# Gap Analysis of Processes in Insurance Department of GMC Hospital Ajman

**Internship Training At**

مستشفى جي إم سي
GMC HOSPITAL

**Gulf Medical College Hospital and Research Centre, Ajman, UAE**
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## TO WHOMSOEVER IT MAY CONCERN

This is to certify that Dr. Aditya Kaura (17th batch) student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute of Health Management Research, Jaipur has undergone dissertation at GMC, Hospital Ajman.

The candidate has successfully carried out the study designated to him during dissertation and his approach to the study has been sincere, scientific and analytical.

The internship is in fulfilment of the course requirements.

I wish him all success in all her future endeavours.

Dr. Ashok Kaushik
Dean, Academics and Student Affairs
IIHMR, Jaipur

Dr. P.R. Sodani
Professor and Dean (Training)
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مستشفى جي إم سي
GMC HOSPITAL
"Healing through knowledge and wisdom"

ثومبي
THUMBAY

May 21, 2014

**To Whom It May Concern**

This is to certify that **Dr. Aditya Kaura** holder of Indian Passport Number L4620066 was working in our institution as Management Trainee from 1st March 2014 till 20th May 2014, as a part of dissertation of his P.G.D.H.M program. He has completed the assigned project.

We wish him all the best.

For **GMC Hospital and Research Centre, Ajman**

**THUMBAY MOIDEEN**
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**INSTITUTE OF HEALTH MANAGEMENT RESEARCH, JAIPUR**

## CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled … "Gap analysis in Insurance department, GMC Ajman and submitted by Dr. Aditya Kaura Enrollment No….1287… under the supervision of… Dr. P.R Sodani … for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 1st March 2014 to 20th May 2014 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature

**Acknowledgements**

I take this opportunity to express my profound gratitude and deep regards to Dr S.D.Gupta (Director IIHMR) and Dr Ashok Kaushik (Dean IIHMR). I also take this opportunity to express my profound gratitude and deep regards to my Guide Dr P. R Sodani Professor and Dean Training for exemplary guidance, monitoring and constant encouragement throughout the internship.

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Lastly, I thank almighty, my parents, brother, sisters and friends for their constant encouragement without which this assignment would not be possible.

**Dr. Aditya Kaura**

**Table of Contents**

## List of figures



## List of Tables



## INTRODUCTION

### Hospital Profile

GMC Hospital, Ajman, UAE was inaugurated on 17th October 2002 by **H.H Sheikh Humaid Bin Rashid Al Nuaimi** - Member of Supreme Council, U.A.E and Ruler of Ajman.

**Key Highlights**

- The First Private University Teaching Hospital in U.A.E.
- The First Private Hospital to get JCI Accredited in Ajman, UAE.
- GMC Hospital and Research Centre affiliated to Gulf Medical University became operational on 17th October 2002.
- Capacity of 117 beds, and serves patients from more than 150 nationalities.
- GMC Hospital conducts the highest number of deliveries in the private sector in U.A.E.
- Affordable prices and caters to population from all the Emirates.
- First dedicated Patient Affairs Department in the private sector in the country.
- An average number of foot fall of 1400 per day

**Location**

GMC Hospital

P.O. Box 4184,

Ajman, United Arab Emirates.

**Vision**

The vision of GMC Hospital and Research Centre is to be recognized as a leading Academic Healthcare Center providing a high quality of patient centric specialty healthcare services to the community integrated with medical research and clinical training.

**Mission**

GMC Hospital and Research Centre is committed to provide ethical patient care focused on patient safety, high quality care and cost effective services.

GMC Hospital and Research Centre is committed to integrate latest trends in education to produce competent healthcare professionals who are sensitive to the cultural values of the clients they serve.

GMC Hospital and Research Centre will strive to attain the highest of quality and accreditation standards

**Core values**

Excellence - Provide clients with a consistently high level of service through benchmarking and continual improvement

Trust - Ensure trust, compassion, dignity and mutual respect for colleagues and clients through open communication and dialogue.

Client centered – Always be guided by the needs of our patients and clients.

Ethics – Always follow ethical practices that emphasize honesty, fairness, dignity and respect for the individual.

Continuous learning – always keeping abreast with new technologies and evidence based clinical practice.

Teamwork – always working together as a team and drawing strength from our diversity to serve the community.

Integrity – Committed to personal and institutional integrity, make honest commitments and work consistently to honor them.

## OVERVIEW

As a major Health Care Service Provider within the Gulf, GMC Hospital has taken great measures to improve all its services and procedures with the introduction of the International Medical and Health Care Tourism unit of the Hospital. It provides excellent Health care services, world class recovery measures, as well as recreational therapy and Spa services to clients.

GMC Hospital targets to a great volume of Medical Tourists travelling from all over the world with a great need for excellent and affordable medical health care services.

GMC Hospital has special schemes to provide affordable medical care to the economically weaker sections of the society.

GMC Hospital brings together highly skilled professional and the latest advancements in medical technology.

GMC Hospital is spread out through the entire UAE with its branches in Sharjah and Fujairah

GMC Hospital is coming up with a new branch in Dubai

GMC Hospital is the first hospital in the Gulf region to have a fully dedicated separate dental centre

## CLINICAL DEPARTMENTS

Medical (12)

- Internal Medicine ,Cardiology ,Dermatology ,Gastroenterology ,Psychiatry ,Nephrology ,Neurology ,Family Medicine ,Accident & Emergency, Pediatrics and Neonatology ,Critical care units (ICU, CCU) and Physiotherapy.

Surgical (8)

- General Surgery ,Urology ,Orthopedics ,Obstetrics & Gynecology Ophthalmology , (ENT) ,Anesthesiology and Dental super specialities

Ancillary departments (15)

- Radiology ,Laboratory - Pathology , Hematology ,Microbiology ,Blood Storage Centre ,Pharmacy & Drug Information Center ,Patients Affairs ,Nutrition and Diet ,Patient Education ,Catering ,Biomedical Engineering ,Insurance ,Hospital Informatics ,CSSD and House Keeping

## SPECIAL FEATURES

- Wide ranging tertiary care services
- Separate IP & OPD blocks
- Private rooms & deluxe Facilities
- Full range of laboratory diagnosis
- Diagnostic imaging & services
- 24 Hour emergency

- ICU- CCU & Labor Rooms
- Day care facility
- New generation medical electronics
- Traditional architecture with modern facilities
- Doctor on call facility

## Accreditations and Affiliations

- Joint Commission International (JCI)
- Ministry of Health, UAE
- Member - Medical tourism Association
- International Hospital Federation
- Tresmos, International Board of Medicine and Surgery
- Temos Dental certification
- Asian Hospital Federation
- Joint commission International – Member

## ORGANIZATIONAL CHART


Gulf Medical College Hospital is a teaching hospital, in this international institution it was very important for me to understand and adapt to the work culture in this institution. Thus it

was very important for me to understand the protocols and find the gaps in operations. The insurance industry is huge with Dubai Health Authority making it a compulsion for each person to have health insurance for renewal of work and residence visa from 2016. There are more than 40 insurance companies private and government catering for the insurance of the important aspect of life that is health. 60 to 70 percentage of revenue of a hospital is generated from insurance companies. The health treatment cost is very high making it a compulsion and need of the hour for every individual to have health insurance. The insurance market is huge covering more than 80 percentage of population as compared to 30 percentages in India which includes the people provided with Insurance through government schemes. This was a great learning experience as on various aspects learning the functioning of the complete insurance department.

**AIM:**

- To understand the working of an international institution and to get acclimatized to the working culture.
- To analyze the gaps and difference in health care delivery process between India and UAE focusing on the insurance industry.
- To study the process flow of Insurance department and finding out the gaps using six sigma and lean tools.

My primary goal during my internship at GMCHRC was to understand the insurance system and industry of UAE. This was followed by process mapping the work flow in the insurance department and finding out the bottlenecks.

## ABSTRACT

# Gap analysis of processes in insurance department of GMC Hospital Ajman

**Aditya Kaura, IIHMR Jaipur, India**

## Background

A new law has made health insurance coverage compulsory for every resident in Dubai starting next year. Presently more than a million residents are covered out of the two million residents in Dubai. Officials from the Dubai Health Authority (DHA) said many blue-collar workers are not covered and this new law will ensure that everyone has access to essential health services. The insurance scheme will start to roll out next year and will be completed by 2016. Many blue collar workers and many spouses of expatriates presently do not have health cover. When it goes into force, the new law will ensure that no work or residence visa would be renewed without a health insurance cover.

UAE has 1.9 beds per 1,000 residents while the global average is 3.0 beds and that for developed countries is 5.5 beds, it said.

## Objectives:

- To understand the functioning of the health insurance system of UAE
- To understand the functioning of insurance department in GMC Hospital, Ajman
- To study the difference in the health insurance system of UAE and India
- To study the rejection rate and its major causes
- To study the TAT taken for each process in the insurance department using DMAIC

## Methods:

Using a service-oriented architecture approach we discuss systems architecture of hospitals, TPA's and insurance companies in relation to various processes and applications, and highlight current challenges and prospects.

**Study design and methods**

a) Type of study: Observational study and descriptive study

b) Location of study: Ajman, UAE

c) Study subjects: Health Insurance system of UAE and Insurance department GMC

d) Sample – Simple random sampling

e) Data (information) to be collected

1. Number of claims rejected and their causes
2. TAT of sending request, follow up and update
3. Total number of cases coming per day
4. Manpower present compared to the actual need

**Results:**

A more service oriented system is designed in relation with the existing system which can cater and resolve a lot of upcoming problems and reduce the burden of healthcare time, cost as well as increasing the efficiency of the insurance department by reducing the TAT. The services and elements are grouped according to functional and interoperability cohesion of

the various functions in the insurance department keeping in minds the link of the department with other departments.

**Conclusions:**

A transition towards service-oriented architecture in health care must acknowledge existing health care systems and promote the functioning of this system with a few additions that will reduce the time, cost and increase the efficiency in the functioning of the healthcare system. This is more focused on patient ease and comfort. A service-oriented approach cannot entirely rely on common standards and frameworks but it must be locally adapted and complemented.

## Health Insurance

Health insurance is insurance against the risk of incurring medical expenses among individuals. By estimating the overall risk of health care and health system expenses, among a targeted group, an insurer can develop a routine finance structure, such as a monthly premium or payroll tax, to ensure that money is available to pay for the health care benefits specified in the insurance agreement. The benefit is administered by a central organization such as a government agency, private business, or not-for-profit entity. According to the Health Insurance Association of America, health insurance is defined as "coverage that provides for the payments of benefits as a result of sickness or injury. Includes insurance for losses from accident, medical expense, disability, or accidental death and dismemberment"(1)

A health insurance policy is:

1. A contract between an insurance provider (e.g. an insurance company or a government) and an individual or his/her sponsor (e.g. an employer or a community organization). The contract can be renewable (e.g. annually, monthly) or lifelong in the case of private insurance, or be mandatory for all citizens in the case of national plans. The type and amount of health care costs that will be covered by the health insurance provider are specified in writing, in a member contract or "Evidence of Coverage" booklet for private insurance, or in a national health policy for public insurance.
2. Provided by an employer-sponsored self-funded ERISA plan. The company generally advertises that they have one of the big insurance companies. However, in an ERISA case, that insurance company "doesn't engage in the act of insurance",

they just administer it. Therefore ERISA plans are not subject to state laws. ERISA plans are governed by federal law under the jurisdiction of the US Department of Labor (USDOL). The specific benefits or coverage details are found in the Summary Plan Description (SPD). An appeal must go through the insurance company, then to the Employer's Plan Fiduciary. If still required, the Fiduciary's decision can be brought to the USDOL to review for ERISA compliance, and then file a lawsuit in federal court.

The individual insured person's obligations may take several forms:

- Premium: The amount the policy-holder or their sponsor (e.g. an employer) pays to the health plan to purchase health coverage.
- Deductible: The amount that the insured must pay out-of-pocket before the health insurer pays its share. For example, policy-holders might have to pay a $500 deductible per year, before any of their health care is covered by the health insurer. It may take several doctor's visits or prescription refills before the insured person reaches the deductible and the insurance company starts to pay for care. Furthermore, most policies do not apply co-pays for doctor's visits or prescriptions against your deductible.
- Co-payment: The amount that the insured person must pay out of pocket before the health insurer pays for a particular visit or service. For example, an insured person might pay a $45 co-payment for a doctor's visit, or to obtain a prescription. A co-payment must be paid each time a particular service is obtained.
- Coinsurance: Instead of, or in addition to, paying a fixed amount up front (a co-payment), the co-insurance is a percentage of the total cost that insured person may also pay. For example, the member might have to pay 20% of the cost of a surgery over and

above a co-payment, while the insurance company pays the other 80%. If there is an upper limit on coinsurance, the policy-holder could end up owing very little, or a great deal, depending on the actual costs of the services they obtain.

- Exclusions: Not all services are covered. The insured are generally expected to pay the full cost of non-covered services out of their own pockets.
- Coverage limits: Some health insurance policies only pay for health care up to a certain dollar amount. The insured person may be expected to pay any charges in excess of the health plan's maximum payment for a specific service. In addition, some insurance company schemes have annual or lifetime coverage maxima. In these cases, the health plan will stop payment when they reach the benefit maximum and the policy-holder must pay all remaining costs.
- Out-of-pocket maxima: Similar to coverage limits, except that in this case, the insured person's payment obligation ends when they reach the out-of-pocket maximum, and health insurance pays all further covered costs. Out-of-pocket maxima can be limited to a specific benefit category (such as prescription drugs) or can apply to all coverage provided during a specific benefit year.
- Capitation: An amount paid by an insurer to a health care provider, for which the provider agrees to treat all members of the insurer.
- In-Network Provider: (U.S. term) A health care provider on a list of providers preselected by the insurer. The insurer will offer discounted coinsurance or co-payments, or additional benefits, to a plan member to see an in-network provider. Generally, providers in network are providers who have a contract with the insurer to accept rates further discounted from the "usual and customary" charges the insurer pays to out-of-network providers.

- Prior Authorization: A certification or authorization that an insurer provides prior to medical service occurring. Obtaining an authorization means that the insurer is obligated to pay for the service, assuming it matches what was authorized. Many smaller, routine services do not require authorization.
- Explanation of Benefits: A document that may be sent by an insurer to a patient explaining what was covered for a medical service, and how payment amount and patient responsibility amount were determined.

Prescription drug plans are a form of insurance offered through some health insurance plans. In the U.S., the patient usually pays a copayment and the prescription drug insurance part or all of the balance for drugs covered in the formulary of the plan. Such plans are routinely part of national health insurance programs. For example in the province of Quebec, Canada, prescription drug insurance is universally required as part of the public health insurance plan, but may be purchased and administered either through private or group plans, or through the public plan.[4]

Some, if not most, health care providers in the United States will agree to bill the insurance company if patients are willing to sign an agreement that they will be responsible for the amount that the insurance company doesn't pay. The insurance company pays out of network providers according to "reasonable and customary" charges, which may be less than the provider's usual fee. The provider may also have a separate contract with the insurer to accept what amounts to a discounted rate or capitation to the provider's standard charges. It generally costs the patient less to use an in-network provider.

## Health Insurance in India

Launched in 1986, the health insurance industry has grown significantly mainly due to liberalization of economy and general awareness. By 2010, more than 25% of India's population had access to some form of health insurance. There are standalone health insurers along with government sponsored health insurance providers. Until recently, to improve the awareness and reduce the procrastination for buying health insurance, the General Insurance Corporation of India and the Insurance Regulatory and Development Authority had launched an awareness campaign for all segments of the population.(2)

### Types of Policies

Health insurance in India typically pays for only inpatient hospitalization and for treatment at hospitals in India. Outpatient services were not payable under health policies in India. The first health policies in India were Mediclaim Policies. In 2000 government of India liberalized insurance and allowed private players into the insurance sector. The advent of private insurers in India saw the introduction of many innovative products like family floater plans, top-up plans, critical illness plans, hospital cash and top up policies. Broadly we can divide the health insurance plans in India today can be classified into two categories:

- **Hospitalization plans**:

  Hospitalization plans are indemnity plans that pay cost of hospitalization and medical costs of the insured subject to the sum insured. The sum insured can be applied on a per member basis in case of individual health policies or on a floater basis in case of family floater policies. In case of floater policies the sum insured

can be utilized by any of the members insured under the plan. These policies do not normally pay any cash benefit. In addition to hospitalization benefits, specific policies may offer a number of additional benefits like maternity and newborn coverage, day care procedures for specific procedures, pre- and post-hospitalization care, domiciliary benefits where patients cannot be moved to a hospital, daily cash, and convalescence.

There is another type of hospitalization policy called a top-up policy. Top up policies have a high deductible typically set a level of existing cover. This policy is targeted at people who have some amount of insurance from their employer. If the employer provided cover is not enough people can supplement their cover with the top-up policy.

- **Hospital daily cash benefit plans**:

Daily cash benefits is a defined benefit policy that pays a defined sum of money for every day of hospitalization. The payments for a defined number of days in the policy year and may be subject to a deductible of few days.

- **Critical illness plans**:

These policies pay out a lump sum in event that the insured is a diagnosed with one of the illnesses specified in the policy. Some of the policies require a survival period for the payout to take effect.

**Payment options**

- **Direct Payment or Cashless Facility**: Under this facility, the person does not need to pay the hospital as the insurer pays directly to the hospital. Under the cashless scheme, the policyholder and all those who are mentioned in the policy can undertake treatment from those hospitals approved the insurer.
- **Reimbursement at the end of the hospital stay**: After staying for the duration of the treatment, the patient can take a reimbursement from the insurer for the treatment that is covered under the policy undertaken.

**Cost and duration**

- **Policy price range**: Insurance companies offer health insurance from a sum insured of Rs. 5000/- for micro-insurance policies to a higher sum insured of Rs. 50 lacs and above. The common insurance policies for health insurance are usually available from Rs. 1 lac to Rs. 5 lacs.
- **Duration**: Health insurance policies offered by non-life insurance companies usually last for a period of one year. Life insurance companies offer policies for a period of several years.

Urbanization has been increasing in variably all countries of the world, Urban life higher rates of trauma, industrial accidents and occupational transmitted disease, alcoholism and drug abuse.

Health insurance plays a role of varying importance in the life of insured. A good deal of that benefit of health insurance is reflected in the betterment of quality of life and we can not overlook the impact of specific health insurance services.

The cost of health care are increasing day by day. The costs will still go up in case of a serious accident or major illness. It is difficult, if not impossible for a typical individual to find financial resources to meet such expenses that come of which may arise suddenly.

The demand for health insurance is also viewed from other perspective like:-

- To ensure that no one is deprived of at least the standard form of health care.
- To protect the patient and his family from financial disaster
- To simplify mode of payments.
- To eliminate sickness as a cause of poverty
- To reduce anxieties of different natures-economic, medical and moral

Health insurance companies thus provide financial assistance to the insured in case of disability or loss of health, so that he/she cannot only take curative measures but also maintain the dependents during the period of sickness/disability with the benefits provided to the insurer.

**List of Insurance Companies in India (3)**

Public Sector

- Oriental Insurance comp. Ltd.
- United India Insurance Comp. Ltd.
- New India Assurance comp. Ltd.
- National Insurance comp. ltd.

Private Sector

- Bajaj Allianz General Insurance
- Bharti AXA General Insurance
- Future Generali India Insurance
- HDFC ERGO General Insurance
- ICICI Lombard
- IFFCO Tokio
- Liberty Videocon General Insurance Co Ltd
- L&T General Insurance
- Magma HDI General Insurance Co Ltd
- Raheja QBE General Insurance
- Reliance General Insurance
- Royal Sundaram
- Shriram General Insurance

- Tata AIG General
- Universal Sompo General Insurance
- Cholamandalam MS General Insurance Company Limited
- Star health and allied insurance company
- Max bupa health insurance
- Religare Health insurance

## Health Insurance in UAE

Origin of Health Care in the UAE

The start of modern health care in the United Arab Emirates can be traced to the days when the area was known as the Trucial Coast. In 1943, a small healthcare centre was opened in the Al Ras area of Dubai. In 1951, under the patronage of Sheikh Saeed bin Rashid Al Maktoum, the ruler of Dubai, the first phase of the Al Maktoum Hospital was built and continued over succeeding years until a 157-bed hospital was completed. In 1960, Sheikhs Shakhbut and Zayed of Abu Dhabi visited an American mission in Muscat and were so impressed by what they saw that they invited the couple in charge, Pat and Marian Kennedy, to open a clinic in Al Ain, which they did in the November of that year. This became officially known as the Oasis Hospital, unofficially as the "Kennedy Hospital" to local people. In 1966, a small outpatient department opened in Abu Dhabi, followed a year later by the appointment of Dr Philip Horniblow with a brief to develop a national health service. This led the then ruler of Abu Dhabi, Sheikh Zayed, to open a new hospital, the Central Hospital, in 1968. The Private sector has also made enormous contributions in the U.A.E led by the Gulf Medical University and the GMC Hospitals as the pioneers in private medical education and healthcare sectors. (4)

Health Care Systems

The UAE now has 40 public hospitals, compared with only seven in 1970. The Ministry of Health is undertaking a multimillion-dollar program to expand health facilities and hospitals, medical centers, and a trauma center in the seven emirates. A state-of-the-art general hospital has opened in Abu Dhabi with a projected bed capacity of 143, a trauma unit, and the first home health care program in the UAE. To attract wealthy UAE nationals and expatriates who traditionally have traveled abroad for serious medical care, Dubai is developing Dubai Healthcare City, a hospital free zone that will offer international-standard advanced private health care and provides an academic medical training center; completion is scheduled for 2010.

The insurance industry is huge with Dubai Health Authority making it a compulsion for each person to have health insurance for renewal of work and residence visa from 2016. There are more than 40 insurance companies private and government catering for the insurance of the important aspect of life that is health. 60 to 70 percentage of revenue of a hospital is generated from insurance companies. The health treatment cost is very high making it a compulsion and need of the hour for every individual to have health insurance. The insurance market is huge covering more than 80 percentage of population as compared to 30 percentages in India which includes the people provided with Insurance through government schemes. This was a great learning experience as on various aspects learning the functioning of the complete insurance department.

Effective January 2006, all residents of Abu Dhabi are covered by a new comprehensive health insurance program; costs will be shared between employers and employees. Prior to

2007, government owned health care facilities were managed by the General Authority for Health Services, GAHS. In 2007, this authority was restructured into:

- Health Authority – Abu Dhabi, HAAD is responsible for regulating the healthcare industry and developing Abu Dhabi's health policy.
- Abu Dhabi health Services Company, SEHA is responsible for managing government owned healthcare facilities in Abu Dhabi. Currently, SEHA manages 57 Primary Health Care Centers, 13 Hospitals, 3 Maternal and Child Health Centers, 3 Specialized Dental Centers, one center for Autism, and 5 Specialized Facilities like rehab, blood bank and herbal center

The health insurance market in UAE has grown in past 10 years only covering a huge population. The system of health insurance being a compulsion and to be provided by the employer is a good and very important decision taken by the government to ensure every individual is provided and gets health facilities.

To understand the system better of UAE and India there is a comparison chart in a few standard areas

**Table 1.1 (Health Insurance system comparison chart of UAE and India)**

| | UAE | INDIA |
|---|---|---|
| **Population** | **9.2 million** | **1.3 billion** |
| **% Population Covered** | **80 %** | **30%** |
| **No. of Companies** | **More than 50 companies** | **30 to 35 companies** |
| **Types of Policies** | **Individual and Group policy** | **Individual, family and corporate policies** |
| **Payer for policy** | **Employer, Individual and Government** | **Individual, Government and community/ state health schemes** |
| **Coverage** | **OPD and IPD** | **IPD** |
| **Hospital Revenue** | **70 to 75 %** | **30 to 40%** |

## Gap analysis in insurance department in GMC Hospital Ajman using six sigma and lean

## Introduction

The main purpose of this study is to describe the application of the five-phase Six Sigma Define, Measure, Analyze, Improve and Control (DMAIC) approach to streamline approval

requests processing in a smoother manner in Insurance Department at Gulf Medical College Hospital and Research Centre (GMCHRC). In this study key output variable (KOV) was identified as average turnaround (TAT) time and a list of key input variables (KIVs) were selected, any improvements in the KIVs can improve the KOV values. In the initial phase of this study process mapping of the complete department was carried out, various interview sessions and self observations made during the study period. Once the process maps were formulated they were discussed with the departments participating in the approval request generation. The next step was to develop a repeatable and reproducible measurement standard operating procedure (SOP) for insurance department. The SOP involved finding the time the physician generated the approval requests. The problem areas and the causes for it were identified. Rejection rate being an important part of the insurance department the causes were taken. Five months data was collected and the detail causes were looked in to. In the analyze phase of the study the KIVs were selected and a cause effect matrix was used to analyze the issues and possible solutions to the issues, the most easy to implement and the cost effective solutions were selected as process improvement initiatives. There were interfaces made in the HMIS, re designing the department and manpower analysis. Due to the lack of time the base line data for the control phase could not be collected but the initial response to the care providers to the interventions was positive.

**Review of Literature**

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hospitals, medical centers, and a trauma center in the seven emirates. A state-of-the-art general hospital has opened in Abu Dhabi with a projected bed capacity of 143, a trauma unit, and the first home health care program in the UAE. To attract wealthy UAE nationals and expatriates who traditionally have traveled abroad for serious medical care, Dubai is developing Dubai Healthcare City, a hospital free zone that will offer international-standard advanced private health care and provides an academic medical training center; completion is scheduled for 2010.

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The health insurance market in UAE has grown in past 10 years only covering a huge population. The system of health insurance being a compulsion and to be provided by the employer is a good and very important decision taken by the government to ensure every individual is provided and gets health facilities.

In computing, **turnaround time** is the total time taken between the submission of a program/process/thread/task (Linux) for execution and the return of the complete output to the customer/user. It may vary for various programming languages depending on the developer of the software or the program. Turnaround time may simply deal with the total time it takes for a program to provide the required output to the user after the program is started.

Turnaround time is one of the metrics used to evaluate operating system scheduling algorithms.

In case of batch systems, turnaround time will include time taken in forming batches, batch execution and printing results.

The expression "turnaround time" is sometimes used in non-computing contexts to mean the amount of time taken to fulfill a request.

**Six Sigma and Healthcare**

Six Sigma continues to be of interest in the corporate world. In the field of health care, Six Sigma has been used to address numerous problems including decreasing length of stay, reducing medication errors, and improving the admissions process (Castle et al. 2005; Christianson et al. 2005). In general, Six Sigma is credited with an ability to manage and improve complicated processes. Even though patient discharge has been identified as one such complicated process (Watts and Gardner 2005) (5), a review of the literature did not discover any hospital discharge projects utilizing the Six Sigma methodology. The Joint Commission for the Accreditation of Health Care Organizations (JCAHO) requires hospitals to implement projects to improve their patient discharge processes. Yet, the rules are ambiguous about how to implement improvements. Several authors have studied the application of individual quality methods for data-driven systems improvement in health care. These methods have included failure mode and effects analysis (FMEA) and root cause analysis (Robinson et al. 2006)(6). Other authors have argued that multimethod approaches are needed (Davies 2001). Six sigma is one such multimethod approach. It also has been defined as a data-driven method for process improvement (De Mast 2007; Linderman et al. 2003)(7).

Since Six Sigma programs strive to reduce variability and defects within processes, implementing a breakthrough strategy is a logical solution for improving patient care. These defects in patient care processes can run the spectrum from minor dietary issues to patient morbidity and fatality. Harry and Schroeder(8) define six sigma methods as disciplined methods of using extremely rigorous data gathering and statistical analysis to pinpoint sources of errors and ways of eliminating them'. Long describes healthcare

industry measures of operating in a higher sigma level environment (i.e. lower defect rate) as: patient satisfaction, physician satisfaction, educed overtime, reduced patient wait times, increased revenues, and enhanced quality of life.

Tucci (9) states that some potential barriers to implementation of Six Sigma programs in hospitals include:

- Nursing shortage: moving Registered Nurses (RNs) to full-time quality program positions, e.g. training to be Black Belts.
- Governmental regulations.
- Costs: the data driven interventions are expensive and require training of the staff start-up and maintenance initial costs of executive education, employee orientation, and investment in intensive training of Black Belts and green belts.
- Difficulty in obtaining base-line data on process performance.
- Long project ramp-up times typically 6 months or more.
- Risk of Six Sigma programs in health care being marginally implemented to only easily measureable non patient care processes, i.e. low touch processes.

He also states that some potential benefits of implementation of Six Sigma in hospitals include:

- Measurement of health care performance requirements on the basis of common standards through use of statistical analysis and hypothesis testing, Six Sigma mirrors the medical fields life-threatening situation and high risk decision-making processes;

- Creation of shared accountability for continuous quality improvement requires development of common definitions of how an error is defined;

- Health care employee surveys indicate that the employees consider their work to be important and they want to improve the quality of patient care, but interestingly these same employees feel under-appreciated and left out of quality improvement programs;

- Implementing Six Sigma with emphasis on improving customer's lives could engage more health care professionals and support personnel in the quality improvement process.

## OBJECTIVE

The objective of the study was to streamline process in insurance department by application of a five-phase Six Sigma define, measure, analyze, improve, and control (DMAIC) approach and to improve process inefficiencies throughout insurance process to reduce Turnaround time and rejection rate.

## Research Question

Will application of the DMAIC approach help reduce the TAT and Rejection rate and improve the approval process in the insurance department?

## Methodology

This study was carried out in the Insurance department of Gulf Medical College Hospital and Research Centre. The six sigma process of Define, Measure, Analyze, Implement and Control (DMAIC) is a data driven process and its main objective is to drive costly variation from business processes. The six sigma approach consists of the five step DMAIC approach. Each step of this process is can be explained as follows:

**Define: Problem selection and benefit analysis**

- Identify and map relevant processes.
- Identify stakeholders.
- Determine and prioritize customer needs and requirements.

**Measure: Translation of the problem into a measurable form, and measurement of the current situation**

- Determine operational definitions for the problem selected.
- Validate measurement systems
- Assess the current process capability.
- Define objectives.

**Analyze: Identification of influence factors and causes that address the problems**

- Identify potential influence factors.
- Select the vital few influence factors.

**Improve: Design and implementation of adjustments to the process to improve the performance**

- Quantify relationships between output and input variables.
- Design actions to modify the process or settings of influence factors in such a way that the input variables are optimized.
- Start collecting baseline data from improvement actions.

**Control: Empirical verification of the project's results and adjustment of the process and to ensure the improvements are sustainable**

- Determine the new process capability.
- Implement control plans.

## Research Methodology:

- **Sampling Method**: Selective sampling was done to identify which were insured and had requests that needed approval from the insurance company. Total numbers of respondents were selected by using simple random sampling technique.

- **Type of Study:** Prospective study was used to find the turnaround time Retrospective approach was used to analyze rejection rate. The data was recorded from the Hospital Information Management System to analyze and interpret to obtain the results.

- **Study period:** The study is conducted from 1st March to 20th May 2014 at Gulf Medical College Hospital and Research Centre, Ajman, UAE.

- **Methodology in testing:** Six sigma tools such as the Statistical process control (SPC) Charting, Process Mapping, Value stream Map (VSM) and cause effect matrices along with software's such as QI Macros, Microsoft Visio, Microsoft Excel were used.

- **Method of Collection:** Secondary data was obtained from the accounts department to find the rejection rate of the past six months. The causes of the rejection rate were taken from the HMIS. The turnaround time was noted personally as in when the approval requests were given by the patients. The process mapping were on personal observation using Value stream mapping, the value added and non value added time was recorded

# IMPLEMENTATION OF DMAIC

**D** – There is a lot of non value added time in the process

**M** - The non value added time may range from 45 mins to 5 hrs

**A** - The bottle necks and root causes identified

**I** - Suggesting and implementing interventions that will bring change

**C** - To ensure the solutions are sustainable and regular improvement is done

## DEFINE PHASE

- The team involved in this study consisted of the finance department, reception staff and the insurance department staff.
- The team was chosen partly because the members had expressed the greatest interest in system improvement and partly to be representative of the main groups of the staff who were involved in the Insurance process and would be affected by changes.
- The study was carried out at Gulf Medical College Hospital and Research Centre. This teaching hospital has a bed capacity of 110 beds.
- The primary goal of this study was to improve the patient satisfaction and rejection rate.
- The key output variables of the study were TAT and Rejection rate, which was identified as from when the patient enters the Insurance department as well as from the HMIS.
- The target unit, where the study was conducted was in the Insurance Department of GMCHRC. The target completion of the study was 3 months.

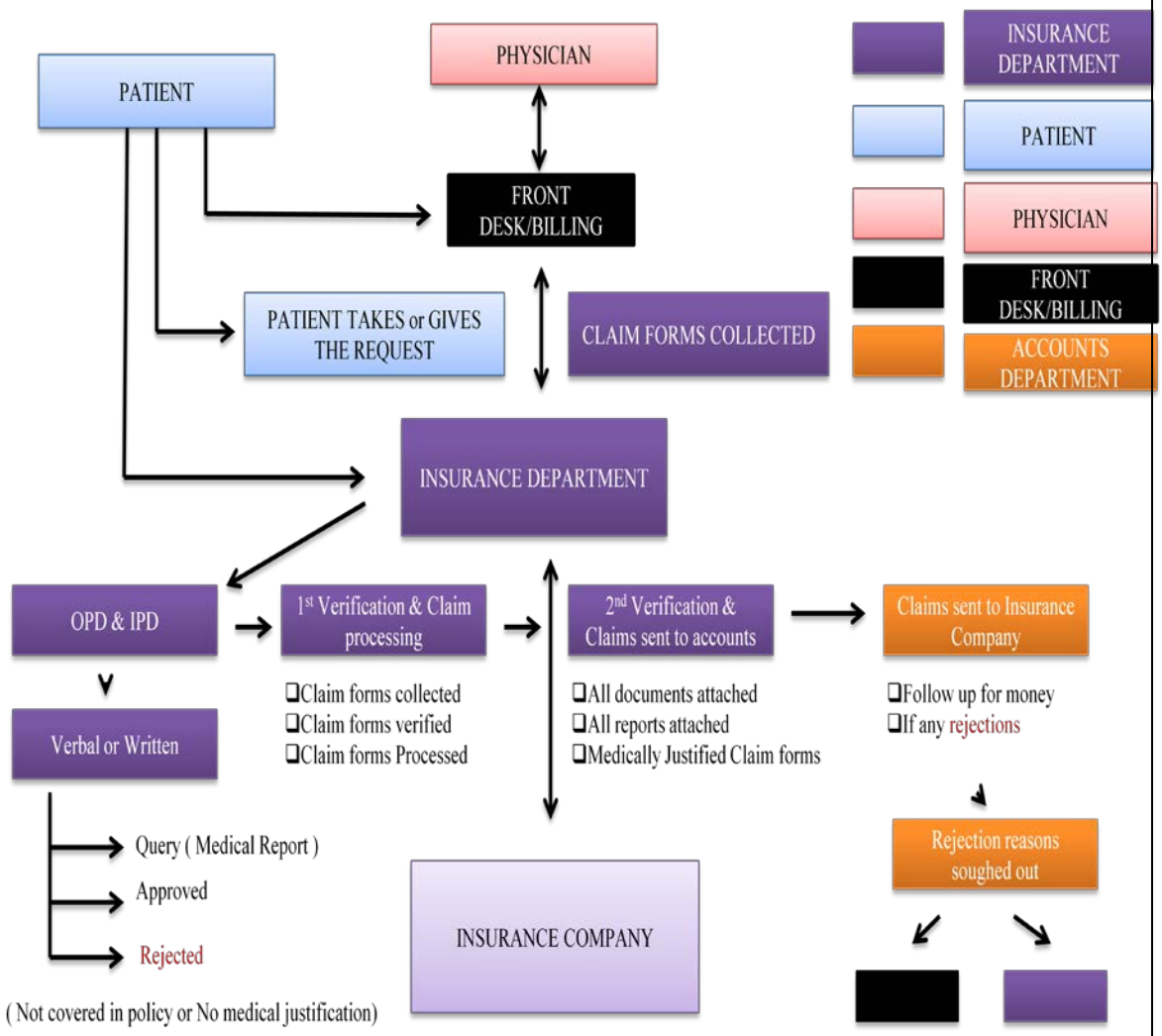
- Various other areas were also indentified but considered as beyond the scope of the project and a possible subject for a follow on project.

## MEASURE PHASE

- The first step in this phase was to identify the process of insurance department
- Thus as a first step of the study, an approximate process map of the Insurance Department was developed.
- The Next step was to develop a repeatable and reproducible measurement standard operating procedure for turnaround time.
- This SOP was prepared with the help of the head of the department and staff of the department.
- A manual measurement protocol was developed by reviewing complete sample patient records from the medical records department, a sample of 150 sequential (by time of discharge) were selected.
- The turnaround time and rejection rate were measured

### Process Flow

**Figure 1 (Process Flow)**




## Turn Around Time (TAT)

**Figure 2 (Turnaround Time)**

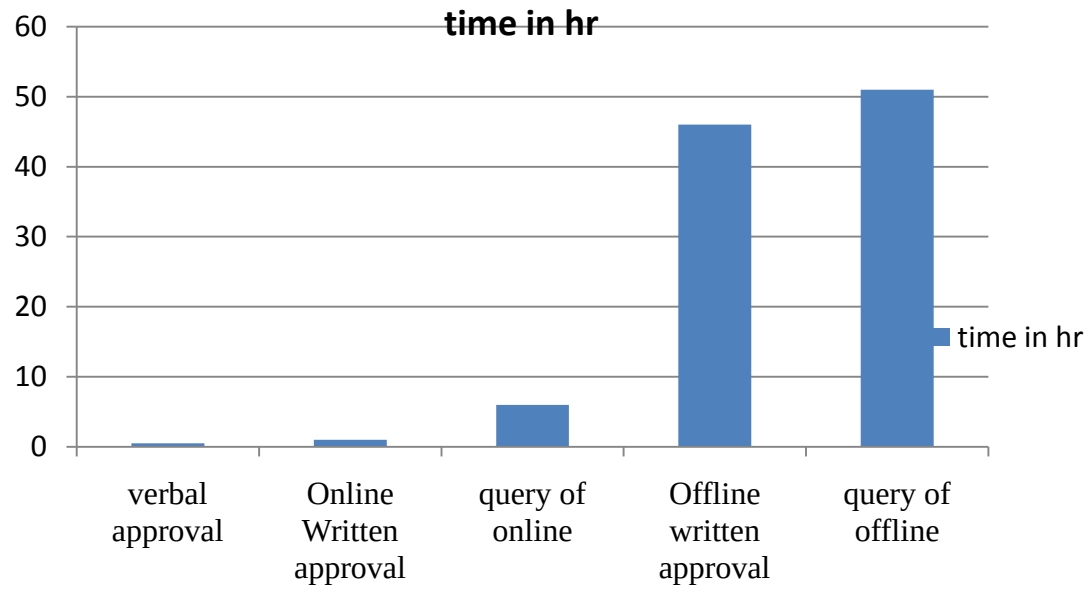
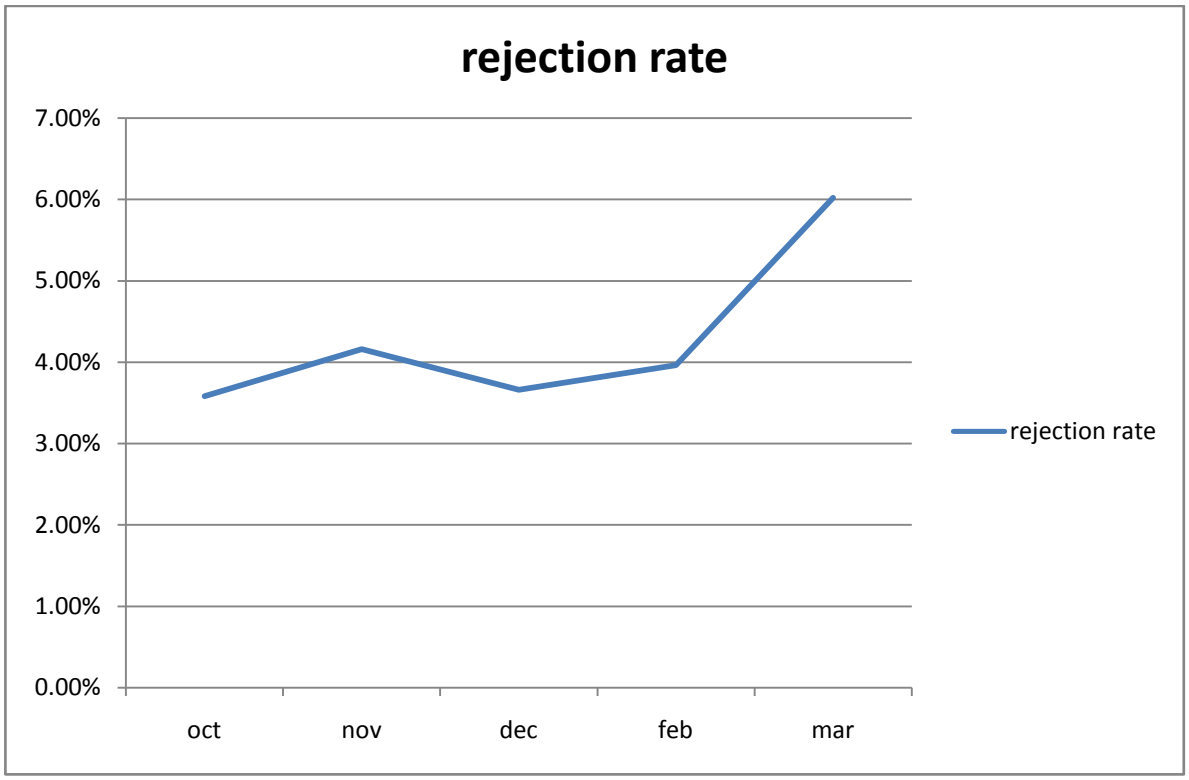



**Figure 3 (Percentage of Rejection Rate)**




## ANALYZE PHASE

- In the define phase, the key output variables (KOVs) were identified as average turnaround time and rejection rate. Thus the analyze phase involves developing a

list of key input variables (KIVs) or project “Xs” on the basis of their relation with the “KOVs”. The “KIV” are selected on the basis of how these variables can improve the “KOV”.

- The “KIVs” were selected using a cause-and-effect diagram in which the key areas were identified.
- A brainstorming session was held with the care providers engaged in the Insurance department process

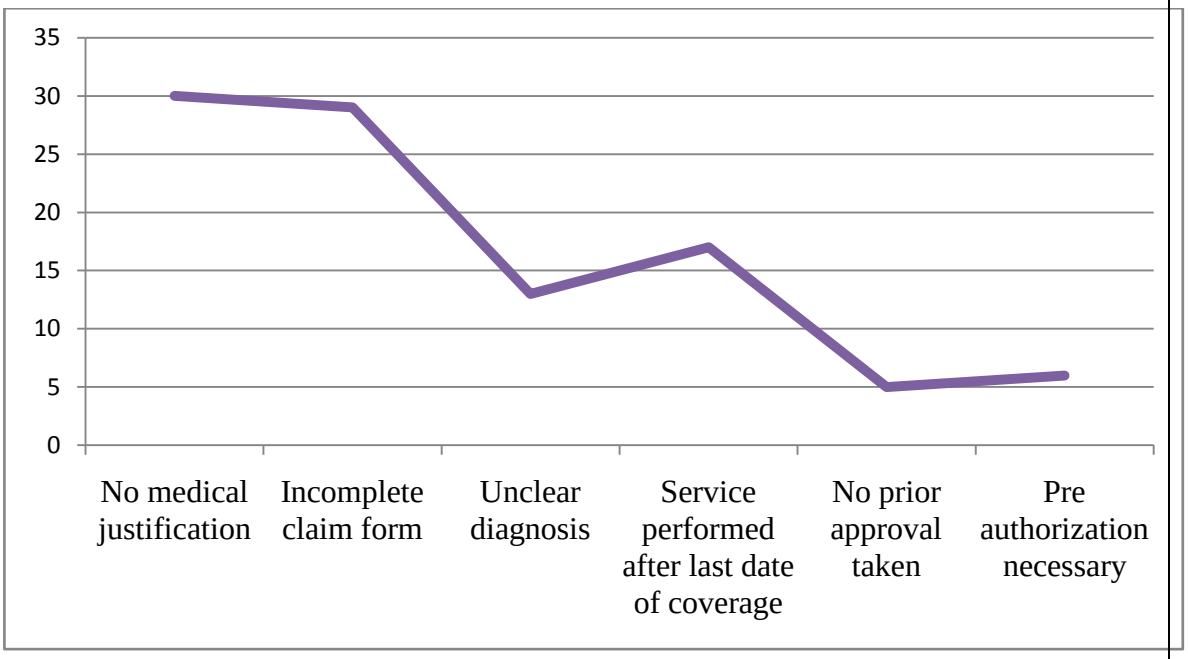
**Reasons for Rejections:**

- Clinical
- Administrative
- Non coverable

Clinical:

- No medical justification
- Incomplete claim form
- Unclear diagnosis
- Service performed after last date of coverage
- No prior approval taken
- Pre authorization necessary

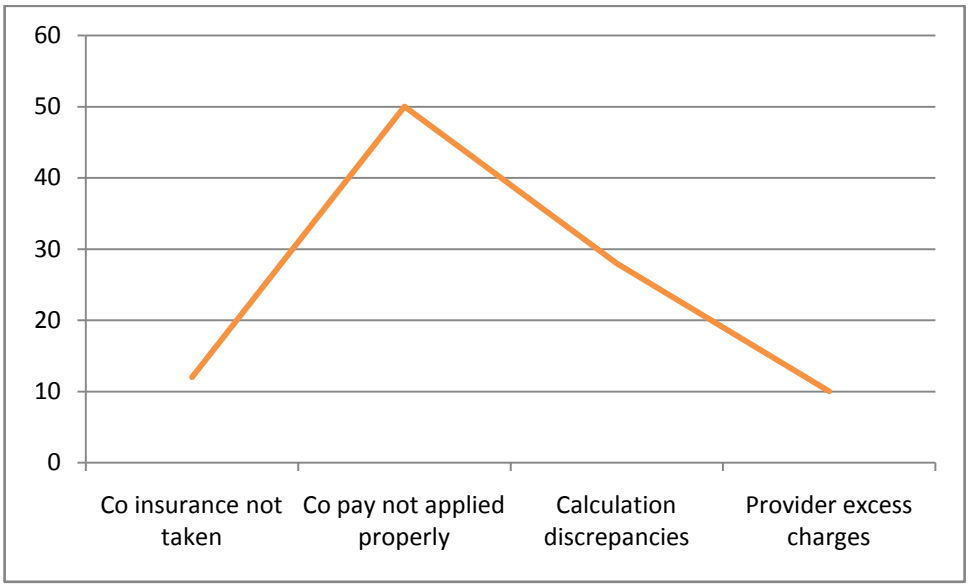
**Figure 4 (Percentage of Clinical reasons for rejection)**




Administrative:

- Co insurance not taken
- Co pay not applied properly
- Calculation discrepancies
- Provider excess charges

**Figure 5 (Percentage of Administrative reasons for rejection)**




Non coverable:

- Standard exclusions
- General exclusions
- Screening tests
- Policy non coverable
- Not under agreed tariff

**Figure 6 (Percentage of Non coverable reasons for rejection)**

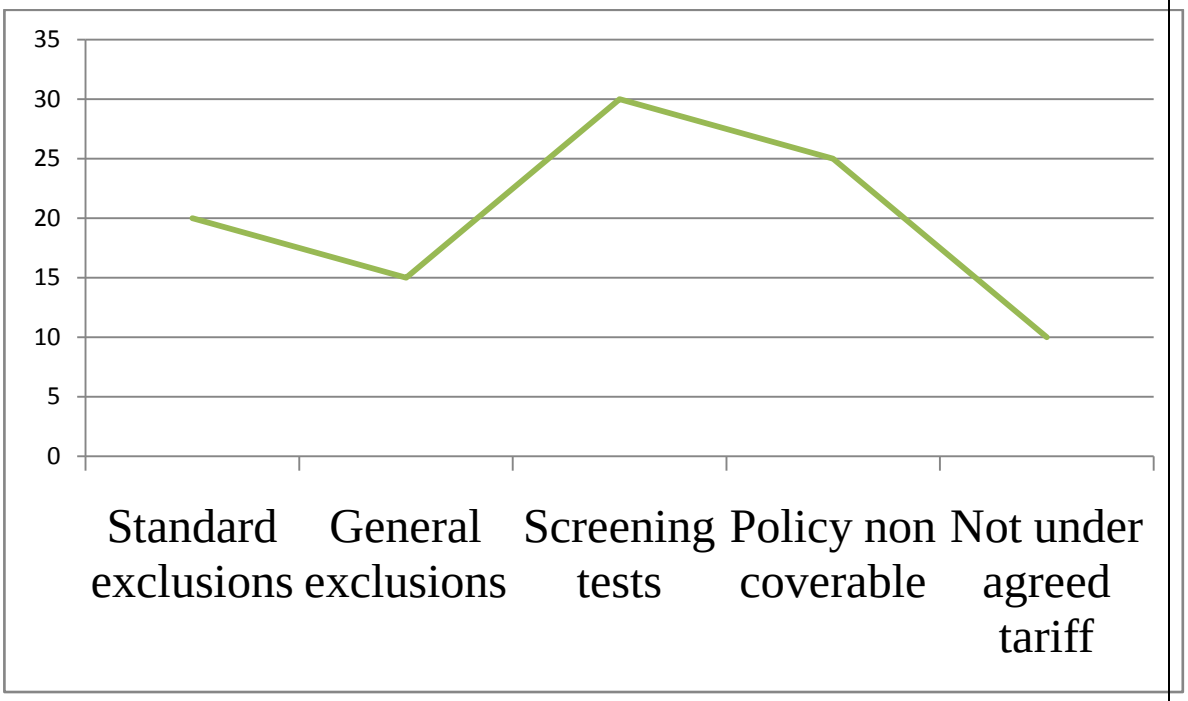
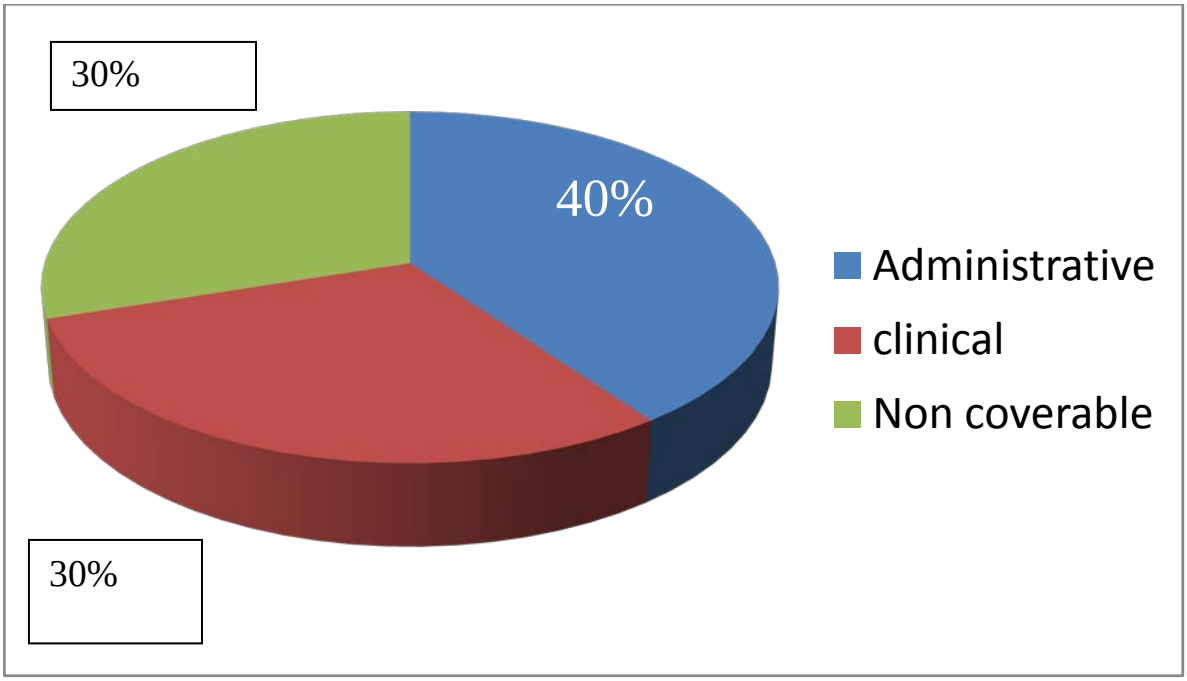



**Figure 7 (Percentage of Complete reasons for rejection rate)**




## IMPROVE PHASE

- In the improve phase, the results of the analyze phase are used to make tentative design change recommendations. These recommendations are then piloted, confirmed, and institutionalized in the control phase.
- Statistically significant evidence that the new system improved key output variables (KIVs) was not available until the control phase. However, during the implementation the immediate anecdotal feedback was positive.
- Due to the limitation of time baseline data for the control phase could not be a part of the study. The documentation of the same is in process and will be recorded

## The main process Improvement Area

HMIS

Manpower Planning

Redesigning of SOP

Revision of SOP

### HMIS

**The following are the requests made to the IT department**

- Limit cross problem
- Discharge Intimation
- View page on single platform- Lab and radio reports
- Increase expiry page time
- View medical records of 6 months
- Status Change as the requests are received and processed
- Link to email and fax from the system
- Single platform module
- Option to add link of lab and radio reports
- SMS sent as soon as processed
- In patient current admission status
- Request update button

**Results**

Approval of Proposed problems to IT team

Till the 15th of May

- Limit cross problem
- Discharge Intimation
- View page on single platform- Lab and radio reports
- Increase expiry page time
- Request update button

No deadline given but agreed

- View medical records of 6 months: consultant name, date, diagnosis and drugs given
- Status Change as the requests are received and processed
- Link to email and fax from the system
- Single platform module
- Option to add link of lab and radio reports
- SMS sent as soon as processed
- In patient current admission status

Manpower Planning

Manpower analysis was done in depth. The turnaround time was calculated to complete a single request. The available time and the present utilized time was noted

The results cleared showed that the required manpower was 17 but only 11 people were working in the Insurance Department.

Re designing of Department

The department re designing was done taking up the space vacant in its adjacent area. The redesigning would help provide awaiting area for the patient and less interference of the patients with the staff increasing the value added time to send the approval requests increasing the efficiency of the staff reducing the turnaround time.

**Discussion**

The turnaround time was high because of the lack of IT interference leading to less patient generation and revenue. The Rejection rate was also high because of the lack of proper channelized system. The interfaces made in the HMIS would help increase the efficiency of the staff reducing the need for extra manpower. This would even help to reduce the rejection rate as the complete process would be streamlined.

**Conclusion**

The interventions made in the HMIS can reduce a huge amount of money and time loss which are the most important resources of an organization. The turnaround time will reduce decreasing the non value added time. The interventions will channelize the complete process reducing the chances of error which will reduce the rejection rate. The changes in HMIS and re designing the department can bring a major change in the process making it a win-win situation for all with the minimum resources.

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