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Embracing **Artificial Intelligence** Transforming Healthcare Management *for a* **Smarter Future**



THE COLLEGE OF MEDICAL ADMINISTRATORS OF SRI LANKA



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“Managing Healthcare with Leadership Wisdom”
Through Academic Excellence, Managerial Excellence, and Emotional Intelligence

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OUR OBJECTIVES

To guide the health development in Sri Lanka.

To assist in the implementation of national health policy.

To promote postgraduate studies in the field of medical administration.

To undertake health system research in the field of medical administration.

To promote and foster professional advancement of Medical Administrators.

To regularly review the status of Medical Administration in the country and analyse problems in the field.

To guide the Ministry of Health and private sector on human resources development and resources mobilization in the field.

To foster fellowship among the professionals engaged in the field of Medical Administration.

To publish a journal of professional Medical Administration.

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TABLE OF CONTENTS

PRESIDENTIAL MESSAGE	iv
EDITORIAL	vi
Cover Story	11
Original Articles	
Assessment of the Completeness of Laboratory Investigation Request Forms of the Outpatient Department in the District General Hospital, Matale	15
Work-related factors associated with Burnout among Nursing officers at Teaching Hospital Badulla	18
Effectiveness of Health Development Committee Meetings in Healthcare Administration: A Qualitative Analysis	24
Optimizing Utilization of Cardiothoracic Surgical Facilities in Sri Lanka: A Cost-Benefit Analysis of Extending Operating Hours to Reduce Waiting Lists	31
Review Articles	
Evolution of Medical Administration in Sri Lanka	39
Quality Improvement Studies	
Improving the Laboratory Investigation Process at the Outpatient Department of Teaching Hospital Kalutara: A Quality Improvement Initiative	45
Optimizing Patient Flow by minimizing the patients' movements in the Accident and Emergency Unit: A Case Study from Teaching Hospital Batticaloa	49
Waterfall and Agile Project Management: Cost-Efficient and Collaborative Approach for Renovating Operating Theater in District General Hospital Negombo	54
Perspective	
A Reflection on the "Noya Yuthu Thana" Workshop: Addressing Drug Addiction Among School Children in Sri Lanka	59
Picture Story	
The Enduring Legacy: A Hundred Years of Service of the National Institute of Infectious Diseases, Sri Lanka (1926 -2026)	65
Appreciation	
In Memory of Dr. Lankathilaka Jayasinghe (1967-2020)	71

PRESIDENTIAL MESSAGE**Managing Healthcare with Leadership Wisdom through Academic Excellence, Managerial Excellence, and Emotional Intelligence***Dharmaratne G.S.K.*<https://doi.org/10.4038/slajma.v26i1.5549>

Fellow Members,

It is a profound honour and a great privilege to address you as the 32nd President of the College of Medical Administrators of Sri Lanka at a time we need to manage healthcare with leadership wisdom. In today's complex healthcare landscape, leadership wisdom requires more than knowledge and authority. It demands the integration of three vital dimensions as echoed in the theme of this year.

A Legacy of Health Excellence

Sri Lanka's healthcare system stands as a remarkable model among developing nations. Despite our relatively modest health expenditure, our health indicators surpass many of our regional peers. With a life expectancy of 76.6 years at birth, and maternal and infant mortality rates significantly lower than regional averages, we are testament to what can be achieved through excellent healthcare initiatives and committed health professionals.

However, while we celebrate these achievements, we are acutely aware of the evolving challenges that face our healthcare system. As we strive towards the Sustainable Development Goals (SDGs) by 2030, we must lead with vision, wisdom, and resilience. This year, we embrace the theme: "Managing Healthcare with Leadership Wisdom through Academic Excellence, Managerial Excellence, and Emotional Intelligence."

Academic Excellence

A well-informed healthcare leader is empowered to make evidence-based decisions, influence policy, and drive innovation. Our country currently benefits from the expertise of more than 350 MSc-qualified and 75 board-certified consultants in medical administration. We also anticipate the return of 18 overseas trainees this year, who will further enrich our healthcare system.

The Postgraduate Institute of Medicine (PGIM) plays a central role in cultivating academic excellence. Its MSc and MD programs in Medical Administration offer a rigorous curriculum that blends theory with real-world practice, equipping future leaders with skills in strategic management, policy development, and health systems improvement.

Equally important is the contribution of allied health professionals, whose education and skill development—facilitated by our universities and training institutions—bolster the overall quality and efficiency of service delivery. Fostering academic partnerships, innovation, and continuous learning are critical as we face emerging global health demands.

Managerial Excellence

Managerial excellence is the engine that drives healthcare systems forward. It is not enough to do things right, we must also do the right things, at the right time, with precision and foresight.

Efficiency, effectiveness, and a relentless pursuit of excellence are the hallmarks of great managers. Whether through strategic planning, resource

optimization, or fostering a culture of quality and accountability, healthcare administrators must rise to meet the unique challenges of working in resource-constrained environments.

From infection control to workforce safety, from adopting health technologies to risk mitigation, the role of a leader is not only to manage but to protect and inspire. As we promote both patient and staff safety, let us remember: the leader is the guardian—of systems, people, and trust.

Emotional Intelligence (EI)

As leaders, our greatest strength often lies not in our intellect, but in our capacity to understand, connect, and inspire. Emotional Intelligence is at the heart of effective leadership. A Greek philosopher Aristotle once said: “To be angry with the right person, to the right degree, at the right time, for the right purpose, and in the right way—that is not easy.”

Lord Buddha echoes this timeless wisdom: “Hatred cannot be overcome by hatred; only by love, kindness, and compassion can it be conquered.”

Daniel Goleman’s five components of EI—Self-Awareness, Self-Regulation, Motivation, Empathy, and Social Skills—are essential tools in navigating the emotional and interpersonal complexities of modern healthcare.

I believe Emotional Intelligence should not only be practiced but also taught. EI can be considered both a tool and a competency that enhances leadership effectiveness—especially in healthcare management. We must integrate this tool into the academic curricula of the PGIM, universities, and allied health training programs. Emotionally intelligent leadership is the foundation of compassionate, ethical, and high-performing healthcare environments.

In this transformative era, the convergence of academic insight, operational mastery, and emotional wisdom will define the future of healthcare leadership in Sri Lanka. Let us rise to

this moment with clarity of vision, strength of purpose, and unity of spirit. I encourage all of you to engage in lifelong learning, exhibiting managerial excellence, cultivating emotional intelligence, shaping the future of healthcare in our country.

This year, I am proud to introduce Volume 26, Issue 01 of the CMASL Journal. This journal is a testament to the dedication and commitment of our members to advancing healthcare management in Sri Lanka. The articles in this issue reflect the wealth of knowledge, experience, and forward-thinking ideas from our members. Together, let us build a health system that is intelligent, resilient, and humane guided by Leadership Wisdom.

With gratitude and commitment,

Dr. Sudath Dharmaratne

President

The College of Medical Administrators of Sri Lanka

EDITORIAL

Continuous Professional Development Towards Academic Excellence*Samarakoon M.A.S.C.¹*¹Ministry of Health (samiddhisamarakoon@yahoo.com)<https://doi.org/10.4038/sljma.v26i1.5546>

In the dynamic landscape of healthcare, the role of medical administrators is continuously evolving. The increasing complexity of healthcare systems, advancements in medical science, and shifting policy landscapes demand that medical professionals remain responsive, knowledgeable, and skilled. In this context, Continuous Professional Development (CPD) emerges as a cornerstone for academic excellence, ensuring that medical administrators remain at the forefront of leadership, innovation, and evidence-based decision-making.

CPD is not merely a regulatory requirement; it is a commitment to lifelong learning and self-improvement. It nurtures a culture of critical thinking, encourages interdisciplinary collaboration, and enhances problem-solving abilities. For medical administrators, CPD is instrumental in refining leadership skills, strengthening healthcare governance, and improving service delivery. It bridges the gap between theory and practice, allowing professionals to translate emerging research into effective healthcare policies and management strategies.

The Importance of CPD in Medical Administration

Academic excellence in medical administration is closely linked to CPD initiatives that are structured, relevant, and impactful. A well-designed CPD framework

should encompass a mix of knowledge acquisition, practical training, peer discussions, and self-reflection. Workshops, seminars, online courses, research publications, and leadership training are essential components that contribute to a holistic CPD approach. Additionally, mentorship and peer networking play a crucial role in advancing an environment of shared learning and professional growth.

CPD also plays a significant role in enhancing decision-making abilities. Medical administrators are responsible for overseeing complex healthcare operations, allocating resources effectively, and ensuring patient safety and quality care. With continuous learning, professionals stay updated with the latest healthcare regulations, financial models, and technological advancements that impact hospital administration and public health policies.

The growing demand for evidence-based decision-making in medical administration necessitates a proactive approach to CPD. The integration of management theories with real-world applications helps administrators craft strategies that enhance hospital efficiency, workforce productivity, and patient-centered care. Furthermore, CPD allows medical administrators to remain competitive, ensuring their skills align with industry standards and best international practices.

CPD as a Driver of Leadership and Innovation

Leadership in healthcare administration is more than just managing teams; it requires vision, strategic thinking, and the ability to adapt to changes. CPD enables medical administrators to refine their leadership styles, enhance emotional intelligence, and build strong, motivated teams. Leadership courses, executive training programs, and mentorship opportunities are crucial in developing skills necessary for driving institutional excellence.

Moreover, CPD raises innovation by exposing medical administrators to emerging trends in healthcare management. Topics such as digital health, artificial intelligence in healthcare, and data-driven decision-making are increasingly relevant. By staying engaged in professional development, administrators can integrate new technologies into hospital systems, streamline processes, and enhance patient experiences.

Healthcare innovation is not limited to technological advancements. CPD also encourages process optimization, policy formulation, and operational efficiency in healthcare settings. Exposure to global best practices allows administrators to adopt innovative management techniques that improve hospital workflows, reduce waiting times, and optimize resource allocation.

CPD and Evidence-Based Practice

Evidence-based practice is at the core of medical administration. Decision-making grounded in research and best practices leads to better healthcare policies and improved patient outcomes. CPD encourages administrators to engage in research,

contribute to academic publications, and participate in knowledge-sharing platforms. Attending medical conferences, publishing in peer-reviewed journals, and collaborating with academic institutions are all avenues for advancing academic excellence through CPD.

Additionally, CPD raises an analytical mindset, equipping professionals with the skills needed to interpret data, assess healthcare trends, and make informed decisions. This is particularly crucial in areas such as hospital accreditation, patient safety initiatives, and health policy formulation, where evidence-based strategies can lead to systemic improvements.

The role of CPD in research cannot be overstated. Administrators who engage in continuous learning contribute to the development of innovative healthcare models, policy frameworks, and strategic management solutions. Research-driven CPD promotes critical analysis, enhances problem-solving skills, and improves the overall quality of healthcare governance.

The Role of Institutions in Promoting CPD

Institutions and governing bodies must recognize the significance of CPD and facilitate opportunities for medical administrators to engage in continuous learning. This includes integrating CPD into career progression pathways, providing financial and logistical support, and encouraging participation in national and international academic platforms. Furthermore, technological advancements such as e-learning modules, virtual conferences, and artificial intelligence-driven

analytics can enhance the accessibility and effectiveness of CPD programs.

Healthcare organizations should also prioritize CPD by creating learning-friendly environments, offering incentives for professional development, and ensuring that CPD activities align with institutional goals. Medical universities and professional bodies must collaborate to design CPD programs that address the real-world challenges faced by medical administrators.

Collaboration between academia and industry is essential in strengthening CPD frameworks. Universities can partner with hospitals, research centers, and professional organizations to offer tailor-made CPD programs that address sector-specific needs. Such partnerships ensure that CPD remains relevant, practical, and aligned with the latest advancements in healthcare management.

Current CPD Framework in Sri Lanka

In Sri Lanka, the Ministry of Health formally launched the **National Continuous Professional Development (CPD) System for Health Professionals** in February 2024. This initiative marks a significant step toward standardizing and enhancing professional development across all categories of healthcare staff in the government sector. The Education, Training, and Research (ET&R) Unit has been designated as the national coordinating body for CPD. The framework introduces structured roles for **mentees**, **mentors**, and **CPD providers**, each with clearly defined responsibilities and a centralized registration process via the Ministry's website. Accreditation of CPD

programs is now mandatory, and CPD points will be allocated based on verified participation and documented evidence. This structured national approach aims to unify existing CPD efforts by healthcare colleges, associations, UN agencies, and the Ministry itself—reinforcing accountability, quality, and consistency in professional development practices.

Barriers to CPD and Strategies to Overcome Them

Despite its numerous benefits, CPD faces several barriers that hinder its widespread adoption. These barriers include time constraints, financial limitations, lack of institutional support, and resistance to change. Addressing these challenges requires a multi-faceted approach:

1. Time Management:

Medical administrators often have demanding schedules, making it difficult to dedicate time to CPD activities. Institutions can support flexible learning options, such as online courses, modular programs, and self-paced learning.

2. Financial Constraints:

CPD programs can be costly, particularly for professionals in resource-limited settings. Scholarships, grants, employer-sponsored training, and government-funded CPD initiatives can help reduce financial burdens.

3. Institutional Support:

Organizations should embed CPD into their work culture, recognizing it as an integral part of professional growth. Structured CPD policies, mentorship programs, and dedicated learning hours can enhance participation.

4. Resistance to Change:

Some professionals may be reluctant to engage in CPD due to a fixed mindset or perceived irrelevance. Encouraging a growth mindset, demonstrating the tangible benefits of CPD, and linking it to career advancement can help overcome this resistance.

A culture of continuous learning should be cultivated at both institutional and individual levels. This can be achieved through structured incentives such as career progression opportunities, recognition of CPD achievements, and leadership endorsement of lifelong learning initiatives.

CPD and the Future of Medical Administration

As the healthcare industry continues to evolve, CPD will play an even more critical role in shaping the future of medical administration. The increasing integration of artificial intelligence, telemedicine, and big data analytics into healthcare systems demands that administrators possess advanced skills in digital health management. CPD programs must therefore be dynamic, incorporating cutting-edge topics that prepare medical administrators for future challenges.

Furthermore, globalization has led to increased collaboration between healthcare institutions worldwide. International CPD opportunities, cross-border exchange programs, and global health leadership training can broaden perspectives and enhance competencies among medical administrators. These experiences contribute to academic excellence by exposing professionals to diverse healthcare models, best practices, and innovative solutions.

The Ethical Dimension of CPD

Beyond technical expertise, CPD also reinforces ethical considerations in medical administration. Ethical leadership, transparency, and patient-centered care are essential components of a well-functioning healthcare system. CPD programs that focus on medical ethics, patient rights, and healthcare equity ensure that administrators make decisions that prioritize public health and well-being.

Additionally, CPD instills a sense of professional responsibility, encouraging medical administrators to mentor the next generation of leaders. By sharing knowledge, experiences, and insights, seasoned professionals contribute to a continuous cycle of learning and improvement within the medical administration field.

Conclusion

The pursuit of academic excellence through CPD ultimately benefits the broader healthcare system. Administrators who actively engage in continuous learning contribute to policy reforms, optimize resource management, and implement best practices that improve patient care outcomes. Moreover, adopting a culture of lifelong learning within healthcare institutions ensures resilience, adaptability, and sustained progress in medical administration.

As medical administrators, the responsibility to embrace CPD extends beyond individual career growth—it is a professional obligation to enhance the quality and efficiency of healthcare delivery. Academic excellence is not a destination but a journey, and CPD

serves as the compass that guides us towards achieving the highest standards of knowledge, leadership, and service. By committing to ongoing learning, we pave the way for a robust, responsive, and future-ready healthcare system.

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Editor

*The College of Medical Administrators of
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COVER STORY

Embracing Artificial Intelligence Transforming Healthcare Management for a smarter Future

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Introduction

The evolution of healthcare management is at a pivotal moment. As Technical Healthcare Executives, our ability to lead with innovation, efficiency, and foresight defines the impact we create. The integration of Artificial Intelligence (AI) into our healthcare systems is not just a trend—it is a transformative force that empowers us to reimagine healthcare delivery. AI enhances decision-making, streamlines operations, and elevates patient care, making it an indispensable tool for modern Healthcare Executives.

In a world where patient demands are rising, financial constraints are tightening, and resource management is becoming more complex, AI stands as a beacon of possibility. This article explores how AI-driven solutions can revolutionize technical health care management and highlights opportunities for the College of Medical Administrators of Sri Lanka (CMASL) to lead this transformation.

AI is a Game Changer in Healthcare Management

Predictive Analytics for Hospital Resource Optimization

Imagine a system that predicts patient surges, optimizes staff allocation, and ensures seamless hospital operations. AI-powered predictive models will enable Sri Lankan hospital Executives to anticipate trends and allocate resources efficiently, particularly during seasonal disease outbreaks like dengue. By harnessing AI's forecasting capabilities, we can move from reactive to proactive healthcare management.

AI-Driven Procurement and Supply Chain Efficiency

No more critical shortages or unnecessary excess. AI-driven inventory management predicts demand patterns, ensuring essential medicines and medical supplies are always available. For Sri Lanka's state-run hospitals, this technology has the potential to eliminate inefficiencies, reduce costs, and ultimately save lives.

Enhancing Clinical Decision Support Systems (CDSS)

AI-assisted decision-making is revolutionizing patient care by providing evidence-based treatment recommendations. As electronic health records (EHRs) become more widespread in Sri Lanka, in step with the Digitalization initiative of the Government, AI-driven CDSS can support clinicians in making informed decisions, reducing diagnostic errors, and enhancing patient safety.

Automation: Freeing Time for Strategic Leadership

Time spent on paperwork and administrative tasks limits the strategic role of healthcare executives. AI-powered robotic process automation (RPA) can

streamline scheduling, billing (in the Private Sector), and financial management, thus allowing Medical Executives, to focus on innovation, policymaking, and improving healthcare quality and safety.

AI in Medical Imaging and Diagnostics: A Life-Saving Innovation

Early detection of diseases saves lives. AI-powered imaging technologies are accelerating diagnostic processes in Radiology and Pathology, improving accuracy, and reducing waiting times. In Sri Lanka, where Specialists in these Specialities are in short supply, AI can bridge the gap, ensuring patients receive timely and precise diagnoses.

AI-Powered Virtual Assistants: Strengthening Patient Engagement

Empowered patients make better healthcare choices. AI chatbots and virtual assistants can provide real-time medical advice, appointment scheduling, and follow-up care, improving accessibility and reducing the burden on healthcare providers.

Cybersecurity: Protecting the Future of Digital Health

With Sri Lanka moving towards digitized healthcare systems, safeguarding sensitive patient data is paramount. AI-driven cybersecurity tools offer proactive defence against cyber threats, ensuring patient information remains confidential and protected.

AI for Universal Health Coverage and Community Health

AI can transform public health initiatives by analysing large-scale health data, predicting disease trends, and guiding resource allocation.

From rural outreach programs to national health planning, AI offers solutions to bridge healthcare disparities and promote equity.

Telemedicine and Remote Patient Monitoring

AI-driven tele-health solutions break geographical barriers, ensuring that rural and underserved populations receive quality healthcare. Remote monitoring, AI-assisted consultations, and digital diagnostics can expand access to expert care across Sri Lanka.

AI in Healthcare Policy Planning

Data-driven policymaking ensures a smarter, more effective healthcare system. AI analytics can support Sri Lanka's Policymakers in resource distribution, crisis management, and public health interventions.

The Road Ahead: AI Adoption in Healthcare Management

Short-Term (0–5 years): Expanding AI adoption in telehealth, virtual assistants, and predictive analytics for operational efficiency.

Medium-Term (5–10 years): Large-scale integration of AI into management processes, electronic health records, and robotic-assisted healthcare.

Long-Term (>10 years): A fully connected healthcare ecosystem where AI-driven diagnostics and treatment plans enhance personalized care and medical decision-making.

AI is the present

AI is no longer the future; it is the present. As healthcare Executives, we must embrace this shift, championing AI's role in building a healthcare system that is more efficient, patient-centred, and forward-thinking.

Overcoming Challenges: Our Responsibility as Leaders

While AI offers vast potential, its integration comes with challenges:

- **Digital Infrastructure:** Many Sri Lankan hospitals still rely on manual systems. Upgrading technology is essential for AI adoption.
- **Data Privacy & Security:** Strong regulations and ethical guidelines must be in place to protect sensitive health data.
- **Training & Workforce Adaptation:** Healthcare professionals and administrators must be equipped with AI literacy to maximize its benefits.
- **Cost & Accessibility:** AI implementation requires strategic investment and collaboration with government initiatives.

Technical Healthcare Executives must lead the charge in addressing these challenges and advocating for sustainable AI integration.

The Role of the College of Medical Administrators of Sri Lanka

CMASL stands at the forefront of this transformation. As leaders in Technical healthcare management, CMASL members can:

Advocate for AI-driven policies that support innovation and efficiency in Sri Lanka's healthcare sector.

Facilitate AI education & training for healthcare professionals, ensuring seamless adoption

Collaborate with technology providers and policymakers to develop tailored AI solutions for Sri Lanka's unique needs.

Promote ethical AI practices, ensuring fairness, accountability, and security in healthcare AI applications.

Conclusion: Leading the Future with AI

AI is more than a tool; it is a transformational force that redefines what is possible in healthcare management. By embracing AI-driven solutions, we, as Technical Healthcare Executives, can build a resilient, efficient, and patient-centred healthcare system for Sri Lanka.

The College of Medical Administrators of Sri Lanka is uniquely positioned to lead this movement. By fostering education, innovation, and collaboration, we can ensure that AI is implemented ethically and effectively, improving the quality of care for all Sri Lankans.

The future is now. Let us rise to the challenge, embrace AI, and lead with vision, purpose, and unwavering commitment.

Together, we can
shape the healthcare system
of tomorrow.

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References

1. Predictive Analytics for Hospital Resource Optimization

- Rajkomar, A., Dean, J., & Kohane, I. (2019). Machine learning in medicine. *New England Journal of Medicine*, 380(14), 1347-1358. <https://doi.org/10.1056/NEJMra1814259>
- Obermeyer, Z., & Emanuel, E. J. (2016). Predicting the future—big data, machine learning, and clinical medicine. *New England Journal of Medicine*, 375(13), 1216-1219. <https://doi.org/10.1056/NEJMp1606181>

2. AI in Procurement and Supply Chain Management

- Harland, C. M. (2019). Supply chain management: Understanding the concept and its implications. *The International Journal of Logistics Management*, 30(1), 65-86. <https://doi.org/10.1108/IJLM-11-20170295>
- Sharma, A., Borah, S. B., & Moses, A. C. (2021). Artificial intelligence and supply chain management: A systematic review and future research agenda. *Supply Chain Management: An International Journal*, 26(5), 565-588. 3.

3. Enhancing Clinical Decision Support Systems (CDSS)

- Shortliffe, E. H., & Sepúlveda, M. J. (2018). Clinical decision support in the era of artificial intelligence *JAMA*, 320(21), 2199-2200. <https://doi.org/10.1001/jama.2018.17163>
- Sutton, R. T., Pincock, D., Baumgart, D. C., Sadowski, D. C., Fedorak, R. N., & Kroeker, K. I. (2020). An overview of clinical decision support systems: Benefits, risks, and strategies for success. *npj Digital Medicine*, 3(1), 17.

4. Automating Administrative Tasks with AI

- Davenport, T., & Kalakota, R. (2019). The potential for artificial intelligence in healthcare administration. *JAMA*, 323(6), 509-510. <https://doi.org/10.1001/jama.2019.22015>
- He, J., Baxter, S. L., Xu, J., Xu, J., Zhou, X., & Zhang, K. (2019). The practical implementation of artificial intelligence technologies in medicine. *Nature Medicine*, 25(1), 30-36.

5. AI in Medical Imaging and Diagnostics

- Esteva, A., Chou, K., Yeung, S., Naik, N., Madani, A., Mottaghi, A., ... & Topol, E. J. (2021). Deep learning-enabled medical computer vision. *npj Digital Medicine*, 4(1), 5. <https://doi.org/10.1038/s41746-020-00376-2>
- Erickson, B. J., Korfiatis, P., Akkus, Z., & Kline, T. L. (2017). Machine learning for medical imaging. *Radiographics*, 37(2), 505-515. <https://doi.org/10.1148/rg.2017160130>

6. AI-Powered Virtual Assistants for Patient Engagement

- Bickmore, T. W., & Giorgino, T. (2006). Health dialog systems for patients and consumers. *Journal of Biomedical Informatics*, 39(5), 556-571. <https://doi.org/10.1016/j.jbi.2005.12.004>
- Razzaki, S., Baker, A., Perov, Y., Middleton, K., Baxter, J., Mullarkey, D., ... & Johri, S. (2018). A comparative study of artificial intelligence and human doctors for the purpose of triage and diagnosis. *npj Digital Medicine*, 1(1), 8.

7. Strengthening Cybersecurity in Health Care

- Kruse, C. S., Smith, B., Vanderlinden, H., & Nealand, A. (2017). Cybersecurity in healthcare: A systematic review of modern threats and trends. *Technology and Health Care*, 25(1), 1-10. <https://doi.org/10.3233/THC-161263>
- Fernandez, J. M., & Pallis, G. C. (2018). Opportunities and challenges of the Internet of Things (IoT) in healthcare systems: A systematic review. *Future Internet*, 10(3), 27.

8. Strengthening Primary Health Care

- Topol, E. (2019). *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. Basic Books.

9. Telemedicine and Remote Patient Monitoring

- Keesara, S., Jonas, A., & Schulman, K. (2020). Covid-19 and health care's digital revolution. *New England Journal of Medicine*, 382(23), e82. <https://doi.org/10.1056/NEJMp2005835>
- Bashshur, R., Doarn, C. R., Frenk, J. M., Kvedar, J. C., & Woolliscroft, J. O. (2020). Telemedicine and the COVID-19 pandemic, lessons for the future. *Telemedicine and e-Health*, 26(5), 571-573.

10. AI in Health Care Policy Planning

- Matheny, M. E., Israni, S. T., Ahmed, M., & Whicher, D. (2019). Artificial intelligence in health care: The hope, the hype, the promise, the peril. *National Academy of Medicine*. 11.

11. Prospects and Ethical Considerations

- Rigby, M. J. (2019). Ethical dimensions of using artificial intelligence in health care. *AMA Journal of Ethics*, 21(2), E121-124. <https://doi.org/10.1001/amajethics.2019.121>
- Floridi, L., & Cowls, J. (2019). A unified framework of five principles for AI in society. *Harvard Data Science Review*, 1(1). <https://doi.org/10.1162/99608f92.8cd550d1>



ORIGINAL PAPERS



Assessment of the Completeness of Laboratory Investigation Request Forms of the Outpatient Department in the District General Hospital, Matale

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Key Words:

Investigation Request
Form, Quality

Abstract

Introduction: In hospital settings, diagnosis and treatment rely on laboratory investigations. Investigation Request Forms (IRFs) serve as the primary means of communication between healthcare providers and laboratories. This study was conducted to assess the completeness of the laboratory investigation request forms of the Outpatient Department in the Tertiary Care Hospital in Matale District, Sri Lanka.

Methods: A descriptive cross-sectional study was conducted in May 2023 using a total of 350 IRFs submitted to the Outpatient Department laboratory on four randomly selected working days. A checklist was used to collect data on the essential components of the completeness of IRFs: patient identification details, clinical history, name of the investigation, and prescriber's details.

Results: None of the IRFs had complete information according to the criteria. Only 1.1% (n=4) contained all three patient identification details. All the IRFs (N=350) included the 'Name of the Investigation', but none included the clinical history. The majority (95.7%; n=335) did not have the 'Prescriber's identification'.

Conclusion and Recommendations: This study observed that the majority of the IRFs were incomplete, mainly the information on patient identification and clinical history. The introduction of standardized IRFs, electronic laboratory investigation prescriptions, continuous monitoring, and feedback mechanisms can be recommended to improve the completeness of IRFS.

Introduction

In hospital settings, diagnosis and treatment rely on laboratory investigations. Investigation Request Forms (IRFs) serve as the primary means of communication between healthcare providers and laboratories. Accurate and complete documentation in IRFs ensures effective communication between the healthcare providers and the laboratory staff, hence essential for safe patient care (1).

An IRF has to provide the patient's identification details, patient registration number issued by the hospital, the investigation requested, relevant clinical history, prescribing medical officer's identification, and the date of issuing the IRF (2). These elements are essential to identify the patient, understand the illness and necessity of the requested investigation, and ensure accurate communication and processing of the request. Therefore, the completeness of IRFs has a direct impact on the quality of diagnostic services, patient management, and overall healthcare

outcomes. As the completeness of IRFs can be used to assess the pre-analytical phase of the laboratory process (3), it is a timely requirement to assess the completeness to identify the areas to improve the laboratory process (4). Many previous studies have identified that the IRFs are incomplete frequently, which may lead to errors causing patient safety issues (1). The objective of this study was to assess the completeness of the laboratory investigation request forms of the Outpatient Department in the District General Hospital, Matale.

Design

A descriptive cross-sectional study was conducted.

Methods

The study setting was the District General Hospital, Matale, which is the tertiary care hospital in the district. The study was conducted in May 2023. Out of the IRFs submitted to the Outpatient Department

laboratory, all the IRFs submitted on four randomly selected working days (N=350) were included in the study. Data on the completeness of the IRFs were collected using a checklist, which was developed to assess the completeness systematically focusing on essential components identified through a literature review (2) and expert opinion. Criteria for completeness included the presence or absence of the patient's full name, age, gender, investigation name, clinical history, prescribing medical officer's identification, OPD registration number, and date (2). Data was collected and recorded by the researcher. Data analysis was done using 'SPSS version 26'. Data were presented in frequencies and percentages. Ethical Approval was obtained from the Ethics Review Committee of the Postgraduate Institute of Medicine, University of Colombo. Administrative approval was obtained from relevant authorities prior to the data collection. This was a self-funded study, and there were no conflicts of interest.

Results

Table 1 presents the findings on the completeness of IRFs. None of the IRFs had complete information according to the criteria. Only 1.1% (n=4) contained all three patient identification details, i.e., the patient's full name, age, and gender. Even though all the IRFs (N=350) included the 'Name of the Investigation', none included the clinical history. The majority, 95.7% (n=335) did not have the 'Prescriber's identification'.

Discussion

Similar studies used the same criteria to assess the completeness of the IRFs (3). None of the IRFs had recorded completeness based on the criteria in this study in contrast to a similar study where completeness was observed in 1% of the IRFs (3). While the name of the investigation and OPD number were recorded in all the IRFs (N=350), none of the IRFs contained the clinical history (0%; n=0) and the patient's gender (1.1%; n=4). Since clinical history is important for the laboratory to interpret the requested investigation accurately (5), the absence of clinical history in all IRFs is an important observation in this study. This is similar to a study conducted in Kenya, where the clinical history was not written in 85.1% of the IRFs (3). This may compromise patient care and diagnostic accuracy. The absence of the identification of the prescriber in the majority of the IRFs (95.7%; n=335) pointed out the lack of accountability and difficulties in follow-up communication. These results highlighted the need for improved documentation practices to ensure comprehensive and accurate medical records, particularly in recording patient demographic details and clinical history.

Table 1: Completeness of Investigation Request Forms (N=350)

Criteria for the completeness	Written	Not Written
	n (%)	n (%)
Full Name	149 (42.6)	201 (57.4)
Age	340 (97.1)	10 (2.9)
Gender	4 (1.1)	346 (98.9)
Name of the investigation	350 (100.0)	0 (0.0)
Clinical History	0 (0.0)	350 (100.0)
Prescriber's identification	15 (4.3)	335 (95.7)
OPD registration number	350 (100.0)	0 (0.0)
Date	231 (66.0)	119 (44.0)

Conclusion

This study observed that the majority of the IRFs were incomplete in the outpatient department of the District General Hospital, Matale. Even though the name of the investigation and the OPD registration number were written in all the IRFs, the most important information on patient identification and clinical history were missing.

Recommendations

The introduction of standardized IRFs and electronic laboratory investigation prescriptions with mandatory fields to be filled can improve documentation practices to ensure the effective communication of essential patient information. Continuous monitoring and feedback mechanisms can be recommended to improve the completeness of IRFS.

References

1. Amarasinghe IF. Preanalytical errors in laboratory testing in Sri Lanka. BMC Clin Pathol. 2018. doi: <https://doi.org/10.1186/s12907-018-0073-7>
2. Ministry of Health. (2011) *Manual on Laboratory Services*. The Laboratory sector of the Ministry of Health.
3. Kipkulei JC, Lotodo TC. Evaluation of the Completeness in the Filling of Laboratory Request Forms Submitted to the Haematology Laboratory at a Tertiary Hospital in Kenya. Health N Hav. 2019;11(07):862–8
4. Adarsh CK. Implementation of Lean Six Sigma methodology in a clinical laboratory for improving quality and productivity. Indian J Clin Biochem. 2018;33:460-9.
5. Agarwal RM. Quality-improvement Measures as Effective Ways of Preventing Laboratory Errors. Lab QA. 2014;45
6. World Health Organization. Development of National Health Laboratory policy and plan. Geneva: WHO; 2011.
7. World Health Organization. Laboratory Services for Acute Care. Geneva.



Work-related factors associated with Burnout among Nursing officers at Teaching Hospital Badulla

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Abstract

Burnout is a pervasive issue among healthcare professionals, with nurses identified as particularly vulnerable. This cross-sectional descriptive study examined work-related factors associated with Burnout among nursing officers at Teaching Hospital Badulla. A stratified random sample of 355 nurses was selected from a total population of 626 to ensure representation across units. The Copenhagen Burnout Inventory was employed to assess Burnout levels. Analysis revealed significantly higher Burnout among nurses in surgical units ($p = 0.026$), service grade III nurses ($p = 0.003$), those who engaged in shift duties outside their usual units within the last six months ($p = 0.032$), and those perceiving inadequate staffing ($p = 0.023$). Increased nursing experience correlated with reduced Burnout. These findings underscore the need for multifaceted organizational and policy strategies to mitigate Burnout and promote nurse well-being.

Introduction

Background

Individuals must first be highly engaged in their work, enjoying it or feeling deeply committed, before they can experience Burnout. Just as a fire cannot keep burning without fuel, employees' energy and capacity to work gradually diminish when their environment is highly demanding but fails to provide sufficient resources. Over time, this depletion can progress to a final stage characterized by severe physical, emotional, and mental exhaustion, from which recovery becomes difficult (10).

It is a recognized manifestation of occupational stress that adversely affects both employee health and organizational efficiency (3)(2). Healthcare professionals are especially susceptible due to the intensive psychological and physical demands of their work (9). Nurses, who provide compassionate and culturally competent care often under strenuous conditions, are particularly vulnerable to Burnout (8).

Although the data was collected in 2019, the structural and staffing challenges in the Sri Lankan healthcare system remain relevant today. Future research should explore whether post-pandemic work environments have altered the burnout landscape.

Definition of Burnout

According to the World Health Organization's International Classification of Diseases (ICD-11), Burnout is a syndrome resulting from chronic workplace stress that has not been successfully managed. It comprises three dimensions: exhaustion, mental distancing or cynicism towards one's job, and reduced professional efficacy (12).

Objective of the research

This study aimed to identify work-related factors associated with Burnout among Nursing officers at the Teaching Hospital, Badulla.

Literature Review

Burnout was assessed among nurses working at Base Hospital Kahawatta and six District hospitals in the Kahawatta cluster area. The prevalence of Burnout was 31.8%. A statistically significant association was noted between Burnout and lack of professional fulfilment, lack of support from the working unit, and poor work-life balance (11).

A study done at the National Institute of Mental Health, Sri Lanka, to identify nurse Burnout found that Work-related Burnout had a mean score of 29.24(1).

A study done among nurses working in Tribhuvan University Teaching Hospital, Kathmandu, Nepal demonstrated a significant

Table 01 : Distribution of Nursing officers in TH Badulla according to the unit

Unit Category		Number of Nursing officers	Percentage from the total hospital nursing population %	Sample size (from 355)
01	Medical	234	37	131
02	Surgical	228	36	128
03	Intensive care	46	7	25
04	OPD/ETU/Clinics /Special units	57	9	32
05	Theatres	67	10	39
Total		632		355

association between the position and Burnout among the nurses. Nurses working in lower positions had greater odds of Burnout than their supervisors(6).

A cross-sectional study was conducted among nurses working in two COVID-19 isolation hospitals in 2022 in Alexandria, Egypt. This study aimed to assess the magnitude of Burnout syndrome and its associated factors among nurses working in COVID-19 isolation hospitals. A significant association of the work-related variables with the Burnout dimensions levels among nurses was found. Being a patient care nurse, shift times other than morning (especially night) and an inadequate number of physicians were significantly associated with higher Burnout scores, while providing direct care to COVID-19 patients, working in the inpatient department, and inadequacy of personal protective equipment and security services were more significantly associated with Burnout and those who had managerial or supervisory duties were found to have less Burnout. It also showed that those working in the inpatient and outpatient departments are predicted to have higher scores(5).

An online survey conducted on nursing staff at two large Mental Health & Community National Health Service (NHS) Trusts in the Wessex region in England identified that working shifts between 8 and 12 hours, inadequate staffing levels and having no choice over shift length were associated with an increased risk of Burnout(4).

Methodology

Study Design

This research utilized a hospital-based, descriptive cross-sectional design.

Study Setting and Period

The study was conducted at Teaching Hospital Badulla between June 1 and August 30, 2019.

Study Population and Sampling

The study population included male and female nursing officers from medical, surgical, intensive care, theatre, outpatient, emergency, and specialized units. A stratified random sampling method was employed, selecting 355 participants from a total nursing population of 632. Sample size calculation was based on an estimated Burnout prevalence of 30%, incorporating a 10% non-response adjustment (7).

Inclusion and Exclusion Criteria

Inclusion: Nursing officers with at least six months of government health sector experience in selected units

Exclusion: Special grade nursing officers, nursing sisters, ward masters, nurses on leave or training during the study period.

Study Instrument

The Copenhagen Burnout Inventory (CBI), adapted and validated for local use with consultation from medical specialists, was employed as a self-administered questionnaire.

Table 02: Correlation Analysis of Work-Related Factors and Burnout

Work-Related Factor	Pearson Correlation	Sig. (2-tailed)	N
Experience as a Nursing Officer (Months)	-0.235	0.000	355
Experience as a Nursing Officer at This Hospital (Months)	-0.195	0.000	355
Experience as a Nursing Officer at Unit of Work (Months)	-0.154	0.004	355
Working Hours per Week	-0.032	0.552	355
Working Hours During the Weekend	-0.076	0.154	355
Average Number of Night Shifts per Month (Last 6 Months)	0.031	0.559	355
Total Number of Leaves Taken (Past 6 Months)	0.028	0.600	355

The instrument comprised the modified CBI and questions on socio-demographic and work-related factors.

Ethical Considerations

Ethical approval was granted by the Postgraduate Institute of Medicine, University of Colombo.

Results

Method of Data Analysis

This was done using SPSS version 22.

A correlation analysis and mean comparison tests (independent sample t-test and one-way ANOVA test) were done to identify the relationship between work-related factors with Burnout. Finally, a regression analysis was done to identify the work-related factors that affected Burnout.

Interpretation of Table 02 (Work -related factors that are associated with Burnout)

There was a weak negative correlation observed between Burnout and the following work-related factors:

- Experience as a nursing officer at this hospital
- Experience as a nursing officer at the section/unit of work

As experience increased, a reduction in burnout levels was noted.

However, there was insufficient evidence to establish a relationship between Burnout and the following work-related factors:

- Working hours per week
- Working hours during the weekend
- Average number of night shifts per month
- Total number of leaves taken

Table 3: Mean Analysis of the Study Sample Who Performed Shift Duty in Another Unit During the Past Six Months

Shift Duty in Another Unit (Past 6 Months)	N	Mean	Std. Deviation	Std. Error of the Mean
Burnout				
Yes	60	31.776	11.44729	1.47784
No	295	28.369	11.09881	0.64620

Table 04: Comparison of Burnout in the Study Sample Based on the Unit of Work Duty

Unit of Duty	N	Mean Burnout Score
Outpatient Department, Emergency Treatment Unit, Clinics	32	25.9112
Intensive Care Unit	25	27.5916
Medical	132	27.6515
Theatre	38	28.4323
Surgical	128	31.4533

Significance (Sig.): 0.177

Table 05: Comparison of Burnout Levels Across Nursing Service Grades

Grade	N	Gabriel Subset for $\alpha = 0.05$
Grade I	114	26.52
Grade II	132	28.83
Grade III	109	31.63
Significance (Sig.)		0.295 / 0.151

Table 06: Comparison of Burnout Levels by Perceived Adequacy of Nursing Staff in Units

Adequacy of Nursing Staff in Unit	N	Gabriel Subset for $\alpha = 0.05$
Not Adequate but Manageable	193	28.25
Adequate	139	29.00
Not Adequate and Unmanageable	22	35.17
Significance (Sig.)		0.980 / 1.000

Interpretation of Table 03

The mean Burnout score for individuals who performed shift duty in another unit during the past six months was 31.776 (N=60), with a standard deviation of 11.44729 and a standard error of 1.47784. For individuals who did not perform shift duty in another unit, the mean Burnout score was 28.369 (N=295), with a standard deviation of 11.09881 and a standard error of 0.64620.

Interpretation of Table 04

Nursing officers working in surgical units reported the highest mean Burnout score (31.4533), followed by those in theatre (28.4323), medical (27.6515), intensive care unit (27.5916), and outpatient departments, emergency treatment units, and clinics (25.9112). The significance value (0.177) indicates that the differences between units were not statistically significant at the alpha level of 0.05.

Interpretation of Table 05

The data indicate that Grade III nursing officers exhibit higher levels of Burnout compared to Grades I and II, although the differences were not statistically significant at the 0.05 level.

Interpretation of Table 06

The results indicate that Burnout levels are significantly higher in units where the number of nursing officers is perceived as inadequate and the workload is unmanageable.

Discussion

The analysis of work-related factors revealed the following significant positive associations with burnout:

- Nurses who were required to perform shift duties in different units within the past six months exhibited higher levels of burnout.
- Nurses working in surgical units demonstrated increased burnout levels.
- Nurses classified within service grade III experienced elevated burnout.
- In units where the nursing staff was insufficient to manage workload effectively, affected nurses showed higher burnout levels.

Conversely, the analysis identified weak negative associations between burnout and the following variables:

- Increased overall nursing experience correlated with a reduction in burnout levels.
- Greater nursing experience specifically at TH Badulla was associated with lower

burnout levels.

- Longer period of experience within the current unit or ward corresponded with decreased burnout levels.

However, no sufficient evidence was found to support an association between burnout and:

- Weekly working hours
- Weekend working hours
- Average number of night shifts per month
- Total number of leave days taken

The overall Burnout level among nursing officers at TH Badulla was relatively low (mean = 28.9). However, significant associations between Burnout and work-related factors were identified, consistent with prior studies. Contrary to some studies, no association was found between Burnout and night shift frequency or leave duration.

Limitations

1. This study was confined to nursing officers at the Teaching Hospital Badulla. Consequently, the findings are specific to the geographic region and cultural context of the population in Badulla, which may limit the generalizability of the results to the broader national context.
2. Given the cross-sectional design of the study and the chronic nature of the condition under investigation, it was not possible to ascertain the consequences of burnout.
3. A longitudinal study design would have been more appropriate to establish causal relationships between burnout and its associated factors; however, a cross-sectional approach was adopted due to time constraints.
4. The reliance on self-reported data may have introduced information bias.
5. The Copenhagen Burnout Inventory (CBI), a publicly available instrument, was utilized in this study instead of the more widely used Maslach Burnout Inventory (MBI), as the latter requires a fee for each questionnaire administered.
6. The CBI assesses the extent of physical and psychological fatigue across three subdomains of burnout: personal, work-related, and client-related (referred to as patient-related in this study) burnout. Minor adaptations were made during the translation process to enhance comprehension and to align with the Sri Lankan cultural and local

context. It is acknowledged that cultural and service-related factors unique to this region and country may have influenced the performance of the instrument.

Conclusions and Recommendations

Conclusions

Burnout prevalence among nursing officers was low but higher in surgical units, Grade III nurses, those with multi-unit shift duties, and those perceiving staffing shortages. Experience was inversely related to Burnout. No significant associations were found for gender, family support, commute time, working hours, night shifts, or leave.

Recommendations

Preventive strategies should be developed collaboratively and regularly reviewed. Implementing duty rotations and standardizing unit procedures may reduce stress related to unfamiliar assignments. Regular health screenings and accessible counseling services should be prioritized. Strengthening welfare societies and providing training opportunities for junior nurses are recommended. Further longitudinal research is warranted to investigate Burnout outcomes.

References

1. Abeynayake A, Abeynayake AM, Perera ML, Pathiraja I. Burnout among nurses working in national institute of mental health, Sri Lanka. In Proceedings of the International Conference on Public Health 2022 Nov 3 (Vol. 7, No. 1, pp. 150-164).
2. Akroyd D, Caison A, Adams RD. Burnout in radiation therapists: the predictive value of selected stressors. *Int J Radiat Oncol* [Internet]. 2002;52(3):816–21. Available from: <https://www.sciencedirect.com/science/article/pii/S0360301601026888>
3. Beckstead JW. Confirmatory factor analysis of the Maslach Burnout Inventory among Florida nurses. *International Journal of Nursing Studies*. 2002 Nov 1;39(8):785-92.
4. Dall'Ora C, Ejebu OZ, Ball J, Griffiths P. Shift work characteristics and burnout among nurses: cross-sectional survey. *Occupational Medicine*. 2023 May 1;73(4):199-204.
5. Ibraheim OG, Shehata AI, Elhoseny TA. Burnout and associated risk factors among nurses working in COVID-19 isolation hospitals: a cross-sectional study in Egypt. *Journal of the Egyptian Public Health Association*. 2025 May 12;100(1):10. 6.
6. Kanak MP, Pant S. Burnout and sleep problems among nurses working in a tertiary hospital in Kathmandu, Nepal. *PLOS Global Public Health*. 2025 Jul 11;5(7):e0003879.
7. Lwanga SK, Lemeshow S. Sample size determination in health studies. Geneva: World Health Organization. 1991 Sep 20;1.
8. Oulton JA. The workplace is the issue—isn't it obvious?. *International Nursing Review*. 2006 Jun;53(2):91-.
9. Piko BF. Burnout, role conflict, job satisfaction and psychosocial health among Hungarian health care staff: A questionnaire survey. *International journal of nursing studies*. 2006 Mar 1;43(3):311-
10. Schaufeli WB, Greenglass ER. Introduction to special issue on burnout and health. *Psychology & health*. 2001 Sep 1;16(5):501-10.
11. Wanniarachchi NU, Wijerathna A. The prevalence and associated factors of burnout among nurses working at Base and District Hospitals in Kahawatta cluster area: A descriptive cross-sectional study. *Sri Lanka Journal of Psychiatry*. 2025 Jul 31;16(1).
12. World Health Organization. Burn-out an "occupations phenomenon": International classification of diseases. Retrieved February. 2019;16:2020.



Effectiveness of Health Development Committee Meetings in Healthcare Administration: A Qualitative Analysis

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Abstract

Background: Health Development Committee (HDC) meetings in Sri Lanka are intended to drive key healthcare improvements through multi-stakeholder decision-making. Recent observations have raised concerns about declining meeting effectiveness, especially after a shift to virtual formats.

Objective: This study evaluated HDC meeting performance, identified procedural gaps, prioritized key issues, and proposed actionable improvements based on those findings.

Methods: A qualitative descriptive study was conducted using multiple data sources: desk review of HDC documents, direct observations of meetings, and key informant interviews. The study was conducted over a six-month period from 1 July 2023 to 31 December 2023. Thematic analysis was applied to identify recurrent codes, sub-codes, and overarching themes. Identified problems were then prioritized by urgency, impact, and feasibility through independent ratings.

Results: Six main themes emerged: follow-up and accountability gaps, time and agenda management issues, participant engagement challenges, attendance and representation shortfalls, virtual meeting difficulties, and meeting content limitations. Lack of proper follow-up on decisions was the most frequently cited problem. In total, 16 distinct sub-issues were documented. All codes, sub-codes, frequencies, and percentages were consolidated into a single table for clarity.

Conclusions: HDC meetings currently suffer from critical weaknesses in follow-up mechanisms, time management, participant engagement, and member participation. Addressing these deficiencies through structured decision tracking, better time allocation, improved accountability, and inclusion of external expertise is recommended to enhance HDC meeting effectiveness and ensure the committee fulfills its mandate.

Introduction

The Health Development Committee (HDC) is a multi-stakeholder forum within Sri Lanka's Ministry of Health, established to coordinate strategic decisions on pressing healthcare issues. Meetings are typically held bimonthly, chaired by the Director General of Health Services, and involve senior health administrators from the national ministry, provincial departments, hospital directors, and representatives of professional colleges. Through this broad representation, the HDC is meant to facilitate collaborative policy implementation and problem-solving across the health sector.

In recent years, concerns have grown that HDC meetings are losing their effectiveness. Notably, after the transition to virtual meetings during the COVID-19 pandemic, stakeholders

observed several issues: weak follow-up on decisions, inadequate time management, uneven participant engagement, and inconsistent attendance. These shortcomings risk undermining the HDC's mandate of driving improvements in the health system. Inefficient meetings are not unique to the HDC – they are a well-recognized challenge in many organizations and can significantly hamper decision-making and productivity. Given the critical role of the HDC in health sector governance, a systematic assessment was conducted to pinpoint process gaps and propose solutions to revitalize the committee's performance.

Objective

This study thus aimed to evaluate the functioning of HDC meetings, identify key deficiencies contributing to inefficiency,

prioritize the issues based on their urgency and impact, and develop evidence-based recommendations to improve meeting outcomes and overall effectiveness.

Methods

A qualitative descriptive design was used to gain an in-depth understanding of HDC meeting processes. Multiple data sources and methods were used for triangulation:

- **Desk review:** Reviewed all available official HDC documents, including the Terms of Reference, past meeting agendas, minutes, and action logs from 2021–2023. This provided background on the intended functions of the HDC and a record of decisions and follow-up actions.
- **Direct observations:** Non-participant observations of HDC meetings (both physical and virtual) were conducted using structured checklists. The checklist captured key process indicators such as attendance and punctuality, adherence to the agenda, quality of discussions, clarity of decision-making, and documentation of post-meeting action items. These observations enabled to witness meeting dynamics and procedures in real time.
- **Key informant interviews:** semi-structured interviews were carried out with four members of the HDC secretariat (including the Director of Organizational Development, two medical officers, and one administrative officer). The interviews explored participants' perceptions of current meeting effectiveness, barriers hindering success, and suggestions for improvement. Informed verbal consent was obtained from all interviewees, and each interview was approximately 30–45 minutes.

All qualitative data were transcribed and then subjected to thematic analysis following Braun and Clarke's framework [1]. Initially, performed an open coding of the transcripts and documents, iteratively grouping similar codes into sub-codes, broader categories, and finally into overarching themes. NVivo 12 software was used to organize the coding process and assist in identifying patterns.

To prioritize the identified problems, five external reviewers were engaged (not involved in data collection) to independently rate each issue on three criteria: urgency, impact, and feasibility of addressing the issue. Each criterion was scored on a 5-point scale

for every problem. Then calculated total scores for each issue (summing the three criteria scores), which allowed us to rank the problems in order of priority. High-priority issues were those scoring highly on urgency and impact, tempered by reasonable feasibility for intervention.

As this assessment was conducted as an internal quality improvement exercise within the Ministry of Health, formal ethical clearance was not required. However, measures were taken to maintain the confidentiality of respondents, and the purpose of the study was explained with assurance that findings would be used to improve HDC functioning.

Results

Identified Themes and Issues

The analysis revealed six overarching themes affecting the effectiveness of HDC meetings, encompassing a total of 16 distinct sub-issues (sub-codes). These themes were: (1) *Follow-up and Accountability gaps*, (2) *Time and Agenda Management issues*, (3) *Participant Engagement and Meeting Dynamics problems*, (4) *Attendance and Representation shortfalls*, (5) *Virtual Meeting Challenges*, and (6) *Meeting Content and Expertise limitations*.

Table 1 presents all the themes with their associated sub-codes, along with the frequency each sub-issue was mentioned and its percentage out of all recorded issue mentions.

Follow-up and accountability deficiencies were the most frequently cited problems overall. Within this theme, the lack of assessment of decisions from previous meetings ("decisions not assessed") was noted 5 times, making it the single most recurrent sub-issue. Participants highlighted that often decisions taken in HDC meetings are not reviewed or tracked in subsequent meetings, leading to poor implementation. Additionally, unclear assignment of responsibilities and members being unprepared to report back on progress contributed to weak follow-up. These issues indicate a significant gap in accountability for translating decisions into action.

Time and agenda management problems were also prominent. In several instances, important agenda items did not receive sufficient time for discussion, and meetings sometimes ran overtime without reaching

Theme	Sub-Code	Frequency (n)	Percentage (%)
Follow-up and Accountability	Decisions not assessed (no review of past decisions)	5	9.6%
	No post-meeting feedback mechanism	2	3.8%
	Proceedings not properly summarized	2	3.8%
	Members are unprepared to report back	3	5.8%
	Unclear responsibilities for action items	3	5.8%
Time and Agenda Management	Inadequate time allocation for agenda items	4	7.7%
	Meetings exceeding the scheduled time	2	3.8%
Participant Engagement and Meeting Dynamics	Few members dominate discussions	2	3.8%
	Quiet members discouraged from speaking	1	1.9%
	Unconstructive arguing	2	3.8%
Attendance and Representation	Member absenteeism without notice	2	3.8%
	No replacement sent for absent members	2	3.8%
Virtual Meeting Challenges	Reduced interaction in virtual meetings	2	3.8%
	Participants disengaging during virtual sessions	1	1.9%
Meeting Content and Expertise	No outside experts invited (limited expertise)	2	3.8%
	Discussion on unimportant matters	3	5.8%

conclusions. Specifically, inadequate time allocation for critical topics (raised 4 times) led to rushed deliberations, and occasionally, meetings extended beyond their scheduled duration. These practices not only frustrate attendees but also result in superficial treatment of complex issues.

Issues related to **participant engagement and meeting dynamics** emerged as another theme. It was observed that a few outspoken members tended to dominate discussions, while other participants remained relatively silent. This imbalance (noted in 2 instances) can stifle the diversity of input. In one case, it was mentioned that some quieter members were implicitly discouraged from speaking up, and there were also reports of occasional nonconstructive arguments or debates that veered off-topic. Such dynamics can erode the collaborative spirit of the committee and prevent valuable insights from being heard.

Persistent **attendance and representation shortfalls** were identified as well. Key members (or their alternates) were frequently absent without prior notice (2 instances), and in those cases, no replacement representatives attended on their behalf. This meant that certain organizations or departments had no voice in some discussions. Inconsistent attendance undermines the multi-stakeholder purpose of the HDC, as the perspectives of absent stakeholders are lost, and decisions may be made without full consensus or needed information.

Shifting to **virtual meeting challenges**, the transition to online meetings during the pandemic introduced new difficulties. Although virtual platforms allowed continuity of meetings, they were associated with reduced interaction and engagement. Participants reported that dialogue in virtual HDC sessions was less spontaneous, with fewer side discussions or clarifications. Some members appeared disengaged or multitasking during online meetings. The data show 2 mentions of reduced interaction in virtual meetings and instances of participants completely disengaging when remote. These findings echo broader observations that virtual meetings tend to be less engaging than in-person meetings.

Finally, limitations in **meeting content and expertise** were noted. On a few occasions, HDC discussions included topics that were not of high priority ("discussion on unimportant matters" was mentioned 3 times), potentially diverting time from more pressing issues.

Moreover, the committee did not regularly bring in external experts or resource persons to inform discussions on specialized topics. The absence of outside experts (noted 2 times) meant that deliberations sometimes lacked depth or the latest evidence, especially on technical matters. This gap in expertise can limit the quality of the decisions or recommendations formulated by the committee.

Priority Issues

When considering the urgency, impact, and feasibility ratings, lack of proper follow-up on decisions emerged as the top-priority issue to address (it scored highest across the three criteria in the prioritization exercise). This was followed by a cluster of issues in time management and participant engagement, which were also deemed urgent and impactful but slightly less so than follow-up mechanisms. Attendance issues and meeting content/expertise problems, while still important, were ranked somewhat lower in priority, largely because their resolution was seen as more straightforward or having slightly less immediate impact than the top issues.

It is noteworthy that the highest priority problems identified (decision follow-up, time management, and engagement) cut across multiple themes, indicating that improving HDC meeting effectiveness will require a multifaceted approach rather than a single intervention. In the next section, we discuss these findings in light of existing literature on effective meetings and provide targeted recommendations for improvement.

Discussion

This qualitative assessment identified several major gaps that have been undermining the effectiveness of HDC meetings. Chief among these was the lack of a structured follow-up process for decisions made during meetings. Decisions were often not revisited or formally tracked, which is consistent with organizational studies emphasizing that, without an action review or tracking mechanism, meeting decisions tend to have little real-world impact. [2]

In other contexts, effective committees ensure that each decision is assigned to someone and reviewed at subsequent meetings. The HDC's current follow-up gap means accountability is weak – participants are not consistently asked to report on progress, resulting in repetitive

discussions on the same problems and slow implementation of solutions.

Poor time management and inadequate agenda prioritization were another notable set of problems. When meetings consistently run short on time or go overtime, important issues either get rushed or deferred. Prior research on meeting effectiveness shows that overloaded or unprioritized agendas can significantly diminish decision-making quality. [3] In the HDC, some critical topics did not get the attention they required due to time constraints, while less important discussions sometimes ate into the schedule. Implementing better time budgeting (for example, strictly allocating time slots to each agenda item and enforcing those limits) and ensuring the most critical items are addressed first would likely improve the efficiency of these meetings.

Issues of participant engagement and meeting dynamics observed in HDC sessions are also supported by the literature on group decision-making. When a few individuals dominate the conversation and others remain passive, the collective intelligence of the group suffers. Encouraging broader participation is essential – techniques could include round-robin updates, directed questions to quieter members, or setting ground rules that limit how long one person can speak at a time. [4]. Such steps can prevent any single voice from overpowering the discussion and help draw in contributions from all members. Training the meeting chair to gently redirect or invite input from those who haven't spoken might also counteract the dominance effect. Establishing norms for respectful dialogue could further address the instances of unconstructive arguing that were reported, keeping the debate productive.

Attendance and representation shortfalls at HDC meetings present a practical barrier to the committee's mandate. Since the HDC meeting is designed to bring together stakeholders from various sectors, each absence means a perspective is missing. Frequent absenteeism (especially without sending an alternate delegate) not only reduces quorum but can delay decisions and follow-up if the responsible parties are not present. Ensuring that member organizations treat HDC meetings as a priority is crucial. This could involve formally reminding institutions of their obligation to send representatives, and perhaps introducing an accountability mechanism – for example, noting absences in the minutes or requiring a briefing for anyone who misses a meeting. Reinforcing the

expectation that an alternate must be sent if the primary representative is unavailable would help maintain consistent representation. Consistency in attendance is a foundational requirement for multi-stakeholder committees to function effectively.

The challenges associated with virtual meetings observed in this study reflect what many organizations experienced during the COVID-19 era. Virtual platforms can limit natural interaction and make it easier for participants to become disengaged (for instance, by multitasking or staying muted with video off). [5] A recent industry study confirmed that virtual meetings often feel less engaging and require more effort from attendees to remain focused. For the HDC, which relies on active discussion, the virtual format may need to be optimized or supplemented by in-person sessions. Possible strategies include requiring video to be turned on to increase accountability, using interactive elements (like polls or directed questions) to keep participants involved, and periodically reminding attendees of discussion etiquette in a virtual setting. The HDC Secretariat might also consider alternating virtual meetings with physical meetings (when safe and feasible) to rebuild some of the lost engagement and personal connection.

Finally, limitations in meeting content and expertise suggest that the HDC could benefit from widening its informational resources. In complex health policy discussions, having the right expertise in the room is key to making well-informed decisions. If HDC members are generalists or administrators, they might not always have specialized knowledge on every agenda topic. The absence of invited expert presentations or external resource persons was identified as a gap. Inviting subject matter experts (for example, public health specialists, economists, or technical consultants) to present or advise on specific issues could enrich the discussion and ensure decisions are based on the best available evidence. Similarly, keeping the meeting focused on high-priority topics is important – time spent on peripheral issues was essentially a lost opportunity. A more rigorous screening of agenda items by the Secretariat or chair (possibly requiring a justification for how each item aligns with strategic priorities) could help keep the content relevant.

Overall, the patterns of problems observed in HDC meetings align with known best practices and principles for effective committee meetings. Effective meetings

require clear goals, inclusive participation, diligent follow-up, and time-conscious facilitation. [6] The HDC's weaknesses essentially represent the absence of these elements. On a positive note, each of the identified issues is addressable through administrative and procedural changes. In similar contexts, relatively straightforward interventions – such as adopting a tracking system for decisions, enforcing meeting ground rules, and improving preparation – have led to substantial improvements in meeting productivity. In the next section, we provide specific recommendations tailored to the HDC's situation, prioritized by the urgency and impact of the issue they target.

Conclusion

The Health Development Committee meetings are currently hindered by several interrelated deficiencies in process and structure, notably in decision follow-up, time management, participant engagement, and consistent stakeholder participation. These weaknesses reduce the committee's effectiveness and threaten to erode its credibility as a platform for coordinated health sector governance. However, all the gaps identified in this study are amenable to improvement through targeted administrative reforms. By instituting better follow-up mechanisms, strengthening meeting management practices, and fostering greater accountability among members, the HDC can significantly enhance its performance. Addressing these issues is essential to restore the HDC's effectiveness and ensure that it fulfils its mandate of driving strategic improvements in Sri Lanka's health system.

Recommendations

Based on the study findings, we propose the following prioritized recommendations to improve the effectiveness of HDC meetings:

1. Establish a formal decision-tracking system: Develop a mechanism to document each decision or action item along with the responsible person and a timeline, and review the status of previous decisions at the start of each subsequent meeting. This will enforce follow-up and accountability for agreed actions.
2. Improve agenda planning and time management: Either extend the duration of HDC meetings or increase their frequency (e.g. monthly instead of bimonthly) to ensure adequate time for all critical topics. Strictly enforce time allocations for each

agenda item and train the meeting chair to keep discussions focused and on schedule.

3. Reinforce attendance protocols: Issue formal instructions that member organizations must treat HDC meetings as a high priority. If a primary member cannot attend, an informed alternate must be sent. Keep an attendance log and consider addressing frequent absenteeism by communicating with the heads of the respective organizations.
4. Foster inclusive participation: Institute ground rules or norms that encourage equitable participation (for instance, limiting how long one person can speak at once, or explicitly inviting input from those who haven't spoken). The chair should be empowered to manage dominant voices and draw out quieter members, creating a more balanced dialogue.
5. Optimize virtual meeting engagement: When meetings are held virtually, require video participation and use interactive tools to maintain attention. Provide brief orientations or guidelines for virtual etiquette. If possible, adopt a hybrid meeting model or periodically return to in-person meetings to rebuild engagement and networking among members.
6. Leverage external expertise with safeguards: Establish a structured process to identify when external expertise is essential for specific agenda items and invite relevant experts or resource persons to selected HDC meetings. To preserve confidentiality, such participation should be limited to non-sensitive topics or occur in separate sessions, ensuring that core committee discussions remain protected. External input can enrich deliberations with specialised knowledge and support better-informed decision-making.

References

1. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006; 3(2):77–101.
2. Leach DJ, Rogelberg SG, Warr PB, Burnfield JL. Perceived meeting effectiveness: The role of design characteristics. *Journal of Business and Psychology*. 2009; 24(1):65–76.
3. Petkovic, J. et al. (2020) 'Protocol for the development of guidance for stakeholder

- engagement in health and healthcare guideline development and implementation', *Systematic Reviews*, 9(1), pp. 1–11. doi: 10.1186/s13643-020-1272-5.
4. Sellers K, Valentino AL, LeBlanc LA. Planning and leading effective meetings. *Behavior Analysis in Practice*. 2019; 12(3):729–739.
 5. Dooley R. Virtual meetings are less engaging than in-person, study confirms. *Forbes* [Internet]. 2023 Dec 12 [cited 2024 Apr 20]. Available from: <https://www.forbes.com/sites/rogerdooley/2023/12/12/zoom-meetings-less-engaging-than-in-person>.
 6. Koon, P. W. (2015) 'How to hold an effective meeting', *InTech*, 62(11–12), pp. 14–15. doi:10.1097/ij9.0000000000000022.



Optimizing Utilization of Cardiothoracic Surgical Facilities in Sri Lanka: A Cost-Benefit Analysis of Extending Operating Hours to Reduce Waiting Lists

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Abstract

This study investigates the underutilization of cardiothoracic theatres and cardiac catheterization labs in three major Sri Lankan hospitals: National Hospital Galle, Sri Jayewardenepura General Hospital, and National Hospital Jaffna. Using a descriptive analytical design, data on operational hours, surgery types, and staffing were collected to estimate potential efficiency gains from utilizing non-operational hours. Findings revealed over 16,864 non-utilized hours annually, which could enable ^{3,373} additional surgeries. These procedures would yield approximately 7,993.54 Quality-Adjusted Life Years (QALYs), translating to an economic benefit of nearly \$79.93 million. The study concludes that extending operational hours and involving healthcare professionals from other institutions could address surgical backlogs without the need for costly infrastructure expansion. Policy recommendations include extending theatre hours, contractual staff engagement, and incentivizing off-hour work. The findings highlight a cost-effective strategy to optimize healthcare delivery and improve access to life-saving procedures, ultimately enhancing patient outcomes and health system efficiency in Sri Lanka.

Introduction

The demand for cardiothoracic surgeries in Sri Lanka is steadily increasing, placing significant strain on the country's limited healthcare resources. [1] Cardiothoracic theatres (CTOTs) and cardiac catheterization laboratories (CCLs), which are essential for life-saving procedures such as coronary artery bypass grafting (CABG) and valve replacements, are mainly concentrated in Colombo, with some facilities also located in major cities like Galle, Jaffna, and Kandy. Despite the availability of these high-cost facilities, a substantial portion of the population faces long waiting times for critical surgeries. In some cases, patients die before receiving the required care due to the backlog and inefficiencies in the system.[2] A key contributor to this backlog is the underutilization of existing facilities. Most CTOTs and CCLs operate from 8:00 AM to 4:00 PM, leaving these expensive resources unused for the remainder of the day.

Sri Lanka's current financial constraints make the expansion of cardiothoracic surgical infrastructure, including the establishment of new theatres and catheterization laboratories, financially unfeasible. Thus, optimizing the

use of existing facilities is an essential solution to alleviate the pressure on the healthcare system and reduce the growing waiting list. This study aims to assess whether leveraging non-utilized hours in existing facilities, by employing healthcare staff from other institutions on a payment basis, can address the demand for cardiothoracic surgeries effectively. The concept is that rather than investing millions in new infrastructure, a portion of those funds could be used to pay staff who can perform surgeries in these non-utilized hours, effectively increasing the capacity of existing facilities.

This research paper will explore the utilization patterns of CTOTs and CCLs in selected hospitals in Sri Lanka and evaluate the potential for increasing surgical throughput by using non-operational hours. Furthermore, a cost-benefit analysis will be conducted to determine whether utilizing these idle hours is financially viable and beneficial for both the healthcare system and patients. By analyzing the possible reduction in waiting times and the financial implications of this approach, this study aims to provide a strategic framework to optimize healthcare resources and improve patient outcomes in Sri Lanka's cardiothoracic healthcare landscape.

Justification

The justification for this study stems from the urgent need to address inefficiencies in the use of existing cardiothoracic surgery facilities in Sri Lanka, particularly considering the current resource constraints facing the healthcare system. While the hospitals have state-of-the-art CTOTs and CCLs, these facilities remain significantly underutilized during non-operational hours. This underutilization leads to prolonged waiting lists, with patients often having to wait for life-saving surgeries for extended periods. In extreme cases, delays in receiving timely surgical intervention result in patient mortality, making this issue not only a logistical concern but a matter of life and death.

Given the current economic challenges faced by Sri Lanka, building new cardiothoracic facilities is neither practical nor financially sustainable. This creates a pressing need for a more efficient and cost-effective solution that maximizes the capacity of existing healthcare infrastructure. By conducting a thorough analysis of the non-utilized hours in CTOTs and CCLs, this study aims to demonstrate the feasibility of extending operating hours to address the growing demand for cardiothoracic surgeries. This approach would not only reduce waiting times but also improve patient outcomes by providing timely access to critical surgical care.

Furthermore, the proposed model of bringing in specialized healthcare staff from other institutions on a payment basis offers a flexible and scalable solution that does not require large-scale investments in infrastructure. This approach also provides an economic incentive for healthcare professionals, while ensuring that high-cost medical equipment and facilities are used to their full potential. By optimizing the use of these underutilized resources, hospitals can perform a significantly higher number of surgeries, addressing both the waiting list backlog and improving the overall efficiency of the healthcare system.

In addition to its potential clinical benefits, this study is crucial from a financial perspective. A cost-benefit analysis will reveal whether the monetary benefits of utilizing non-operational hours outweigh the costs associated with staff compensation. If viable, this approach could serve as a model for optimizing resources in other underutilized healthcare facilities across Sri Lanka, especially in specialties where demand far exceeds supply. The findings of

this study will also contribute to policymaking, offering a practical framework for improving healthcare delivery without incurring the high costs of new infrastructure development. Thus, the study holds both immediate and long-term significance for enhancing the efficiency and equity of healthcare in Sri Lanka.

Objectives

General Objective:

To evaluate the utilization of CTOTs and CCLs in Sri Lankan hospitals and determine the cost-effectiveness of extending non-operational hours to reduce waiting times for surgeries.

Specific Objectives:

1. To analyze the current utilization patterns, including total available hours, hours utilized, and hours left unused, in CTOTs and CCLs across selected hospitals in Sri Lanka.
2. To estimate the potential number of additional cardiothoracic surgeries that could be performed by using non-utilized hours and assess the impact on reducing the waiting lists.
3. To conduct a cost-benefit analysis of employing healthcare staff from other institutions to perform surgeries during extended hours and evaluate the financial viability and benefits of this approach.

Literature Review

The global demand for cardiothoracic surgeries and catheterization procedures continues to rise, placing significant pressure on healthcare systems to optimize the use of existing facilities. As these procedures are both resource- and time-intensive, many hospitals face challenges in meeting patient demand while maintaining operational efficiency. To address this, several hospitals worldwide have implemented strategies to optimize CTOTs and CCLs, aiming to increase throughput, reduce waiting times, and improve cost-effectiveness.[3]

Extended Operating Hours and Facility Optimization

One of the most common strategies to improve the utilization of CTOTs and CCLs is the extension of operating hours. Several hospitals in high-demand regions have successfully

adopted this approach. For instance, a study conducted in the United Kingdom showed that extending operating hours beyond the traditional 9:00 AM to 5:00 PM schedule significantly increased the number of surgeries performed, reducing waiting lists and enhancing patient outcomes.[4] The research demonstrated that by extending operational hours into the evening, hospitals were able to use existing resources more efficiently without the need for costly infrastructure expansion.

Similarly, hospitals in Canada have explored the feasibility of running Cath labs during evenings and weekends.[5] In a study conducted at the University Health Network in Toronto, it was found that extending Cath lab operating hours reduced wait times for patients requiring urgent catheterization procedures. The study emphasized the importance of optimizing existing infrastructure, particularly during off-peak hours, to alleviate the pressure on healthcare systems facing budget constraints.

In Australia, hospitals have adopted a slightly different approach by improving workflow efficiency within existing operating hours.[6] By streamlining pre-operative and post-operative processes, hospitals have reduced the time between surgeries, thus increasing the number of procedures performed per day. This process optimization, combined with the occasional extension of operating hours, has proven to be an effective way of addressing the rising demand for cardiothoracic procedures.

Cost-Benefit Analysis in Resource Optimization

Cost-benefit analyses have been a critical component in determining the feasibility of extending operating hours or optimizing resource utilization in cardiothoracic surgery facilities. A study conducted in the United States at the Cleveland Clinic examined the financial implications of extending the operating hours of their CTOTs.[7] The analysis showed that while extending hours increased staffing and operational costs and the overall financial benefit. This is due to increased patient throughput and reduced waiting lists, and it justified the investment. The cost savings derived from preventing patient deterioration, which can result in more complex and expensive treatments later on, also contributed to the net benefit.

Similarly, a cost-benefit analysis conducted in Germany focused on the optimal utilization of Cath labs. Researchers found that optimizing

Cath lab scheduling and extending operational hours by a few additional hours per day increased the number of procedures by 25% without the need for new equipment or infrastructure.[8] The additional revenue generated from the increased number of procedures outweighed the marginal costs associated with staffing during extended hours, making it a financially viable option.

Effectiveness of Theater Time Optimization

The effectiveness of optimizing theatre time is not limited to financial benefits; it also has significant implications for patient outcomes. A study conducted in India highlighted the impact of reducing wait times for cardiothoracic surgeries by extending theatre hours.[9] Hospitals that adopted extended hours and improved workflow efficiency saw a marked reduction in patient mortality rates due to faster access to life-saving procedures. The study also showed that optimal utilization of theatre time improved overall staff morale, as healthcare providers could perform more procedures within the same timeframe, reducing burnout caused by long waiting lists and overbooked schedules.

In the context of lower-income countries, such as Sri Lanka, where financial constraints limit the ability to expand healthcare infrastructure, these global strategies present a promising solution. By optimizing the use of existing CTOTs and Cath labs, Sri Lankan hospitals could significantly reduce waiting lists, improve patient outcomes, and achieve cost savings. The success of such approaches in other countries highlights the potential for Sri Lanka to implement similar strategies, leveraging non-operational hours and available healthcare staff to address the growing demand for cardiothoracic procedures.

The global experience in optimizing CTOTs and Cath labs demonstrates that extending operating hours and improving workflow efficiency are effective strategies for addressing the rising demand for surgeries without incurring substantial infrastructure costs. Cost-benefit analyses from various hospitals have consistently shown that the financial investment in extended hours is justified by increased throughput, reduced patient wait times, and improved outcomes. These findings provide a valuable framework for Sri Lanka to enhance the utilization of its existing cardiothoracic surgical facilities and address the challenges posed by long waiting lists and limited resources.

Methodology

This study adopts a descriptive analytical design to evaluate the utilization of CTOTs and CCLs in three selected hospitals in Sri Lanka. The hospitals were randomly selected from all government and semi-government institutions where both cardiothoracic surgical facilities and Cath labs are available, using a lottery method. To ensure geographical representation, if two hospitals from the same region were drawn, the second hospital was excluded, and the lottery process continued until a hospital from a different region was selected.

Study Tool

The primary tool used in this study is a structured interviewer-administered questionnaire aimed at gathering detailed information from hospital administrators and cardiothoracic surgery teams. The questionnaire collects data on the operational hours of the CTOTs and Cath labs, the types of surgeries performed, waiting lists, down times, and the current staffing arrangements. Additionally, the study will collect data on the average time taken for various cardiothoracic procedures.

Calculation Procedures

1. **Utilization Hours Calculation:** The total number of operational hours currently utilized in each hospital's cardiothoracic theatre and Cath lab will be calculated by summing up the hours of usage recorded during standard operating hours (8:00 AM – 4:00 PM).
2. **Non-Utilization Hours Calculation:** The total number of non-utilized hours was calculated by multiplying the number of operational CTOTs in the hospital by the total hours available per theatre annually (i.e., 24 hours × 365 days). For example, in a hospital with 2 theatres, the total potential operational hours per year would be 17,520 hours. From this figure, we subtracted the actual hours of theatre use, along with all types of downtimes (such as cleaning, maintenance, or scheduled closures), to determine the estimated number of non-utilized hours.
3. **Assessment of Surgery Types and Average Time:** Data on the types of surgeries performed and the average time taken for each surgery (such as coronary artery bypass grafting, valve replacements, and catheterization procedures) will be

gathered. This information will help estimate the additional number of surgeries that can be performed during the non-utilized hours.

4. **Calculation of Total Non-Utilized Hours:** The total non-utilized hours across all three hospitals will be calculated by aggregating the individual totals from each institution.
5. **Calculation of Additional Surgeries:** Based on the average time taken per surgery, the study will estimate how many additional surgeries can be performed if these non-utilized hours are fully used.
6. **Estimation of Quality-Adjusted Life Years (QALYs):** Using established data on the improvement in life expectancy and quality of life after cardiothoracic surgeries, the study will calculate the number of Quality-Adjusted Life Years (QALYs) that can be gained for patients through optimal utilization of these facilities.
7. **Monetary Value of Earned QALYs:** Finally, the study will calculate the monetary value of the additional QALYs gained, providing an estimate of the economic benefits to the healthcare system from the improved utilization of these facilities. This will be done using cost-effectiveness analysis frameworks that assign a monetary value to each QALY gained.

Results

This section presents the findings of the cost-benefit analysis

1. Utilization and Non-Utilization Hours

The hospitals in the study are SJGH, National Hospital Galle, and National Hospital Jaffna. The data for National Hospital Galle and National Hospital Jaffna has been extrapolated to cover a full year.

We now calculate the non-utilized hours for the CTOTs in these hospitals as described above in methodology.

- a. **SJGH:** With 8,640 total hours available in a year, SJGH utilized 5,792 hours, leaving 2,848 non-utilized hours.
- b. **National Hospital Galle:** The available data covers only three months (January to March) with 1,632 non-utilized

hours out of 2,160 hours. If this trend continues, the estimated non-utilized hours for the entire year would be 6,528 hours

- c. National Hospital Jaffna: The data provided covered eight months with 4,992 non-utilized hours out of 5,760 total hours. Extrapolating this data to cover 12 months estimated Annual Non-Utilized Hours for Jaffna would be 7,488 hours.

2. Potential Additional Surgeries

Using the average surgery time of 5 hours for cardiothoracic surgeries, we calculate the number of additional surgeries that could be performed in the non-utilized hours.

- a. SJGH: With 2,848 non-utilized hours, SJGH could perform 570 additional surgeries.
- b. National Hospital Galle: With an estimated 6,528 non-utilized hours, National Hospital Galle could perform 1,306 additional surgeries
- c. National Hospital Jaffna: With an estimated 7,448 non-utilized hours, National Hospital Jaffna could perform 1,498 additional surgeries

3. Quality-Adjusted Life Years (QALYs)

Each successful cardiothoracic surgery is estimated to provide an average of 2.37 QALYs. Using this figure, the total number of QALYs that could be gained from the additional surgeries is calculated as follows:

- a. SJGH: 1,350.9 QALYs
- b. National Hospital Galle: 3,094.22 QALYs
- c. National Hospital Jaffna: 3,548.26 QALYs

The total QALYs gained across all three hospitals would be approximately: 7,993.54 QALYs

4. Monetary Value of QALYs

Using a value of \$10,000 per QALY, the monetary benefit of the additional QALYs earned through the optimal use of non-operational hours is as follows:

- a. SJGH: $1,350.9 \times 10,000 = \$13,509,$

b. National Hospital Galle: $3,094.22 \times 10,000 = \$30,942,200$

c. National Hospital Jaffna: $3,548.26 \times 10,000 = \$35,482,600$

The total monetary value of the additional QALYs across all three hospitals is approximately:

$13,509,000 + 30,942,200 + 35,482,600 = \$79,933,800 = \$79.93 \text{ million}$

Summary of Findings

- Total Non-Utilized Hours across the three hospitals: 16,864 hours
- Total Additional Surgeries that could be performed: 3,373 surgeries
- Total QALYs Earned: 7,993.54 QALYs
- Monetary Value of QALYs: \$79.93 million

By optimizing the use of non-operational hours, these hospitals could perform an additional 3,373 surgeries annually, leading to a significant reduction in the waiting list for cardiothoracic surgeries in Sri Lanka. This would generate an estimated 7,993.54 QALYs and provide economic benefits worth nearly \$80 million annually only from 3 selected hospitals. If this is calculated for National Hospital Sri Lanka (NHS) and National Hospital Kandy value may be further high. These findings underscore the potential benefits of fully utilizing existing healthcare resources without the need for costly infrastructure expansion.

Discussion

The findings from this study highlight the significant underutilization of CTOTs in three key hospitals in Sri Lanka: SJGH, National Hospital Galle, and National Hospital Jaffna. With over 16,800 hours of non-utilized operating time per year, these hospitals have the capacity to perform an additional 3,373 surgeries annually. This study emphasizes the efficiency gains that could be achieved by extending operational hours and optimizing the use of existing resources, without incurring the high costs associated with building new infrastructure.

The resulting additional surgeries could provide 7,993 QALYs, demonstrating a clear clinical benefit to patients. Additionally, the financial implications are substantial, with a potential economic benefit of nearly \$ 80 million annually. The cost-benefit analysis

shows that utilizing non-operational hours by compensating healthcare professionals from other institutions is a cost-effective solution to the country's capacity issues. This approach addresses not only the current backlog of surgeries but also enhances patient outcomes by reducing waiting times and improving access to life-saving procedures.

Limitations of the Study

Limited Hospital Representation: The study focused on only three hospitals—SJGH, National Hospital Galle, and National Hospital Jaffna. This limited scope may not provide a complete representation of the utilization patterns across the country's CTOTs.

Short Data Collection Duration: The duration of data collection may not be sufficient to capture long-term trends in theatre utilization and surgical patterns. Variations in demand, staffing, or other operational factors could affect the representativeness of the data collected during a limited timeframe.

Variability in Surgery Time: The estimated surgery times used in the study are generalized averages. In reality, the time required for cardiothoracic surgeries can vary significantly depending on the type of procedure, the complexity of the case, the skills of the surgeon, and intraoperative complications. These variations may affect the accuracy of the estimated number of surgeries that could be performed during non-utilized hours.

Lack of ICU Capacity Assessment: While this study evaluates theatre utilization and available health staff, it does not assess the availability or capacity of intensive care units (ICUs), which are a critical limiting factor for performing cardiothoracic surgeries. The absence of ICU data may affect the accuracy of estimating the true potential for increasing surgical throughput.

Conclusion

This study concludes that optimizing the use of non-utilized hours in CTOTs in Sri Lanka's hospitals can significantly increase surgical capacity, reduce waiting lists, and improve patient outcomes. By performing over 3,300 additional surgeries annually, the healthcare system could generate nearly 8,000 QALYs and deliver economic benefits worth \$ 80 million. Extending operational hours and employing available healthcare professionals from other institutions provide a feasible and cost-effective solution to address the current

capacity challenges in Sri Lankan hospitals. These findings underscore the potential for resource optimization as a practical approach to improving healthcare delivery in the country.

Recommendations

1. **Extend Operating Hours:** It is recommended that SJGH, National Hospital Galle, and National Hospital Jaffna extend their cardiothoracic theatre hours to include non-operational periods, such as evenings and weekends. This will help to maximize the utilization of existing resources.
2. **Engage Additional Healthcare Staff:** To support the increased workload, hospitals should consider bringing in healthcare professionals from other institutions on a contractual basis. This flexible staffing model ensures that hospitals can meet the demand for additional surgeries without the need for permanent hires.
3. **Assess and Strengthen ICU Capacity:** To fully realise the potential for increasing cardiothoracic surgical volumes, it is essential to assess the existing ICU capacity in each hospital. Expanding and optimising ICU facilities should be prioritised alongside theatre and staff improvements to ensure safe post-operative care and improved patient outcomes.
4. **Implement Policy Changes:** The Sri Lankan Ministry of Health should develop policies to incentivize the use of non-operational hours across all hospitals with cardiothoracic facilities. This includes providing compensation for healthcare professionals willing to work during extended hours.
5. **Monitor and Evaluate:** Continuous monitoring and evaluation of extended operational hours should be implemented to assess the ongoing efficiency of the system and make adjustments where necessary. This ensures that resource optimization efforts remain sustainable and aligned with healthcare demand.

These recommendations align with the study's objectives of increasing utilization, improving patient outcomes, and conducting a cost-benefit analysis of optimizing existing healthcare resources.

References

1. Almekhlafi. (2014). vercoming the evening/weekend effects on time delays and outcomes of endovascular stroke therapy. *Journal of NeuroInterventional Surgery*.
2. Athauda-Arachchi. (2019). Advanced interventional cardiac procedures and perioperative care required to prevent the epidemic of end-stage heart disease in Sri Lanka. *Sri Lanka Journal of Medicine*.
3. Duignan, S. (2020). Decision-making in the catheter laboratory: the most important variable in successful outcomes. *Pediatric Cardiology*.
4. Dunning. (2017). The society of thoracic surgeons expert consensus for the resuscitation of patients who arrest after cardiac surgery. . *The Annals of Thoracic Surgery*.
5. Guerriero. (2011). Operational research in the management of the operating theatre:. *Health care management science*, .
6. Harischandra. (2020). The workload, outcome and waiting time of cardiothoracic operations: a single unit study in Sri Lanka. *Sri Lanka Journal of Surgery*,.
7. Mohan. (2017). mproving the process efficiency of catheterization laboratories using simulation. *Health Systems*.
8. Sakowska. (2017). Hospital-wide implementation of an electronic-workflow solution aiming to make surgical practice improvement easy. *journal of surgery*.
9. Stafinski. (2022). Reducing wait times to surgery—an international review. *Journal of Hospital Management and Health Policy*.



REVIEW ARTICLES



Evolution of Medical Administration in Sri Lanka

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Ancient and Early History

The history of ancient Sri Lanka, which is recorded in “Mahavamsa”, and some of the archeological remains in the ancient kingdoms of Sri Lanka, provide evidence that some services of a public health nature, such as drainage, sanitary facilities, and cemeteries, were provided by ancient kings of Sri Lanka. The technical ingenuity of some of these measures, practiced by the people who lived twenty centuries ago, is truly surprising.” Vinaya” rules for the Buddhist monks, as well as tenets of “Ayurvedha”, by their injunctions on good living, have probably contributed significantly to this health consciousness of the nation of this island paradise in the Indian ocean. (Ceylon / Sri Lanka).

Colonial Era Developments

It is true that Sri Lankans were keen on developing the health facilities since the ancient kings' period, and later, the same continued during the colonial era as Sri Lankan doctors pioneered to lead the health services of the country. This situation had been endorsed by Sir West Ridgeway (then Governor of Colonial Ceylon) in his address to Ceylon Medical College at the distribution of medals on 28th August 1903, stating as “Ceylon is proud of its medical service, and justly proud, and it has always been a great pleasure to me to be associated with it. The medical service of Ceylon is Ceylonese. essentially Ceylonese, and Ceylonese, I hope it will remain”.

The British Governor, Sir Henry Ward, established the Medical Department of Ceylon in 1858, and it was mainly tuned to the control of communicable diseases. The head of the Department was named PCMO (Principal Civil Medical Officer) . His staff consisted of a medical assistant who supervised the central provinces, three superintendents of vaccination who were stationed in Colombo, Kandy, and Jaffna, respectively. 33 medical sub assistants and 100 ‘native ‘vaccinators. The medical sub-assistants were of two grades, namely those who received their training in the Department itself and those who qualified from Calcutta Medical College.

The head of the Medical Department was always a Britisher till 1936, during which year the first Sri Lankan was appointed to the post. When the British PCMO was on leave, the first Sri Lankan to cover the post of PCMO was Dr P.D. Anthoniz, who later became the first President of Sri Lankan Medical Association.

Sir William Gregory (1872 – 1877) arranged many medical reforms, on the advice of the

PCMO. The number of doctors increased, and the system of classification was changed. Although there were two Colonial Surgeons attached to the Medical Department, the new reforms were aimed at reducing the higher-class appointments and increasing the number of subordinate officers. This meant a decrease in the employment of higher-paid European doctors and a bigger intake of lower-paid Sri Lankan sub-assistant surgeons (Doctors).

In 1893, PCMO, Dr W.R. Kynsey, put forward a scheme for the unification of the Civil and the Estate branches of the Medical Department, and it was approved by the British government. With this new arrangement, Deputy Assistant Colonial Surgeons (Doctors) were attached to plantation districts as District Medical Officers. At the beginning, only those with a British qualification or a higher Indian qualification were eligible to get into this grade, but later their requisite qualification was amended to include a license from the Ceylon Medical College or an Indian Medical College.

During the Colonial period, the British were keen on developing Plantation District Hospitals as to provide the medical services required by the Indian laborers who served in Plantations owned by the British. These Indian origin laborers were originally located at Nilgiri Hills of South India (at the tri-border of Tamil Nadu, Kerala, and Karnataka States of South India). They were taken to Rameshwaram by train and then to Thalai Mannar by ship. From Thalai Mannar to up-country plantations of Sri Lanka, they had to walk due to the non-availability of transport services during those days. As a result of this long journey by foot, many of them became ill, and these Plantation District Hospitals were the places where, these sick Indians obtained

treatment. The Colonial Government approved a special Act named the Medical Wants Ordinance, the CEO of the plantation had to allocate Rs 3.25 annually per Indian Labourer for health needs, and the DMO had to send the invoice to the Superintendent of the estate requesting payments for the medical services offered at the District Hospital for the resident Indian Labourers of the Estate.

During the Second World War, the British used this island in the Indian Ocean – Ceylon as one of their best Military reserves; and Camps were established at certain places as Base Camps for their reserve of African soldiers. The hospitals created for the use of the Military-reserve were named Base Hospitals (BH).

Shortly after the Second World War, the entire Medical Department was staffed by Sri Lankans, but the existing District Hospitals were mainly providing health services to the British planters and their resident Indian laborers in the estates. The medical services provided for the local village population were extremely insufficient. To address this gap in medical services, the Colonial Government of Ceylon introduced the Visiting Dispensary service in remote rural regions of the catchment area of each plantation District Hospital.

A doctor from Kandy, who had to attend such a Visiting Dispensary service, wrote to “The Lancet” on 30th September 1877, giving a graphic description of the travails of a District Medical Officer of His day. “The roads, as a rule, are very bad, and severe upon both horse and rider, over most of these, anything but a walking pace is impossible. Owing to the size of the districts (twenty five to thirty in diameter) the district surgeon (doctor) is compelled to remain away from home two or three nights at each week, and is fortunate indeed if he gets a bed to sleep on; but in most instances will have to be content with a sofa, and exposure all night to the attacks of mosquitoes.”

As such, the Visiting Dispensary service was not capable of providing emergency services in these remote rural regions. The Colonial Government later established Maternity Homes (MH), the Central Dispensaries (CD), and in certain places the amalgamated model, which was designated as the Central Dispensary & Maternity Home (CD & MH).

In addition to providing the aforementioned system of curative services, the Colonial Government made a significant change in 1926 by initiating an organized form of

Preventive Health service. The establishment of the Health Unit system in 1926 was a major advancement in the field of Preventive health services in Sri Lanka. Till then, assistant sanitary officers were responsible for large districts. Their work was centralized to the urban areas, while the rural sector was largely neglected. The first Health Unit in Sri Lanka, or for that matter in Asia, was established in Kalutara in July 1926. Health Units in Sri Lanka undertook the usual duties of a public health department in a tropical country, including health education, general sanitation, collection of vital statistics, study and control of preventable diseases, vaccination, maternal and child health, and school medical inspections. The second Health Unit was set up in “Weudawili Hathpattu” in Northwestern Province in November 1927. and the third in Matara in May 1928. At present, the name of these Health Units has been changed as the Office of the Medical Officer of Health (MOH), and such MOH divisions have been established in each of the administrative divisions (Divisional Secretary areas) of the country.

Post-Independence Reforms

After the Independence (1948), the successive Sri Lankan Governments identified the deficiencies of Curative Services at locations distant to existing Base Hospitals (BH) and District Hospitals (DH) and therefore developed an intermediate model of hospitals named as Peripheral Units (PU) for these distant locations (Peripheral Hospitals). At the same time, most of the existing Maternity Homes (MH) and the existing Central Dispensaries & Maternity Hospitals (CD & MH) were developed into Rural Hospitals (RH), considering the three A principle (Accessibility, Availability, and Attentiveness).

According to the Recategorization of Hospitals, the aforementioned BH are now classified into two categories according to the number of service provision units (BH-A and BH-B). The DHH, PUU, and RHH are given a new name as Divisional Hospitals and classified according to Bed Strength as DH-A, DH, B, and DH-C. However the DH, PU, RH system and the modern version of medical administration of it ; namely the Divisional Hospital system (with the upgraded CD as Primary Medical Care Units – PMCU) remain as the Primary Level Curative Care institutions of the country . It is also noted that ; in addition to BH of Colonial era , certain large DH had been upgraded to the state of BH

during the post-independent area . Such medical administrative reforms were implemented to provide a better coverage by specialty clinical services throughout the country (Secondary Level Curative Care Institutions)

Legal and Administrative Frameworks

The most important decision taken by the first Sri Lankan Government after Independence was to invite the Director General of Health Services of Australia to design a suitable Health Administrative System for Sri Lanka. This was the first attempt in the history of Sri Lanka to analyze the available service components to design better health futures. This report has been named as the 'Cumpston Report 'as it was prepared by the late Dr. J.H.L. Cumpston (C.M.G, M.D., D.P.H), the Director General of Health Services of the Government of Australia in February 1950 (printed by the order of the Government at the Government Press).

The Legal framework of the Health System of Sri Lanka is based on this report. The following are the major recommendations of the Cumpston report.

1. Establishment of a separate department titled as Department of Health.
2. The ultimate highest authority of the Department of Health should be a medical man, designated as the Director of Health Services (DHS).
3. The Department of Health should consist of three divisions: Medical Services, Preventive Services, and Laboratory Services.

The Act of Parliament No. 12 of 1952, "The Health Services Act," was prepared to the aforementioned recommendations of the Cumpston report. Vide section 2. (1) The Department of Health has been established; and vide section 3. (1) the Head of the Department is appointed from the medical profession with the designation of Director General of Health Services (DGHS). Section 3.(1) further describes the legal framework of the Department of Health , and it is as follows (a) A person to be or act as the Director of Health (DHS) ; (b) A person to be or act as the Deputy Director (Medical Services) ; (c) A person to be or act as the Deputy Director (Preventive Services) ; (d) A person to be or act as the Deputy Director (Laboratory Services)

However , as at present, the Department of Health has been absorbed into the Ministry of

Health, but it is not possible to trace any such Amendment to the Act of Parliament No. 12 of 1952 – The Health Services Act.

Modern Developments in Medical Administration

Other than the aforementioned Legal procedures, a Health Policy had not been formulated for the next forty years (40 years from 1952 to 1992). However, the Ministry of Health has expanded its internal organization over the decades to undertake the ever-increasing workload efficiently. The Medical Services Division (of Cumpston Report) has been divided among Deputy Director General (Medical Services) I and II, with Directorates of Tertiary Care Services, Medical Services, and Primary Care Services. For Dental Services, a Deputy Director General and a Directorate of Dental Services have been established. The Laboratory Services Division (of the Cumpston Report) is manned by a Deputy Director General with a Directorate of Laboratory Services. The Preventive Service Division of Cumpston's report has the most ramifications at present. Deputy Director General (Public Health Services) I; for Surveillance Services with Units such as Epidemiology Unit, Quarantine, Malaria, Leprosy, Filariasis, Dengue, STD & HIV, Tuberculosis, Rabies, etc. Deputy Director General (Public Health Services) II, for Preventive Programmes with Units such as Family Health Bureau, Health Promotion Bureau, Directorates of the Health of Youth, Elderly, Disabled, etc. A separate division for Management Development & Planning has been created (MDPU) with a Deputy Director General (Planning) and Directorates of Planning, International Health, etc. To facilitate the development of the health workforce, a separate division has been created as Education Training & Research (ETR) with a Deputy Director General (ET&R) and Directorates of Training, Research, etc. All the aforementioned posts are manned by Medical Administrators with postgraduate qualifications. The Medical Services Minute has stipulated the relevant Post Graduate qualifications required for the respective posts.

In the 1980's the Department of Health introduced a new Health Administrative system identified as the DHO system. In response to the WHO – Alma-Ata – Health for All policy, and with funds from the WB – IDA project, certain District Hospitals were developed as Divisional Health Centre (DHC) and the DMO was designated as the Divisional Health Officer. Certain satellite small hospitals

(PUU & RHH) were developed into Sub Divisional Health Centres (SDHC). The DHO had to function as the administrative head of DHC and satellite SDHC of the demarcated area (It is necessary to note that Preventive Services of the demarcated area, including the staff and functions of the MOH, came under the purview of the DHO). But due to a lack of experienced staff, this Health System ceased to function after a few years.

Considering the Evolution of Medical Administration in Sri Lanka, one of the major steps taken is the establishment of a General Hospital (GH) in each district in the country (Tertiary Level Curative Care Institutions). These General Hospitals consisted of several clinical disciplines and functioned as the apex hospital or the key referral centre for the smaller hospitals of the district. But depending on the geographical location of these GH, and the availability of public transport to and from GH, the patients of the surrounding districts, too obtained treatment from these GH irrespective of their permanent residence in adjoining districts (as any patient in the country is free to obtain treatment at free of charge from any hospital of the country). With the establishment of Provincial Councils under the 13th Amendment of the Constitution, the GH of main city of the Province was designated as the Provincial General Hospital (PGH) and the GH of other districts of the Province were designated as the District General Hospitals (DGH). As new Medical Faculties were created at certain locations, the relevant PGHs were developed with Professorial Clinical Units and designated as Teaching Hospitals (TH). All these hospitals (Including Special Hospitals for Women, Children, Dental Services, Mental Health, Eye Care, etc) are manned by Medical Administrators viz, Hospital Directors and Deputy Directors.

The National Health Policy of 1992 had identified many policy issues about Sri Lankan Health Sector, but the main focus was to decentralize the Health system from District Level to Divisional Level by introducing a new Health Administration system at Divisional Level (Divisional Director of Health Services – DDHS) which is in par with 13th Amendment to the Constitution of Sri Lanka (1987) which introduced the devolution of power to the Provincial Council System. However, the DDHs system failed, and the main reason for failure was the non-availability of experienced medical administrative staff at most of the newly created DDHS areas (At most of the places the MOH office was changed as the DDHS office,

the MOH became the DDHS after a short training, but the DMOO of the hospitals of the DDHS area were much senior to the newly designated DDHS, and the change in administration from RDHS at District level, down to the DDHS at Divisional Level led to much confusion confrontation and communication issues. It is interesting to compare the rise and fall of the DHO system and the DDHS system.

As experienced from the issues of the DHO system and DDHS system, the Ministry of Health decided to create a postgraduate course of study for medical officers to obtain academic qualifications in Medical Administration. The curriculum of this post graduate course of study had been designed in par with international standards of Health Administration and to award PG degrees of M.Sc. and M.D after successful completion of the stipulated curriculum (which included a period of overseas study of one year for M.D. trainees in Internationally accredited Hospitals and Health Systems). Accordingly the Post Graduate Institute of Medicine of the University of Colombo, commenced the programme with first batch of M.Sc. students (selected after a screening test) in 1996

As a result of the 13th Amendment of the Constitution of Sri Lanka, the centralized Medical Administration was devolved to a certain extent to the provinces by creating a post of Provincial Director of Health Services (PDHS) for each of the Provinces in Sri Lanka. According to the duties and responsibilities stipulated for the PDHS, he/she has to report to the Central Government (DGHS and DDGs of the National Health Ministry) and also to the respective Provincial Council (Secretary of the Provincial Health Ministry). To accommodate the existing Medical Administration in the Districts, which has the designation as Regional Directorate of Health Services (RDHS), was renamed as Deputy Provincial Directorate of Health Services (DPDHS). But sometimes later, it was renamed again as the RDHS (and in certain places, the designation of District Directorate of Health Service is also used).

Another milestone of Medical Administration in Sri Lanka is the creation of a Deputy Director General Post as the head of institution with the upgrading of Colombo General Hospital as the National Hospital of Sri Lanka (NHSL). Later the General Hospital – Kandy and General Hospital – Karapitiya (Galle) have been upgraded as National Hospital – Kandy and National Hospital – Galle and requisite qualification for the respective heads

of institution is a Board Certified Consultant in Medical Administration.

The Government in 1994 appointed a committee to revise the National Health Policy of 1992 and formulate a new National Health Policy. Accordingly, the new National Health Policy was prepared and approved in 1996. Both of the National Health Policies (1992 and 1996) were instrumental in Re-structuring of Health System & Medical Administration by creating new Directorates at the National Ministry of Health, such as Organization Development, Policy Analysis & Development, Health Information, Health Quality and Safety, Disaster Preparedness & Response, Health Research, Private Health Sector Development, Estate & Urban Health, Mental Health, Non Communicable Diseases, Environment & Occupational Health, etc.)

However, the Medical Services and Laboratory Services (designed by the Cumpston report) remain without much expansion. (when compared to the present expansion of the Planning and Preventive Divisions of the Ministry of Health Sri Lanka) The National Health Policy 2016 – 2025 has proposed major reforms to the health system in the document titled “National Health Strategic Master Plan 2016 – 2025 Volume V – Section on REFORMS.

For the first time in Sri Lanka, the National Health Policy 2016 – 2025 with linked National Health Strategic Master Plans 2016 – 2025 Vol I (Preventive Services), Vol II (Curative Services), Vol. II (Rehabilitative Services) and Vol. IV 9 Health Administration and Reforms) have been approved by the Cabinet of Ministers of the Government of Sri Lanka on 18th July 2017 (Reference No. Cabinet Decision 17/17/1366718/084) One of the reforms proposed by the aforementioned National Health Policy 2016 – 2025 and the Master Plan linked is the creation of a NCD Bureau under a Deputy Director General (NCD) which has become a reality now. The present-day Medical Administrators have to implement the REFORMs approved to create a better Health System.

References

1. Urugoda , C.G. The Profession and its Institutions, Sri Lanka Medical Association 1987 , p . 131
2. The Lancet, 1878 , 1 , 37
3. National Health Policy of Sri Lanka 2016 – 2025



QUALITY IMPROVEMENT STUDIES



Improving the Laboratory Investigation Process at the Outpatient Department of Teaching Hospital Kalutara: A Quality Improvement Initiative

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Abstract

This study provides a comprehensive analysis of the laboratory investigation process at the outpatient department (OPD) laboratory of Teaching Hospital, Kalutara, highlighting existing challenges and proposing feasible solutions for improvement. The OPD laboratory, which is essential in managing a high patient load across various specialties, faces issues related to a lack of standardized guidelines, legibility of request forms, sample handling, availability of consumables, equipment functionality, and staffing. These challenges contribute to long patient waiting times, missed investigations, and inconsistencies in report quality. Evidence-based recommendations include implementing a Hospital Information Management System (HIMS) lab module, developing Standard Operating Procedures (SOPs), streamlining sample handling, and improving infrastructure and training. The proposed solutions aim to reduce waiting times, enhance patient care, and optimize resource utilization. By prioritizing actionable steps and involving key stakeholders, these measures will ensure continuous quality improvement and operational efficiency.

Introduction

Teaching Hospital (TH) Kalutara is a major healthcare institution, offering diverse services to approximately 352,840 outpatients and 107,885 inpatients annually. The laboratory services are integral to patient diagnosis and management, supporting various specialties. Efficient lab operations rely on accuracy, precision, timeliness, and authenticity. However, prolonged waiting times and inconsistent report quality indicate gaps in current practices.

Laboratory operations can be broken down into three phases:

1. Pre-analytical: From test ordering to sample reception
2. Analytical: Test processing
3. Post-analytical: Report generation and distribution

For the second half of 2021, the OPD lab processed a significant number of tests across different categories, including biochemistry and hematology. Currently, the lab lacks standardized guidelines for test requests, with samples sometimes brought in directly by patients, leading to inefficiencies and

dissatisfaction. Human resources, however, are stretched thin, with limited staff dedicated solely to OPD lab services.

Objective

To assess the OPD laboratory process at Teaching Hospital Kalutara, identify existing gaps, and recommend practical solutions to enhance the efficiency and quality of laboratory services.

Literature review

A timely turnaround time (TAT) for laboratory results is critical in healthcare delivery. TAT measures the time from investigation to result in receipt, although there is debate among clinicians and lab personnel on the exact definition (1). Prior studies emphasize the importance of standard operating procedures, efficient equipment maintenance, and the need for standardized procedures to streamline processes and reduce TAT (2).

Clinical laboratories have focused on quality control and assessment related to the analytical aspects of testing. However, research conducted in recent decades has highlighted that quality in clinical laboratories cannot be assured solely by focusing on

analytical aspects. The major proportion of errors occurs in the pre-analytical phase (3).

Successful attempts to achieve cost savings by improving the effectiveness of test utilization have several things to follow. First and foremost, it is important to improve the ordering of tests; the clinical questions behind the test requests must be thoroughly understood. Using the appropriate clinical experts' opinion, the laboratory must establish standards and guidelines for appropriate test use (4). These procedures can be developed to review and monitor test utilization and determine compliance with the standards and guidelines. These cost-effective improvements in the use of laboratory tests may require strategic modification in clinicians' test ordering behavior. Such problem-oriented requests form administrative policy changes and review of the clinical laboratory's testing procedures to ensure they are appropriate for improving the effectiveness of the laboratory investigation process (4). As laboratory tests are important elements of medical practice, the cost-effective use of laboratory tests and services is clearly joined with the responsibility of clinicians and the clinical laboratory (4).

Accurate and prompt disease diagnosis depends on an effective laboratory investigation process. Making effective treatment options depends on the laboratory's ability to recognize and measure illness indicators (5). As a result, any enhancement to the laboratory investigation process will directly affect patient outcomes and care (6).

Effective laboratory investigation processes lead to increased efficiency and productivity, which can result in cost savings for the healthcare institute. By identifying areas for improvement and implementing changes, the laboratory can streamline processes and reduce wastage, leading to more efficient use of resources (7).

Methods

This descriptive cross-sectional study was done at Teaching Hospital, Kalutara, from 1st of March to 1st of April 2023. The study employed a mixed-methods approach, integrating observational data, interviews, document review, and literature analysis to thoroughly assess the OPD laboratory investigation process at Teaching Hospital, Kalutara. The methodology focused on identifying gaps within the pre-analytical, analytical, and post-analytical phases of the

laboratory service to propose evidence-based solutions.

Data Collection

1. **Observational Visits:**
To gain firsthand insights into patient waiting times and workflow efficiency, observational visits were conducted at the OPD laboratory. A pre-tested checklist documented key metrics such as the average waiting time for patients, the time taken from sample collection to report issuance, and other relevant observations that could impact service quality.
2. **Key Informant Interviews (KII):**
Interviews were conducted with various stakeholders, including the Medical Officer in the quality management unit, special grade Medical Laboratory Technologist (MLT), chief MLT, and patients. This qualitative approach provided insights into the perceptions and challenges faced by both staff and patients, shedding light on operational bottlenecks and areas needing improvement.
3. **Desk Review:**
Hospital records and other relevant documented sources were examined as secondary data to provide context for the laboratory's operations, including workforce allocation and overall performance. This analysis also extended to process-related information, such as records of equipment maintenance and historical data on patient volumes.

Literature Review:

To benchmark the hospital's laboratory practices against industry standards, a comprehensive review of journal articles and web-based resources was conducted. This analysis included best practices and performance indicators pertinent to laboratory quality, such as turnaround time, procedural accuracy, and equipment reliability, to inform evidence-based recommendations.

Each method contributed to a holistic understanding of the existing workflow and identified practical areas for intervention. The combined insights from these approaches facilitated an in-depth situation analysis, providing a basis for prioritizing key issues and formulating targeted recommendations to enhance laboratory efficiency and service quality.

Results

Challenges identified through situational analysis included:

1. Pre-analytical phase: No standardized guidelines, illegible request forms, and sample handling errors
2. Analytical phase: Consumable shortages, equipment breakdowns, and insufficient staffing
3. Post-analytical phase: Clerical errors and delays in report distribution

Average patient waiting time ranged from 3-4 hours, with some patients leaving without results due to prolonged waiting times. Approximately 40% of investigations remained unattended or unreported daily, reflecting inefficient processes and resource waste.

Problem prioritization using a matrix highlighted “long waiting times” as the most pressing issue. Root cause analysis revealed infrastructure, staffing, and procedural inefficiencies as key contributors.

Discussion

The long waiting times and report inconsistencies underscore the need for systematic improvements in lab processes. Introducing a HIMS lab module could digitize requests and tracking, reduce human errors, and speed up workflows. SOPs would standardize the test ordering and handling processes, ensuring consistent practices. Other recommendations, such as improving sample-handling procedures and reinforcing infrastructure, align with previous findings advocating for structured workflows and optimized equipment use (8,9).

Conclusion

Improving the OPD laboratory process at TH Kalutara is essential for quality patient care. Implementing the recommended HIMS module and SOPs will streamline operations, reduce patient waiting times, and enhance service reliability. Regular supervision and quality audits will support continuous improvement.

Recommendations

1. Develop SOPs for OPD lab processes and implement basic guidelines for investigation requests

2. Integrate the bleeding center with the OPD lab to reduce patient movement
3. Introduce numbered sample trays to improve sample handling efficiency
4. Repair infrastructure to prevent electricity disruptions
5. Deploy HIMS for electronic lab request management

Implementation plan

- The implementation plan involves assigning specific roles to departments:
- Directorate: Lead SOP development
- Quality Unit: Oversee integration of the bleeding center and numbered trays
- Maintenance Unit: Address infrastructure repairs
- Information Technology Unit: Implement HIMS module

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References

1. Hawkins RC. Laboratory turnaround time. Clin Biochem Rev. 2007;28(4):179–94.
2. Tsai ER, et al. A critical review of laboratory performance indicators. 2019.
3. Lippi G, Plebani M. Lab test results management: from chaos to order. Clin Chim Acta. 2014;432:13–8. doi:10.1016/j.cca.2013.12.035
4. Wong ET. Improving the utilization of laboratory tests. Med Clin North Am. 1985;69(1):39–49.
5. National Academies of Sciences, Engineering, and Medicine. Improving diagnosis in health care. Washington (DC): National Academies Press; 2015.
6. Melissa M, Epner PL, Schiff GD. Communicating laboratory data in support of patient care: a report of the key issues. Institute of Medicine; 2013.
7. Adarsh MB. Cost-effectiveness analysis and quality control in clinical laboratory

- services. *Int J Healthc Biomed Res.* 2018;6(3):75–9.
8. Dark R, et al. *Medical Laboratory Archives - The Dark Intelligence Group.* 2020.
 9. World Health Organization, Regional Office for the Eastern Mediterranean (WHO EMRO). *Laboratory Quality Management System.* 2020.
 10. Ministry of Health. *Manual on Laboratory Services. The laboratory sector of the Ministry of Health.* 2011.



Optimizing Patient Flow by Minimizing the Patients' Movements in the Accident and Emergency Unit : A Case Study from Teaching Hospital Batticaloa

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Abstract

Background: Unnecessary patient movement within healthcare settings can lead to delays, inefficiencies, and dissatisfaction, particularly in high-pressure areas like Accident and Emergency (A&E) Units. At Teaching Hospital Batticaloa—the only tertiary care teaching hospital in Sri Lanka's Eastern Province—a significant delay in patient registration, Patient Health Number (PHN) issuance, and visitor's pass processing was observed due to the physical separation of administrative counters from treatment areas.

Objective: To streamline the patient admission process in Accident and Emergency Unit in Teaching Hospital Batticaloa.

Methods: A mixed-methods evaluation was conducted using time-motion studies, patient movement mapping, staff interviews and review of HHIMS data to assess the impact of the intervention.

Intervention: The hospital decentralized the registration process, PHN issuance, and visitor's pass processing by assigning responsibilities to on-site Medical Officers and Nursing Officers in the Resuscitation Unit, Treatment Unit, and Booked Admission Counter. Laptops, printers, and desktop systems were provided at Doctors and Nursing stations to enable point-of-care documentation. **Results:** Patient movement was reduced by over 70%, and admission processing time decreased from an average of 50 – 60 minutes to 10 – 12 minutes of category 3 and 4 patients. Staff reported improved efficiency and ownership of tasks, while patients and bystanders experienced higher satisfaction due to reduced physical burden and delays.

Conclusion: This low-cost, context-sensitive intervention demonstrates how Kaizen principles can be effectively applied in resource-limited settings to streamline workflow, enhance patient experience, and optimize healthcare delivery in emergency settings.

Background

The concept of Kaizen, originating from Japan, emphasizes continuous, incremental improvements in processes with the involvement of all staff members. In healthcare settings, Kaizen encourages reducing waste, enhancing workflow efficiency, and ultimately improving patient care. One of the key wastes identified in Lean and Kaizen approaches is unnecessary movement—whether of patients, staff, or materials—which can lead to delays, confusion, and reduced satisfaction (1,2).

In the context of emergency care, minimizing patient movement is essential not only for improving service delivery but also for ensuring timely clinical interventions. Excessive or uncoordinated movement within Accident and Emergency (A&E) Units can result in duplication of efforts, delayed treatment, and patient discomfort. Applying the Kaizen principle to streamline patient flow can significantly enhance

the operational efficiency of emergency care services (3).

Teaching Hospital Batticaloa (THB) stands as the only tertiary-level Teaching Hospital in the Eastern Province of Sri Lanka, offering a comprehensive range of specialties and sub-specialties. The hospital plays a crucial role in delivering advanced healthcare services to a large and diverse population. The fully equipped Accident and Emergency Unit, established in 2016, was a major milestone in strengthening emergency medical services in the region. Furthermore, the implementation of the Hospital Health Information Management System (HHIMS) in 2022 was aimed at digitizing and optimizing administrative and clinical processes (4).

Despite these advancements, the A&E Unit continues to face operational challenges, particularly during the patient admission process. Delays in patient registration, the generation of

Patient Health Numbers, and the issuance of Visitor's Passes often result in increased waiting times and unnecessary patient movement between counters and service points. These inefficiencies not only burden the staff but also compromise the quality and timeliness of patient care (5,6).

Therefore, this case study aims to streamline the patient admission process in Accident and Emergency Unit in the Teaching Hospital Batticaloa – particularly registration, issuance of the Patient Health Number (PHN), and visitor's pass – to minimize unnecessary movements between physically distant counters and clinical units. By identifying bottlenecks and implementing small yet impactful process changes, the hospital can move closer to achieving a more patient-centered and streamlined emergency care service (7).

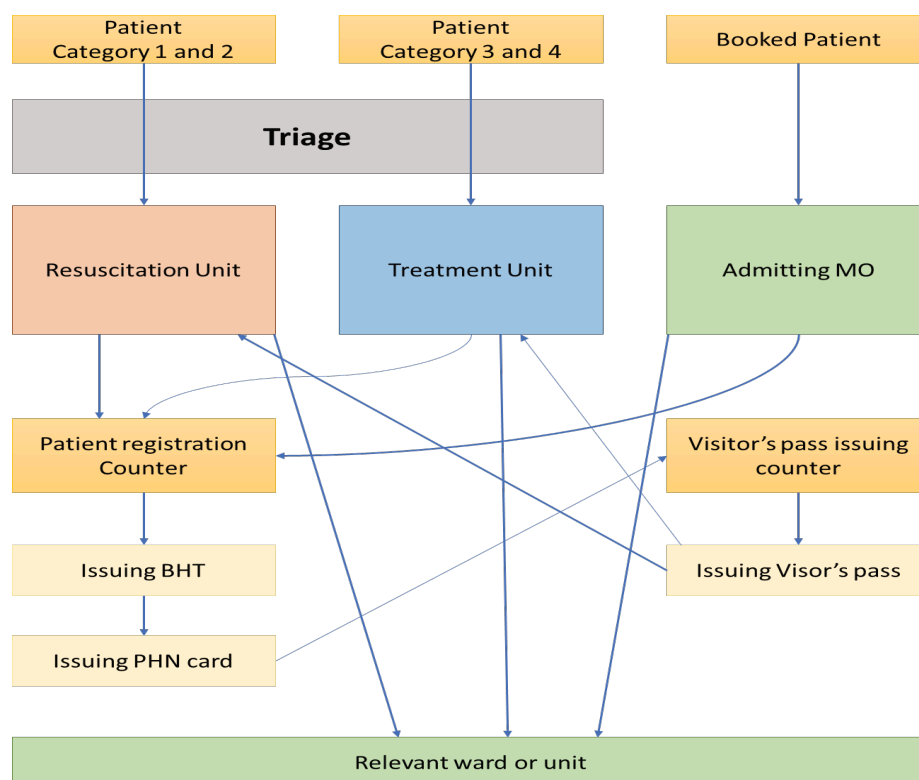


Figure 1: Process mapping of patients' admission in A & E.

Based on the provided flow diagram, the patient admission pathway in the Accident and Emergency (A&E) Unit at Teaching Hospital Batticaloa, with a focus on increased patient movements related to registration, Patient Health Number (PHN) issuance, and visitor's pass, which were done in different counters by Health Assistants (8).

Upon arrival at the A&E Unit, patients are categorized by Triage based on urgency. Category 1 and 2 patients (emergency and urgent) are directed to the Resuscitation Unit (RU), and Category 3 and 4 patients (semi-urgent and non-urgent) are sent to the Treatment Unit (TU). Booked patients (already scheduled for admission or follow-up) are managed by the Admitting Medical Officer (MO) (8).

However, irrespective of the patient category, the following essential administrative processes are required before admission.

- Patient Registration and BHT printing:** Patients must go to the Patient Registration Counter, which is physically located away from both RU and TU. This requires either the patient or a bystander to move between units.
- Issuance of Patient Health Number (PHN):** After registration, the patient proceeds to another point for obtaining the PHN card. This adds another layer of movement, particularly inconvenient for critical patients or their attendants.
- Visitor's Pass Issuance:** Patients or relatives must then navigate to the Visitor's Pass Issuing Counter. This is also located away from the primary treatment areas, further increasing foot traffic.

Once the visitor's pass is issued, they return to the RU or TU. Multiple back-and-forth movements were observed between units that are geographically separated, causing Delays in admission and treatment initiation, confusion among patients, especially elderly or those with limited mobility, overcrowding in transitional spaces like corridors and additional workload for healthcare providers who must often guide patients or complete processes manually.

Description of the intervention

To address the increased movement of patients and their bystanders within the Accident and Emergency (A&E) Unit at Teaching Hospital Batticaloa, a targeted intervention was implemented, guided by the principles of the Kaizen approach.

1. Decentralization of Patient Registration and BHT Printing

Previously, all patients were required to visit a central registration counter, irrespective of their triage category. This process was time-consuming and inefficient, particularly for critically ill patients in the Resuscitation Unit and others requiring urgent care in the Treatment Unit.

Intervention: Designated Medical Officers (MOs) in the Resuscitation Unit, Treatment Unit, and Booked Admission Counter were assigned responsibility for directly handling patient registration and BHT (Bed Head Ticket) printing at the point of care. Laptops with Wi-Fi connectivity and WiFi printers were provided to these MOs, enabling them to perform registrations and print BHTs without referring patients to the central counter.

2. *On-Site Issuance of Patient Health Number (PHN)*

The previous system required patients or their attendants to visit another counter for PHN issuance, resulting in additional movement.

Intervention: PHN cards are now issued directly at the Nursing Stations of both the Resuscitation and Treatment Units. Nursing Officers at these units were trained and equipped with desktop computers and printers, allowing real-time generation of PHN cards immediately after triage and initial assessment.

3. *Streamlined Visitor's Pass Issuance*

The issuance of visitor's passes was also centralized earlier, further contributing to inefficiency and congestion.

Intervention: The same Nursing Officers who issue PHNs at the Resuscitation and Treatment Units are now responsible for issuing visitor's passes. For booked admissions, the existing Health Assistant continues to manage PHN and visitor's pass issuance from the designated counter, which is located near to admitting Medical Officer.

This decentralization model enhances coordination between clinical and administrative functions, reduces waiting times, and significantly minimizes the need for patient or bystander movement within the A&E Unit. Furthermore, it ensures the timely initiation of care and improves the overall patient experience while optimizing staff efficiency.

Methods used for the evaluation

To assess the effectiveness of the intervention aimed at reducing patient movement within the Accident and Emergency (A&E) Unit of Teaching Hospital Batticaloa, a combination of qualitative and quantitative evaluation methods was employed. The following approaches were used.

1. *Time-Motion Study*

A before-and-after time-motion analysis was conducted to measure the average time taken for patient registration, PHN issuance and visitor's pass processing.

Data was collected for 30 randomly selected patients before and after the intervention to compare efficiency improvements.

2. *Patient Movement Mapping*

A flow mapping exercise was used to track the physical movement of patients and their bystanders from the triage point to final admission in the relevant ward or unit. This was done through direct observation and pathway analysis, identifying the number of movement steps required before and after implementation.

Table 1: Implemented interventions to reduce the patients' movement

Interventions	Responsible person	Place	Remarks
Patient Registration and BHT printing	Medical Officer	Resuscitation Unit	Providing laptops for
		Treatment Unit	doctors with Wi-Fi
		Booked admission counter	printer
Issuance of Patient Health Number (PHN)	Nursing Officer	Resuscitation Unit	Providing desktops
		Treatment Unit	and printers on their Nursing stations.
Visitor's Pass Issuance:	Health Assistant	For booked admissions	Using the existing counter for issuance of PHN and visitor's pass

3. Staff feedback and Key Informant Interviews
Semi-structured interviews were conducted with Medical Officers, Nursing Officers, and Health Assistants. These interviews explored perceptions of the intervention's feasibility, ease of implementation, and impact on their workflow and patient care.

This mixed-methods evaluation provided a comprehensive understanding of how the intervention influenced operational efficiency and staff performance, allowing for informed conclusions and future recommendations.

Results

The implementation of the decentralized registration and documentation process in the Accident and Emergency (A&E) Unit of Teaching Hospital Batticaloa yielded significant improvements in operational efficiency and staff workload. The results observed within the first few weeks of implementation are as follows.

1. Reduction in Patient Movement.

Patient and bystander movement between the Resuscitation Unit, Treatment Unit, and centralized administrative counters was reduced by over 70%. Critically ill patients no longer needed to be moved or accompanied by attendants for registration or documentation processes.

2. Decrease in admission processing time.

The average time for completing registration, BHT printing, and PHN issuance was reduced from 50 – 60 minutes to 10 – 12 minutes per patient. This significantly accelerated the time to admission and initiation of clinical care, particularly for emergency cases.

3. Improved staff efficiency and Satisfaction.

Medical Officers and Nursing Officers reported greater control over patient documentation and smoother handover between administrative and clinical responsibilities. Reduced dependence on clerical staff and centralized counters minimized delays during peak hours and night shifts.

Overall, the intervention demonstrated that simple, low-cost adjustments grounded in the Kaizen principle can result in measurable improvements in healthcare delivery, particularly in high-pressure settings like emergency units. This model holds promise for replication in other departments or hospitals facing similar workflow challenges.

Lessons learnt

The implementation of a decentralized approach to patient registration, PHN issuance, and visitor's pass processing in the A&E Unit at Teaching Hospital Batticaloa offered several important lessons that can inform future quality improvement initiatives in similar settings.

1. Simple process changes can create a big impact.

Even without structural changes or additional manpower, reorganizing existing processes and utilizing available human resources and technology can lead to significant improvements. The Kaizen principle of making small, continuous changes proved highly effective in reducing inefficiencies.

2. Decentralization enhances Efficiency and Responsiveness.

Bringing administrative services such as registration and documentation closer to the point of care empowered frontline staff and eliminated unnecessary movement. This greatly improved the speed and quality of patient admissions and initial treatment.

3. Multidisciplinary involvement is critical.

The success of the intervention was largely due to active involvement and collaboration among Medical Officers, Nursing Officers, and Health Assistants. Engaging all stakeholders early in the planning process helped ensure practical, sustainable solutions.

4. Technology can be a strong enabler.

Strategic use of laptops, desktop computers, and printers supported the effective rollout of the intervention. Ensuring reliable connectivity and access to HHIMS played a key role in integrating clinical and administrative workflows.

5. Staff empowerment leads to ownership.

Providing staff with the tools and autonomy to manage registration and documentation at their own units increased their sense of responsibility and job satisfaction. This helped improve compliance and sustained the intervention with minimal supervision.

References

1. Kim JK. Enhancing Patient Flow in Emergency Departments: A Machine Learning and Simulation-Based Resource Scheduling Approach. *Applied Sciences* (Switzerland). 2024 May 1;14(10).
2. Jacobson GH, McCoin NS, Lescallette R, Russ S, Slovis CM. Kaizen: A method of process improvement in the emergency department. Vol. 16, *Academic Emergency Medicine*. 2009. p. 1341–9.
3. Scholarworks S, Jones JF. Strategies to Increase Emergency Department Patient Flow [Internet]. 2020. Available from: <https://scholarworks.waldenu.edu/dissertations>
4. Samadbeik M, Staib A, Boyle J, Khanna S, Bosley E, Bodnar D, et al. Patient flow in emergency departments: a comprehensive umbrella review of solutions and challenges

across the health system. BMC Health Serv Res. 2024 Dec 1;24(1).

5. Samadbeik M, Staib A, Boyle J, Khanna S, Bosley E, Bodnar D, et al. Patient flow in emergency departments: a comprehensive umbrella review of solutions and challenges across the health system. BMC Health Serv Res. 2024 Dec 1;24(1).
6. Ministry of Health. GUIDELINES FOR ACCIDENT AND EMERGENCY CARE SERVICES IN GOVERNMENT HOSPITALS IN SRI LANKA. 2016.
7. Miró Ò, Sánchez M, Espinosa G, Coll-Vinent B. Analysis of patient flow in the emergency department and the effect of an extensive reorganisation [Internet]. Vol. 20, Emerg Med J. 2003. Available from: www.emjonline.com
8. Al-Shareef AS, Al Jabarti A, Babkair KA, Jamajom M, Bakhsh A, Aga SS. Strategies to Improve Patient Flow in the Emergency Department during the COVID-19 Pandemic: A Narrative Review of Our Experience. Emerg Med Int. 2022 Oct 7;2022:1–7.



Waterfall and Agile Project Management: Cost-Efficient and Collaborative Approach for Renovating Operating Theater in District General Hospital Negombo

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Operation Theatre

Abstract

The Main operating theatre (OT) at the District General Hospital (DGH) in Negombo, Sri Lanka, a crucial healthcare facility near the Bandaranaike International Airport (BIA) and export processing zone (KEPZ), was non-functional for over five years due to structural safety issues.

An initial proposal for a new OT at Sri Lankan Rupees (LKR) 1,500 million was deemed financially unfeasible due to economic constraints [1], which necessitated a cost-efficient solution. Focus group discussions (FDGs) were held with the stakeholders, and Key Informant Interviews (KII) were conducted. SWOT analysis was conducted to propose alternative solutions. The most cost-efficient intervention was implemented through public-private collaboration with pro bono expertise [5]. The cost estimate was LKR 70 million.

Employing a hybrid project management approach (Waterfall and Agile) [5], this project included civil engineering improvements, electrical and air conditioning (AC) upgrades, and an advanced medical gas supply. A Work Breakdown Structure (WBS) and Gantt Chart supported phased execution and timely resource allocation [7].

The project was physically started on 05.01.2025. Major risks such as contractor coordination, economic constraints, end user perspectives, and material preference were addressed through daily meetings, change control, Radio Frequency Identification Device (RFID) tracking, [1], and pre-approved payments. Close stakeholder engagement was vital, particularly with the Ministry of Health (MoH) and hospital staff. As a result, 90% of physical progress was achieved at the end of March 2025.

Successful renovation demonstrates the significance of adaptive and agile project management, [5] fiscal responsibility, and stakeholder collaboration in public healthcare infrastructure projects. It provides an example of cost-efficient hospital renovation in resource-limited settings [3]. Recommendations include deploying a dedicated project manager and a wider stakeholder consultation to manage the triple constraints of the project [5].

Introduction

The DGH in Negombo is a pivotal government healthcare provider in Sri Lanka, serving as the main curative care center for Katunayake and the broader Negombo region since its establishment in 1909.

Strategically located near BIA Katunayake, DGH Negombo is the preferred medical facility for international delegates, tourists, and the aviation community, reflecting its increasing importance in meeting the healthcare demands of a growing population as a dynamic economic hub.

It caters to the health needs of the Board of Investment (BOI—KEPZ), one of the

country's largest industrial hubs, government and private sector institutions, and local communities in the catchment area. It operates with 940 beds and a workforce of approximately 1,000 health care personnel. In 2024, approximately 265,000 Outpatient Department (OPD) visits and nearly 90,000 in-ward admissions were recorded. Moreover, the hospital has performed nearly 13000 surgeries per annum.

Problem Statement

Despite its extensive medical services, DGH Negombo has faced significant challenges in surgical operations due to a lack of infrastructure. The main OT, located on the top floor of a seven-story building, has not been

utilized for the last five years due to water seepage and unsafe conditions, hindering the hospital's ability to meet the increasing demand for surgical care [8]. The hospital authorities decided to rectify the main OT, addressing the safety issues. The initial estimated cost was LKR 1,500 million, but the MoH was unable to provide funds due to economic constraints [3]. In this context, the Consultant surgeons and the Consultant anesthetists of the hospital were demotivated and expressed their dissatisfaction to the hospital management, leading to a conflict situation.

This issue was discussed with the Secretary of Health and the Director General of Health Services (DGHS). They advised generating alternative options. The hospital management committee was convened, and it was decided to find a cost-effective solution to renovate the OT using a collaborative approach. A team was assigned to explore this area further, and the following objectives have been formulated.

Objectives

General Objective: To provide a cost-efficient solution to renovate the Operating Theater in DGH Negombo.

Specific Objectives

1. To conduct a SWOT analysis with the stakeholders to find out the appropriate strategies to renovate the main OT
2. To propose a cost-efficient solution to the MoH to renovate the main OT at DGH, Negombo
3. To implement the proposed solution to renovate the main OT, addressing the safety concerns.

Design

The key stakeholders of the Project included the Project Sponsor (GOSL, MoH), a core team comprising MoH, hospital administration, surgeons, anaesthetists, and end users (patients, public, and medical staff). The primary stakeholders were the MoH, hospital administration, surgeons, and anaesthetists, which were considered a high-power and interest group. The secondary stakeholders included the Health Secretary, DGHS, MoH Engineering and Logistics Departments, the Chief Financial Officer of the MoH, and the building contractors, who possessed high power but low interest. It

necessitated strategies to keep them satisfied. Beneficiaries were the patients, public, medical, and surgical staff.

SWOT analysis was designed to be conducted with the following stakeholders: Consultants, MO/Planning, Hospital management committee, and the hospital development committee, including a religious priest and well-wishers.

They assessed the internal and external environment to find out strengths, weaknesses, opportunities, and threats.

FGDs were held with the surgical and anaesthetist teams. KII was conducted with the Central Engineering Consultancy Bureau (CECB) [2] and the Additional Secretary, Engineering, MoH.

The qualitative data were analyzed to decide the layout and other structural compliance with International Healthcare Standards [1]. The quantitative data were analyzed based on the Bill of Quantities (BOQs), and the cost estimates were prepared and further scrutinized to calculate the minimum possible cost which is required to renovate the OT using a collaborative approach.

Results

SWOT analysis revealed the following.

Internal strengths: Regular management committee meeting for which all section heads are participating.

Internal Weaknesses: Conflict among supportive staff

External opportunities: Expert architects and engineers who were willing to offer voluntary expert service to redesign and plan solutions for free of charge (pro bono expertise).

External threats: The prevailing unstable economic situation, with constraints on fiscal space.

It was found that quantity surveyors in the community were willing to prepare the BOQ free of charge with the guidance of the architects and engineers. These designs and BOQs were prepared with no cost involvement.

Yet, the estimate could be brought down to LKR 450 million, and the MoH was unable to provide these funds during the given year. Repeated discussions were held to identify ways of mitigating the cost further.

As the CECB estimate was high [2], it was advised to get a third-party contractor following procurement guidelines.

As a result, a renovation estimate of LKR 70 million was prepared, excluding the consultancy fees of the CECB [2] and including only the essential civil works and other requirements. The stakeholder consensus was obtained through regular consultations with surgeons, engineers, and MoH officials, ensuring scope clarity. A WBS was divided into civil, electrical, AC, and medical gas work. Risk management was proactive, using a risk matrix to identify high-probability issues like contractor delays and assigning mitigation strategies [5]. This cost-efficient proposal was submitted to the MoH, and approval was obtained to proceed.

The most cost-effective alternative solution has been implemented through the collaborative efforts of hospital well-wishers, including engineers, architects, and medical professionals from the private sector [1]. The MoH supervised the project through its Engineering Department, ensuring adherence to quality and safety regulations. The meticulous preparation of bidding documents, facilitated by professional well-wishers, highlighted the collaborative spirit of this transformative initiative. Safety certifications from the MoH and CECB [2], staff training programs, comprehensive project documents, maintenance manuals for the upgraded systems, and a transition plan for staff handover and operational continuity were provided to the DGH Negombo.

As of March 2025, the physical progress was 90% with no variation to the cost.

Discussion

The project utilized a hybrid methodology, combining structured waterfall phases with iterative agile feedback [7]. Waterfall is a linear, sequential approach where each phase of a project must be completed before the next begins. Conversely, Agile is iterative and flexible, emphasizing collaboration and continuous feedback to adapt to changing requirements.

The project employed a Stakeholder Power-Interest Grid to prioritize communication with influential stakeholders like surgeons and MoH. Earned Value Management (EVM) was used to monitor budget adherence amidst change requests [5]. SWOT analysis evaluated the project's strengths, weaknesses, opportunities, and threats.

The strengths included pro bono expertise, ensuring cost efficiency, and strong stakeholder collaboration, which helped mitigate risks [6]. Weaknesses included the lack of a dedicated project manager, which led to coordination issues; inexperienced contracts, which increased rework risks; and weak supervision by the MoH Engineering Department, causing oversight lapses. These weaknesses correlated with risks like delays, cost overruns, and quality problems [10]. Opportunities involved public-private partnerships, potential economic recovery for additional funding, and technology adoption like Radio Frequency Identification (RFID) tracking (a possible precedent for other public projects), which could reduce risks and create advantages [7]. Threats consisted of the economic crisis, causing limited funding and straining contractor relations, pilferage/theft due to an open site, and scope creep from surgeons' ad-hoc demands, all requiring proactive mitigation.

A SWOT-Based Risk Matrix links SWOT elements to specific risks and mitigation strategies. For example, inexperienced contractors (weakness) were associated with rework delays and safety non-compliance, addressed through pre-project workshops and third-party inspections. The economic crisis (threat) posed payment delays and contractor disputes, mitigated by pre-approved payment milestones and MoH guarantees [8]. Stakeholder collaboration (strength) reduced scope conflicts through daily stand-up meetings. RFID tracking adoption (opportunity) aimed to reduce pilferage by partnering with tech firms [3]. The SWOT analysis enhanced risk management through proactive planning (early risk identification and linking to mitigation), resource allocation (prioritizing high-impact weaknesses), and improved stakeholder confidence by demonstrating structured risk evaluation and project governance [7].

Conclusions & Recommendations

The DGH Negombo OT project underscores the importance of adaptive planning, robust stakeholder communication, [6] and proactive risk management. While fiscal constraints necessitated innovative solutions, gaps in governance highlight the need for structured PM frameworks in public-sector projects [1].

The successful renovation of DGH Negombo's Operating Theatre demonstrates the critical role of adaptive project management in overcoming financial,

logistical, and operational challenges. By leveraging hybrid methodologies—combining Gantt charts for timeline precision, Stakeholder Power-Interest Grids for prioritized engagement, [10] and Earned Value Management for fiscal control, the project is almost completed within a streamlined budget of 70 million LKR

Protective risk management, interim governance adjustments, and stakeholder collaboration mitigated challenges such as contractor coordination gaps, scope creep, and material pilferage [3]. This initiative not only restored vital healthcare infrastructure but also underscored the value of integrating professional expertise with structured frameworks, offering a model for resource-constrained public-sector projects prioritizing efficiency, safety, and stakeholder alignment [6].

References

1. Bandara S, Fernando P. Public healthcare infrastructure challenges in Sri Lanka: An economic and policy perspective. *Int J Public Health Policy*. 2023;15(2):112-130.
2. Central Engineering Consultancy Bureau (CECB). Structural integrity and safety assessments in healthcare infrastructure. Colombo, Sri Lanka: CECB Publications; 2023.
3. Gamage H, Perera, R. The impact of Sri Lanka's economic crisis on healthcare services: A case study of hospital renovations. *J South Asian Health Policy*. 2022;18(3):205-220.
4. Ministry of Health, Sri Lanka. Annual health sector performance report. Colombo, Sri Lanka: MoH Publications;2022.
5. Project Management Institute. A guide to the project management body of knowledge (PMBOK® Guide). 7th ed. Newtown Square, PA: PMI;2021.
6. Perera D, Wijesinghe, M. Leveraging stakeholder collaboration in Sri Lanka's public hospital projects. *Asian J Project Manag*. 2023;12(1):45-67.
7. Kerzner H. Project management case studies. 6th ed. Hoboken, NJ: Wiley;2022.
8. Wickramasinghe K, De Silva N. Addressing surgical care deficits in Sri Lanka's district hospitals: A case for innovative financing. *Sri Lanka J Health Econ*. 2023;10(2):88-104.
9. World Health Organization. Healthcare infrastructure resilience: Lessons from South Asia's economic challenges. Geneva, Switzerland: WHO Publications;2022.
10. Ranasinghe P, Gunasekara T. Integrating risk management strategies in healthcare renovations: A Sri Lankan case study. *Int J Health Project Manag*. 2024;7(1):30-50.



PERSPECTIVE



A Reflection on the "Noya Yuthu Thana" Workshop: Addressing Drug Addiction Among School Children in Sri Lanka

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Introduction

The escalating drug addiction crisis among school-aged children in Sri Lanka represents a significant threat to the nation's future [1]. According to recent data, approximately 13% of school children are addicted to drugs, with alarming statistics showing that drug-related offences account for a significant portion of juvenile incarceration [3]

In this reflection, I will critically analyze my experience at the "Noya Yuthu Thana" (The location you should avoid) workshop, addressing this burning issue. As Deputy Director of Colombo East Base Hospital (CEBH) and Registrar of Medical Administration, my participation in this workshop provided valuable insights into the current state of drug addiction among schoolchildren and potential strategies for intervention.

Description

The "Noya Yuthu Thana" workshop was organized through a collaborative effort between the Health Promotion Unit, CEBH, Lions Club, and Senannayaka Aramya Trust at Madampe, in partnership with the Prison Department. The distinguished guest speaker, Lion Jagath Chandan Weerasinghe, Commissioner of Prisons, added significant credibility to the event.

The workshop took place in the hospital hall, with approximately 200 participants, including students from four surrounding schools, accompanied by their teachers.

Although the session was scheduled for 8:00 a.m., it started at 9:00 a.m. due to the delayed arrival of some school groups.

The three-hour session featured Commissioner Weerasinghe sharing his experiences, statistics, personal anecdotes, and case studies highlighting the severity of drug addiction among Sri Lankan school children. Though my ambition is observational, I actively participated in the sessions throughout the period. As of March 2025, Sri Lanka's prison population was 29,743, significantly exceeding the 12,000-accommodation capacity, with drug-related offences accounting for 69.2% of

Table 01: Demographic Statistics (Educational Levels) of imprisoned schoolchildren

Education Level	Female	Male	Total	Percentage (%)
No Education	0480	00321	00801	02
1-5 years	0681	15435	16116	12
6-8 years	1147	26355	27502	20
9-10 years	1824	47214	49038	36
O/Ls	1504	31452	32956	24
A/Ls	475	08761	09236	07
Degree	027	00238	00265	00

incarcerations. A particularly alarming statistic revealed that approximately 230,982 schoolchildren in the Colombo district alone (about 13% of the total school population) are severely drug addicted. The commissioner presented demographic data on prisoners' education levels and age distribution (Table 01).

Feelings

The workshop evoked a strong emotional response from me, particularly upon learning that 813 school children were labelled as Inmates Requiring Care (IRCs), with over 95% due to drug addiction, causing deep sadness and concern. The statistic that 230,982 school children in the Colombo district are strongly addicted to drugs struck me as devastating, initially prompting my disbelief, followed by fear for our country's future. The overall realisation that 13% of school children nationwide are affected by drug addiction left me feeling overwhelmed by the magnitude of the problem.

The commissioner's presentation of two specific cases deeply affected me. The first involved a boy who reported his friends' pressure to smoke cigarettes in grade 8 to his teacher, but his concerns were dismissed due to the teacher's workload. Consequently, he succumbed to peer pressure, started smoking, became addicted to drugs, and ultimately received a 10-year prison sentence. The commissioner's discovery of this talented young man singing in "Bussa Prison" led him to win the "SIRASA Super Session 07 competition," highlighting the derailed tragic potential. I was filled with frustration and a sense of systemic failure, emphasizing the crucial impact of timely intervention that was absent.

The second case about a respected school principal's son, who's known for his drug addiction prevention work, yet is unable to save his child, evoked a complex mix of empathy and helplessness in me. The stark irony underscored the insidious nature of drug addiction and the inadequacy of current preventative approaches. The emotional impact of these narratives was evident in the audience's tearful silence. As a healthcare professional, I felt a heightened sense of responsibility and was left emotionally drained, but was motivated to advocate for more comprehensive preventative measures.

Evaluation

The selection of Commissioner Weerasinghe as the main speaker was a strategic advantage due to his direct experience with incarcerated youth, lending credibility to his presentation. The case studies presentation was particularly impactful and memorable, as it humanized the statistics through individual stories, creating an emotional connection that resonated deeply. This narrative-based approach [6] suggests it significantly increases empathy and awareness about drug addiction. The profound emotional response from the audience (silence and tears) further demonstrated the effectiveness of this approach.

The workshop's focus on prevention, while highlighting punishment severity, marked a positive shift in addressing drug addiction, supported by recent research [4]. By emphasizing the early intervention by teachers, parents, social leaders, and community members, it fostered a more holistic understanding of addiction prevention.

The workshop had limitations, including a delayed start that shortened discussion time and the absence of question-and-answer sessions, potentially limiting participant engagement. Another limitation was the relative lack of student voices and active participation.

Although the workshop attracted approximately 200 participants drawn from four neighboring educational institutions, comprising younger students, it appears to lack the requisite maturity to critically engage with the complex sociopsychological and health-related consequences of substance abuse. To optimize the efficacy of such initiatives, it is recommended that future iterations prioritize senior secondary students, particularly those at the Ordinary Level (OL) and Advanced Level (AL). It enables them to internalize preventive messaging and contextualize the long-term societal ramifications of addiction. Thereby, more meaningful behavioral insights and foster informed decision-making, amplifying its potential to yield sustainable, positive impacts on public health and social well-being in Sri Lanka.

Despite the limitations, the workshop successfully achieved its primary objective of

raising awareness about drug addiction among school children and creating a sense of urgency to motivate preventative action among participants.

Analysis

The workshop highlighted several crucial factors driving drug addiction among Sri Lankan school children. Firstly, it highlighted the failure of early intervention mechanisms within schools, exemplified by the case of a boy whose concerns were dismissed by his teacher, emphasizing the importance of responsive support systems within educational institutions. This aligns with findings [4], which indicated that effective school-based early intervention programs could reduce drug experimentation among adolescents by up to 40%.

Peer pressure was highlighted as a significant factor in initiating drug use [9], whose research in Sri Lanka indicated that 67% of adolescent drug users reported their initial exposure to substances was through peers. The absence of effective peer resistance skills training in schools creates vulnerability among students who lack the confidence to resist negative influences. programs that incorporate peer resistance training show significantly better outcomes in preventing substance use initiation than those focusing solely on information provision [6].

The demographic data (Table 02) showed that the largest population (36%) of incarcerated had 9-10 years of education, highlighting early to mid-secondary school as a crucial time for

intervention [4], which found that substance use among Sri Lankan adolescents typically begins between ages 13-16 (grades 8 – 11). Therefore, targeted prevention efforts during this developmental stage are essential.

The case of the principal's son highlighted another critical aspect: the 'prevention-implementation gap' where knowledge of preventative strategies doesn't always translate into effective action, even for those who understand them - the principal's inability to prevent his own son's addiction. This gap occurs due to emotional, cultural, or contextual barriers hindering the application of theoretical knowledge in reality [7].

The fact 13% of school children nationwide are affected by drug addiction highlights the inadequacy of the current prevention strategies. According to Bandara et al. (2023), effective prevention requires a comprehensive approach addressing risk factors at multiple levels (individual, family, school, and community). The emotional impact of the workshop's case studies demonstrates the power of narrative in creating awareness and motivation for change.

The workshop's inclusion of too many younger students (n=200 from four schools) limited critical engagement with substance abuse's multifaceted health and sociopsychological consequences. Prioritizing senior OL/AL cohorts, whose cognitive maturity aligns with such interventions, would amplify preventive internalization and long-term societal well-being in the Sri Lankan community.

Table 02: Statistics of incarcerated individuals depend on their age groups

Age (Years)	Female	Male	Total	Percentage (%)
<16	067	0015	00082	00
17-22	8712	0352	09064	07
23-30	3629	1378	33007	24
31-40	43402	2010	45412	33
41-50	29061	1376	30437	22
51-60	14124	0683	14807	11
61-70	4248	0265	04512	03

Conclusion

Reflecting on this experience has deepened my understanding of the drug addiction crisis among Sri Lankan youth. My key realizations include: drug addiction in schoolchildren is a complex issue influenced by systemic factors beyond individual choice, such as inadequate early intervention, peer pressure, and gaps in prevention. Case studies highlighted how seemingly minor incidents can escalate without timely intervention, emphasizing the crucial role of responsive support systems in schools and communities and the importance of early identification by teachers and parents.

I recognized that the knowledge of prevention doesn't guarantee effective implementation. Demographic data identified that mid-secondary school, which falls between grades

8 – 11 as a critical intervention period. The limitations of punitive approaches were noted, advocating for a more compassionate, health-oriented approach. The power of personal narratives in creating empathy and motivating change was also significant.

Action Plan

Based on this reflection, I developed a comprehensive action plan to effectively address drug addiction among school children (Table 03).

Table 03: Proposed Action plan to address drug addiction prevention among School Children

Title of the Program	Duration	Description
Develop a Teacher Training Program	03 months	Collaborate with specialists and educational psychologists to create a comprehensive training program, etc. Role playing, drama.
Student, Peer Support Networks	02 months	School principals and department authorities to implement peer support programs where selected students are trained to recognize warning signs of addiction.
Create a Parent Education Series	01 month	Arrange a series of workshops for parents that address effective communication about drugs, recognition of warning signs, and strategies for supporting their children through peer pressure situations.
Advocate for Policy Changes	02-03 months	I will engage with educational policymakers to advocate for the integration of evidence-based drug prevention programs into the national curriculum, particularly targeting grades 8-11
Develop Community Resource Networks	01 year	I will work to establish networks connecting schools, healthcare providers, community organizations, and rehabilitation services to create comprehensive support systems and a holistic approach for at-risk youth.
Secure Funding and Resources	04 months	I will identify and apply for grants and funding opportunities to support these initiatives, including government allocations, international aid organizations, and private sector partnerships focused on youth development.
Implement Monitoring & Evaluation Mechanisms	01 year	Develop tools to track the effectiveness of these interventions, including pre- and post-intervention surveys, focus groups with students and teachers, and tracking of referral and treatment rates.

References

1. Prevention of Drug Abuse in South Asia Y. Ratnayake, <https://www.unodc.org/documents/india/ddch11.pdf>
2. Bandara, R., Gunathilake, W., & Rajapaksa, L. (2023). School-based interventions for prevention of substance abuse among adolescents in Sri Lanka: A systematic review. *Journal of Substance Abuse Prevention in South Asia*, 14(2), 78-92. <https://doi.org/10.1080/jsapsa.2023.45678>
3. Department of Prisons Sri Lanka. (2024). Annual statistical report on prison population 2023-2024. Ministry of Justice, Sri Lanka
4. Fernando, T., & Perera, H. (2024). Risk factors and protective factors for adolescent substance use in Sri Lanka: A longitudinal study. *Asian Journal of Psychiatry*, 67, 103431. <https://doi.org/10.1016/j.ajp.2024>.
5. Gibbs, G. (1998). *Learning by doing: A guide to teaching and learning methods*. Further Education Unit, Oxford
6. Jayasuriya, D., Wijesinghe, C., & Fernando, S. (2023). Effectiveness of narrative-based versus information-based drug prevention programs among Sri Lankan adolescents: A comparative analysis. *International Journal of Mental Health and Addiction*, 21(3), 1429-1443. <https://doi.org/10.1007/s11469-023-00987->
7. Ratnayake, P., & Silva, D. (2024). Peer-led interventions for substance abuse prevention in secondary schools: Evidence from Central Province, Sri Lanka. *Prevention Science*, 25(1), 123-138. <https://doi.org/10.1007/s11121-023-01567->
8. Siriwardhana, C., Abeysinghe, R., & Wickremasinghe, R. (2022). Public health approach to drug addiction in South Asia: Moving beyond criminalization. *The Lancet Regional Health - Southeast Asia*, 5, 100045. <https://doi.org/10.1016/j.lansea.2022>.
9. Wickramasinghe, T., Ranawaka, D., & Perera, S. (2022). Patterns of substance use initiation among adolescents in Sri Lanka: Implications for targeted prevention. *Drug and Alcohol Dependence*, 231, 109254. <https://doi.org/10.1016/j.drugalcdep.2022>.



PICTURE STORY



The Enduring Legacy: A Hundred Years of Service of the National Institute of Infectious Diseases, Sri Lanka (1926 -2026)

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Introduction

February 2026 marks a momentous occasion for Sri Lanka's healthcare landscape: the centenary of the National Institute of Infectious Diseases (NIID), a beacon of hope and resilience in the nation's fight against communicable diseases. From its humble beginnings as the Angoda Fever Hospital in 1926, the institution has evolved, adapted, and consistently stood at the forefront of public health.

This pictorial essay chronicles its remarkable journey, highlighting key milestones, challenges, and the unwavering dedication of those who have shaped its legacy.



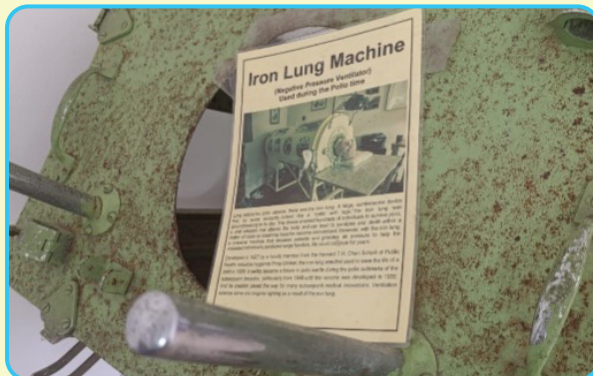
I. The Genesis: A Response to Contagion (1926-Mid 20th Century)

Angoda Fever Hospital was established on February 16, 1926 in an era where the colonial trend was to deal with infectious diseases through institutionalized isolation. Strategically located on elevated grounds in Angoda, its serene surroundings and vast lands were ideal for isolating infectious patients, a critical need during an era prone to epidemics. Initially comprising three permanent wards and several temporary Cadjan sheds, with a small but resolute staff, it quickly became the

primary facility for managing acute infectious diseases. In its nascent years, the hospital confronted a range of formidable diseases including Smallpox, Plague, Cholera, Enteric fever, Mumps, Influenza, Whooping cough, Chickenpox, and Measles.

This period laid the fundamental groundwork for its indispensable role in national disease control, earning it the enduring, affectionate moniker, the "Fever Hospital."





II. Evolution and Expansion: Growing to Meet National Needs (Mid-20th Century - Early 21st Century)

Over the decades, the institution, later known as the Infectious Diseases Hospital (IDH), continuously expanded its scope and capacity. While its primary focus remained on infectious diseases, it gradually integrated allied clinical disciplines to provide more comprehensive care. A significant milestone was achieved in 2008 when the institution was elevated to the status of Base Hospital, Angoda.



This transformation allowed for the expansion of services to include general Medicine and Paediatrics, marking a period of substantial growth and increased accessibility for the local community, while still retaining its specialized role. Throughout this period, its close collaboration with national public health bodies, like the Epidemiology Unit, was crucial in tackling major outbreaks and achieving successes such as smallpox and polio eradication.





III. The National Institute of Infectious Diseases: A New Era of Focus (2016 - Present)

In 2016, the hospital underwent another significant transformation, being upgraded, and renamed the National Institute of Infectious Diseases (NIID).

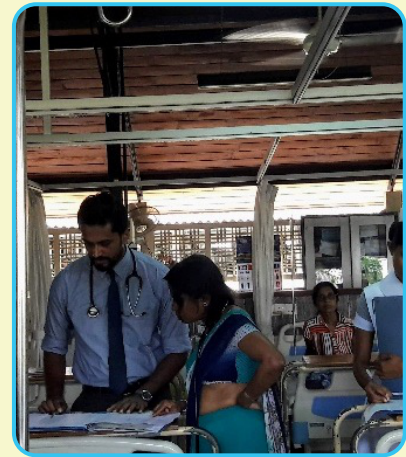


This elevation solidified its role as the premier national-level institution specializing in infectious diseases, with a heightened emphasis on advanced training, innovative research, and national health security.

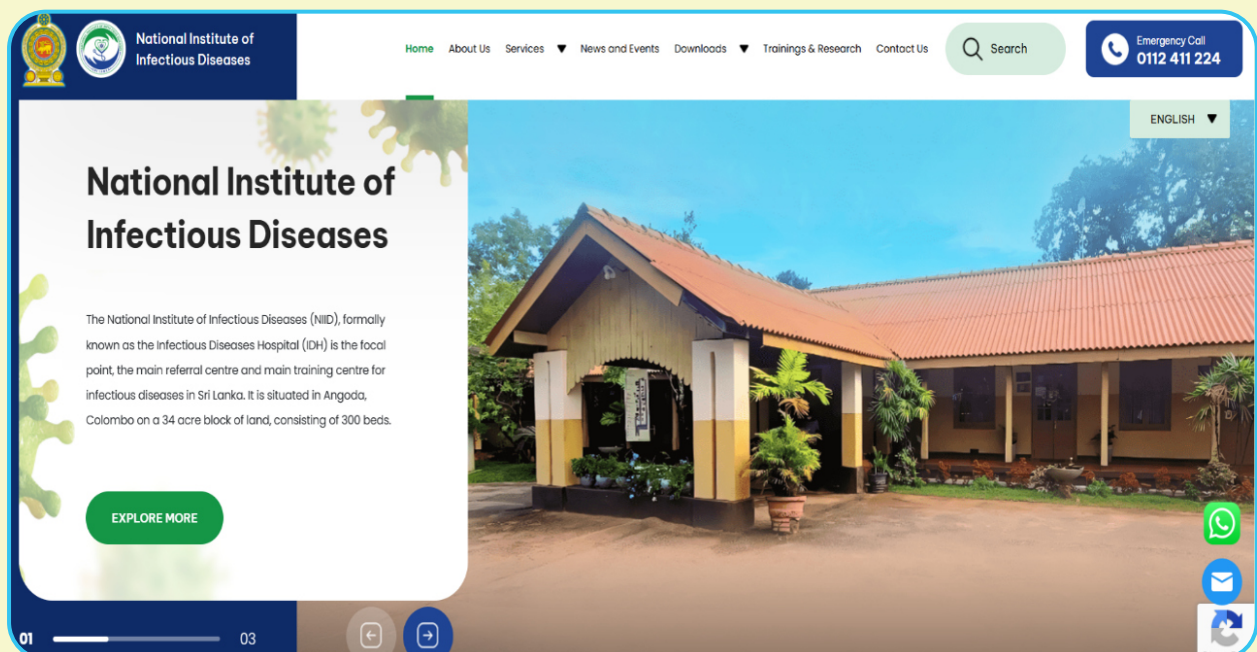
The NIID has consistently risen to the occasion during major health crises, most notably serving as a pivotal treatment and research hub during the unprecedented COVID-19 pandemic. Stories tell of a period of great hardship and perseverance of the staff, combating the unknown while facing social stigma and rejection.

Its commitment to progress is further exemplified by the initiation of stroke thrombolysis treatment and ongoing efforts to preserve its rich historical artifacts. Today, NIID is a modern 300-bed institute offering comprehensive inpatient and outpatient services, including specialized units for Dengue and HIV. Recent developments, such as a new lounge for consultants and doctors and the groundbreaking push for the establishment of a BSL-2 laboratory complex with enhanced facilities, underscore its continuous advancement.





NIID is also a Training and Research Hub and World Health Organization collaborative training center. The establishment of the CeRT – Centre for Research and Training has led to the expansion of the role of the NIID to new heights. NIID also has vibrant and active website and a Facebook® Page.







APPRECIATION



In Memory of Dr. Lankathilaka Jayasinghe (1967-2020)

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A child named Lankathilaka was born to a family of Mr. and Mrs. Jayasinghe in Colombo in the mid-1960s, whose mother was already in the health service. He was the eldest in a family of five children. Young Lankathilaka started his schooling in Asoka Primary School in Colombo and later moved to Mahinda College, Galle, for secondary education.



The next chapter of his life began in 1989 when he enrolled as a student at Kuban Medical University in the town of Krasnodar in Russia. Following graduation, he returned as an enthusiastic young man to start work in the health sector. His initial exposure to the Sri Lankan health service at General Hospital, Matara, and National Hospital, Colombo. Dr. Lankathilaka began his career as a young doctor with an internship at then General Hospital, Badulla. He soon moved out to begin his public service with the appointment as a Medical Officer at Rural Hospital Wadinagala, a small hospital in an extremely remote area in the Ampara district.

The golden era of his public service started when he accepted the appointment of the post of District Medical Officer of the then Base Hospital Ampara in October of Year 2000. The next few years were the best period in his career, where he transformed the neglected Base Hospital to a world-renowned healthcare service provider, upgrading the facilities and converting it to a District General Hospital in the process. The miraculously transformed hospital was the brainchild of Dr. Lankathilaka, inspiring other health leaders to follow the same path of improving healthcare services.

Dr. Jayasinghe was a pioneer in introducing the Quality Improvement concept to state



sector health institutions, with the collaboration of a few other champions in the health service. The upgraded District General Hospital, Ampara, was a model hospital epitomizing quality health care in a resource-poor setting.

Another facet of improvement of care was the introduction of Disaster Management Concepts to healthcare. Scientific management of disaster situations was born out of the necessity to improve the services in times of disasters frequently experienced at the time.

In the year 2004, when the tsunami devastated the coastal health infrastructure, Ampara Hospital was lucky to be unscathed owing to its location, but it would be well remembered

for the role it played during the humanitarian crisis under his leadership. Concepts of disaster management were effortlessly applied in catering to the demand. The commitment harnessed from the staff in the crisis was the greatest masterstroke of his illustrious career.

Lesser-known facts about his life were his love of wildlife and his love for music. He was an avid wildlife photographer who tried to engage in whatever free time he could get, patiently exploring the wilderness to experience the splendor of wildlife. Love for music was evident for most people who knew him. He was not merely a fan of music, but a songwriter who had already released two albums teaming up with renowned composers and singers.

He was a man for the people, worried about the welfare of the common man. Had a vision to uplift the healthcare services in the country by addressing the inequity of care. However, in embracing service for the public, he could have devoted more attention to himself.

People in Ampara will be eternally grateful to Dr. Lankathilaka for his contribution. The name will echo in the winds of Galoya valley for another lifetime; gone too soon, Sir, may you attain the supreme bliss of Nibbana.







