INTERNSHIP & DISSERTATION

AT

PARAS HOSPITALS

Partners In Health

ON

IMPROVEMENT IN DISCHARGE PROCESS

USING-: SIX SIGMA ( )

Under The Guidance Of-:

Dr Shankar Narang
GM – Operations & Quality
Organisation: Paras Hospital
Gurgaon

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POST-GRADUATE DIPLOMA IN HOSPITAL & HEALTH MANAGEMENT
(2008-2010)
INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH (NEW DELHI)

Improvement In Discharge Process

Using-: Six Sigma ()

A dissertation submitted in partial fulfillment of the requirements for the award of

Post-Graduate Diploma in Health and Hospital Management

by

Dr. Shweta Dhingra



International Institute of Health Management Research

New Delhi -110075

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May, 2010

Certificate of Internship Completion

Date:……..

TO WHOM IT MAY CONCERN

This is to certify that **Dr.Shweta Dhingra** has successfully completed his 3 months internship in our organization from February 1, 2010 to April 30, 2010. During this intern he has worked on **Improvement In Discharge Process Using Six Sigma** .(under the guidance of me and my team at …**Paras Hospital Gurgoan**.. …….(any positive/negative comment)

We wish him/her good luck for his/her future assignments

(Signature)

_____(Name)

_____Designation

Certificate of Approval

The following dissertation titled **"Improvement In Discharge Process Using Six Sigma.**" is hereby approved as a certified study in management carried out and presented in a manner satisfactory to warrant its acceptance as a prerequisite for the award of **Post- Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation

Name	Signature
_____	_____
_____	_____
_____	_____

Certificate from Dissertation Advisory Committee

This is to certify that **Dr.Shweta Dhingra**, a participant of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. She is submitting this dissertation titled "**Improvement In Discharge Process Using Six Sigma.**" in partial fulfillment of the requirements for the award of the **Post- Graduate Diploma in Health and Hospital Management**.

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Faculty Advisor	Organisational Advisor
Designation	Designation
IIHMR	Organisation
New Delhi	Address
Date	Date

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ACKNOWLEDGEMENT

Wavering between the profit & loss
In this brief transit where the dreams cross
The dreams crossed twilight between birth & dying .
-T.S. Eliot.

Expressing gratitude is a difficult task & words often fall short of reflecting one's feeling. It is proud privilege ,however to do so & I undertake this task with utmost sincerity . I would like to convey our sincere gratitude to the management of PARAS HOSPITAL ,GURGAON & all those who have contributed their valuable efforts & encourage towards completion of my project.

In this context I wish to express my gratitude towards – Dr. Dharmender Nagar (MD Paras Hospitals) Dr Shankar Narang ,GM (Operations & Qualitys), Dr. Nitin Khanna (Deputy Manager Operations), Dr. Gopal Sharan (Deputy Manager Operations) , Mr. Neetu Maltiar (Manager Training and Quality) ,Dr. Sanjeev (Deputy Manager Operations) , Mr.Balakishan, (Manager- HR),

As my project guide & valuable suggestion given during the training period.

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Abstract

Improvement In Discharge Process

Using-: Six Sigma ( )

By

Dr. Shweta Dhingra

Introduction-

As the Discharge process is the final step in the hospital experience, so the process is likely to be well remembered by the patient and his attendants. The Discharge Process is the process consisting of the activities that are undertaken before the patient finally leaves the hospital premises. These activities include making a Discharge Summary, collection of all the patient reports, generation of the Final Bill, Payment by the patient, escorting services etc. Even if everything else went satisfactorily, a slow, frustrating discharge process can result in low patient satisfaction.

This study used the framework for Corporate Strategy, which links the customer satisfaction with the organizations by utilizing the concept of voice of customer, organizational resources and capabilities. The research sites chosen MULTI-specialty of 250 bedded Hospital .

Objective-

To reduce the Discharge time in the hospital by using the Six Sigma Methodology

The Research methodology used :

i) For Sample collection - It was done from all the patient admitted in IPD ward
ii) Study of Primary & secondary data sources,
iii) Sample size- Data collected for four month
iv) Direct Observation Technique

Analysis will be done and corrective measures will be suggested further improvement.

The major findings are :

- Analysis is done by using the Six Sigma Methodology- DMAIC
- The Sigma Value comes out to be 1.16 & the average time taken is -4.32hrs
- Root Cause Analysis is done to find out the delay in discharge process
- The Reasons like Consultant are not coming on time , lack of trained staff , no coordination between the different departments ,

Corrective & Preventive Actions are taken like prep of tentative discharges. Training of the staff , Hiring of the staff , good observation etc techniques are used to improved the discharge process

Results-

Sigma level comes out to be 2.8 after the implementation of corrective measures & the discharge time comes out to be 2.5-3hrs

Conclusion –

Six sigma is the process used to reduced the error in any process. Six Sigma concept were implemented in many of the industry ,now the hospitals are also using this concept so that they can reduced the error , save the cost & to achieve complete patient satisfaction .

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ABBREVIATIONS

σ	**Six Sigma**
TQM	**Total Quality Management**
TAT	**Turn Around Time**
KPI	**Key Performance Improvement**
CAPA	**Corrective & Preventive Action**
CPK	**Process Capability**
DMAIC	**Define, Measure, Analyses, improvement, Control**
NABH	**National Accreditation Board For Hospital & Health Care Provider**
NABL.	**National Accreditation Board For Lab**
DPMO	**Defects per million of opportunities**
RCA	**Root Cause Analysis**

INTERNSHIP

AT

PARAS HOSPITALS

Partners In Health

INTRODUCTION-

In today's fast paced world, an education needs to be more than just book study. Career prospects need to hit the ground running and be well acclimatized to their chosen career path. History shows us that hands on learning in a particular field offers the best training for people new to a career. Nothing compares to shadowing the expertise of seasoned professionals and their unique individual skills.

I had completed my Internship in Paras Hospital Gurgaon. The first & the only hospital for NABH & NABL accredited in Gurgaon.

Period for my Internship is -1st Feb2010 to 30th April 2010 .

Area consigned me is IPD ward & I had completed my Internship under the Guidance of-
Dr Shankar Narang ,GM (Operations & Qualitys), . Gopal Sharan (Deputy Manager Operations)
Dr. Sanjeev (Deputy Manager Operations) , Dr. Nitin Khanna(Deputy Manager Operations) .

ABOUT PARAS



PARAS Hospitals, Gurgaon is the state-of-the art multi super specialty, the first & only NABL & NABH accredited hospital in Haryana providing a depth of expertise in the complete spectrum of advanced medical and surgical interventions and Outpatient services. The hospital is dedicated to provide competitive, accessible and affordable world class healthcare services.

It is a 250 bedded hospital, designed by Mr. Henning Lensch of RRP Architects, Munich, Germany. 7 storey, centrally Air-conditioned in a premises of 3 Acre and having 2, 50,000 sq.ft. build up area.

PARAS Group

- Founded in 1960 to start the business of dairy products by**: Late Ch. Ved Ram Nagar.**

Group Companies

- **Paras Dairy**
- **Paras Buildtech**
- **Paras Calltech**
- **Paras Mineral Water**
- **Paras Healthcare**

PARAS LOGO-

PARAS HOSPITALS
Partners In Health

Green Hand

- Colour green- symbolizes healing.
- Open palm position -symbolizes Honesty
- Green hand - Represents Paras Hospital

Blue Hand

- Represents our patients

VISION

- To become preferred health care provider for all
- Partnership in caring & curing
- Providing excellent medical care to our customers through our faith in values, integrity, respect, teamwork, & innovation to achieve complete patient satisfaction

MISSION

- The mission of "Paras Hospitals" is to provide competitive, innovative and accessible medical care to the patients
- To facilitate improving the health of the patient by providing quality service through our professionals that is affordable and delivered
    - **C**ompassionately
    - **A**ppropriately
    - **R**esponsibility
    - **E**fficiently
- To exhibit stewardship and creativity in the management of all available resources for patient care.
- To ensure the delivery of our services enabling patient, families, guests, healthcare professional, our associates to make the best use of our facilities and environment consistent with our philosophy and commitment of the patient care, health education and strategic initiative.
- To provide excellent family centre healthcare to the entire family and children in an environment that meets or exceeds the expectation of those we serve.

PARAS HOSPITALS QUALITY POLICY

- Paras Hospitals believe in partnership with the communities we serve.
- They fulfill our purpose of providing Quality Healthcare Services By:
    - Providing uniform patient treatment & care, use of evidence based medicine & excellence in clinical outcomes.
    - Knowledge Enhancement of our staff, clinicians & patients.
    - Delivering superior customer service & complying with statutory regulations.

PARAS HOSPITAL: The Story

12th OCT 2004: Construction Activity began.

JULY 2006: Soft Launch.

2nd OCT 2006: Commercial Launch with 90 beds.

Oct 2008: The Cardiac Unit fully operational.

74.0% : The average bed occupancy since July 08.

June 2007: The blood bank was inaugurated.

May 2009: NABL.

July 2009: NABH.

FACILITY

- First private hospital in Gurgaon to have Accredited BLOOD BANK.
- The covered area is approx 2.1 Lacs sq. ft. spread over 7 storey (2 basement, 1 service floor, 4 operational floors).
- Centrally air conditioned with 24 hrs kitchen and laundry services and Well-furnished rooms for comfortable stay of patients and attendant
- Cath Lab.
- 50 critical care beds special ICUs and NICUs.
- Emergency, Ambulance and pharmacy services functioning round the clock.
- Advanced Imaging and Laboratory Services.
- Online patient consultation / estimation through the Web site
- 7 state of art operation theatres

SUPER SPECIALTY IN-

- Neuro Science
- Cardiac Sciences
- Joint Replacement
- Paras Heart institute
- Mother & child
- Trauma & child
- Advance Nephro & Uro centre

OTHER SPECIALTIES-

Accident & Trauma Centre
Anesthesiology
Bariatric Surgery
Biochemistry
Clinical Pathology
Critical Care
Dental Surgery
Dermatology
Dietetics & Nutrition
Endocrinology
ENT
Gastroenterology
Geriatrics
Gynecology & Obstetrics
Interventional Radiology
Interventional Cardiology
Minimally Invasive Surgery
Nephrology
Ophthalmology
Orthopedics
Paras Neurosciences Centre
Physiotherapy And Rehabilitation
Plastic Surgery And Cosmetic Surgery
Preventive Health Checkups
Psychiatry & Psychology
Radiology Emergency Medicine
Skin & Cosmetic Clinic
Spinal Surgery
Rheumatology
Spinal Surgery
Urology Histopathology
Joint Surgery
Microbiology Cardiac Surgery

KPI-AT PARAS HOSPITAL GURGAON

I used to do General as well as Routine Management. Area consign me is IPD ward . The wards are divided into 3 floors 1st floor consist of all the ICU & OT , 3rd floor is dedicated mainly to mother & child unit & 4rd floor is dedicated to neuro science & all other types of patients .In both the floors we have room like VIP, Deluxe , single ,double bed , 4 bed , & dormitory of 9 bedded & isolation room . Here my work is-

- Daily meeting with all admitted patients & solving all the queries
- Briefing of the patient on their rights & responsibilities.
- Daily following up with nursing in-charges of any problems regarding pharmacy / Diagnostic & other services.
- Daily ensuring dispatch of complete files of the discharge patients to MRD.
- Ensuring the smooth function of the IPD areas with maintaining all the TAT as mention in the process.
- Coordinating with billing dept, & resolving any issues of inpatient regarding their bills.
- Responsibility for maintaining all the procedures of NABH & dash board.
- Ensuring that patient & attendant are aware of the medical status as well as the bill status of the patients.
- Following up with consultant regarding the discharges of the patient & improve on the discharge time of the patient
- Responsible for the correctness of the patient medical record & discharge summaries

Over all the complete and smooth care of the patient in IPD ward.

DEPARTMENT VISITED

- Pharmacy ,
- Billing
- House Keeping ,
- Nursing
- CSSD
- Lab ,
- Radiology ,
- F& B ,
- Front Desk ,
- Maintenance ,
- Physiotherapy
- Biomedical,
- IT
- Blood Bank
- Gas Manifold
- Mortuary
- Emergency Department
- ICU
- OT

FROM THE ORGANIZATION-

It was a great experience in Paras hospital while working in it , here I come to know about the various services of the hospital, how to provide complete patient care ,understand their queries & solving them ,help to learn how to work within a team , coordinate with the different department , how to work in a emergency situation like codes blue , etc while working in it help to developed the skills like- managerial , soft , etc .Overall a great place to learn all aspects of Management System in a hospital.

DISSERTATION

AT

PARAS HOSPITALS

Partners In Health

ON

IMPROVEMENT IN DISCHARGE PROCESS

USING-: SIX SIGMA ( )

INTRODUCTION

DISCHARGE- Discharge from the hospital is the point at which the patient leaves the hospital & either returns home or is transferred to another facility such as one for rehabilitation or to a multi –specialty hospital

Discharge involves the medical instruction that the patient will need to fully recover.

A lengthy, inefficient process for discharging in-patients is a common concern of hospitals. It not only causes frustration for patients and family members, but also leads to delays for incoming patients from Emergency Department.

When the Doctors take round & see the patient is fit for discharge, the bill is prepared in the Billing Section & the required amount is paid in the Billing Section by the patient or attendant and get clearance slip. This slip is given to the nursing station. All documents of patient are handed over to the attendant or patient with discharge summary by assigned staff and patient leaves hospital.

POLICY AND PROCESSES FOR ADMISSION AND DISCHARGE

Admission process:

When a patient is required to be admitted, the patient/attendant have to fill the admission form before the admission of patient. After feeling the form patient is registered and he is provided a U.H.I.D. means a unique hospital identity number. Before admission patient's attendant (s) goes to counseling cell for the detail of packages, expenses and room or ward expenses etc. now after admission patient is reached to the allotted room or ward with one patient care person to guide him from registration counter. Patient or attendant shows the registration and discharge card to nursing staff.

There are two types of Admission –

1) Admission through O.P.D.
2) Admission through emergency.
3) Admission through reference

WARD

The term ward is also known as nursing unit means a temporary home to the patients. The place of accommodation for the patients with service facilities which enable a team of nurses to care for inpatients under the best possible condition , and includes under one roof patient beds, the nursing station, the service area, work area and sanitary area. Patients need the best possible physical facilities, high quality of nursing care, treatment at the lowest possible cost, most desirable patient environment and provide a congenital work environment for the nursing and medical staff.

AIM & OBJECTIVES

- To Study the current Discharge Process
- To see the feasibility of improving the discharge process if any,

Research problem and research question

Discharging a patient is an activity common to every hospital - small, large, community, Inner-city, teaching or non-teaching. The discharge process can have an impact on Numerous factors, such as patient satisfaction, bed availability, timely tests and procedures needed for discharge, home health equipment and service availability, social worker and therapist coordination, transportation, and nursing home arrangements. No matter what type of patient is being discharged (maternity, medicine, orthopedic, neurologic) numerous activities must be completed for each before the patient can be released..

A lengthy, inefficient process for discharging in-patients is a common concern of hospitals. It not only causes frustration for patients and family members, but also leads to delays for incoming patients from Admitting, the Post Anesthesia Care Unit or the Emergency Department.

A solution to that problem can be found in the application of Six Sigma methodology. A tool to reduce defects and process variability, and improve the efficiency and quality of key care delivery and support processes. The combination of these tools, first used in the manufacturing industry, is now being applied to health care and the effects are being felt throughout the organization.

RESEARCH METHODOLOGY

Methodology used is to make the study effective and non–biased.

A prospective & retrospective study is done

STUDY DESIGN-

- Collect the feedback from the patient / Attendant
- Retrospective study is done by asking staff members (Doctors, nurses. MT. billing)
- Self observation is done by tracking the data on AD Trackers

SAMPLE AREA-

All the Patients Admitted in IPD ward.

DATA COLLECTION TECHNIQUE:

- PRIMARY DATA
- SECONDARY DATA

SAMPLE SIZE-

Data collected for three months – Jan , Feb , March , April

Daily Discharges in Paras Hospital-25-30 patients

Daily Admission in Paras Hospital-20-25 patients

- After Collection of Data-
    - Analysis will be done on the current Discharge process
    - Application of Six Sigma Techniques is used to found out the current sigma level.
    - corrective measures will be suggested for the improvement of Discharge process & sigma level

STUDY IS BASED ON – (DATA ANALYSES TECHNIQUES)

1. Timely information
2. Communication between the staff
3. Timely Physician Discharge order
4. Properly Pharmacy Return
5. Timely Discharge summary preparation
6. Timely Bill preparation
7. Patient went out of the hospital.

LITERATURE REVIEW

"**Quality is never an accident; it is always the result of intelligent effort.**"

QUALITY

Appropriate application of medical knowledge with due regard to the balance between the hazard inherent in every medical intervention and the benefits expected from it

ISO 9001-2000

"Degree to which a set of inherent characteristic **fulfils requirements**." The standard defines *requirement* as need or expectation

LEAN

Eliminate non-value-added activities and waste. Save time and money.

SIX SIGMA

"**Number of defects per million opportunities**." The metric is tied in with a methodology and a management system.

JOSEPH M. JURAN

"**Fitness for use**." Fitness is defined by the customer.

PETER DRUCKER

Quality in a product or service is not what the supplier puts in. It is what the **customer gets** out and is willing to pay for.

NEED FOR QUALITY

- Competition
- Changing customer
- Changing product mix
- Product complexity
- Higher levels of customer satisfaction

TQM

Total Quality Management (TQM) is a structured system for meeting and exceeding customer needs and expectations by creating organization-wide participation in the **planning and implementation of improvement** (continuous and breakthrough) processes.

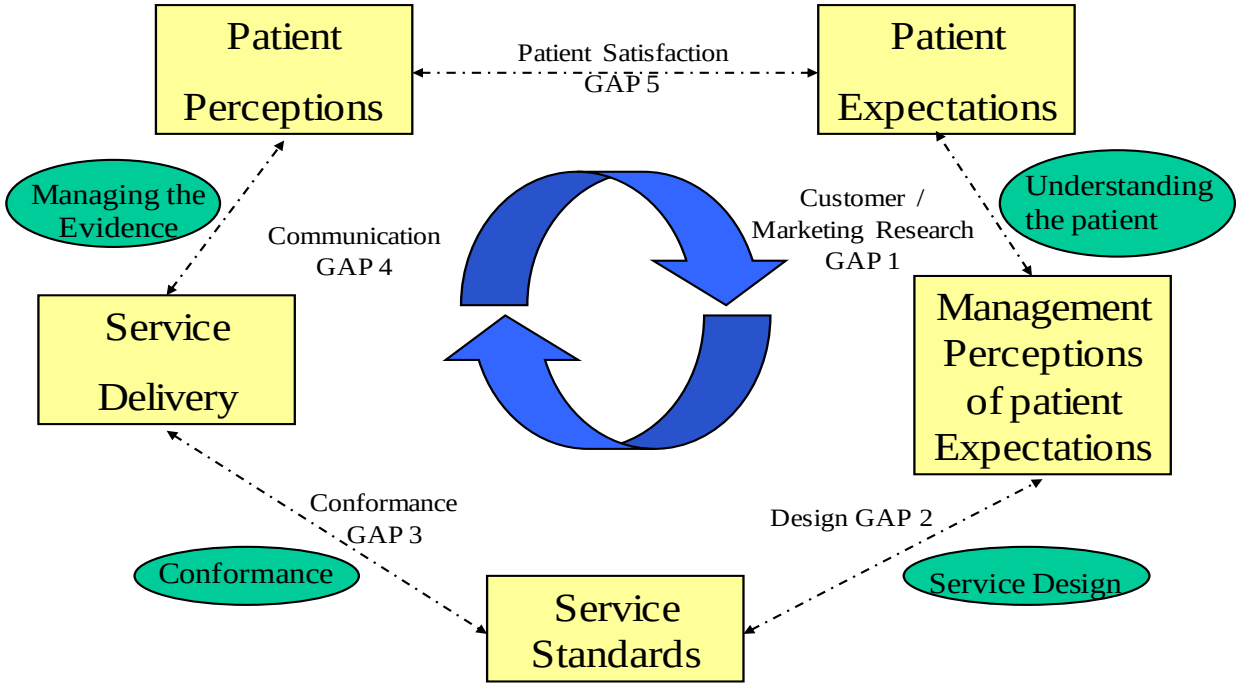
KAIZEN THEORY

One translation of the term Kaizen from Japanese is "**to take apart and put back together in a better way"**. One will immediate recognize that we have a term that relates to quality, as Kaizen relates directly to improvement.

PDCA - THE DEMING CYCLE

The Deming Cycle, or PDSA cycle, is a model for continuous improvement of quality. It consists of a logical sequence of four repetitive steps for continuous improvement and learning: **PLAN, DO, STUDY (CHECK) and ACT**. The PDCA cycle is also known as the Deming Cycle, or as the Deming Wheel or as the Continuous Improvement Spiral. It originated in the 1920s with the eminent statistics expert Mr. Walter A. Shewhart, who introduced the concept of Plan, Do and See. Deming modified the cycle of Shewart 1777-1855) introduced the concept of the normal curve.

Service Quality Gap Model



SIX SIGMA

Six Sigma as a measurement standard in product variation can be traced back to the 1920's when Walter Shewhart showed that three sigma from the mean is the point where a process requires correction. Many measurement standards (CPK, Zero Defects, etc.) later came on the scene but credit for coining the term "Six Sigma" goes to a Motorola engineer named Bill Smith. (Incidentally, "Six Sigma" is a federally registered trademark of Motorola).

In the early and mid-1980s with Chairman Bob Galvin at the helm, Motorola engineers decided that the traditional quality levels -- measuring defects in thousands of opportunities -- didn't provide enough granularity. Instead, they wanted to measure the defects per million opportunities. Motorola developed this new standard and created the methodology and needed cultural change associated with it. Six Sigma helped Motorola realize powerful bottom-line results in their organization - in fact, they documented more than $16 Billion in savings as a result of our Six Sigma efforts.

WHAT IS SIX SIGMA?

Six Sigma is a Greek letter which stands for Standard deviation, that measure how far a given process deviates from perfection

Six Sigma is a management tool that helps in identifying the root cause to-:



The statistical representation of Six Sigma describes quantitatively how a process is performing. To achieve Six Sigma, a process must not produce more than 3.4 defects per million opportunities.

Another Meanings of Sigma

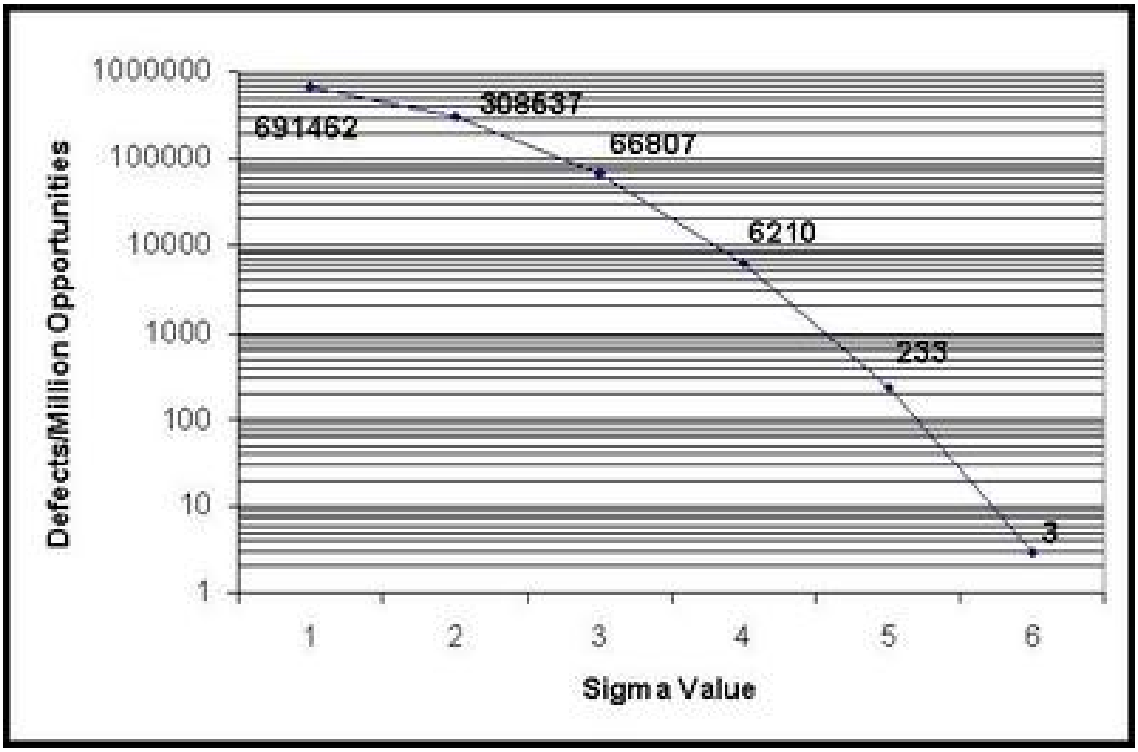
- For a process, the sigma capability (z-value) is a metric that indicates how well that process is performing. The higher the sigma capability, the better. Sigma capability measures the capability of the process to produce defect-free outputs. A defect is anything that results in customer dissatisfaction.

Sigma is a Greek symbol represented by "σ".

Why do we call Six Sigma ?

Six Sigma and not Four or Five Sigma or Eight Alpha (another Greek symbol)? Sigma is a statistical term that measures process deviation from process mean or target. Mean is also referred as average in common language. The figure of six was arrived statistically by looking at the current average maturity of most business enterprises. They would like to revise this figure to 8 or may be 9 provided the world becomes a more orderly and predictable .

DPMO - Defect per million of opportunities



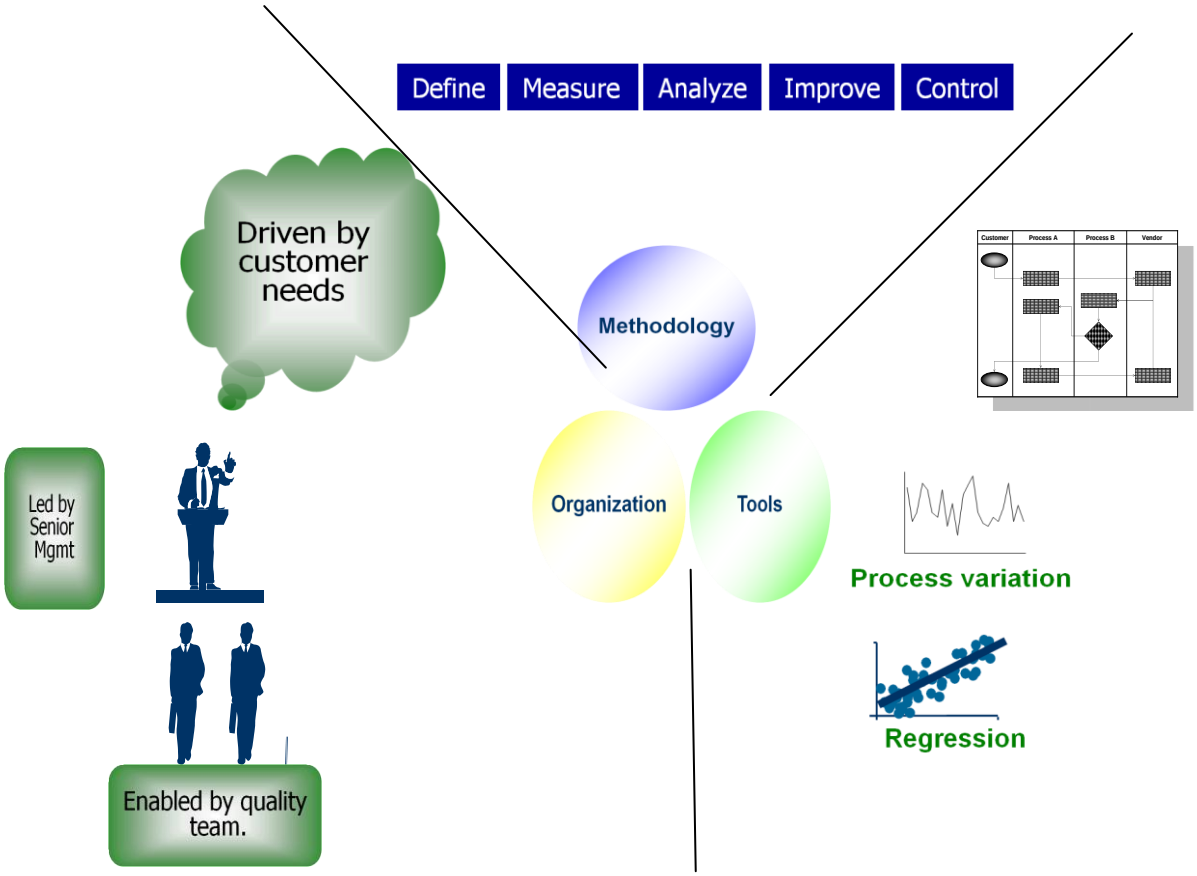
HEALTH CARE –

From a quality control perspective, it is possible to use and apply six sigma culture to a changing national healthcare. From the national discourse on the subject, the healthcare system is broken and in need of major repair. Striking a balance between cost, speed and quality is a challenge, for this six sigma methodology is used and which help in solving problems & increses the customer satisfaction.

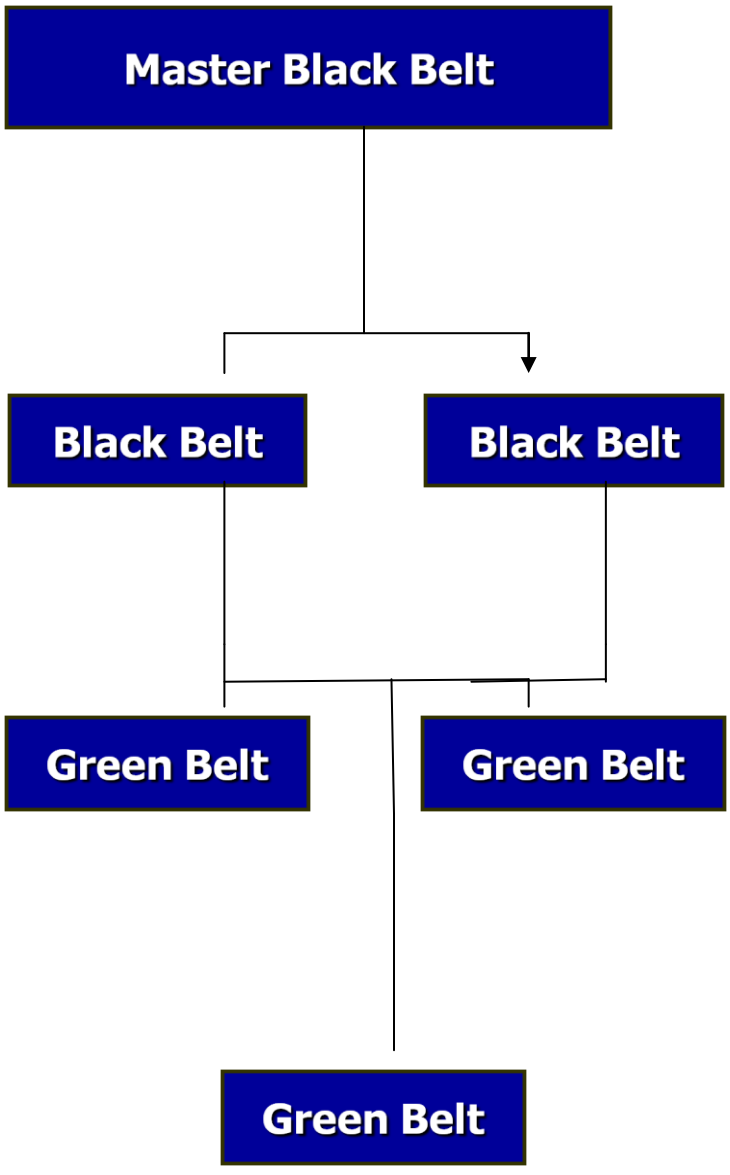
The Growth Of Six Sigma-GE the company that perfected Six Sigma

- Jack Welch launched Six Sigma at GE in Jan,1996
- 1998/99 - Green Belt exam certification became the criteria for management promotions
- 2002/03 - Green Belt certification became the criteria for promotion to management oles

SIX SIGMA – THE THREE DIMENSION



THE QUALITY TEAM

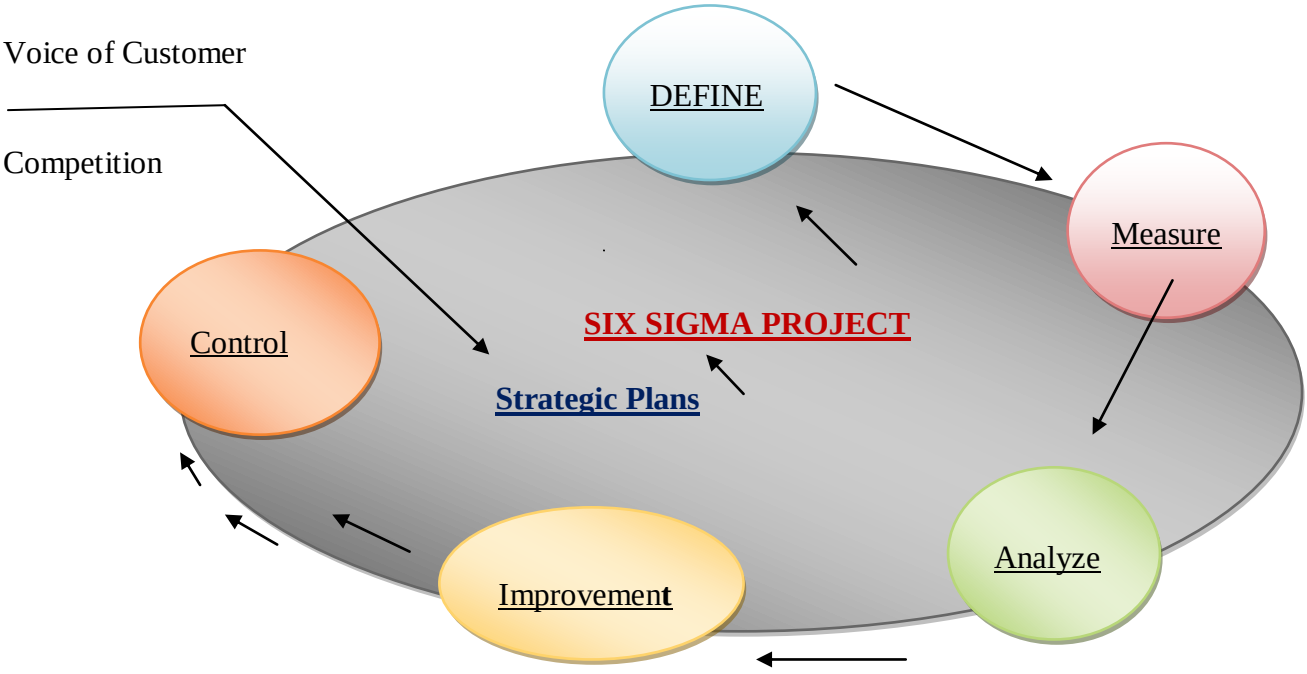


Thought Leadership
- Expert on Six Sigma
- Mentor Green and Black Belts

- Backbone of Six Sigma Org
- Full time resource
- Deployed to complex or "high risk" projects

Part time or full time resource
Deployed to less complex projects in areas of functional expertise

METHODOLOGY:



Combination of change management & statistical analysis=**DMAIC**

DMAIC – is

- A logical and structured approach to problem solving and process improvement
- An iterative process (continuous improvement)
- A quality tool with focus on change management

E (Effectiveness) = Q(Quality Improvement) * A(Acceptance)

THE APPROACH-:



DMAIC

D- Identify and state the practical problem

M- Validate the practical problem by collecting data

A- Convert the practical problem to a statistical one, define statistical goal and identify potential statistical solution

I- Confirm and test the statistical solution

C- Convert the statistical solution to a practical solution

DEFINE-

- **OBJECTIVE** = Main Objective it to reduced the discharged time of the patient from the hospital

DISCHARGE- After treatment in hospital, patient will be discharged when the consultant or health professional who is in charge of the care decides that you are well enough to leave.

The healthcare professionals will often involve you in planning your discharge. Patient will be able to discuss their needs, and how they will be met in order to ensure that the patient have everything that you need for a full recovery when you return home.

Medicare says discharge planning is "A process used to decide what a patient needs for a smooth move from one level of care to another." Only a doctor can authorize a patient's release from the hospital, but the actual process of discharge planning can be completed by a social worker, nurse, case manager or other person. Ideally, and especially for the most complicated medical conditions, discharge planning is done with a team approach.

In general, the basics of a discharge plan are:

- ***Evaluation*** of the patient by qualified personnel
- ***Discussion*** with the patient or his representative
- ***Planning*** for homecoming or transfer to another care facility
- ***Determining*** if caregiver training or other support is needed
- ***Referrals*** to home care agency and/or appropriate support organizations in the community
- ***Arranging*** for follow-up appointments or tests.

- **DESCRIPTION**

Hospitalization is often a short term event, special planning for discharge may begin shortly after admission. The physician, nurses, managers involved in improving the condition of patients and after the treatment given by the physician, the physician themselves decides whether the patient will be able to return home following the physician advices.

During the discharge process the primary question includes-:

- Can this patient return to his or her preadmission situation?
- Has there been a changed in the patient's ability to care for him/her?
- Is the patient in need of service to be able to care for him/her?

Good discharge planning involves clear communication between the hospital physicians and the primary care physician. this may be done by telephone and /or in writing .the information to be convey includes-

- A summary of the hospital stay
- A list of test and surgeries performed with results
- A list of test needed after discharged ,such as a repeat chest x- ray
- A list of medication the patient is being discharge with ,included the dosage and the frequency.

Before leaving the hospital, the patient will receive discharge instruction that should included-

- An explanation of the patient care the patient received in the hospital
- A list of medications the patient will be taking (the dosage ,times and frequency).
- A prescription for any newly prescribed medications
- When to see the primary care physician for follow up appointment
- Home care instruction such as activity level , diet , restrictions on bathing wound care , as well as when the patient can return to work to school , or resume driving.
- Sign of infection or worsening condition, such as pain, fever, bleeding difficulty breathing, or vomiting.
- An explanation of any services the patient will not be receiving, such as for a visiting nurse and to include contact information.

Discharge process can occur under four different conditions for which the process slightly varies. These are as under:

- **Normal Discharge**
- **Normal Discharge for a TPA patient**
- **Leave Against Medical Advice (LAMA)**
- **Discharge on request (D.O.R.)**
- **Discharge incase of Death.**

A **NORMAL DISCHARGE** is said to occur when the patient is to be discharge from the hospital on the advice of the expert consultant. The patient is now not under any medical treatment and is fit to go home, hence can be discharge from the hospital.

A **NORMAL DISCHARGE PROCEDURE FOR A TPA** patient differs slightly as the patient does not pay the bill but the TPA does. Usually a few more formalities have to be completed by the patient before he gets discharge.

LAMA is a case when the patient is discharge against the advice of the consultant. He is discharge as per his own wish and not as advised by the hospital. Hence he has to take full responsibility of himself and a consent form stating the same is to be signed.

DISCHARGE ON REQUEST (DOR) - is a state between the normal discharge and L.A.M.A. because of on threat of life and vital are almost stable. and doctor may fifty percent agree with some instruction.

DISCHARGE DURING A DEATH also has a process to be followed and formalities regarding the death have to be fulfilled by the attendants of the patient.

Ideally, the Discharge Process should be a planned process." Discharge Planning" is a term that is most commonly seen as a critical link between the treatment received in the hospital by the patient and the post discharge care provided in the community. It is said that

'Discharge ***does not begin on the day that the decision is made to send a patient home. It is not a single event. It is started till the time of admission.'***

- **MODE OF PAYMENT IN PARAS HOSPITAL:**

Which includes 2 types of payment-

CASH
TPA

- **CASH-**

In the cash mode of payment the patient party have to paid the full balance amount in the billing system .after the clearance the patient have to show the receipt to the nursing staff & after taking all handovers the from the nursing staff patient can leaves the hospital .

The handovers include -

Discharge summary & all his original reports is given to the patient and the photocopies of the document are send to medical record .

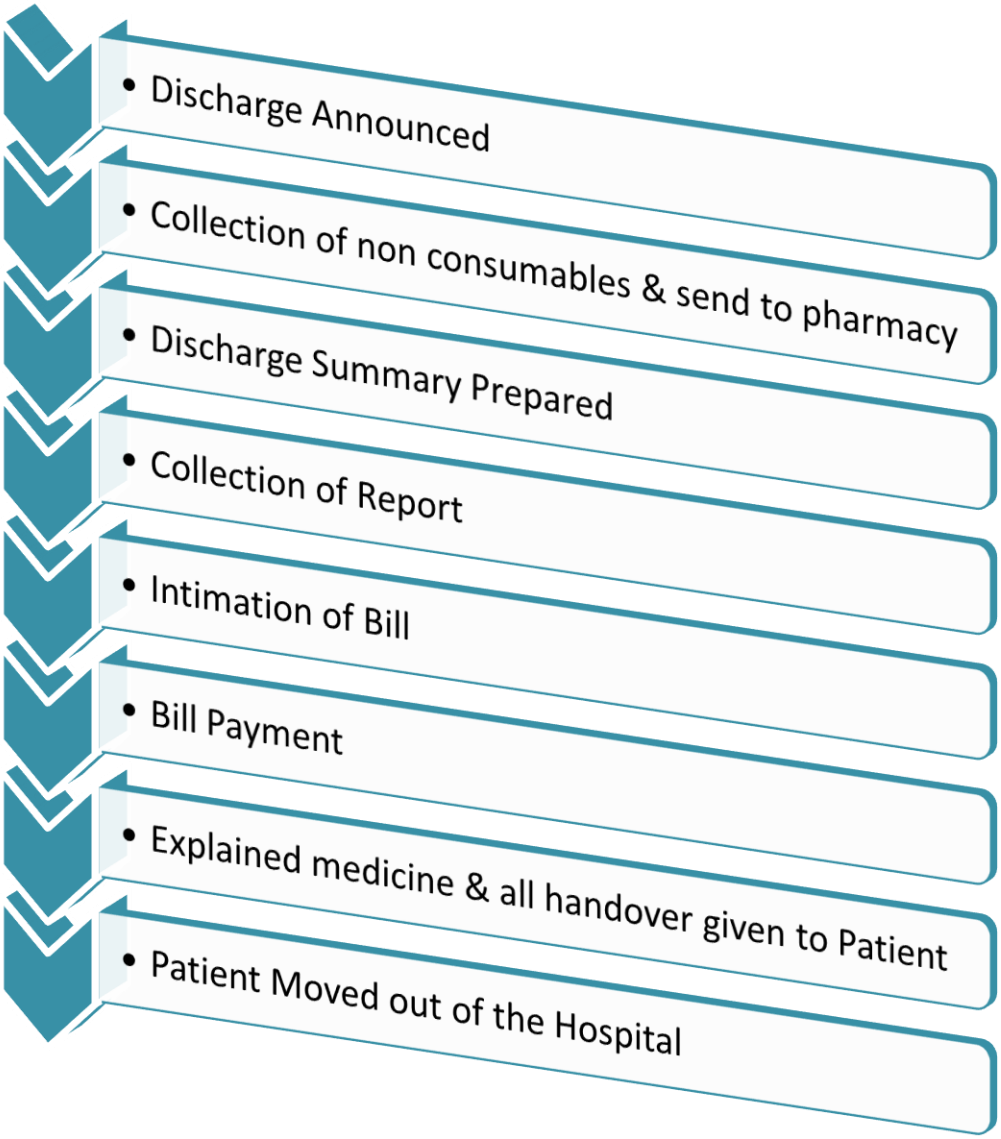
- **TPA-**

In this case TPA the discharge summary is been Fax to the empanel TPA for the final approval

After the final approval the patient is discharge & all the original are send to the medical record department & photocopy of the documents are given to the patient.

FLOW CHART-

- **CASH**



- **TPA-**


Discharge Announced by Doctor
Collect Non Consumed Medicine & send to Pharmacy
Discharge Summary Prepared
Report Collection From Lab
Discharge Summary Faxed To Concerned Tpa
Intimation Of Final Approval From TPA Desk
Explain The Medicine & Handover Given To The Patient
Patine Moved Out Of The Hospital

BASE LINE PERFORMANCE-how the current process is performing

- **Discharge Announced** =Is the written order given by the consultant to RMO after seeing the condition of the patient

- **Collection Of Non Consumables & Send To Pharmacy** = Is the Pharmacy which is kept unused is return to the IPD pharmacy with the activity sheet for the pharmacy clearance

- **Discharge Summary Prepared** = Prepared by the RMO which contained the course in the hospital & discharged medicines

- **Collection Of Report** = All the reports are collected from the radiology & be given at the time of discharge

- **Intimation Of Bill & Bill Payment** = Intimation of the Final bill is received through the phone call to the nursing staff & finally the bill is paid by patient / attended

- **Explained Medicine & All Handover Given To Patient** = Before leaving the hospital nursing staff explained the whole discharged medicine & gives all the document to the patient

- **Patient Moved Out Of The Hospital** = finally patient moved out of the hospital

- **Define Process By Its Starting Time & Its End Time** = It's the total time taken starting from the discharge announced till patient moved out of the hospital

Determine the DPMO-

It is the measurement to calculate how many defects will occur for every million opportunities.

There may be several opportunities to produced the defect within each unit of services

Formula-

DPO- defects/opportunities *100

DPMO=DPU * 1000,000.

- **Cost Of Poor Quality Of Services -** Max no. of defects shows the poor quality of services from which we lost revenue in the form of non availability of bed if the discharge time is not proper

MEASUREMENT

- **DEVELOPED THE DETAILED PROCESS MAP-** For this we developed the process that have to study to expose opportunities & defects.

    - **Discharge Announced**
    - **Collection of non consumables & send to pharmacy**
    - **Hand Written Discharge Summary Prepared**
    - **Final Discharge summary**
    - **Intimation of Bill , Bill Payment**
    - **Patient Moved out of the Hospital**

- **VERIFY THE ACCURACY OF DATA**- We used the TAT to ensure gag accuracy & simply compare the GAG Variation to the process variation & product tolerance

- **<u>CRTERIA TAKEN MEASUREMENT OF DATA ARE-</u>**

TAT cash=2 hr

TAT for TPA=5 hr

- **Discharge Announced=x1**
- **Collection of non consumables & send to pharmacy=x2(TAT=10 min)**
- **Hand Written Discharge Summary Prepared=x3(TAT=20 min)**
- **Final Discharge summary=x4=(TAT=45 min)**
- **Intimation of Bill , Bill Payment=x5 (TAT=20 min)**
- **Patient Moved out of the Hospital=x6 (TAT=15min)**

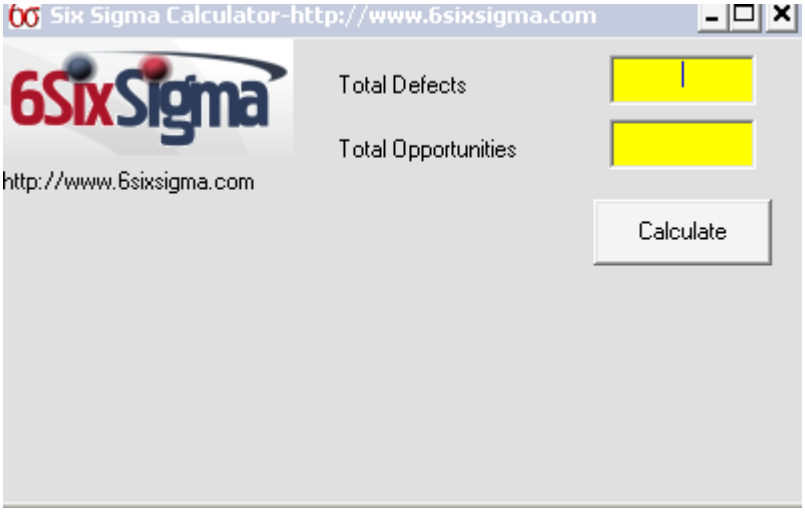
- **Total Time Taken-: X=(x1-x5)=2hr/5hr**

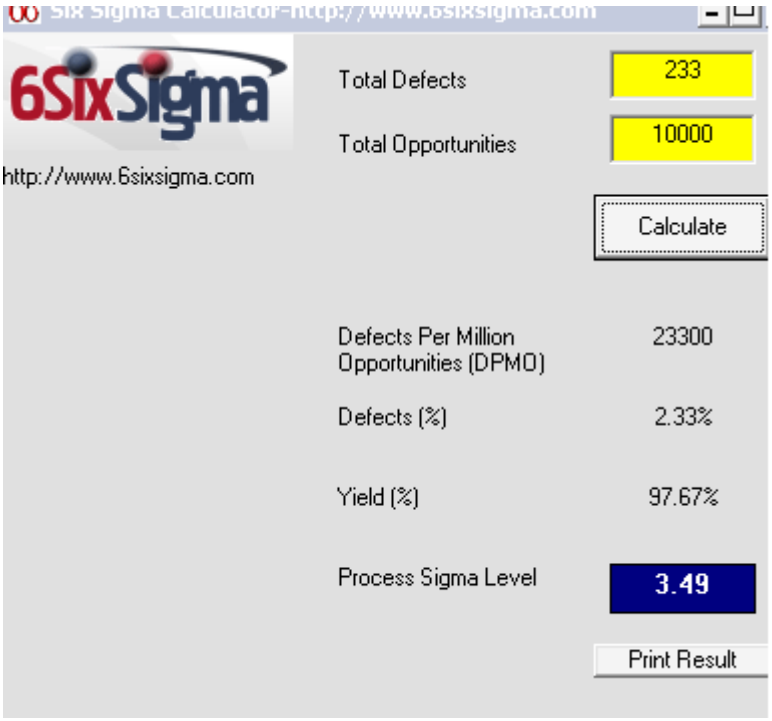
OBSERVATION & FINDINGS

- **CALCULATE THE SIGMA-**

We calculate the UNIT DEFECT (DPMO), to determine the sigma level of the process .

By using the sigma calculator- [www.6sixsigma .com](http://www.6sixsigma.com)

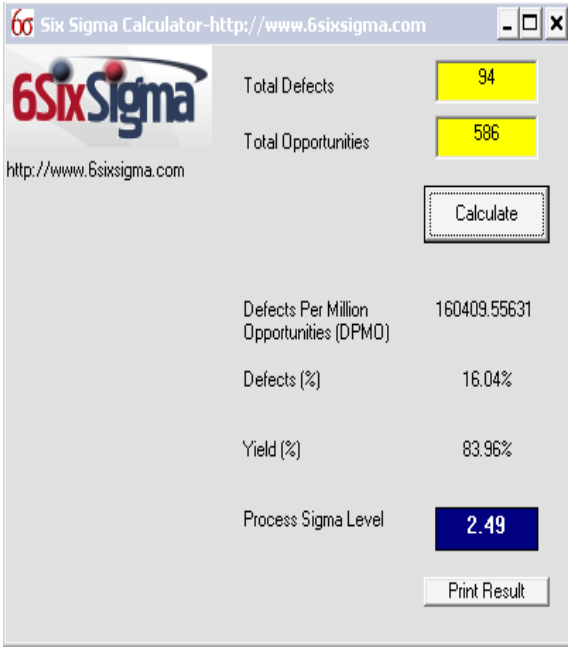




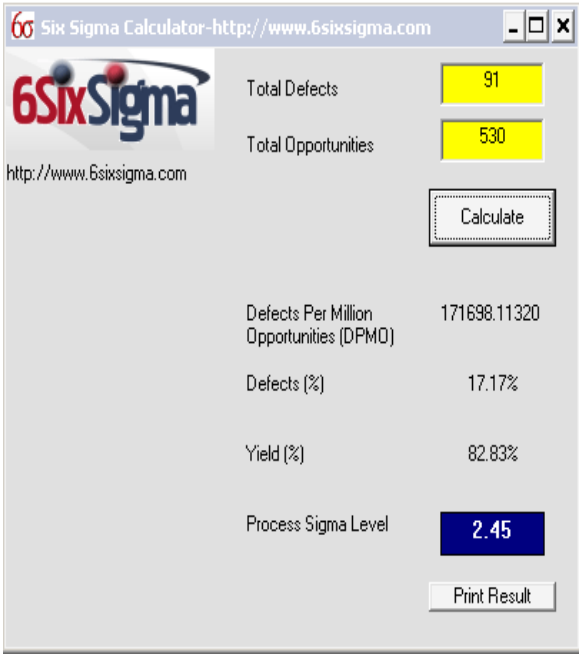
VISUAL DATA-Graphical representation of Data -

Total Defects & Opportunities in Doctor Announced & Pharmacy Return is shown in - Fig-1

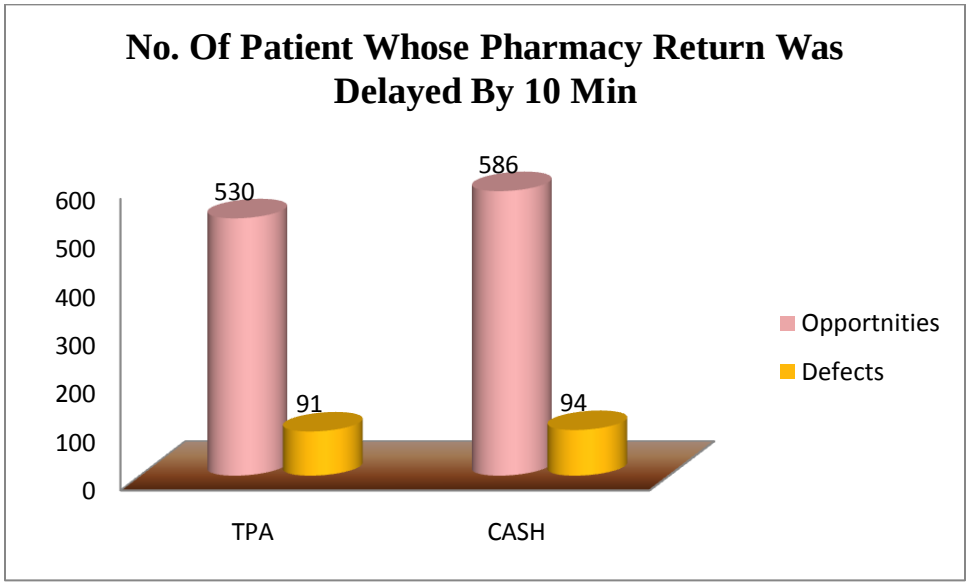
CASH



TPA



The Delay In Pharmacy Return After Doctor Announced The Discharge Beyond TAT (10 MIN) - Is Shown In –Fig 1.1



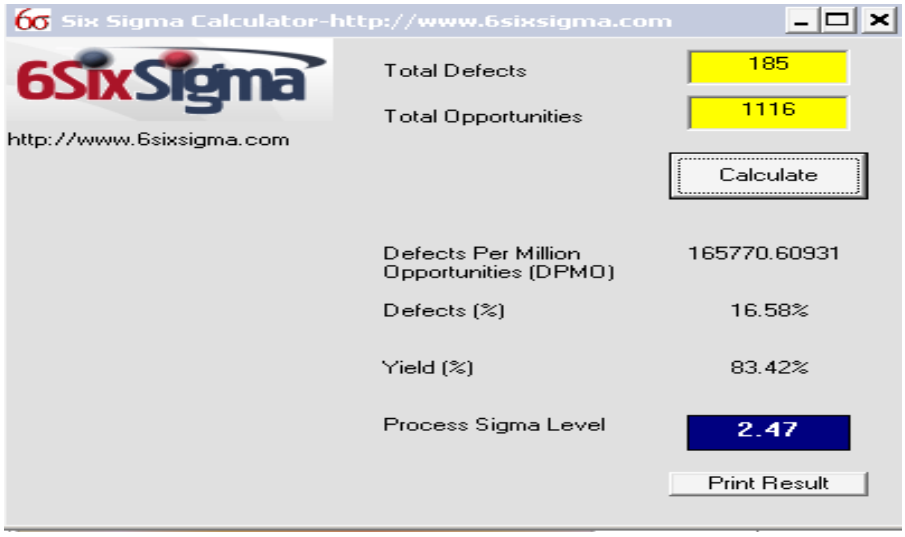
In this we have taken the subsection between the doctor announced the discharge & pharmacy return takes place. The time taken should be 10 min (TAT)

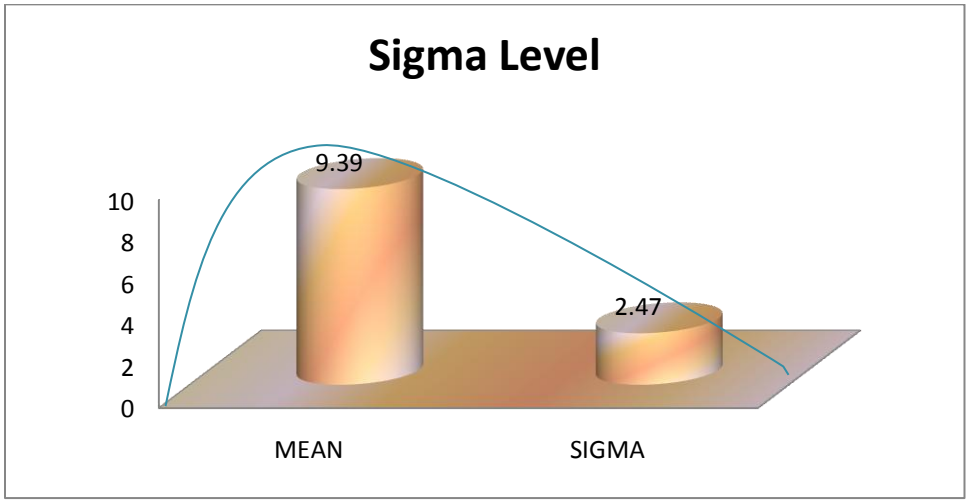
No of patient taken from TPA Category is 530 (**82.45%)** & from cash is 586 **(83.04%)** from which 91 (**17.55%)** & 94 **(16.04%)** patients are delay in sending their pharmacy return on time from TPA mode & cash mode. Their time may exceed up to 20 min which is shown in Annexure

Reason of delay is-no AAYA is available at that time to return the pharmacy

Large no. of medicines which take more time to write an indent

Sigma Level- for Doctor announced the discharge & pharmacy send is shown in Fig-1.2

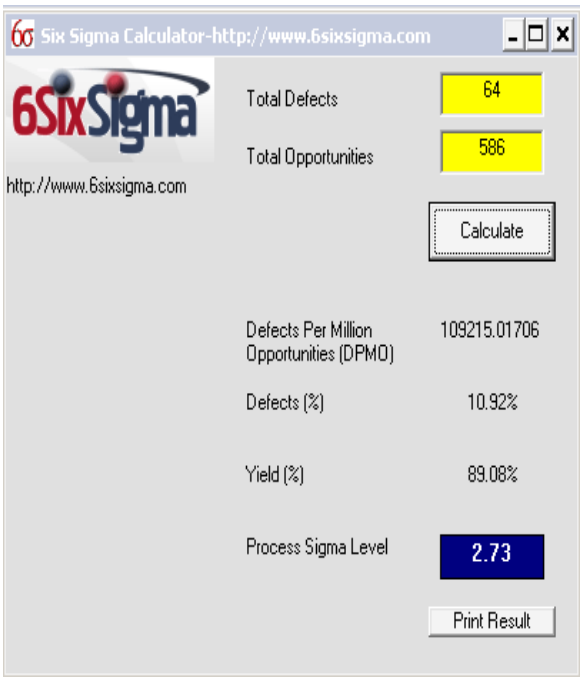


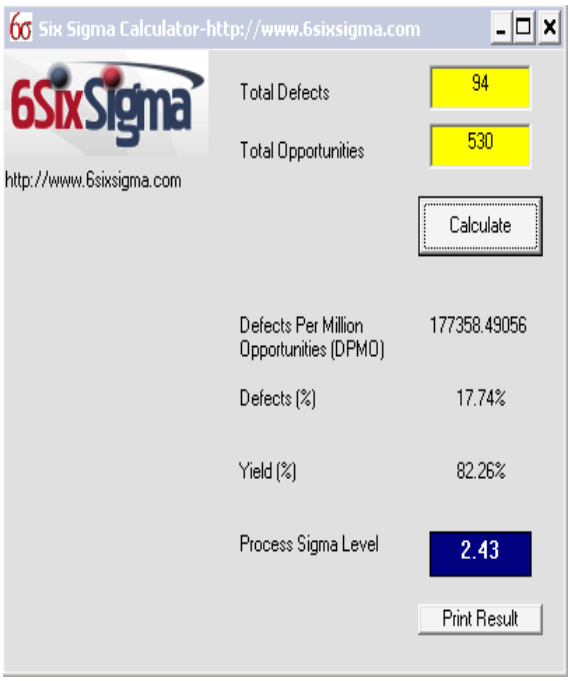


The sigma level is found out by using the six sigma calculator – Total no. of patient is 1116 (both TPA & cash) , from which 185 patients are whose pharmacy returned was not done on time (TAT=10 min). The average time taken is 9.39 min & sigma comes out to be 2.47

Total Defects & Opportunities in pharmacy send & Preparation of Hand Written Discharge Summary- is shown in Fig-2

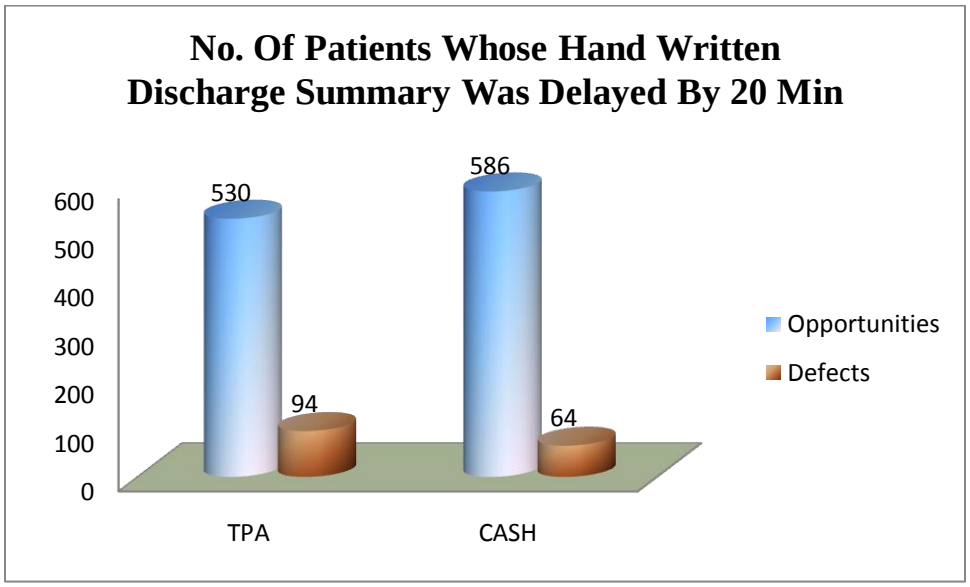
CASH **TPA**





The Delay In Preparation Of Hand Written Discharge Summary After The Pharmacy Send Beyond TAT (20 MIN)

Is shown in –Fig 2



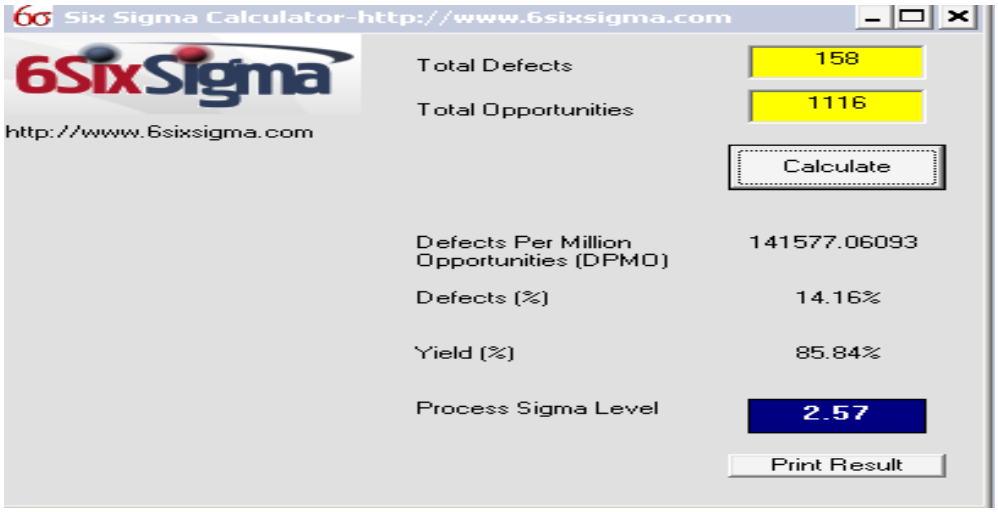
In this we have taken the subsection between the pharmacy send & preparation of hand written Discharge Summary .The time taken should be 20 min (TAT)

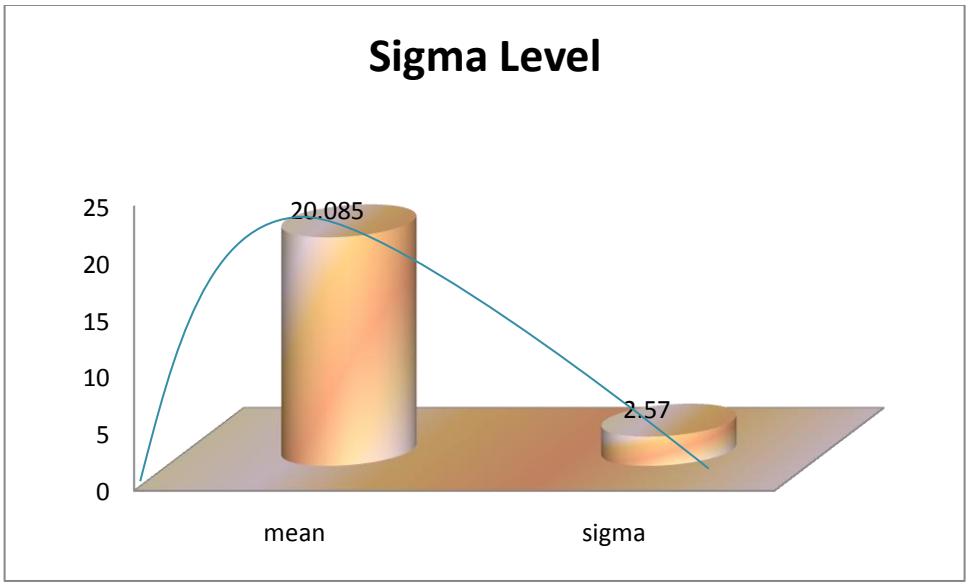
No of patient taken from TPA Category is 530 (**82.45%)** & from cash category is 586 **(83.04%)** from which 94 (**17.74%)** & 64 **(10.92%)** patients are there whose Discharge summary was not prepared on defined time. Their time may exceed up to 40 min which is shown in Annexure

Reason of delay is-RMO are busy with new admission

No TPA form

Sigma Level-For Pharmacy Send & Preparation of Hand written Discharge summary is shown in Fig- 2.2



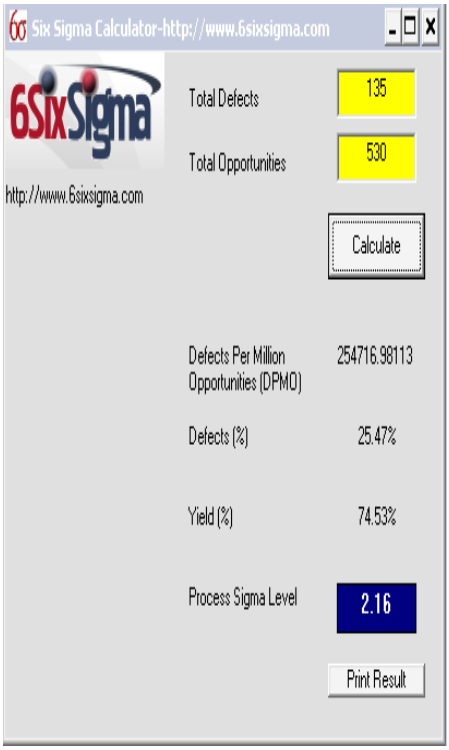


The sigma level is found out by using the six sigma calculator – Total no. of patient is 1116 (both TPA & cash) , from which 158 patients are e whose hand written Discharge summary was not prepare on time (TAT=20 min). The average time taken is 20.085 min & sigma comes out to be 2.57

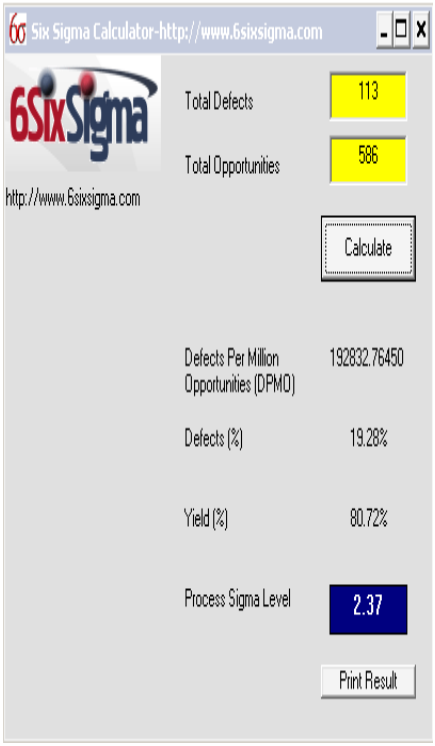
Total Defects & Opportunities in Preparation of Hand written Discharge summary & Final Discharge Summary

Is shown in Fig 3

TPA

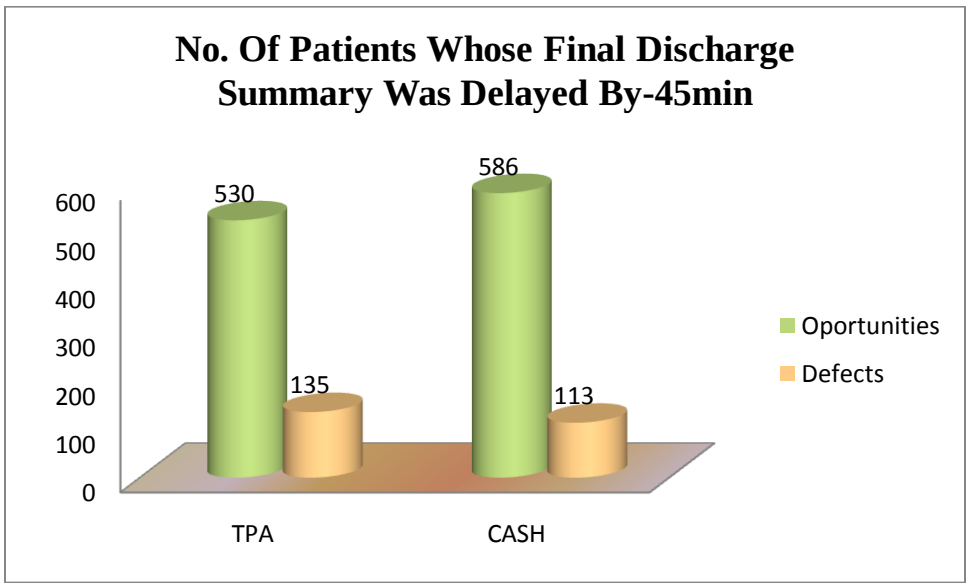


CASH



The Delay In Preparation Of Final Discharge Summary After The Completion Of Hand Written Discharge Summary Beyond TAT (45 MIN)

Is shown in –Fig 3.1



In this we have taken the subsection between the preparation of Final Discharge Summary &hand written Discharge summary .The time taken should be 45 min (TAT) No of patient taken from TPA Category is 530 (**82.45%)** & from cash is 586 **(83.04%)** from which 135 **(25.47%)** & 113 **(19.28%)** patients are there whose final Discharge summary was not prepared on defined time.

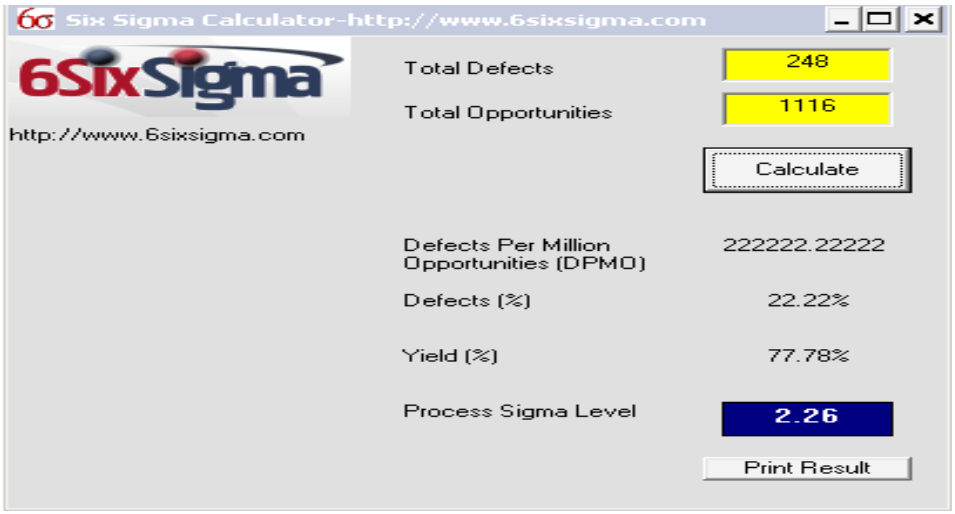
Their time may exceed up to 1:10 min which is shown in Annexure

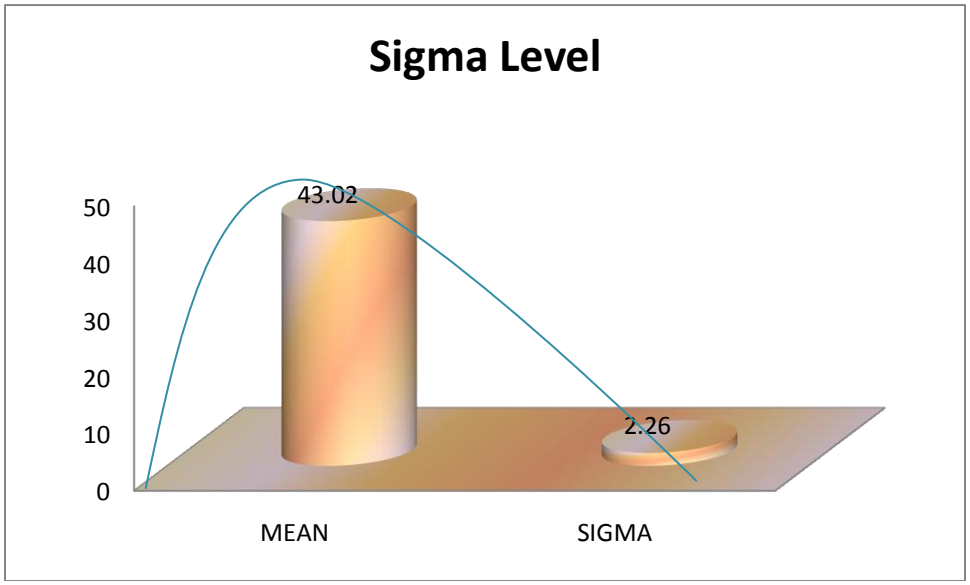
Reason of delay is- Single MT

IT problem

Sigma Level-For Preparation Of Hand Written Discharge Summary & Final Discharge Summary

Is Shown In Fig-3.2



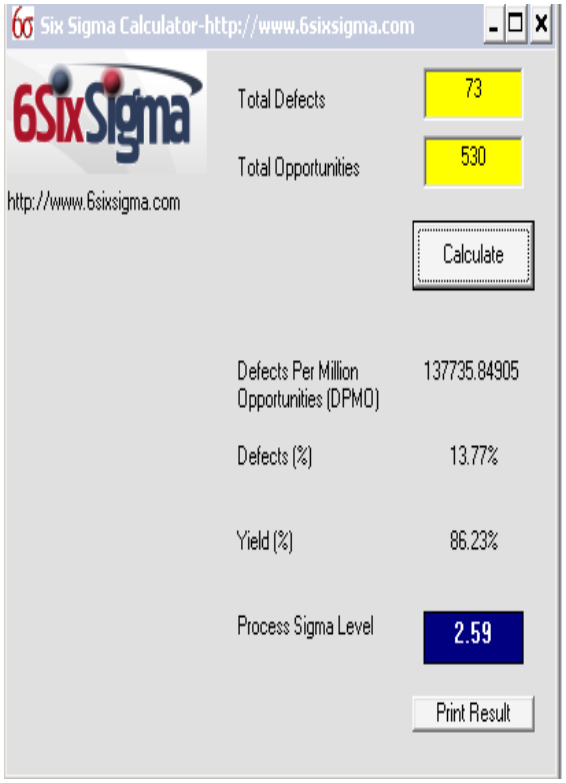


The sigma level is found out by using the six sigma calculator – Total no. of patient is 1116 (both TPA & cash) , from which 248 patients are there whose Final Discharge summary was not prepare on time (TAT=45 min). The average time taken is 43.025 min & sigma comes out to be 2.26

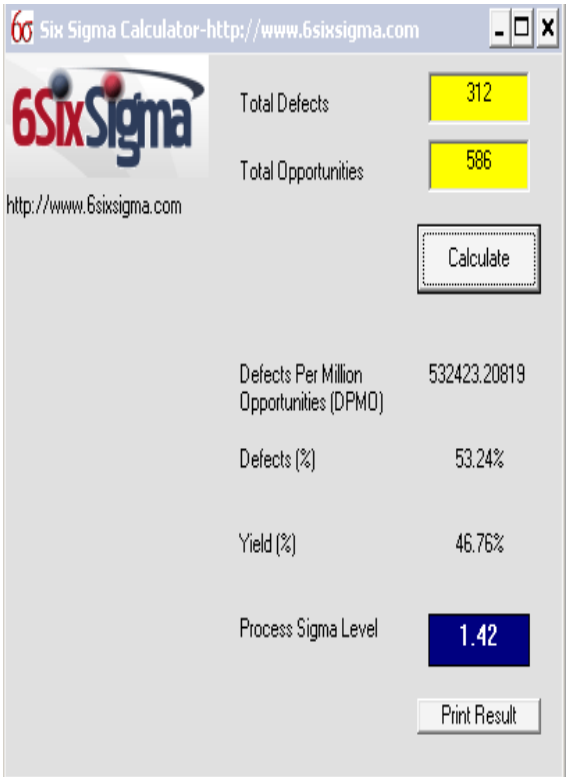
Total Defect & Opportunities For Intimation Of Bill & Patient Moved Out Of The Hospital

Is shown in Fig-4

TPA

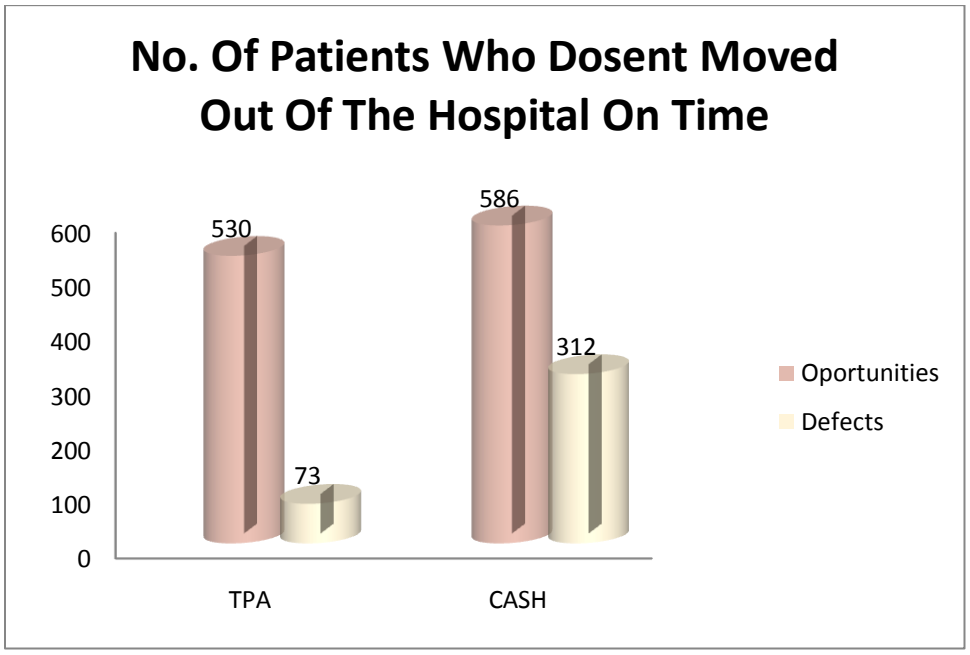


CASH



The Delay In Patient Physically Moved Out Of The Hospital Summary After The Intimation Of Bill Beyond TAT (3:00hr TPA &30 MIN IN Cash)

Is shown in Fig- 4.1

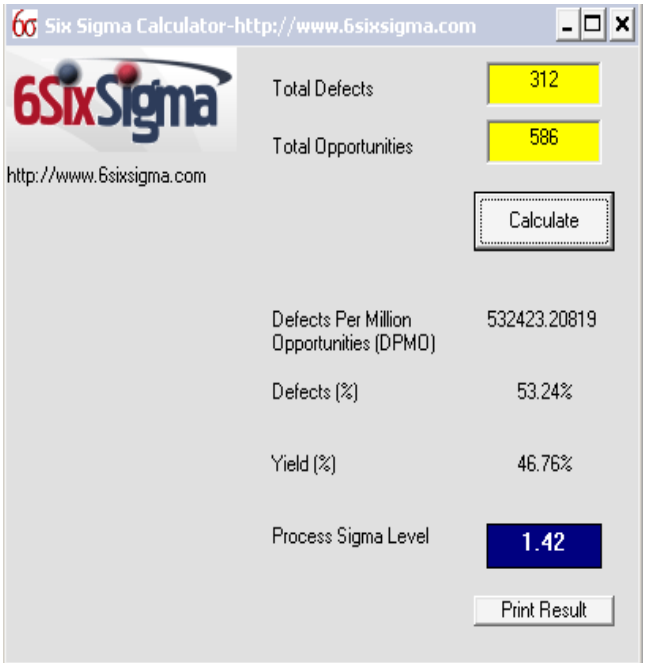


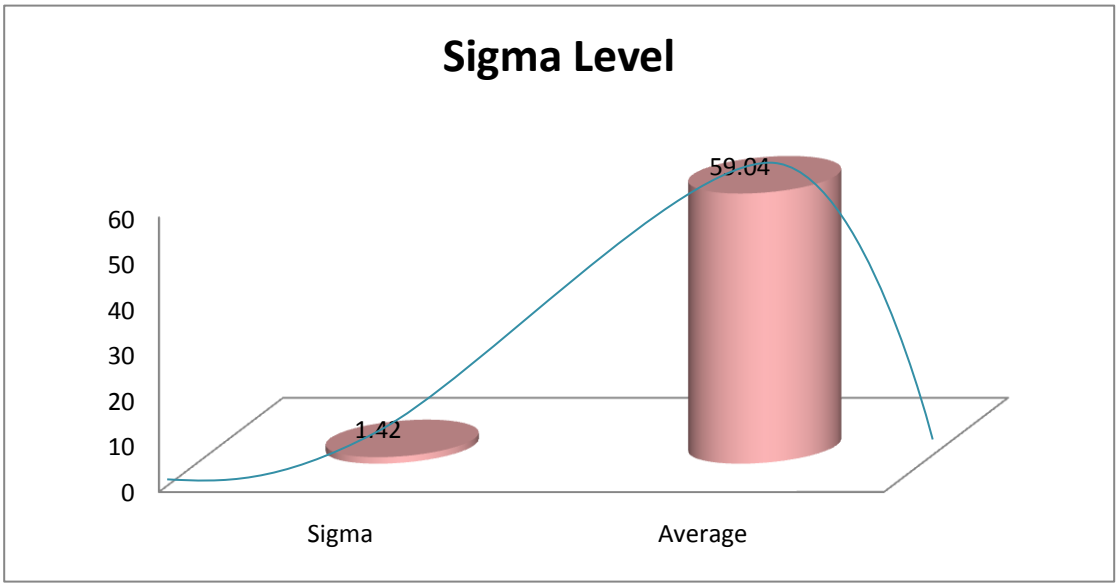
In this we have taken the subsection between the physically patient moved out of the hospital & intimation of Final bill .The time taken should be 3:00hrs in TPA & 30 min in CASH (TAT) No of patient taken from TPA Category is 530 (**86.23%)** & from cash is 586 (**47.76%)** from which 73 **(18.77%)** & 312 **(53.24%)** patients are there who doesn't went out at the defined time. Their time may exceed up to 5:oo hr in TPA & 2:00 hr in cash min which is shown in Annexure

Reason of delay is - no Attendant is present to pay
NO transport

Sigma Level- For Patient Moved Out Of The Hospital (Cash)

Is Shown In Fig-4.2(A)

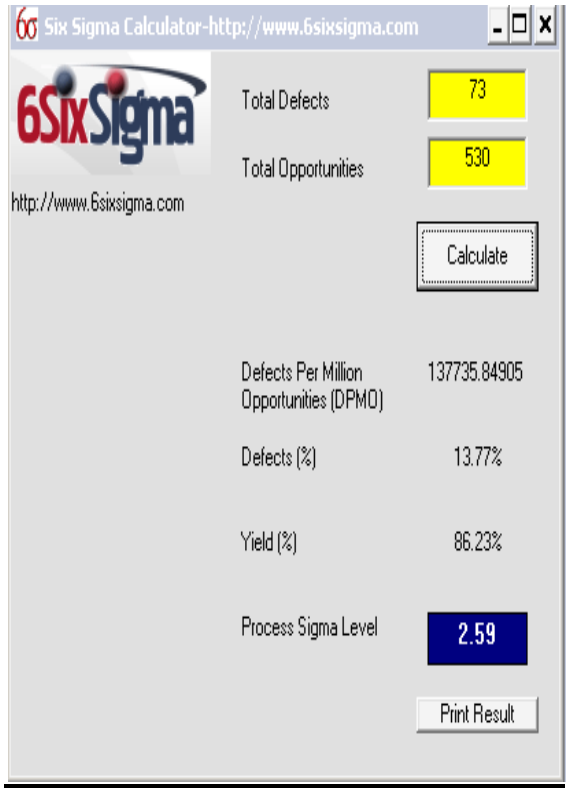


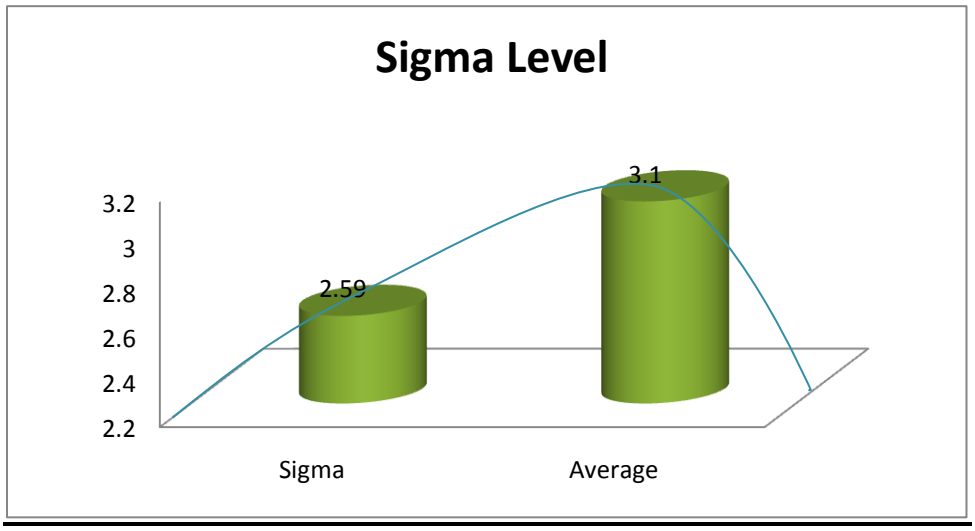


The sigma level is found out by using the six sigma calculator – Total no. of patient is 586 (cash) , from which 312 patients are there who doesn't moved out from the hospital on the defined time (TAT=30 mins)The average time taken is 59.04min & sigma comes out to be 1.42

Sigma Level- For Patient Moved out of the Hospital (TPA)

Is shown in Fig-4.2 (b)

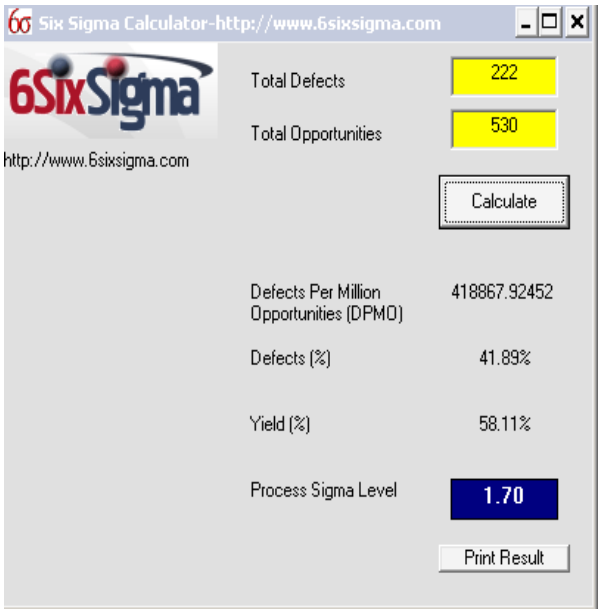




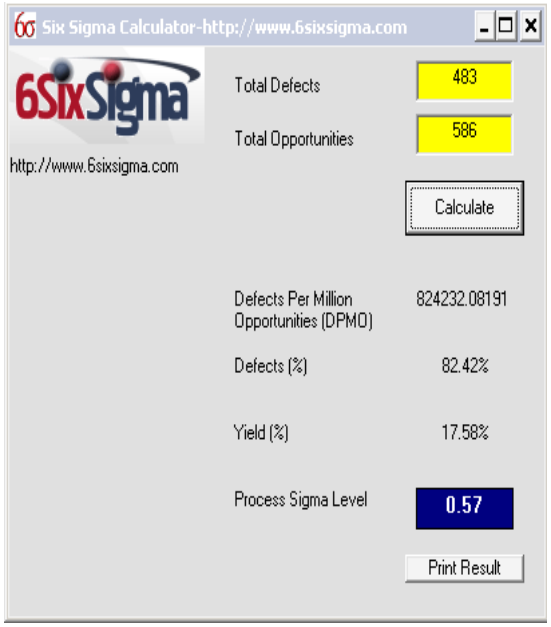
The sigma level is found out by using the six sigma calculator – Total no. of patient is 530(TPA) , from which 735 patients are there who doesn't moved out from the hospital on the defined time (TAT=3:00hrs). The average time taken is 3:10min & sigma comes out to be 2.58

Defects &Opportunities in Total Time Taken In Discharge Process- is shown Fig-5

TPA

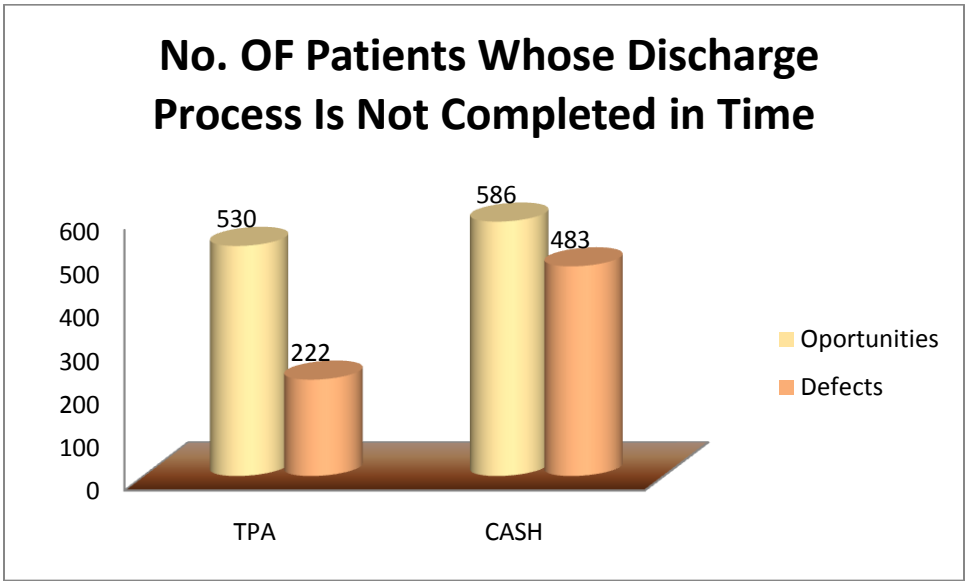


CASH



The delay in the Total Discharge process – beyond the TAT (2 :00 hrs in cash & 5:00hrs in TPA)

(time at which doctor announced the discharge & patient physically moved out of the hospital)



In this we have taken the whole process between the physically patient moved out of the hospital & doctor announced the discharge The time taken should be 5:00hrs in TPA & 2:00hrs CASH(TAT)

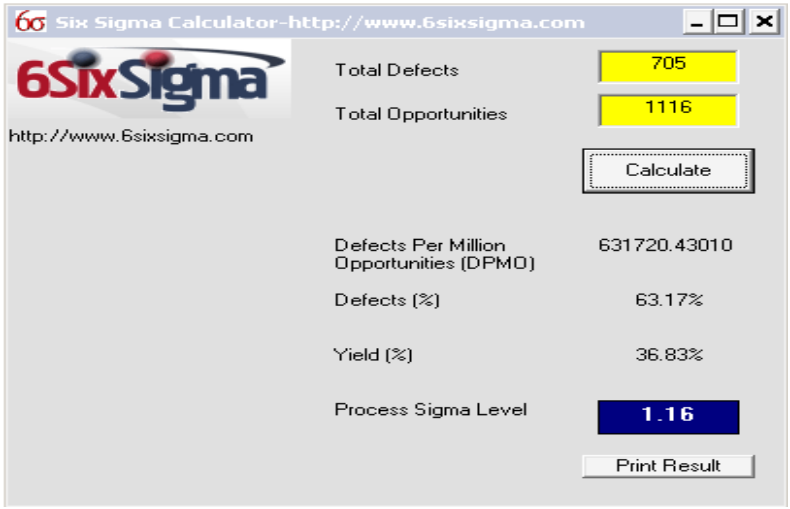
No of patient taken from TPA category is 530 (**58.11%)** & from CASH is 586 (**17.58%)** from which 222 **(41.89%)** & 483 **(82.42%)** patients are there who doesn't went out of the hospital on the defined time.

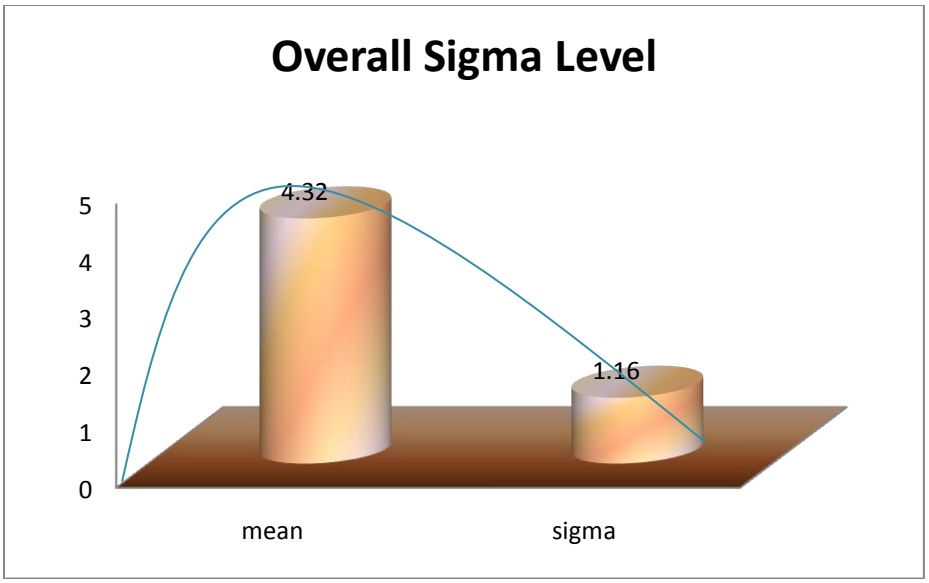
Their time may exceed up to 8:oo hr in TPA & 5:00 hr in CASH which is shown in annexure

Reason of delay is- No MT

Doctor are busy in rounds etc

Sigma Level- For Total Time Taken In Discharge Process- Is shown in Fig-5.2





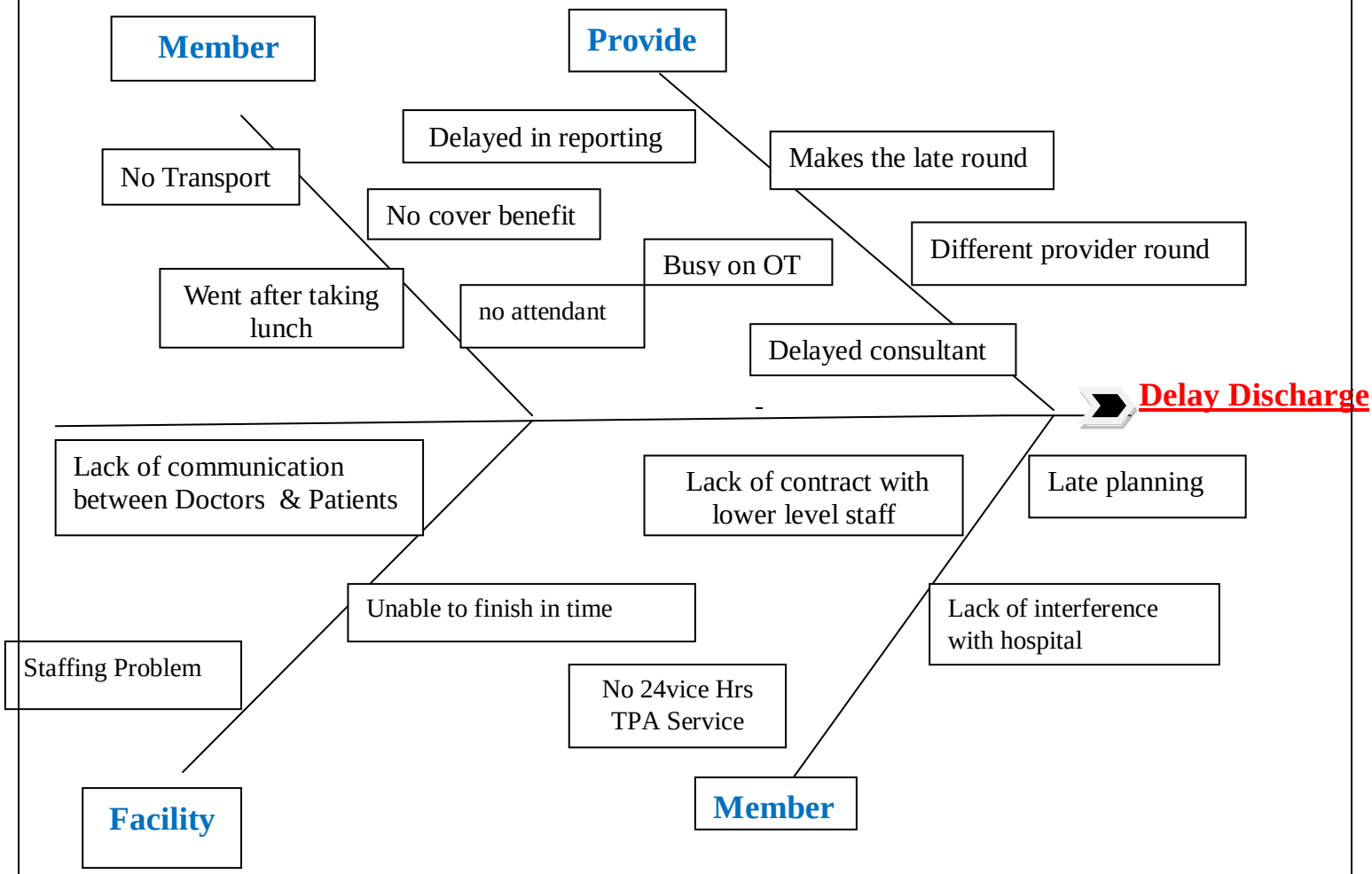
The sigma level is found out by using the six sigma calculator – Total no. of patient is 1116 (both TPA & cash) , from which 705 patients are there who doesn't moved out from the hospital on the defined time (TAT=5:00hrs in TPA & 2:00HRS IN CASH). The average time taken is 4.025 min & sigma comes out to be 1.16

ANALYSING PHASE-

TEST OF THE SIGNIFICANT FACTORS-ROOT CAUSE ANALYSIS

FISH BONE

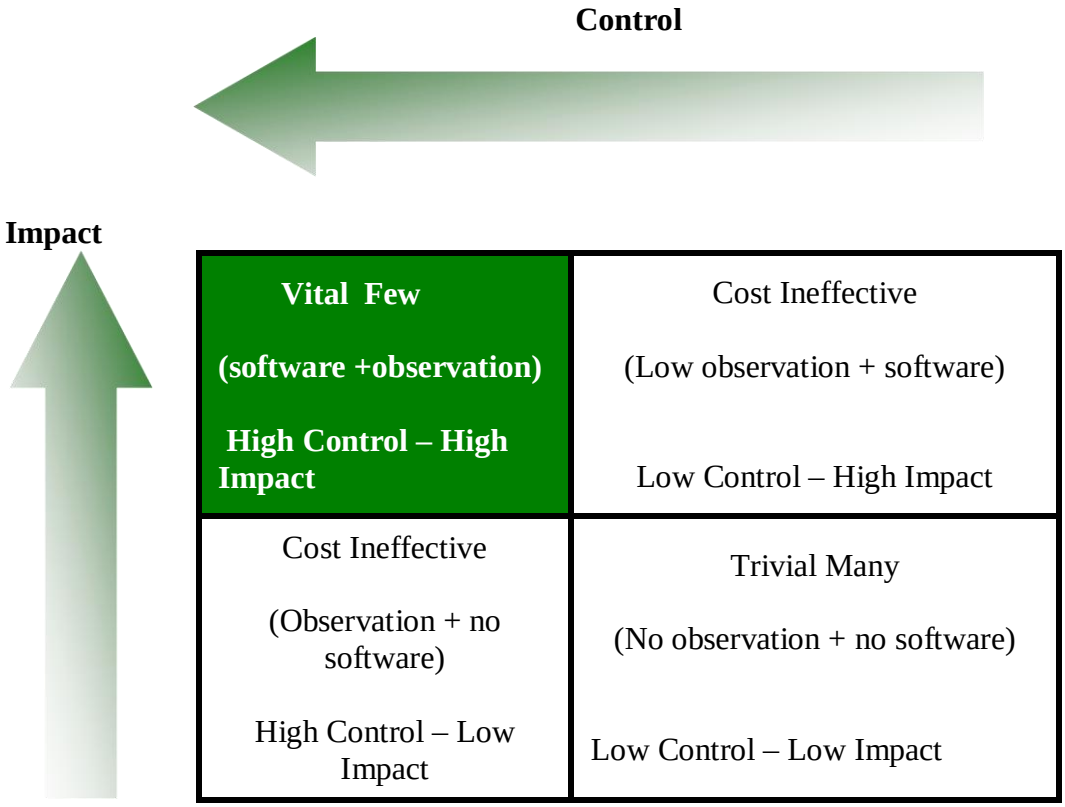
- A brainstorming tool that helps define and display major causes, sub causes and root causes that influence a process
- Visualize the potential relationship between causes which may be creating problems or defects



REASONS-

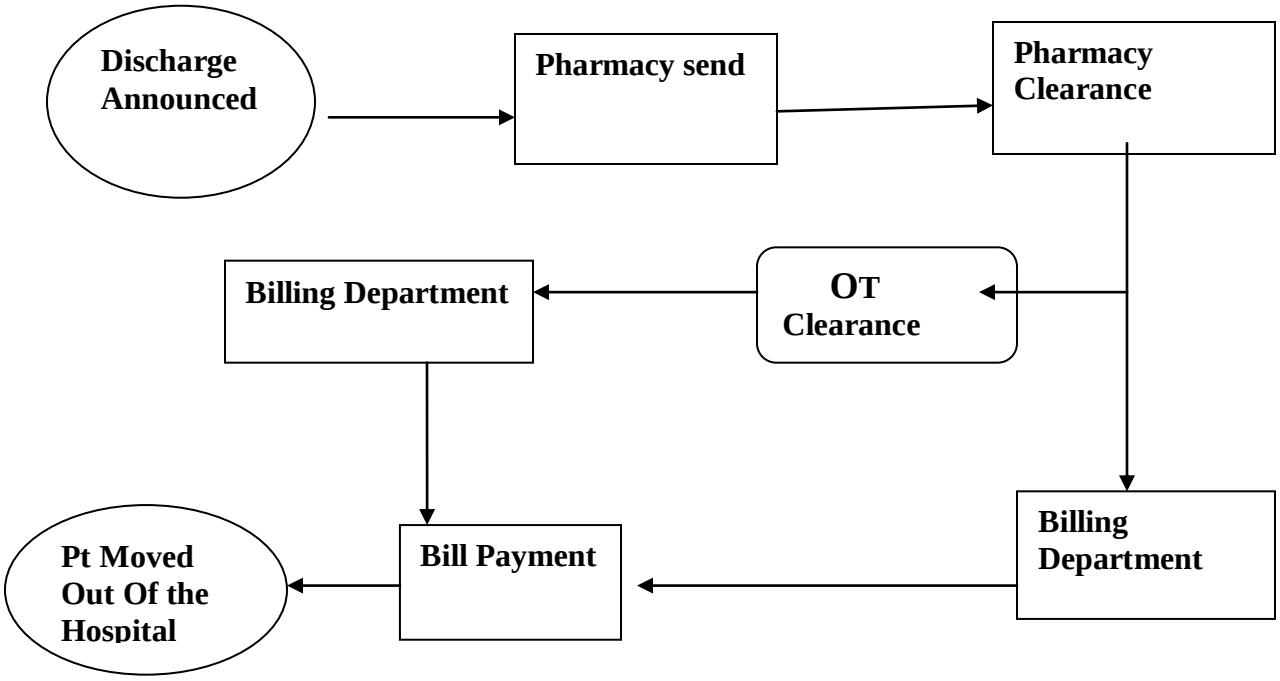
1. Doctors Are On Round
2. Single MT
3. Number Of Times Correction
4. No Aaya
5. RMO Is Busy With Admission
6. No Attendant To Pay
7. Patient Went After Taking Lunch
8. No Tentative Discharges
9. Doctor Are Busy In OT
10. More Pharmacy To Be Return
11. Same Time Room Allotment
12. IT Problem
13. Delayed In Reporting
14. Attendant Went Out For Arrangement
15. Waiting For The Vehicle
16. Aaya Is Taking 2 Hrs For Medicine Returns
17. Due To Some Of The Disputes
18. Activity Takes 2-3 Hrs To Reached The Billing
19. Single RMO In 20-25 Patience
20. Neuroscience Summary Takes Longer Times

IDENTIFY TO VITAL FEW TO CORRECT THE PROBLEM



Map Analysis

- Visually highlights hand off points / working relationships between people, processes and organizations
- Helps identify rework loops and non value add steps



IMPROVEMENT

After doing the root cause analysis we found the various manner to solve the trouble-

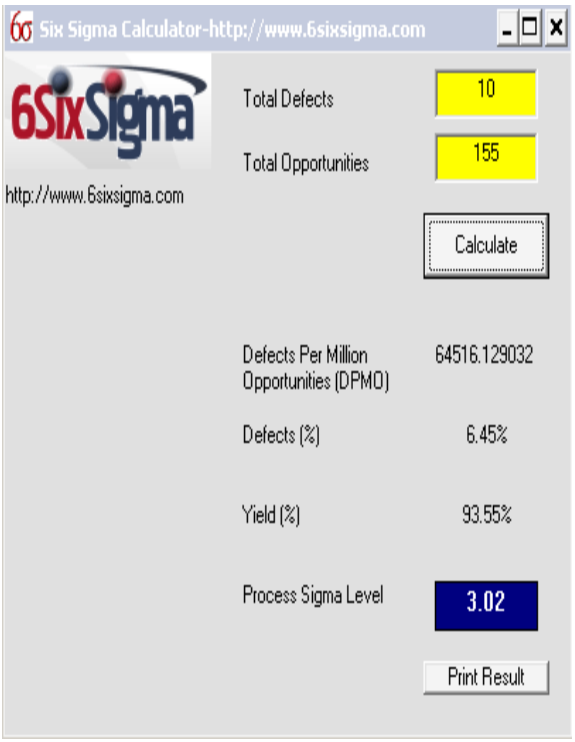
- Implementation of online pharmacy
- Hiring of the staff
- Scheduling the time of MT
- All the Activity sheet will not go for the OT clearance
- Preparation of Tentative discharges
- Before hand collection of all the reports
- Improve the communication between doctors nurse & patients
- Special training should be given to the staff
- Good coordination in between the all the departments
- An Official Protocol is made for Discharge process

RESULTS-

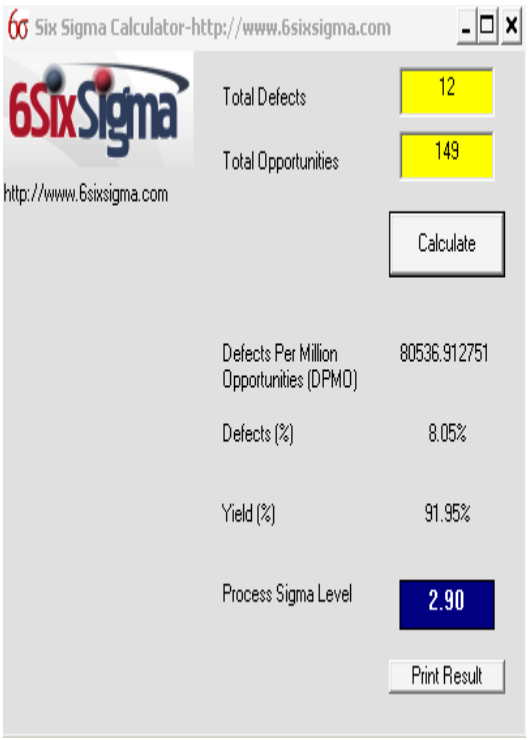
Total Defects & Opportunities In Pharmacy Return After Applying The Corrective Measures-

Is Shown In Fig -1

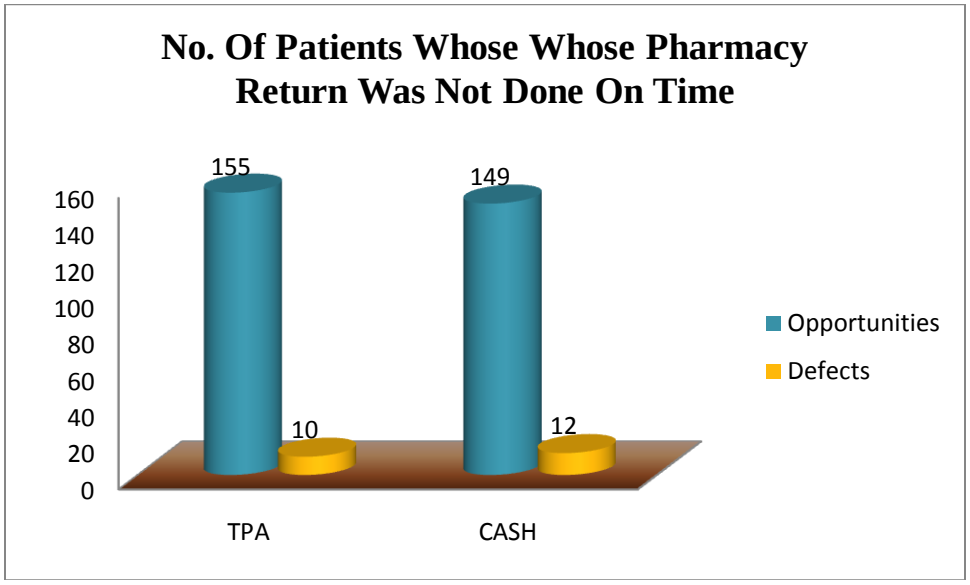
TPA



CASH



Delay In Pharmacy Returns After Applying The Corrective Measure – Is Shown In Fig-1.1



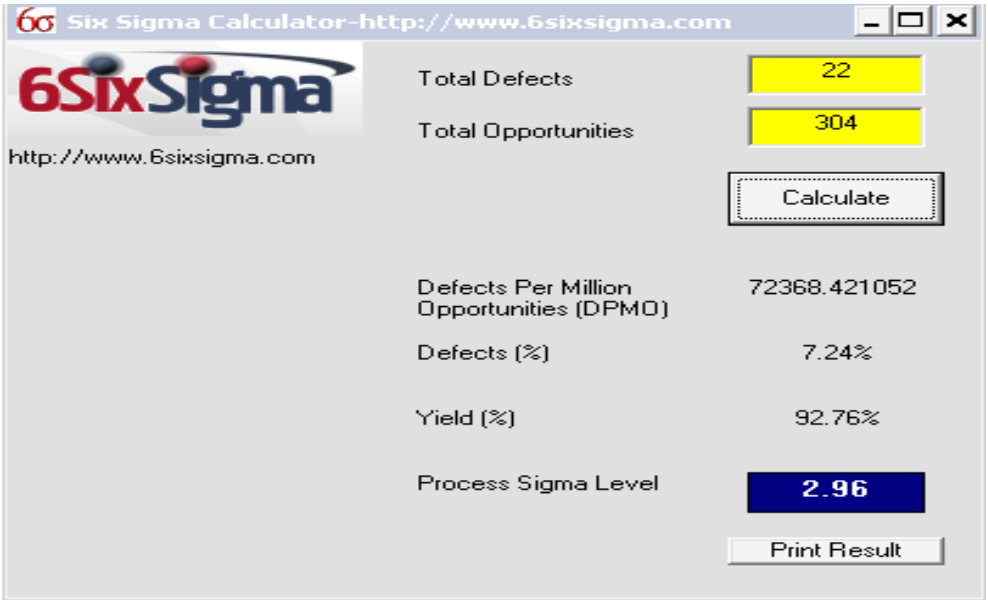
After applying the corrective measures the no of patients whose pharmacy return was not done on time(10 min) was reduced to 10 (**6.45%)** out of 155 **(93.55%)**patient from TPA Category & 12 (**7.38%)** from 149 patients from Cash category

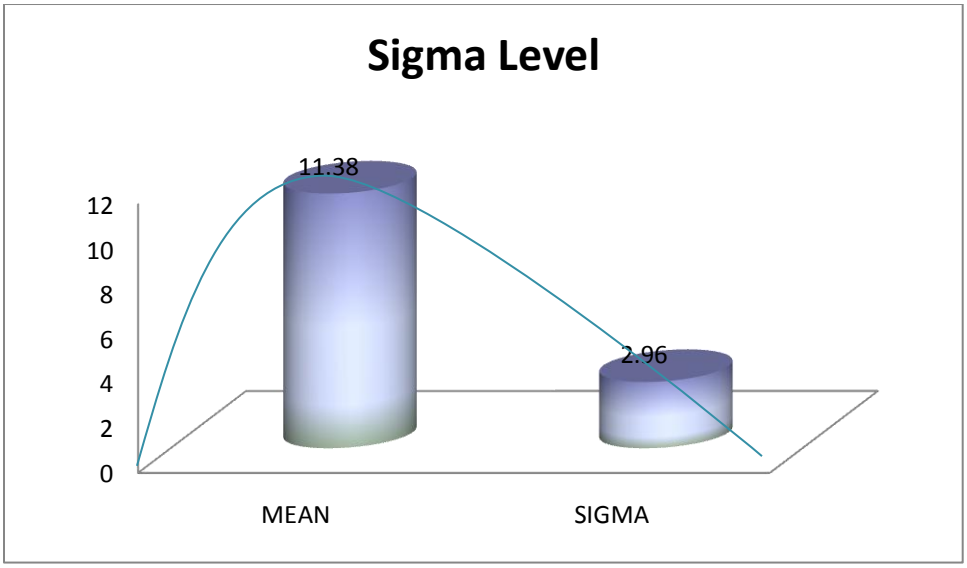
Corrective Measures- Making of Tentative Discharges

Starting of Online Pharmacy

Sigma Level for Delay in Pharmacy Returns

Is shown in Fig-1.2





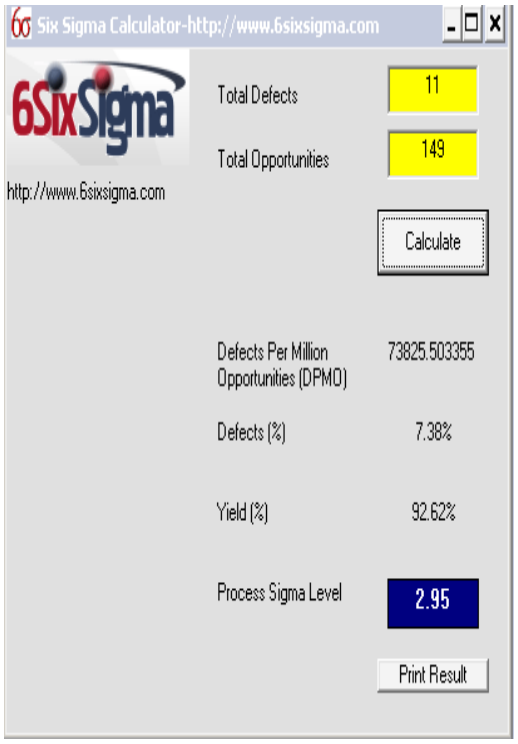
Sigma level for pharmacy returned increased from 2.47 to 2.96 after applying the six sigma technique

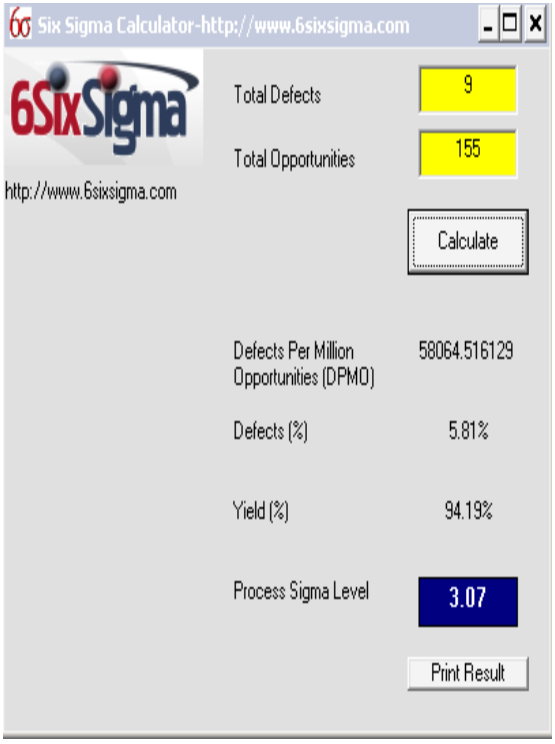
Total Defects & Opportunities In Preparation Of Hand Written Discharge Summary After Applying The Corrective Measures

Is Shown In Fig -2

TPA

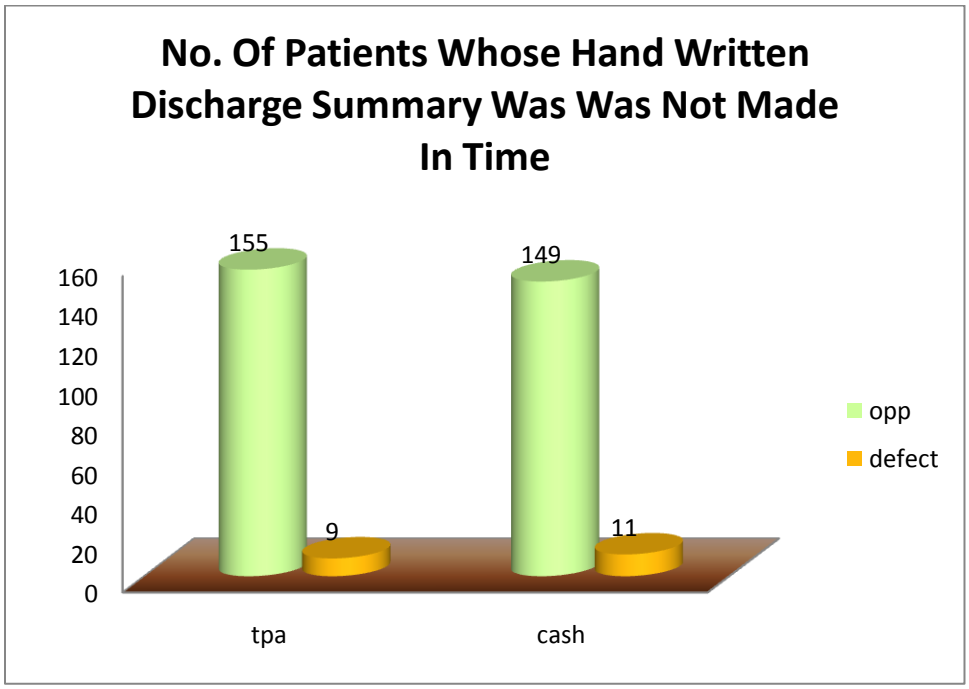
CASH





Delay In Preparation Of Hand Written Discharge Summary After Applying The Corrective Measure –

Is shown in Fig-2.1



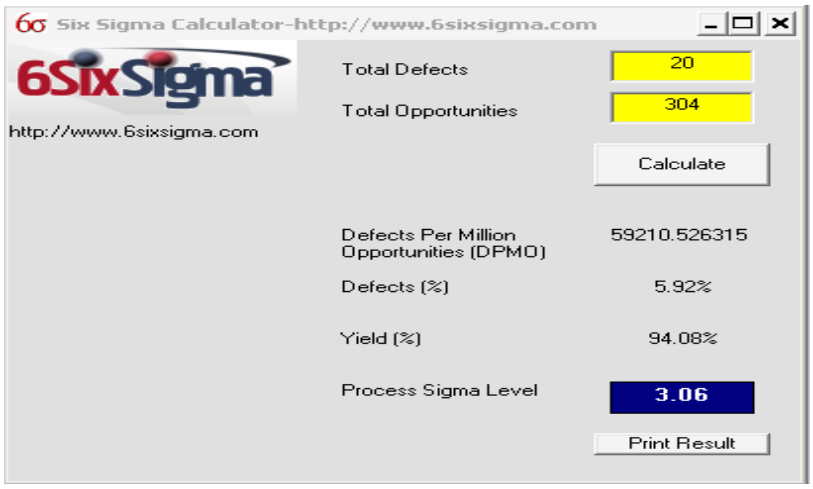
After applying the corrective measures the no of patients whose hand written discharge summary was not made on time(20 min) was reduced to 9**(5.81%)** out of 155 (**94.19%)** patient from TPA Category & 11**(7.38%)** from 149 (**92.62%)**patients from Cash category

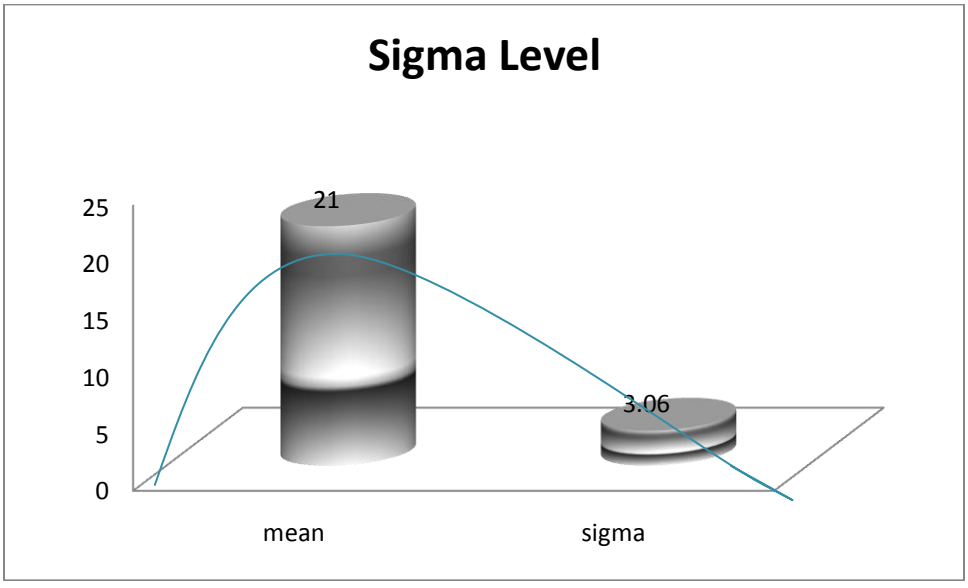
Corrective Measures- Making of Tentative Discharges

Hiring of Staff

Sigma Level In Delay In Preparation Of Hand Written Discharge Summary

Is Shown In Fig-2.2



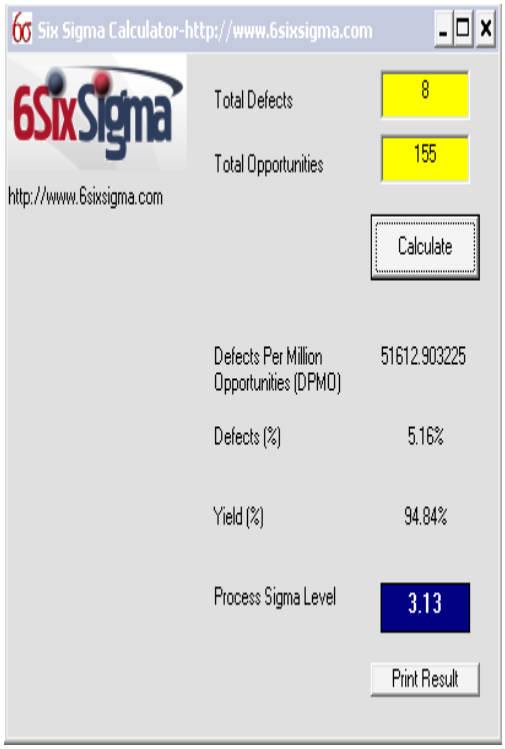


Sigma level for pharmacy returned increased from 2.57 to 3.06 after applying the six sigma technique

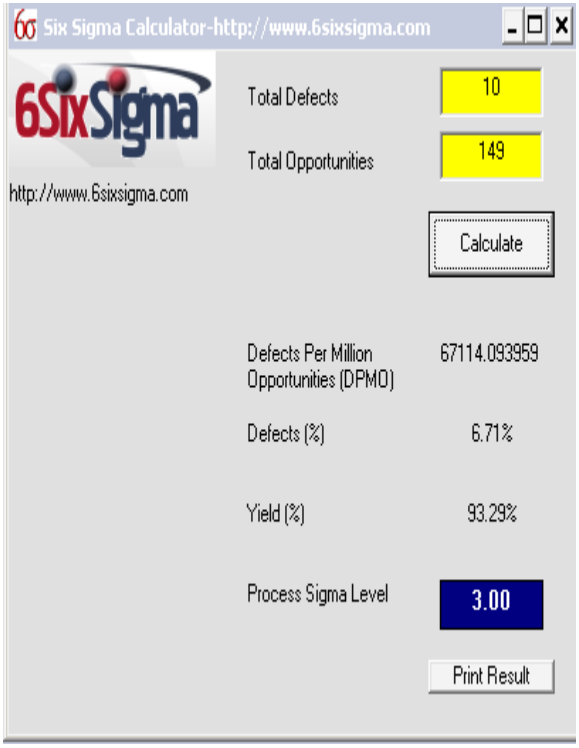
Total Defects & opportunities in preparation of Final Discharge Summary after applying the corrective measures

Is shown in Fig -3

TPA

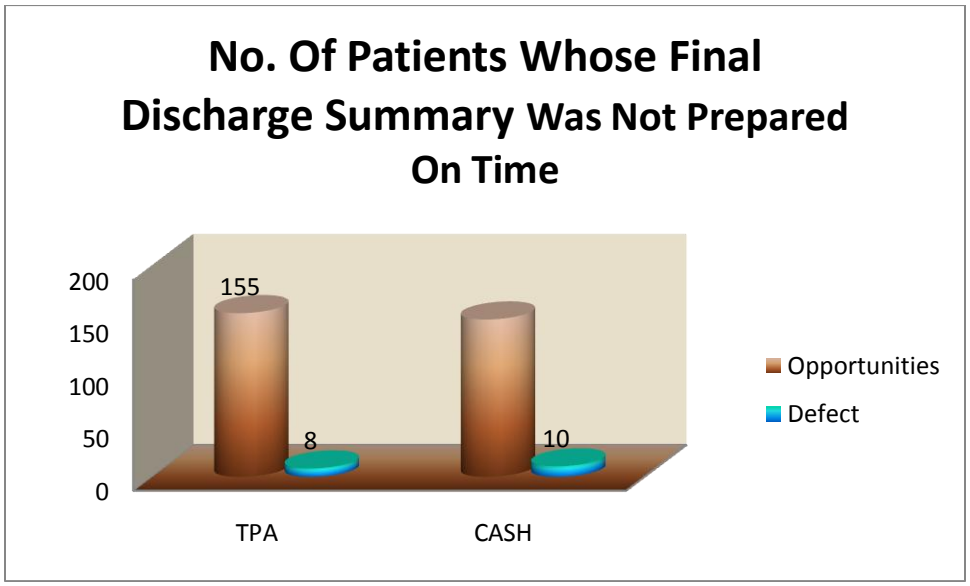


CASH



Delay in preparation of Final Discharge summary after applying the corrective measure –

Is shown in Fig-3.1



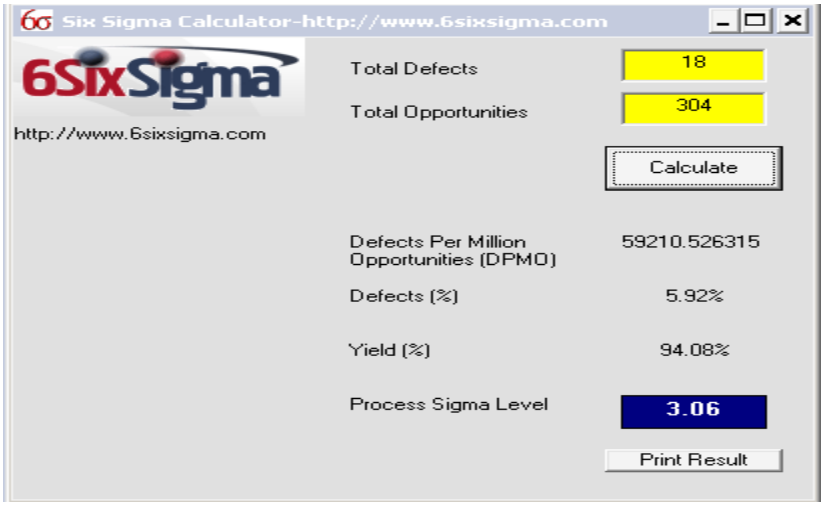
After applying the corrective measures the no of patients whose Final discharge summary was not made on time(45 min) was reduced to 8**(5.16%)** out of 155 (**94.84%)** patient from TPA Category & 10**(6.71%)** from 149 (**93.292%)**patients from Cash category

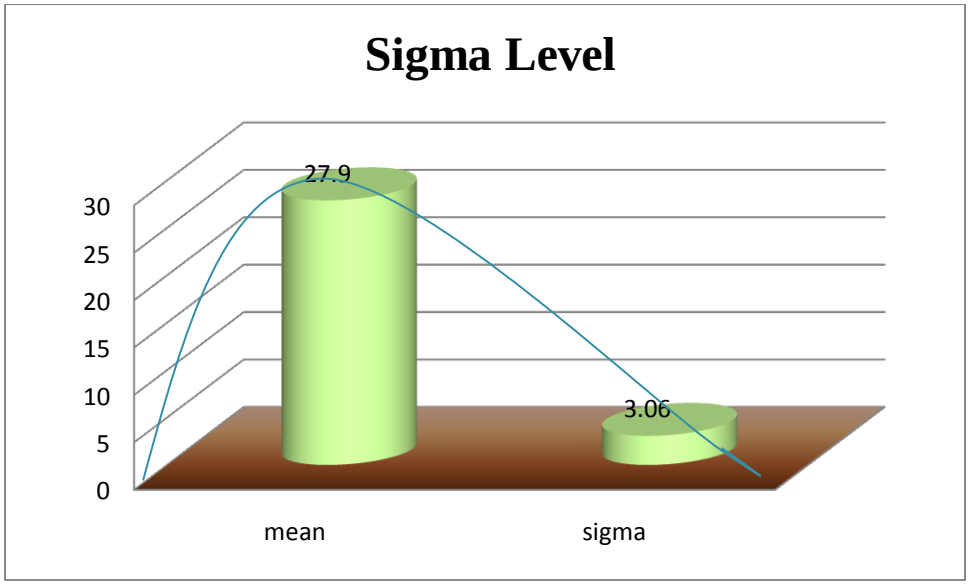
Corrective measures- Hiring of Staff

Preparation of Tentative Discharges

Sigma Level in Delay In Preparation Of Final Discharge Summary

Is shown in Fig-3.2



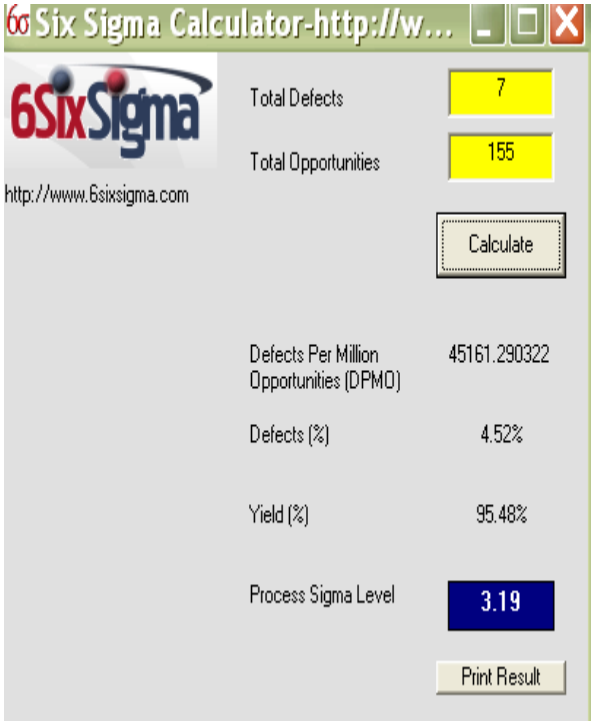


Sigma level for preparation of final Discharge summary increased from2.26 to 3.06 after applying the six sigma technique

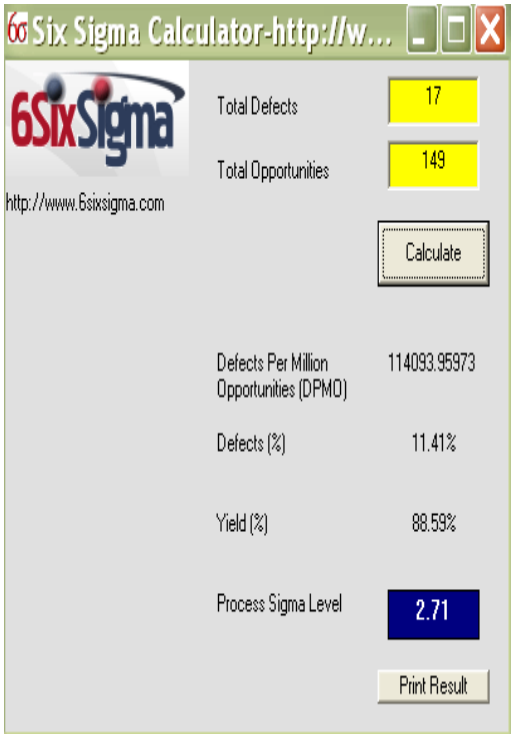
Total Defects & opportunities in preparation of Final Discharge Summary after applying the corrective measures

Is Shown In Fig-4

TPA

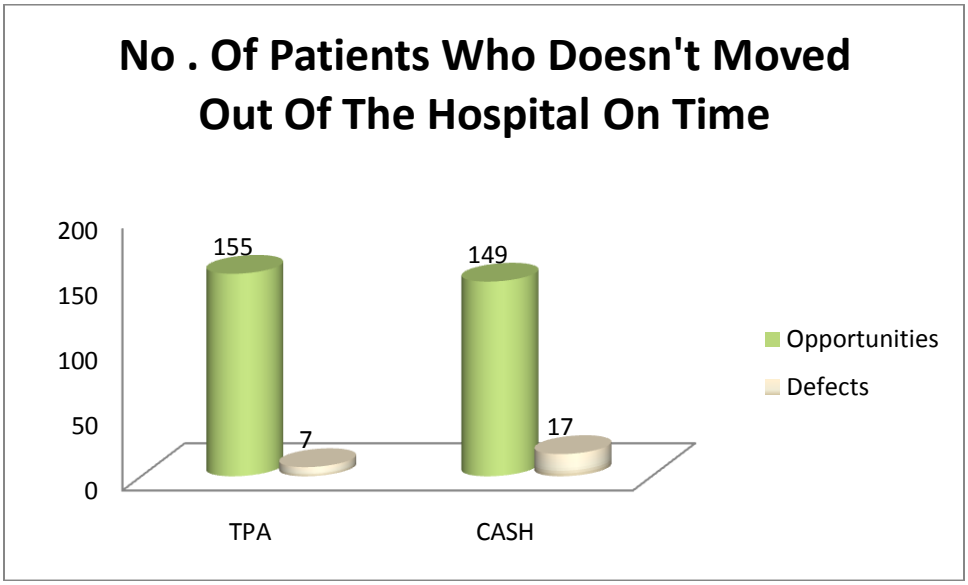


CASH



Delay in Patient moved out of the Hospital-

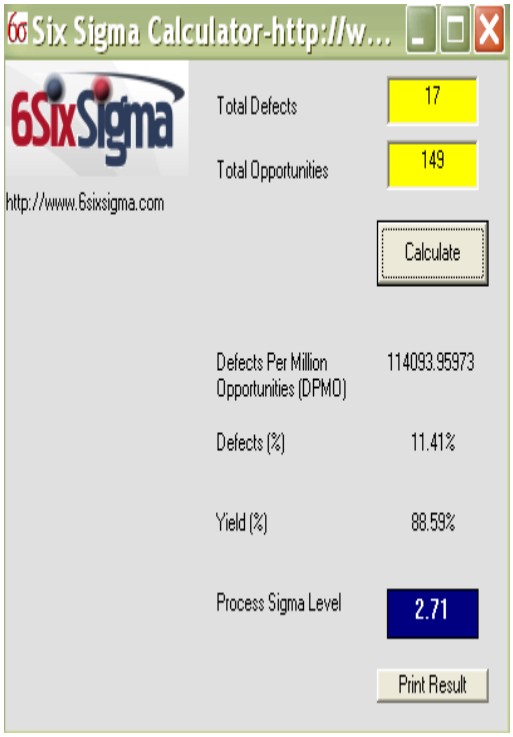
Is shown in Fig-4.1

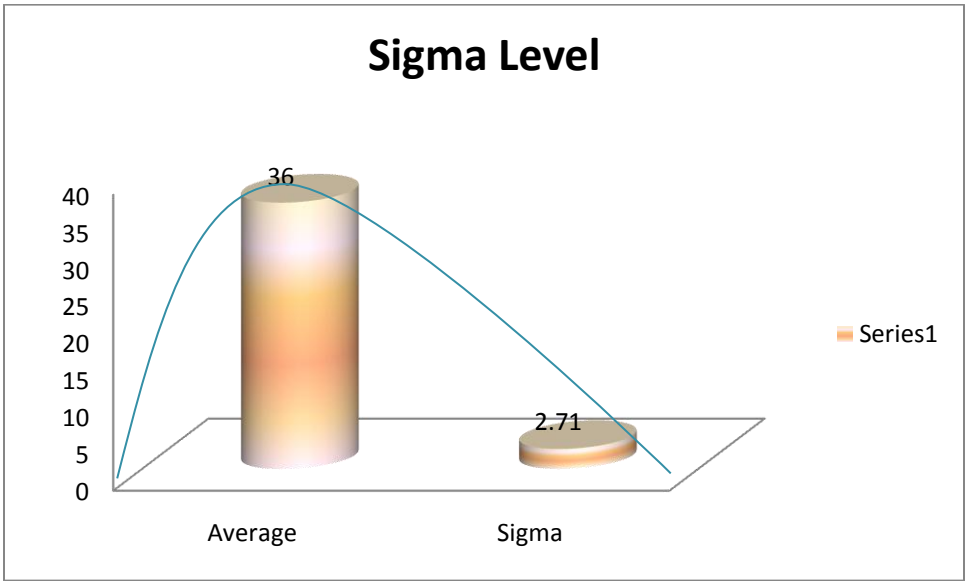


After applying the corrective measures the no of patients whose doesn't moved out of the hospital , after intimation of bill (TAT-3:00 hrs TPA & 30 min CASH) was reduced to 7**(4.52%)** out of 155 (**96.484%)** patient from TPA Category & 17**(11.41%)** from 149 (**88.91%)**patients from Cash category

Corrective measures- Proper Communication between Staff & patients

Sigma Level in Delay In Preparation Of Final Discharge Summary (CASH)
Is shown in Fig-4.2(a)

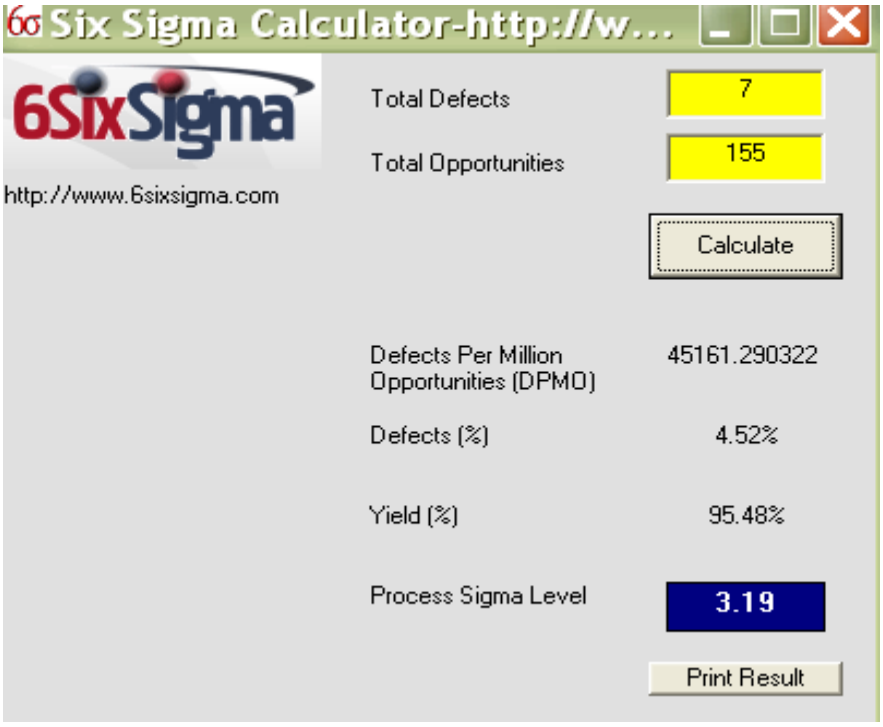


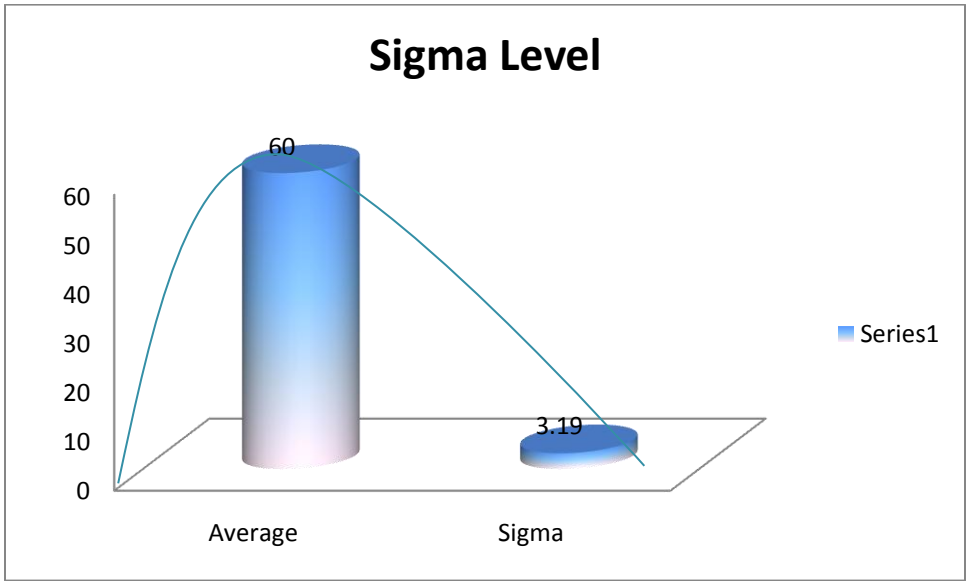


Sigma level for preparation of final Discharge summary increased from 1.42 to 2.71 after applying the six sigma technique

Sigma Level in Delay In Preparation Of Final Discharge Summary (TPA)

Is shown in Fig-4.2(b)



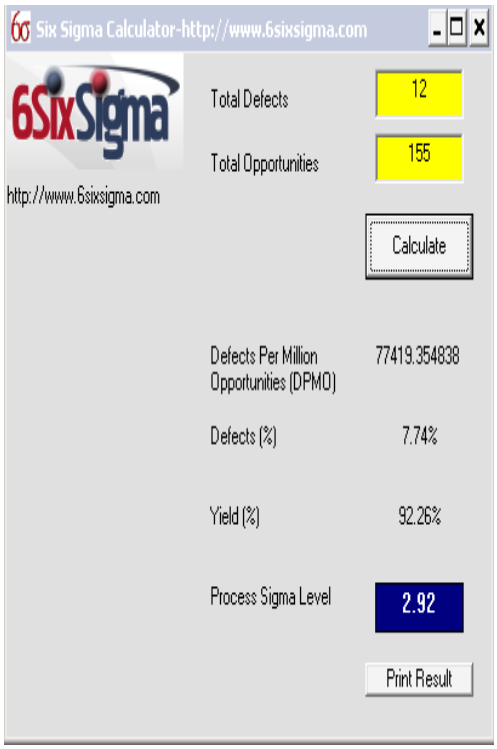


Sigma level for preparation of final Discharge summary increased from 2.59 to 3.19 after applying the six sigma technique

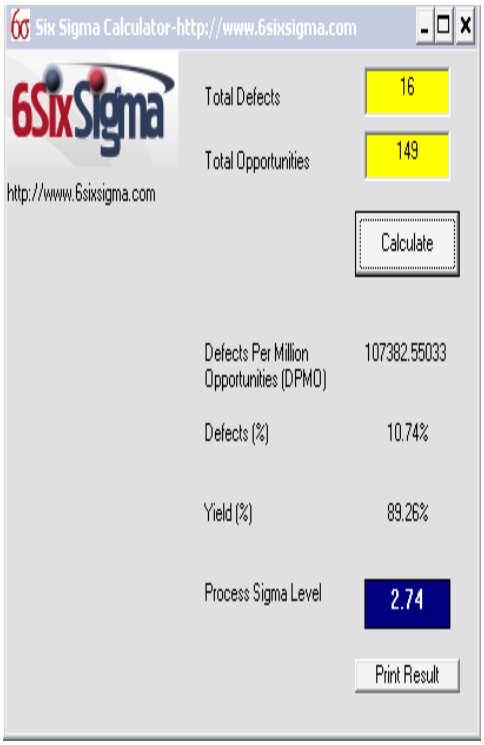
Total Defects & opportunities in Discharge process after applying the corrective measures

Is shown in Fig -4

TPA

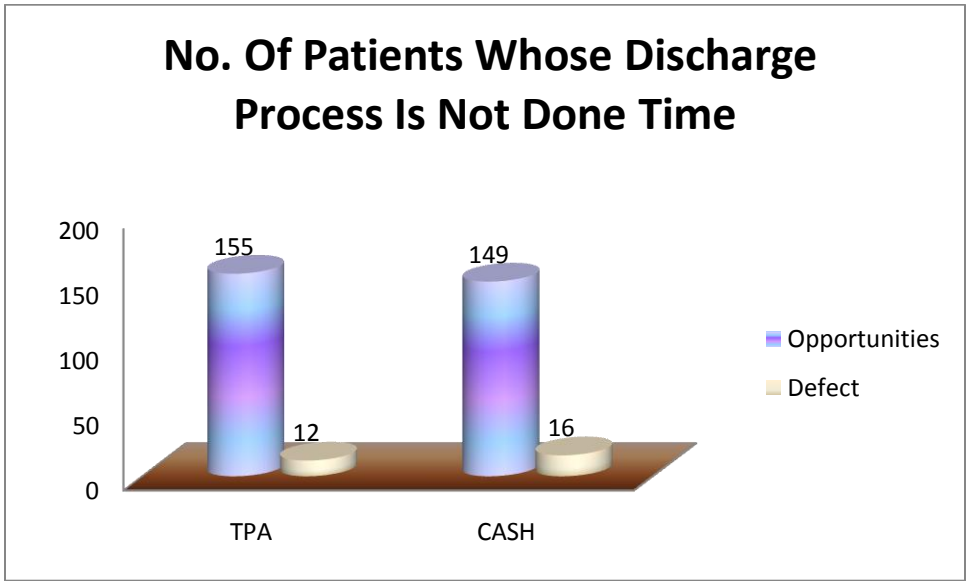


CASH



Delay In Discharge Process After Applying The Corrective Measure –

Is Shown In Fig-4.1



After applying the corrective measures the no of patients whose Discharge process is not completed on time (5:00 hrs in TPA) & (2:00hrs in cash) was reduced to 12**(7.74%)** out of 155 (**92.26%)** patient from TPA Category & 16**(10.74%)** from 149 (**89.26%)** patients from Cash category

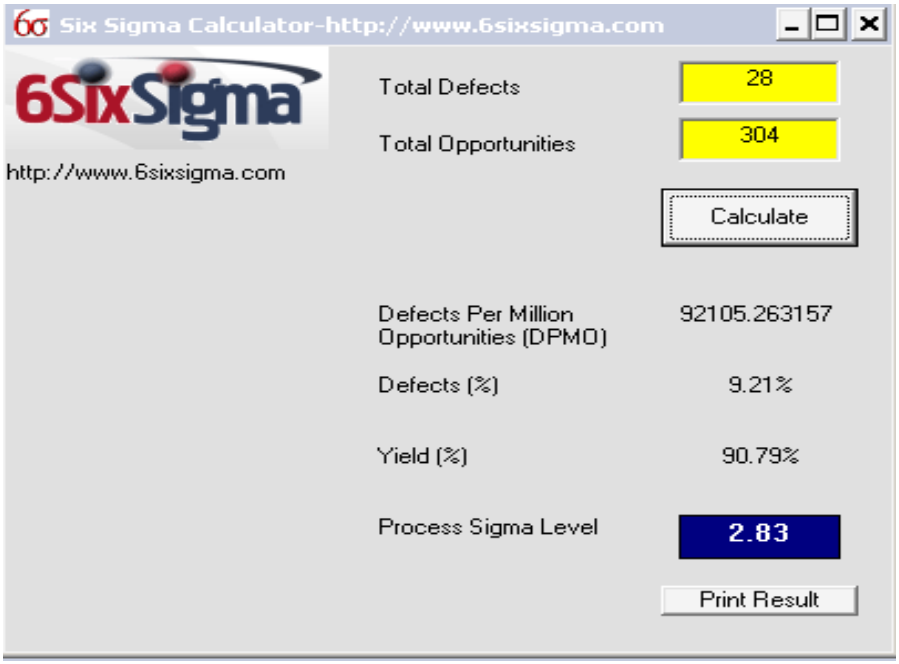
Corrective Measures- Hiring of Staff

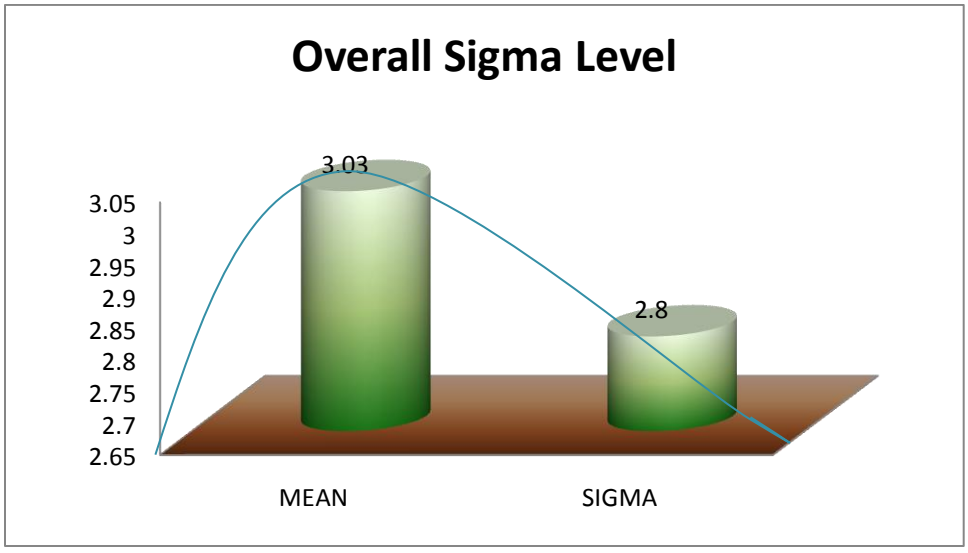
Preparation of Tentative Discharges

Implementation of Online pharmacy

Sigma Level For Delay In Discharge Process

Is shown in Fig-4.2

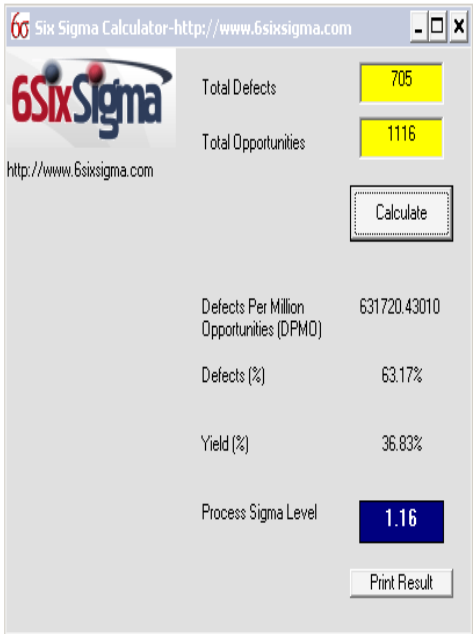




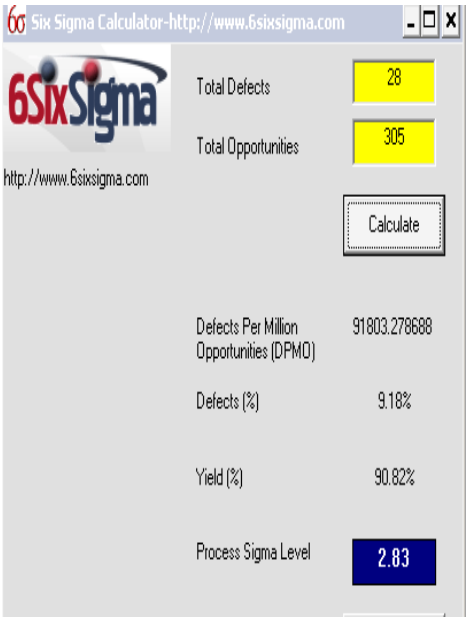
Sigma level for preparation of final Discharge summary increased from 1.16 to 2.8 after applying the six sigma technique

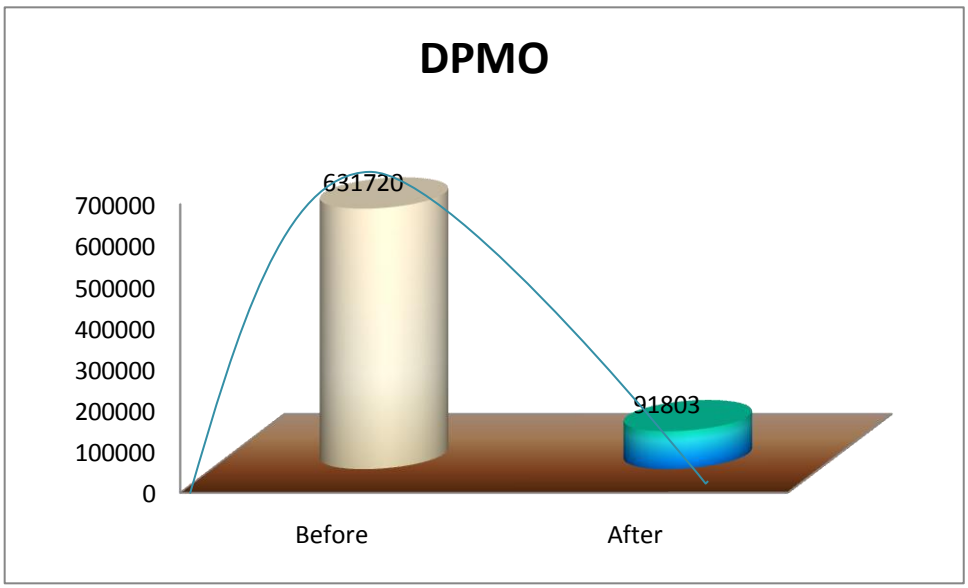
DPMO

Before



After





DPMO has been reduced to 91803 from 631720 after applying the six sigma technique

CONTROL-

A control plan was put in place to ensure that these improvements would continue in the future. **Control** charts were used to monitor ongoing performance of the key variables. With a highly people-dependent process, the chart can be an essential tool to verify compliance

Other Techniques are-

- Observation –ensure that all the process are completed on time
- Training- Regular training session must be given to the all the staff members
- Documentation – Ensure that all the documentation should be completed
- Audits- Regular Audits must be done so that gap should be found out through & it was corrected by CAPA
- Monitor the new process – so that all process are completed on time

Recommendations-:

The following recommendations are made in order to increase the overall quality of the discharge process being followed

- Need to pay some more attention to keep all documents ready prior to the discharge
- Implementation of online pharmacy
- Hiring of the staff
- The Consultants should be advised to provide Prior information regarding Discharge to the Nursing Station.
- The Discharge Process should be a Planned Process.
- A specific Discharge Time should be fixed
- Frequent Training should be provided to the Nursing Staff:
- The importance of a smoother discharge process should be understood by all:
- The Discharge Process should be regularly audited
- Need to counsel the attendants one day prior to discharge date.
- Increase good communication between doctor and nursing staff & the patients.
- Assigned staff must go through the file first and collect investigation reports before doctor's visit.

OUT COME-

- Patient satisfaction level increases
- Timeliness of the discharge process
- Nursing staff: less time spent on the discharge process, more time with patients, and more time for personal development.
- Financial increase because of the more admission
- Less wait time in ED for bed availability
- Assured continuity of care through prompt of the nursing staff.

CONCLUSION: -

SIX SIGMA is tool used to find out the defects in the procedure & helps to remove all its defects by using its methodology – DMAIC

From a quality control perspective, it is possible to use and apply six sigma culture to a changing national healthcare. From the national discourse on the subject, the healthcare system is broken and in need of major repair. Striking a balance between cost, speed and quality is a challenge, but the six sigma methodology is the way of solving problems & help in making excellent healthcare sector & to gain the **customer satisfaction** and not only make him contended with the services rather provide him **delightment** at his decision of choosing the very hospital

The SIX SIGMA can be estimated from the processes / procedures followed at the discharge process at Paras Hospitals that in spite of allotting a varying margin of time limits at every stages lacuna were observed & at the end of the day, the expected results are yet not found.

Thus, concluding the part it can be vivaciously accepted that unlike other organizations Paras Hospitals, a newly born in the state has been crowned with both NABH and NABL . The urge for excellence and improvement never ends and is well evident by the initiatives taken in the hospital premises such as, **" Various *Seminar for all the Department, regular training classes for both New employees and the existing ones, CMEs and many m*ore**. The motivation and the learning skills of the employees keeps on moving with a pace and thus proves an example in front of others who believe that continuous struggle and a devotion to strive for the best would definitely lead to the partners in success and that is why Para Hospitals are known as "PARTNERS IN HEALTH".

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  Authors: Theodore T. Allen
- **Using Six Sigma Methodologies: Creating a Revised Discharge Medication Reconciliation Process** Authors: **Dalton, Deb; Humphrey, Michael; Neptune, Carolyn; Novario, Mike; Scoates, Gail; Wakefield, Rachel**
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  By Chip Caldwell, Jim Brexler, Tom Gillem
- **Discharge Planning Handbook for Healthcare: Top 10 Secrets to Unlocking a ...**
  By Ali Birjandi, Lisa M. Bragg

Annexure-

newsigma.xlsx