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System Thinking

# Executive summary

The Value Stream Map (VSM) provides a comprehensive framework adopted for providing better quality care service to the patients visiting emergency rooms. The report provides a detailed analysis of the issues faced by the current VSM and identifies the desirable actions for the recommended VSM. The major weaknesses of the current value stream map include long wait times experienced by patients in the emergency rooms of the hospital that causes patient dissatisfaction and inconvenience. The recommended VSM suggests methods for addressing the issue of long waits such as by adopting digital systems for information storage, conducting one-time diagnosis, hiring adequate staff and tracking mechanisms. Minimizing waits after assessments have been conducted by the physicians and before the decision of final admission also reduce the wait time.

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# Introduction

Key system thinking tools are proposed along with strategies for attaining a transformational change in the healthcare system. System thinking offers a broad array of approaches including collaborations across healthcare departments such as modeling techniques. Value stream mapping is a valuable tool used for evaluating work and process flow in the emergency department (Swanson, et al., 2012). Value stream mapping provides a visual framework required for creating a product and delivering to the end customers. It is adapted for mapping the patient's path to treatment that improves service of care and minimizes delays. The most critical steps in the implementation of VSM include attaining high-quality and reliable data related to the patient maintained through efficient channels. The information flows inappropriate manner that eliminates the possibilities of unnecessary delays. Multi-departmental teams are also required for obtaining a true picture of what happens. The VSM emphasize on establishing an appropriate framework that is adequate for providing cost-effective services to the patients.

# Current state value stream map

Due to the rising healthcare costs, initiatives are taken for increasing operational efficiency and cost-effectiveness of the delivery process at the emergency department. The current state of value stream map highlights that the patient’s visit includes many small events such as registration, nursing assessment, doctors assessment, consultation, and treatments. The delay in such events results in increased wait time for the patients. This undermines the quality of service because patients undergo extreme inconvenience and discomfort (Swanson, et al., 2012).

The common issues faced by the patients that affect the quality of service include crowding and boarding. The evidence suggests that most of the times physicians and nurses encounter challenging situations when patient turnover is extremely high in the emergency department. The sharp rise in the number of visitors directly impacts the quality of service. This also prevents doctors from spending adequate time with each patient that undermines opportunities for adopting accurate standards of care. There are many causes that cause delays for the patients. Triage is one of the common issues that reflects that the patients are not seen on the basis of first come first serve. The hospital has a policy that instructs staff to handle patients according to the severity of patient's condition arriving in an emergency. A care provider of a triage nurse is responsible for examining the patients and identifying the severity of the condition. Time-sensitive illness criteria are used for identifying the patients undergoing severe illness and require immediate treatment (Shen & Lee, 2018). This causes unnecessary waits for the patients who don’t look bad in the emergency rooms.

The process of diagnosis also cause delays that influence the quality of service. The steps followed by the staff or nurse in diagnosing a medical condition take more time. Delays are more common when the physician is handling a life-threatening situation. Analysis of texts, x-rays, and CT scans consume much time that results in more time spent on waits (Swanson, et al., 2012). Boarding is another significant cause of waits because the patients have to wait in emergency rooms until the bed is made available for them. Hospital restricts the number of inpatient beds for avoiding the situation of overcrowding. Only admitted patients are provided quality service while many patients have to spend days in emergency rooms if they are not allotted beds.

The specialists like neurosurgeons, cardiologists, and orthopedic surgeons are not available 24/ 7 like the emergency physicians. This is also due to the lack of specialists in the hospitals and causes long waits for the patients. Due to lack of specialists the patients are often moved to the other hospitals that also results in long waits. Inadequate staffing is identified as one of the dominant reasons that limit the hospital's capacity of providing timely and efficient service to the patients (Lin, Ling, & Yeung, 2017).

One of the critical problems faced by the emergency department is the lack of nursing staff. This minimizes the possibilities of giving a timely response to the patients. During high turnover the nurses more likely to experience pressures that affect the quality of service. They are unable to spend adequate time on each patient because they have to respond to a large number of patients. The time spent on waiting has a direct correlation with patient satisfaction. as patients have to wait for more than 30 minutes they exhibit high dissatisfaction (Layeb, Jmal, Aissaoui, & Mansour, 2017).

# Recommended state of value stream map

The recommended state of Value Stream Map (VSM) stresses on reducing the wait time for the patients by improving nurse efficiency. A timely response will reduce the time of wait for the patients. This required hiring adequate staff for the emergency department. The recommended value stream map stresses on increasing nursing staff that could handle a high turnover of patients (Layeb, Jmal, Aissaoui, & Mansour, 2017). The wait time can be minimized by making efficient use of the existing resources. scheduling staff members inappropriate manner is also part of the recommended VSM. Equipment and supplies must be stored in an appropriate manner that minimizes the delays in accessing them. The X-ray lab departments are also instructed to prioritize patients and aligning services in response to the patient's needs.

Another goal of the recommended value stream map is to hire experienced and skilled staff that minimize the chances of medical errors. Increased number of staff will face less pressure so they will manage to perform their duty more appropriately. This assures that accurate procedure are followed that prevents the staff from committing errors in diagnosis, testing or prescribing medicines (Layeb, Jmal, Aissaoui, & Mansour, 2017). Improving the communications between emergency department and laboratory will also reduce the time spent by patients on wait. This will provide timely information to the nurses and doctors and they will use the tests for making a timely diagnosis. Improved communications enhance the staff's ability to conduct timely investigations and adopting adequate treatment for the patient. This is an effective method for reducing patient’s wait time that lowers discomfort and inconvenience. The hospital can also hire more specialists that will prevent the need for sending patients to other hospitals or medical facilities (Ducket, 2018).

Adopting digital database mechanisms will save the time spent on conducting a diagnosis. The staff will use already stored information in the databases in case of old patients who had availed the services of the hospital. In the case of new patients, the nurse will enter the details of the patient's history and forward to the physician that will prevent the need for recollecting information. The proposed recommendations also involve use of secure messages for informing the patient about his health status. This is a practical way of increasing efficiency a removes unnecessary wait in the emergency department. Setting a time limit for late arrivals will also help the emergency department in saving time (Shen & Lee, 2018).

Redeploying nursing staff is also a practical method used for minimizing the wait time for patients. This will prevent the staff from asking the same questions from the patients. Checklists will be developed for recording the information used by physicians during their interaction with the patients. The healthcare institute can also use outpatient appointment scheduling. The outpatient appointments stress on reducing resource overtime, patient wait time and improving the quality of the service (Lin, Ling, & Yeung, 2017).

The model stresses on reducing the wait times by;

* Minimizing waits after the patients have arrived before the doctor has assessed them (Back, Ross, D Duncan, Jayeatherine, Chirc, & Anderson, 2017).
* Minimizing waits after assessments have been conducted by the physicians and before the decision of final admission.
* Reducing waits after the final decision of the patient's admission and before the patient has left the emergency room.

# Intended and unintended consequences

The intended consequences of the recommended VSM include events that are desired by the healthcare institute. These include the provision of controlled access to the healthcare staff and doctors. The deterrence effect is adopted that will prevent the staff from committing errors. The staff including physicians, doctors, and the nurses will follow the rules and standards for healthcare that will discourage them from neglecting patient's health (AIHW, 2018). The staff is provided clear knowledge of the penalties imposed on crimes such as in the case of adopting wrong diagnostic procedures or errors in medications. Such steps will assure that the staff takes care of the standards and fulfill their duty with responsibility. Deterrence also assures that the doctors and nurses maintain control over their actions and will minimize the prospects of negligence. Tracking mechanisms is another intended consequence of the VSM system because adequate procedures are established that record information about staff's performance. The system records time spent by the nurse or doctor with the patient and reason for making them stay. Such mechanisms will eliminate the possibilities of adopting a negligent attitude. The staff will also be discouraged to adopt a discriminatory approach towards patients (Back, Ross, D Duncan, Jayeatherine, Chirc, & Anderson, 2017).

Unintended consequences that are more likely to develop as a result of the new VSM system include; user resistance, data disclosure, workflow disruptions, and usability issues. The resistance of the patients to share their complete information for the database will affect the process and cause unnecessary delays. The data collected about clients can be misused by the staff or disclosed to the persons. The staff will face difficulty in using the updated systems without proper training and supervision. Lack of staff’s training will cause more complications for the hospital.

# Conclusion

The prominent issues faced by the current VSM state include increased wait times, delay in staff’s response and low patient satisfaction. Major events of delay include registration, nursing assessment, doctors assessment, consultation, and treatments. The most critical steps in the implementation of VSM include attaining high-quality and reliable data related to the patient maintained through efficient channels. The recommended VSM system emphasizes minimizing the wait time through proper staffing. This requires hiring more specialists that will prevent the need for sending patients to other hospitals or medical facilities. Checklists will be developed for recording the information used by physicians during their interaction with the patients. Adopting digital database mechanisms will save the time spent on conducting diagnosis (Lin, Ling, & Yeung, 2017). Outpatient appointment scheduling and improves the quality of service. Deterrence framework will prevent staff from committing errors that could affect the patient's health adversely.

# Recommendations

* Integration of healthcare standards and their implementation will prevent staff such as nurses and doctors from making patients wait for long hours. This will also prevent them from neglecting their duty towards the patients. There will be a decline in the medication and other errors (Ducket, 2018).
* Providing training to the staff including nurses and the doctors about the use of a digital system for storing or retrieving patient’s information. This will be an effective way of removing staff's resistance against new systems (Layeb, Jmal, Aissaoui, & Mansour, 2017).
* Providing complete details to the patients and assuring them about personal information confidentiality will be effective in overcoming users resistance.
* Conducting one-time diagnosis and evaluation of the patient's condition will minimize the total time spent on waiting.
* Maintaining strong strict supervisory controls through tracking mechanisms will eliminate the possibilities of unnecessary delays and remove negligent attitudes of the staff towards patients.

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# Appendix

