



Ensuring Tertiary Care Services to All: A Strategic Approach in the Socio-economic Context of Sri Lanka

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Abstract

Sri Lanka's health system is internationally recognized for achieving impressive health indicators at a relatively low cost, a testament to its robust primary and secondary healthcare networks. However, a significant challenge remains in ensuring equitable access to high-cost, technology-intensive tertiary care services, which are often concentrated in major urban centers. This disparity poses a barrier to the nation's commitment to Universal Health Coverage (UHC). This perspective article analyzes existing frameworks and proposals within the Sri Lankan health system to outline a strategic approach for decentralizing and democratizing tertiary care. We argue that instead of replicating high-cost infrastructure, Sri Lanka can adopt a more sustainable and efficient model based on networked resources, digital integration, and strengthened care pathways. Key strategies explored include the development of "hub-and-spoke" models for high-technology services like cardiology and oncology, where district-level resources are shared among multiple institutions to maximize utilization. Furthermore, we examine the critical role of telemedicine and digital platforms in extending specialized expertise in fields like emergency medicine, community paediatrics, and mental health to peripheral settings. The National Organ Donor Coordination Programme is presented as a case study in effective, resource-conscious national coordination. The article concludes that by integrating these strategies—underpinned by robust Health Technology Assessment—Sri Lanka can create a resilient, equitable, and economically viable model for tertiary care delivery that aligns with its socio-economic context and reinforces its commitment to health for all.

Key Words: Tertiary Care, Universal Health Coverage (UHC), Health Service Delivery, Sri Lanka, Telemedicine, Networked Resources, Integrated Care

Introduction

The Democratic Socialist Republic of Sri Lanka has long been a paradigm of effective public health policy, achieving health indicators comparable to developed nations despite modest economic investment [1, 2]. This success is largely attributed to a foundational commitment to free health and education, resulting in a well-established network of primary and secondary curative and preventive health institutions accessible to the majority of the population. The country's health system is structured with a decentralized service delivery model through nine Provincial Ministries of Health, while the central Ministry of Health provides stewardship and manages major tertiary and specialized institutions.

Despite these strengths, a critical challenge persists: the inequitable distribution of tertiary care services [3]. Tertiary care, which involves specialized consultative healthcare, usually for inpatients and on referral from a primary or secondary health professional, relies on advanced medical technology and highly specialized personnel. Consequently, services such as advanced cardiac interventions, radiotherapy, complex diagnostic imaging, and sub-specialty paediatric and psychiatric care have traditionally been concentrated in national and teaching hospitals in major cities. This centralization creates significant geographical and financial

barriers for a large portion of the population, undermining the core principle of Universal Health Coverage (UHC), which aims to ensure all people have access to quality health services without suffering financial hardship.

The conventional solution of replicating comprehensive tertiary care centers in every district is not financially viable within Sri Lanka's low-cost, resource-conscious model. Therefore, a more strategic, innovative, and integrated approach is required. This review article aims to analyze and synthesize various proposals and existing frameworks within the Sri Lankan health system to formulate a cohesive strategy for extending tertiary care services to all citizens. We will explore models based on networked resources, the strategic use of digital health platforms, the strengthening of care pathways, and national coordination programs that maximize efficiency while upholding quality and equity.

The Foundational Strategy: Integrating the Care Pyramid

Before tertiary services can be effectively decentralized, the entire care pyramid must be strengthened to manage patient loads appropriately. The current system is often characterized by the underutilization of Primary Health Care (PHC) institutions and concurrent

overcrowding of secondary and tertiary care centres. A key strategy to alleviate the burden on tertiary care is to empower PHC and secondary care institutions to manage conditions effectively, ensuring that only the most complex cases are referred upwards [4].

This is achievable through an Integrated Care Services (ICS) model, which aims to provide comprehensive and coordinated care across different healthcare settings and disciplines. The establishment of Family Medical Clinics within PHC institutions, staffed by trained medical officers and supervised by Family Medicine specialists, serves as the cornerstone of this model [5, 6]. These clinics would manage the long-term follow-up of uncomplicated non-communicable diseases (NCDs) and other chronic conditions, which currently consume a significant portion of tertiary clinic resources.

A robust, formal referral and back-referral mechanism is critical to this integration. Patients identified at the primary level requiring specialist assessment would be referred to the designated "Apex" secondary or tertiary hospital within their cluster. Crucially, once stabilized, these patients would be referred back to their local Family Medical Clinic/ primary medical care unit for continued management, with clear communication and shared care protocols. This not only ensures continuity of care but also reserves specialist time at tertiary centers for complex cases, reducing waiting lists and improving overall efficiency. This process of step-down care is extremely useful for the elderly and those with disabilities where services could be extended to home based care and community-based rehabilitation provided by skilled staff under the supervision of the specialists at tertiary care services.

A Hub-and-Spoke Model for High-Technology Services

For capital-intensive diagnostic and therapeutic services, a "hub-and-spoke" or networked resource model is the most pragmatic approach for a low-resource setting [7]. This involves establishing advanced facilities at a central "hub" institution within a district or region, which then serves multiple "spoke" hospitals.

This model will ensure access to all while curtailing the costs incurred. It also an important mechanism to ensure that Specialist within the district do not have a loss of skills due to non-usage where the specialists can be given time slots to practice at the specialized hub to cater to the patients of his/her catchment area.

Cardiology and Radiology

Cardiovascular diseases are a leading cause of morbidity and mortality. While cardiologists may be posted at multiple District General and Base Hospitals, access to interventional facilities like

Cardiac Catheterization Laboratories (Cath Labs) is limited. A strategic approach involves establishing a single, fully equipped Cath Lab at a designated tertiary or secondary hospital within a district. This shared resource could then be utilized by all consultant cardiologists in the region on a rotational basis, with dedicated time slots. This model maximizes the return on investment for the expensive equipment, ensures a high case volume to maintain staff expertise, and provides equitable access for patients across the district without the need for long-distance travel to a national hospital.

The same principle applies to advanced radiological services. The proposal to equip each district with a CT scanner and each province with an MRI scanner is a significant step towards equitable access. These units, placed strategically, can serve a network of surrounding hospitals, which can refer patients for scans, with results transmitted digitally for interpretation by radiologists.

Oncology

Cancer management often requires radiotherapy, a highly specialized and capital-intensive service. Centralizing radiotherapy units at key provincial or district-level oncology centers creates hubs of expertise. Patients from surrounding areas can be referred to these centers for their treatment course. This model ensures that expensive linear accelerators and planning systems are used to their full capacity and that care is delivered by experienced, specialized teams, which is critical for safety and efficacy in radiation oncology.

Laboratory Specialties

With the constant developments and upgrading of the technology and scientific knowledge of the laboratory specialties, including Hematology, Microbiology, Chemical Pathology and Histopathology as well as the more focused areas of Virology, Mycology, Parasitology and Immunology it is recommended to develop a central lab at District General Hospital level to cater to the needs of the District is accessible to all the relevant Consultants placed within the district.

Extending Specialized Expertise through Digital Health

The most significant barrier to accessing tertiary care is often the scarcity of specialized human resources. Digital health and telemedicine offer a powerful, cost-effective solution to bridge this expertise gap, projecting the knowledge of tertiary-level specialists into peripheral settings.

Strengthening Emergency Care

A major focus has been on the strengthening of Emergency Treatment Units (ETUs) at the PHC

level to serve as the first contact point for emergencies. However, medical officers at this level often face complex cases requiring immediate specialist input.

Telemedicine integration is a revolutionary solution, enabling a direct link between a medical officer in a rural ETU and an Emergency Physician or relevant specialist at a tertiary center [8, 9]. Through a video call, the specialist can guide the initial resuscitation, interpret an ECG, or advise on stabilizing a patient for transfer. This "tele-consultation" can prevent the three critical delays in emergency management: the delay in deciding to seek care, the delay in reaching care, and the delay in receiving *adequate* care [10]. This model reduces unnecessary and risky inter-hospital transfers and ensures that life-saving interventions begin within the "golden hour".

Specialized Child Health and Mental Health Services

Sub-specialties like Community Paediatrics and Child and Adolescent Psychiatry are crucial for managing developmental disorders and complex mental health issues in children, but specialists are few and centrally located. The proposed model for Community Pediatric Services exemplifies a functional hub-and-spoke system enhanced by technology. A tertiary-level Community Pediatrician based at a district general/teaching center would conduct diagnostic and assessment clinics for referrals from a wide network of Medical Officer of Health areas, schools, and primary care doctors.

Crucially, follow-up care can be decentralized to peripheral clinics closer to the child's home. The specialist can support these peripheral centers through a combination of physical visiting clinics and tele-consultative sessions to review progress with local medical officers, therapists, and families. This tiered system ensures that specialized tertiary assessment is available to all, while the long-term management is integrated into the community, reducing the travel burden on families and promoting continuity of care. A similar model can be applied to mental health services, linking tertiary-level psychiatrists with community mental health teams and primary care physicians through digital platforms, supplemented by existing resources like the 1926 mental health hotline.

"Healthnet" to monitor the needs

A systematic reporting system of requirement technology, equipment, human resources on the centralized platformed that can be monitored at each level of governance is also critical. This would allow policy makers at the central and provincial level to make decisions based on real time updated data and allow rational usage of resources.

A National Model for Coordination: The Organ Donor Programme

The National Transplant Programme represents another facet of tertiary care—one that depends less on physical infrastructure and more on sophisticated coordination, public awareness, and a robust legal and ethical framework [11]. Strengthening this program to suit Sri Lanka's resources involves creating a centralized coordination system that can efficiently manage the process from donor identification to organ retrieval and allocation [12].

This involves training transplant coordinators in major hospitals, establishing a national donor registry, and streamlining communication between ICUs across the country. A key, low-cost innovation is the proposal to integrate organ donor status into national documents like the driving license, which can significantly increase donor identification rates. This program serves as an excellent case study of a highly specialized tertiary service that can be made more effective not through massive capital investment, but through intelligent system design, process optimization, and public engagement.

The Role of Health Technology Assessment (HTA)

Underpinning all decisions related to the expansion of tertiary care in a low-resource setting must be a rigorous process of Health Technology Assessment (HTA) [13]. The proposal to establish a dedicated HTA and Improvement Unit is a critical step towards ensuring that investments are strategic and sustainable [14]. This unit would be responsible for scientifically evaluating new and existing technologies, projects, and proposals for their cost-effectiveness and benefit-for-cost. By providing evidence-based guidance, the HTA unit would ensure that decisions to procure expensive equipment like MRI machines or to establish new specialized units are based on actual need and proven value, preventing wasteful expenditure and ensuring that resources are allocated for maximum impact on public health.

Discussion

The challenge of providing equitable tertiary care in Sri Lanka is not insurmountable. The solution lies not in abandoning the country's successful low-cost public health model, but in adapting it with strategic innovation. The models reviewed here—networked resources, digital health integration, strengthened care pathways, and national coordination—collectively form a blueprint for a more equitable and efficient system. This approach moves away from a paradigm of "building more" to one of "connecting better."

By creating shared-resource hubs for technology-intensive services, the system can achieve economies of scale and ensure high utilization rates. By leveraging telemedicine, the system can "transport" expertise, not just patients, overcoming geographical barriers and empowering healthcare providers at the primary and secondary levels. By strengthening the entire care pyramid and implementing formal referral pathways, the system ensures that tertiary centers can focus on their core mandate: managing the most complex and critical cases.

However, the implementation of these strategies is not without challenges. It requires robust governance and coordination between central and provincial health authorities. Significant investment is needed in digital infrastructure, including reliable internet connectivity in rural areas. Furthermore, it necessitates a cultural shift among both healthcare providers and patients, fostering trust in peripheral centers and embracing new models of care delivery. Continuous professional development is essential to equip staff at all levels with the skills needed to function within this integrated system.

Conclusion

Ensuring equitable access to tertiary care is the next frontier for Sri Lanka's health system in its journey towards comprehensive Universal Health Coverage. The country's socio-economic context demands a strategy that is intelligent, integrated, and innovative rather than merely capital-intensive. By strategically networking high-technology resources, extending specialist expertise through digital platforms, strengthening the entire continuum of care, and making evidence-based investment decisions through Health Technology Assessment, Sri Lanka can successfully deliver advanced healthcare to all its citizens. This approach not only promises better health outcomes but also provides a sustainable and resilient model for other developing nations striving to achieve similar goals.

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