

Enhancing the Healthcare System in Timor-Leste: A Comprehensive Analysis and Strategic Recommendations

1. Executive Summary

Timor-Leste, a nascent nation in Southeast Asia, has made considerable strides in establishing a public healthcare system since gaining independence. However, the healthcare sector continues to grapple with a multitude of challenges, including inadequate infrastructure, a shortage of skilled healthcare professionals, and limited financial resources. This report provides a comprehensive analysis of the current state of healthcare in Timor-Leste, drawing upon available research to identify key areas for improvement. The analysis highlights the prevalence of communicable and non-communicable diseases, as well as significant maternal and child health concerns. By examining successful healthcare strategies implemented by developing nations with similar socioeconomic conditions, this report synthesizes findings and proposes integrated recommendations aimed at strengthening Timor-Leste's healthcare system to achieve universal health coverage and improve the health and well-being of its population.

2. Introduction: Contextual Overview of Timor-Leste's Healthcare System

Timor-Leste, one of the world's youngest countries, gained independence in 1999 and has been in a process of recovery and development since ¹. The nation faces various socioeconomic challenges, with a significant portion of its population living in poverty ². The healthcare system in Timor-Leste is primarily public, with the government, through the Ministry of Health (MoH), providing the majority of healthcare services ³. Organized into a network of national hospitals, community health centers, and health posts, the system operates on a three-tiered structure designed to deliver primary, secondary, and tertiary care ³. Since independence, the healthcare system has undergone gradual improvements, heavily reliant on international aid to support its development ³.

The government of Timor-Leste has demonstrated a firm commitment to providing free essential health services, grounded in the principles of equity, population-wide coverage, and financial protection ⁵. This commitment is further reflected in the pursuit of universal health coverage (UHC), a goal enshrined in the national health sector strategic plan ⁵. Despite these efforts and the progress achieved, the healthcare system continues to face significant challenges, including inadequate infrastructure, a shortage of skilled healthcare workers, and limited financial resources ³. Understanding the historical context of conflict and the nation's relatively

young age is crucial to appreciating the current state of its healthcare system. The years of conflict likely caused significant damage to infrastructure and hindered the development of a robust healthcare workforce, leaving a legacy of underdevelopment. While international aid has played a vital role in supporting the system's growth, this dependence underscores the importance of building national capacity and ensuring long-term financial sustainability. The three-tiered healthcare delivery system, while a standard model, experiences issues in connectivity and resource distribution, particularly impacting the accessibility and quality of care in rural areas compared to urban centers. This disparity suggests a need for a closer examination of the effectiveness of the referral system and the allocation of resources across the different levels of care.

3. Analysis of the Current Healthcare Infrastructure in Timor-Leste

3.1 Number and Distribution of Healthcare Facilities:

The healthcare infrastructure in Timor-Leste is organized into a three-tiered system. At the apex is the Guido Valadares National Hospital (HNGV) in Dili, which serves as the country's only tertiary referral hospital, providing both primary and secondary care to patients from across the nation ⁴. Complementing the national hospital are five referral hospitals situated at the district level, offering secondary health services and capable of performing some surgical procedures ⁴. These hospitals are supported by a network of primary healthcare facilities, including community health centers (CHCs) and health posts ³.

Data from various sources indicate a fluctuating but generally increasing number of these primary healthcare facilities. As of 2011, there were 65 CHCs and 187 health posts ⁶. By 2016, the number of CHCs had slightly increased to 66, and health posts to 193 ⁶. More recent data from 2018 suggests 71 CHCs and 323 health posts, along with 459 monthly outreach sites ⁷. By 2021, the network comprised 71 CHCs, 318 health posts, seven treatment posts serving as mini health posts, and 600 Servisu Integrado du Saude Comunidade (SISCa) outposts ⁶. The SISCa program plays a crucial role in delivering community-based primary care at the village level, extending health services to areas with difficult access ⁵. In addition to the public facilities, a few private medical centers operate in Timor-Leste, such as the DMC (Dili Medical Center), MSITL Clinic, and Stamford Medical LDA, primarily located in Dili ¹⁰. The presence of a relatively extensive network of primary healthcare facilities compared to the limited number of hospitals indicates a foundational focus on primary care delivery. However, the actual capacity and resources available at these primary levels warrant further investigation to ensure they can effectively meet the healthcare needs

of the population. The distribution of these facilities, particularly specialized care, appears to be uneven, with a concentration in urban areas like Dili. This likely creates significant access challenges for individuals residing in rural communities, potentially explaining why rural households are less likely to seek hospital services compared to their urban counterparts ⁴.

3.2 Adequacy of Infrastructure and Equipment:

A significant challenge facing the healthcare system in Timor-Leste is the inadequacy of healthcare infrastructure, particularly in rural areas ³. Many healthcare facilities lack the essential equipment and medical supplies necessary to handle a wide range of health issues, especially emergencies ³. Hospitals are often reported to be under-equipped, and there is a critical shortage of ambulances and other vital resources required for effective emergency care ³. Furthermore, a substantial number of existing ambulances are poorly equipped and lack the necessary medical supplies and trained personnel to provide effective pre-hospital care, further hindering the emergency response capabilities ³. Even in areas where health centers are present, access to essential medical supplies remains a significant issue, particularly in remote regions without hospitals ¹³. This lack of adequate infrastructure and equipment, especially in emergency care and rural settings, has a direct and negative impact on the quality and accessibility of healthcare services. The inability of healthcare workers to access necessary tools and supplies, particularly during emergencies, can lead to delays in treatment and potentially preventable deaths and complications. Shortages of ambulances and inadequately equipped pre-hospital care further exacerbate these issues, particularly in a country with challenging terrain. The difficulties in ensuring a consistent supply of medications to remote health facilities compound these problems, affecting the overall effectiveness of the healthcare system.

3.3 Geographical Barriers to Access:

Timor-Leste's mountainous terrain and underdeveloped road network present substantial geographical challenges to accessing healthcare, especially emergency services ². Many rural communities are geographically isolated, and the transportation of patients to healthcare facilities can take several hours, or even days, which can be critical in emergency situations ³. During the rainy season, landslides and flooding can further impede access, making it difficult for patients to reach hospitals or for ambulances to respond to emergencies in a timely manner ³. To overcome these significant infrastructure limitations in districts with many problems, where ambulances cannot readily go, aerial transportation is utilized. The government has contracted an Australian airplane for patient transport from Suai and Oecusse to Dili

and has also requested assistance from the United Nations for helicopter transport⁸. Additionally, a boat is used to connect Ataúro Island to the mainland, and over 50 horses are employed across the territory to transport patients through rivers and other difficult terrains⁸. Despite these efforts, the average walking time to a health center for a significant portion of the population with access is reported to be around 70 minutes, highlighting the continued challenges of reaching healthcare facilities¹². These geographical barriers represent a major impediment to healthcare access, particularly for emergency care. The reliance on innovative, albeit sometimes limited, transportation methods underscores the need for tailored solutions to improve service delivery and ensure timely access in remote and isolated areas.

Key Takeaways and Insights for Section 3:

While Timor-Leste possesses a network of primary healthcare facilities, its effectiveness is significantly limited by inadequate infrastructure, persistent shortages of essential equipment and medical supplies, and formidable geographical barriers, particularly in the country's rural regions. The infrastructure for emergency care is notably underdeveloped, further compounding the challenges in providing timely and effective urgent medical services. Furthermore, the distribution of healthcare facilities and the resources available within them appears to be skewed towards urban centers, potentially disadvantaging those living in more remote areas. The referral system's current operational status and efficiency in ensuring patients receive appropriate care at the right level across the different tiers of healthcare would benefit from further examination.

4. Prevalence and Impact of Major Health Issues and Diseases in Timor-Leste

4.1 Communicable Diseases:

Communicable diseases constitute a significant portion of the disease burden in Timor-Leste. Tuberculosis (TB) stands out as a major public health concern, with the nation consistently ranking among those with the highest estimated TB incidence globally¹⁴. In 2021, the estimated TB incidence rate was 486 cases per 100,000 population¹⁶. Other communicable diseases, such as malaria and dengue, transmitted through mosquito bites, also pose ongoing public health challenges¹⁴. While there has been a notable decline in malaria incidence, dengue fever remains a concern¹⁸. Lower respiratory infections and diarrheal diseases are also significant contributors to morbidity and mortality, particularly among young children¹⁴. Additionally, diseases like hepatitis A and B, Japanese encephalitis, and sexually transmitted infections (STIs) are prevalent within the population¹⁹. Despite these challenges, Timor-Leste

has achieved notable success in eliminating leprosy and maternal and neonatal tetanus as public health problems ¹⁸. The continued high prevalence of communicable diseases, particularly TB, despite progress in other areas, underscores the ongoing need for robust prevention, early diagnosis, and effective treatment strategies to mitigate their impact on public health.

4.2 Non-Communicable Diseases (NCDs):

Timor-Leste is experiencing a growing burden of non-communicable diseases (NCDs), which now account for over half of all deaths in the country ¹⁴. Stroke and ischemic heart disease are identified as the leading causes of mortality ¹⁴. Other significant NCDs include chronic obstructive pulmonary disease, hypertensive heart disease, diabetes mellitus, and kidney diseases ¹⁴. The increasing prevalence of NCDs alongside the persistence of communicable diseases presents a dual challenge for the healthcare system. A major contributing factor to the rise in NCDs is the high rate of tobacco use among the population ¹⁸. This epidemiological shift necessitates a healthcare system capable of effectively addressing both infectious and chronic conditions, requiring a multifaceted approach that includes preventative measures, early detection initiatives, and long-term management strategies.

4.3 Maternal and Child Health:

Maternal and child health indicators in Timor-Leste, while showing a trend of improvement, remain areas of significant concern. The country's maternal mortality rate is one of the highest in Southeast Asia, although it has declined from 750 per 100,000 live births in 2000 to 204 in 2020 ¹. Infant and under-five mortality rates are also high compared to regional averages, with the infant mortality rate at 45.6 deaths per 1,000 live births in 2022 and the under-five mortality rate at 58.5 ¹. A concerning factor contributing to maternal deaths is that a significant proportion of women still do not give birth in health facilities ¹. Malnutrition and stunting are critical issues affecting child development, with Timor-Leste having one of the highest rates of stunting in the world, affecting nearly half of all children under five years of age ¹. Preterm birth complications and birth asphyxia also contribute to mortality in newborns ¹⁴. Addressing these challenges requires targeted interventions aimed at improving access to quality care during pregnancy, childbirth, and early childhood, as well as comprehensive strategies to combat malnutrition.

4.4 Other Health Issues:

Beyond communicable and non-communicable diseases and maternal and child

health, other health issues also impact the population of Timor-Leste. Road injuries and violence are significant causes of mortality¹⁴. Furthermore, mental health is an area that requires increased attention, with a recognized need for a scaled-up response to mental health issues¹⁸. As Timor-Leste continues its development, these emerging health concerns, including injuries, violence, and mental well-being, warrant greater consideration within the public health agenda to ensure a comprehensive approach to improving overall health outcomes.

Key Takeaways and Insights for Section 4:

Timor-Leste faces a substantial health burden characterized by a high prevalence of both communicable and non-communicable diseases, alongside significant challenges in maternal and child health. Tuberculosis, stroke, ischemic heart disease, and complications related to pregnancy and childbirth are among the leading causes of death. Malnutrition and stunting pose critical threats to child development and long-term health. Understanding the specific geographical and socioeconomic disparities in the prevalence of these health issues within Timor-Leste is essential for developing targeted and effective interventions.

5. Comparative Study: Successful Healthcare Improvement Strategies in Developing Nations with Similar Socioeconomic Conditions

5.1 Identifying Comparable Nations:

To gain insights into effective healthcare improvement strategies, it is beneficial to examine the experiences of developing nations that share similar socioeconomic conditions with Timor-Leste. Several countries in Southeast Asia, including Cambodia, Laos, and Myanmar, are classified as Least Developed Countries (LDCs) alongside Timor-Leste, suggesting potential similarities in their developmental challenges and healthcare system evolution³¹. Table 1 in the research material provides a comparative overview of socioeconomic and health indicators for Timor-Leste, Indonesia, Thailand, Cambodia, and Vietnam, revealing that Cambodia's GNI per capita in 2014 (PPP\$ 3080) was closer to that of Timor-Leste (PPP\$ 5080) than other listed nations⁴. Additionally, Pacific Island nations such as Kiribati, Solomon Islands, and Vanuatu, also listed as LDCs, may offer relevant experiences, although their socioeconomic contexts might exhibit some differences³². Considering these factors, Cambodia and Laos appear to be particularly relevant Southeast Asian nations for comparison due to their shared LDC status and potentially similar trajectories in healthcare development.

5.2 Healthcare Improvements in Cambodia:

Cambodia has made significant progress in improving its healthcare system after the devastating impact of the Khmer Rouge regime, which severely depleted the healthcare workforce and infrastructure ¹¹. The country has achieved notable reductions in child mortality and the prevalence of major communicable diseases such as HIV, tuberculosis, and malaria ¹¹. Key strategies employed in Cambodia include expanding access to healthcare services across the country, particularly in rural and underserved areas, through the establishment of healthcare facilities, mobile clinics, and community health centers ³⁶. The government has also invested in strengthening healthcare infrastructure by constructing and upgrading hospitals, clinics, and medical facilities, leading to enhanced medical capabilities and increased capacity to handle a broader range of health issues ³⁶. To address the shortage of healthcare professionals, Cambodia has invested in training and education programs and made efforts to attract and retain qualified healthcare staff ³⁶. Furthermore, the country has expanded the scope of healthcare services to include preventive care, vaccinations, maternal and child health programs, and the management of communicable diseases, with a focus on promoting primary healthcare and disease prevention ³⁶. A significant initiative in Cambodia is the Health Equity Fund (HEF), launched in 2016, which provides financial assistance to lower socioeconomic households to cover healthcare costs, thereby reducing out-of-pocket payments and increasing access to care for this vulnerable population ³⁶. The development of the National Health Information System (NHIS) in 2018, a centralized database tracking health data nationwide, has also contributed to improved healthcare quality through better data for decision-making ³⁶. Cambodia has demonstrated a strong commitment to universal health coverage (UHC) and has developed national strategic plans, such as the Third Health Strategic Plan 2016–2020, to guide its healthcare sector towards this goal ¹¹. This progress has been facilitated by collaborations with international organizations and partners, including the World Health Organization, which have provided expertise, resources, and funding to support healthcare infrastructure development, capacity building, and the implementation of health programs ¹¹. Cambodia's experience in rebuilding its healthcare system from a severely weakened state and its emphasis on equity through the HEF offer valuable lessons for Timor-Leste as it continues to strengthen its own healthcare system. The development and implementation of a robust national health information system, as seen in Cambodia, also present a key step towards improving data-driven healthcare planning and delivery in Timor-Leste.

5.3 Healthcare Improvements in Laos:

Laos has prioritized the strengthening of primary healthcare services as a critical foundation for achieving universal health coverage (UHC) and other health-related

Sustainable Development Goals by 2030⁴⁰. A notable strategy employed by Laos is the use of geospatial analysis as a powerful tool for enhancing primary healthcare services⁴⁰. This involves mapping data related to demographics, socioeconomic status, the location of health facilities, the utilization of health services, and the availability of human resources for health. By leveraging this data, the government has been able to improve its strategic planning and resource allocation to enhance the accessibility, availability, and quality of health and care services at the primary care level⁴⁰. Efforts have also been directed towards improving health infrastructure, enhancing the skills of healthcare workers through training, and strengthening data systems⁴⁰. A particular emphasis has been placed on improving health equity by reaching hard-to-reach populations in remote and rural areas⁴⁰. The Health and Nutrition Services Access Project (HANSA), supported by the World Bank, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the Australian government, exemplifies these efforts by aiming to scale up the delivery of quality essential health services to those most in need, particularly women and children from ethnic minority groups in rural communities⁴². Phase 2 of the HANSA project builds on the successes of the first phase, which improved primary healthcare services using performance-linked payments and enhanced the District Health Information System for better planning and monitoring⁴². Given Timor-Leste's similar geographical challenges with mountainous terrain and isolated communities, Laos' strategic application of geospatial analysis to inform resource allocation and improve access in remote areas could be a highly relevant and potentially effective strategy to consider.

5.4 Healthcare Improvements in Solomon Islands and Vanuatu (Pacific Island Nations):

While their socioeconomic conditions may differ in some aspects from Timor-Leste, the experiences of Pacific Island nations like Solomon Islands and Vanuatu offer valuable insights into addressing healthcare challenges in island settings with remote populations. In Solomon Islands, a significant development was the handover of a world-class, four-story Comprehensive Medical Centre, a generous donation from the People's Republic of China⁴⁴. This new facility is expected to greatly enhance healthcare services, particularly in specialized areas like cardiology, nephrology, and urology, reducing the need for overseas medical referrals⁴⁴. Solomon Islands has also been actively developing a Digital Health Strategy for 2025-2029 to transform its health system through digital health technologies, building on existing successes in this area⁴⁵. Furthermore, with support from the World Bank, the Ministry of Health and Medical Services in Solomon Islands has been strengthening its health system by investing in infrastructure and workforce training, with a focus on developing primary

healthcare capacity at the community level ⁴⁶. This includes renovating medical stores and provincial hospitals, building isolation units, and providing essential equipment and transportation to reach patients in remote areas ⁴⁶. Australia has also established a significant health partnership with Solomon Islands, committing \$150 million to enhance healthcare delivery and save lives across the country, with a strong focus on provincial health departments and primary health services ⁴⁷. In Vanuatu, efforts to improve healthcare access in remote areas are central to the national health mission, with collaborations between local healthcare providers and organizations to enhance medical facilities, provide training, and increase awareness on crucial health issues ⁴⁸. UNICEF has also been supporting Vanuatu in improving water, sanitation, and hygiene (WASH) services in healthcare facilities to boost healthcare activities and reduce the spread of infections ⁴⁹. These experiences, particularly in leveraging international partnerships for infrastructure development (Solomon Islands) and focusing on digital health and improving access in remote and island communities (both Solomon Islands and Vanuatu), could provide valuable lessons and potential models for Timor-Leste to adapt and implement.

Key Takeaways and Insights for Section 5:

The experiences of Cambodia and Laos offer particularly relevant case studies for Timor-Leste, given their similar socioeconomic conditions and developmental challenges. Key strategies observed in these nations include a strong government commitment to achieving universal health coverage, the implementation of targeted funding mechanisms to support vulnerable populations in accessing healthcare, a focus on strengthening primary healthcare services as the cornerstone of the health system, the strategic utilization of technology for improved data management and service delivery, and the cultivation of strategic engagements with international partners and non-governmental organizations. Specific initiatives such as the application of geospatial analysis for resource allocation in Laos and the establishment of health equity funds in Cambodia present potentially adaptable models for Timor-Leste. The experiences of Solomon Islands and Vanuatu in the Pacific region further underscore the importance of leveraging international aid for infrastructure development and focusing on digital health solutions to overcome the challenges of providing healthcare to dispersed and remote populations. Understanding the specific challenges encountered by these countries during the implementation of these strategies and the approaches they adopted to address them can provide a more nuanced and practical perspective for Timor-Leste's own healthcare improvement efforts.

6. Assessment of the Healthcare Workforce in Timor-Leste: Challenges and

Opportunities

6.1 Number and Distribution of Healthcare Professionals:

Timor-Leste has witnessed a significant increase in its healthcare workforce over the past two decades, particularly in the number of medical doctors, which has grown from fewer than 30 to over 900⁵⁰. This increase is largely attributed to a strong commitment from the government, including a partnership with Cuba that provided medical training to numerous Timorese students⁵. Data from 2023 indicates a density of 22.8 medical doctors, nurses, and midwives per 10,000 population⁵⁰. However, the distribution of these healthcare professionals remains a significant challenge, with a notable concentration in urban areas and persistent shortages in rural regions⁵⁰. In 2014, a survey revealed that while approximately 53% of doctors were posted in rural facilities, nurses were more concentrated in urban areas (70%)⁵¹. The government has set an ambitious goal to ensure that by 2020, every Suco (village) with at least 2,000 inhabitants would have at least one doctor, two nurses, two midwives, and one laboratory technician⁵². Despite the progress in increasing the number of doctors, the distribution and the overall numbers of other essential healthcare professionals, such as nurses and medical specialists, require continued attention to ensure equitable access to healthcare services across the country. The disparity between urban and rural areas in the availability of healthcare workers remains a critical issue hindering the delivery of quality care to all Timorese citizens.

6.2 Shortages and Training Needs:

Despite the increase in the number of doctors, Timor-Leste continues to face a critical shortage of trained healthcare professionals, particularly in specialized fields and emergency medicine³. The healthcare system is plagued by a lack of specialized care, especially within emergency services³. Furthermore, there are concerns regarding insufficient practical skills among some healthcare cadres⁵⁰. Addressing these shortages requires not only increasing the overall number of healthcare workers but also focusing on providing targeted specialized training and ensuring continuous professional development opportunities³. Several initiatives are underway to address these training needs. Organizations like Maluk Timor collaborate with the Ministry of Health to deliver comprehensive training programs aimed at building the clinical skills of local healthcare professionals in primary care, digital literacy, and other essential areas⁵⁷. The Australia Timor-Leste Program of Assistance for Secondary Services-Phase II (ATLASS II) provides postgraduate medical education to increase the number of skilled doctors in specialized fields⁶². WHO also supports training programs, such as the Emergency and Critical Care training program, to enhance the

skills of healthcare workers in handling emergency situations ⁵⁵. The development of the country's first official, nationally recognized qualification in ambulance care, with assistance from the Order of Malta, is another step towards improving the skills of emergency responders ⁶³. Continuous investment in and expansion of such training programs are essential to improve the competency and practical skills of the healthcare workforce and to address the critical shortages in specialized areas.

6.3 Retention Challenges:

Retaining healthcare workers, especially in rural and remote areas of Timor-Leste, poses a significant challenge to achieving equitable healthcare access ⁵⁰. Several factors contribute to this challenge, including a lack of adequate facilities and essential medical supplies at health facilities, limited effective management and supervision, and insufficient opportunities for career development ⁵¹. Health Posts are often considered the least attractive work stations for medical staff ⁵¹. Surveys have indicated that only a small percentage of doctors express a long-term preference for working in rural Sucos ⁵¹. The absence of sufficient infrastructure, supplies, effective management support, and clear pathways for professional advancement severely reduces the motivation of healthcare workers deployed to these areas ⁵⁴. Addressing these retention challenges is crucial for ensuring that healthcare services are consistently available across the country. Strategies need to be developed and implemented to incentivize healthcare professionals to work in rural settings, including improvements to facilities and resources, enhanced management and supervision, and the provision of opportunities for ongoing training and career progression. Understanding the specific preferences and concerns of healthcare workers regarding their work environment and career aspirations is essential for designing effective retention strategies.

6.4 Training Institutions and Initiatives:

Timor-Leste has several institutions involved in the training of healthcare professionals. The National University of Timor-Leste (UNTL) is the leading higher education institution, offering programs in medicine, nursing, public health, and biomedical sciences ⁶⁵. Other institutions include the Dili Institute of Technology (DIT), the University of La Salle Timor-Leste, the Timor-Leste Health Sciences University (TLHSU), and the Instituto Superior de Saúde de Timor-Leste (ISSTL), each focusing on various aspects of healthcare training, including nursing, midwifery, medical laboratory science, and public health ⁶⁵. The Cuban Medical Brigade has played a pivotal role in training a significant number of Timorese doctors since 2003 ⁵. In addition to national institutions, numerous international organizations and NGOs

support healthcare professional training initiatives. WHO provides technical assistance in developing training programs and has supported the establishment of simulation-based skills centers⁵⁵. UNICEF supports capacity building of healthcare workers in areas like maternal and newborn health²⁴. The Royal Australasian College of Surgeons, through the ATLASS II program, offers postgraduate medical education⁶². Maluk Timor also conducts various training programs for doctors, nurses, and other healthcare professionals⁵⁷. The development of a primary care curriculum in collaboration with international partners further supports the training of healthcare workers in this critical area⁵⁷. While these efforts are significant, ensuring that the training provided aligns with the specific healthcare needs of the country, including addressing the burden of communicable and non-communicable diseases and improving maternal and child health outcomes, and that graduates are effectively distributed and retained across all regions, remains a key priority.

Key Takeaways and Insights for Section 6:

Timor-Leste faces a persistent shortage of skilled healthcare workers, particularly in nursing and specialized medical fields, compounded by a significant geographical maldistribution that favors urban centers over rural areas. The challenge of retaining healthcare professionals in rural and remote regions is exacerbated by inadequate infrastructure, limited resources, and a lack of opportunities for professional growth. While national training institutions and initiatives supported by international organizations and NGOs are actively working to build the healthcare workforce, these efforts must be strategically aligned with the country's specific health needs and distribution challenges to ensure equitable access to quality healthcare for all citizens.

7. Evaluation of Healthcare Financing Mechanisms in Timor-Leste

7.1 Current Financing Structure:

The healthcare system in Timor-Leste operates on a predominantly publicly financed and provided model, with health services generally offered free at the point of use in public facilities⁴. This commitment results in a large proportionate contribution from the government to total healthcare expenditure, accounting for approximately 90%⁴. However, the absolute amount of government spending on healthcare remains low in per capita terms compared to other nations in the East Asia region, with figures around US\$101 reported in 2014⁴. The health sector in Timor-Leste is heavily reliant on external funding, primarily through international development assistance for health (DAH). Notably, donor health spending has been on a decline in recent years and is

projected to continue this trend, which will place significant pressure on the total health budget ⁴. The national government's budget is largely dependent on revenues generated from oil extraction, making the healthcare sector's financial stability susceptible to fluctuations in global oil prices ⁵. This high dependence on a single, volatile revenue source underscores the vulnerability of the healthcare budget and highlights the critical need to explore more diversified and sustainable financing mechanisms. The observed decline in donor funding further emphasizes the urgency for Timor-Leste to strengthen its domestic resource mobilization efforts to ensure the long-term viability and growth of its healthcare system.

7.2 Government Expenditure on Health:

Government expenditure on health in Timor-Leste has varied over the years, reflecting the country's evolving economic situation and policy priorities. In 2017, the health sector budget was reported to be US\$73 million, accounting for 5.4% of the total national budget and 3.88% of the GDP ⁵. More recent data from 2021 indicates a per capita healthcare spending of \$135, representing 11.44% of the GDP ¹⁴. However, figures from 2015 show domestic general government health expenditure at 1.935% of GDP ⁶⁹. To address the growing need for resources in the health sector, the country launched the Health Financing Strategy 2019–2023, which outlines objectives such as ensuring financial protection for the population and increasing health funding to cover unmet needs ⁵. The implementation of health programs and capital investments has faced challenges due to delays in the approval of state budgets, sometimes leading to the adoption of duodecimal mechanisms where the system operates on monthly installments ⁷⁰. While the government remains the primary source of healthcare funding, the proportion of the national budget and GDP allocated to health appears relatively modest when considering the stated commitment to achieving universal health coverage. This suggests a potential need for increased budgetary allocation to the health sector and for enhancing the efficiency of public spending to maximize the impact of available resources. The inconsistencies in reported expenditure figures across different sources underscore the importance of establishing robust and standardized data collection and reporting mechanisms for accurate financial planning and monitoring in the health sector.

7.3 Donor Contributions and Out-of-Pocket Expenses:

Out-of-pocket payments (OOPs) for healthcare in Timor-Leste are notably lower compared to most other countries in the region, accounting for around 8% of current health expenditure in 2017 ⁴. While a low OOP rate might seem indicative of good financial protection, it is important to consider that this could also be linked to a lower

overall utilization of health services and the limited availability of comprehensive healthcare infrastructure, particularly in rural areas ⁴. External financial contributions from various international organizations and donors play a significant role in strengthening Timor-Leste's healthcare system. These contributions are often channeled through vertical programs targeting specific diseases or health areas and are facilitated by organizations such as the World Bank, UNICEF, and WHO ². Specific donor-funded projects and initiatives, including the Advance UHC Trust Fund, the Health Emergency Preparedness and Response Trust Fund, and the USAID Integrated Health System Activity, provide crucial financial and technical support for various aspects of healthcare development ². While the reliance on donor funding is substantial and has been instrumental in the progress achieved, it is essential for Timor-Leste to strategically manage these contributions to ensure alignment with national health priorities and to work towards long-term financial sustainability as donor support trends downwards.

7.4 Health Financing Strategy and Reforms:

The government of Timor-Leste launched the Health Financing Strategy 2019–2023 with the aim of ensuring financial protection for the population, increasing health funding to meet existing needs, reducing inequities in access to healthcare across different territories and population groups, and improving the overall efficiency of the health system ⁵. As part of its efforts to strengthen health financing, the Ministry of Health is considering the adoption of program-based budgeting and performance-based financing (PBF) models, particularly for primary healthcare providers in municipalities ⁷⁴. PBF aims to improve the delivery of health services by linking payments to the achievement of specific performance indicators, such as the provision of a pre-agreed set of services that meet appropriate quality and administrative standards ⁷⁴. To provide strategic direction and technical analysis for these reforms, there have been discussions about establishing a Health System Strengthening Working Group (HSSWG) and a dedicated Health Financing Unit (HFU) within the Ministry of Health ⁷⁴. The HSSWG would serve as an umbrella body to guide the technical sub-working groups, while the HFU would focus on informing policy related to health financing and budgeting, as well as exploring the earmarking of pro-health tax revenues for health sector initiatives ⁷⁴. These strategic initiatives indicate a proactive approach by the government to enhance the sustainability and efficiency of healthcare financing in Timor-Leste. However, the successful implementation of these reforms will depend on overcoming existing challenges, such as budget constraints and the continued reliance on external aid, and ensuring effective coordination across different government bodies and stakeholders.

Key Takeaways and Insights for Section 7:

Timor-Leste's healthcare system is predominantly funded by the government, with revenues largely derived from oil extraction, creating a potential risk of financial instability. While donor contributions are significant, they are on a downward trend, necessitating a greater emphasis on domestic resource mobilization. Out-of-pocket expenses for healthcare are low, but this may reflect limited access rather than comprehensive financial protection. The government has formulated a Health Financing Strategy and is exploring reforms, including program-based and performance-based financing, to improve the sustainability and efficiency of the system. The successful implementation of these strategies will be crucial for achieving universal health coverage. The specific targets and progress indicators of the Health Financing Strategy 2019-2023, along with a detailed assessment of its achievements and challenges to date, would provide further valuable insights into the ongoing efforts to strengthen healthcare financing in Timor-Leste.

8. Review and Potential Expansion of Public Health Initiatives and Preventative Care Programs

8.1 Existing Public Health Programs:

Timor-Leste has implemented several public health initiatives aimed at improving the health and well-being of its population. The Integrated Community Health Service Programme (SISCa) plays a vital role in delivering community-based primary care, extending essential health services to the village level ⁵. The Health in the Family Programme (Saude na Familia) is another key initiative designed to reach populations in remote and hard-to-reach areas, providing basic healthcare to every household ⁵. Immunization programs in Timor-Leste have achieved significant success in eliminating diseases such as polio, measles, and maternal and neonatal tetanus ²¹. The recent introduction of the Human Papillomavirus (HPV) vaccine in 2024 and the high coverage rates achieved in some immunization campaigns demonstrate the program's effectiveness ²¹. Maternal and child health are addressed through various programs focusing on antenatal care, promoting safe delivery practices, and providing postnatal care ²⁶. The Liga Inan (Connecting Mothers) program utilizes mobile health technology to improve maternal care seeking behaviors and maternal and child health outcomes by connecting pregnant women with government midwives via mobile phones ²⁹. Programs targeting specific diseases, such as tuberculosis, include initiatives like mobile TB screening using advanced technology ⁸⁵. Timor-Leste has also successfully eliminated lymphatic filariasis as a public health problem ⁸⁶. Furthermore, the School-Based Primary Health Care Package (PHCP) has been introduced to facilitate

the early detection of health issues among school children ⁸⁷. Health literacy programs, such as those run by Mary MacKillop Today, aim to improve community knowledge on essential health and hygiene practices ¹. These diverse public health initiatives indicate a strong commitment to addressing the nation's health challenges. The notable success of immunization programs provides a clear example of the potential impact of well-executed public health interventions. However, there remains scope to further enhance the reach and effectiveness of other programs, particularly those focused on preventative care and health education, to achieve broader improvements in population health.

8.2 Potential Areas for Expansion or Improvement:

Several areas present opportunities for expanding or improving public health initiatives and preventative care programs in Timor-Leste. Given the rising burden of non-communicable diseases (NCDs), there is a need to expand health education initiatives to effectively address behavioral risk factors such as high tobacco use rates and unhealthy dietary habits ¹. Strengthening preventative care programs for maternal and child health, with a particular focus on enhancing access to antenatal care, skilled birth attendance during delivery, and comprehensive postnatal care, especially in rural communities, remains crucial ¹. Exploring the feasibility of expanding screening programs for prevalent NCDs like hypertension and diabetes at the primary healthcare level could facilitate earlier diagnosis and management ⁸⁵. Adopting and scaling up community-based approaches for health promotion and disease prevention, leveraging the potential of community health workers, could improve reach and effectiveness, particularly in underserved areas ¹. Integrating mental health services into the primary healthcare system and improving access to mental health support are also important considerations ¹⁸. Furthermore, intensifying programs aimed at combating malnutrition and stunting, with a specific focus on interventions during the critical first 1000 days of life, is essential for improving child health and development outcomes ¹. By strategically expanding the scope and reach of these preventative care programs and strengthening community engagement, Timor-Leste can make significant strides in improving the overall health and well-being of its population.

8.3 Immunization Program Strengthening:

The immunization program in Timor-Leste has been a notable success story in public health, achieving the elimination of several key diseases ²¹. A comprehensive review of the Expanded Programme on Immunization (EPI) and Vaccine-Preventable Disease Surveillance (VPDS) systems was recently conducted in October 2024, highlighting the program's strengths and identifying areas for further improvement ²¹. Key

recommendations from the review include enhancing dropout tracking and follow-up mechanisms within routine immunization, strengthening the accuracy of denominator data, and improving awareness, notification, and investigation of Adverse Events Following Immunization (AEFI) to maintain public trust ²¹. Given the continued threat of vaccine-preventable diseases, it is imperative for Timor-Leste to maintain its strong focus on immunization programs to prevent disease resurgence and to continue the fight against active diseases ²². Continuous monitoring, evaluation, and adaptation of the immunization program are essential to address any remaining challenges and to ensure consistently high coverage rates across all geographical regions and population groups.

Key Takeaways and Insights for Section 8:

Timor-Leste has made commendable progress in establishing various public health initiatives, with the immunization program serving as a prime example of success. However, there is significant potential to further expand and enhance preventative care programs, particularly in the areas of non-communicable diseases, maternal and child health, and mental health. Strengthening community-based approaches for health promotion and actively addressing behavioral risk factors are identified as key areas for future focus. While the immunization program has achieved notable milestones, continuous efforts are needed to monitor, evaluate, and improve its reach and effectiveness across the entire population. Enhancing the coordination and integration of the existing public health programs could also lead to a more synergistic and efficient healthcare system.

9. Opportunities for Integrating Technology and Digital Health Solutions in Timor-Leste

9.1 Current Use of Technology:

Timor-Leste has already begun to integrate technology and digital health solutions into its healthcare system in several key areas. The Liga Inan program, a mobile health initiative, utilizes SMS messaging and phone calls to connect pregnant women with healthcare providers, aiming to improve maternal care seeking behaviors and overall maternal and child health outcomes ²⁹. Digital tools are being employed to assess immunization coverage, allowing for more efficient data collection and analysis, feeding directly into the Timor-Leste Health Information System (TLHIS) ⁷⁸. The country has also rolled out the Integrated Case-Based Electronic Surveillance System (ICBS-TL) to enhance the tracking and management of diseases such as tuberculosis, malaria, and HIV, moving from aggregate data to case-specific information ⁹².

mSupply, an electronic logistics management information system, is being used by the Timor-Leste Medical and Pharmaceutical Supply Agency (SAMES) and the National Hospital to manage medical supplies stock and facilitate requisitions ⁹³. To further expand digital health technology, UNICEF has supported the Ministry of Health by providing computer tablets and routers to numerous Community Health Centres and municipal health services across the country ⁹⁴. Additionally, modern laboratory software, such as the CGM SCHUYLAB Laboratory Information System, has been implemented in the National Health Laboratory and the National Hospital in Dili to improve diagnostic capabilities and enhance access to laboratory results for healthcare providers ⁹⁵. These existing applications of technology demonstrate a growing recognition of the potential benefits of digital health solutions in improving healthcare delivery and management in Timor-Leste.

9.2 Potential for Further Integration:

Significant opportunities exist for Timor-Leste to further integrate technology and digital health solutions to address various challenges within its healthcare system. Telemedicine holds considerable potential to overcome geographical barriers and improve access to specialist medical care, particularly for individuals living in remote and mountainous regions ². Expanding the use of electronic health records (EHRs) across healthcare facilities could significantly enhance patient data management, improve the continuity of care, and support more informed clinical decision-making ⁶¹. However, successful EHR implementation would require addressing existing challenges related to computer literacy among healthcare professionals and improving internet connectivity, which remains a barrier in many parts of the country ⁶¹. Mobile health applications (mHealth) could be further leveraged for patient education, sending reminders for appointments and medication adherence, and facilitating remote monitoring of health conditions ²⁹. The feasibility of utilizing drones for the delivery of essential medical supplies, especially during emergencies in geographically challenging areas, has also been explored ². Furthermore, the development and deployment of an AI-powered clinical decision support chatbot, such as MediBot, tailored to the local context and language (Tetun), could provide valuable assistance to primary care providers in making accurate and evidence-based medical decisions ¹⁰³. Realizing these opportunities for technology integration has the potential to greatly improve the accessibility, efficiency, data management capabilities, and overall quality of healthcare services in Timor-Leste. However, it is crucial to address the existing infrastructural limitations, connectivity issues, and the varying levels of digital literacy among healthcare workers through targeted training and infrastructure development initiatives.

9.3 Digital Health Blueprint:

Recognizing the transformative potential of digital health, the World Health Organization (WHO) and the Ministry of Health (MoH) in Timor-Leste have collaborated to develop a Digital Health Blueprint ¹⁰⁴. This blueprint serves as a strategic framework to guide the development and implementation of digital health solutions across the country, with a strong emphasis on ensuring sustainable approaches, promoting strategic planning, and fostering the integration of emerging technologies ¹⁰⁴. The blueprint aims to build a collaborative ecosystem involving stakeholders from the public sector, development partners, and the private sector to architect and deploy effective digital health solutions ¹⁰⁴. The creation of this national digital health strategy represents a significant and positive step towards establishing a coordinated and sustainable approach to leveraging technology within the healthcare system. By providing a clear framework and direction, the blueprint is expected to ensure that future digital health initiatives are aligned with national health goals, are implemented in a well-coordinated manner, and involve the active participation of all relevant stakeholders.

Key Takeaways and Insights for Section 9:

Timor-Leste has already made initial steps in adopting digital health solutions, demonstrating a positive trend towards leveraging technology in healthcare. Expanding the use of telemedicine, electronic health records, and mobile health applications presents significant opportunities to enhance healthcare access and quality, particularly in remote areas. However, addressing existing challenges related to inadequate infrastructure, limited internet connectivity, and varying levels of digital literacy among healthcare professionals is crucial for the successful and widespread integration of these technologies. The development of a national Digital Health Blueprint provides a strategic roadmap for future digital health initiatives, emphasizing the importance of coordination, sustainability, and stakeholder engagement.

10. Synthesis of Reports and Recommendations from International Organizations and NGOs

10.1 World Health Organization (WHO):

The World Health Organization (WHO) has been a key partner in supporting the development of Timor-Leste's healthcare system. WHO has provided substantial impetus to the implementation of the country's essential health service package for primary healthcare and has mobilized high-level political commitment to accelerate

efforts to end tuberculosis by 2025 ¹⁰⁵. WHO has also played a crucial role in formulating an integrated national plan to control and eliminate neglected tropical diseases through strategic coordination with stakeholder networks and the private sector ¹⁰⁵. Recognizing the importance of preparedness, WHO has worked with the government to enhance its capacity to respond to health emergencies by guiding the development of a national action plan for health security and supporting the establishment of the first health emergency operations center in March 2020 ¹⁰⁵. Furthermore, WHO has been instrumental in supporting Timor-Leste's immunization programs, including a recent comprehensive review aimed at strengthening the program further ²¹. In the realm of emergency care, WHO provided technical assistance to develop the Emergency and Critical Care training program ⁵⁵. A significant achievement supported by WHO is the validation of Timor-Leste for having eliminated lymphatic filariasis as a public health problem ⁸⁶. WHO is also actively collaborating with the Ministry of Health on the development and finalization of the Digital Health Blueprint, which will guide the implementation of digital health solutions in the country ¹⁰⁴. The multifaceted support provided by WHO underscores its vital role in providing technical expertise, policy guidance, and programmatic assistance to strengthen Timor-Leste's healthcare system and align it with global health standards and goals.

10.2 World Bank:

The World Bank has been a significant development partner for Timor-Leste, providing extensive support for strengthening its healthcare system. Through initiatives like the Advance Universal Health Coverage Trust Fund, the World Bank has offered tailored analytics and advisory support to the government to deepen its understanding of how to improve the quality and availability of health services ². Key analytical outputs, such as the Timor-Leste Human Capital Review (2023) and the Timor-Leste Economic Report – Investing in the Next Generation (2022), have identified critical areas for investment in health, education, and social protection to enhance the country's human capital and socio-economic development ². The World Bank has also supported the government through the Health Emergency Preparedness and Response Trust Fund (HEPR-TF) Project, which aims to strengthen the country's capacity to prevent, detect, and respond to health emergencies ². Additionally, the World Bank is supporting the Healthcare Action Through Rapid Infrastructure Improvements (“HARI’I”) Project, which focuses on strengthening health infrastructure and the referral system in targeted areas ¹⁰⁶. The World Bank has also been involved in initiatives to improve the management of medical supplies within the country ¹³. The comprehensive support provided by the World Bank encompasses

financial assistance, technical expertise, and analytical work, all aimed at building a more resilient, efficient, and equitable healthcare system in Timor-Leste.

10.3 UNICEF:

UNICEF's efforts in Timor-Leste are primarily focused on improving the survival, development, and well-being of children and mothers. The organization works in close partnership with the Ministry of Health to strengthen the health system at both national and municipal levels, with a particular emphasis on five priority municipalities²⁴. UNICEF supports immunization programs to ensure children receive essential vaccinations, contributes to improving maternal and neonatal care services, and works to enhance access to clean water and sanitation in healthcare facilities and communities¹. UNICEF also provides support for reaching communities with essential nutrition interventions to prevent and treat malnutrition among children and mothers¹. In line with the growing importance of digital health, UNICEF has supported Timor-Leste's efforts in this area by providing equipment and technical assistance to expand the use of digital health technology for improved data management and service delivery⁹⁴. Furthermore, UNICEF has assisted the government in the development of key national strategies and policies, such as the National Nutrition Strategy, to provide a framework for addressing critical health issues²⁴. Through its multifaceted approach, UNICEF plays a vital role in addressing the specific health needs of children and women in Timor-Leste, contributing to improved health outcomes and overall well-being.

10.4 Non-Governmental Organizations (NGOs):

Non-governmental organizations (NGOs) play a crucial role in complementing the efforts of the government and international organizations to improve healthcare in Timor-Leste. Maluk Timor is a prominent NGO that focuses on empowering local healthcare workers through targeted and continuous training programs, thereby strengthening primary care services and improving the skills of doctors, nurses, and allied healthcare professionals⁵⁷. The East Timor Hearts Fund is dedicated to addressing heart health issues in the country, providing screening, treatment support, and training for local heart health professionals⁹⁸. Health Alliance International (now HAMNASA) has made significant contributions to maternal and newborn care and was instrumental in the scale-up of the Liga Inan program, which connects pregnant women with essential health information and services²⁹. Mary MacKillop Today runs a Health Literacy Program that trains teachers to convey vital health information to primary school children, aiming to prevent common diseases through education on health and hygiene practices¹. Historically, NGOs played a critical role in providing

health services in Timor-Leste, particularly in the aftermath of independence⁵. The diverse activities of these and other NGOs highlight their valuable contributions to the healthcare sector, often focusing on specific areas of need or reaching underserved populations with tailored programs and community-level engagement. Effective collaboration and coordination between the government and these NGOs are essential to maximize their impact and ensure alignment with national health priorities.

Key Takeaways and Insights for Section 10:

A multitude of international organizations, including WHO, the World Bank, and UNICEF, along with numerous non-governmental organizations, are actively engaged in supporting the development of Timor-Leste's healthcare system. Their collective efforts encompass a wide range of activities, including the provision of financial and technical assistance, policy guidance, infrastructure development, workforce training, disease control programs, and initiatives focused on maternal and child health. The effectiveness of these contributions is significantly enhanced by strong coordination and collaboration among these various actors and with the government of Timor-Leste to ensure alignment of priorities and avoid any potential duplication of efforts.

11. Conclusion: Integrated Recommendations for Improving Timor-Leste's Healthcare System

The analysis presented in this report underscores the significant progress Timor-Leste has made in developing its healthcare system since independence, while also highlighting the persistent challenges that need to be addressed to achieve universal health coverage and improve population health outcomes. Synthesizing the key findings and drawing upon the experiences of comparable nations and the recommendations of international organizations and NGOs, the following integrated recommendations are proposed:

- **Strengthening Healthcare Infrastructure:** Prioritize sustained investments in upgrading and adequately equipping healthcare facilities across all levels, with a particular focus on rural and remote areas. Expand and modernize ambulance services and enhance the training of personnel to improve pre-hospital emergency care. Implement robust supply chain management systems to ensure the consistent availability of essential medicines and medical supplies, especially in underserved regions.
- **Addressing Major Health Issues:** Implement comprehensive and targeted programs for the prevention, early diagnosis, and effective treatment of

tuberculosis and other prevalent communicable diseases. Develop and execute a national strategy to combat the rising burden of non-communicable diseases through public health campaigns promoting healthy lifestyles, expanding screening programs at the primary healthcare level, and strengthening the capacity for long-term management of chronic conditions. Enhance maternal and child health services by focusing on increasing access to quality antenatal care, promoting skilled birth attendance in health facilities, improving postnatal care, and implementing evidence-based interventions to address the high rates of malnutrition and stunting among children.

- **Healthcare Workforce Development:** Invest strategically in specialized training programs and continuous professional development opportunities for all cadres of healthcare workers, with a particular emphasis on emergency medicine, specialized medical fields, and primary healthcare skills. Develop and implement a comprehensive strategy to attract and retain qualified healthcare professionals in rural and remote areas through a combination of financial incentives, improved living and working conditions, opportunities for professional advancement, and enhanced management support.
- **Sustainable Healthcare Financing:** Explore diversified revenue streams to reduce the healthcare system's heavy reliance on volatile oil revenues. Gradually increase the proportion of the national budget allocated to health to better meet the needs of the population and progress towards universal health coverage. Strategically leverage donor contributions to support national health priorities and build long-term sustainability. Enhance efficiency in healthcare spending through improved financial management, strategic purchasing, and the reduction of wastage.
- **Expanding Public Health Initiatives:** Scale up successful existing preventative care programs and health education initiatives, tailoring them to the specific needs of different communities and focusing on promoting healthy behaviors. Strengthen community-based approaches for health promotion, disease prevention, and health service delivery by empowering community health workers and fostering community participation. Continue to strengthen and expand the reach of the national immunization program, addressing identified gaps in coverage and ensuring robust surveillance for vaccine-preventable diseases.
- **Leveraging Technology and Digital Health:** Continue the strategic implementation and expansion of digital health solutions, including telemedicine, electronic health records, and mobile health applications, while simultaneously addressing the critical challenges of inadequate infrastructure, limited internet connectivity, and varying levels of digital literacy among healthcare workers and the general population. Effectively implement the national Digital Health Blueprint,

ensuring collaboration and coordination among all stakeholders to maximize the benefits of digital health for improving healthcare access and quality.

- **Strengthening Coordination and Partnerships:** Establish and strengthen mechanisms for effective coordination and collaboration among the government, international organizations, non-governmental organizations, and the private sector involved in healthcare development. Regular consultations, joint planning, and shared monitoring frameworks are essential to ensure alignment of priorities, optimize resource utilization, and avoid duplication of efforts in the pursuit of a stronger and more effective healthcare system in Timor-Leste.

By implementing these integrated recommendations, Timor-Leste can build upon the progress already achieved and move towards a more equitable, resilient, and high-quality healthcare system that effectively addresses the health needs of all its citizens, contributing to improved health outcomes and the realization of universal health coverage.

Works cited

1. Timor-Leste | UNICEF Australia, accessed March 28, 2025, <https://www.unicef.org.au/what-we-do/our-work-in-timor-leste>
2. Building a deeper understanding of Timor-Leste's health system - World Bank, accessed March 28, 2025, <https://www.worldbank.org/en/programs/multi-donor-trust-fund-for-integrating-externally-financed-health-programs/brief/building-a-deeper-understanding-of-timor-leste-s-health-system>
3. Exploring the emergency care challenges in Timor-Leste, accessed March 28, 2025, <https://en.tatoli.tl/2024/10/09/exploring-the-emergency-care-challenges-in-timor-leste/11/>
4. Determinants of health care utilisation: the case of Timor-Leste - PMC, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC6204763/>
5. Building social protection floors for all - Country Brief: Timor-Leste, accessed March 28, 2025, <https://www.social-protection.org/gimi/Media.action;jsessionid=9Nqi01wrCg4U0dXa7sgsCdtGCxfH2QFlyNStT5ygpZm90MCiN-L!1945465934?id=18735>
6. List of hospitals in Timor-Leste - Wikipedia, accessed March 28, 2025, https://en.wikipedia.org/wiki/List_of_hospitals_in_Timor-Leste
7. UNICEF Timor-Leste, accessed March 28, 2025, <https://open.unicef.org/sites/transparency/files/2020-06/Timor-Leste-TP1-2018.pdf>
8. National Health System « Government of Timor-Leste, accessed March 28, 2025, <https://timor-leste.gov.tl/?p=3374&lang=en&n=1>
9. www.social-protection.org, accessed March 28, 2025,

<https://www.social-protection.org/gimi/Media.action;jsessionid=9Ngi01wrCg4U0dXa7sgsCdtGCxfH2QFlyNStT5ygpZm90MCiN-L!1945465934?id=18735#:~:text=Timor%2DLeste's%20public%20health%20system,services%20under%20the%20SISCA%20program.>

10. List of Medical Facilities in Timor-Leste - GOV.UK, accessed March 28, 2025, <https://www.gov.uk/government/publications/timor-leste-medical-facilities/list-of-medical-facilities-in-timor-leste>
11. Sector Brief Cambodia: Health Care - GIZ, accessed March 28, 2025, https://www.giz.de/en/downloads/SectorBrief_Cambodia_HealthCareSector.pdf
12. Health Profile Health Profile: Democratic Republic of Timor-Leste - World Health Organization (WHO), accessed March 28, 2025, https://cdn.who.int/media/docs/default-source/searo/timor-leste/health-information-tls-health-profile-rdtl.pdf?sfvrsn=f941afd0_2
13. Timor-Leste: Better Medical Supply Management Improves Lives - World Bank, accessed March 28, 2025, <https://www.worldbank.org/en/news/feature/2015/01/08/timor-leste-better-medical-supply-management-improves-lives>
14. Timor-Leste - WHO Data, accessed March 28, 2025, <https://data.who.int/countries/626>
15. Communicable Illnesses: The Most Common Diseases in Timor-Leste - BORGEM Magazine, accessed March 28, 2025, <https://www.borgenmagazine.com/common-diseases-in-timor-leste/>
16. National cross-sectional cluster survey of tuberculosis prevalence in Timor-Leste: a study protocol - PubMed Central, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC10928736/>
17. HEALTH PROFILE TIMOR-LESTE - World Life Expectancy, accessed March 28, 2025, <https://www.worldlifeexpectancy.com/country-health-profile/timor-leste>
18. Timor-Leste - IRIS, accessed March 28, 2025, https://iris.who.int/bitstream/handle/10665/136890/ccsbrief_tls_en.pdf?sequence=1&isAllowed=y
19. Diseases: East Timor - Beware of the Bugs, accessed March 28, 2025, <https://bewareofthebugs.com/countries/east-timor/>
20. Timor-Leste - NaTHNaC, accessed March 28, 2025, <https://travelhealthpro.org.uk/country/68/timor-leste>
21. Timor-Leste Conducts Comprehensive Immunization and Vaccine Surveillance Review - Blog and Newsletters - TechNet-21, accessed March 28, 2025, <https://www.technet-21.org/en/community/blogs-newsletters/timor-leste-conducts-comprehensive-immunization-and-vaccine-surveillance-review>
22. World Immunization week: Timor-Leste's focused efforts in immunization are vital pillar of public health, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/24-04-2024-world-immunization-week--timor-leste-s-focused-efforts-in-immunization-are-vital-pillar-of-public-health>
23. TIMOR-LESTE - NET, accessed March 28, 2025, <https://srhdpeuwpubsa.blob.core.windows.net/whdh/DATADOT/COUNTRY/PDF/62>

[6_Timor-Leste.pdf](#)

24. Child Survival and Development | UNICEF Timor-Leste, accessed March 28, 2025, <https://www.unicef.org/timorleste/child-survival-and-development>
25. Timor-Leste Maternal Mortality Rate 2000-2025 - Macrotrends, accessed March 28, 2025, <https://www.macrotrends.net/global-metrics/countries/TLS/timor-leste/maternal-mortality-rate>
26. Maternal Health - UNFPA Timor-Leste, accessed March 28, 2025, <https://timor-leste.unfpa.org/en/topics/maternal-health-12>
27. Timor-Leste - Lao Hamutuk, accessed March 28, 2025, https://www.laohamutuk.org/DVD/DGS/Cens22/Mortality_Summary_-2022_Optimized.pdf
28. MORTALITY - UNFPA Timor-Leste, accessed March 28, 2025, https://timor-leste.unfpa.org/sites/default/files/pub-pdf/census_booklet_%20MORTALITY-1707%20Over%202.pdf
29. How an app is saving the lives of women and babies in Timor-Leste | Catalpa International, accessed March 28, 2025, <https://catalpa.io/blog/how-an-app-is-saving-the-lives-of-women-and-babies-in-timor-leste/>
30. Violence in Timor-Leste - World Life Expectancy, accessed March 28, 2025, <https://www.worldlifeexpectancy.com/timor-leste-violence>
31. Timor-Leste looks to ASEAN for membership and modernisation | East Asia Forum, accessed March 28, 2025, <https://eastasiaforum.org/2025/02/21/timor-leste-looks-to-asean-for-membership-and-modernisation/>
32. UN list of least developed countries - UNCTAD, accessed March 28, 2025, <https://unctad.org/topic/least-developed-countries/list>
33. (PDF) Trends in Population and Socioeconomic Development in Southeast Asia, accessed March 28, 2025, https://www.researchgate.net/publication/360415935_Trends_in_Population_and_Socioeconomic_Development_in_Southeast_Asia
34. Pacific Economic Survey - Department of Foreign Affairs and Trade, accessed March 28, 2025, https://www.dfat.gov.au/sites/default/files/Pacific_Economic_Survey09.pdf
35. Pacific Islands Overview: Development news, research, data | World Bank, accessed March 28, 2025, <https://www.worldbank.org/en/country/pacificislands/overview>
36. Healthcare in Cambodia - IPS Cambodia Real Estate, accessed March 28, 2025, <https://ips-cambodia.com/healthcare-in-cambodia/>
37. Cambodia: Progressing Toward Universal Health Coverage - World Bank Blogs, accessed March 28, 2025, <https://blogs.worldbank.org/en/health/cambodia-progressing-toward-universal-health-coverage>
38. Our work in Cambodia - World Health Organization (WHO), accessed March 28, 2025, <https://www.who.int/cambodia/our-work>

39. Improving Health Service Quality in the Kingdom of Cambodia: A Policy Perspective - PMC, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC7768884/>
40. Geospatial analysis in Lao PDR helps people access better health care services, accessed March 28, 2025, <https://www.who.int/news-room/feature-stories/detail/geospatial-analysis-in-lao-people-s-democratic-republic-helps-people-access-better-health-care-services>
41. Fulfilling the Right to Health: The Path to Lao PDR's Recovery and Growth - UNICEF.org, accessed March 28, 2025, <https://www.unicef.org/laos/stories/fulfilling-right-health-path-lao-pdrs-recovery-and-growth>
42. Access to Quality Health and Nutrition Services – Tackling One of Laos' Enduring Challenges - World Bank, accessed March 28, 2025, <https://www.worldbank.org/en/country/lao/brief/access-to-quality-health-and-nutrition-services-tackling-one-of-laos-enduring-challenges>
43. World Bank and Partners to Build on Support for Improved Health and Nutrition in Lao PDR, accessed March 28, 2025, <https://www.worldbank.org/en/news/press-release/2024/03/23/world-bank-and-partners-to-build-on-support-for-improved-health-and-nutrition-in-lao-pdr>
44. PRC hands over World-Class Comprehensive Medical Centre - Solomon Islands Government, accessed March 28, 2025, <https://solomons.gov.sb/prc-hands-over-world-class-comprehensive-medical-centre/>
45. Solomon Islands Ministry of Health and Medical Services paves the way for digital health transformation - World Health Organization (WHO), accessed March 28, 2025, <https://www.who.int/westernpacific/about/how-we-work/pacific-support/news/detail/20-01-2025-solomon-islands-ministry-of-health-and-medical-services-paves-the-way-for-digital-health-transformation>
46. Solomon Islands: Improving Rural Health Services, Investing in Systems - World Bank, accessed March 28, 2025, <https://www.worldbank.org/en/news/feature/2024/12/05/solomon-islands-improving-rural-health-services-investing-in-systems>
47. \$150m for health sector - Solomon Star News, accessed March 28, 2025, <https://www.solomonstarnews.com/150m-for-health-sector/>
48. Healthcare improvement - Vanuatu, accessed March 28, 2025, <https://vanuatu.b12sites.com/healthcare-improvement>
49. Thousands to benefit from strengthened healthcare services through access to reliable and safe water supply - Unicef, accessed March 28, 2025, <https://www.unicef.org/pacificislands/press-releases/thousands-benefit-strengthened-healthcare-services-through-access-reliable-and-safe>
50. Timor-Leste - World Health Organization (WHO), accessed March 28, 2025, https://cdn.who.int/media/docs/default-source/searo/his/hrh-profiles/timor_leste_hrh_countryprofile_final_09232024.pdf?sfvrsn=af185866_3

51. Health Worker Survey in Timor-Leste - World Bank Documents and Reports, accessed March 28, 2025, <https://documents1.worldbank.org/curated/fr/986251468187127947/pdf/103443-WP-P146118-PUBLIC-Timor-Leste-Health-Worker-Survey-Final-Report-14June15.pdf>
52. What do health workers in Timor-Leste want, know and do? Findings from a national health labour market survey, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC5116185/>
53. Health sector in Timor-Leste set for massive capacity boost as over 400 Timorese Doctors graduate, accessed March 28, 2025, <https://timor-leste.gov.tl/?p=7483&lang=en>
54. Health worker survey in Timor-Leste | Oxford Policy Management, accessed March 28, 2025, <https://www.opml.co.uk/projects/health-worker-survey-timor-leste>
55. Timor-Leste: Saving lives through critical care in remote mountainous regions, accessed March 28, 2025, <https://extranet.who.int/uhcpartnership/story/timor-leste-saving-lives-through-critical-care-remote-mountainous-regions-0>
56. Timor-Leste strengthens stroke care with specialized training program, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/07-01-2025-timor-leste-strengthens-stroke-care-with-specialized-training-program>
57. Empowering Local Healthcare Workers Through Comprehensive Training Programs - Maluku Timor, accessed March 28, 2025, <https://maluktimor.org/2025/01/08/empowering-local-healthcare-workers-through-comprehensive-training-programs/>
58. Health Professionals Development Program - Maluku Timor, accessed March 28, 2025, <https://maluktimor.org/about-maluk/medical-training/>
59. Saving Lives Through Local Empowerment: Transforming Healthcare in Timor-Leste, accessed March 28, 2025, <https://maluktimor.org/2024/10/16/saving-lives-through-local-empowerment-transforming-healthcare-in-timor-leste/>
60. Lessons Learnt Delivering a Novel Infectious Diseases National Training Programme to Timor-Leste's Primary Care Workforce - PubMed, accessed March 28, 2025, <https://pubmed.ncbi.nlm.nih.gov/39525392/>
61. Digital Literacy in Healthcare: Bridging the Gap in Timor-Leste, accessed March 28, 2025, <https://maluktimor.org/2024/10/16/digital-literacy-in-healthcare-bridging-the-gap-in-timor-leste/>
62. ATLASS II Program - RACS, accessed March 28, 2025, <https://www.surgeons.org/about-racs/global-health/global-health-programs/timor-leste-programs/atlass-ii-program>
63. Rebuilding medical infrastructure across Timor Leste - Sovereign Military Order of Malta, accessed March 28, 2025, <https://www.orderofmalta.int/news/rebuilding-medical-infrastructure-across-tim>

[or-leste/](#)

64. Retaining Health Workers in Rural Areas of Timor Leste - World Bank Documents and Reports, accessed March 28, 2025,
<https://documents1.worldbank.org/curated/ru/612771468196751307/pdf/103440-BRI-P146118-PUBLIC-Rural-retention-of-health-workers-in-Timor-Leste.pdf>
65. Top 10 Medical Universities in Timor-Leste - AcadFly, accessed March 28, 2025,
<https://www.acadfly.com/blogs/medical-universities-timor-leste>
66. www.social-protection.org, accessed March 28, 2025,
<https://www.social-protection.org/gimi/Media.action:jsessionId=9Ngi01wrCg4UOdXa7sgsCdtGCxfH2QFlyNStT5ygpZm90MCiN-L!1945465934?id=18735#:~:text=Health%20services%20in%20Timor%2DLeste,mot%20countries%20in%20the%20region.>
67. Timor-Leste - P4H Network, accessed March 28, 2025,
<https://p4h.world/en/countries/timor-leste/>
68. Timor-Leste Healthcare Spending 2003-2025 - Macrotrends, accessed March 28, 2025,
<https://www.macrotrends.net/global-metrics/countries/TLS/timor-leste/healthcare-spending>
69. Timor-Leste TL: Domestic General Government Health Expenditure: % of GDP - CEIC, accessed March 28, 2025,
<https://www.ceicdata.com/en/timorleste/health-statistics/tl-domestic-general-government-health-expenditure--of-gdp>
70. Health Financing Strategy for progressing towards the universal health coverage: overview of WHO's support - World Health Organization (WHO), accessed March 28, 2025,
<https://www.who.int/about/accountability/results/who-results-report-2020-mtr/country-story/2020/health-financing-strategy-for-progressing-towards-the-universal-health-coverage-overview-of-who-s-support>
71. Health in Timor-Leste - Unicef, accessed March 28, 2025,
https://www.unicef.org/timorleste/media/5841/file/UNICEF_TIMOR_LESTE_INVESTMENT_CASE_HEALTH_Final.pdf
72. USAID Integrated Health System Activity, accessed March 28, 2025,
https://propelhealth.thepalladiumgroup.com/wp-content/uploads/2024/11/USAID_T-L-IHSA_Fact-Sheet_2024_508.pdf
73. Democratic Republic of Timor-Leste - World Bank Documents and Reports, accessed March 28, 2025,
<https://documents1.worldbank.org/curated/en/099112024212035554/pdf/P17676715a616f0d01b1b7146cca5581d3b.pdf>
74. The Way Forward for Sustainable Health Financing in Timor-Leste - LHSS Project - Medium, accessed March 28, 2025,
<https://lhssproject.medium.com/the-way-forward-for-sustainable-health-financing-in-timor-leste-c5e112ab29e>
75. Joint national and international review of immunization systems after 9 years in Timor-Leste, accessed March 28, 2025,
<https://www.who.int/timorleste/news/detail/27-10-2024-joint-national-and-intern>

- [ational-review-of-immunization-systems-after-9-years-in-timor-leste](#)
76. Immunisation program review in Timor-Leste - SABII, accessed March 28, 2025, <https://sabii.sydney.edu.au/2024/10/28/immunisation-program-review-in-timor-leste/>
 77. Timor-Leste rolls out HPV vaccination program - NCIRS, accessed March 28, 2025, <https://ncirs.org.au/timor-leste-rolls-out-hpv-vaccination-program>
 78. Timor-Leste's health workers use digital tools to assess immunization coverage, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/28-04-2023-timor-leste-s-health-workers-use-digital-tools-to-assess-immunization-coverage>
 79. Empowering Women in Timor-Leste: The Role of Maternal and Child Health Training, accessed March 28, 2025, <https://maluktimor.org/2024/08/15/empowering-women-in-timor-leste-the-role-of-maternal-and-child-health-training/>
 80. Maternal & Child Health - Maluk Timor, accessed March 28, 2025, <https://maluktimor.org/programs/womens-health/>
 81. REDUCING MATERNAL AND PERINATAL MORBIDITY AND MORTALITY THROUGH STRENGTHENING THE EMERGENCY OBSTETRIC AND NEWBORN CARE SERVICES IN TIMOR-LESTE, accessed March 28, 2025, <https://timor-leste.unfpa.org/en/news/reducing-maternal-and-perinatal-morbidity-and-mortality-through-strengthening-emergency>
 82. Adoption of policies to improve respectful maternity care in Timor-Leste - PMC, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC10962841/>
 83. Maintaining the provision and use of services for maternal, newborn, child and adolescent health and older people during the COVID-19 pandemic, accessed March 28, 2025, <https://apps.who.int/iris/bitstream/handle/10665/365567/9789240065239-eng.pdf>
 84. 'Mobile Moms' to boost health of women in Timor-Leste - University of Washington, accessed March 28, 2025, <https://www.washington.edu/news/2012/08/31/mobile-moms-to-boost-health-of-women-in-timor-leste/>
 85. Timor-Leste's Integrated Health Program – a path to Universal Health Coverage, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/12-12-2023-timor-leste-s-integrated-health-program--a-path-to-universal-health-coverage>
 86. Elimination of lymphatic filariasis as a public health problem in Timor-Leste, accessed March 28, 2025, <https://www.who.int/news/item/08-10-2024-elimination-of-lymphatic-filariasis-as-a-public-health-problem-in-timor-leste>
 87. Timor-Leste brings health access to classrooms, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/18-12-2024-timor-leste-brings-health-access-to-classrooms>
 88. Timor-Leste: Health Literacy Program - Mary MacKillop Today, accessed March 28, 2025, <https://www.marymackilloptoday.org.au/what-we-do/our-projects/timor-leste/he>

- [alth-literacy-program/](#)
89. Lessons from developing nations on improving health care - PMC - PubMed Central, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC406330/>
 90. Lancet Series Launch: The Current and Future Outlook for Primary ..., accessed March 28, 2025, <https://publichealth.jhu.edu/2024/lancet-series-launch-the-current-and-future-outlook-for-primary-health-care-in-south-asia>
 91. Health | UNICEF Timor-Leste, accessed March 28, 2025, <https://www.unicef.org/timorleste/topics/health>
 92. Zooming in: Timor-Leste's case-based approach to health data, accessed March 28, 2025, <https://www.who.int/timorleste/news/detail/19-12-2024-zooming-in-timor-leste-s-case-based-approach-to-health-data>
 93. UNFPA digital solutions strengthen health systems and upscale health services in Timor-Leste, accessed March 28, 2025, <https://timor-leste.unfpa.org/en/news/unfpa-digital-solutions-strengthen-health-systems-and-upscale-health-services-timor-leste>
 94. UNICEF supports Timor-Leste's digital health system with funding from Japan, accessed March 28, 2025, <https://www.unicef.org/timorleste/press-releases/unicef-supports-timor-lestes-digital-health-system-funding-japan>
 95. Modern lab software improves healthcare in Timor-Leste | CGM - CompuGroup Medical, accessed March 28, 2025, https://www.cgm.com/usa_en/articles/testimonials/lab/modern-lab-software-improves-healthcare-in-timor-leste.html
 96. Telemedicine in Action: Transforming healthcare for LMICs, accessed March 28, 2025, https://cdn.who.int/media/docs/default-source/searo/hsd/webinar_flyer_telemedicine.pdf?sfvrsn=9e00de4b_3
 97. What is Telemedicine and How Are Health Systems Using It Globally? A Primer for Health System Leaders | Intelheath, accessed March 28, 2025, <https://intelehealth.org/what-is-telemedicine-and-how-are-health-systems-using-it-globally-a-primer-for-health-system-leaders/>
 98. Telemedicine to Timor-Leste: implementing an international cardiac telehealth service during population dislocation, floods and COVID-19 - PubMed Central, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC9111676/>
 99. Telemedicine to Timor-Leste: implementing an international cardiac telehealth service during population dislocation, floods and COVID-19 - Find an Expert - The University of Melbourne, accessed March 28, 2025, <https://findanexpert.unimelb.edu.au/scholarlywork/1668419-telemedicine-to-timor-leste--implementing-an-international-cardiac-telehealth-service-during-population-dislocation--floods-and-covid-19>
 100. Electronic Personal Health Record (e-PHR) - International Organization for Migration, accessed March 28, 2025, <https://www.iom.int/ephr>

101. Readiness of Health Professional Using Computers, Internet and Mobile phone to Digitalize Timor-Leste' Healthcare System, accessed March 28, 2025, <https://jmedicalsciences.tl/index.php/TLJMS/article/download/11/11/10>
102. Primary health care physicians' perception of electronic health records adoption in Timor-Leste: a cross-sectional study - ResearchGate, accessed March 28, 2025, https://www.researchgate.net/publication/367193632_Primary_health_care_physicians'_perception_of_electronic_health_records_adoption_in_Timor-Leste_a_cross-sectional_study
103. MediBot is an AI chatbot that provides clinical decision support to medical professionals, starting in Timor-Leste - MIT Solve, accessed March 28, 2025, <https://solve.mit.edu/solutions/87027>
104. WHO and MoH hold consultation on Digital Health Blueprint, accessed March 28, 2025, <https://en.tatoli.tl/2025/01/23/who-and-moh-hold-consultation-on-digital-health-blueprint/10/>
105. Timor-Leste - Country profile, accessed March 28, 2025, <https://www.who.int/about/accountability/results/who-results-report-2020-2021/country-profile/2021/timor-leste>
106. Healthcare Action Through Rapid Infrastructure Improvements ("HARI") Project (P179592) - World Bank Documents and Reports, accessed March 28, 2025, <http://documents1.worldbank.org/curated/en/099062524024034175/pdf/P1795921fc7e980fc1a15f127c05408693d.pdf>
107. Health | UNICEF Timor-Leste, accessed March 28, 2025, <https://www.unicef.org/timorleste/topics/health?page=6%2C%2C%2C%2C0>
108. Lessons Learnt Delivering a Novel Infectious Diseases National Training Programme to Timor-Leste's Primary Care Workforce, accessed March 28, 2025, <https://pmc.ncbi.nlm.nih.gov/articles/PMC11545918/>
109. About us - Timor-Leste Hearts Fund, accessed March 28, 2025, <https://timorlesteheartsfund.org.au/about-us/>
110. Preventative health - Timor-Leste Hearts Fund, accessed March 28, 2025, <https://timorlesteheartsfund.org.au/our-work/preventing-deaths/>
111. Timor Leste - Health Alliance International, accessed March 28, 2025, <https://www.healthallianceinternational.org/tl/>
112. Full article: The World Bank's Health Projects in Timor-Leste: The Political Economy of Effective Aid - Taylor & Francis Online, accessed March 28, 2025, <https://www.tandfonline.com/doi/full/10.1080/13533312.2015.1059731>
113. The role of international NGOs in health systems strengthening: the case of Timor-Leste, accessed March 28, 2025, <https://pubmed.ncbi.nlm.nih.gov/24919307/>