VALUE STREAM MAPPING OF EMERGENCY DEPARTMENT IN ETERNAL HEART CARE CENTRE, JAIPUR

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Introduction

- **The Department of Emergency at Eternal Hospital provides round the clock emergency services to patients arriving at the facility without prior appointment; either by their own means or by an ambulance.**
- **The department is easily accessible to patients owing to its location on the ground floor closer to the main entry of the hospital.**
- **The Emergency department or the ER here has a total of seven beds color coded according to the severity of the patient's condition.**
- **A part of the emergency department is dedicated for day care patients who come for minor procedures like catheter removal and inpatients waiting for beds for impending surgeries.**

- **The Emergency department can be considered as the face of the hospital as it is the first contact point between a patient and the hospital when the former is in distress.**
- **A smooth process from receiving the patient to transferring him/her out of ER is crucial to instill a sense of trust in the patients regarding the quality of services provided by the hospital.**
- **Value Stream Mapping of the ER process helps in identifying waste steps in the patient care process in order to eliminate them, thereby reducing unnecessary patient waiting times.**

AIMS & OBJECTIVES

The study aims at removing non-value adding processes from the cycle of patient care in ER.

The objectives of the study are:

- **To understand the process flow of the Emergency department**
- **To calculate the Average Length of Stay (LOS) and the initial assessment time of patients in ER.**
- **To calculate the time in which consultant responds to calls from ER.**
- **To identify the reasons for delay in shifting the patient.**
- **To suggest the measures to improve the process cycle of ER.**

ER PROCESS FLOW

- Patient comes to the ER department either by himself or by ambulance.
- The GDA and the nursing staff go outside to receive the patient and take him/her in, shifting him/her on the appropriate bed.
- Primary assessment is done by the nursing staff (vitals are taken and nursing triage assessment form is filled).
- ER doctor does the assessment and the patient is immediately given treatment as per his/her need.
- Assessment done by the ER team which includes nurses and doctors together constitutes the initial assessment.
- Non-emergency patients who come to ER and require consultation only are referred to the OPD.
- Emergency patients are then registered as per the registration process and investigations are ordered, if necessary, and the patient is kept under observation.
- Based on the assessment, doctor decides as to which diagnostic tests are to be conducted for screening.
- Based on the results of the investigations, ER doctor decides whether referrals are needed to be made to specialities for further course of treatment or the patient can be discharged/ transferred out.

- **The ER doctor, as per his provisional diagnosis, informs the concerned consultant chosen by the patient. If the patient does not come with a choice of consultant, then the ER doctor gets the ER module started under EHCC consultant and informs the concerned consultant according to his/her own judgement of the patient's condition.**
- **Patient coming to ER with a specific doctor's name shall be admitted under that doctor irrespective of his presenting complaint.**
- **Patient with an apparent cardiac problem, after evaluation, shall be directly admitted under Cardiologist of that particular day through cardiac helpline.**
- **Walk-in patient without having any reference of a particular consultant or with a non-cardiac complaint shall be examined by the ER doctor, who will first consult the physician of the day and accordingly will admit the patient.**

- **The doctor after examining the patient either advises Admission or Discharge.**
- **If the patient agrees for admission then admission is given if bed is available but if bed is not available then patient is referred to some other facility.**
- **The admission form is filled and the required information is forwarded to the central reception. The reception personnel shall complete the admission process on priority basis and the patient shall be transported from the ER to the assigned bed.**
- **Patient privacy and confidentiality has to be respected at all times.**
- **A patient can be kept under observation in ER for not more than four hours within which a decision has to be taken for admission or discharge based on the patient's condition.**
- **If the patient disagrees for admission then he/she, after being given primary treatment, is asked to fill the LAMA (Leave Against Medical Advice) form and the patient goes away.**

QUALITY INDICATORS FOR ER

1)Time for initial assessment of emergency patients

Definition: Initial assessment is the evaluation of the health status of a patient by performing a physical examination after taking a health history. The time shall begin from the time the patient has arrived till the time that the initial assessment has been completed.

Benchmark: 15 min

2)Length of stay in emergency

Definition: Duration for which a patient stays in ER during a particular time period.

Benchmark: 4hrs.

BACKGROUND

Length of Stay is often considered the most significant measure of the Emergency Department's services and is used to judge its efficiency.

Timely initial assessment of patients is now considered an important aspect of the services.

Rapid admission/discharge of patients are important both from a medical as well as commercial point of view.

Various studies have shown that health outcomes of a patient coming to a hospital from the emergency route have been affected by the time taken to complete the process of patient reception to patient transportation.

RESEARCH QUESTIONS

- **What is the average time taken to shift a patient from the emergency department to IPD/Discharge at Eternal Heart Care Center Jaipur?**
- **What is the average time taken within which the initial assessment of a patient is completed?**
- **How much average time do consultants take to examine patients after receiving a call from ER.**
- **What are the possible reasons for delays, if any?**

METHODOLOGY

- **The study is Cross-sectional in nature**
- **Emergency department of EHCC was the setting for the study conducted.**
- **The study was conducted during 12th February 2019– 15th April 2019**
- **The participants of the study were-**
  - Patients
  - Nursing staff
  - ER doctors
  - Consultants

RESEARCH PROCEDURE

A checklist was developed to observe the patient time spent in the Emergency Room. The components of the checklist were as follows:

- **Name of the patient**
- **UHID**
- **Arrival Time (t1)**
- **Nursing assessment time**
- **ER doctor assessment time**
- **Initial assessment time**
- **Time at which ER doctor calls the concerned consultant/senior doctor**
- **Time of arrival of the consultant/senior doctor**
- **Name of the consultant/senior doctor**
- **Consultant response time**
- **Time of shifting out of the patient (t2)**
- **Location where the patient is shifted to**
- **Length of stay**
- **Remarks**

SAMPLING & SAMPLE SIZE

Sampling: Purposive Sampling

Sample size: 349 patients

Exclusion and Inclusion Criteria:

- **Only the patients coming between 9:00 a.m. till 3:00 p.m. were considered for the study. Patients coming before and after the given time were not considered as part of the study.**
- **Both Emergency as well as emergency patients in Day Care were included as part of the study.**
- **Patients in day care waiting for beds were not included.**
- **Patients for minor procedures like catheter removal, drip or injection were not a part of the study.**
- **Patients found dead on arrival were not included.**
- **Code Blue patients who died after arrival were included.**

Data collection methods:

PRIMARY DATA:

- **Time study**
- **Direct Observation**
- **Conversation with the ER department staff**
- **Conversation with the patients**

SECONDARY DATA:

- **HIS- Panacea**
- **Patient Files & ER Registers**
- **MRD**

OPERATIONAL DEFINITIONS

- **Length of Stay: Duration for which a patient stays in ER during a particular time period.**
- **Initial assessment: Initial assessment is the evaluation of the health status of a patient by performing a physical examination after taking a health history. The time shall begin from the time the patient has arrived till the time that the initial assessment has been completed.**
- **Time of arrival (t1):Time when the patient enters the ER for immediate care.**
- **Time of shifting (t2): Time when the patient is shifted out of the ER either as an IPD patient for further course of treatment or is discharged after primary treatment.**
- **Length of stay: t2-t1**

Data collection tools

- **A workflow diagram with the goal of gaining a clearer understanding of how a process works will be made. The start and the end points of the process and listing of the steps in between will be done which will give a fair idea of all the activities involved.**
- **Time study will be conducted to calculate the LOS of patients in the ER, initial assessment time of patients; time gap between informing the consultant and his arrival will be calculated.**
- **Direct observation for understanding the routine activities of the department and flow of the patients and information, a checklist will be prepared for the same and it will be totally a personal observation.**

Results & Process Flow

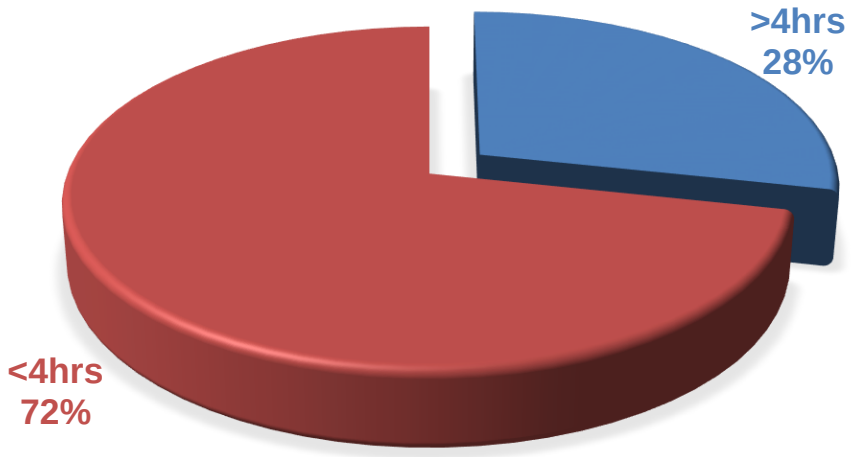


FIG 1: PERCENTAGE OF PATIENTS STAYING FOR MORE THAN 4 HOURS & LESS THAN 4 HOURS IN ER

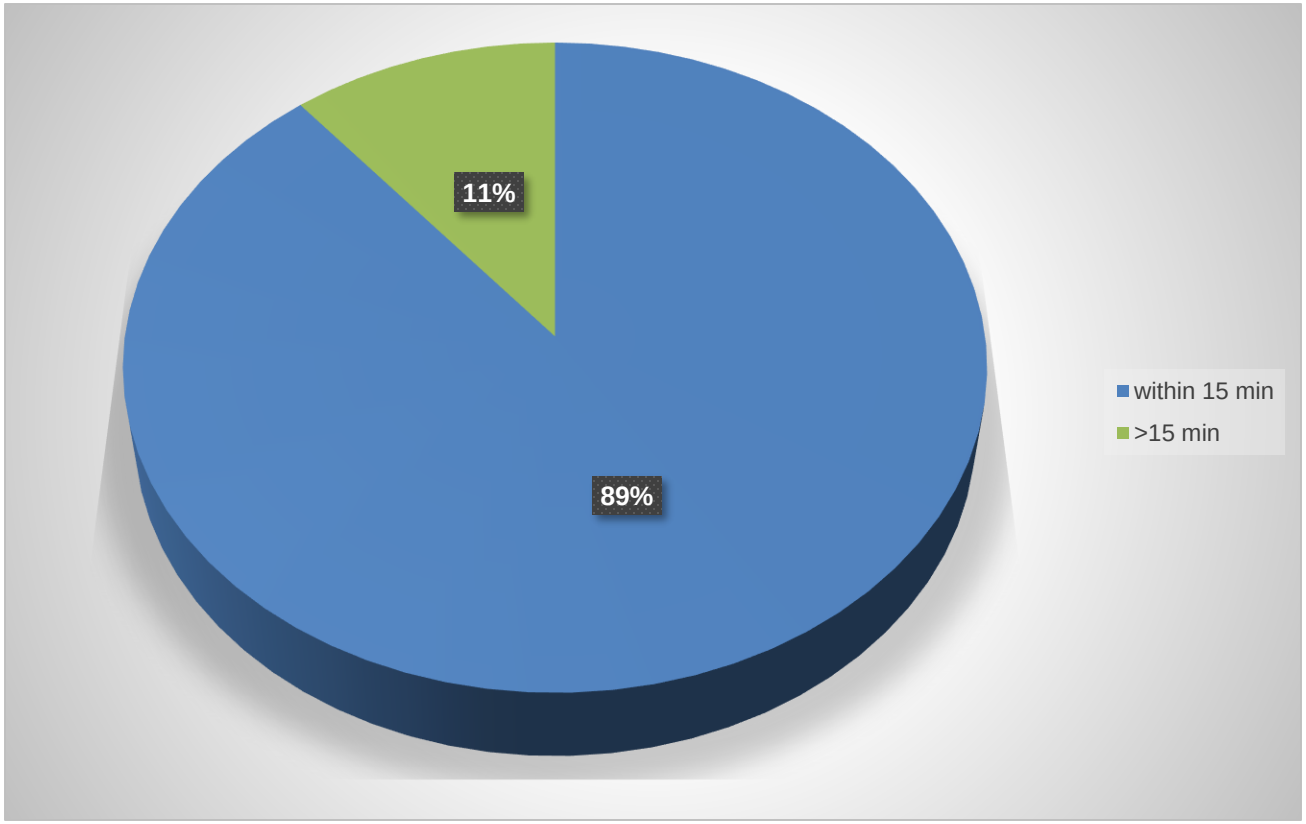


Fig 2: Percentage of patients getting initial assessment within first 15 minutes of arrival

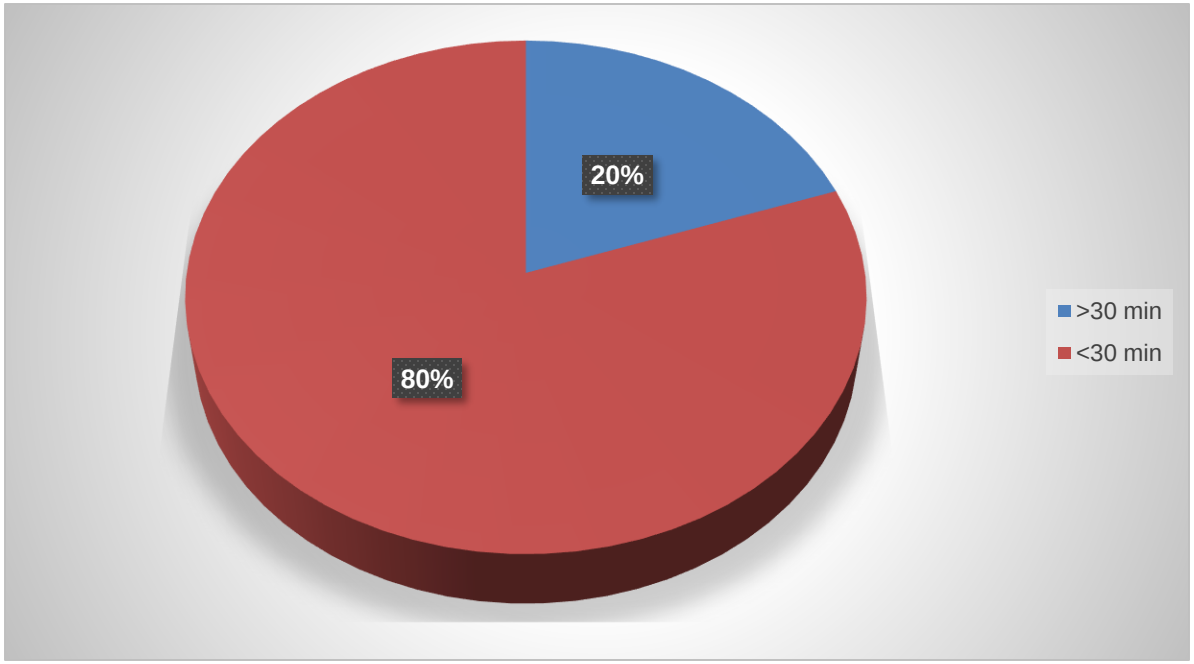
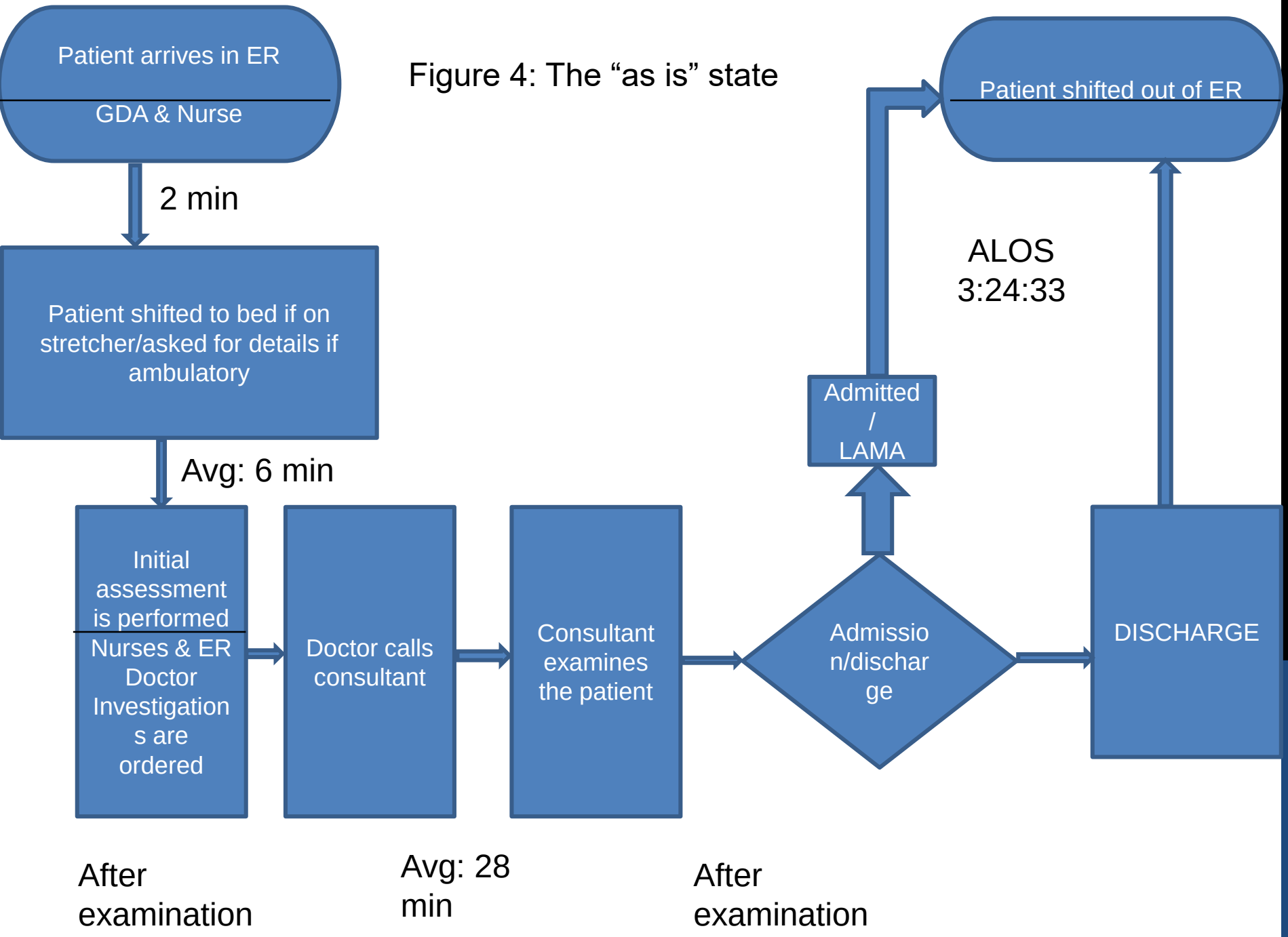


Fig 3: Percentage of patients who got examined by consultant 30 minutes after being called

RESULTS

- The average time consumed in initial assessment of the patient comes out to be 6.78 minutes which is well below the benchmark of 15 minutes specified by Eternal Hospital.
- Some consultants have to be called again and again before they finally come.
- Some consultants take more than an hour to respond to the emergency patient after a call has been made to them by the ER doctor. From the figure, we can see that 20% of the patients are seen by consultants more than 30 minutes later after being called.
- Out of a sample of 349 patients, 99 remained in the ER for more than 4 hours, some extending to even 18 hours.

Figure 4: The “as is” state



THE ‘AS IS’ STATE

This is the “As is” state

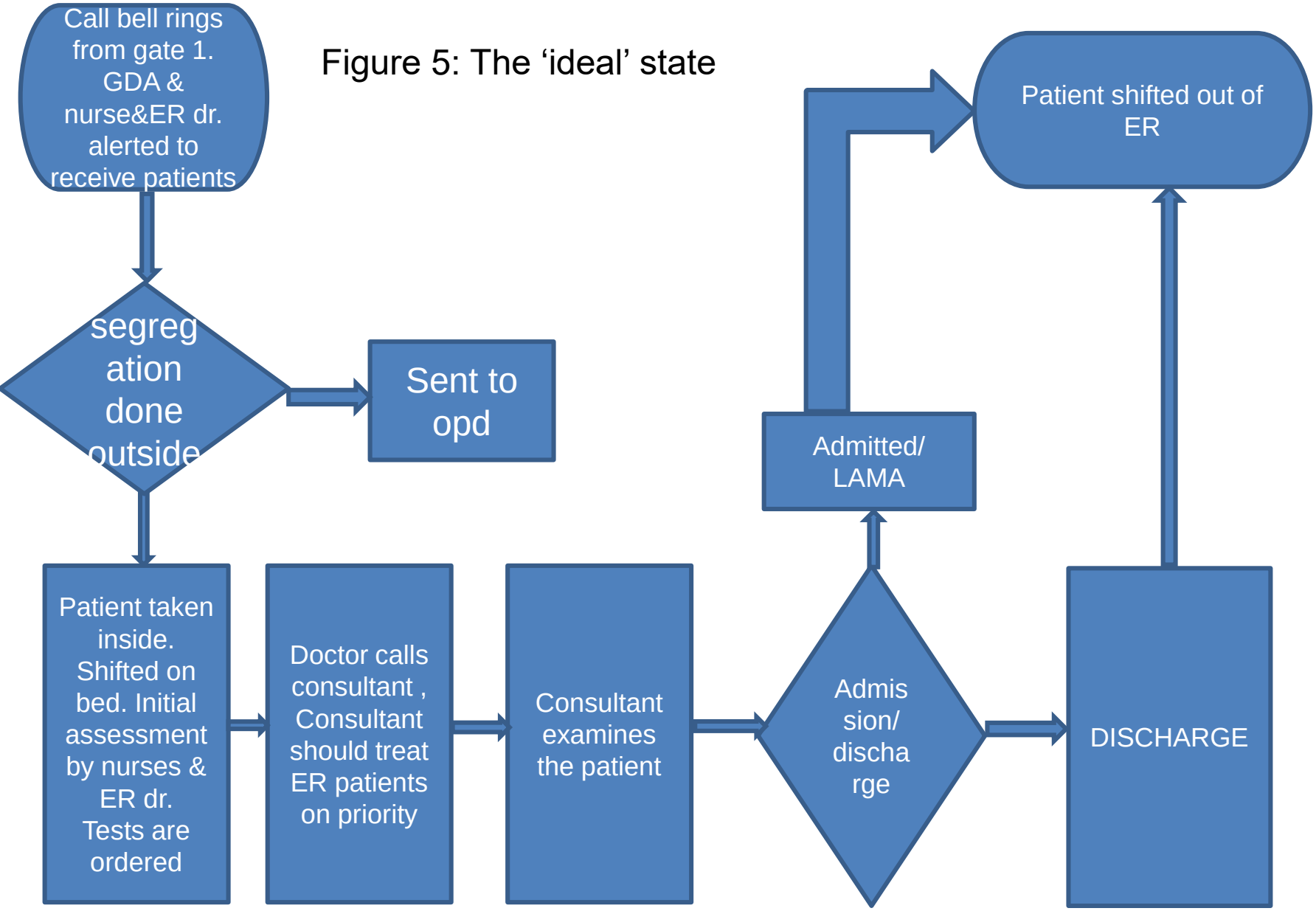
The activities that cause delay are:

- **GDA’s not available to receive the patients. Nurses shift responsibility of receiving patients.**
- **Many times it happens that patients is shifted on the bed and after initial assessment ER Doctor finds out that it is an OPD patient.**
- **Consultant takes time to come down in ER.**
- **For admission & billing attendant has to go to the central reception.**
- **Radiology results, due to overcrowding, are delayed.**
- **Time is consumed in sending samples manually in Laboratory**
- **Crisis of Beds due to High Occupancy for shifting IPD patient through ER.**

INTERPRETATION

- **The average time consumed in initial assessment of the patient comes out to be 6.78 minutes which is well below the benchmark of 15 minutes specified by Eternal Hospital.**
- **89% of the patients received initial assessment within first 15 minutes of arrival. The reason for 11% patients not receiving it within 15 minutes could be due to ER doctors being busy with a more serious patient.**
- **Some consultants have to be called again and again before they finally come.**
- **On an average, a consultant took 28 minutes to respond to the emergency patient after a call has been made to them by the ER doctor.**
- **Out of a sample of 349 patients, 28% of the patients remained in the ER for more than 4 hours, some extending to even 15 hours.**
- **Though the % is small, efforts should be made to reduce it to the minimum so that ER staff is able to intake more patients and the process of patient care continues without any delays.**

Figure 5: The ‘ideal’ state



THE ‘IDEAL’ STATE

This is the “ideal” state

The activities that can minimize delays are:

- **A call bell at gate no. 1, the guard can use it to alert the staff inside ER about the arrival of an ER patient.**
- **ER reception should be there for billing & admission.**
- **Segregation of patients should be done outside so that OPD patients are sent to OPD from outside only.**
- **Radiology department should treat ER patients on priority.**
- **Blood samples can be sent via pneumatic chute.**
- **TAT should be there for consultants too except for when they are in OT. (or they can send their doctors if they are busy)**
- **Discharge process should be hastened. This causes major delays in patient shifting.**

Discussion

- **Of total 349 patients, 72% did not stay for more than 4 hours in ER while the stay was delayed for 28% of them. The major reason for delay is non-availability of beds in IPD.**
- **Some doctors took a long time to visit the patient in ER due to other preoccupations.**
- **The initial assessment time for ER doctors in some cases was found to be more than 15 minutes. This can be because the doctor was busy with a more serious patient.**

Other reason for delay were:

- **The pneumatic chute, though in place, is not used to transfer samples.**
- **Shortage of waiting area outside the department creates chaos inside ER as attendants tend to barge in.**
- **No proper signage for OPD outside the hospital leading to unnecessary chaos in the ER.**
- **Insufficient number of guards during a single shift to cater to the flow of patients and their attendants.**
- **Shortage of ER doctors.**

- **Communication gaps inter-departmental and intra-departmental.**
- **No separate admission & billing counter in ER even though there is space for it. The attendant has to go to the central reception for admission and billing increasing chaos and time taken for patient treatment.**
- **More than often GDAs are not available when needed.**
- **ER doctors are hesitant in filling lengthy triage forms.**
- **No fall risk signage used or used very rarely.**
- **Bed managers are mostly unaware about the status of availability of beds. The ER coordinator has to directly call the authorized person in the patient destination to find out if bed is available.**
- **The F&B department does not come to deliver patient food or to collect used dishes on time. Frequent calls have to be made. Same is the case with the laundry & linen department.**

- **Even OPD patients come to ER as consultant sends them to start the necessary tests to be done before a surgery. The reason again is unavailability of beds. This creates shortage of beds in ER for actual patients.**
- **Many times, it is observed that the nursing staff doesn’t receive the patients and only GDAs are sent who are unaware of the medical needs of a patient.**
- **Patients come to ER and get treatment but after getting financial counselling they refuse to get admitted. Financial constraint is a major reason behind patients taking LAMA.**
- **Waiting for diagnostic test results delays the decision-making process of ER doctors.**
- **Too many files and registers have to be maintained. A number of forms have to be filled.**
- **Due to unavailability of proper waiting area for attendants, they have to find a place to sit somewhere else but when they are needed for shifting the patient, it is difficult to find them**

Conclusion

- **The staff of ER is responsive and polite in dealing with the patients and is always ready to serve the patients.**
- **Efforts are constantly made to improve the process with a dedicated ER coordinator to get the patients shifted out of ER (either IPD or Discharge) within the stipulated time.**
- **Regular audits are conducted by quality department to maintain the standards of services being provided by the ER department.**
- **Files are maintained properly and registers are devoid of any incomplete information.**
- **Further interventions and changes in patient care can enhance the process and can bring down the delay in the ER process cycle.**
- **This at the end can improve the overall experience of the patients visiting the department and will smoothen the functioning as well.**

Suggestions

- **Training should be rigorous to improve the soft skills of the ER staff. It is observed that they do not listen to patients who constantly ask for something.**
- **All female staff should not be allowed to grow their nails to maintain hygiene during patient care.**
- **Only one person should be authorized to receive calls at the first instance to avoid miscommunication.**
- **The availability of beds is heavily dependent upon the smoothening of the discharge process. Turn Around Time of 4 hours for cash patients and 6 hours for TPA patients should be maintained.**

- **Manpower should be increased according to the footfall of patients.**
- **Regular audits at least once a month to check for delays and identify areas that need improvement.**
- **ER patients should be given priority in imaging services.**
- **Pneumatic chute must be used to transfer samples to the laboratory.**
- **A separate admissions & billing counter should be made inside the ER.**
- **A call bell should be installed at gate number 1. The guard can press the bell in case of an emergency patient so that the staff is alerted and comes outside immediately to receive the patient. Relatives will be satisfied.**
- **Demarcation for car parking should be there so that there is enough space for the patient to get down.**
- **A guide or guard should stand outside to guide the cars coming with emergency patients.**
- **Other vehicles should not be allowed to use the path leading to ER.**
- **The hospital should consider opening up satellite centers to cater to far away areas.**

- **Segregation should be done at the entrance gate that whether the patient is an emergency patient or an OPD patient.**
- **One oxygen cylinder should be present outside.**
- **One small oxygen cylinder should be there on one wheelchair too.**
- **Nursing & doctor triage form should always be present on every cardiac table so that they don’t look for it when the patient arrives.**
- **Waiting area should be there for attendants.**
- **Financial counselling should be done while the patient is being given primary treatment. Validity of TPA card or Bhamashah card should be clarified in the beginning itself.**
- **Proper signage for OPD should be there at gate no. 1, as most people enter the hospital through this gate only.**
- **ER department should prepare itself for the newly launched Certification Standards for Emergency Department in Hospitals**

THANK YOU