



BMJ Open Country learning on maintaining quality essential health services during COVID-19 in Timor-Leste: a qualitative analysis

Melissa B Kleine-Bingham ¹, Gregorio Rangel,¹ Diana Sarakbi,² Treasa Kelleher,³ Nana Afriyie Mensah Abrampah ⁴, Matthew Neilson,³ Oriane Bodson,³ Philippa White,³ Vinay Bothra,¹ Helder M de Carvalho,⁵ Feliciano da C A Pinto,⁵ Shamsuzzoha Babar Syed³

To cite: Kleine-Bingham MB, Rangel G, Sarakbi D, *et al.* Country learning on maintaining quality essential health services during COVID-19 in Timor-Leste: a qualitative analysis. *BMJ Open* 2023;**13**:e071879. doi:10.1136/bmjopen-2023-071879

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2023-071879>).

Received 23 January 2023
Accepted 30 March 2023



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

Correspondence to

Ms Melissa B Kleine-Bingham; binghamm@who.int

ABSTRACT

Objective This case study examines the enabling factors, strengths, challenges and lessons learnt from Timor-Leste (TLS) as it sought to maintain quality essential health services (EHS) during the COVID-19 pandemic.

Design A qualitative case study triangulated information from 22 documents, 44 key informant interviews and 6 focus group discussions. The framework method was used to thematically examine the factors impacting quality EHS in TLS.

Setting National, municipal, facility levels in Baucau, Dili and Ermera municipalities in TLS.

Results Based on the TLS National Health Statistics Reports, a reduction in outpatient, emergency department and primary care service delivery visits was observed in 2020 when compared with 2019. However, in contrast, maternal child health services simultaneously improved in the areas of skilled birth attendants, prenatal coverage and vitamin A distribution, for example. From the thematic analysis, five themes emerged as contributing to or impeding the maintenance of quality EHS including (1) high-level strategy for maintaining quality EHS, (2) measurement for quality and factors affecting service utilisation, (3) challenges in implementation of quality activities across the three levels of the health system, (4) the impact of quality improvement leadership in health facilities during COVID-19 and (5) learning systems for maintaining quality EHS now and for the future.

Conclusion The maintenance of quality EHS is critical to mitigate adverse health effects from the COVID-19 pandemic. When quality health services are delivered prior to and maintained during public health emergencies, they build trust within the health system and promote healthcare-seeking behaviour. Planning for quality as part of emergency preparedness can facilitate a high standard of care by ensuring health services continue to provide a safe environment, reduce harm, improve clinical care and engage patients, facilities and communities.

INTRODUCTION

The disruptive impact of the COVID-19 pandemic on quality essential health services (EHS) worldwide is a source of

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The qualitative data gave detailed insights into the operationalisation of key strategic COVID-19 emergency documents and the national quality implementation strategy.
- ⇒ Data collection was performed in three out of 13 municipalities, including the largest metropolitan city of Dili.
- ⇒ The qualitative research was conducted in the participants' native language (Tetum).
- ⇒ Not all preidentified national-level key informant interview participants were available to provide feedback.

concern.^{1 2} A lack of EHS results in adverse population health outcomes, especially for the most vulnerable, such as children, older persons, those living with chronic health conditions or disabilities and minority groups.¹ A recent study on health systems resilience reviewed 154 country preparedness and response plans from 106 countries and found that less than half (47%) considered maintaining EHS and only 29% regarded quality of care during health emergencies.³

The delivery of quality health services is key to ensuring effective, safe and people-centred care, while also maintaining that care is timely, equitable, integrated and efficient.⁴ When quality health services are delivered prior to and maintained during public health emergencies, they build trust within the health system and promote healthcare-seeking behaviour while creating a more sustainable health system.^{4 5} *WHO Pulse Survey on the continuity of essential health services during the COVID-19 pandemic* highlights how countries across

the world have responded to maintaining quality EHS while simultaneously addressing COVID-19.^{2 6}

This study aims to learn from the factors impacting quality EHS in Timor-Leste (TLS) by exploring national-level governance including leadership, monitoring and evaluation, and guidelines; municipal-level engagement on quality EHS during the COVID-19 pandemic; and lastly, capture the experiences of facility-level quality improvement (QI) teams during the COVID-19 response.

At the writing of this study in June 2022, TLS has recorded 19 860 cases, 19 714 recoveries and 122 COVID-19 deaths since April 2020.⁷ Like the global community, there were increased demands on the health system which jeopardised the delivery of quality EHS and strained resources. In areas such as the outpatient departments (OPD) there was a dramatic decrease of 1 000 000+ visits between 2019 and 2020, while also an increase in the hospital death rate of 22 more deaths per 1000.^{8 9} On the other hand, there was a decrease in maternal mortality (from 20 to 16 deaths between 2019 and 2020) and an increase in skilled birth attendants (SBA) from 67% to 92% (of which there was a 2% increase in deliveries at health facilities between 2019 and 2020).^{8 9} This case study sought to understand the variance in this service utilisation, including the best practices and lessons learnt in reducing maternal mortality and increasing SBA.

METHODS

Study design and setting

This study was conducted in TLS, which is a Southeast Asian nation with a population of 1 318 442 in 2021. TLS is a lower middle-income country comprising 13 districts and has one of the youngest populations in the Asia Pacific region, with a median age of 19.6 years.^{10 11} In 2017, 30.3% of the population lived below the poverty line on less than US\$1.90 per day.¹² About 70% of the population are rural residents, with most people living in small, scattered villages that are isolated by mountainous terrain and poor roads. Throughout these districts, there is a network of 71 community health centres, around 440 village health posts, 5 referral hospitals (RH) and 1 national tertiary hospital.¹²

The first and second authors (MBK-B, GR) led the study in Dili, TLS, in consultation with the Ministry of Health (MOH). As a native Tetum speaker, GR contextualised the study protocol, particularly the methods, ethical considerations, key informant interview (KII) questionnaires (see online supplemental material A) and timeline. The study methodology comprised a two-step approach including (1) a document review and (2) KIIs. Later during the preparation of interviews, it was decided to establish two types of focus group discussions (FGDs) from the list of key informant participants to encourage group discussions and reflections on quality activities. These two FGD groups included technical staff in municipal health offices and health workers in facilities.

Box 1 Health system level definitions

The following definitions for the national, municipal and facility levels of the health system are used:

National level refers to policy, planning and strategic direction for quality essential health services at the national government level.

Municipal level refers to governance at municipal health office level in Timor-Leste which includes oversight of delivery of primary care and secondary care in Timor-Leste.

Health centre level refers to any primary, secondary and tertiary health facilities that provide essential healthcare services to the Timorese population.

Document review

The document review was conducted in Dili, TLS, by MBK-B and documents were obtained through the MOH websites and by visiting the respective MOH departments when online copies were not available. Peer-reviewed publications and grey literature were gathered by using Google Scholar, PubMed and relevant international organisations such as the UNICEF, the United Nations Development Program, the United States Agency for International Development and the World Bank. Keywords for peer-reviewed publications and grey literature included 'essential health services in Timor-Leste', 'Quality of Care in Timor-Leste', 'Quality service-delivery in Timor-Leste', 'Cabinet of Quality Assurance in Health', 'health system learning systems' and 'quality essential health services'.

The objective of the document review was to review existing policies and strategies across the national, municipal and facility levels on quality EHS. Box 1 highlights the definitions used for the three levels of the health system. Documents included a review of national health sector policy and strategies, national-level COVID-19 policies and broader public health emergency preparedness plans. Relevant subnational, facility documents were also included (see table 1). At the conclusion of the document review, a consultation was then undertaken with MOH senior leadership to map stakeholders on quality and delivery of EHS during the COVID-19 pandemic.

KII and FGD

The KII questionnaires were developed based on the document review to facilitate an in-depth understanding of the involvement of the Cabinet of Quality Assurance in Health (CQAH), municipality health management teams and facility-level QI teams in the maintenance of quality EHS. Under the direction of the MOH, Dili, Baucau and Emera municipalities were selected as sites for recruiting KII participants, which was corroborated by the document review. Dili municipality has the largest population and often receives referrals from all municipalities for tertiary services, while Baucau was chosen as it serves the second largest population and provides secondary services for all eastern municipalities. The hospitals were selected in these municipalities based on levels of care; there is only one tertiary facility in Dili and one secondary hospital in Baucau. Lastly, Ermera was selected as it has

Table 1 List of government and facility documents

Health system level	TLS document name	Year of publication	References
National	National Health Sector Strategic Plan II 2011–2030	2020	12
	Package of essential non-communicable (PEN) disease interventions for primary healthcare in low-resource settings	2021	36
	National Strategic Plan for Human Resources for Health 2020–2024	2020	37
	Operational guidelines for maintaining routine essential reproductive, maternal and child health, immunisation and nutrition services during the COVID-19 pandemic in Timor-Leste	2020	38
	National Healthcare Quality Improvement Strategic Plan Timor-Leste 2020–2024	2020	15
	Clinical protocol and guidelines for intrapartum and immediate postpartum care for women with COVID-19 in Timor-Leste	2020	39
	National Contingency Plan for COVID-19 in Timor-Leste	2020	18
	Health Statistics Report January	2020	8
	Health Statistics Report January	2019	9
	Ministry of Financial Annual Report	2016	40
	Timor-Leste primary healthcare essential service package	2020	41
	Health Financing Strategy 2019–2023	2019	42
	Journal Republic, 19 March 2020	2020	43
	Law No 24/2021 Exceptional and temporary measures of health surveillance in response to COVID-19 pandemic	2021	23
	Dispatch No 04/202/III/MS National Health Executive Commission for COVID-19	2020	43
	Ministerial Diploma No 75/2021 of 27 October Internal Regulation of the National Hospital Guido Valadares	2021	24
Municipal	Exceptional and temporary measures of health surveillance in response to COVID-19 pandemic (This is a federal-level document supporting the municipal response)	2021	23
Facility	National Hospital Guido Valadares, Presentation and dissemination of standing operating procedures	2020	44
	National Hospital Guido Valadares, Presentation and dissemination of standing operating procedures	2021	45
	National Hospital Guido Valadares Annual Data Report, Quality Team	2019	46
	National Hospital Guido Valadares Annual Data Report, Quality Team	2020	47
	National Hospital Guido Valadares Annual Data Report, Quality Team	2021	48
TLS, Timor-Leste.			

the third largest population but no hospital services, thus depending on transfers to Dili municipality for any higher levels of care required.

Through purposive sampling, KII participants (n=40) and FGDs (n=6) represented a wide range including medical officers, nurses, midwives, medical technicians,

data scientists, leaders, managers, families and community members. This diverse sample of individuals (see table 2) provided perspectives across the span of the national, subnational/municipality and facility levels of the health system. All participants signed a consent form agreeing to their participation (see online supplemental

Table 2 KII and FGD

HS level	KII participant categories				Focus groups
	Leadership	Technical	Clinical	Community	Technical/clinical
National	5	Nil	Nil	Nil	Nil
Municipality	3	12	4	4	3
Facility	10	Nil	6	6	3
Total	18	12	10	10	6
FGD, focus group discussion; HS, health system; KII, key informant interview.					

material B). This form was made available in English and Tetum.

The criteria used for selecting informants included (1) a key representative at the national, municipal and/or facility level of the health system, (2) having significant first-hand experience related to maintenance of quality EHS at the national, municipal and/or facility level and (3) representing different aspects of the level of the health system in which they work.

Patient and public involvement

No patients were involved in the recruitment to conduct the study or directly involved in the design of this study. The study will be made available to all participants and shared directly with MOH, municipal health departments and health facilities involved.

Analysis of key information collected

Data were collected by authors MBK-B and GR through semistructured interview guides used for all KIIs and FGDs. Each KII and FGD lasted between 45 and 75 min and were held in MOH, municipal and health facility offices. All interviews were conducted in Tetum and recorded, dictated and translated by the national, Tetum-speaking consultant. Following the dictation, each interview was reviewed and summarised. All interviews were conducted privately, and data were only accessible to MBK-B and GR via WHO TLS office.

Using the framework method,^{13 14} a thematic analysis was done to code, categorise, inductively analyse and interpret the data using Excel spreadsheets and Word. Codes were used to detect themes to the study

questions at the national, subnational and facility levels. MBK-B and GR completed the interviews and coding, and author DS supported the thematic development. A coding matrix is available in [table 3](#) and provides an understanding of the triangulation between the desk review and how these three levels of the health system interacted, communicated and coordinated quality EHS during COVID-19.

RESULTS

High-level strategy and planning for quality in TLS

Document review

The National Health Sector Strategic Plan II emphasises that quality care is to be ‘timely, affordable and accessible to safe, quality and effective’,¹² while the National Healthcare Quality Improvement Strategic Plan (NHQISP) 2020–2024 aims to strengthen the quality of healthcare by ‘ensuring that it works towards quality improvement for essential health services: for all of Timor-Leste’.¹⁵ The CQAH supports the national direction on quality by (1) strengthening leadership and management for QI; (2) ensuring health service provision; (3) improving quality service delivery standards and implementation; and (4) ensuring a patient-centred approach to healthcare.

One best practice found to strengthen and operationalise quality between the three levels of the health system was led by the CQAH before the COVID-19 pandemic. A Twinning Partnerships for Improvement (TPI) with Macau SAR Health Bureau between 2018

Table 3 Analytical thematic framework for data analysis

Themes	Description (theme)	Codes
1. High-level strategy for maintaining quality EHS	Strategic goals and implementation plan for maintaining quality EHS	Quality EHS National strategic plans
2. Measurement for quality and factors affecting service utilisation	Use of measurement to monitor the impact of COVID-19 for quality EHS	Health service planning Guidance
3. Challenges in implementation of quality activities across the three levels of the health system	Role that the CQAH had in supporting the implementation and alignment of quality goals at the municipal and facility levels	National priorities Received care Quality programmes and activities
4. The impact of quality improvement leadership in health facilities during COVID-19	Enabling factors, challenges and lessons learnt on quality improvement activities in health facilities and how health facility leadership aided in maintaining quality EHS	Quality implementation Health promotion Partner support IPC training
5. Learning systems for maintaining quality EHS now and for the future	Identifying and sharing lessons learnt for maintaining quality EHS	Data for quality Quality planning Indicators Challenges and barriers Facilitators Shared knowledge Supportive activities Adaptation Fear Mistrust Facility leadership
CQAH, Cabinet of Quality Assurance in Health; EHS, essential health services; IPC, infection prevention and control.		

and 2020 focused on strengthening quality planning and improving infection prevention and control (IPC) by using QI methods.^{16 17} Reportedly, this TPI helped prepare the CQAH and participating hospitals in QI methods and IPC practice prior to the COVID-19 response. The document review revealed in the TPI synthesis report¹⁷ that:

IPC training and learning took place and hand hygiene awareness and motivation improved.¹⁷

The partnership approach [was] good. It gave us a chance to share experience and achieve quality improvement.¹⁷

We can see our frontline staff participate actively and show their understanding of quality.¹⁷

KII and FGD

The NHQISP was launched in 2020; however, the KIIs revealed that the NHQISP did not align with the current needs of the COVID-19 response and was not implemented. KIIs reported that IPC became the primary focus of the CQAH as they were assigned leadership over pillar 6 and all resources went towards their mandated activity of IPC.

The strategic plan [NHQISP] 2020–2024 did not match. The main areas in the quality plan focus on human resources, infrastructure, and service provision/delivery. This did not happen during COVID [for routine services]. (National level, KII participant)

CQAH developed [IPC] guidelines and procedures and [were] distributed to all health facility around the country to avoid infection, either COVID-19 or non-COVID. (National level, KII participant)

When asked what could have facilitated the maintenance of quality EHS, several colleagues addressed how quality may be better included during a public health outbreak. Such reflections included:

To guarantee national goal to maintain quality EHS during COVID-19, need to have an operational guideline that includes screening and readiness [for quality]. (National level, KII participant)

A contingency plan [is needed] to cover all activities, starting from planning, implementation, monitoring and evaluation. These will guarantee that national goal to maintain quality EHS during COVID-19. (National level, KII participant)

Measurement for quality and factors affecting service utilisation

Document review

Currently, there are no national, municipal or facility-level quality indicators nor are there key performance indicators monitored by the CQAH, although the NHQISP does make suggestions. For COVID-19, there

was no emphasis on quality EHS in the *Contingency Plan for Public Health Emergency for the Coronavirus 2019*.¹⁸

Developed during the document review, [table 4](#) shows a mapping between *WHO primary healthcare (PHC) measurement framework and indicators*,¹⁹ the *Donabedian framework*²⁰ and available data in TLS, which were collected from partners, MOH programmes and health facilities. WHO PHC framework highlights that health worker density and distribution, and existing policies, for example, are health service determinants which reflect the capacity of PHC services. The framework also includes health service delivery indicators (eg, processes and outputs) that may impact health system objectives (outcomes) (see [figure 1](#)).

While WHO PHC framework monitors progress and performance in PHC, the Donabedian framework accounts for quality at all levels of care, including secondary and tertiary. Efforts to maintain quality in TLS are highlighted in this table and show quality-focused data before and during COVID-19 that were supported by MOH programmes, CQAH and partners. For example, as part of the national direction on quality, TLS had given particular attention to water sanitation and hygiene (WASH) and IPC practices prior to COVID-19, which could have had some impact on maintaining quality EHS. [Table 4](#) also helped direct the authors to formulate the KII questionnaires to better understand what contributed to improved maternal and child health services and outcomes versus the decrease in outpatient, emergency department and primary care service visits.

The asterisk (*) in [table 4](#) indicates those EHS that were designated by the National Contingency Plan for COVID-19¹⁸ to be monitored in TLS during the COVID-19 response. The other indicators included in [table 4](#) are based on *WHO PHC measurement framework*, *WHO operational framework for PHC*^{19 21} and the data sets available in TLS.

KII and FGD

The indicators in maternal care, child immunisation and nutrition between 2019–2020 are worth noting. The KIIs revealed that the improvements in maternal care could have been related to scaling up capacity building, health promotion, strong leadership and ongoing services during COVID-19. The following are comments from the KIIs and FGDs:

The health promotion and clinical services [for maternity] were continued during COVID-19. The health promotion was increased due to health workers socializing scientific information on how to prevent of COVID-19. (Municipal level, FGD participant)

Maternity [services] remained opened during COVID-19. Maternity care had specific COVID-19 guidance and continued care during COVID-19.

Table 4 National indicators for quality EHS during COVID-19 mapped to WHO PHC framework and Donabedian framework

Donabedian indicator category	PHC framework (with quality domains)	Specific indicators available in Timor-Leste	Available data points for Timor-Leste 2019–2021			References
			2019	2020	2021	
Structure indicators	Health system determinants	Structure				
		Existence of policy strategy or plan for improvement of quality and safety	–	National strategy launched	–	15
		Existence of health emergency and disaster risk management strategies	–	COVID-19 contingency plan	–	18
	Inputs	Health worker density (per 10 000)	23.9	–	–	9
		Health worker distribution (medical doctors per 10 000)	–	7.56	–	49
		Physical infrastructure (% of facilities with basic hand washing)	40% CHCs had water, 30% of HPs had no water (2018)			8 9 50–52
		Completed hand hygiene self-assessments (HHSAF) (n)	9	2	6	
		Completed WASH in HCF assessment (n)	44	11	–	
		IPC assessment in HCF	11	2	6	
		Health worker competency data for medication safety (HNGV new nursing staff)	Not available	Not available	49%	8 9 53
Process indicators	Service delivery	Processes				
		Facilities with systems to support quality improvement (% secondary, tertiary)	16	16	16	
		*Serviço Integrado de Saúde Comunitária (SISCa) home visits (n)	88 654	78 656	–	
	Outputs (effective, safe, efficient, people centred and timely)	Children with diarrhoea received Oral Rehydration Solution (ORS) (%)	77	–	–	8 9
		*Malaria (total confirmed) (n)	91	92	–	
		*Tuberculosis — treatment success rate (%)	91	92	–	
		OPD visits (n)	3 401 910	2 393 693	–	
		RH	236 942	203 656		
		Bed occupancy rate	90	92	–	
		RH	98.2	85.8		
Patient satisfaction survey (HNGV only) (%)	77	87	89	46–48		

Continued

Table 4 Continued

Donabedian indicator category	PHC framework (with quality domains)	Specific indicators available in Timor-Leste	Available data points for Timor-Leste 2019–2021			References
			2019	2020	2021	
		*Antenatal care coverage (4 visits) (%)	50	58	–	8 9 50
		*Skilled birth attendants (SBA) (total of home and healthcare facilities (HCF)) (%)	67	92	–	
		*SBA (% of SBA delivered in HCF)	84	86		
		*Prenatal care coverage (%)	42	58	–	
		1–6 weeks	29	60	–	
		*Full child immunisation coverage (%)	25	52	–	
		6 years	34	75	–	
		*Vitamin A distribution (12–59 months) (%)	65	78	–	
		*Monthly average malnutrition – children less than 5 years (%)	95	95	–	
		Moderate	4	4	–	
		Severe	2	1	–	
		*Children <5 years weight (0–59 months) (%)	4	4	–	
		Severe	2	1	–	
		*TB treatment success rate for new and relapsed cases (%)	91	92	–	
		*New TB cases diagnosed (%)	65	68	–	
		Hypertensives are treated and controlled (%)	2	–	–	
		*HIV new cases (n)	237	56	–	
		*Dengue cases 2 months to 5 years, male/female (n)	68/73	56/65	–	
		Prescribing practices for antibiotics (%)	19% increase between 2020 and 2021 antimicrobial consumption			26 54
Outcome indicators	Health system objectives	Emergency room visits	48 639	36 302	–	8 9 46–48
		Hospital death rate (net) (per 1000)	194	216	–	
		Infant mortality (0–28 days) (n)	609	694	–	
		*Maternal mortality (health centres and hospitals) (per 100 000) (n)	20	16	–	
CHC, community health centre; EHS, essential health services; HHSAF, hand hygiene self-assessment framework; HNGV, Hospital Nacional Guido Valadares; HP, health post; IPC, infection prevention and control; OPD, outpatient department; PHC, primary healthcare; RH, referral hospital; SBA, skilled birth attendants; TB, tuberculosis; WASH, water sanitation and hygiene.						

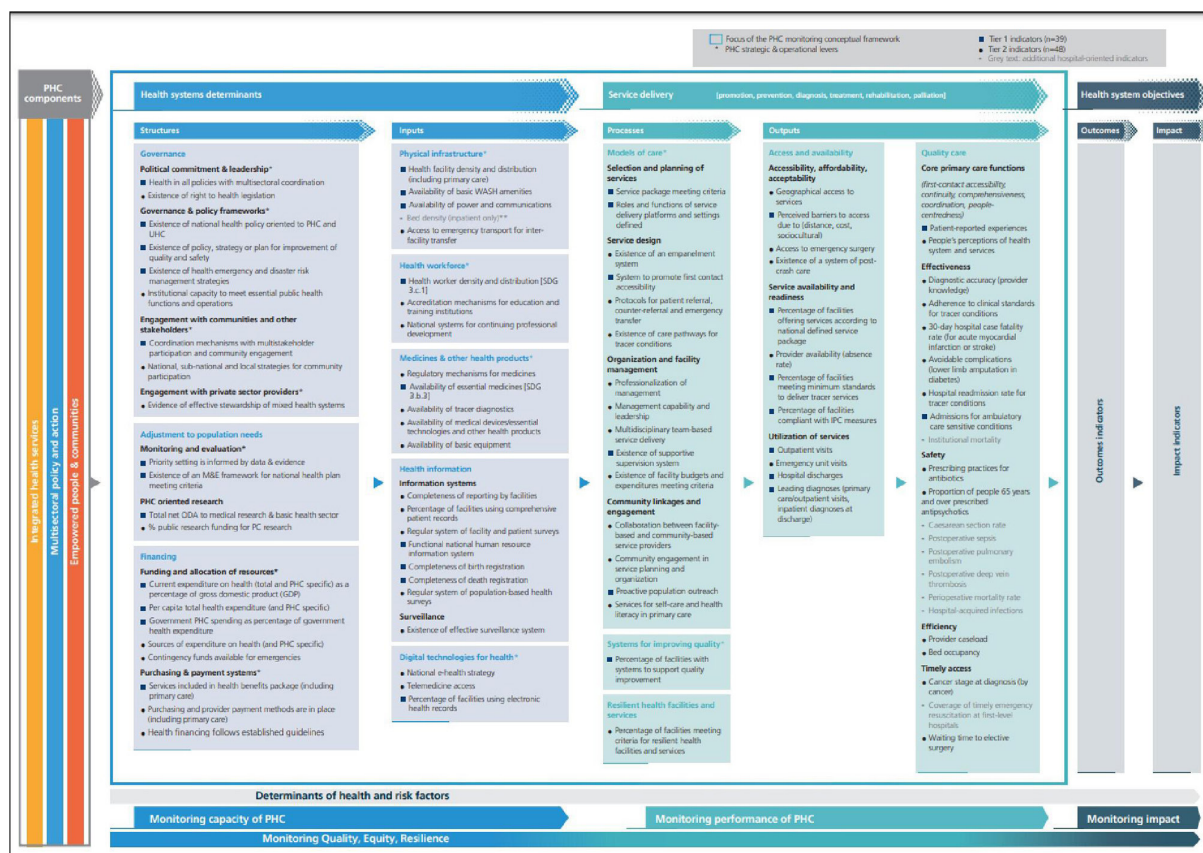


Figure 1 WHO primary healthcare (PHC) monitoring framework. IPC, infection prevention and control; M&E, monitoring and evaluation; ODA, official development assistance; PC, Primary Care; SDG, Sustainable Development Goal; UHC, universal health coverage; WASH, water sanitation and hygiene.

The maternity care program was very strong at central level and from partners. (Municipal level, KII participant)

Emergency and maternity [services] were opened during COVID-19 period even when the visit of patients was limited. (Health facility, FGD participant)

Table 4 also revealed a large decrease in OPD and emergency room visits (Hospital Nacional Guido Valadares (HNGV) only). To understand the decrease in service utilisation by community members, KIIs revealed that patients were not visiting emergency departments and OPD largely related to:

Lack of trust [in the health system]. (Municipal level, KII participant)

Increased fear [of the hospital]. (Facility level, FGD participant)

When probed further about their 'lack of trust' or 'increased fear', participants described family and community members not going to the hospital because they were:

Worried about being sent to a COVID-19 treatment centre [if becoming COVID-19 positive]. (Facility level, FGD participant)

Essential Health Services did not work properly during COVID-19 because all staff focused on COVID-19. Chronic patients did not take their medications and they died as a result. Taxi and bus services were not running so patients could not afford to get to the hospitals for treatment. (Facility level, KII participant)

One family member said:

The IPC used to be great and implemented in all health facilities, but the consciousness is decreased, we can see limit of PPE [personal protective equipment] and there is no social distance among health workers, and patients with health workers. This makes us not want to come. (Facility level, KII participant)

Another family member stated:

[My family member] has been here since morning at 10 am, however [they] did not get clinical care until 08.00 pm. After that [they] got clinical care by putting infusion. (Facility level, KII participant)

Overall, most programmatic areas reported having 'decreased resources and were not run well during COVID-19' (Municipal level, FGD participant). However, it was also stated that 'Some programs, like maternity

care had ongoing partner support' (Municipal level, FGD participant), which reportedly helped facilitate the upward trends as seen in [table 4](#). The document review revealed that the maternal and child health programme disseminated and provided orientations on the national-level guidance at the municipal health offices. 'This made it possible to have the ongoing support and knowledge we needed,' stated a key informant (Municipal level, FGD participant).

Challenges in implementing quality activities across the three levels of the health system

Document review

WHO Quality Health Services: A Planning Guide highlights five foundational requirements for supporting quality health services at each level of the health system. These include (1) on-sight support, (2) measurement, (3) sharing and learning, (4) stakeholder and community engagement and (5) management.²² Considering these five requirements, the CQAH has achieved much in the way of setting the national direction on quality. With the launch of the NHQISP, the national commitment, priorities in quality interventions, measurement framework and a costed operational plan have all been established.¹⁵

TLS is in the process of decentralising the health system.¹² As such, municipal health offices are responsible for maintaining routine services while leading the COVID-19 response.²³ However, implementation of national-level quality priorities at the municipal and facility levels has not yet happened and there was little documentation to understand the progress on maintaining quality EHS.

As part of the TLS essential service package, and a priority for maintaining EHS during COVID-19, there are two MOH-led outreach service delivery models for PHC. Saúde na Família (SnF) and Serviço Integrado de Saúde Comunitária (SISCa) both aim to increase the access of care to rural communities through home visits and outreach.¹² In reviewing the data in [table 4](#), SISCa visits decreased by approximately 10 000 during the 2019–2020.

KII and FGD

During the KIIs, it was asked of the municipal health offices if there was a focus on maintaining quality planning or programmes related to EHS or any services provided, to which there was reportedly none. In one municipality, it was reported that:

We had started a quality improvement activity for maternal and child health in 2018, but we had to stop it when COVID-19 happened. (Municipality, FGD participant)

When asked why, it was reported that 'no one had the time'. (Municipality, FGD participant)

SISCa and SnF were reported as not operational during the peaks of COVID-19, citing a lack of human resources

as service delivery priorities changed to focus chiefly on the COVID-19 response. When asked why the number for SISCa visits is still quite high, it was stated by a municipal health office that:

These high SISCa visits are related to COVID-19 testing, not medical checkups. (Municipal level, KII participant)

The impacts of QI leadership in health facilities during COVID-19

Document review

The national tertiary facility, HNGV, reported several strengths related to maintaining quality, including leadership, an established quality team, a multidisciplinary *Quality and Safety Committee*, a hospital motto of 'Excellence in service, commitment, compassion and knowledge' and staff motivated to provide optimal, people-centred care.^{24 25}

KII and FGD

For several of the ongoing quality activities, KIIs at HNGV revealed that partner support helped facilitate QI projects and was key to the continuation of these efforts. For example, HNGV reported that with the support of partners, they used the 'Plan-Do-Study-Act (PDSA) model' (Facility level, KII participant) for improving practices in cleaning and disinfection in the intensive care unit for a *Burkholderia cepacia* complex outbreak in 2021.²⁶ Following the improvements made in disinfection, no further detections of the bacteria were reported by the pathology department.

The HNGV quality lead reported improvements in triage and managing COVID-19 cases because of the quality training received during the CQAH-led TPI. When discussing quality activities with the health facilities, a few colleagues mentioned the direct impact of the TPI:

Because of the TPI, I knew how to set up a fever clinic when the COVID-19 pandemic came. The quality methods and IPC activities helped us to quickly reflect on what was and was not working. (Facility level, KII participant)

The IPC training, we had during with TPI colleagues helped us to learn how to don and doff PPE and teach other colleagues when COVID-19 came. (Facility level, FGD participant)

Another example of ongoing improvements in quality is from Maliana RH, which decreased neonatal sepsis rates by strengthening IPC and hand hygiene practices. Reportedly, the approaches used for the improvements were influenced by HNGV and partners during a learning exchange training early in the COVID-19 response. As a result of these improvements, Maliana RH noted a decrease in neonatal sepsis incidence as seen in [figure 2](#) (21% (2019); 26% (2020); 11% (2021)).²⁷

In [table 4](#), patient satisfaction increased to 89% in 2021 from 77% in 2019 at HNGV. It was reported that these scores increased during COVID-19 because of:

Figure 2. Annual neonatal sepsis rates at Maliana Referral Hospital

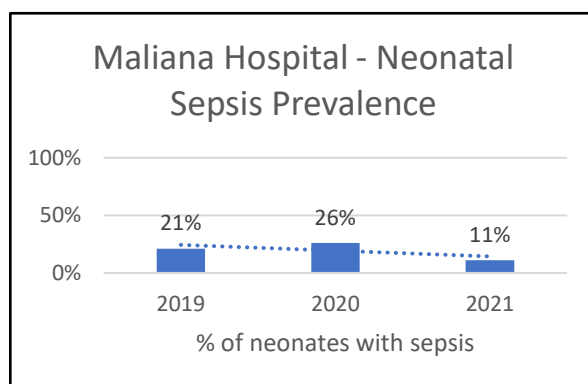


Figure 2. Annual neonatal sepsis rates at Maliana Referral Hospital

Figure 2 Annual neonatal sepsis rates at Maliana Referral Hospital.

Ongoing support for HNGV Quality Team to lead on IPC and good attitudes. (Facility level, KII participant)

The health services are good because when patients come to the hospitals, health workers always treat patients well. (Facility level, KII participant)

The Quality Team Lead always makes sure we wash our hands and that we have supplies [to do so]. (Facility level (HNGV), KII participant)

Learning systems for maintaining quality EHS now and for the future

Document review

During COVID-19, the TPI between the CQAH and Macau SAR Health Bureau supported learning by encouraging the spread of quality principles vertically throughout the health system, but also horizontally to other municipalities and health facilities.¹⁷ Participants from all levels of the health system participated in TPI learning events to strengthen IPC and quality during the COVID-19 response in 2020.

Key informant interview

Reportedly, another learning event led by the CQAH was the annual World Hand Hygiene Day on 5 May 2022. The CQAH used this opportunity to promote municipal and facility sharing to inform each other but also the national direction on quality. Further, this learning event brought all of TLS municipalities together to highlight what they have done to work towards better hand hygiene in health facilities.

During COVID-19, the HNGV quality team was involved in the IPC training in the five municipal RHs. The quality lead shared their experience in setting up triage, creating

hand washing stations when water was not reliable. When discussing the impact of this learning opportunity, Baucau RH stated that:

These learning opportunities gave us confidence that we could implement the needed changes too. (Facility level, KII participant)

DISCUSSION

From early in its independence in 2002, TLS committed itself to the delivery of quality EHS. In 2004, the Quality Control Unit was established, and in 2013 the CQAH was formed. More recently in August 2020, the NHQISP was launched, which aims to focus on 'quality improvement and provide the best consumer experience through safe, effective, accessible, equitable and sustainable service packages'.¹⁵ The degree to which TLS could maintain quality EHS during COVID-19 was, however, based on the various available health system inputs and not on quality planning across the three levels. The maternal and child health programme did strive to ensure health worker training, available services, health promotion and community engagement, but more broadly, quality was not assured in EHS delivery during COVID-19.

To better prepare health systems to maintain quality EHS during a public health emergency, the analysis highlighted several key recommendations from TLS that may be of benefit to other countries. First, developing national-level strategy and/or policy for quality will set the foundation for the national quality priorities.²⁷ From here, national leaders can inform stakeholders, national and international agencies and all health system levels

of the quality priorities. For example, [table 4](#) shows that several health partners in TLS had ongoing activities that are supporting quality service delivery before and during COVID-19. Ensuring alignment of these partners to the national quality priorities can greatly contribute towards maintaining quality EHS during any future health emergency.

To maintain quality EHS, planning for quality must be proactively considered across all levels in service delivery packages, municipal health offices and health facilities.²² While the national level sets the priorities, municipal health offices and facilities need to participate in strategic quality planning for implementation to minimise the interoperability gap.²⁸ As such, the authors recommend for countries to consider aligning quality planning and learning systems throughout the health system to be better prepared to maintain quality EHS.^{22 28} For example, by involving all three levels of the health system, the activities taken by the maternal and child health programme during COVID-19 may have contributed towards minimising the interoperability gap. The programme leaders took an integrated approach to quality by developing national guidance, disseminating and orientating that guidance to the municipal and facility levels, while also promoting healthy behaviours in the community. Another example is the TPI, which planned quality activities through a learning system between the national, municipal and facility levels and then later shared their lessons learnt in implementing IPC improvements during COVID-19 to other municipalities.^{17 29} This approach had impact on a referral hospital 18 months later, which helped reduce neonatal sepsis.

The *operational framework for PHC* highlights four areas of quality that should be considered across the health system. These areas include systems environment (eg, WASH, cleanliness of the facility, infrastructure); reducing harm; improving clinical care; and engaging patients, families and communities,^{4 30 31} all of which can support maintenance of quality EHS during public health emergencies. Measurement across these areas, and throughout the health system levels, can indicate the ongoing quality activities that may not be captured by national-level data.²² Additionally, and as previously noted in the findings, *WHO Quality Planning Guide* suggests monitoring and shared learning to track indicator data in real time to inform gaps in policies and strategies for maintaining quality EHS.²² The authors further recommend that countries consider including quality-focused indicators in public health emergency preparedness and response plans.

In addition to indicators, integrating quality planning into preparedness and response plans and health emergency contingency plans would better prepare countries to maintain quality EHS. A recent review of 106 preparedness and response plans by Mustafa *et al* highlights that emergency planning should include all domains of quality in health service delivery as a contributing factor that will reduce excess mortality and morbidity for non-emergency

health services during the COVID-19 pandemic.³ The same review also states that ‘an integrated approach to planning should be pursued as health systems recover from COVID-19 disruptions and take actions to build back better’.³ This strategic approach and commitment could lead to better monitoring of quality EHS during crises while potentially addressing disruptions in care. It could also help guide all stakeholders, including government, health and development partners, to support the ongoing quality EHS.^{32 33}

Quality is often seen as secondary to ensuring access. But as stated by WHO Director-General, ‘without quality, UHC [universal health coverage] remains an empty promise’.³⁴ We know that in low and middle-income countries, approximately 134 million adverse events occur annually due to unsafe care in hospitals,³⁵ so the need to plan and ensure quality in facilities remains a high priority. Strong leadership for quality across the three levels of the health system is essential for maintaining safe environments, particularly when resources are constrained. As seen from the national tertiary hospital, strong leadership eliminated a healthcare associated infection and may have also contributed to the rising patient satisfaction scores seen in [table 4](#). Having strong leadership for quality EHS during a health emergency may contribute to a facility culture that promotes safety, learning, trust and compassionate care.²²

Limitations

There were several challenges including a small data analysis team (MBK-B and GR only) and there was also limited access to documents at the municipal and health facility levels. Document collection largely depended on the ability to directly visit MOH offices, municipal health offices and health facilities. Notably, general strategic documents were readily available, like the National Health Strategic Plans, but sources related to COVID-19 response were limited, particularly on national response plans and municipalities.

Limitations during the interviews included translation from Tetum and Portuguese to English. It was reported by the national consultant that when conducting the interviews, questions and translation were not always understood, thus answering the questions indirectly or incorrectly. Further, not all key people were able to be interviewed. Valuable insight into such service delivery or high-level coordination might have been missed.

CONCLUSION

Maintaining quality EHS is a continuous process that must be considered in health emergency preparedness planning. By setting national-level priorities in quality, stakeholders, national and international agencies and all health facilities can align quality service delivery activities, particularly when resources are strained. Integrating quality planning into preparedness plans can bring awareness and accountability to health system leaders to ensure

that quality EHS will be maintained, while also empowering facility staff to continue advocating for quality during a public health emergency.

This study is a snapshot of quality EHS in TLS during the COVID-19 pandemic and the analysis identified approaches and recommendations that may be of benefit to other countries. Even though more knowledge is needed on how to operationalise plans for maintaining quality EHS, this learning can support countries towards better quality planning for public health emergencies.

Author affiliations

¹Health Systems, World Health Organization, Dili, Timor-Leste

²Health Quality Programs, Queen's University, Kingston, Ontario, Canada

³Department of Integrated Health Services, World Health Organization, Geneva, Switzerland

⁴Faculty of Epidemiology and Population Health Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, London, UK

⁵Cabinet of Quality Assurance in Health, Ministry of Health, Dili, Timor-Leste

Twitter Melissa B Kleine-Bingham @melkbingham

Acknowledgements The authors thank the Ministry of Health in Timor-Leste for supporting this work and the Cabinet of Quality Assurance in Health, Timor-Leste. The authors also thank Benjamin Dingle and Patricia Dingle for an ongoing editorial review and the Rockefeller Foundation for the financial support to complete this research. Without them, this work would not have happened.

Contributors MBK-B supported the initial protocol design; led on obtaining ethical permission and methodology; supervised data collection, management and data analysis, interpretation; wrote the original manuscript; and reviewed and edited drafts. GR supported the ethical premission, led data collection and supported the management, data analysis and interpretation. DS supported and guided the document review, technical findings, and data analysis. TK, NAMA were responsible for the conceptualisation of research idea and design; methodology; and ongoing support for technical review. OB and PW supported technical reviewed and supported the administrative requirements for WHO. VB reviewed guided for country context. HMD and FdCAP provided guidance and technical information on the national direction on quality. SBS led on the overall strategic direction of quality EHS and the research. All authors approved the final version of this manuscript. MBK-B is responsible for the overall content as guarantor.

Funding This research was funded by the Rockefeller Foundation.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Obtained.

Ethics approval This study involves human participants and after the data collection protocol was developed, the study proposal was then reviewed by the Human Research Ethics Committee in Timor-Leste who approved the research in December 2021 (Reference No 155 MS-INS/GDE/II/2022). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Data are available upon request.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially,

and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Melissa B Kleine-Bingham <http://orcid.org/0000-0003-4096-0164>

Nana Afriyie Mensah Abrampah <http://orcid.org/0000-0003-1749-5401>

REFERENCES

- World Health Organisation. *Maintaining essential health services: operational guidance for the COVID-19 context*. Geneva, Switzerland, 2020.
- World Health Organisation. *Second round of the national pulse survey on continuity of essential health services during the COVID-19 pandemic: january-march 2021, interim report*. 2021.
- Mustafa S, Zhang Y, Zibwowa Z, et al. COVID-19 preparedness and response plans from 106 countries: a review from a health systems resilience perspective. *Health Policy Plan* 2022;37:255–68.
- World Health Organization, World Bank Group, OECD. *Delivering quality health services: a global imperative for universal health coverage*. June 2018.
- World Health Organization. *Quality in primary health care*. Geneva, Switzerland, 2018.
- World Health Organization. *Pulse survey on continuity of essential health services during the COVID-19 pandemic: interim report*. World Health Organization, 2020.
- World Health Organisation. *Timor-leste economic report*. 28 June 2022.
- Ministerio da Saude. Health statistics report; 2020.
- Ministerio da Saude. Health statistics report. Dili, Timor-Leste; 2019.
- CIA. The world factbook timor-leste. 2021. Available: <https://www.cia.gov/the-world-factbook/countries/timor-leste/>
- World Bank. World bank country and lending groups. 2023. Available: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>
- Ministerio da Saude. National health sector strategic plan II 2020–2030. Dili, Timor-Leste; 2020.
- Macdonald NE, Ford-Jones L, Friedman JN, et al. Preparing a manuscript for publication: a user-friendly guide. *Paediatr Child Health* 2006;11:339–42.
- Ritchie J, Lewis J, Lewis PSPJ, et al. *Qualitative research practice: A guide for social science students and researchers*. SAGE Publications, 2013.
- Saude Ministerio da. National healthcare quality improvement strategic plan timor-leste 2020–2024. Dili, Timor-Leste; 2020.
- World Health Organization. *Needs assessment on quality in timor-leste: step 2 of the twinning partnership for improvement between timor-leste and macao SAR china*. 2019.
- World Health Organization. *Twinning partnerships for improvement synthesis and lessons learnt from the partnership between macao health bureau and timor-leste cabinet of quality assurance in health 2018–2020*. Geneva, Switzerland, 2021.
- Health Executive Comssion for the Coronavirus 2019 Outbreak. Contingency plan for public health emergencies new coronavirus 2019 (COVID-19). Dili, Timor-Leste; 2020.
- World Health Organization. *Primary health care measurement framework and indicators: monitoring health systems through a primary health care lens*. Geneva, Switzerland, 2022.
- Ayanian JZ, Markel H. Donabedian's lasting framework for health care quality. *N Engl J Med* 2016;375:205–7.
- World Health Organization. *Operational framework for primary health care*. Geneva, Switzerland, 2020.
- World Health Organization. *Quality health services: planning guide*. Geneva, Switzerland, 2020.
- Journal Republic. Law no.24/2021 exceptional and temporary measures of health surveillance in response to COVID-19 pandemic. Dili, Timor-Leste; 2021.
- Republic Journal. *Ministerial diploma no.75 / 2021 of october 27 internal regulation of the National Hospital Guido Valadares*. Dili, Timor-Leste, 2021.
- Hospital Nacional Guido Valadares. *Quality cabinet review presentation on lessons learned in the COVID-19 pandemic dili, 2020–2021*. Timor-Leste, 2021.
- Menzies School of Health Research. *6-monthly progress report for the ministry of health january - july 2021*. Dili, Timor-Leste, 2021.
- World Health Organization. *Handbook for national quality policy and strategy: a practical approach for developing policy and strategy to improve quality of care*. 2018.

- 28 Douthit BJ. The influence of the learning health system to address the COVID-19 pandemic: an examination of early literature. *Int J Health Plann Manage* 2021;36:244–51.
- 29 Sarakbi D, Mensah-Abrampah N, Kleine-Bingham M, et al. Aiming for quality: a global compass for national learning systems. *Health Res Policy Syst* 2021;19:102.
- 30 World Health Organization. *Operational framework for primary health care*. 2020.
- 31 Leatherman S, Tawfik L, Jaff D, et al. Quality healthcare in extreme adversity: developing a framework for action. *Int J Qual Health Care* 2020;32:149–55.
- 32 O'Brien N, Shaw A, Flott K, et al. Safety in fragile, conflict-affected, and vulnerable settings: an evidence scanning approach for identifying patient safety interventions. *J Glob Health* 2022;12:04018.
- 33 Neilson M, Leatherman S, Syed S. The quality-of-care agenda in fragile, conflict-affected and vulnerable settings. *Bull World Health Organ* 2021;99:170–170A.
- 34 Ghebreyesus TA. How could health care be anything other than high quality? *Lancet Glob Health* 2018;6:e1140–1.
- 35 National Academies of Sciences Engineering, Medicine. *Crossing the global quality chasm: improving health care worldwide*. 2018.
- 36 Ministerio da Saude, World Health Organization. Protocols of organizing implementation and monitoring of perople-centered package of essential noncommunicable diseases (PEN) interventions in primary health care. Dili, Timor-Leste; 2021.
- 37 Ministerio da Saude. National strategic plan for human resources for health (NSPHRH) 2020–2024. Dili, Timor-Leste; 2020.
- 38 Ministerio da Saude. Operational guidelines for maintaining routine essential reproductive, maternal and child health, immunization and nutrition services during the COVID-19 pandemic in timor-leste. Dili, Timor-Leste; 2020.
- 39 Saude Ministerio da, Fund United Nations Population, World Health Organisation. Clinical protocol and guidelines for intra-partum and immediate post-partum care for women with COVID-19 in timor-leste. Dili, Timor-Leste; 2020.
- 40 Ministry of Finance. 2016 ministry of financial annual report. Dili, Timor-Leste; 2016.
- 41 World Health Organization. Timor-leste primary health care essential service package. Dili, Timor-Leste; 2020.
- 42 Ministerio da Saude. Health financing strategy 2019–2023. Dili, Timor-Leste; 2019.
- 43 Journal Republic. Dispatch NO 04/202/III/MS. national health executive commission for COVID-19. Dili, Timor-Leste; 2020.
- 44 National Hospital Guido Valadares Quality Team. National Hospital Guido Valadares, presentation and dissemination of standing operating procedures. 2020
- 45 Hospital Nacional Guido Valadares. Presentation and dissemination of standing operating procedures. Dili, Timor-Leste; 2021.
- 46 National Hospital Guido Valadares Quality Team. National Hospital Guido Valadares annual data report. Dili, Timor-Leste,
- 47 National Hospital Guido Valadares Quality Team. National Hospital Guido Valadares annual data report. Dili, Timor-Leste; 2020.
- 48 National Hospital Guido Valadares Quality Team. National Hospital Guido Valadares annual data report. Dili, Timor-Leste; 2021.
- 49 The global health observatory [internet]. 2022. Available: [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-\(per-10-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/medical-doctors-(per-10-000-population))
- 50 United Nations Children's Fund. 2018: A journal of change in Timor-Leste Dili, Timor-Leste. 2018. Available: https://www.unicef.org/timorleste/media/2731/file/2018%20Journal%20of%20Change_English_web%20version_spread_0612.pdf.pdf
- 51 World Health Organisation. *Infection prevention and control assessment framework (IPCAF) and han hygiene self assessment framework (HHSFAF) for community health centers and healths posts in bacuau municipality health facilities, timor-leste*. Dili, Timor-Leste, 2020.
- 52 World Bank Group. *Economy profile of timor-leste*. 24 October 2019.
- 53 St John of God Health Care. *New nurse and midwife program assessment april - august 2021*. Dili, Timor-Leste, 2021.
- 54 Procurelink. *Antimicrobial consumption (AMC) analysis*. Darwin, Australia: Menzies School of Health Research, 2021.