multiple teams addressing this aim, health facilities expressed a desire to choose various areas for improvement specific to their own needs. For example, larger hospitals primarily wished to focus on infection control and waste management, while smaller health facilities focused on family planning and antenatal care. Thus, the project adapted the QIC approach to align with these needs and enabled smaller sized collaboratives. The project also adapted QIC processes and reporting timelines to align with NQEM, which conducts quarterly reviews. Lastly, the Ministry of Health is in the process of establishing and strengthening hospital accreditation systems. Thus, QICs with provincial hospital staff have adjusted improvement ideas to support the introduction of accreditation standards.
- Prioritising facilitation by local actors enabled context-specific and effective QI. As facilitation by local actors has proven to be effective in continuous QI,[8] NQEM assessors at provincial and district health departments were deliberately chosen to become QI coaches and facilitators to ensure their ability to encourage facilities to address context-sensitive gaps identified from NQEM assessments. Literature has also demonstrated the value of context-specific facilitation within improvement interventions.[9] Furthermore, QI coaching and facilitation targeted health facility teams, not individuals, and prioritised inquiry-based guidance rather than clinical skill instructions. QI coaches and health facility teams chose improvement areas (through patient data and rich pictures and other systems thinking-based practices) that ranged from infection control, waste management, TB, and family planning—areas with recurring gaps identified through NQEM.
- Support from higher levels of the Ministry of Health created an enabling environment for healthcare QI. QIC support from leadership was crucial in their continued implementation and transparent district-level and provincial-level ownership, aligning with literature on QI and the importance of organisational leadership and culture.[7 16] The project hosted webinars for members of the national QI technical working group with 'High Excellency' status and directors of various Ministry of Health departments, featuring participants who shared QIC achievements in Cambodia and globally. The webinar was used to develop a common understanding that integrating QI models (eg, QICs) with quality assessment mechanisms (eg, NQEM) and delivery at scale would create an enabling environment for healthcare QI, addressing concerns from some Ministry of Health staff who did not immediately acknowledge the value of QICs and believed a single approach (NQEM) was adequate for improving quality of care. Though support from selected high-level Ministry of Health officials exists and the project has successfully worked with the Ministry to create a QI handbook (which the Ministry has endorsed), the challenge of obtaining formal approval for QICs at the national level persists.
- Creation of district and provincial coordination structures through QICs enabled greater health facility involvement in QI and facilitated novel learning mechanisms. Poor organisational culture, limited ownership, and lack of collaboration have been associated with substandard QI within healthcare organisations.[17] Thus, the project facilitated mid-level district and provincial health department managers' acknowledgement of the value in QICs, which

Table 2 Examples of change ideas tested by QICs†

Topic	Change ideas tested	QI indicators	Preimplementation results (month collected)	Latest implementation results (month collected)	Implementation scope
Infection control	Peer-to-peer monitoring of hand hygiene practices	% of times healthcare providers practiced hand hygiene correctly (measured monthly)	43% (June 2020)	77% (June 2021)	11 health centres
Medical waste management	On a weekly basis, assigned providers observe management of medical waste according to an established checklist	% of times medical waste was organised and managed correctly	56% (June 2020)	85% (August 2021)	31 health centres
General waste management	On a weekly basis, assigned providers observe management of general waste according to an established checklist	% of times general waste was organised and managed correctly	98% (June 2020)	85% (September 2021)	114 health centres
TB screening*	Ask patients presenting at outpatient departments about TB symptoms regardless of their complaints	% of outpatient cases screened for TB symptoms	40% (October 2019)	51.3% (June 2021)	124 health centres; 5 referral hospitals
Family planning	Provide thorough counselling on advantages of long-acting reversible contraception (LARC) to contribute to increased uptake of LARC methods	% of family planning clients who answered at least two-thirds of questions regarding advantages of LARC methods correctly	72% (October 2019)	85% (June 2021)	44 health centres

*Additional TB cases identified as a result of provider-initiated TB screening.
†Improvement and performance varied across health facilities though the majority of change ideas tested resulted in improvements (except one—general waste management).
QIC, quality improvement collaborative; TB, tuberculosis.

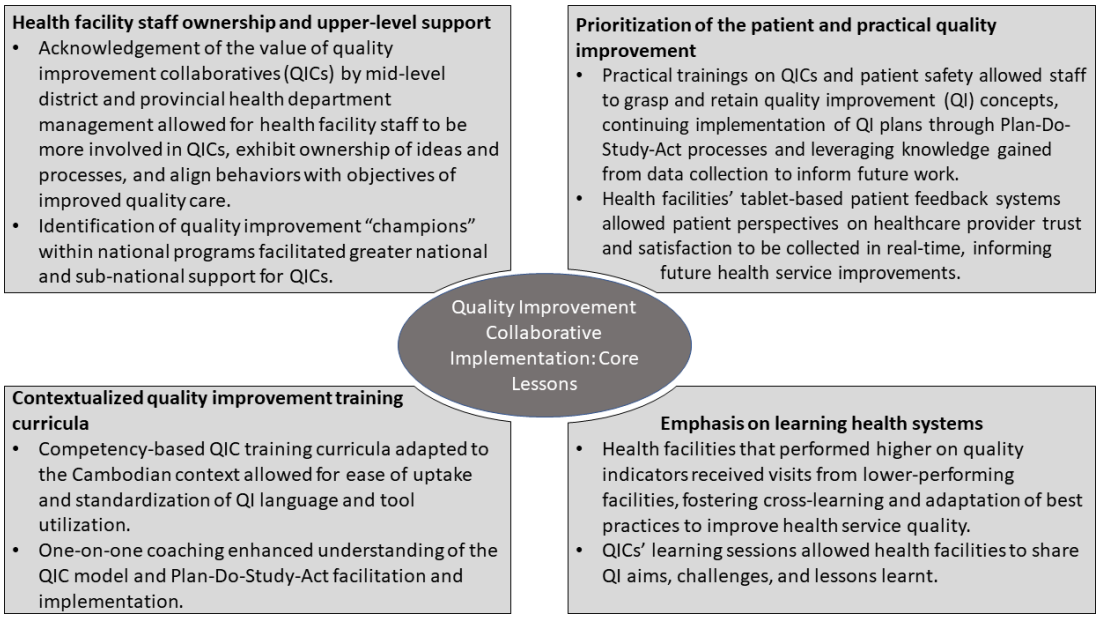

Figure 1 Lessons learnt from quality improvement collaborative implementation in Cambodia

allowed health facility staff to be more involved in QICs, exhibit ownership of ideas and processes, and align behaviours with objectives of improved quality care. Establishing district and provincial coordination structures within QICs enabled greater team-based learning and reflection—vital for sustained QIC efforts; regional support and community networks have also been demonstrated by literature to foster effective continuous QI.[18] Furthermore, the COVID-19 pandemic drove the project to organise virtual learning sessions, which proved to be more efficient, accommodating more participants without removing them from their workplace and achieving greater focus among attendees (compared with in-person learning sessions) who were intent on sharing thoughts. Virtual sessions can be maintained by health system stakeholders with minimal cost and continue to facilitate learning and improvement.

- Continuous professional education on QI and clinical topics fostered motivation and mastery. As context-sensitive QI, skills-based training, and locally led solution development have been demonstrated to be effective,[8 9] the project team developed competency based QIC training curricula and a QI handbook adapted to the Cambodian context that focused on essential QI tools, with examples based on the project's experience of QIC implementation. English-speaking coaches were provided opportunities to benefit from the ISQua continuing education fellowship to build confidence in QI tool application.[19] In addition, health facility staff were continuously trained on relevant clinical topics by national and provincial specialists, receiving continuing professional development credits per training. Such combined QI-clinical topic professional development provided staff with motivation and mastery, informing a continuous learning and improvement approach that capitalised on joint solutions and transformative learning—facets much needed within professional health education.[20] Interventions combining QICs and training have also been demonstrated to improve patient health and healthcare provider practice outcomes.[6]
- Design of the QIC as an evidence-based adaptable model enabled rapid scale up. The QIC model, aligning with recommendations from literature that QICs should be implemented with scale-up in mind,[21] was designed as a short-term (6–15 months) learning approach that unifies health facility teams seeking improvement in a focused topic area. The model can be adapted and aligned with health system resources and structures within other LMICs and enable efficient and rapid scale up of improvement ideas and processes. Since the initial QIC pilot in 2018, the project quickly increased its support to 52 facilities in 2019, covering 6 districts and 3 provinces, and 398 facilities in 2021, covering 29 districts and 6 provinces.
- Peer-to-peer exchanges between facilities differing in performance fostered greater improvement. Through QICs, the project facilitated 13 information exchanges and visits between health facilities that varied in healthcare quality. Such exchange visits motivated facility staff, allowing high-performing facilities to be recognised and inspiring lower-performing facilities to adopt changes from peers more efficiently. For instance, lower-performing health facilities that visited higher-performing sites regarding TB and infection control and triage incorporated change ideas in these topic areas into PDSA processes within their own facilities within 1–2 months after the exchange visit. Such participatory, team-based learning and coaching initiatives have been recommended by the WHO as

effective solution-sharing platforms[22] and as drivers of successful mutual learning.[23]

- Prioritisation of patient voice, trust, and satisfaction within QICs encouraged data-driven QI. QICs created an enabling environment for health facilities to discuss and brainstorm change ideas to improve client trust and satisfaction in service delivery. Responses were captured through a tablet-based patient feedback system positioned in health facilities' waiting areas. Health facility QICs reviewed these responses on a regular basis, leveraging system data to identify areas for improvement. From April through June 2021, 362 patients within six hospitals shared perspectives through the patient feedback system, with 88% reporting high levels of trust and satisfaction with health services. However, a rapid assessment found the feedback system to be underused with further improvements needed. Underuse was thought to be due to fewer in-person patient visits due to the COVID-19 pandemic and facility staff's minimal orientation of feedback system utilisation to patients.

RECOMMENDATIONS FOR EFFECTIVE QUALITY IMPROVEMENT COLLABORATIVES WITHIN LEARNING HEALTH SYSTEMS

PBF alone has not demonstrably improved health service quality in Cambodia.[24] Thus, the project intentionally designed QICs to align with Cambodia's PBF system and to address service delivery gaps identified through NQEM. As project experience demonstrates, QICs catalysed improvement in specific clinical areas and subsequently NQEM scores and healthcare quality. QICs should be part of a comprehensive strategy to sustainably improve service quality as literature has demonstrated[6 25] ; and as demonstrated in this paper, an explicit combination of QICs with PBF could accelerate improvements in quality of care. Other QI mechanisms Cambodia has planned include competency-based pre-service public health training, continuing professional development processes, and the establishment of a national accreditation system. Regarding accreditation efforts, Cambodia is designing hospital accreditation standards and accreditation training for public and private hospital staff. Hospital leadership has been trained in QICs and patient safety to implement QI plans—now required according to new national standards—increasing likelihood of sustainability of QICs and centring 'triple loop' learning mechanisms where existing structures and learning frameworks are modified to increase self-reliance, continuous learning, and adaptivity.[22]

Based on project experience, QICs offered additional benefits such as fostering ongoing learning at multiple levels of the health system and operationalising quality management principles, peer-to-peer exchanges and adoption of changes, and patient-centred approaches—all of which are vital for sustainable health system quality and strengthening.[15] Cambodia and other LMICs would benefit from implementing and sustaining them. Because QIC scale-up was planned from the outset, piloted health facilities were able to share lessons learnt with health facilities newly involved in QICs and prioritised an approach that adapted from cases of 'positive deviance' (facilities with exceptional performance on quality metrics) and attitudes that collectively stressed team-based solution design and testing—facets of QI that have been demonstrated to be effective.[7 21] However, QIC sustainability depends on their institutionalisation in the health system and inclusion in national healthcare quality policy. Cambodia has an opportunity to do so with the development of its next Health Strategic Plan.

Other LMICs can adopt Cambodia's experience implementing QICs as part of the mandate to achieve universal health coverage and Sustainable Development Goal 3. QICs provided public health facility staff with an exchange and learning platform to prioritise patient trust and satisfaction, leveraging insights from the patient feedback system to further inform quality healthcare delivery. Establishing patient-level data systems and stronger healthcare provider education mechanisms for greater quality care have been among the structural investments identified to improve health system performance[26]; QICs enhance and enable such investments, fostering an environment to leverage patient-level data and continuous healthcare provider learning. While more work needs to be done to create participatory governance and accountability mechanisms for the health system to prioritise patient needs,[27] health facilities are beginning to underscore feedback, leveraging digital technology and stewarding data for continuous improvement.[28] Institutionalisation of project-developed QIC training curricula would also allow QI tools to be adopted at the national level and facilitate better healthcare provider education on quality.

Literature has emphasised the importance of collaborative and participatory culture, shared decision-making and transparent, continually assessed outcomes for successful 'learning health systems'.[28 29] QIC-led learning sessions served as opportunities for health facilities to share QI aims and change ideas, providing a platform for mutual exchanges on best practices and challenges. QICs (and QI tools used within QICs) are dynamic, rooted in course correcting, and will ultimately lead to health facility self-reliance at the district and provincial levels. QIC-facilitated peer-to-peer exchanges, continuous professional education, and team-oriented coaching increased health facility staff's intrinsic motivation to implement changes in their daily work. Such conditions for learning are vital to achieving universal health coverage,[22] with operationalising a culture of quality care and embracing change and accountability held as the norm.

Although Cambodia's subnational Ministry of Health supported QICs, political commitment is still needed from the national Ministry of Health to fully develop and sustain the health system's learning capabilities. Adoption of the formal National QI Policy, integration of QIC training in pre- and in-service education, improvement of healthcare management,[30] provision of continuing professional development credits to health providers engaged in QICs, and further use of QI tools to reach compliance with accreditation standards are additional ways to sustain QIC benefits in the health system.

CONCLUSION

Continuously improving and sustaining health service quality requires a comprehensive strategy that includes models such as QICs. In Cambodia, QICs complemented the Ministry of Health's quality assurance approaches and PBF mechanisms and catalysed facility-based teams to test solutions appropriate to their context, achieve improvements and generate learning to be used for health system strengthening efforts nationwide. This added focus on quality is an essential pillar of universal health coverage.

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