


Learning Question 1: *What are the contributions of systems thinking approaches and tools to changes in health system outcomes?*
How do systems thinking approaches affect health system outcomes?

Improving TB Case Detection through High-Quality Health Systems Approach



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CONTEXT



USAID-EQHA supports Ponhea Kreek Referral Hospital staff to strengthen their capacity in improving the accuracy of TB diagnosis.

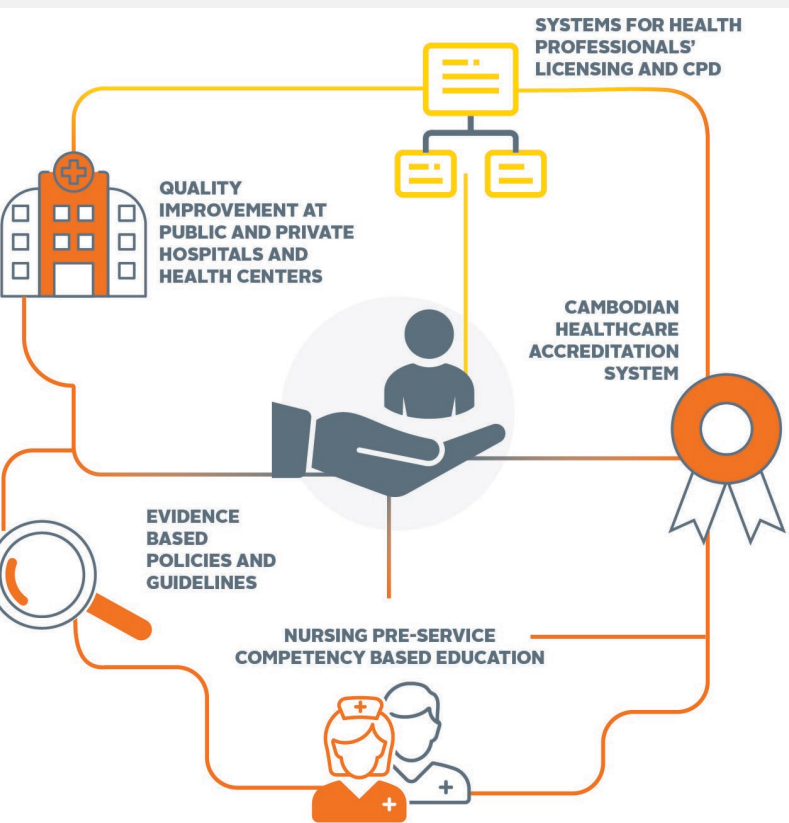
third of TB cases remain undiagnosed or untreated, effective TB treatment coverage remains low at around 60% and disease transmission continues. To improve TB case detection and to narrow the gap of missing cases, routine and systematic provider-initiated TB screening at public and private health facilities in Cambodia is needed.

To address this need, the U.S. Agency for International Development (USAID) Enhancing Quality of Healthcare Activity (EQHA) is applying the high-quality health system framework¹ for optimizing the health system to improve the quality of care, a fundamental pillar of universal health coverage. EQHA engages all levels of the Cambodian health system, including the private sector and local communities, to integrate system components and empower health actors. A component of EQHA's health systems strengthening work is supporting the effective detection of missing TB cases and achievement of accelerated TB elimination.

1. Kruk ME, Gage AD, Arsenault C, et al. High-quality health systems in the Sustainable Development Goals era: time for a revolution. *Lancet Glob Health.* 2018;6(11):e1196-e1252. doi:10.1016/S2214-109X(18)30386-3

The National Tuberculosis (TB) Program (CENAT) of the Cambodian Ministry of Health (MoH) has set a target of reducing TB incidence by 80% and TB mortality by 90% by 2030. It also aims to end TB by 2035. However, because an estimated one-

ACTIVITY DESCRIPTION



To close the TB case detection gap, EQHA is: (1) supporting the national quality enhancement monitoring (NQEM) system to integrate TB management and foster the prioritization of TB in the public health system; (2) establishing QI collaboratives (QICs) and accreditation standards for continuous care improvements in the public and private sectors; and (3) designing competency-based education systems to prepare competent health providers. This synergistic combination of interventions maximizes impact and leads to sustainable systemic changes.

The following TB-specific activities illustrate the systems approach of EQHA's project components:

1. Improve policies, guidelines, and standards for streamlined quality assurance to support decision makers to take a more integrated approach to policy making for improved quality of health services.

- EQHA facilitated a process through CENAT and the Cambodian Quality Assurance Office of the MoH to integrate TB screening clinical vignettes and indicators into NQEM—the basis of a performance-based financing (PBF) scheme that awards public health facilities and providers additional funds when they achieve certain quality scores.
- EQHA supports CENAT to implement TB screening and treatment guidelines aligned with global standards set by the World Health Organization and adapted to the country context.

2. Increase efficiency and effectiveness of service delivery by applying an Institute for Healthcare Improvement (IHI)² QIC approach. This approach builds a culture of continuous improvement at the facility level to address TB and other patient care problems. Working as a team, facility staff use data to systematically screen patients for TB at outpatient departments and conduct peer-led learning sessions to exchange best practices for TB screening. This empowers frontline workers to implement changes in healthcare practices that can be easily replicated at scale.

- Outpatient health facility providers are encouraged to screen patients for at least one of the four main TB symptoms.
- Facility teams conduct biweekly tracking and hold monthly discussions using the Plan-Do-Study-Act (PDSA) approach to test improvement ideas. Those that work are added to the delivery package.
- Patient experience is considered in the QIC process, gathered via digital patient satisfaction surveys measuring trust and satisfaction with care in public and private facilities administered on tablets at the facility exit.
- Teleconferencing equipment links all facility levels for timely diagnosis, training and coaching, supporting an interconnected health system for the benefit of patients.
- SwipeRx, a private-public partnership online platform, builds private pharmacists' capacity to screen, identify and refer clients with TB symptoms to public health facilities for diagnosis and treatment.

3. Strengthen implementation and enforcement of the regulatory framework by supporting individual health professionals' regulation and introduction of accreditation standards for public and private health facilities.

- To better govern public and private health facilities and improve patient safety, the MoH is designing hospital accreditation standards that received ISQua's³ International Health Care External Evaluation Association Award Committee accreditation and is conducting accreditation training for public and private hospital staff.
- To enable health providers to practice evidence-based care, MoH and CENAT collaborated with health professional councils (HPCs: Medical Council of Cambodia, the Dental Council of Cambodia, the Cambodian Midwives Council, the Cambodian

ACTIVITY IMPACT

EQHA contributes to the HSS Vision 2030 goals by encouraging public and private health workers, communities, leaders and policymakers to engage in HSS efforts. EQHA's QIC model creates locally-designed and -led systems that are resilient and sustainable. This high-quality health systems approach leads to improved TB diagnosis and care at all levels.

Governance to optimize public and private health system engagement for higher quality and safer health system

- Cambodian health accreditation system is being designed for public and private health sectors with optimal standards that should empower health providers regardless of payment to provide safe and equally high-quality care, including TB screening and treatment, for their patients.
- Health professional councils' RMS require valid license and CPD credits based on continuous education that includes TB training, for public and private health professionals.
- QICs optimize the participation of teams of public and private providers from multiple sites who agree on a common aim, such as prioritizing TB screening, test possible improvements, and scale up the most significant ones.
- Facility-based QICs combined with PBF schemes encourage TB screening as part of a comprehensive healthcare package and accelerate progress towards universal health coverage in Cambodia.

Digital resources to accelerate improvement in the system

- The tablet-based patient satisfaction feedback system empowers patients to express their true trust and confidence in the health system.
- The QIC model and the tablet-based NQEM tool enable health practitioners to prioritize TB and

continually improve patient care.

- Mobile software SwipeRx enables private pharmacists to refer patients for TB diagnosis and treatment, integrates pharmacists into the health system, and provides opportunity to earn CPD credits towards relicensing.
- Hospitals are testing the use of a phone application (Telegram) to communicate TB test results quickly and implement changes to the lab schedule to process GeneXpert tests more efficiently.
- The online RMS streamlines the licensing process by allowing practitioners to manage CPD credits collected via TB and QI trainings and renew licensing online.
- To improve TB diagnosis, health providers use telemedicine and teleconferencing to support consultation, training and coaching.

Health system resiliency and sustainability

- Resiliency and sustainability are built into the EQHA approach through intentional design of working with health institutions and systems and linking any new intervention (accreditation, competency-based education, collaborative improvement) with the existing mechanisms (NQEM).
- QICs foster a culture of continuous improvement and collaboration within and among public and private health facilities—features crucial to attaining high-quality health services.⁴ This is being adopted by the MoH Quality Assurance Office as the main method of improving quality of care and linked with accreditation and NQEM systems.
- QIC addresses service delivery gaps, improves provider competency, and increases patient trust and satisfaction in the health system, a driver of healthcare utilization. Health facility teams conduct biweekly tracking and hold monthly discussions to drive a culture of continuous improvement.
- TB screening is being integrated into the quarterly NQEM system in conjunction with performance-

based financing, creating a catalytic effect of QICs on PBF schemes.

- PBF combined with NQEM are key components of Cambodia's strategy to achieve universal health coverage and the health-related Sustainable Development Goals. Integration of private and public sectors forces health actors to work outside their silos and results in improved continuum of care for TB patients.

4. Perry KE, Rakhmanova N, Suos P, Nhim D, Voeurng B, Bouchet B. Lessons learnt from quality improvement collaboratives in Cambodia. *BMJ Glob Health.* 2022;7(3):e008245. doi:10.1136/bmjgh-2021-008245



A patient accessed to Ponhea Kreek Referral Hospital is happy to provide her perspectives about the hospital services.



EVIDENCE

- A retrospective study 2017–2021 of 245 health facilities in four provinces measured the change in TB incidence rates pre- and post-intervention among self-referred outpatients. Systematic TB screening among self-referred outpatients contributed to an increase in TB case detection relative to routine TB screening practices (Figure 1; also see Figure 3).
- As a result of the improvement process implemented at targeted health facilities in 25 operational districts from January 2020 to June 2021, a systematic outpatient department screening process identified 1,574 active TB patients. Based on our analysis, without provider-initiated TB screening, these 1,574 TB patients would have remained undiagnosed and untreated or self-treated, potentially transmitting the disease to their families and communities (Figure 2).
- A larger proportion of health centers enrolled in the QIC intervention with PBF achieved NQEM scores of at least 80%, considered an acceptable level of quality, compared with health centers that did not implement QICs.
- The TB e-referral system launched in June 2021 has engaged 55 pharmacies. To date, 27 presumptive TB clients have been referred to the public health facilities. Of these, 1 was positive TB and treated accordingly by the public health facility.

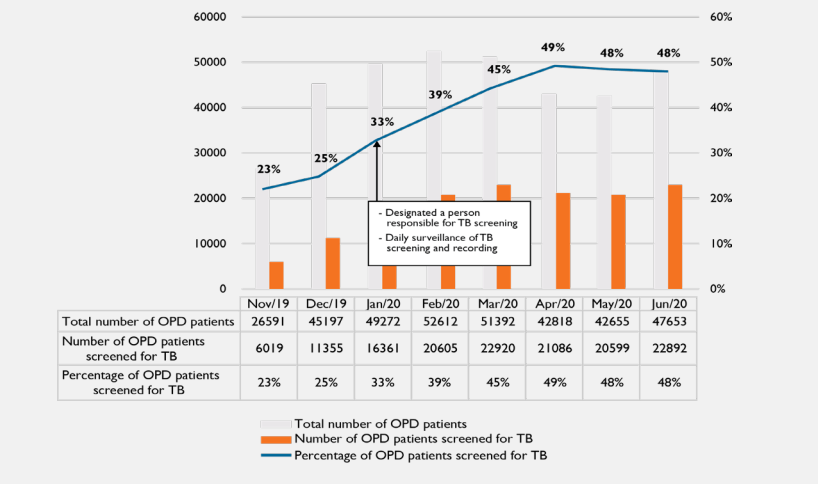


Figure 1: TB screening progress among QIC patients in six QICs from January 2020 to June 2021

Month	Total number of QIC patients	Number of QIC patients screened	Percentage of QIC patients screened
Jan-20	1,000	100	10%
Feb-20	1,100	110	10%
Mar-20	1,200	120	10%
Apr-20	1,300	130	10%
May-20	1,400	140	10%
Jun-20	1,500	150	10%
Jul-20	1,600	160	10%
Aug-20	1,700	170	10%
Sep-20	1,800	180	10%
Oct-20	1,900	190	10%
Nov-20	2,000	200	10%
Dec-20	2,100	210	10%
Jan-21	2,200	220	10%
Feb-21	2,300	230	10%
Mar-21	2,400	240	10%
Apr-21	2,500	250	10%
May-21	2,600	260	10%
Jun-21	2,700	270	10%

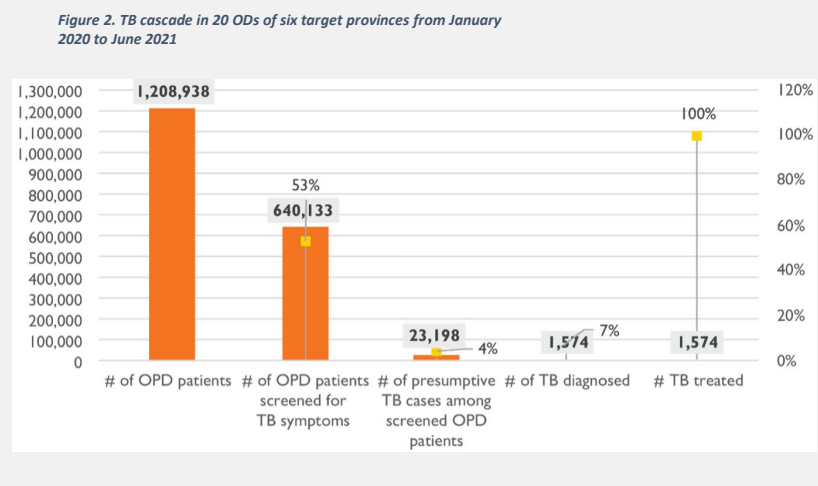


Figure 2: TB incidence in 20 QICs of all target provinces from January 2020 to June 2021

Month	Total number of QIC patients	Number of QIC patients screened	Percentage of QIC patients screened
Jan-20	1,000	100	10%
Feb-20	1,100	110	10%
Mar-20	1,200	120	10%
Apr-20	1,300	130	10%
May-20	1,400	140	10%
Jun-20	1,500	150	10%
Jul-20	1,600	160	10%
Aug-20	1,700	170	10%
Sep-20	1,800	180	10%
Oct-20	1,900	190	10%
Nov-20	2,000	200	10%
Dec-20	2,100	210	10%
Jan-21	2,200	220	10%
Feb-21	2,300	230	10%
Mar-21	2,400	240	10%
Apr-21	2,500	250	10%
May-21	2,600	260	10%
Jun-21	2,700	270	10%

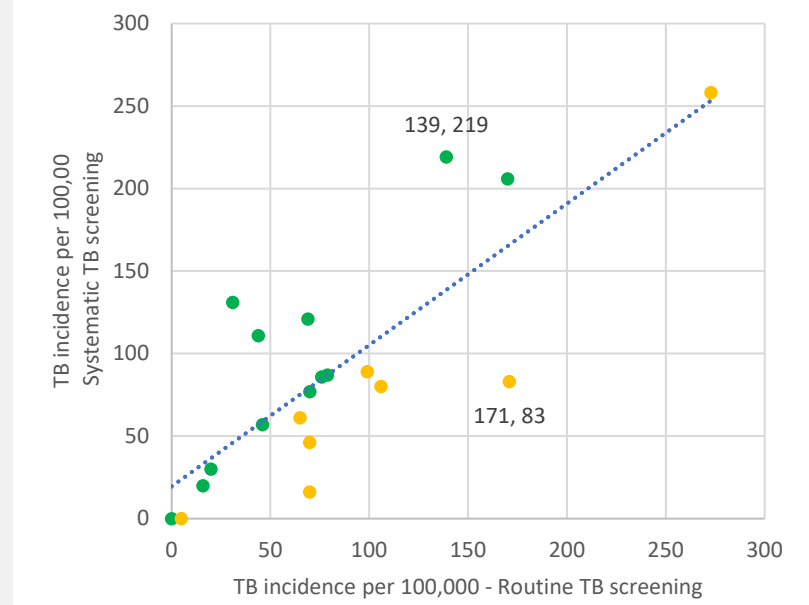


Figure 3: Changes on TB Incidence (Routine vs Systematic Screening)

Month	TB incidence per 100,000 population (Routine TB screening)	TB incidence per 100,000 population (Systematic TB screening)
Jan-20	100	100
Feb-20	110	110
Mar-20	120	120
Apr-20	130	130
May-20	140	140
Jun-20	150	150
Jul-20	160	160
Aug-20	170	170
Sep-20	180	180
Oct-20	190	190
Nov-20	200	200
Dec-20	210	210
Jan-21	220	220
Feb-21	230	230
Mar-21	240	240
Apr-21	250	250
May-21	260	260
Jun-21	270	270

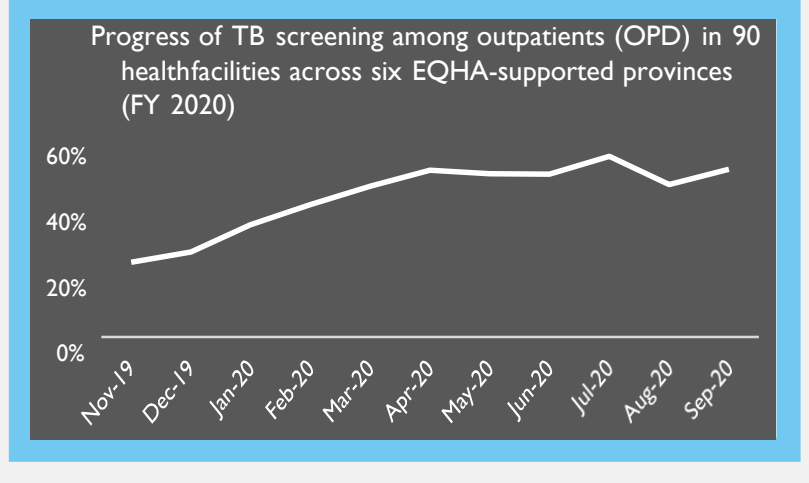


Figure 4: Progress of TB screening among outpatients (OPD) in 90 health facilities across six EQHA-supported provinces (FY 2020)

Month	Percentage of OPD patients screened for TB
Jan-20	10%
Feb-20	15%
Mar-20	20%
Apr-20	25%
May-20	30%
Jun-20	35%
Jul-20	40%
Aug-20	45%
Sep-20	50%
Oct-20	55%
Nov-20	60%
Dec-20	65%
Jan-21	70%
Feb-21	75%
Mar-21	80%
Apr-21	85%
May-21	90%
Jun-21	95%

FACILITATORS

EQHA played the role of facilitator to convene multiple and various stakeholders around high-quality health system interventions. The table below summarizes the interventions, stakeholders, and roles that were designed by EQHA.

High-quality health system interventions	Critical stakeholders	Roles
Health care accreditation system	MoH (QAO), quality improvement WG, USAID/EQHA, WB, GIZ	Designing governance for public and private health system
Performance-based financing/NQEM	MoH (QAO, PHDs, ODs), H-EQIP (WB, DFAT, KfW, KOICA), USAID/EQHA	Integrating TB clinical vignettes in the NQEM
Facility-based QIC	MoH (national programs, PHDs, ODs, RHs, HCs), USAID/EQHA, GIZ	Engaging public and private health facilities in the collaboratives
Training and coaching	MoH (CENAT, PHDs, ODs, RHs, HCs), WHO/other partners	Ensuring competency-based in-service training and linking training with CPD
Competency-based pre-service training	MoH (HRDD, RTCs in KMP and BTB), pre-service TWG, USAID/EQHA, WB	Updating TB and other curricula for nurses and midwives
Registration management system for licensing, relicensing and continuous professional development	Five professional councils for medical, nursing, midwifery, pharmacy and dental professionals	Certifying TB and other training for CPD and registration in the RMS

BTB: Battambang; DFAT: Dept of Foreign Affairs and Trade (Australia); GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit; H-EQIP: Health Equity and Quality Improvement Project; HC: health center; HRDD: Human Resources Development Department; KMP: Kampong Cham; KOICA: Korea Int'l Cooperation Agency; OD: operational district; PHD: provincial health department; QAO: Quality Assurance Office; RH: referral hospital; RTC: regional training center; TWG: technical working group; WB: World Bank; WG: working group

CHALLENGES

- Health centers demonstrated inconsistent record keeping and communication, making it difficult to follow an individual patient's care and assess the health facility's adherence to the standards of practice, such as following up with TB patients until all test results are available and determining next steps.
- Health facility QI teams originally focused on improving TB testing; however, teams soon realized that the root problem was TB screening. To combat this issue, the staff identified the need to establish standards for communication to reduce the risk of losing patients to follow up and create a mechanism to ensure that health facilities communicate test results/next steps to patient and provider.

- While acknowledging the value of routine TB screening, CENAT initially remained passive in advocating for nationwide institutionalization of practice due to a leadership change.
- TB is relatively rare, and health workers do not expect to see it. Improvements in screening at the lowest level do not contribute to expected case rates. Analysis of TB screening efforts should be made at the operational district and provincial levels to see benefits at the national level.
- Diagnosing one TB case through systematic TB screening requires screening roughly 500 outpatients or 20 presumptive TB patients by testing sputum or chest x-ray. Further analysis indicates that outpatient TB screening should range between 35% and 70% to optimize the impact on TB case detection. This challenge can be met by improving the accuracy of the TB screening approach.

LESSONS LEARNED

- EQHA's health system quality improvement approach demonstrates that a vertical disease like TB can be addressed in a synergistic and sustainable way. It follows the patient and can engage all players of the health system, even those not working directly with TB patients.
- Like any other public program, health facility support through supervision and coaching needs to be continuous. The lack of feedback to a health facility creates a disconnect between its providers and efforts at higher levels of the health care system.
- The alignment of the QIC design with the Cambodian context and health system allowed for smooth implementation. Participating in QI empowers public and private frontline workers to be proactive and systematic regarding the improvements they can make in health care settings. CPD and peer-to-peer exchanges on QI and clinical topics fostered motivation and mastery. Prioritization of patient voice, trust, and satisfaction within QICs encouraged data-driven QI.



USAID-EQHA in collaboration with National Center for Tuberculosis and Leprosy Control provided coaching on TB film interpretation skill to clinicians and X-ray technicians for referral hospitals.

- Patients need a continuum of services regardless of whether they access private or public health care. This necessitates the integration of quality TB screening into the larger health system and strategic guidance for the entire network.
- Tracking TB care performance with a focus on TB screening, confirmation of diagnosis, and enrollment in care led to improved data recording and communication of test results.
- Cambodia's experience demonstrates that implementing QICs is an important component of achieving universal health coverage and Sustainable Development Goal 3.

