

MANAGING THE SHORTAGE OF BEDS IN HEALTH CARE SECTOR IN THIS COVID 19 PANDEMIC

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ABSTRACT

Globalization has boosted the development of new pathogens as well as their capacity to cross national borders and threaten citizens' health. It should therefore have been no surprise that the infection caused by COVID-19 spread so quickly from the metropolitan city of Wuhan, China, to the whole world. Today, the COVID-19 pandemic represents the biggest health crisis for many countries since the post war period. The aggressiveness of the virus quickly led many countries to bring in strict containment measures to limit the spread of the disease and particularly to reduce pressure on hospitals. Pandemics affect the health care community in different ways, but all involve a bigger flow of patients into the system, compromising the proper functioning of hospitals. Italy was the first Western country to be heavily affected by the virus. A survey administered to health management experts highlights the main problems and possible ways for health care organizations to cope with the health crisis more effectively. Results highlight that the COVID-19 pandemic had a dramatic impact on health care organizations, forcing all hospitals to modify structures and processes to guarantee an efficacious response to new patient care needs. The lack of specialized resources, appropriate coordination tools, and clear plans for emergency management were the main problems faced by hospitals. Italy's experience could be useful to countries facing the crisis today, or those which will face it soon.

Keyword: Covid 19, Pandemic, Health care sector, disease

INTRODUCTION:

The growing number of covalent cases has resulted in many countries experiencing unprecedented and sustained high levels of demand for limited intensive care units' capacity. In China and Italy around 5% and 9% respectively, of confirmed cases developed critical disease requiring treatment in ICU's. In some countries there have been reports of doctors triaging admissions to ICU and ventilators where demand has exceeded capacity. These decisions place a significant psychological burden on clinicians for having to decide who does not receive potentially lifesaving treatment. To support clinicians facing these decisions under challenging circumstances, clear guidance on how to triage patients are necessary. While there are existing guidelines to manage limited ventilatory support capacity in a pandemic or healthcare emergency, published prior to the covid 19 pandemic, many countries have developed specific guidelines and triage criteria for covid 19 pandemic, reflecting the unique challenges on managing emergency respiratory disease. There is significant variability in the development, interpretation and implementation of these guidelines which may contribute to difficulties for clinicians. There is an urgent need for a robust synthesis of published guidance to inform future guidance and revised iterations of existing guidance. Despite the initial peak of the pandemic passing in some countries, the need for suitable guidance will continue in preparation for subsequent peaks. Rises in intensive care admissions have been met in some places by significantly reducing routine care and other demands for intensive care admissions. This is unlikely to be sustainable which may create renewed pressure to try edge intensive care admissions.

OBJECTIVES OF THE STUDY:

2.1 Primary Objective:

The primary objective of the study is to manage and overcome the shortage of beds in this Covid-19 Pandemic using Lean tools of Operations Management and help the Health Care Institutions to treat and recover more patients from this pandemic.

2.2 SECONDARY OBJECTIVE:

To use lean tools effectively and bring a revolution in the health care sector.

2.3 RESEARCH METHODOLOGY:

The aim of the study is to meet out the shortage of beds in Tamil Nadu in the Third wave which is likely to happen in Tamil Nadu. To understand the research deeper, a method was conducted where secondary data was collected like active cases number of normal cases ICU and ventilator beds and population in Tamil Nadu.

RESEARCH DESIGN:

The research design used in this project is descriptive because it helps to describe a particular situation prevailing and the suitable methods to control the issue.

- Type of Study: Descriptive
- Time frame of Study: From January 2021 to August 2021
- Type of Data: Secondary Data (Official Web Sites of the Government)
- Sampling Design:
 - Population: General Public affected with Covid 19

SOURCE OF DATA:

secondary data was used in the study full stop the date of the study was conducted from Tamil Nadu official website www.stopcorona.tn.gov.in.

TOOLS FOR ANALYSIS:

Lean tools from Operations Management were mainly used for this study. To get a better knowledge about the cases admitted in hospitals at General beds, beds with oxygen support and beds with ventilator support along with beds available or whether there is a shortage of beds in the hospitals of Tamil Nadu, details were gathered from Official Government websites. Then, the lean tools and some other tools from Operations management were implemented in this study to manage the shortage of beds.

3. ANALYSIS AND INTERPRETATION:

With reference to the data obtained from the websites and the news being reported by official medias, there is a probability of third wave of Covid 19 Pandemic. Also, there are many new cases of Covid 19 with new variants of its' kind like Nipa, Delta, etc., being discovered in our neighbouring sates of Kerela, Andhra Pradesh, Telangana etc., There are chances to likely to spread to Tamil Nadu as the cases are in a fluctuating state. Though the chances are less to control and prevent the cases immediately and imply strict measures here forth, it is better to find the best suitable measures, that could be helpful to handle the shortage of beds that might arise in the future. The suitable measures that can be implemented are listed below:

INTERPREATION:

The Lean Concept Five Principles Lean concept development is important and can be obtained by applying the five principles of the concept into an actual manufacturing operation system. Womack et al. (1990) categorised these five principles as follow:

- The value from the customer point of view must be defined and specified. Companies need to focus more on manufacturing products that are valued by the end customer, not products that are convenient for manufacturing (Wang et al, 2011). The Womack 1990 covered the other four principles:

- Identify the value stream: It deals with the processes of the production from the supplier to the end customer. These processes must be organised according to the perspective of the customer not to what the different departments in an organisation crave.
- The creation of the value flow: This means decrease delays of activities that add value to the product and remove or improve the activities that do not add value through the production processes.
- Pull production: It aims to eliminate the extra production and concentrate on the customer's demand.
- Strive for perfection: This gained by produce with high quality, reach for the customers' satisfaction, have reasonable prices, eliminate waste, and improve the system continuously.

Whether these five principles are applicable to the health care sector or not is not easy to say, maybe some of these principles need to be adapted and modified to fits the health care sector. However, the second principle can be considered as the most important one because it emphasises the identification of the process that creates the value for the customer. The value stream in manufacturing is the patient flow in health care. The other principles can be applied for the healthcare sector without modifying

Lean in the Healthcare Sectors:

Health care system contains several service provider organisations. As any organisation, hospitals want to eliminate waste, reduce costs, improve the working processes, reduce the waiting time, and have satisfied customers, which in this case patients. This part of the thesis presents lean in the health care system. In 1987, the Quality Improvement in health care national demonstration project was introduced as an experiment in the United States of America (Godfrey cited in Patwardhan, 2008). The study goal was to find methods that are relevant for the health care system. The study applied some of these methods at 21 health care organisations in the United States of America. The study results showed that 15 out of 21 organisations made a remarkable improvement in their economic issues and patients' satisfaction. The experiment continued for 3 more years due to the good findings; this experiment evolved to the Institute for Healthcare Improvement. This institution is a non-profit-making organisation with a goal of offering management teams to the health care organisations. Moreover, the rising knowledge about the importance of the total quality management and how it focuses on the consumer (patient) rather than to the organisations' structure, culture, and services.

The health care organisation outcome is the patient recovery from its illness. Therefore the major duty in such process relies on the medical professionals. For a long time, clinicians were the traditional leadership for health care organisations. Therefore, the outcome was affected by many different internal and external factors such as pharmacy, pathology, technical support, information technology, teamwork, communications management, time management, political involvement, the increasing costs, bigger demands for quality care, and higher consumer expectation.

Since the flow of the process is an important element in the lean concept principles, to analyse the process flow to find the non-value-added activities and manage ways to improve or eliminate these activities.

Implementation:

Before introducing the implementation process of the lean concept, the term implementation must be defined. Implementation is the realisation of an application by performs a set of actions, to accomplish or practice a strategy or method for producing something.

Lean Implementation

As shown previously, some organisations realised that Lean is a method that can be used to improve production or service processes, eliminate wastes, and reduce their cost. Since the theory was not designed for the health care processes, it needs to be improved or developed to fit the working environment at hospitals

Organisations started to implement Lean strategies into their systems on a long-term basis. Organisations started by gaining a general understanding of the concept and relate it to existing problems. Lean implementation process requires commitment, external and internal support, and a continuous progress to be effectively implemented. Therefore companies and organisations should be fully committed to the implementation process even though they should not expect to see results in a short time.

To get an understanding of the importance of Lean Implementation, the tools and techniques, benefits, challenges, critical success factors, and criticism must be presented as follows:

The Tools and Technique of The Lean Implementation:

There are many tools and techniques for implementing the Lean strategies, some of them are developed from the manufacturing sectors and others are from the servicing sectors. Below are some present applicable tools and techniques:

Process mapping:

The traditional flow-charting way of presenting the production process at any organisation did not represent the whole picture of the production line but missed and excluded the employees' participants from the process. The process mapping is a tool that shows the complete picture, from the input step to the final output product, and identifies the participants through the process. This tool requires serious work, and it costs much, but reducing the mapping level can be helpful to gain the best results.

According to the Scottish government website (2007), the patient flow or the patient pathway in the health care system is a primary strategy that concentrates on providing a sustainable performance. This is achieved by plan a service that benefits the patient in the first place. Another important point according to the website is the reduction of the variety of these pathways to gain what the organisation needs to implement the right team of staff at the right place at the right time through the patient pathway see that means, at any health care organisation the process mapping described in the term of the Patient Flow, which is the treatment journey of patient at the hospital.

Value Stream Mapping (VSM):

Value Stream Mapping (VSM) is an important tool in the lean implementation strategies. It helps to increase the organisations awareness about the current condition and to identify opportunities for improvement.

This tool is also used to grasp the process within the organisation and involve the employees in the process of finding problems and searching for solution. The value stream mapping means to map all activities in a process and plan the processes together. Information and material are important requirement to improve the product or service.

Involving the employees at any hospital is an important factor, mapping the activities together as one process and analyse the patient flow, (from the moment the patient comes to the hospital until the treatment is completed) find the problems, and participate in offering the suitable solutions.

The Lean Implementation 5S:

The 5 S's system is a tool developed to improve the implementation of the Lean strategies in the service sector. This tool creates a non-real working environment that explains, order, and improves itself. The aim of this method is to contribute and create an enhanced working place for the employees. This aim is achieved by reduce the workload for the workers, reduce the amount of errors in the working process, and develop the employees experiences by providing courses and learning workshops.

According to Dennis 2002, the 5S are mainly:

- **Sort:** This principle aims to sort out everything unnecessary at the workplace, any useless parts, furniture, documents, machines, and equipment should be cleaned out to make the motion of the employees easier and faster and eventually effect the workflow. A good way to achieve this goal is to use the red tagging technique. The tagging system is to put a tag on the package that contains information about the package such as the item ID, date, and the work section.

- **Set in order:** This principle is concern with the layout inside the working place. The placement of the staff desks, machines, and the storage of the products may affect the process flow by the possibility of creating needless motion for the employees. To solve the extra motion the organisation, use the rationalise location method, it means to design the workplace on a paper first to make sure that there will be no extra motion in it.
- **Shine:** This principle aims towards having a clean well organises working place. This is an easy achieved principle since it does not need any specific method other than clean the working place regularly.
- **Standardised:** It means that the organisation should have a standardised method to measure the Five's system and make sure it develops to standard routine at the company.
- **Sustain:** Sustain means to guarantee that the system is working as it should be, and develop it continuously to achieve the company's objectives

Benefits of Lean Implementation:

Implementing Lean may not be easy, but it is worth to try it at any company, this section presents some of the benefits than can result from implementing Lean to a company or an organisation. Lean most important features are related to waste, lead-time reduction, control the usage of inventory, knowledge, and management improvement, cost saving, and more efficient process flow.

Improve the employees' competence is another benefit of Lean implementation, more expertise and knowledge lead to faster work, improve the customer satisfaction, and reduce the cost for the organisation.

Since lean working environment is very connected, it gives organisations the benefit of improving the working environment for the employees.

Having the complete picture of the process makes it faster to identify the problems and including the workers gives them opportunities of introducing solution to enhance the working process.

Implementing lean is also financially beneficial. Taner & Sezen 2009 discussed the financial difference in some medical organisation before and after implementing Lean. The study results were impressive where some companies could save about 11% of their expenses in a period of 18 months.

CHALLENGES OF LEAN IMPLEMENTATION:

The process is not visible: Observation is enough to identify wastes in the manufacturing organisation due to their visibility. However, in the service organisations the customer judges the activities' execution.

The process is large and complex: Improvements are always seen at the end-to-end processes. Service organisations are large and complex, therefor is difficult to see and control the improvement along the process.

The process is technology dependent: Technology is an important utility for companies. Communication would be the first and most important feature the company gains when using advanced technology. The challenge here is when the system does not work correctly, it impacts the whole implementation process negatively.

The process cuts through vendors: Vendors are suppliers or customers in the company's supply chain. Implementing lean requires including these vendors in the system and to see the supply chain. The communication level must be high between these vendors. This is the challenge for many organisations lack of the willingness to share information with other companies is difficult to overcome.

CONCLUSION:

While no clinician wants to make rapid and unguided ICU admission and ventilatory support allocation decisions, the COVID 19 pandemic has unfortunately placed some clinicians in the position. This work provides a synthesis of current guidelines, and identifies the different approaches taken globally, to manage these challenging situations. A set of factors are being developed to consider developing guidelines and inform the

creation or revision of guidelines for managing Intensive Care admissions during the pandemic. Clear evidence-based guidelines are essential to avoid inconsistency and bias in decision-making. Reduce distress among clinicians having to make difficult decisions and improve patient outcomes.

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