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Incidence of Transfer to Tertiary Care Centre and Death Rate of Patients with Covid -19 at the Largest DCHC in the City of Mumbai and Suggested Protocol to get Similar Outcomes: A Cross-Sectional Study

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Introduction: The outbreak of novel coronavirus pneumonia resulted in worldwide pandemic. World Health Organization formally named it COVID-19. Dedicated Covid Health Care Centre offered care for all cases that were clinically assigned as moderate. Though many arrangements had been made during the initial phase of covid, multiple transfers were needed for severe cases of Covid. This required good interaction amongst all the covid health care centers.24*7 administrative centre was set up as control room to attend these transfers.

Aim: To get the incidence of transfer to tertiary centre and death rate of patients and suggested strategy to get the similar outcomes.

Material and Methodology: Transfers arranged for patients from DCHC Mumbai were recorded by control room team from June (2020) to December (2021). Also, follow-ups were arranged for all the patients during the above-mentioned period and outcomes were recorded.

Statistics: Data were analyzed using MS Excel Software.

Results: Total data recorded for study was about of 10,012 patients.Out of which 85.64% got discharge , 13.22% transferred and 1.14% was mortality.

Conclusion :Most patients were discharged directly from the ward, while transfers to higher centers were efficiently conducted within the golden hour. Regular vital monitoring and timely software updates enabled the administrative team to prioritize emergencies and arrange necessary care. This model of an administrative control room and evidence-based approach serves as a valuable guide for ensuring seamless coordination in healthcare operations.

I. INTRODUCTION:

The COVID-19 pandemic exposed and amplified existing challenges in India's healthcare system, highlighting the urgent need for investment and reform. Strained by limited resources, inadequate infrastructure, and workforce shortages, the system struggled to cope with the surge in cases. The crisis emphasized the importance of strengthening healthcare infrastructure, ensuring sufficient medical supplies, and enhancing workforce training. It also revealed the critical need for better coordination between primary care and specialized centers to build a more resilient and integrated healthcare system[1]. The COVID-19 pandemic, declared by the WHO on March 11, 2020, rapidly escalated from its emergence in Wuhan, China, in late 2019. By April 8, 2020, there were 1,514,866 confirmed cases and 88,444 deaths globally, highlighting the pandemic's severity. In response, countries implemented lockdown, travel restrictions, social distancing, and widespread testing and vaccination campaigns to slow the virus's spread, prevent healthcare system overload, and save lives[2].India reported its first COVID-19 case on January 30, 2020, with cases rising by March. The first death occurred on March 12, 2020, and by mid-April, the virus had spread to all states except Sikkim[3,4]. Mumbai, one of India's hardest-hit cities during the COVID-19 pandemic, established multiple Jumbo COVID Care Centers, including the NESCO Jumbo COVID Care Facility, the world's largest Dedicated COVID Health Centre (DCHC) with a planned capacity of 3,000 beds. Originally an exhibition hall, the NESCO facility in Goregaon opened on June 2, 2020, with 285 oxygenated beds, staffed by 48 doctors, 44 nurses, 41 ward boys, and 2 technicians. By September 2020, it was upgraded to an ICU facility, becoming a Dedicated COVID Hospital (DCH) to handle the increasing case load.

The facility's control room, managed by doctors from Nair Hospital Dental College, plays a key role in patient care. Patient vitals are recorded every four hours and updated in real-time to ensure continuous monitoring. Patients are categorized into low, moderate, and high-risk groups, prioritizing urgent care for those in critical condition. Special attention is given to elderly

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patients with fluctuating parameters, ensuring they receive the necessary care and attention.

The main essence of this study is to improve awareness of hospital administration across various levels of medical professionals. By incorporating insights from both secondary and tertiary care centers, the study likely offers a comprehensive perspective on the challenges and best practices in hospital administration. This initiative could potentially enhance collaboration and communication among medical professionals, training them to handle crisis in future.

II. MATERIAL AND METHODOLOGY:

Nesco Jumbo COVID Care Centre had a structured system for managing patient admissions. The process involves a control room team and boot doctors who played crucial roles in assessing and managing patient data.Primary Health Centers (PHCs) collected patient data.This data included basic health parameters, details of comorbidities, and other relevant medical information.PHCs then sent this information to the control room at Nesco Jumbo COVID Care Centre via mobile numbers designated for this purpose. A dedicated control room team received incoming data from various PHCs. Control room doctors reviewed the patient information and assessed basic health parameters such as temperature, oxygen saturation, heart rate, and blood pressure along with comorbidities (e.g., diabetes, hypertension, respiratory conditions). Based on the initial assessment, control room doctors determined the severity of each case.Boot doctors,on-site medical staff, assisted in further evaluation and transportation of patients.When there is a change in a patient's hemodynamic parameters, the information is communicated to the control room, and a transfer to a tertiary center is initiated. Similarly, after the opening of the ICU center at NESCO, all transfers are made there. A dedicated team of doctors is assigned to monitor updates on all patients transferred to the tertiary center and the NESCO ICU.

All the data of transferred patients, including voluntary transfers, was extracted from the center's software and compiled into an Excel sheet. Each patient mentioned in the timeline was contacted by the concerned doctor to record updates regarding their health after discharge and the time of discharge.

III. RESULTS:

Total patients admitted in nesco ward till 18th december 2020: 9623
Total patients transferred from nesco ward to tertiary care including voluntary transfer: 1046 (10.87% of admitted patients)
Out of total transferred patient from nesco ward:
733 out of 1046 (70%) got discharged;
80 out of 1046 (7.64 %) were fatal
233 out of 1046 (22.26%) loss to follow up
Total patients discharged from nesco ward: 8575 (89.13 % of admitted patients)
Nesco ward mortality: 2 (0.02 %)

Total patients admitted in nesco icu till 18th december 2020: 389
Total patients transferred from Nesco Icu including voluntary transfer and ward transfer: 278 (71.47% of admitted patients)
Patients transferred from nesco icu to tertiary care excluding voluntary transfer and nesco ward transfer: 127 (32.65 % of admitted patients)
Mortality in icu: 112 (28.79 % of admitted patients)
Overall statistics:
Total patient admitted till 18th december 2020 upto 11: 30am: 10,012
Patient transferred: 1324 (13.22% transferred)
Mortality: 114 (1.14 %)
Discharged: 8574 (85.64 %)

IV. DISCUSSION

In a crisis scenario, seamless coordination among hospital units is essential to ensure optimal patient care. This requires effective interpersonal communication, strong intra-departmental coordination, and collaborative teamwork across all departments[5]. The hospital administration control room serves as the central hub for managing administrative issues and operates 24/7 to ensure seamless coordination. Joynt et al.[6] in their chapter about the management of influenza pandemic or mass casualty events (MCE) have also recommended the establishment of a centralized control unit to enable coordination and communication between various stakeholders. Our study demonstrated that effective coordination and vigilant monitoring by the tracking team were instrumental in assessing patient status promptly. This enabled timely decisions to transfer patients to higher centers until the ICU was fully established. Effective management of human resources is essential for delivering high-quality healthcare, and its significance is amplified during a crisis[7]. Also other study has brought out the various administrative issues reported to the administrative control room of the hospital under study and identified issues in communication and coordination (23%), policy and procedures (22%), human resource and training (16%), administration

and implementation (15%), infrastructure (14%), and HMIS and IT (10%)[8].

The families of critically ill COVID-19 patients endured significant emotional distress, primarily because they were physically separated from their loved ones and found it challenging to stay informed about their condition. To alleviate this, a systematic communication process was established. Ward doctors conducted regular rounds, meticulously documenting each patient's status in the HMIS system. These updates were reviewed by the triage doctor stationed in the control room, who ensured that families received timely information through WhatsApp messages and phone calls. In addition, nursing personnel played a vital role by contacting the traige doctor if in case of any lag in updating the vitals' daily via telephone to provide detailed updates on their condition. This multi-tiered approach helped bridge the communication gap and offered much-needed reassurance to the families during this difficult time.To facilitate communication, multiple intercoms were installed within the ward, connecting directly to the senior consultant and the control room.Three specialized teams were established to ensure the efficient and safe transport of COVID-19 patients, particularly critical cases requiring transfer to higher centers. These teams, equipped with full PPE, included a nursing officer and three hospital attendants, operating round the clock. A senior doctor was stationed in a dedicated call center to oversee and coordinate all patient transfers. This doctor assessed each situation and deployed the teams as needed, ensuring rapid response times. Each team was supplied with its own set of transport equipment, ensuring readiness for immediate action. Additionally, a sanitary attendant accompanied every transfer, meticulously disinfecting all areas and equipment used during the process to maintain strict infection control protocols.

To further streamline operations, dedicated routes were carefully planned for patient transport, minimizing exposure and delays. In non-COVID areas, a security personnel led the team, clearing pathways and ensuring bystanders were kept at a safe distance. This proactive measure helped maintain a secure and efficient environment during transfers.

The hospital's extensive surveillance system played a crucial role in these efforts. Cameras installed throughout the facility—from the entrance gate to the control room—enabled administrative doctors to monitor the process in real-time. This allowed them to coordinate seamlessly with ward doctors and nursing staff, ensuring that patients were moved from their wards to ambulances without unnecessary delays or obstacles.

Once a transfer was initiated, updates were continuously provided by the accompanying doctor throughout the journey. These updates were shared with the control room to track the progress of the patient. Upon reaching the higher center, the accompanying doctor confirmed the safe arrival and condition of the patient, completing the transfer process.

This evidence-based study provided invaluable insights into the outcomes of all transfers and discharges facilitated by the center during the COVID-19 crisis. It also highlighted the challenges faced by patients and their families during these transfers, offering a comprehensive understanding of their experiences and needs. Such an approach not only evaluated the efficacy of the systems in place but also underscored areas requiring improvement, enabling better preparedness for future crises. Healthcare, being a service-oriented industry, stands to benefit significantly from evidence-based methodologies to identify and address critical challenges. This framework is not restricted to tertiary care hospitals but can be implemented in primary care centers, community health settings, and even individualized care setups. Family physicians, often at the frontline of patient care, would also recognize the value of integrating hospital administration principles to enhance service delivery, ensuring seamless care coordination whether at an individual level or within a larger organizational structure.

The approach outlined in this study demonstrates its utility beyond pandemic scenarios, extending to routine operational challenges and unexpected crises. It provides a robust template for identifying bottlenecks, optimizing resource allocation, and ensuring patient-centered care. The establishment of a well-equipped control room as a central hub for communication and coordination exemplifies how holistic care can be achieved. This hub acts as a bridge between healthcare providers and patients, enabling real-time information sharing, swift decision-making, and continuous monitoring.

Furthermore, this model highlights the growing importance of hospital administration as a specialized discipline integral to the efficient functioning of healthcare systems. By fostering collaboration among medical staff, administrative teams, and patients, such an approach enhances the overall quality of care and operational efficiency. It ensures that healthcare systems are not only

reactive to crises but also proactive in addressing day-to-day challenges.

In the broader context, the principles derived from this study could serve as a blueprint for addressing a wide range of healthcare issues, from managing a global pandemic to tackling routine operational inefficiencies. By embracing such evidence-based strategies, healthcare organizations can build resilient systems capable of adapting to both current and future challenges, ensuring holistic care for all stakeholders involved.

V. CONCLUSION

This study highlights the vital role of evidence-based strategies in enhancing healthcare delivery during crises like the COVID-19 pandemic. Efficient coordination, robust communication systems, and patient-centered care were key to improving patient outcomes and addressing challenges faced by families. The central control room emerged as a pivotal hub for real-time decision-making and seamless operations, adaptable to various healthcare settings.

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