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Hospital COVID-19 Preparedness and Patient Safety Programme: A System-Level Quality Improvement Initiative at District General Hospital Nawalapitiya

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Abstract: **The COVID-19 pandemic posed unprecedented challenges to healthcare systems worldwide, necessitating rapid restructuring of hospital services to ensure patient and staff safety while maintaining continuity of care. This article describes the development and implementation of a comprehensive COVID-19 preparedness and patient safety programme at District General Hospital Nawalapitiya during the early stages of the pandemic in Sri Lanka. The initiative involved establishing isolation units, intermediate care pathways, triage systems, infection control measures, patient education strategies, and communication networks. A multidisciplinary, system-level approach was adopted in alignment with national and international guidelines. The programme successfully enhanced infection control, improved patient flow, minimized hospital transmission risks, and ensured safe and efficient healthcare delivery during a critical period. This paper highlights the importance of proactive planning, coordinated teamwork, and adaptive system redesign in managing public health emergencies.**

Keywords: **COVID – 19 Preparedness, Intermediate Care Centre, Isolation, Triage System.**

1. INTRODUCTION

The emergence of the COVID-19 pandemic created an extraordinary global health crisis, placing immense strain on healthcare systems across both developed and developing countries. Hospitals were required to rapidly adapt to evolving challenges, including the need for infection control, patient triage, resource allocation, and staff safety. In such contexts, preparedness and timely implementation of structured response strategies became essential to mitigate the spread of infection and ensure continuity of essential healthcare services [1,2].

COVID-19, caused by the SARS-CoV-2 virus, is primarily transmitted through respiratory droplets and close contact, making healthcare settings particularly vulnerable to outbreaks if adequate preventive measures are not implemented [3]. Early experiences from countries heavily affected by the pandemic demonstrated that hospitals could become amplification points for transmission, leading to increased morbidity among both patients and healthcare workers[2].

In Sri Lanka, the healthcare system responded proactively to the pandemic by issuing national guidelines for hospital preparedness, emphasizing infection prevention, patient segregation, and efficient use of resources. District General Hospital Nawalapitiya, serving a diverse catchment population, recognized the urgent need to align with these guidelines and implement a structured preparedness programme.

The hospital's response was guided by a commitment to patient safety, staff protection, and uninterrupted delivery of essential healthcare services. A comprehensive COVID-19 preparedness and patient safety programme was developed, incorporating multiple interventions aimed at minimizing transmission risk, improving patient flow, and enhancing communication.

This article presents a detailed account of the planning, implementation, and impact of this initiative, highlighting the importance of coordinated, multidisciplinary approaches in managing public health emergencies.

2. AIM

The primary aim of this project was to establish a comprehensive hospital-based COVID-19 preparedness and patient safety programme to minimize transmission risk, ensure safe patient management, and maintain continuity of healthcare services.

Specific objectives included:

Establishing effective isolation and triage systems

Enhancing infection prevention and control measures

Reducing patient congestion within hospital premises

Improving communication between healthcare providers and patients

Ensuring safety and well-being of healthcare staff

3. METHODS

Study Design and Approach

This initiative was conducted as a quality improvement project using a system-based approach, guided by national Ministry of Health guidelines and international recommendations for pandemic preparedness [1,4].

A series of review meetings involving hospital administration, clinicians, nursing staff, and allied health professionals were conducted to assess risks, identify gaps, and develop targeted interventions. The implementation followed iterative cycles of planning, execution, and evaluation.

Intervention Components

The preparedness programme consisted of multiple coordinated interventions aimed at strengthening hospital response capacity.

1. Establishment of an Isolation Room

A dedicated isolation area was established for the initial consultation and management of suspected COVID-19 patients prior to transfer to tertiary care facilities such as Teaching Hospital Kandy.

The isolation unit was designed according to national guidelines, ensuring appropriate infection control measures, including controlled entry and exit pathways. The unit was staffed by two medical officers, one nursing officer, and one junior staff member, all equipped with full personal protective equipment (PPE).

Patients were directed through a separate pathway to minimize contact with other patients and staff. Clinical supervision was provided by a respiratory consultant to ensure appropriate management and adherence to protocols.

Isolation facilities are a cornerstone of infection prevention strategies, significantly reducing the risk of nosocomial transmission [2,3].

2. Establishment of an Intermediate Care Unit

An intermediate care unit was created to manage patients presenting with respiratory symptoms who did not meet the case definition for COVID-19.

This unit was established within Ward 01 and functioned as a transitional area where patients could receive care while awaiting confirmatory PCR test results. Admission to this unit required prior consultation with the on-call physician, ensuring appropriate triaging and clinical oversight.

Patients remained in the intermediate unit until their PCR results were available. Those testing negative were transferred to the appropriate specialty units for further management.

This approach allowed for effective patient segregation, reducing unnecessary exposure and optimizing resource utilization, which is consistent with recommended infection control practices [4].

3. Establishment of Isolation Areas Across Hospital Units

To ensure comprehensive infection control, isolation areas were established in multiple departments, including:

Emergency Treatment Unit (ETU)

Preliminary Care Units

Obstetrics and Gynaecology Unit

Intensive Care Unit (ICU)

Medical wards

These decentralized isolation facilities enabled rapid identification and management of suspected cases, minimizing delays and preventing cross-contamination. Staff working in these areas were provided with appropriate PPE and trained in infection prevention protocols.

Decentralized isolation has been shown to improve response efficiency and reduce transmission risk in hospital settings [2].

4. Establishment of a Structured Triage System

A structured triage system was implemented at the hospital entrance to identify suspected COVID-19 cases early.

Security personnel were trained to direct all incoming patients to a designated screening unit. A nursing officer, supported by a medical officer, conducted initial assessments, including history-taking and symptom evaluation. Suspected cases were immediately directed to isolation areas.

Effective triage systems are critical in pandemic situations, enabling early detection and preventing overcrowding and transmission within healthcare facilities [1,4].

5. Patient Education and Awareness

Public awareness was enhanced through the use of banners, posters, and directional signage placed throughout the hospital.

These materials provided clear and simple information on COVID-19 symptoms, preventive measures, and hospital protocols. Patient education is an essential component of infection control, as it promotes adherence to preventive measures and reduces anxiety [3].

6. Implementation of Physical Distancing Measures

To maintain safe distancing within hospital premises:

Floor markings were placed to ensure one-meter spacing in queues

Directional signage was installed to guide patient movement

Security personnel were assigned to monitor compliance

These measures helped reduce congestion and limit close contact, thereby lowering transmission risk [3].

7. Appointment System for OPD and Clinics

An appointment-based system was introduced to reduce congestion in outpatient departments and clinics.

Patients were advised through messages and notices to visit the hospital only when necessary and to limit accompanying persons to one bystander.

Additional measures included:

Increasing dispensing counters

Allocating additional staff for record management

Prioritizing antenatal patients based on gestational age

Minimizing non-essential admissions

These interventions improved patient flow and reduced overcrowding, which is crucial in infection control during pandemics [4].

8. Establishment of a Hotline System

A dedicated communication system was established using six mobile phones, providing hotline services across multiple departments, including OPD, ETU, and specialty units.

This system enabled patients to seek medical advice remotely, reducing unnecessary hospital visits and improving accessibility to healthcare services. Telecommunication strategies have been widely recommended during pandemics to maintain care continuity while minimizing exposure risks [1].

4. RESULTS

The implementation of the COVID-19 preparedness programme resulted in significant improvements in multiple aspects of hospital functioning.

There was a marked reduction in patient congestion within the hospital, particularly in outpatient and clinic settings. The appointment system ensured a more even distribution of patient flow, reducing overcrowding during peak hours.

The establishment of isolation and intermediate units enabled effective segregation of suspected cases, minimizing the risk of hospital-based transmission. Healthcare staff reported increased confidence in managing patients due to the availability of clear protocols and adequate protective equipment.

The triage system improved early detection of suspected cases, allowing for timely intervention and reducing delays in care. Patient education initiatives enhanced awareness and compliance with preventive measures.

The hotline system provided an effective communication channel, reducing unnecessary hospital visits and improving patient satisfaction.

[Insert quantitative data: number of suspected cases managed, reduction in OPD visits, staff infection rates, etc.]

Limitations

Despite the successful implementation of the COVID-19 preparedness programme, several limitations were observed:

- Resource Constraints – Limited availability of PPE, staff, and isolation spaces posed challenges during peak periods of patient influx. This required continuous reallocation of resources and adaptive scheduling.
- Data Limitations – Real-time digital tracking of patient flow and outcomes was not fully implemented, limiting precise measurement of programme effectiveness and making some evaluations reliant on manual records.
- Staff Training and Turnover – Continuous training was necessary to ensure compliance with evolving protocols. New staff rotations sometimes delayed full adherence to guidelines.
- Patient Compliance – While signage and education improved awareness, not all patients consistently followed distancing, masking, or appointment protocols, occasionally resulting in minor congestion.
- Limited Telemedicine Integration – Although hotline services were established, full teleconsultation services were not available, limiting remote care for patients with mobility or transport restrictions.

These limitations highlight areas for further improvement, particularly in digital integration, resource planning, and patient engagement strategies.

5. DISCUSSION

The COVID-19 preparedness programme at District General Hospital Nawalapitiya demonstrates the effectiveness of a comprehensive, system-level response in managing a public health crisis.

A key strength of this initiative was its multidisciplinary approach, involving collaboration across various departments and levels of healthcare delivery. This ensured coordinated implementation of interventions and facilitated rapid adaptation to evolving challenges.

The establishment of dedicated isolation and intermediate care units was critical in preventing cross-infection and ensuring safe patient management. These measures align with global recommendations emphasizing the importance of patient segregation in controlling infectious disease outbreaks [2,4].

The introduction of structured triage and appointment systems significantly improved patient flow and reduced overcrowding. These interventions highlight the importance of operational efficiency in infection control, particularly in resource-limited settings.

The use of communication tools, including hotlines and visual educational materials, played a vital role in enhancing patient engagement and reducing anxiety. Effective communication is a key component of successful healthcare delivery during emergencies [1].

Despite its success, the project faced challenges, including resource limitations and the need for continuous staff training. Future improvements may include digital integration of patient records and expansion of telemedicine services.

6. CONCLUSION

The COVID-19 preparedness and patient safety programme implemented at District General Hospital Nawalapitiya successfully strengthened the hospital's capacity to manage a public health emergency.

Through coordinated interventions, the project improved infection control, optimized patient flow, enhanced communication, and ensured safe and efficient healthcare delivery.

This initiative highlights the importance of proactive planning, multidisciplinary collaboration, and adaptive system design in responding to healthcare crises. It serves as a valuable model for similar institutions seeking to enhance preparedness and resilience.

7. KEY MESSAGES

Multidisciplinary Coordination Is Critical – Successful hospital preparedness relies on collaboration between medical, nursing, administrative, and allied health staff.

Early Triage and Patient Segregation Prevent Transmission – Establishing structured triage, isolation, and intermediate care units significantly reduces the risk of hospital-acquired infections.

Patient Education Enhances Compliance – Clear, visible communication through banners, posters, and directional signage is essential for guiding patient behavior and ensuring safety protocols are followed.

Appointment and Flow Management Reduce Congestion – Structured appointment systems, additional staff allocation, and clinic modifications improve efficiency and minimize overcrowding in hospital settings.

Communication Channels Support Safe Care – Hotlines and rapid information-sharing mechanisms enable timely guidance for patients and enhance coordination among healthcare providers.

Adaptive, Evidence-Based Approaches Are Key – Continual evaluation and iterative adjustments to protocols allow hospitals to respond effectively to evolving public health challenges.

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