DISSERTATION TRAINING

AT

DISTRICT PROGRAM MANAGEMENT UNIT, NRHM, GUJARAT

THE STUDY OF ROLE AND CONTRIBUTION OF INFORMATION TECHNOLOGY COMPONENTS IN TWO NATIONAL LEVEL HEALTH INSURANCE SCHEMES (RSBY AND MA) IN JAMNAGAR DISTRICT, GUJARAT STATE.

BY

BIPINKUMAR G RATHOD

PGDHHM

2012-2014

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

NEW DELHI

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The study of role and contribution of information technology components in two national level health insurance schemes (RSBY and MA) in Jamnagar district, Gujarat state.

BY

BIPINKUMAR G RATHOD

UNDER GUIDANCE

OF

DR D K DABHI

POST GRADUATE DIPLOMA IN HOSPITAL & HEALTH MANAGEMENT

YEAR 2012-2014

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

NEW DELHI

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr Bipinkumar G Rathod student of Post Graduate Diploma in Hospital and Health Management (PGDHHM) from International Institute of Health Management Research, New Delhi has undergone internship training at District Program Management Unit NRHM, Gujarat State Government District Health Office from 11th Feb to 11th May 2014.

The Candidate has successfully carried out the study designated to him during internship training 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 his future endeavours.

Dean, Academics and Student Affairs **Professor**

IIHMR, New Delhi **IIHMR, New Delhi**

CERTIFICATE

The certificate is awarded to Mr Bipinkumar G Rathod In recognition of having successfully completed his dissertation Internship in the department of District Program Management Unit District project office (Rastriya Swasthaya Bima Yojna & MA), CDH Office , District Panchayat, Jamnagar.

He has successfully completed his Project on 'The study of role and contribution of information technology components in two national level health insurance schemes (RSBY and MA) in Jamnagar district, Gujarat state.'

Date 12 May-2014

Organisation: District Health Office, Jamnagar, Gujarat State.

He comes across as a committed, sincere & diligent person who has a strong drive & zeal for learning

We wish him all the best for future endeavours

Quality Assurance Medical Officer **Chief District Health Officer**

National Health Mission **Jamnagar district**

INTERNATION INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled "The study of role and contribution of information technology components in two national level health insurance schemes

(RSBY and MA) in Jamnagar district, Gujarat state".

and submitted by Mr Bipinkumar G Rathod Enrolment No. PG/12/20 under the supervision of Dr Anandhi Ramachandran for award of Postgraduate Diploma in Hospital and Health Management of the Institute carried out during the period from 11/2/2014 to 10/5/2014 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.

Dean Academics & Student Affairs	**Professor**
IIHMR, New Delhi	**IIHMR, New Delhi**

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Acknowledgement

I would like to express the deepest appreciation to my faculty Professor Dr Anandhi Ramachandran , who has the attitude and the substance of a genius. She continually and convincingly conveyed a spirit of adventure in regard to this dissertation, and an excitement in regard to teaching. Without her guidance and persistent help this dissertation would not have been possible.

I would like to thank my Chief Dr D K Dabhi (Chief District Health Officer) and Mentor Dr Subhash H Dhamsaniya (District Quality Assurance Officer NHM), whose work demonstrated to me that strategic and operational **planning of both health insurance scheme data interpretation.**

In addition, a thanks to District Development Officer , insurance company representatives, third party administrator, providers who introduced me to health insurance, data, web portal and whose enthusiasm for the insurance eco system had lasting effect.

I thank the University of IIHMR Delhi staff, faculty for consistent support to conduct this dissertation in timely manner.

Preface

A few publication and thesis written on health information technology used in health care insurance, many of them produced by agency like world bank, planning commission etc.

I embarked upon working with two state level national health insurance scheme at district level interacting with IT components which dealt with its efficiency and effectiveness factors.I was holding the post of District project officer in National Health Mission at Jamnagar district Gujarat state during the dissertation period.

I used the HIMSS Health value IT Suite 'STEPS' analysis to compare and analyse the success factors where IT technology help the scheme running smoothly.

I am very thankful to all who help me to all possible perspective to see the this IT components closely , opportunity to testify in real life conditions, data gathering and advise from seniors helped me write this dissertation precisely and coherently.

I would like to thanks District Program management unit staff, Chief District Health officer,Project office (RSBY and MA),district co-ordinators of both schemes.

Special thanks goes to Dr Ananadhi Ramachandran whose consistent and timely help to perform in depth analysis of the data and work toward, produce data mining and business intelligence report of these two insurance scheme.

Abstract

This study is qualitative exploratory attempt to review the Information Technology components in government sponsored health insurance scheme in Jamnagar district Gujarat state.

Secondary data from feedback, grievance records reviewed and HIMSS Health value suite STEPS used to quantify the response by providers/payers/beneficiaries of the RSBY and MA health insurance schemes.

Qualitative information quantify with Liker scale and SPSS V20 used for frequency table to review the response in each category of the STEPS criteria.

Overall respondents of the IT components users is positive, nearly 65% to 75% task effectively dealt with IT usage by providers/payers.

HIMSS STEPS analysis of IT usage in insurance sectors good analysing tools to prove the IT investment in health insurance sector in India

Introduction

The study of role and contribution of information technology components in two national level health insurance schemes (RSBY and MA) in Jamnagar district, Gujarat state.

There have been increasingly use of information technology in health insurance sector in last decade in India. Private Health Insurance Company effectively dealt with issues related to IT components of service delivery of health insurance to their stakeholders. Where government still struggling with effective utilisation of the IT in enrolment, data collection, implementation and governance issues.

Government too adopt the information technology for better management of their two health insurance schemes (Rastriya swathya bima yojna and Mukhyamantri Amrutam) to address the bellow poverty line population paying capacity for rising healthcare cost.

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RSBY implemented at national level to cover all BPL population of India , whereas MAA scheme is state sponsored scheme to target non communicable disease (7 clusters as mentioned) in Gujarat state only.

1.Cardiovascular Surgeries
2. Neurosurgeries
3. Burns
4. Poly Trauma
5. Cancer (Malignancies)
6. Renal (Kidney)
7. Neo-natal (newborn) diseases

This study try to explore the factors affecting the IT components (enrolment kiosks, hardware and software, hospital kiosks) of these both schemes

About RSBY

Rashtriya Swasthya Bima Yojna (RSBY) has been launched by Ministry of Labour and Employment, Government of India to provide health insurance coverage for Below Poverty Line (BPL) families. The objective of RSBY is to provide protection to BPL households from financial liabilities arising out of health shocks that involve hospitalization.

Beneficiaries under RSBY are entitled to hospitalization coverage up to Rs. 30,000/- per year for most of the diseases that require hospitalization. Government has even fixed the package rates for the hospitals for a large number of interventions. Pre-existing conditions are covered from day one and there is no age limit. Coverage extends to five members of the family which includes the head of household, spouse and up to three dependents. Beneficiaries need to pay only Rs. 30/- as registration fee while Central and State Government pays the premium to the insurer selected by the State Government on the basis of a competitive bidding.

Figure 1 :RSBY Card sample

Scheme Features The RSBY scheme is not the first attempt to provide health insurance to low income workers by the Government in India. The RSBY scheme, however, differs from these schemes in several important ways.

Empowering the beneficiary

RSBY provides the participating BPL household with freedom of choice between public and private hospitals and makes him a potential client worth attracting on account of the significant revenues that hospitals stand to earn through the scheme.

Business Model for all Stakeholders

The scheme has been designed as a business model for a social sector scheme with incentives built for each stakeholder. This business model design is conducive both in terms of expansion of the scheme as well as for its long run sustainability.

Insurers

The insurer is paid premium for each household enrolled for RSBY. Therefore, the insurer has the motivation to enroll as many households as possible from the BPL list. This will result in better coverage of targeted beneficiaries.

Hospitals

A hospital has the incentive to provide treatment to large number of beneficiaries as it is paid per beneficiary treated. Even public hospitals have the incentive to treat beneficiaries under RSBY as the money from the insurer will flow directly to the concerned public hospital which they can use for their own purposes. Insurers, in contrast, will monitor participating hospitals in order to prevent unnecessary procedures or fraud resulting in excessive claims.

Intermediaries

The inclusion of intermediaries such as NGOs and MFIs which have a greater stake in assisting BPL households. The intermediaries will be paid for the services they render in reaching out to the beneficiaries.

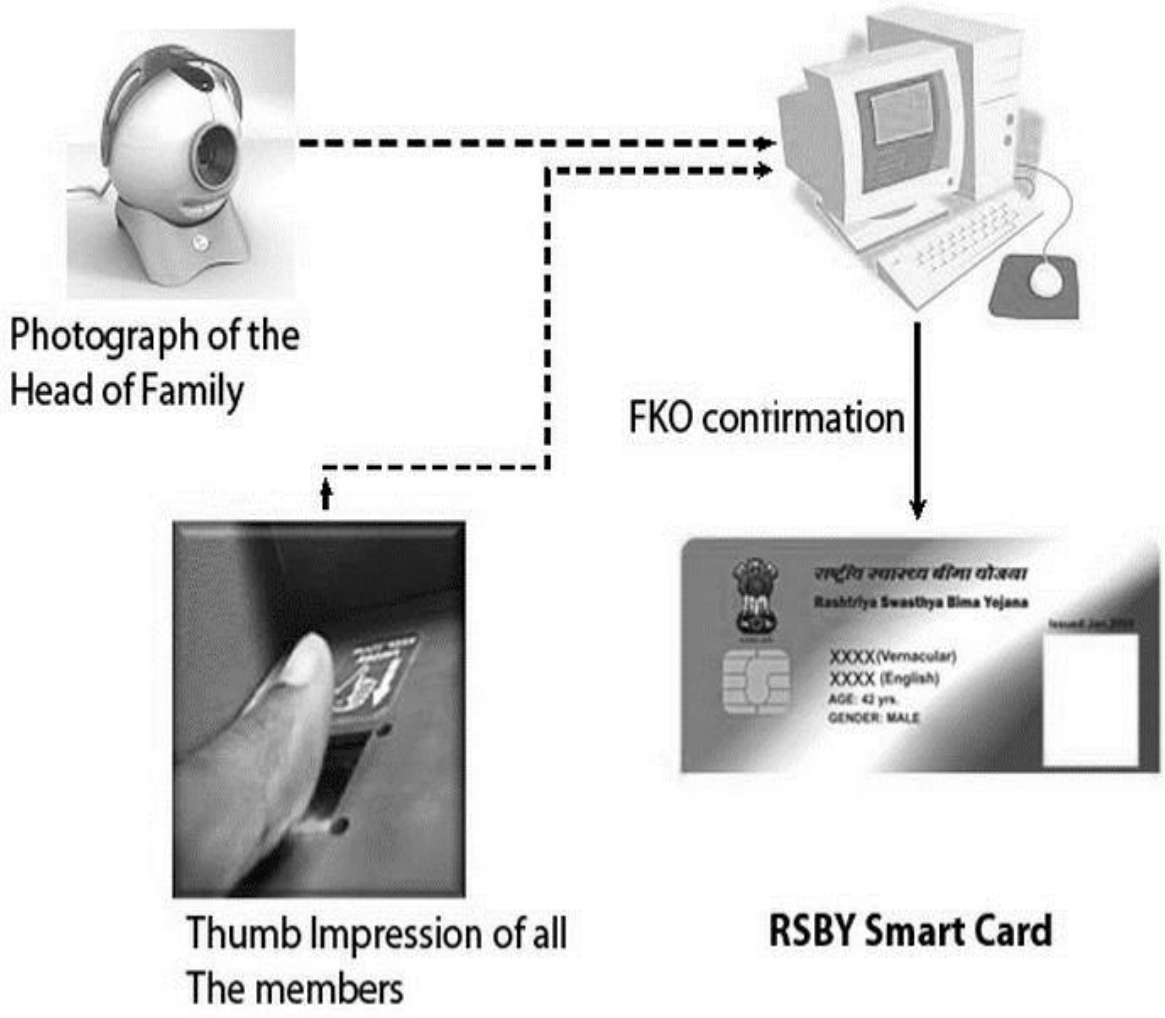
Government

By paying only a maximum sum up to Rs. 750/- per family per year, the Government is able to provide access to quality health care to the below poverty line population. It will also lead to a healthy competition between public and private providers which in turn will improve the functioning of the public health care providers.

Information Technology (IT) Intensive

For the first time IT applications are being used for social sector scheme on such a large scale. Every beneficiary family is issued a biometric enabled smart card containing their fingerprints and photographs. All the hospitals empanelled under RSBY are IT enabled and connected to the server at the district level. This will ensure a smooth data flow regarding service utilization periodically.

Figure 2 : RSBY kiosk machine components



Safe and fool proof

The use of biometric enabled smart card and a key management system makes this scheme safe and fool proof. The key management system of RSBY ensures that the card reaches the correct beneficiary and there remains accountability in terms of issuance of the smart card and its usage. The biometric enabled smart card ensures that only the real beneficiary can use the smart card.

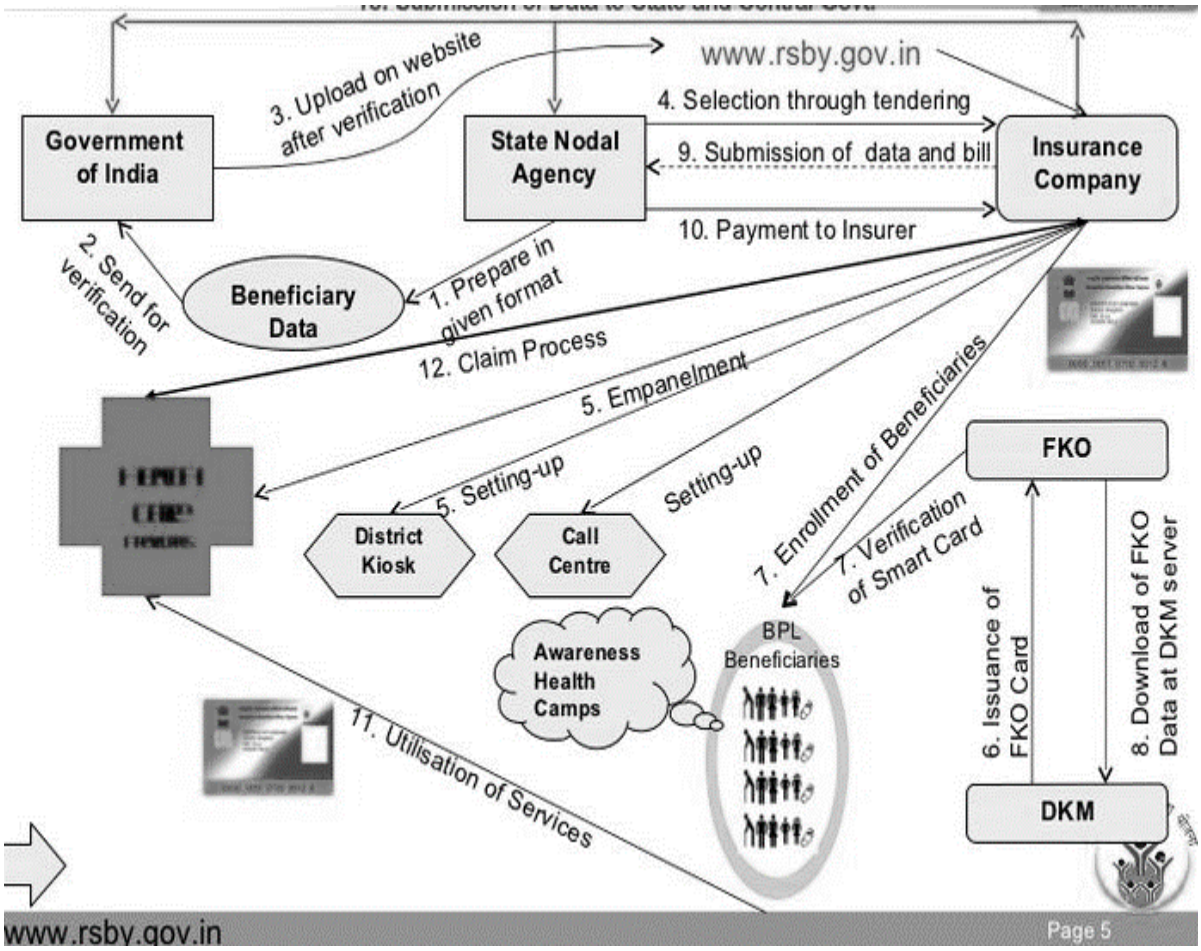
Portability

The key feature of RSBY is that a beneficiary who has been enrolled in a particular district will be able to use his/ her smart card in any RSBY empanelled hospital across India. This makes the scheme truly unique and beneficial to the poor families that migrate from one place to the other. Cards can also be split for migrant workers to carry a share of the coverage with them separately.

Cash less and Paperless transactions

A beneficiary of RSBY gets cashless benefit in any of the empanelled hospitals. He/ she only needs to carry his/ her smart card and provide verification through his/ her finger print. For participating providers it is a paperless scheme as they do not need to send all the papers related to treatment to the insurer. They send online claims to the insurer and get paid electronically.

Figure 3 RSBY card process map



Robust Monitoring and Evaluation

RSBY is evolving a robust monitoring and evaluation system. An elaborate backend data management system is being put in place which can track any transaction across India and provide periodic analytical reports. The basic information gathered by government and reported publicly should allow for mid-course improvements in the scheme. It may also contribute to competition during subsequent tender processes with the insurers by disseminating the data and reports.

Financing for RSBY - RSBY is a Government sponsored scheme for the BPL population of India. The majority of the financing, about 75%, is provided by the Government of India (GOI), while the remainder is paid by the respective state government. Government of India's contribution is 90% in case of North-Eastern states and Jammu and Kashmir and respective state Governments need to pay only 10% of the premium.

Beneficiaries need to pay only Rs. 30 as the registration fee. This amount shall be used for incurring administrative expenses under the scheme.

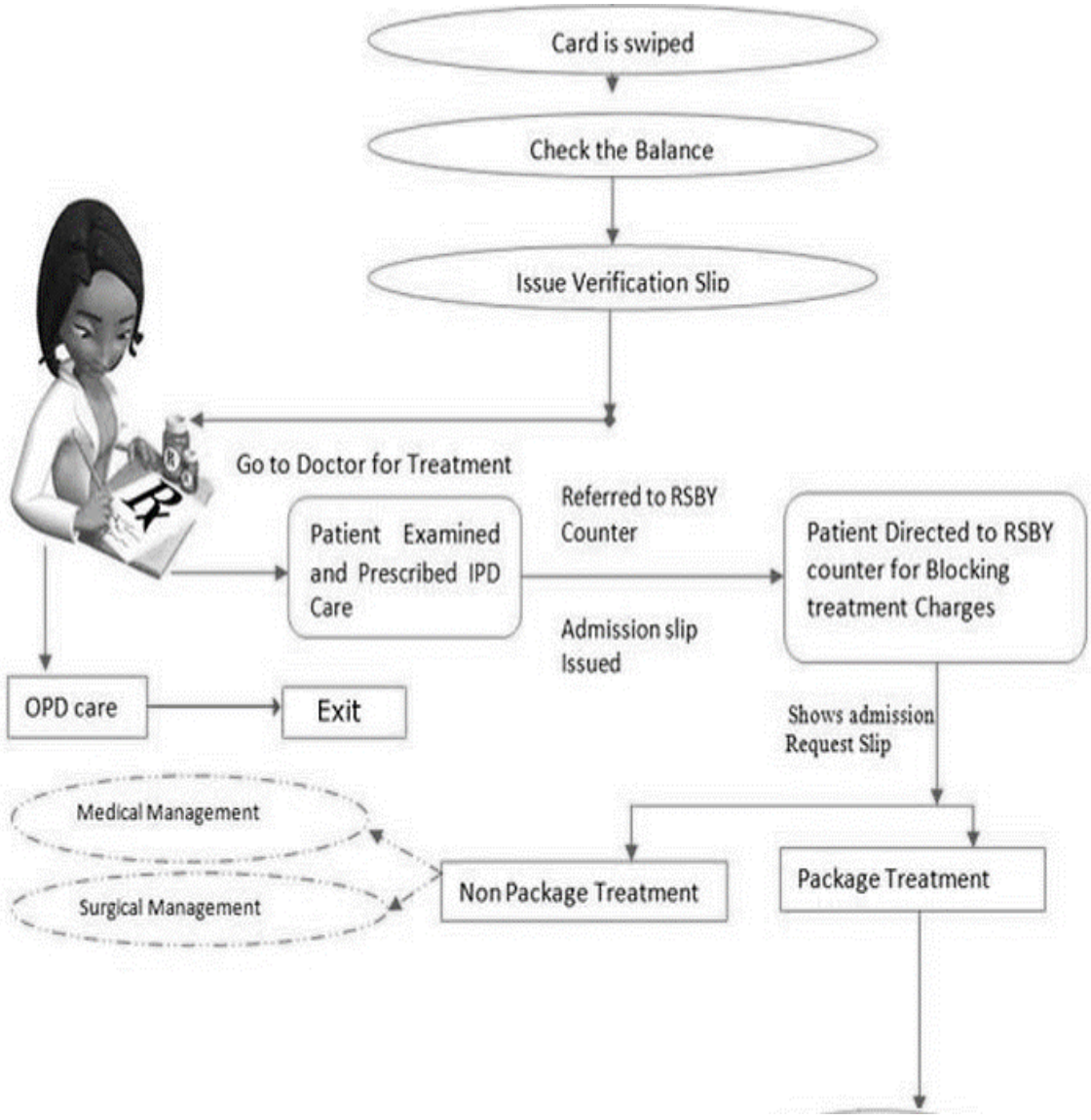
Selection of Insurance Company - State governments engage in a competitive public bidding process and select a public or private insurance company licensed to provide health insurance by the Insurance Regulatory Development Authority (IRDA) or enabled by a Central legislation. The technical bids submitted must include a number of elements as per GOI requirements.

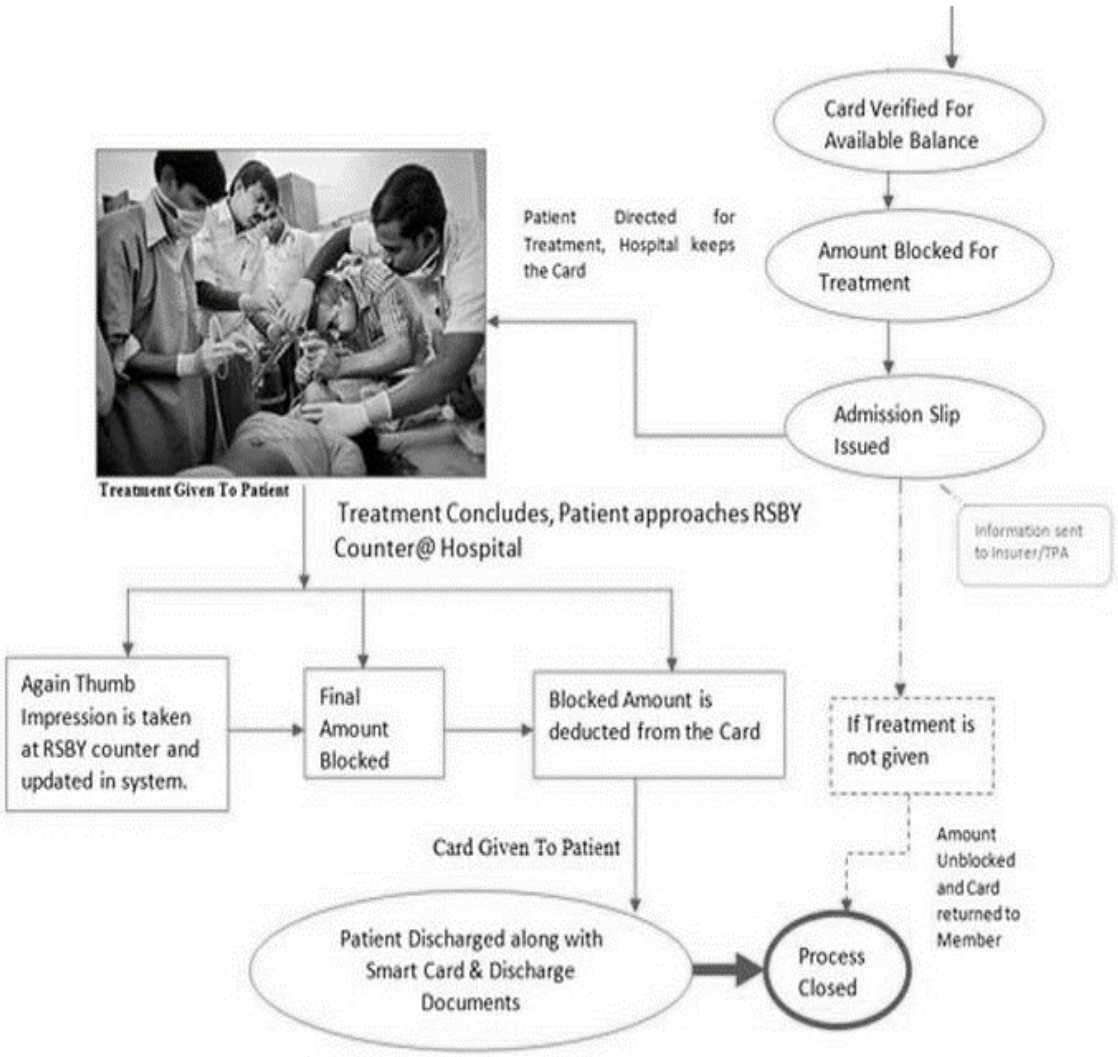
Empanelment of Health Care Providers – The selected insurance company needs to empanel both public and private health care providers in the project and nearby districts.

Figure 4 : RSBY enrolment station

These empanelled hospitals should install necessary hardware and software so that smart card transactions can be processed. They should also set up a special RSBY desk with a trained staff. The hospital list should allow for both public and private hospitals who agree to participate. The insurer must also provide a list of RSBY empanelled hospitals, to the beneficiaries at the time of enrolment. This list can be revised at periodic intervals as more and more hospitals are added in the list. When empanelment takes place, a nationally unique hospital ID number is generated so that transactions can be tracked at each hospital.

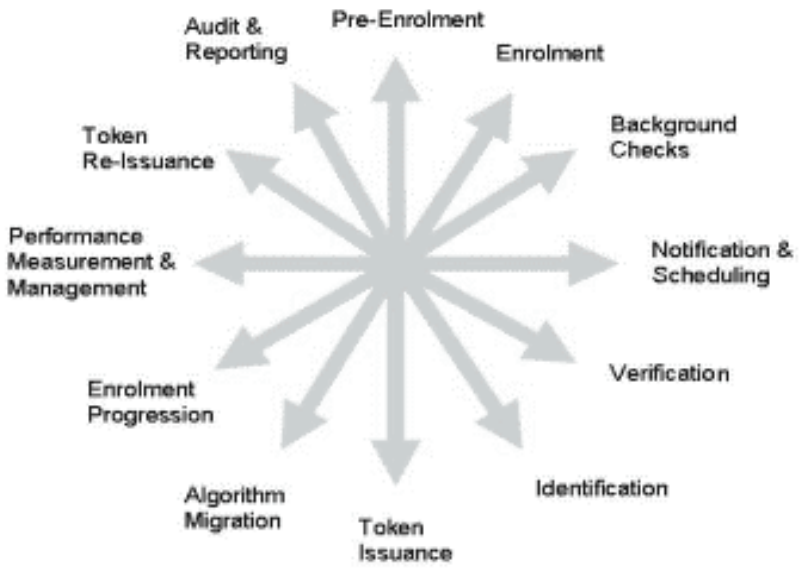
Figure 5 :RSBY Hospital kiosk process map.





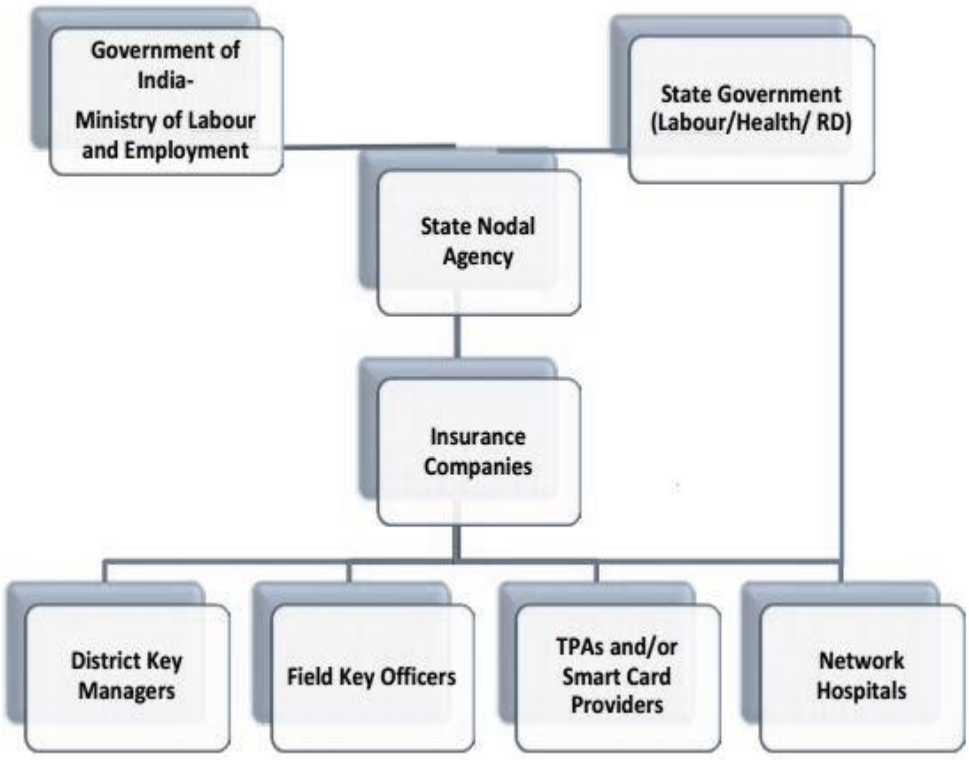
RSBY provides health insurance for the enrolled BPL families from each district up to a maximum number of households based on the definition and the figures provided for each state by the union Planning Commission. State Government must prepare and submit the BPL data in an electronic format specified by Government of India. The format requires details of all the family members including name, father or husband's name for the head of household, age, gender and relationship with the head of household. Respective State Governments need to convert their existing BPL data in this format for each district and send these data to Government of India which in turn checks the compatibility of this data with the standard format. However, state governments alone are responsible for the accuracy of their BPL lists. Preparation of BPL data in the specified format is necessary for implementing the scheme.

Figure 6 : IT mapping of processes



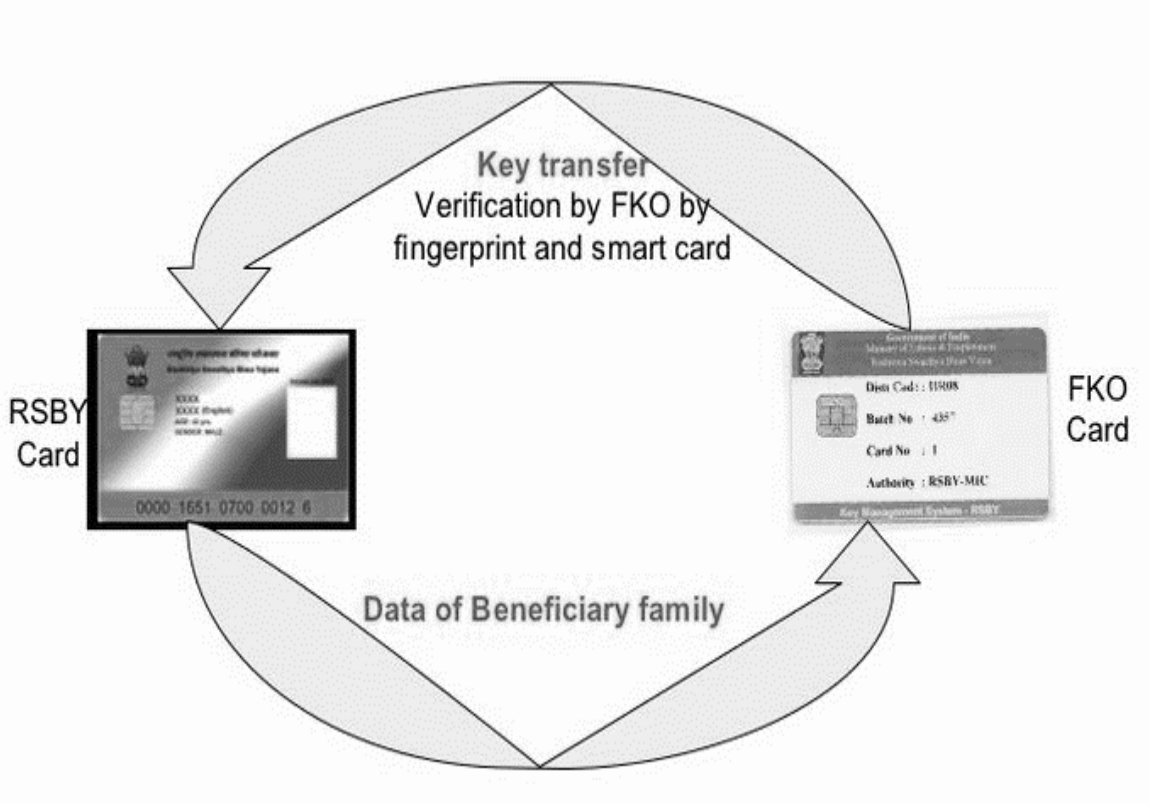
Enrolment of Beneficiaries– An electronic list of eligible BPL households is provided to the insurer using a pre-specified data format. An enrolment schedule for each village, along with dates, is prepared by the insurance company with the help of the district level officials. As per the schedule, the BPL list is posted in each village at enrolment station and prominent places prior to the enrolment and the date and location of the enrolment in the village is publicized in advance. Mobile enrolment stations are set up at local centres (e.g., public schools) at each village. These stations are equipped by the insurer with the hardware required to collect biometric information (fingerprints) and photographs of the members of the household covered and a printer to print smart cards with a photo. The smart card, along with an information pamphlet describing the scheme and the list of hospitals, is provided on the spot once the beneficiary has paid the 30 rupee fee. The process normally takes less than ten minutes. The cards are handed over in a plastic cover.

Figure 7 : RSBY Government Ministry cross mapping



A government officer (called Field Key Officer – FKO) – needs to be present and must insert his/her own, government-issued smart card to verify the legitimacy of the enrolment. (In this way, each enrolee can be tracked to a particular state government official). In addition to the FKO, an insurance company representative/ smart card agency representative must be present. At the end of the each day of enrolment, the list of households which have been issued smart cards is sent to the state nodal agency. This list of enrolled households is maintained centrally and is the basis for financial transfers from the Government of India to the state governments.

Figure 8 : RSBY-FKO Card



Portability of Smart Card – On receipt of the smart card and consequent to the commencement of the policy, the beneficiary shall be able to use health service facilities in any of the RSBY empanelled hospital across India. Any hospital which is empanelled under RSBY by any insurance company will provide cashless treatment to the beneficiary.

Utilization of Services by Beneficiaries – The transaction process begins when the member visits the participating hospital. After reaching the hospital, beneficiary will visit the RSBY help desk at hospital where his identity will be verified by his photograph and fingerprints which are stored on his/her smart card.

Claim Settlement – After rendering the service to the patient, the hospitals need to send an electronic report to the insurer/ Third Party Administrator (TPA). The Insurer/ TPA after going through the records information will make the payment to the hospital within a specified time period which has been agreed between the Insurer and the hospital.

Monitoring and Evaluation –Information relating to transactions that take place each day at each hospital is sent to a district server. A separate set of pre-formatted tables are generated for the insurer and for the government respectively. This allows the insurer to track claims, transfer funds to the hospitals and investigate in the case of suspicious claim patterns through on-site audits.

Introduction

Figure 9 : NHM State Organizational profile

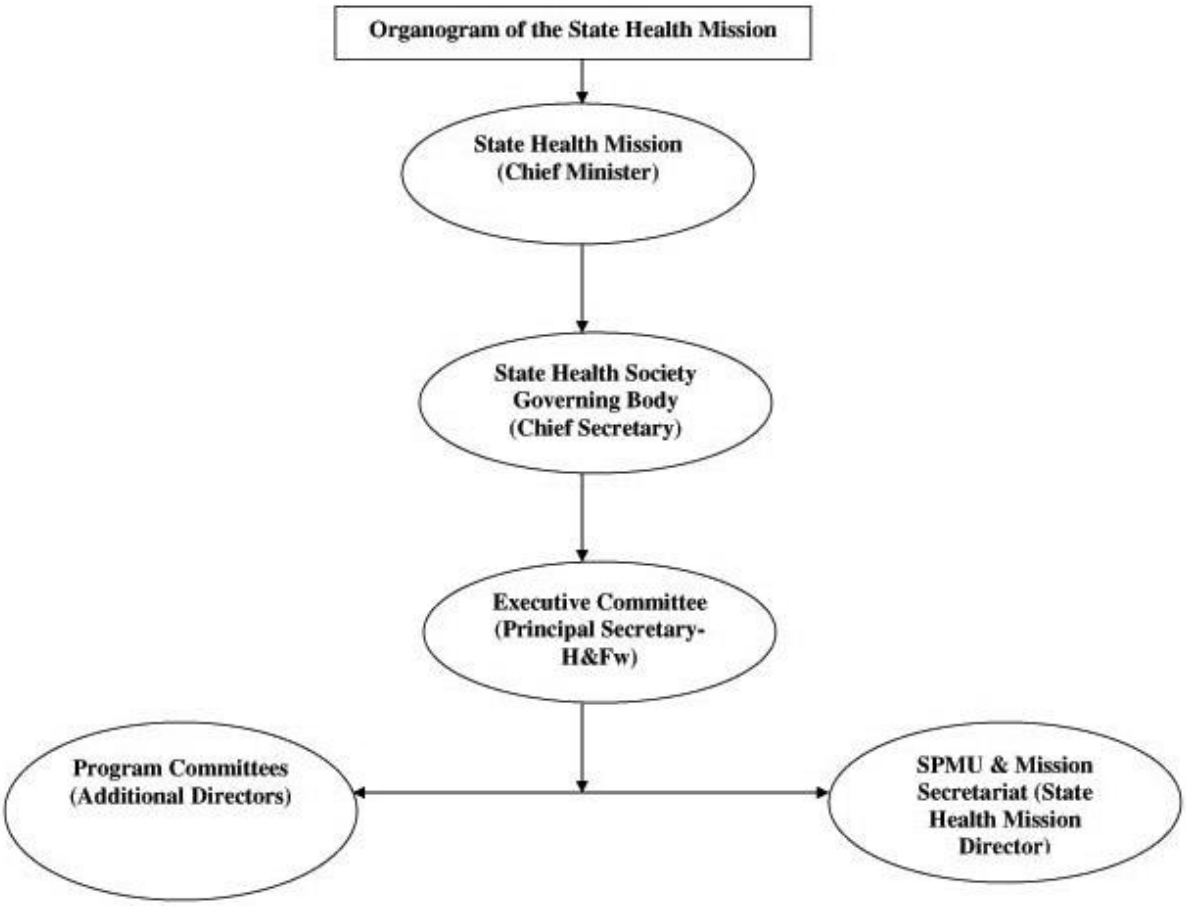


Figure 10 :NHM District health society

Diagram-1 : Governance Structure of the DHS

National Rural Health Mission: Institutional Setup at the District level

District Health Mission and the District Health Society

On the lines of the State Health Mission, every district will have a District Health Mission headed by the Chairperson, Zila Parishad. It will have the District Collector as the Co-Chair and Chief Medical Officer as the Mission Director.

To support the District Health Mission, every district will have an integrated District Health Society (DHS) and all the existing societies as vertical support structures for different national and state health programmes will be merged in the DHS. The DHS will be responsible for planning and managing all health and family welfare programmes in the district, both in the rural as well as urban areas. There are two important implications of this requirement. Firstly, DHSs planning will have to take note of both treasury and non-treasury sources of funds, even though it may not be handling all sources directly. Secondly, its geographical jurisdiction will be greater than those of the Zilla Parishad and /or Urban Local Bodies (ULBs) in the district.

A. Governing Body		
Chair	:	District Collector/DM/CEO Zilla Parishad
Co-Chair	:	DDC cum CEO, Zilla Parishad
Chief Executive Officer	:	Chief Medical Officer/CDMO/Civil Surgeon
Members	:	Project Officer (DRDA), District Programme Managers for Health, AYUSH, Water and Sanitation [under Total Sanitation Campaign (TSC)], DPMSU, PHED, ICDS, education, social welfare, Panchayati Raj, a State representative, Sub-Divisional Officer, CHC In-charge; representatives of Medical Association/MNGO/SNGO and Development Partners

Ensuring Inter-sectoral convergence and integrated planning should be a specific task for the Governing Body of the DHS. However, the DHS is not meant to take over the executive functions of the ZP / ULBs and/or the district health administration. On the contrary, DHS is meant to provide the platform where the three arms of governance ZP, ULBs and district health administration and district programme managers of NHM sectors get together to decide on health issues of the district and delineate their mutual roles and responsibilities.

Figure 11: DHS executive committee

Executive Committee		
Chair	:	DDC cum CEO Zilla Parishad (CMO in case no Post of DDC/CEO Zilla Parishad is notified in the district
Co-Chair	:	CMO/CDMO/CMHO/CS
Chief Executive Officer and Convener	:	District Programme Manager/District RCH Officer
Members	:	Superintendent-District Hospital, All District Programme Managers for health, ICDS, PHED, Water and Sanitation, Education, Panchayati Raj etc.

Diagram-1 : Governance Structure of the DHS

Services provided by District Project Office

Departments visited/worked

District Program Management Unit (DPMU),District Development Office, State Program Management Unit

Problems and issues in each department: strict government administration. Lengthy paper works

Observations/Learning: RSBY and MA portal log-in and report generation, stack holders meeting. Dispute and Grievance redressal committee. Monthly claims analysis. liaison with third party administrator company, Insurance company and government.

Any projects undertaken other than dissertation

Reporting extraordinary good/adverse events without naming hospital/department

Right to information for these both schemes by public.

Table 1: Scheme comparison

Criteria	RSBY-scheme	MA-scheme	Remarks for IT Technology
Enrolment process?	3 months / year	All year around.	10 MA-kiosk
Purpose	To cover all medical/surgical disease (all specialities)	7 major identified diseases cluster NCD.	
photograph	Head of family,group photo, individual beneficiary ,	Head of family,group photo, individual beneficiary ,	
Verifying Authority (VA)	Government appointed not less than class 2 officer	Government officer in health department.	Biometric verification

charge any fees for issuance	30 Rs / card	Free	
Dependents Enrollment	Max 5 persons /card	Max 5 persons/card, new-born can be added	
Age limit	None	None	
Add-On cards	Yes	No (But split card facility available)	Data inter operability
Loses/Damage	Re-issue	Re-issue	
Enrolled be changed midway	Only add/remove beneficiaries, no change in head of family name.	Yes, add/remove as needed.	
Transactions	Cashless	Cashless /paperless	
Card technology	Chip embedded card	Quick response code card	
Sponsor	Ministry of labour and employment	Gujarat government	
clinical specialisation	Any	Super specialisation	
Operation	Pan India	Only in Gujarat state	

In 2008, India's Labour Ministry launched a hospital insurance scheme called Rashtriya Swasthya Bima Yojana (RSBY) covering 'Below Poverty Line' (BPL) households. RSBY is implemented through insurance companies; premiums are subsidized by Union and States governments (75 : 25%). We examined RSBY's enrolment of BPL, costs vs. budgets and policy ramifications.

Only about 0.037 per cent of the total union budget, sufficient to pay premiums of only 34 per cent of the BPL households enrolled by March 31, 2011.

Health financing functions of revenue collection, pooling and purchasing affects the realisation of health financing targets of resource generation, optimal resource use and financial accessibility

of health services for all. Then, within each health financing function, key performance issues and associated measurable indicators are developed.

The evaluation of health technologies as an instrument to support or to control their dissemination and use or to help define policies is not institutionalized or systematically used

This study describes the two systems' (RSBY and MA) information technology (IT) infrastructures, their roles, and quantitative analysis of their work performance. It also reports the impact of these systems on claims processing by analysing the health insurance claim data submitted to respective websites from Feb 1 to April 1, 2014.

Interoperability: Presently, most of the information systems are developed in silos, causing redundancy/ ambiguity of information exchange/sharing. To uniform use of common terms and common methods for sharing information, interoperability allows user to extract required information from multiple sources through a single query.

Use of information: The challenge for the health information system in health insurance is to bring together data production with data. It support users in synthesizing information regarding service delivery, epidemics, clinical Management , alert/early warnings, Program Management, planning process, health situation, trend analyses, reporting, supervision and monitoring.

Monitoring and Evaluation: Well-designed IT enabled evaluations provide the information that information system designers need to insure a system’s performance, usability, security and functionality. Among other uses, evaluations are helpful in permitting system developers to develop and implement new health information systems, to inform public policy decisions.

Health technology effectiveness, safety, cost and the use of the social, ethical, organizational and legal impact assessment in conjunction with healthcare professionals

Evaluation of methods for the understanding and promotion of the use of assessment data

The provision of reliable information on major health care decision making, especially in the social and the Ministry of Health, local authorities and hospital use

Review of literature

A small body of literature supports a role for Health IT in improving the quality of insurance schemes. Insufficient data were available on the costs or cost-effectiveness of implementing such systems. Most of them from World Bank, UNDP and economy institutes.

Despite the heterogeneity in the analytic methods used, all cost-benefit analyses predicted substantial savings from ICT in health insurance sector (and health care information exchange and interoperability) implementation: The quantifiable benefits are projected to outweigh the investment costs.

However, widespread implementation of Health-insurance IT has been limited by a lack of generalizable knowledge about what types of Health-insurance IT and implementation methods will improve care and manage costs for specific health organizations. The reporting of Health IT development and implementation requires fuller descriptions of both the intervention and the organizational/economic environment in which it is implemented.

HIT has the potential to enable a dramatic transformation in the delivery of health care, making it safer, more effective, and more efficient. Some organizations have already realized major gains through the implementation of multifunctional, interoperable HIT systems

Statistics and MIS of insurance Claims: As the data in computer can be stored for longer period the data may be useful for the insurer to prepare the type of policies are sold in the market and type of claim arisen in the particular region. These types of data will be useful for management to take any decision.

Archiving of historical data and imaging Policy Management and underwriting system

To carry out business transactions efficiently easy to handle growing volume of business and variety of business

Efficient customer services

Reduction in office expenses

Customer Relationship Management (Toll free No.)

E-insurance will reduce managerial and administrative costs through the process of

Business automation, and will improve the managerial data

E-insurance, by selling insurance policy, directly will reduce commission paid to

middlemen

Increasing the accuracy in the insurance activities

Upgrading mechanized insurance system, according to the latest hardware and software facilities

Eliminating costly and time-consuming stages, such as issuing letter of

introduction, inquiries from centers and Reducing the office space of insurance companies through developing virtual space.

Encouraging policyholders to further use of insurance affairs through a perfect informing

Attracting organizations to contracts with insurance

Retaining policyholders and current contract centres

Facilitating the insurance affairs such as documents, reporting.

The possibility of further controlling and managing the affairs of insurance

Inhibiting fraud and forgery

Exact analysing the costs

Integration of mechanized insurance systems in all branches, insurance website and insurance ATM terminals and marketing.

2- The advantages of under contract companies

The possibility of rapid identifying insurance coverage, reducing the time repayment to the Centre, from insurer

Inhibiting offence and fraud

The possibility of issuing special insurance policies in Centre place without

Referring to insurer

- Rapid identifying the policyholders
- Increasing the clients in order to use provided facilities
- Rapid identifying letter of introduction
- Reducing the administrative costs of the above mentioned Centers in order to communicate with insurer
- Increasing the rate of interaction between institutions and insurer affairs

3- The advantages of insurer

 Increasing the rate of identifying actual insurer

 Reducing the frequency of actual presenting in the branches of insurance

 No need to manually completing forms

 The possibility of observing the information of insurance policies related to the policyholder

 No need to providing a letter of introduction

 Ease of paying and receiving related funds

 Reducing the time and the cost of using insurance coverage and the resultant satisfaction

 Increasing familiarization with the insurance affairs by insurer website

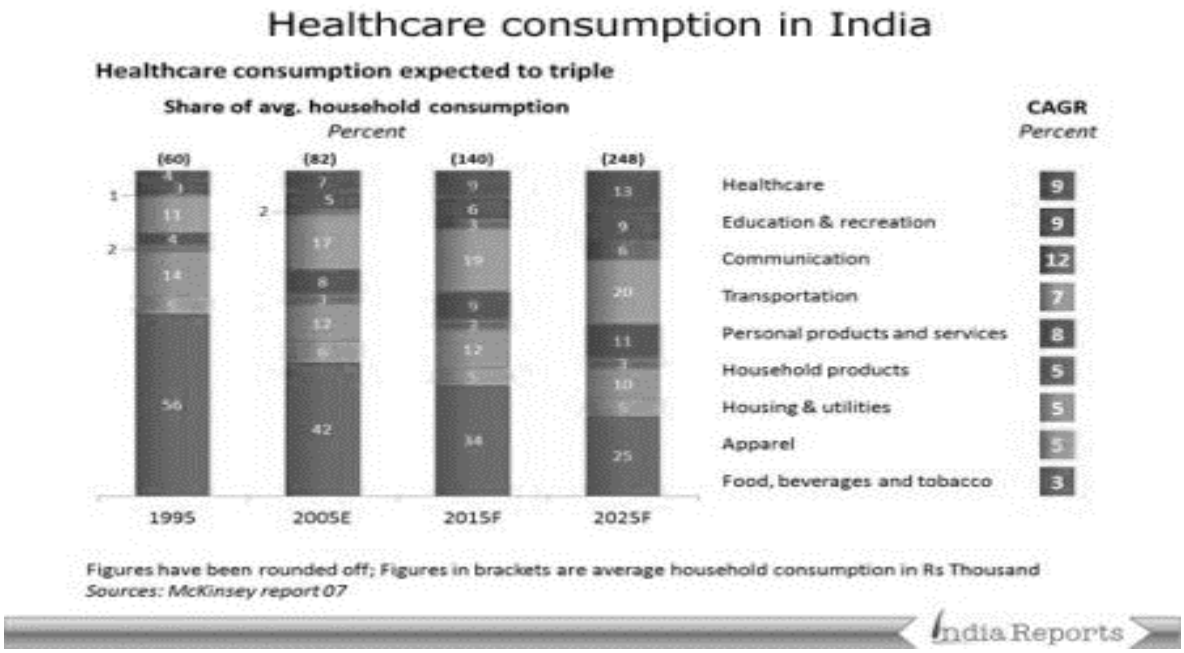
The possibility of taking insurance free consulting through accurate informing of Insurers website

Possibility of direct communicating (virtually) with the managers and administrators in any time and space, Instant access to statistics and thereby quickly producing reports

Policy administration led the insurance technology spending in India, accounting for 21%, with a spend of $205.6m in 2007. Claims processing followed, with a spend of $149.6m, accounting for 15.3% of the total insurance technology spend in 2007.

Technology spending within the life insurance business line in India was valued at $798.2m in 2007, growing at a CAGR of 16.9% between 2005 and 2007. Policy administration led the life insurance technology spending in India, accounting for 22.5%, with a spend of $179.6m in 2007.

Figure 12 : Healthcare consumption in India



The honourable Chief Minister of Gujarat – Shri Narendra Modi has inaugurated the Mukhyamantri Amrutum (MA) Yojana for providing tertiary health care treatments to Below Poverty Line (BPL) population of Gujarat. MA Yojana provides quality medical and surgical care for the catastrophic illnesses involving hospitalization, surgeries and therapies through an empanelled network of private as well as government hospitals to the BPL families.

(n)Code is engaged for project roll out which includes activities such as end-to-end project conceptualization (ICT front) data collection/ migration/ verification, Biometric Fingerprint De-duplication, Quick Response Code based card personalization /Issuance/ distribution, setup of Stationary as well as Mobile Kiosks and Integrated software and Web Portal development.

To gain confidence of Below Poverty Line families, State Government officials, Implementation Support Agency (Third Party Auditors) and Card Technology industry

2. Supply of necessary Hardware and Software – As huge database is involved and all transactions are online, special care has been taken for the requirements of necessary hardware and software. The supply of QR Coded MA Card related hardware/infrastructure was required in large numbers.

3. Improving the enrolment and hospitalization – Issuance of QR Coded "MA Cards" in the village was one of the most challenging aspects of MA Yojana. Once, the MA Cards were issued, the second challenge was to improve the awareness about the usage of MA Cards at empanelled hospitals. Sensitization activities through all the stakeholders helped in facilitating the beneficiaries.

4. Lack of capacities at different levels – Building the capacities at every level to implement MA Yojana was another challenge. Lack of capacity was not only from government end but also among the hospitals, ISA (Third Party Auditors), Manpower Provision Agency as well as IT services vendors. Training camps were arranged for Data Entry Operators, State, District & Taluka level health officials, ISA members and Hospital employees for effective and efficient operations of MA yojna.

5. Transaction Monitoring and Control- As large number of beneficiaries and stakeholders were involved in the scheme, and financial transactions take place in large numbers and amount. Thus, monitoring and making the processes transparent using various validation and de-duplication technology was a challenge. MA Yojana review meetings are done under the chairmanship of Project Director is organized every week to assess and monitor the progress. Various amendments were also made in the policy.

Figure 13 : RSBY IT Processes components

Information and Communications Technology (ICT) can be the force-multiplier to overcome the above challenges and enable public healthcare to be scaled up at an affordable cost. ICT-enabled solutions help in improving telemedicine and citizen lifecycle healthcare with electronic patient records, integrated preventive disease surveillance, remote consultations to reduce outpatient visits and increased efficiency of the drug supply chain.

This paper promotes better understanding of the value that nurses participating in interdisciplinary and team-based IT-enabled healthcare projects can bring to underserved rural communities. The paper solicits development of a shared understanding among providers, professional organizations, the health information technology (HIT) industry, academic institutions, policy bodies, informaticians, and funding agencies

Advocate for changes in insurance practice, policy, funding, and education to better prepare project officers to assume leadership roles in the design, implementation, and evaluation of HIT-enabled care in underserved rural areas.

maximizing government’s roles in new HIT-enabled delivery models is both prudent and overdue.

The Internet technology has “flattened” the healthcare landscape

Information and communication technologies allow accessibility to information so that underserved rural populations can see for themselves the disparate levels of healthcare in rural versus urban areas.

• Underserved rural patients' expectations are changing; they, too, want the latest technology

demand for HIT-enabled care will expand. The shifting focus of the Government and the health care industry to encourage IT-enabled care opens new doors for service innovation, particularly in underserved populations

Developing Capacity

Newer health information technologies can help to level the playing field between rural and urban settings. In doing so, they can open new venues for health insurance innovation and entrepreneurship. Examples of technologies presenting opportunities that require an informed health service presence are described in the following sections.

Electronic Health Records and Connectivity

Implementation of health information exchanges (HIEs) also creates new linkages between urban health centers and rural communities.

Distributed e-Learning for kiosk operators, support engineers.

Personal Health Records saved in hospitals' claim management system.

Effective deployment of HIT is required to meet healthcare consumers' needs in underserved rural areas. This, in turn, requires the collaboration of many groups: government, universities, health authorities, industry, health professionals, and consumers.

Healthcare insurance technologist must design, implement, and evaluate new collaborative models for coordinating care in underserved rural communities.

HIT systems need to capture relevant nursing data across the continuum of care.

healthcare planners make decisions about implementing rural health IT projects partnerships are needed. Although there are examples of Successful public-private informatics partnerships in academia

Healthcare insurance in the past two years (2011-2013) has witnessed a steep increase driven by rising claims and increased regulatory environment.

- Leadership
- Interoperability
- Privacy and Security
- Electronic Payments (cashless)
- Consumer Empowerment

Funding Assisting Providers in the Adoption and Use of Health IT,Empowering Consumers through Health IT

- Enterprise Solutions
- Business Intelligence Tools
- Information Mobility
- Superior Communication

A robust billing and claims module that allows you to closely monitor and audit billing and claims processes. The EHI application provides highly transparent information on-demand to keep track of insurance claims and the practice's finances.

Financial Reporting

Net A/R report by insurance/patient

Outstanding/Un-applied claims

Transaction detail/summary report

Claims Tracking

- Track primary and secondary insurance claims in real-time
- Easily manage rejected insurance claims and re-submit them
- Manage paper and treasury claims

TPA Services (Health)

- Cash less and hassle free hospitalization benefits at network hospitals/ nursing homes
- Member enrollment, benefit confirmation, on line profile management
- Empanelment of service providers, negotiation of tariffs and discounts
- 24*7*365 Helpline and Customer Support (Toll-free No.) both schemes run the help line
- Claims adjudication and payment
- Analytics/Under Writing Support for Insurance Company.

Mass / Rural Schemes

Implementation of RSBY – beneficiary mobilisation and field enrollment, empanelment of rural providers, providing IT support – machines and manpower, processing of claims and payment, liaison with nodal agencies/Ministry, uploading of data on World Bank server etc.

Implementation of UHIS and similar schemes in different states.

Self-funded schemes of state governments.

Improved patient care

Improved clinical and diagnostic services through workflow-driven processes

Streamlined operations

Integration between the various functions for smooth patient movement

Effective administration and proactive monitoring of quality health services

Improved resource and asset utilization

Cost management in sales support, operations, and IT.

Fragmented IT and operations raise complexity and costs.

Create a centralized structure

Use lean process design

Design focus allowed these insurance companies to streamline their core activities across the business, to eliminate redundancy, and to route tasks and manage work flows more effectively.

Actuarial Analysis

Health Policy Administration

Automated Underwriting and Rating

Using next-generation technologies to improve customer interaction, claims response, fraud detection

Shifted from systems of record to systems of engagement, a strategy that places more focus on effectiveness than efficiency. With these models, customer experience is multi-channel and based on collaboration. Big data, mobility, and cloud are all big drivers in systems of engagement

Approximately 10% of insurance claims are fraudulent

Insurers can protect themselves by identifying fraud early, centralizing data to identify fraud trends, using link analysis to connect data points, increase fraudsters' chances of getting caught, and build a company culture of fraud awareness.

Health insurance industry faces daunting technology challenges, including limited resources, aggressive timeframes and often-unrealistic demands from business stakeholders, HIT must reduce costs, increase service quality and position for growth in rapidly changing markets The changing regulatory environment and unwieldy legacy applications make these efforts even more difficult.

Gartner research delivers insight on the drivers of change like big data, cloud and mobility, as well as emerging trends and technologies.

Health IT Value Suite — a comprehensive knowledge repository that classifies, quantifies and articulates the clinical, financial and business impact of IT implementation in health insurance.

Figure 14 : Health value suite STEPS

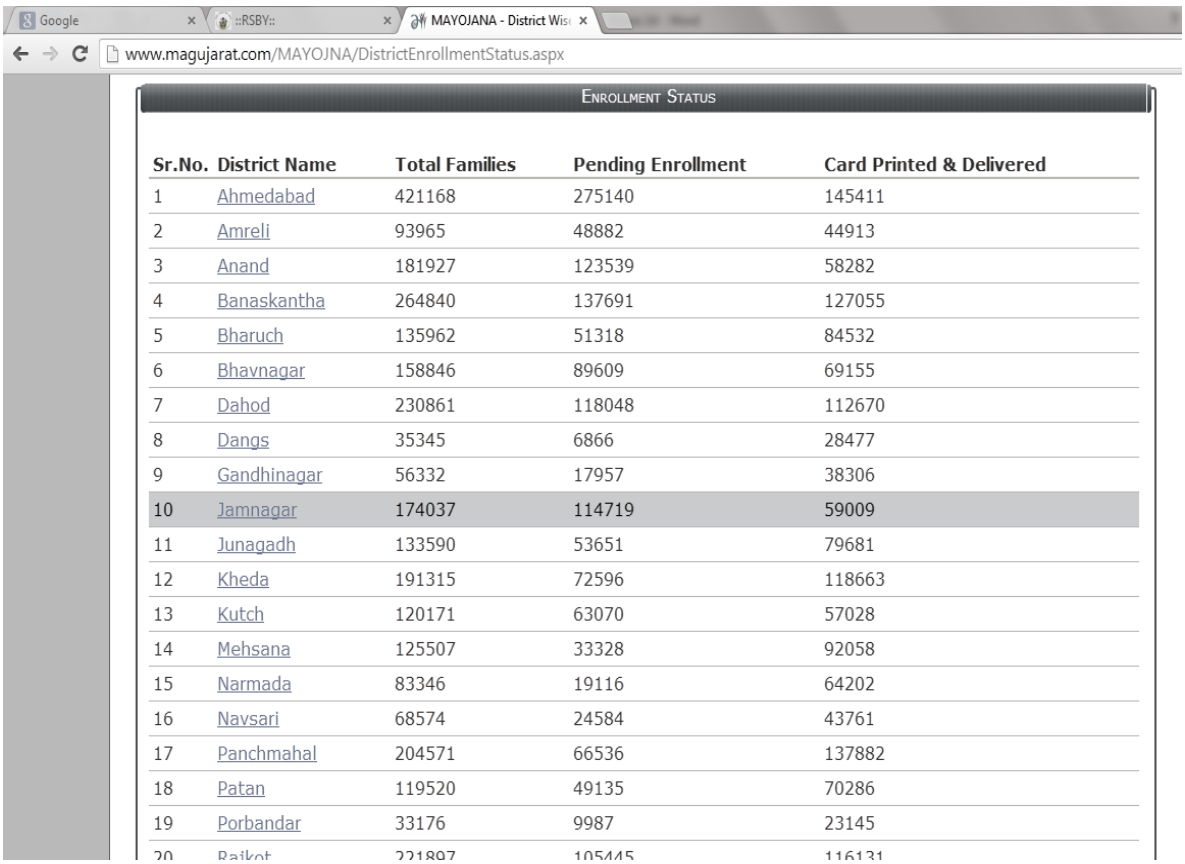
STEPS analysis of ICT in health insurance in national scheme RSBY and MA.

Table 2 : STEPS Analysis

S	Satisfaction: Patient; Provider; Staff; Other	Improved communication with patients; improved patient satisfaction scores; improved internal communication
T	Treatment / Clinical: Safety; Quality of Care; Efficiency	Improved patient safety; reduction in medical errors; reduced readmissions; improved scheduling
E		

	Electronic information / Data: Evidence Based Medicine; Data Sharing and Reporting	Increased use of evidence-based guidelines; increased population health reporting; improved quality measures reporting
P	Prevention and Patient Education: Prevention; Patient Education	Improved disease surveillance; increased immunizations; longitudinal patient analysis; improved patient compliance
S	Savings: Financial / Business; Efficiency Savings; Operational Savings	Increased volume; reduction in days in accounts receivable; reduced patient wait times; reduced emergency dept. admissions; improved inventory control

Figure 15 : MA Gujarat enrolment



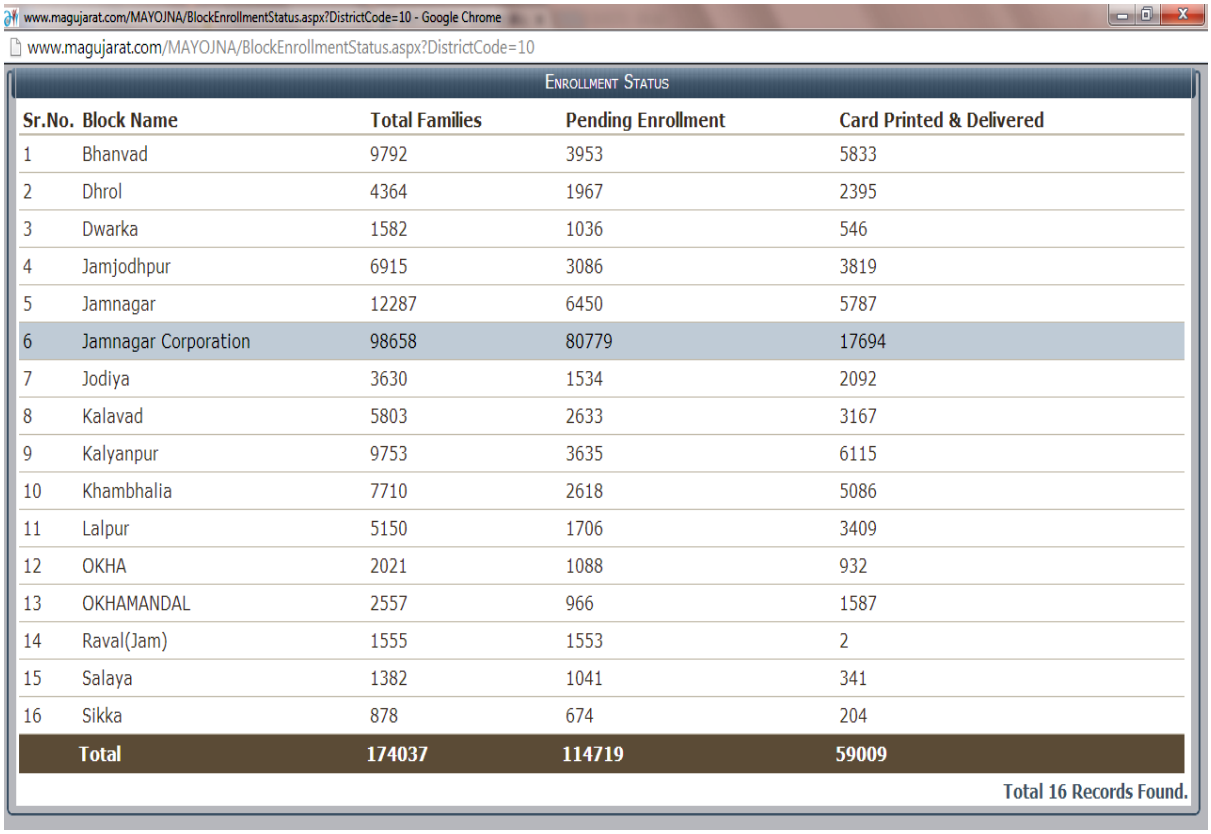
Google | ::RSBY:: | MAYOJANA - District Wis

www.magujarat.com/MAYOJNA/DistrictEnrollmentStatus.aspx

ENROLLMENT STATUS

Sr.No.	District Name	Total Families	Pending Enrollment	Card Printed & Delivered
1	Ahmedabad	421168	275140	145411
2	Amreli	93965	48882	44913
3	Anand	181927	123539	58282
4	Banaskantha	264840	137691	127055
5	Bharuch	135962	51318	84532
6	Bhavnagar	158846	89609	69155
7	Dahod	230861	118048	112670
8	Dangs	35345	6866	28477
9	Gandhinagar	56332	17957	38306
10	Jamnagar	174037	114719	59009
11	Junagadh	133590	53651	79681
12	Kheda	191315	72596	118663
13	Kutch	120171	63070	57028
14	Mehsana	125507	33328	92058
15	Narmada	83346	19116	64202
16	Navsari	68574	24584	43761
17	Panchmahal	204571	66536	137882
18	Patan	119520	49135	70286
19	Porbandar	33176	9987	23145
20	Rajkot	221897	105445	116131

Figure 16 : MA Gujarat Jamnagar enrolment



www.magujarat.com/MAYOJNA/BlockEnrollmentStatus.aspx?DistrictCode=10 - Google Chrome

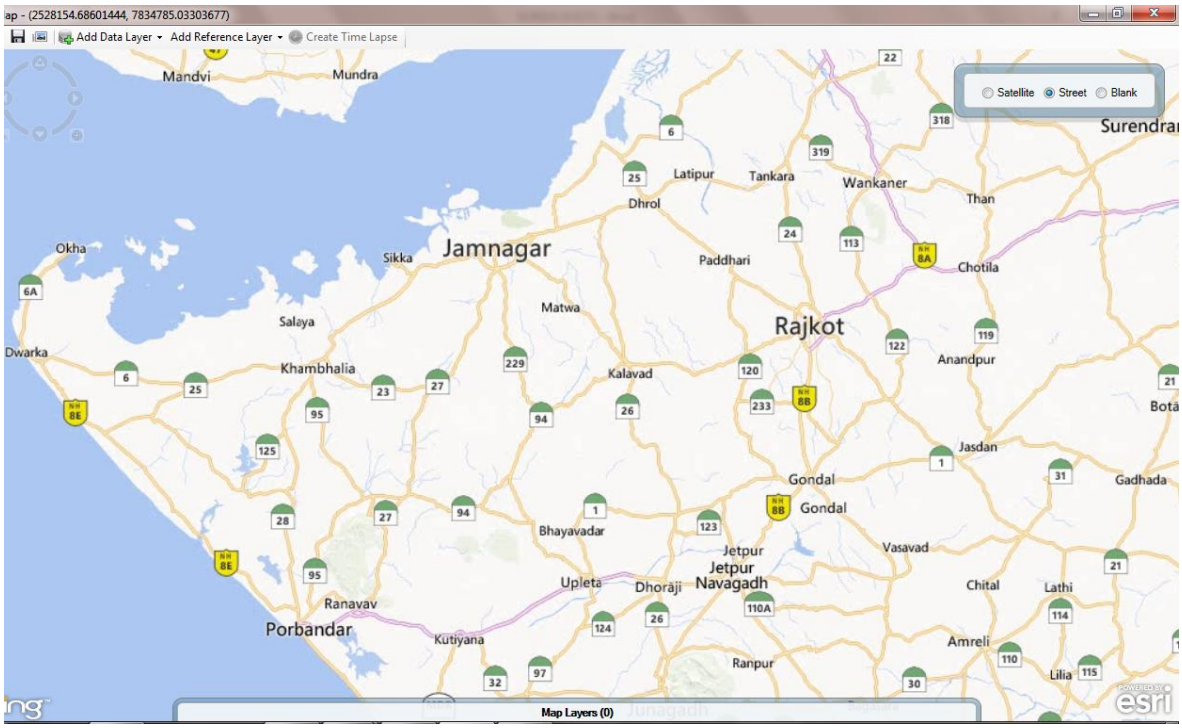
www.magujarat.com/MAYOJNA/BlockEnrollmentStatus.aspx?DistrictCode=10

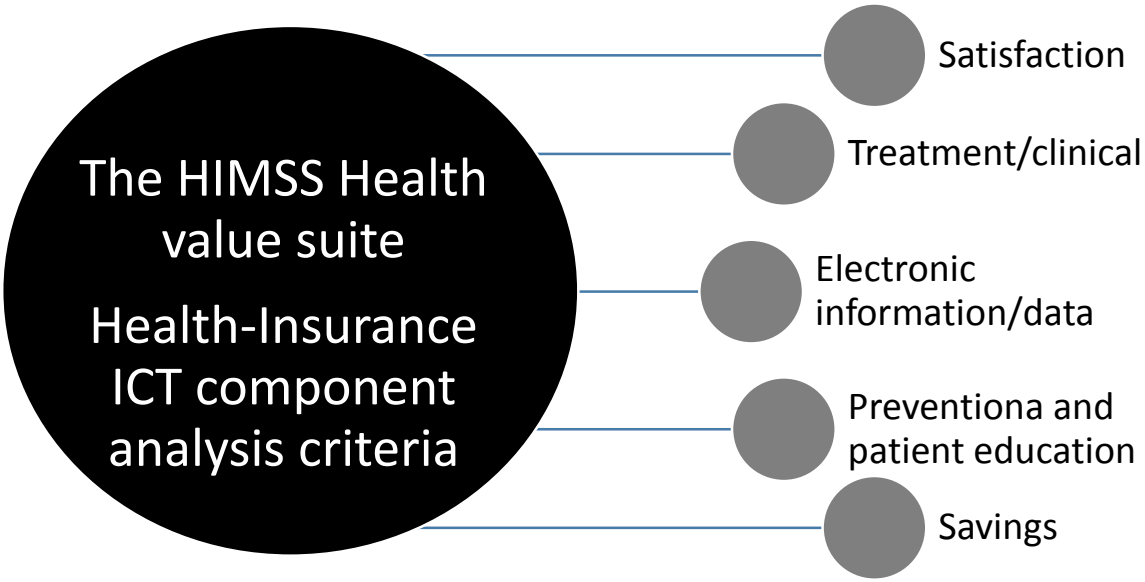
ENROLLMENT STATUS

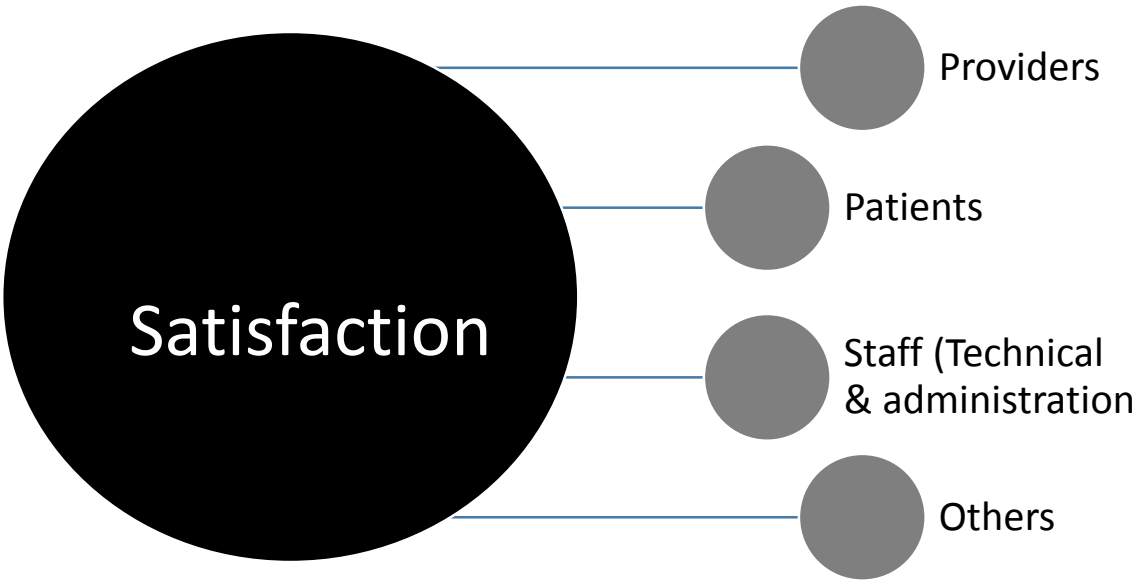
Sr.No.	Block Name	Total Families	Pending Enrollment	Card Printed & Delivered
1	Bhanvad	9792	3953	5833
2	Dhrol	4364	1967	2395
3	Dwarka	1582	1036	546
4	Jamjodhpur	6915	3086	3819
5	Jamnagar	12287	6450	5787
6	Jamnagar Corporation	98658	80779	17694
7	Jodiya	3630	1534	2092
8	Kalavad	5803	2633	3167
9	Kalyanpur	9753	3635	6115
10	Khambhalia	7710	2618	5086
11	Lalpur	5150	1706	3409
12	OKHA	2021	1088	932
13	OKHAMANDAL	2557	966	1587
14	Raval(Jam)	1555	1553	2
15	Salaya	1382	1041	341
16	Sikka	878	674	204
	Total	**174037**	**114719**	**59009**

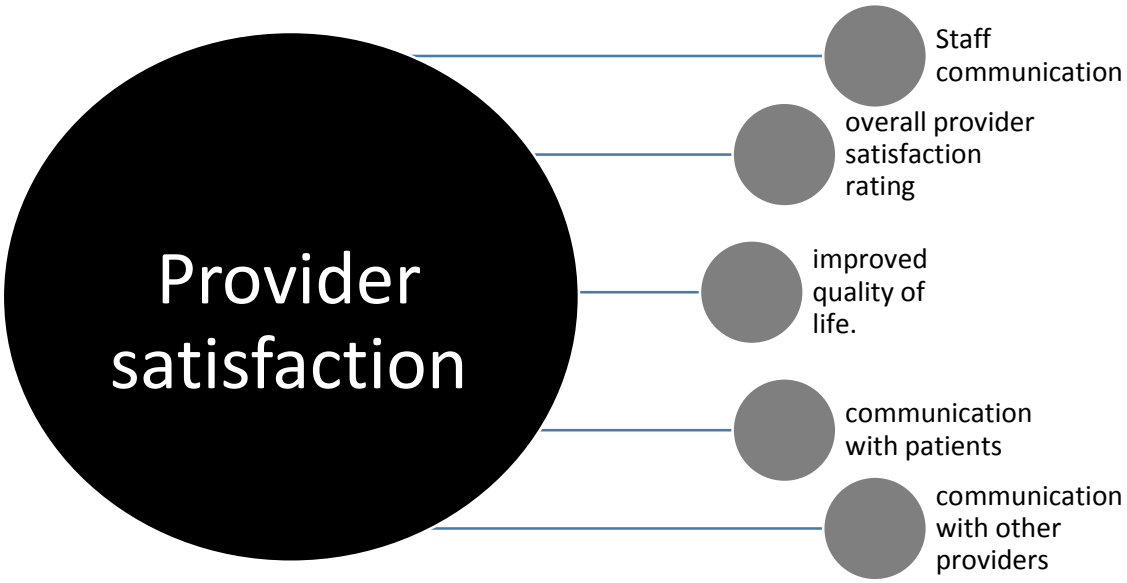
Total 16 Records Found.

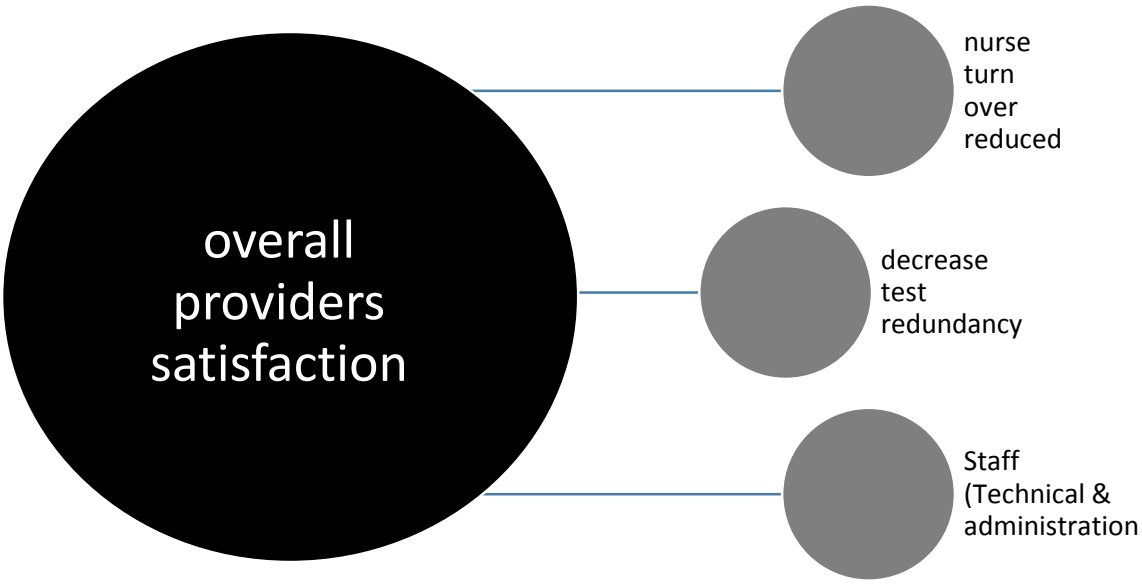
Figure 17 :Jamnagar map

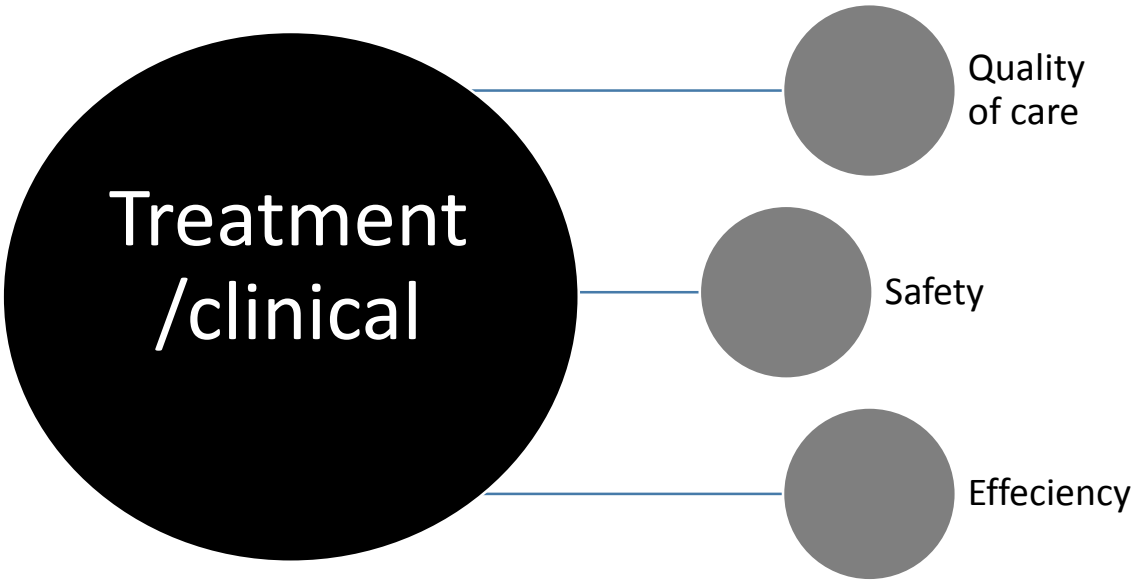


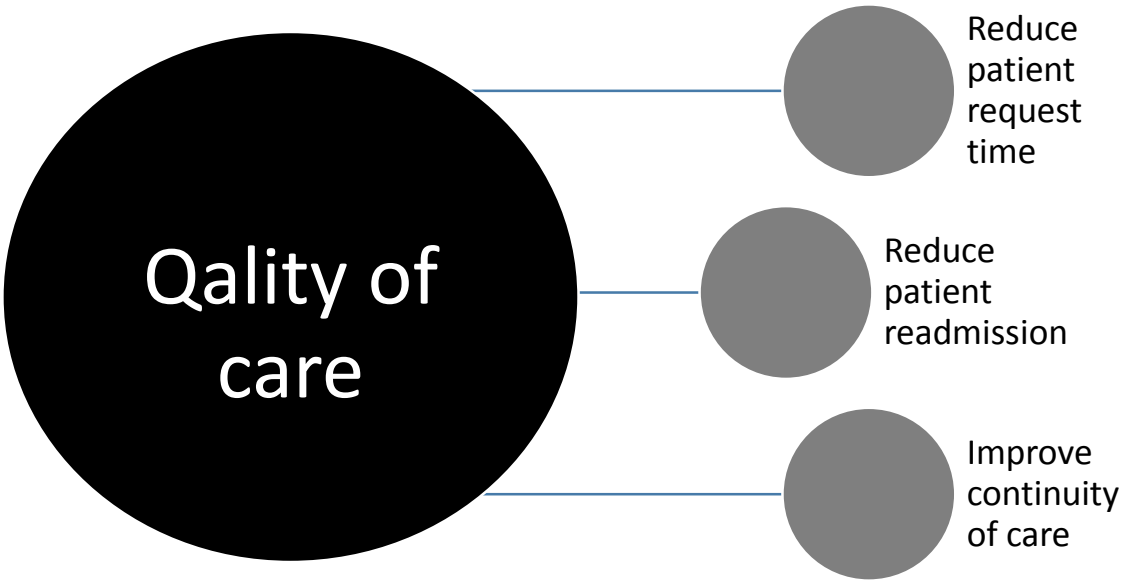

The HIMSS Health value suite
Health-Insurance ICT component analysis criteria
Satisfaction
Treatment/clinical
Electronic information/data
Preventiona and patient education
Savings

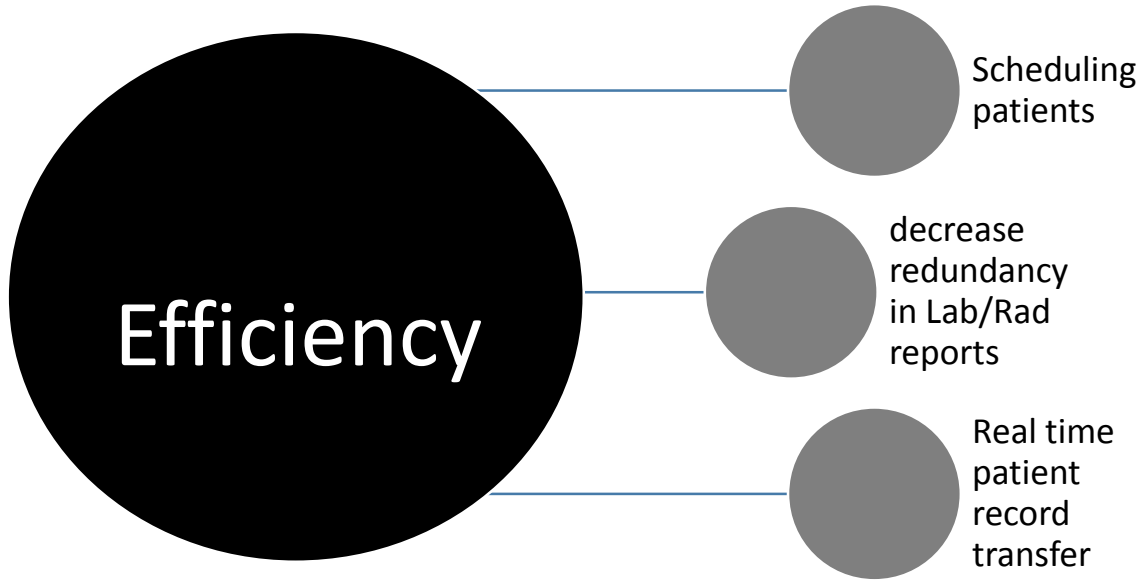

Satisfaction
Providers
Patients
Staff (Technical & administration
Others

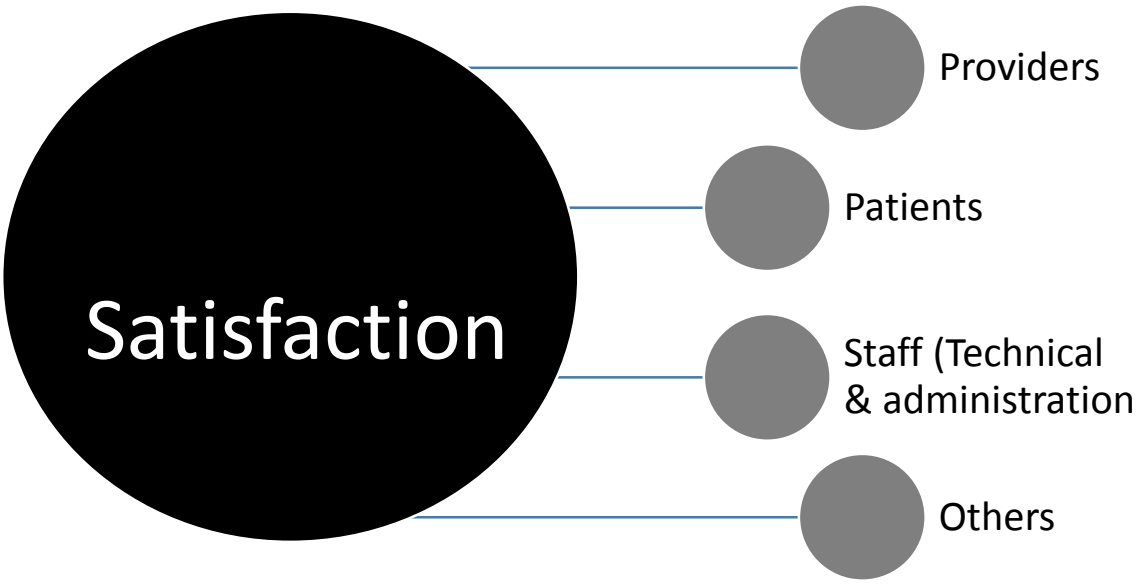

Provider satisfaction
Staff communication
overall provider satisfaction rating
improved quality of life.
communication with patients
communication with other providers

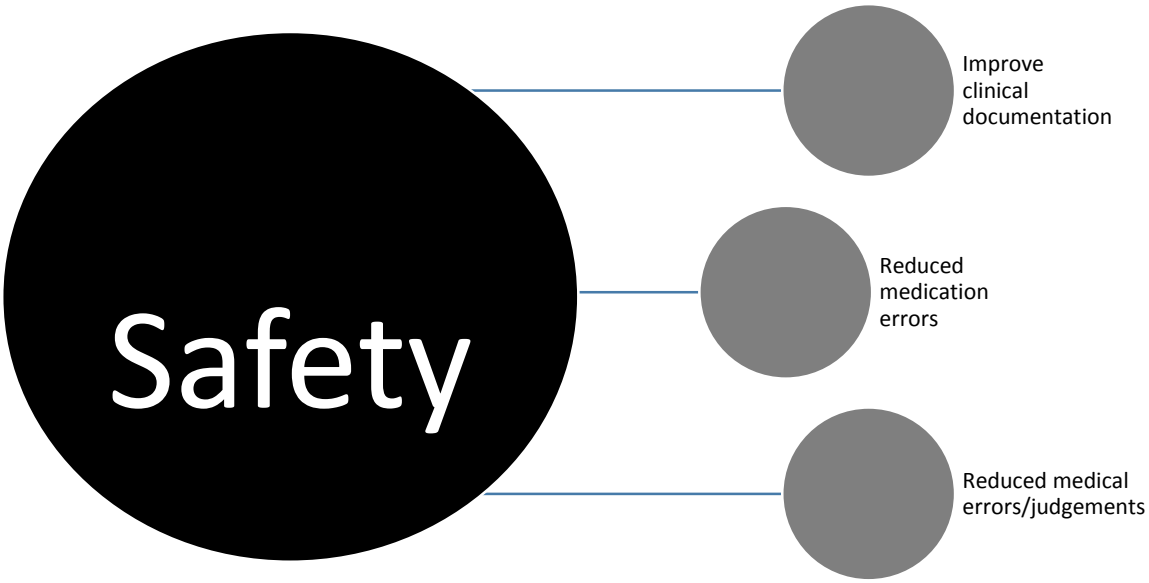

overall providers satisfaction
nurse turn over reduced
decrease test redundancy
Staff (Technical & administration

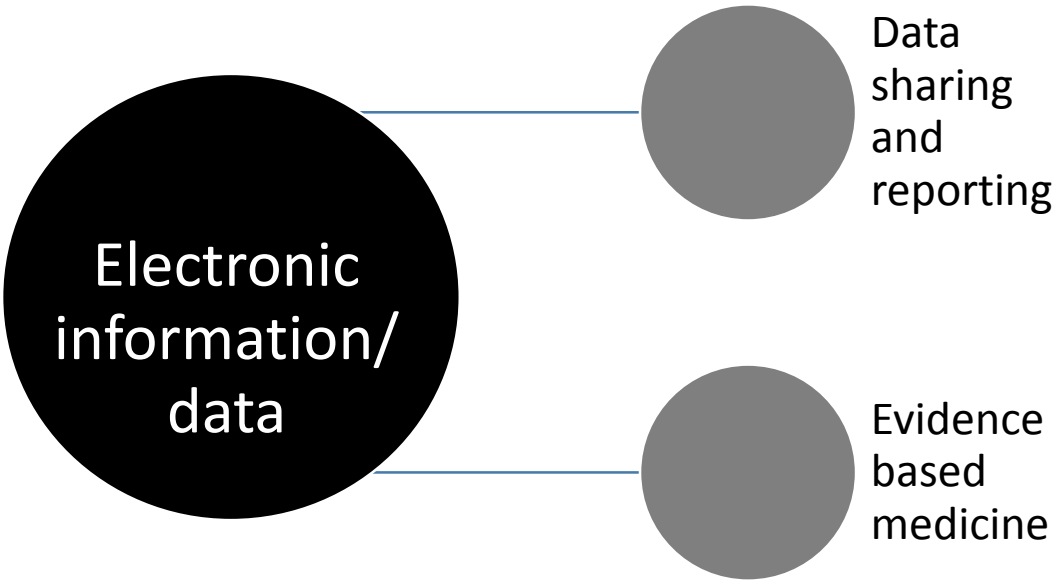

Treatment /clinical
Quality of care
Safety
Effeciency

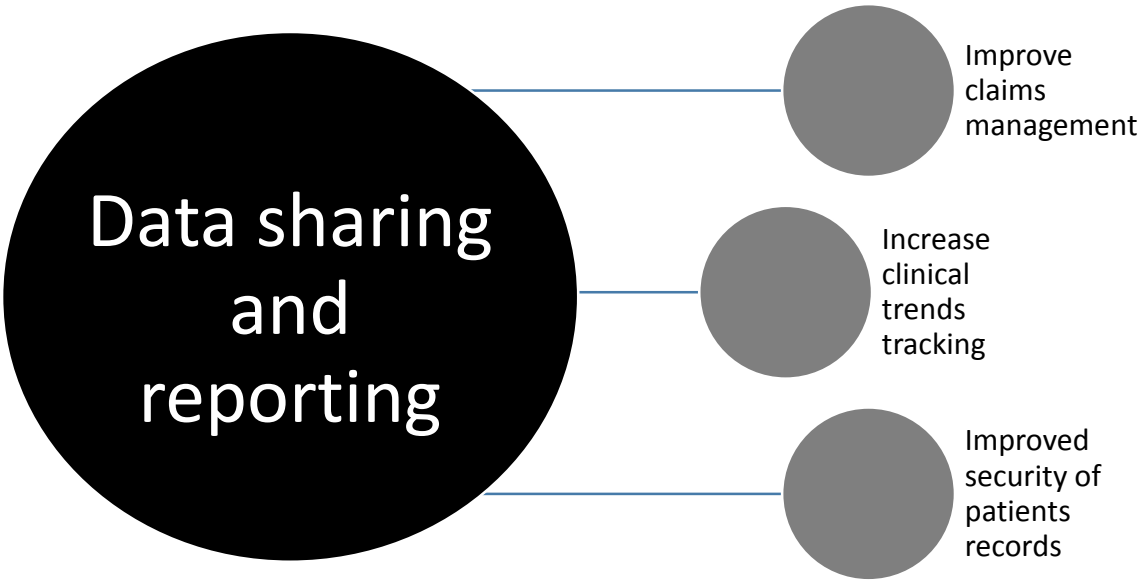

Qality of care
Reduce patient request time
Reduce patient readmission
Improve continuity of care

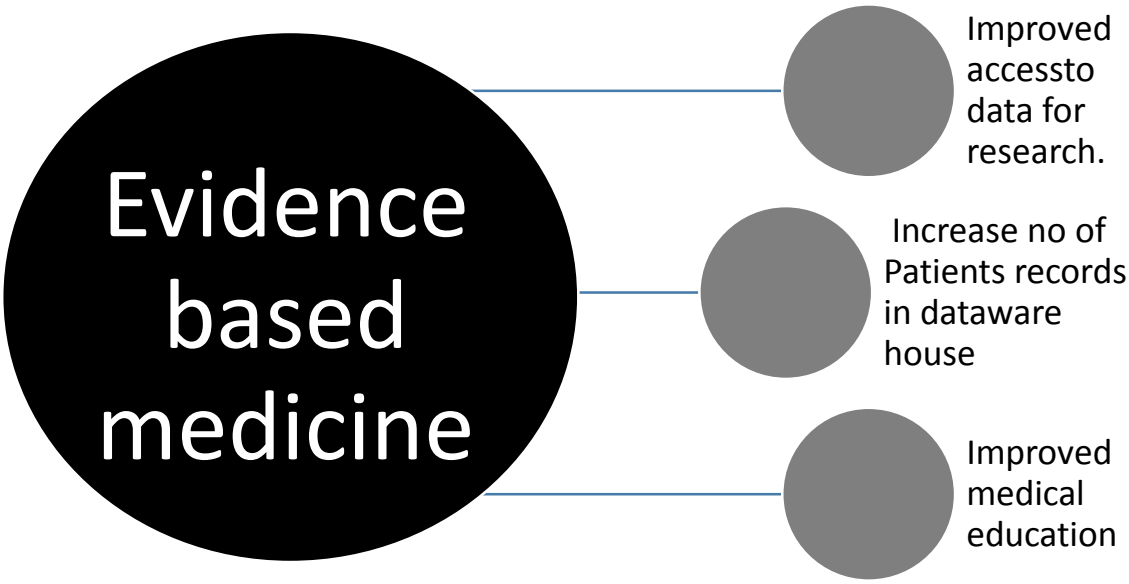

Efficiency
Scheduling patients
decrease redundancy in Lab/Rad reports
Real time patient record transfer

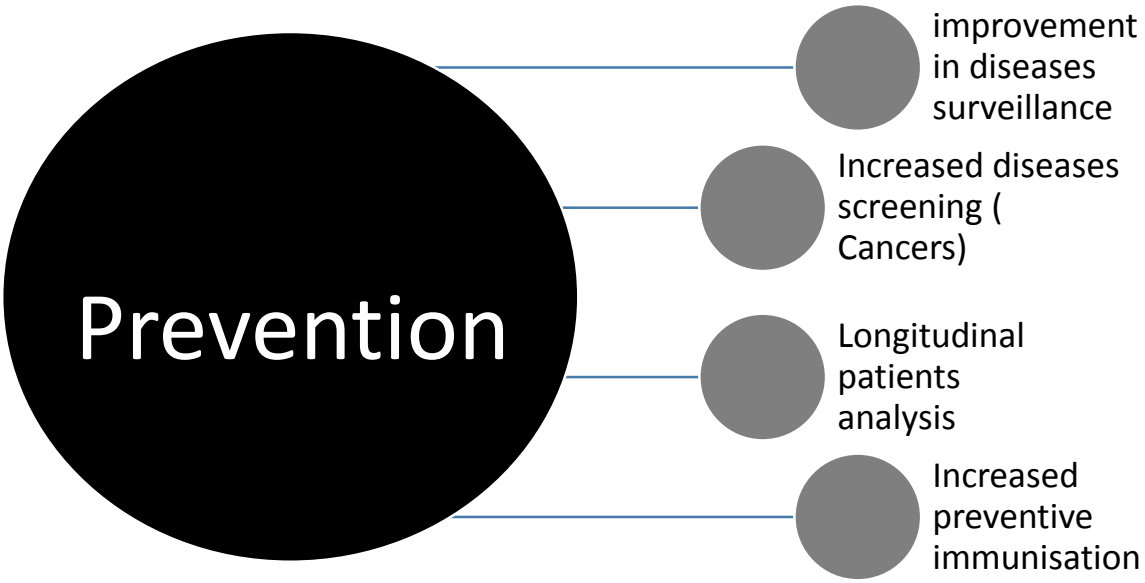

Satisfaction
Providers
Patients
Staff (Technical & administration
Others

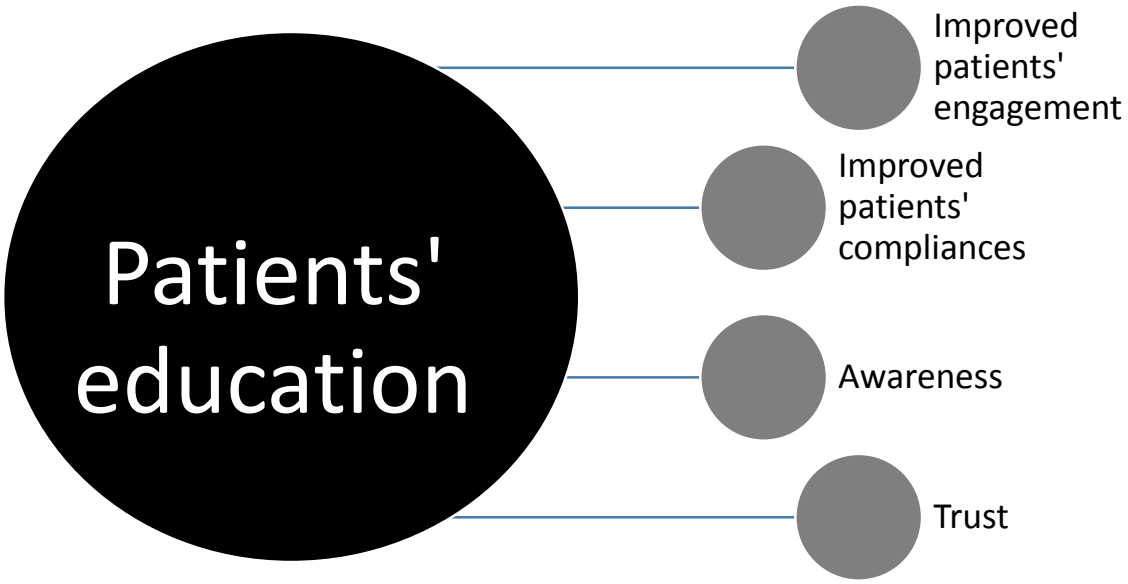

Safety
Improve clinical documentation
Reduced medication errors
Reduced medical errors/judgements

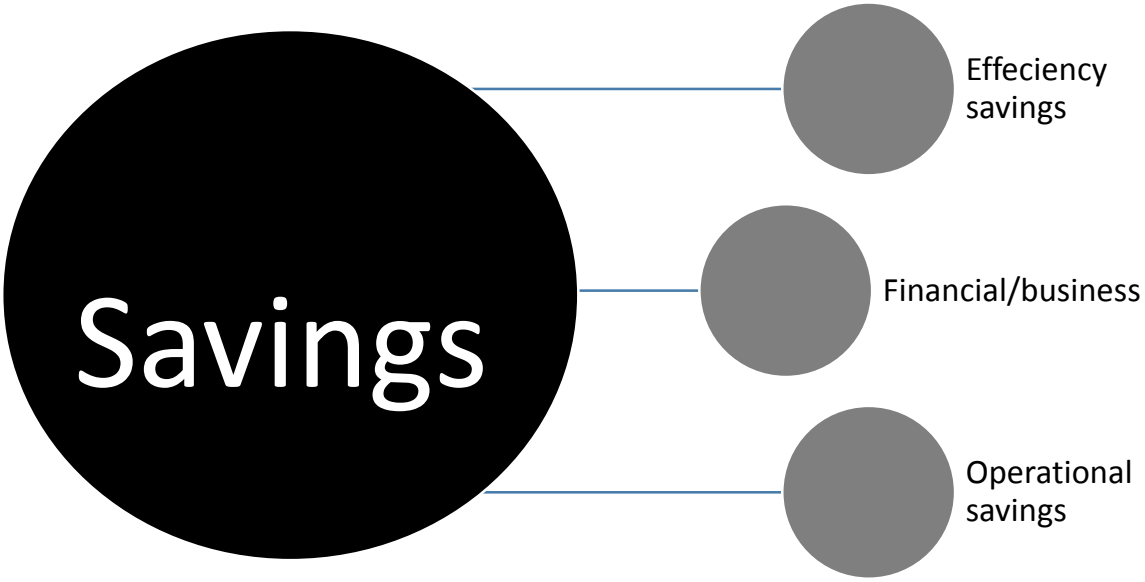

Electronic information/ data
Data sharing and reporting
Evidence based medicine

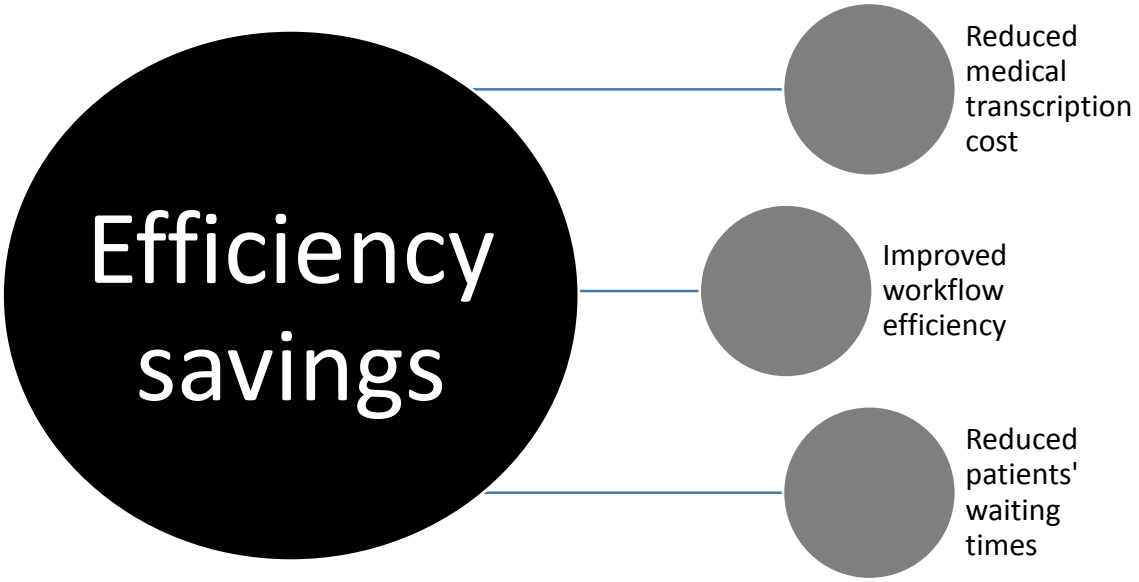

Data sharing and reporting
Improve claims management
Increase clinical trends tracking
Improved security of patients records

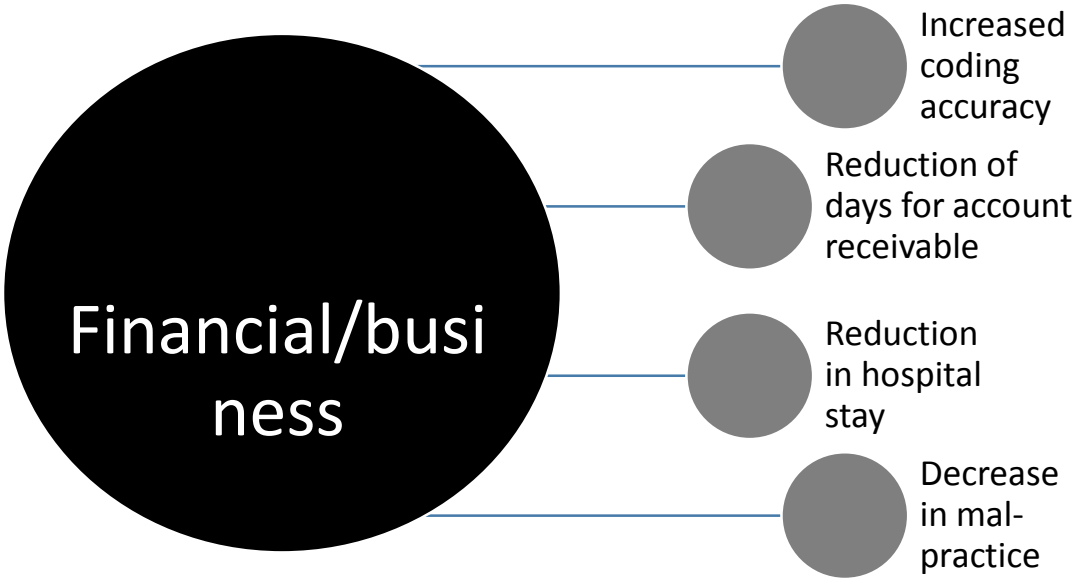

Evidence based medicine
Improved accessto data for research.
Increase no of Patients records in dataware house
Improved medical education

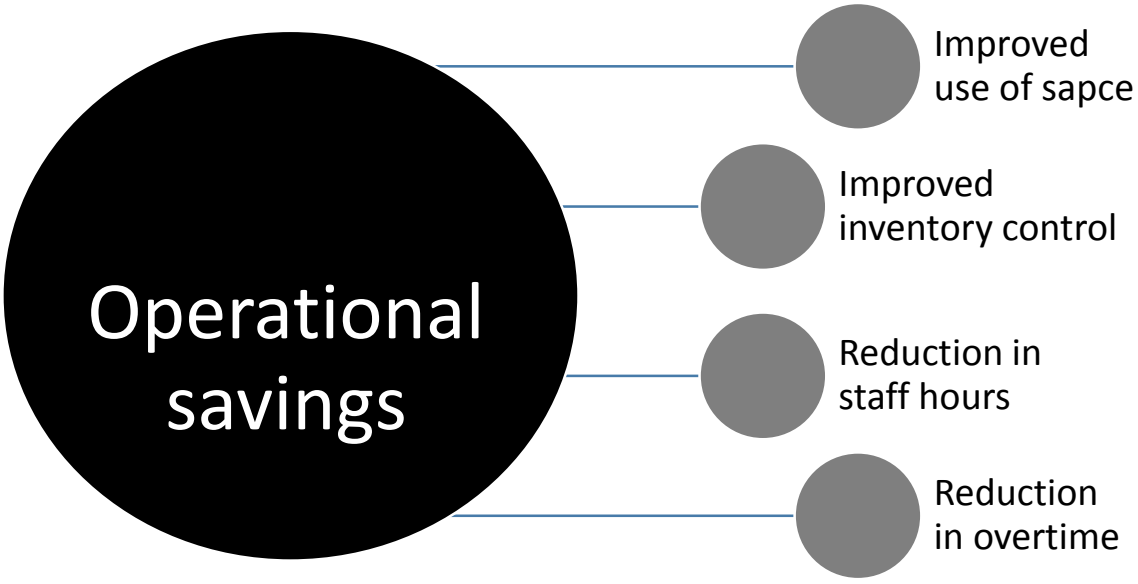

Prevention
improvement in diseases surveillance
Increased diseases screening (Cancers)
Longitudinal patients analysis
Increased preventive immunisation


Patients' education
Improved patients' engagement
Improved patients' compliances
Awareness
Trust


Savings
Effeciency savings
Financial/business
Operational savings


Efficiency savings
Reduced medical transcription cost
Improved workflow efficiency
Reduced patients' waiting times





Methodology

Secondary data from various source like web portal, monitoring and evaluation meeting reports, performance indicators of enrolment, claims data of both schemes are analyse to determine the role of IT components as per HIMSS Health IT Value Suite criteria STEPS.

These data were collected and compiled since January-2012 (for both schemes),they range from likert scale (1to5) to yes/no response questionnaires and feedback form for insurance company, patients, providers hospitals for ongoing performance evaluation.

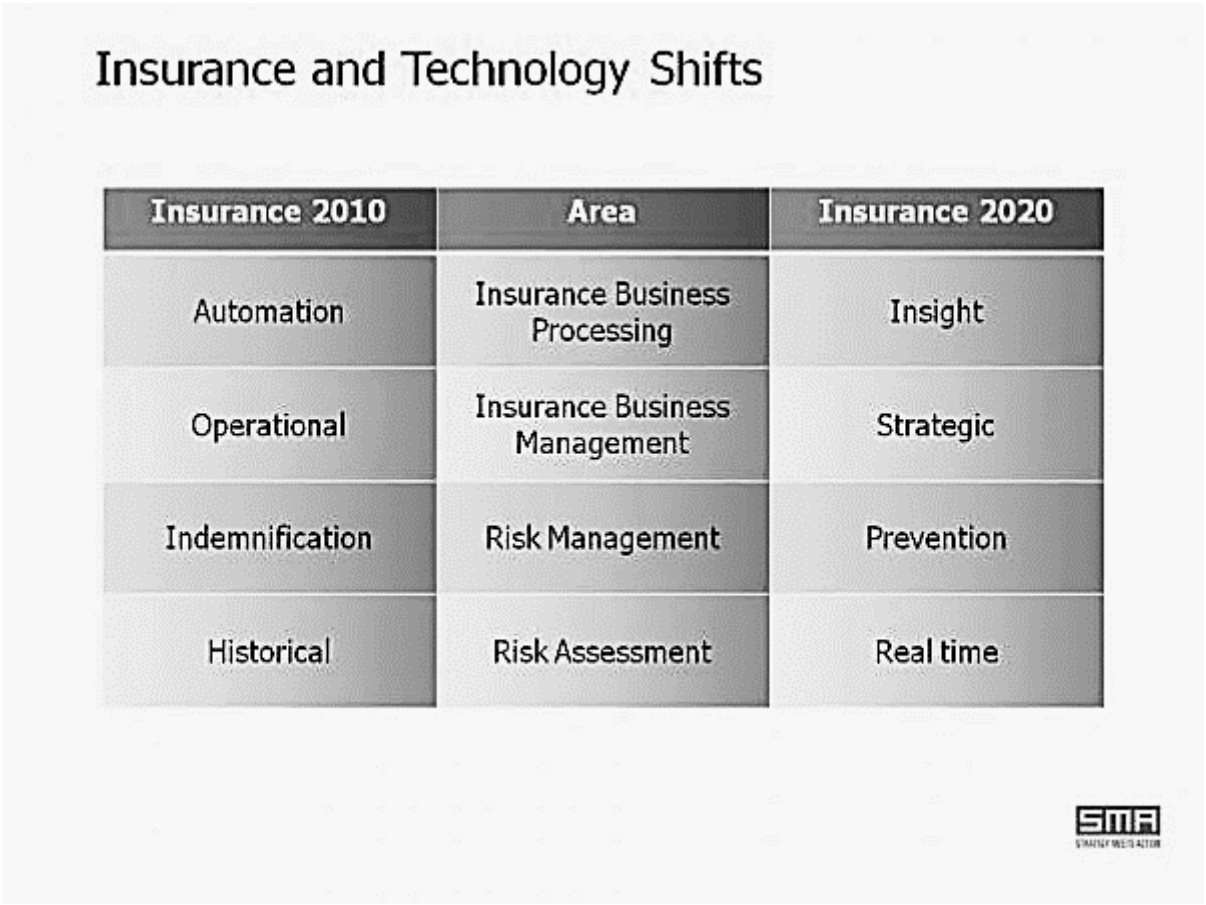
Likert scale designed as (strongly disagree (1), disagree (2), Neutral (3), agree (4), strongly agree(5))

Data collated for the purpose of statistical manipulation to know the trend , average and factor analysis.(software used MS Excel-2013, SPSS V20)

STEPS criteria are evaluation template that classifies, quantifies and articulates the clinical, financial and business impact of IT implementation in health insurance.

Secondary data from sources are both qualitatively and quantatively indicate magnitude of the IT support to overall scheme success.

Figure 18 : Insurance technology shift



These both scheme have been forefront in using Information Technology, start from its inception, and won several IT implementation awards from Industry associations.

Technology shift also affect the technology adaptation in these both schemes automation, as MA scheme launch with better equipped IT technology then RSBY.

Both has operational and automation task computerised with web technology, servers, fingerprint biometrics and security of transaction data.

As progress shown above in insurance technology both scheme still not reached to strategic and insight level.

Secondary data from web portal (w3.rsbygujarat.in and w3.magujarat.com) explored with purposes of data mining and business intelligence in government sponsored healthcare insurance schemes.

Results

Table3: RSBY STEPS analysis (Frequency Table)

Statistics

		Satisfaction	Treatment / clinical	Electronic information/data	Prevention and patient education	Savings
N	Valid	24	24	24	24	24
	Missing	0	0	0	0	0
Mean		3.58	3.42	4.54	1.50	2.54
Median		4.00	3.00	5.00	1.00	2.50
Mode		4	3	5	1	3
Std. Deviation		.974	.776	.588	.780	1.382
Minimum		1	2	3	1	1
Maximum		5	5	5	3	5

Satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	4.2	4.2	4.2
	2	3	12.5	12.5	16.7
	3	3	12.5	12.5	29.2
	4	15	62.5	62.5	91.7
	5	2	8.3	8.3	100.0
	Total	24	100.0	100.0	

Treatment / clinical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	4.2	4.2	4.2
	3	15	62.5	62.5	66.7
	4	5	20.8	20.8	87.5
	5	3	12.5	12.5	100.0
	Total	24	100.0	100.0	

Electronic information/data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	4.2	4.2	4.2
	4	9	37.5	37.5	41.7
	5	14	58.3	58.3	100.0
	Total	24	100.0	100.0	

Prevention and patient education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	66.7	66.7	66.7
	2	4	16.7	16.7	83.3
	3	4	16.7	16.7	100.0
	Total	24	100.0	100.0	

Savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	29.2	29.2	29.2
	2	5	20.8	20.8	50.0
	3	8	33.3	33.3	83.3
	5	4	16.7	16.7	100.0
	Total	24	100.0	100.0	

Table 4 :RSBY-Satisfaction

Statistics

		Providers	Patients	Staff (Technical/administration)	Others (Clerks,kiosk operators)
N	Valid	24	24	24	24
	Missing	0	0	0	0
Mean		3.50	3.75	3.71	3.88
Median		4.00	4.00	4.00	4.00
Mode		4	3	4	4
Std. Deviation		1.180	.897	1.160	.741
Variance		1.391	.804	1.346	.549

Range	4	3	4	2
Minimum	1	2	1	3
Maximum	5	5	5	5

Providers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	8.3	8.3	8.3
	2	2	8.3	8.3	16.7
	3	7	29.2	29.2	45.8
	4	8	33.3	33.3	79.2
	5	5	20.8	20.8	100.0
	Total	24	100.0	100.0	

Patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	4.2	4.2	4.2
	3	10	41.7	41.7	45.8
	4	7	29.2	29.2	75.0
	5	6	25.0	25.0	100.0
	Total	24	100.0	100.0	

Staff (Technical/administration)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	8.3	8.3	8.3
	2	1	4.2	4.2	12.5
	3	5	20.8	20.8	33.3
	4	10	41.7	41.7	75.0
	5	6	25.0	25.0	100.0
	Total	24	100.0	100.0	

Others (Clerks, kiosk operators)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	8	33.3	33.3	33.3

	4	11	45.8	45.8	79.2
	5	5	20.8	20.8	100.0
	Total	24	100.0	100.0	

Table 5:RSBY-Providers

Statistics

		Staff communication	overall provider satisfaction rating	Improved quality of life.	Communication with patients	Communication with other providers
N	Valid	24	24	24	24	24
	Missing	0	0	0	0	0
Mean		3.75	3.75	4.04	4.13	3.08
Median		4.00	4.00	4.00	4.00	3.00
Mode		5	5	4	4	3
Std. Deviation		1.294	1.113	.806	.741	.881
Variance		1.674	1.239	.650	.549	.775
Range		4	3	2	2	3
Minimum		1	2	3	3	2
Maximum		5	5	5	5	5

Staff communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	8.3	8.3	8.3
	2	2	8.3	8.3	16.7
	3	5	20.8	20.8	37.5
	4	6	25.0	25.0	62.5
	5	9	37.5	37.5	100.0
	Total	24	100.0	100.0	

overall provider satisfaction rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	4	16.7	16.7	16.7
	3	6	25.0	25.0	41.7
	4	6	25.0	25.0	66.7
	5	8	33.3	33.3	100.0
	Total	24	100.0	100.0	

Improved quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	7	29.2	29.2	29.2
	4	9	37.5	37.5	66.7
	5	8	33.3	33.3	100.0
	Total	24	100.0	100.0	

Communication with patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	5	20.8	20.8	20.8
	4	11	45.8	45.8	66.7
	5	8	33.3	33.3	100.0
	Total	24	100.0	100.0	

Communication with other providers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	6	25.0	25.0	25.0
	3	12	50.0	50.0	75.0
	4	4	16.7	16.7	91.7
	5	2	8.3	8.3	100.0
	Total	24	100.0	100.0	

Table 6 :RSBY –Clinical

Statistics

		Quality of care	Safety	Efficiency
N	Valid	24	24	24
	Missing	0	0	0
Mean		3.00	3.13	3.17
Median		3.00	3.00	3.00
Mode		3	2	3
Std. Deviation		1.063	1.154	1.049
Variance		1.130	1.332	1.101
Range		4	3	4
Minimum		1	2	1
Maximum		5	5	5

Quality of care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	12.5	12.5	12.5
	2	3	12.5	12.5	25.0
	3	10	41.7	41.7	66.7
	4	7	29.2	29.2	95.8
	5	1	4.2	4.2	100.0
	Total	24	100.0	100.0	

Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	9	37.5	37.5	37.5
	3	8	33.3	33.3	70.8
	4	2	8.3	8.3	79.2
	5	5	20.8	20.8	100.0
	Total	24	100.0	100.0	

Efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	4.2	4.2	4.2
	2	5	20.8	20.8	25.0
	3	10	41.7	41.7	66.7
	4	5	20.8	20.8	87.5
	5	3	12.5	12.5	100.0
	Total	24	100.0	100.0	

Table 7 :RSBY – Quality control

Statistics

		Reduce patient request time	Reduce patient readmission	Improve continuity of care
N	Valid	24	24	24
	Missing	0	0	0
Mean		4.71	3.50	4.88
Median		5.00	3.00	5.00
Mode		5	3	5
Std. Deviation		.464	1.216	.338
Variance		.216	1.478	.114
Range		1	4	1
Minimum		4	1	4
Maximum		5	5	5

Reduce patient request time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	7	29.2	29.2	29.2
	5	17	70.8	70.8	100.0
	Total	24	100.0	100.0	

Reduce patient readmission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	8.3	8.3	8.3
	3	14	58.3	58.3	66.7
	5	8	33.3	33.3	100.0
	Total	24	100.0	100.0	

Improve continuity of care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	3	12.5	12.5	12.5
	5	21	87.5	87.5	100.0
	Total	24	100.0	100.0	

Table 8 :RSBY- Efficiency

Statistics

		Scheduling patients	decrease redundancy in Lab/Rad reports	Real time patient record transfer
N	Valid	24	24	24
	Missing	0	0	0

Mean	2.08	4.58	4.88
Median	2.50	5.00	5.00
Mode	3	5	5
Std. Deviation	.974	.584	.338
Variance	.949	.341	.114
Range	2	2	1
Minimum	1	3	4
Maximum	3	5	5

Scheduling patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	41.7	41.7	41.7
	2	2	8.3	8.3	50.0
	3	12	50.0	50.0	100.0
	Total	24	100.0	100.0	

decrease redundancy in Lab/Rad reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	4.2	4.2	4.2
	4	8	33.3	33.3	37.5
	5	15	62.5	62.5	100.0
	Total	24	100.0	100.0	

Real time patient record transfer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	3	12.5	12.5	12.5
	5	21	87.5	87.5	100.0
	Total	24	100.0	100.0	

Table 9 :RSBY- Information and data

Statistics

		Data sharing and reporting	Evidence based medicine
N	Valid	24	24
	Missing	0	0
Mean		4.63	4.92
Median		5.00	5.00
Mode		5	5
Std. Deviation		.495	.282
Variance		.245	.080
Range		1	1
Minimum		4	4
Maximum		5	5

Data sharing and reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	9	37.5	37.5	37.5
	5	15	62.5	62.5	100.0
	Total	24	100.0	100.0	

Evidence based medicine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	2	8.3	8.3	8.3
	5	22	91.7	91.7	100.0
	Total	24	100.0	100.0	

Table 10 :RSBY-Evidence based medicine

Statistics

		Improved accessto data for research	Increase no of Patients records in dataware house	Improved medical education
N	Valid	24	24	24
	Missing	0	0	0
Mean		5.00	4.08	3.17
Median		5.00	4.00	3.00
Mode		5	5	3
Std. Deviation		.000	1.176	1.274
Variance		.000	1.384	1.623
Range		0	4	4
Minimum		5	1	1
Maximum		5	5	5

Improved accessto data for research

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	24	100.0	100.0	100.0

Increase no of Patients records in data ware house

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	8.3	8.3	8.3
	3	3	12.5	12.5	20.8
	4	8	33.3	33.3	54.2
	5	11	45.8	45.8	100.0
	Total	24	100.0	100.0	

Improved medical education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	12.5	12.5	12.5
	2	3	12.5	12.5	25.0
	3	10	41.7	41.7	66.7
	4	3	12.5	12.5	79.2
	5	5	20.8	20.8	100.0
	Total	24	100.0	100.0	

Table 11 : RSBY- Savings

Statistics

		Improve claims management	Increase clinical trends tracking	Improved security of patients records
N	Valid	24	24	24
	Missing	0	0	0
Mean		4.58	2.75	4.63
Median		5.00	3.00	5.00
Mode		5	3	5
Std. Deviation		.504	1.294	.495
Variance		.254	1.674	.245
Range		1	4	1
Minimum		4	1	4
Maximum		5	5	5

Improve claims management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	10	41.7	41.7	41.7
	5	14	58.3	58.3	100.0
	Total	24	100.0	100.0	

Increase clinical trends tracking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	25.0	25.0	25.0
	2	2	8.3	8.3	33.3
	3	11	45.8	45.8	79.2
	4	2	8.3	8.3	87.5
	5	3	12.5	12.5	100.0
	Total	24	100.0	100.0	

Improved security of patients records

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	9	37.5	37.5	37.5
	5	15	62.5	62.5	100.0
	Total	24	100.0	100.0	

Table 12 : RSBY-Efficiency savings

Statistics

		Reduced medical transcription cost	Improved workflow efficiency	Reduced patients' waiting times
N	Valid	24	24	24
	Missing	0	0	0
Mean		4.46	3.42	1.79
Median		5.00	3.00	2.00
Mode		5	3	2
Std. Deviation		.721	1.248	.658

Variance	.520	1.558	.433
Range	2	4	2
Minimum	3	1	1
Maximum	5	5	3

Reduced medical transcription cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	12.5	12.5	12.5
	4	7	29.2	29.2	41.7
	5	14	58.3	58.3	100.0
	Total	24	100.0	100.0	

Improved workflow efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	12.5	12.5	12.5
	3	11	45.8	45.8	58.3
	4	4	16.7	16.7	75.0
	5	6	25.0	25.0	100.0
	Total	24	100.0	100.0	

Reduced patients' waiting times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	33.3	33.3	33.3
	2	13	54.2	54.2	87.5
	3	3	12.5	12.5	100.0
	Total	24	100.0	100.0	

Table 13 : RSBY- Financial and Business

Statistics

		Increased coding accuracy	Reduction of days for account receivable	Reduction in hospital stay	Decrease in mal-practice
N	Valid	24	24	24	24
	Missing	0	0	0	0
Mean		4.75	2.29	3.33	4.29
Median		5.00	2.50	3.00	4.00
Mode		5	3	5	5
Std. Deviation		.442	.999	1.633	.751
Variance		.196	.998	2.667	.563
Range		1	3	4	2
Minimum		4	1	1	3
Maximum		5	4	5	5

Increased coding accuracy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	6	25.0	25.0	25.0
	5	18	75.0	75.0	100.0
	Total	24	100.0	100.0	

Reduction of days for account receivable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	29.2	29.2	29.2
	2	5	20.8	20.8	50.0
	3	10	41.7	41.7	91.7
	4	2	8.3	8.3	100.0
	Total	24	100.0	100.0	

Decrease in mal-practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	4	16.7	16.7	16.7
	4	9	37.5	37.5	54.2
	5	11	45.8	45.8	100.0
	Total	24	100.0	100.0	

Table 14 : RSBY – Operation

Statistics

		Improved use of sapce	Improved inventory control	Reduction in staff hours	Reduction in overtime
N	Valid	24	24	24	24
	Missing	0	0	0	0
Mean		3.17	3.50	2.63	2.58
Median		3.00	4.00	3.00	3.00
Mode		5	3[a]	3	4
Std. Deviation		1.494	1.285	.924	1.248
Variance		2.232	1.652	.853	1.558
Range		4	4	4	3
Minimum		1	1	1	1
Maximum		5	5	5	4

a. Multiple modes exist. The smallest value is shown

Improved use of sapce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	16.7	16.7	16.7
	2	5	20.8	20.8	37.5
	3	5	20.8	20.8	58.3
	4	3	12.5	12.5	70.8
	5	7	29.2	29.2	100.0
	Total	24	100.0	100.0	

Improved inventory control

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	12.5	12.5	12.5
	2	1	4.2	4.2	16.7
	3	7	29.2	29.2	45.8
	4	7	29.2	29.2	75.0
	5	6	25.0	25.0	100.0

	Total	24	100.0	100.0	

Reduction in staff hours

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	12.5	12.5	12.5
	2	6	25.0	25.0	37.5
	3	13	54.2	54.2	91.7
	4	1	4.2	4.2	95.8
	5	1	4.2	4.2	100.0
	Total	24	100.0	100.0	

Reduction in overtime

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	29.2	29.2	29.2
	2	4	16.7	16.7	45.8
	3	5	20.8	20.8	66.7
	4	8	33.3	33.3	100.0
	Total	24	100.0	100.0	

Mukhyamantri Anrutam scheme – STEPS-Analysis

Table 15 MA-STEPS

Statistics

		Satisfaction	Treatment/clinical	Electronic information/data	Prevention and patient education	Savings
N	Valid	4	4	4	4	4
	Missing	0	0	0	0	0
Mean		3.75	4.25	4.75	2.00	2.00

Median	4.50	4.50	5.00	2.00	2.00
Mode	5	5	5	1[a]	1[a]
Std. Deviation	1.893	.957	.500	1.155	1.155
Variance	3.583	.917	.250	1.333	1.333
Range	4	2	1	2	2
Minimum	1	3	4	1	1
Maximum	5	5	5	3	3

a. Multiple modes exist. The smallest value is shown

Satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	4	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Treatment/clinical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	4	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Electronic information/data

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	1	25.0	25.0	25.0
	5	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Preventiona and patient education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	3	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	3	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Table 16 MA-Satisfaction

Statistics

		Providers	Patients	Staff (Technical/administration)	Others (Clerks,kiosk operators)
N	Valid	4	4	4	4
	Missing	0	0	0	0
Mean		3.75	4.50	4.75	4.75
Median		3.50	4.50	5.00	5.00
Mode		3	4[a]	5	5
Std. Deviation		.957	.577	.500	.500
Variance		.917	.333	.250	.250
Range		2	1	1	1
Minimum		3	4	4	4
Maximum		5	5	5	5

a. Multiple modes exist. The smallest value is shown

Providers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	50.0	50.0	50.0
	4	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Patients

	Frequency	Percent	Valid Percent	Cumulative Percent

	4	2	50.0	50.0	50.0
Valid	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Staff (Technical/administration)

		Frequency	Percent	Valid Percent	Cumulative Percent
	4	1	25.0	25.0	25.0
Valid	5	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Others (Clerks,kiosk operators)

		Frequency	Percent	Valid Percent	Cumulative Percent
	4	1	25.0	25.0	25.0
Valid	5	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Table 17 : MA-Providers

Statistics

		Staff communication	overall provider satisfaction rating	Improved quality of life.	Communication with patients	Communication with other providers
N	Valid	4	4	4	4	4
	Missing	0	0	0	0	0
Mean		3.75	4.50	5.00	5.00	5.00
Median		3.50	5.00	5.00	5.00	5.00
Mode		3	5	5	5	5
Std. Deviation		.957	1.000	.000	.000	.000
Variance		.917	1.000	.000	.000	.000
Range		2	2	0	0	0
Minimum		3	3	5	5	5
Maximum		5	5	5	5	5

Staff communication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	50.0	50.0	50.0
	4	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

overall provider satisfaction rating

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	5	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Improved quality of life.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Communication with patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Communication with other providers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Table 18 : MA-Overall

Statistics

	Nurse turn over reduced	Decrease test redundancy	Staff (Technical & administration)

N	Valid	4	4	4
	Missing	0	0	0
Mean		1.00	3.50	4.25
Median		1.00	4.00	4.50
Mode		1	5	5
Std. Deviation		.000	1.915	.957
Variance		.000	3.667	.917
Range		0	4	2
Minimum		1	1	3
Maximum		1	5	5

Nurse turn over reduced

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	100.0	100.0	100.0

Decrease test redundancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	3	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Staff (Technical & administration)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	4	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Table 19 : MA-Clinical

Statistics

	Quality of care	Safety	Efficiency

N	Valid	4	4	4
	Missing	0	0	0
Mean		2.50	2.75	3.25
Median		2.50	3.00	3.00
Mode		2[a]	3	3
Std. Deviation		.577	.500	1.258
Range		1	1	3
Minimum		2	2	2
Maximum		3	3	5

a. Multiple modes exist. The smallest value is shown

Quality of care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	50.0	50.0	50.0
	3	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	25.0	25.0	25.0
	3	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	25.0	25.0	25.0
	3	2	50.0	50.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Table 20 : MA-Quality Control

Statistics

		Reduce patient request time	Reduce patient readmission	Improve continuity of care
N	Valid	4	4	4
	Missing	0	0	0
Mean		4.25	3.50	4.50
Median		4.50	3.00	5.00
Mode		5	3	5
Std. Deviation		.957	1.000	1.000
Variance		.917	1.000	1.000
Range		2	2	2
Minimum		3	3	3
Maximum		5	5	5

Reduce patient request time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	4	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Reduce patient readmission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	75.0	75.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Improve continuity of care

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	5	3	75.0	75.0	100.0

	Total	4	100.0	100.0	

Table 21 : MA-Efficiency

Statistics

		Scheduling patients	decrease redundancy in Lab/Rad reports	Real time patient record transfer
N	Valid	4	4	4
	Missing	0	0	0
Mean		1.00	2.25	3.75
Median		1.00	2.00	3.50
Mode		1	1	3
Std. Deviation		.000	1.500	.957
Variance		.000	2.250	.917
Range		0	3	2
Minimum		1	1	3
Maximum		1	4	5

Scheduling patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	100.0	100.0	100.0

decrease redundancy in Lab/Rad reports

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	3	1	25.0	25.0	75.0
	4	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Real time patient record transfer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	50.0	50.0	50.0
	4	1	25.0	25.0	75.0

	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Table 22 : MA-Safety

Statistics

		Improve clinical documentation	Reduced medication errors	Reduced medical errors/judgements
N	Valid	4	4	4
	Missing	1	1	1
Mean		4.50	4.25	3.50
Median		5.00	4.50	3.50
Mode		5	5	2[a]
Std. Deviation		1.000	.957	1.291
Variance		1.000	.917	1.667
Range		2	2	3
Minimum		3	3	2
Maximum		5	5	5

a. Multiple modes exist. The smallest value is shown

Improve clinical documentation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	20.0	25.0	25.0
	5	3	60.0	75.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

Reduced medication errors

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	20.0	25.0	25.0
	4	1	20.0	25.0	50.0
	5	2	40.0	50.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

Reduced medical errors/judgements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	1	20.0	25.0	25.0
	3	1	20.0	25.0	50.0
	4	1	20.0	25.0	75.0
	5	1	20.0	25.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

Table 23 : MA- Information and data

Statistics

		Data sharing and reporting	Evidence based medicine
N	Valid	4	4
	Missing	0	0
Mean		5.00	5.00
Median		5.00	5.00
Mode		5	5
Std. Deviation		.000	.000
Variance		.000	.000
Range		0	0
Minimum		5	5
Maximum		5	5

Data sharing and reporting

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	5	4	100.0	100.0	100.0

Evidence based medicine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Table 24 : MA-Sharing

Statistics

		Improve claims management	Increase clinical trends tracking	Improved security of patients records
N	Valid	4	4	4
	Missing	1	1	1
Mean		4.25	4.50	5.00
Median		4.50	5.00	5.00
Mode		5	5	5
Std. Deviation		.957	1.000	.000
Variance		.917	1.000	.000
Range		2	2	0
Minimum		3	3	5
Maximum		5	5	5

Improve claims management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	20.0	25.0	25.0
	4	1	20.0	25.0	50.0
	5	2	40.0	50.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

Increase clinical trends tracking

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	3	1	20.0	25.0	25.0
	5	3	60.0	75.0	100.0
	Total	4	80.0	100.0	
Missing	System	1	20.0		
Total		5	100.0		

Improved security of patients records

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	80.0	100.0	100.0
Missing	System	1	20.0		
Total		5	100.0		

Table 25 : MA- evidence based medicine

Statistics

		Improved access to data for research	Increase no of Patients records in data ware house	Improved medical education
N	Valid	4	4	4
	Missing	0	0	0
Mean		5.00	5.00	4.25
Median		5.00	5.00	4.50
Mode		5	5	5
Std. Deviation		.000	.000	.957
Variance		.000	.000	.917
Range		0	0	2
Minimum		5	5	3
Maximum		5	5	5

Improved access to data for research

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Increase no of Patients records in data ware house

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Improved medical education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	1	25.0	25.0	25.0
	4	1	25.0	25.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Table 26 : MA-Prevention

Statistics

		improvement in diseases surveillance	Increased diseases screening (Cancers)	Longitudinal patients analysis	Increased preventive immunisation
N	Valid	4	4	4	4
	Missing	0	0	0	0
Mean		5.00	3.00	3.00	2.00
Median		5.00	3.00	3.00	1.00
Mode		5	1[a]	1[a]	1
Std. Deviation		.000	2.309	2.309	2.000
Variance		.000	5.333	5.333	4.000
Range		0	4	4	4
Minimum		5	1	1	1
Maximum		5	5	5	5

a. Multiple modes exist. The smallest value is shown

improvement in diseases surveillance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Increased diseases screening (Cancers)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Longitudinal patients analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Increased preventive immunisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	75.0	75.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Table 27 : MA-Savings

Statistics

		Efficiency savings	Financial/business	Operational savings
N	Valid	4	4	4
	Missing	0	0	0
Mean		2.50	3.00	2.50
Median		3.00	3.00	2.00
Mode		3	3	1
Std. Deviation		1.000	1.633	1.915
Variance		1.000	2.667	3.667
Range		2	4	4
Minimum		1	1	1
Maximum		3	5	5

Efficiency savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	3	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Financial/business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	3	2	50.0	50.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Operational savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	3	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Table 28 : MA-Efficiency savings

Statistics

		Reduced medical transcription cost	Improved workflow efficiency	Reduced patients' waiting times
N	Valid	4	4	4
	Missing	0	0	0
Mean		3.00	2.75	1.50
Median		2.50	2.50	1.50
Mode		2	1[a]	1[a]
Std. Deviation		1.414	1.708	.577
Variance		2.000	2.917	.333
Range		3	4	1
Minimum		2	1	1
Maximum		5	5	2

a. Multiple modes exist. The smallest value is shown

Reduced medical transcription cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	2	50.0	50.0	50.0
	3	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Improved workflow efficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	2	1	25.0	25.0	50.0
	3	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Reduced patients' waiting times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	2	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Table 29 : MA-Financial and business

Statistics

		Increased coding accuracy	Reduction of days for account receivable	Reduction in hospital stay	Decrease in mal-practice
N	Valid	4	4	4	4
	Missing	0	0	0	0
Mean		5.00	3.00	2.50	1.50
Median		5.00	3.00	2.00	1.00
Mode		5	3	1	1

Std. Deviation	.000	1.633	1.915	1.000
Variance	.000	2.667	3.667	1.000
Range	0	4	4	2
Minimum	5	1	1	1
Maximum	5	5	5	3

Increased coding accuracy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5	4	100.0	100.0	100.0

Reduction of days for account receivable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1	25.0	25.0	25.0
	3	2	50.0	50.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Reduction in hospital stay

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	50.0	50.0	50.0
	3	1	25.0	25.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Decrease in mal-practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	75.0	75.0	75.0
	3	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Table 30 : MA-Operational efficiency

Statistics

		Improved use of space	Improved inventory control	Reduction in staff hours	Reduction in overtime
N	Valid	4	4	4	4
	Missing	0	0	0	0
Mean		1.75	4.75	4.00	3.50
Median		1.00	5.00	4.00	3.00
Mode		1	5	3[a]	3
Std. Deviation		1.500	.500	1.155	1.000
Variance		2.250	.250	1.333	1.000
Range		3	1	2	2
Minimum		1	4	3	3
Maximum		4	5	5	5

a. Multiple modes exist. The smallest value is shown

Improved use of space

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	75.0	75.0	75.0
	4	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Improved inventory control

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4	1	25.0	25.0	25.0
	5	3	75.0	75.0	100.0
	Total	4	100.0	100.0	

Reduction in staff hours

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	2	50.0	50.0	50.0
	5	2	50.0	50.0	100.0
	Total	4	100.0	100.0	

Reduction in overtime

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3	3	75.0	75.0	75.0
	5	1	25.0	25.0	100.0
	Total	4	100.0	100.0	

Discussion

Implication of IT on RSBY schemes rated on Likert scale from 1 to 5 on various stakeholder like providers, payers, beneficiaries.

RSBY schemes has 24 empaneled hospitals in Jamnagar district.

Criteria	Statistical outcome	comments
STEPS	3 (75%)Provider satisfied with Electronic information/data Not with Prevention and patient education 2 (50%)	
Satisfaction	All provider gave rating shows not fully satisfied or fully dissatisfied, 50 % patients strongly/ agreed,66% technical staff given 4 or 5 rating.	
Providers Hospitals	62% hospital agreed for improved communication among staff, 58% overall satisfied,70% quality of life.78% gave 4-5 rating for patient communication	Toll free numbers
Clinical	70% gave rating 4-5 for quality of care.70% not agree with safety issue improvement through IT. efficiency improvements has wide range of opinion	
Quality	All gave 4-5 rating for reduce waiting time,58% agreed for reducing re-admission.88% believe that it improve continuity of care.95% agreed in decrease redundancy in Lab/Rad reports. All are agree for real time patients' record transfer.	Electronic communication speeds up the process

Information and data	All agree for data sharing and reporting,92% strongly agreed it help in evidence based medicine practice.	Evidence improved
Evidence based medicine	79% agreed that it add patients in data ware house, all of them agreed it improve access to data for medical research.	Improve clinical decisions
Savings	All are agreed it improve claim management, only 20% agreed for clinical tracking of diseases.	Longitudinal records
Efficiency savings	80% agreed it reduce medical transcription cost, all disagree that it improve workflow efficiency and reduce patient waiting time	No transcription
Financial and business	All are agree for clinical coding accuracy,50% agreed for reduction of time in account receivable.83% agreed it reduce mal practice	Predefined clinical coding
Operation	43% agreed it improve use of space,54% improve inventory control,	

Mukhyamantri Amrutam scehme – STEPS-Analysis

MA scheme has only one hospital empanelled (GG Hospital) which provided with 3 clusters approved Burns, poly trauma and oncology.these cluster unit individually rating the IT components contribution in this scheme.

MA-STEPS

Criteria	Statistical analysis outcome	comments
STEPS	75% providers satisfied,75% agreed IT improve treatment, all agreed IT help in electronic information/data exchange. None agreed IT save money	
Satisfaction	All beneficiaries are satisfied, technical /administrative staff and kiosk operators satisfied with IT components,	Finger scan
Providers Hospitals	50% providers agreed IT improve staff communication,75% fully satisfied with all components,100% improve quality of life and communication with patients.	Toll free numbers
Overall	100% reduced nurse turnover,50% decrease test rendundancy,75% technical/administrative staff satisfied.	

Clinical	None agreed IT improve quality of care,75% neutral IT improve safety, 25% agreed that IT improve clinical efficiency.	
Quality control	75% agreed IT reduce patient request time, and continuity of care	Electronic communication speeds up the process
Efficiency	None agreed IT help scheduling the patients,50% for IT help real time patient record transfer.	
Safety	75% agreed IT help in clinical documentation, reduce medication errors, and 50% believe that IT reduce medical errors/judgements.	
Information and data	All agreed for data sharing and reporting, and evidence based medicine,	Evidence improved
Evidence based medicine	All are agreed for Improved access to data for research And Increase no of Patients records in data ware house , 75% improve in medical education.	Improve clinical decisions
Prevention	All agreed improvement in diseases surveillance,50 %,Increased diseases screening (Cancers) , and Longitudinal patients analysis ,Only 25% agreed Increased preventive immunisation	
Savings	No one agreed in Effeciency savings, 25 % agreed improve Financial/business process, and Financial and operational savings.	Longitudinal records
Efficiency savings	Only 25% agreed in Reduced medical transcription cost,And Improved workflow efficiency,None agreed for Reduced patients' waiting times	No transcription, local supply.
Financial and business	All agreed for Increased coding accuracy, only 25% Reduction of days for account receivable and Reduction in hospital stay, All refused that it Decrease in mal-practice	Predefined clinical coding
Operational efficiency	25% agreed on Improved use of space , 75% in Improved inventory control,50% in Reduction in staff hours	

Conclusion

Stake holders of the government sponsored national level health insurance schemes are satisfied with IT enabled process of the enrolments, validation and verification of beneficiaries, claims process, cashless money transfer, administrative feasibility etc.

Both scheme started with full fledge IT enabled service right from beginning and improvement made after the stakeholders feedback and technical difficulties at remote areas of India ie power supply , slow internet connectivity.

Technically RSBY is mature scheme than MA schemes as it start 3 years earlier, but MA scheme managed to learn from RSBY mistakes

Predetermined quality IT role has to be placed in such large scale IT implementation. No pre planned IT performance bench marks developed to monitor IT support in large scale use of information technology in insurance sector.

Large scale multisite studies to be conducted to review performance of IT components of Insurance delivery for providers/payers/beneficiaries. Tools to be developed for overall bench marking of the IT parts of insurance sectors.

Both schemes' insurance process benefited from IT capability of the hardware and software components in administrative, clinical and financial perspectives.

Some of the process in these schemes heavily depend on the IT enabled service, like claim process, patients verification, without that fraud can be easily made with schemes.

Both scheme made available operational through IT enablement of processes, though vast difference in response noted from providers between private/government.

Instrumentation

Likert scale used to conduct qualitative study on secondary data collected over the period of 2 years for both schemes in Jamnagar district.

Secondary data file from excel files, hand written reports , complaints, errors reports , grievances reported for IT system to IT solution providers. Total documents processed are 210.

Both private and government hospitals, implement support agency, and insurance company gave their feedback in varying degree of scales that had to modify with Likert scales to maintain uniformity of response.

Data processing and analysis done on SPSS V20.

Case study

Data mining and business intelligence is integral part of any organisation who are dealing with large data sets (More than 1TB)

These two schemes have their own large data sets in data centre with structured and unstructured data sets like images, biometrics details, hospital profiles, scanned copy of case notes, transaction, claim details etc.

In these case study SPSS (V20) used for data mining manipulation on claims data to identify clusters among the claims details of RSBY

RSBY Enrolments and hospital empaneled data in 2013

City	Premium	Total	Enrolled	Private	Public
Ahmedabad	403	406378	98823	61	31
Amreli	459	92278	34754	15	17
Anand	403	185098	65304	44	20
Banaskantha	640	302708	102864	59	14
Bharuch	374	137122	61866	27	10
Bhavnagar	459	139978	62899	48	19
Dohad	374	264527	71500	25	17
Gandhinagar	640	60008	32012	27	12
Jamnagar	**373**	**120997**	**42101**	**12**	**14**
Junagadh	459	169389	97683	35	18
Kheda	403	222056	99400	31	28
Kutch	373	122551	48439	27	20
Mahesana	640	127841	76929	107	70
Narmada	374	95633	55940	16	6
Navsari	342	85345	50707	17	12
Patan	640	152240	62624	43	17
Porbandar	373	33176	25380	9	5
Rajkot	373	215664	97689	60	22
Sabar Kantha	640	205122	87998	86	22
Surat	342	174269	80069	29	21
Surendranagar	403	169945	58928	25	14
Tapi	342	91740	64783	11	8
The Dangs	342	69129	28920	3	7
Vadodara	374	334188	151070	62	29
Valsad	342	143975	76940	10	13

RSBY-Enrolment district comparison

OLAP CUBE

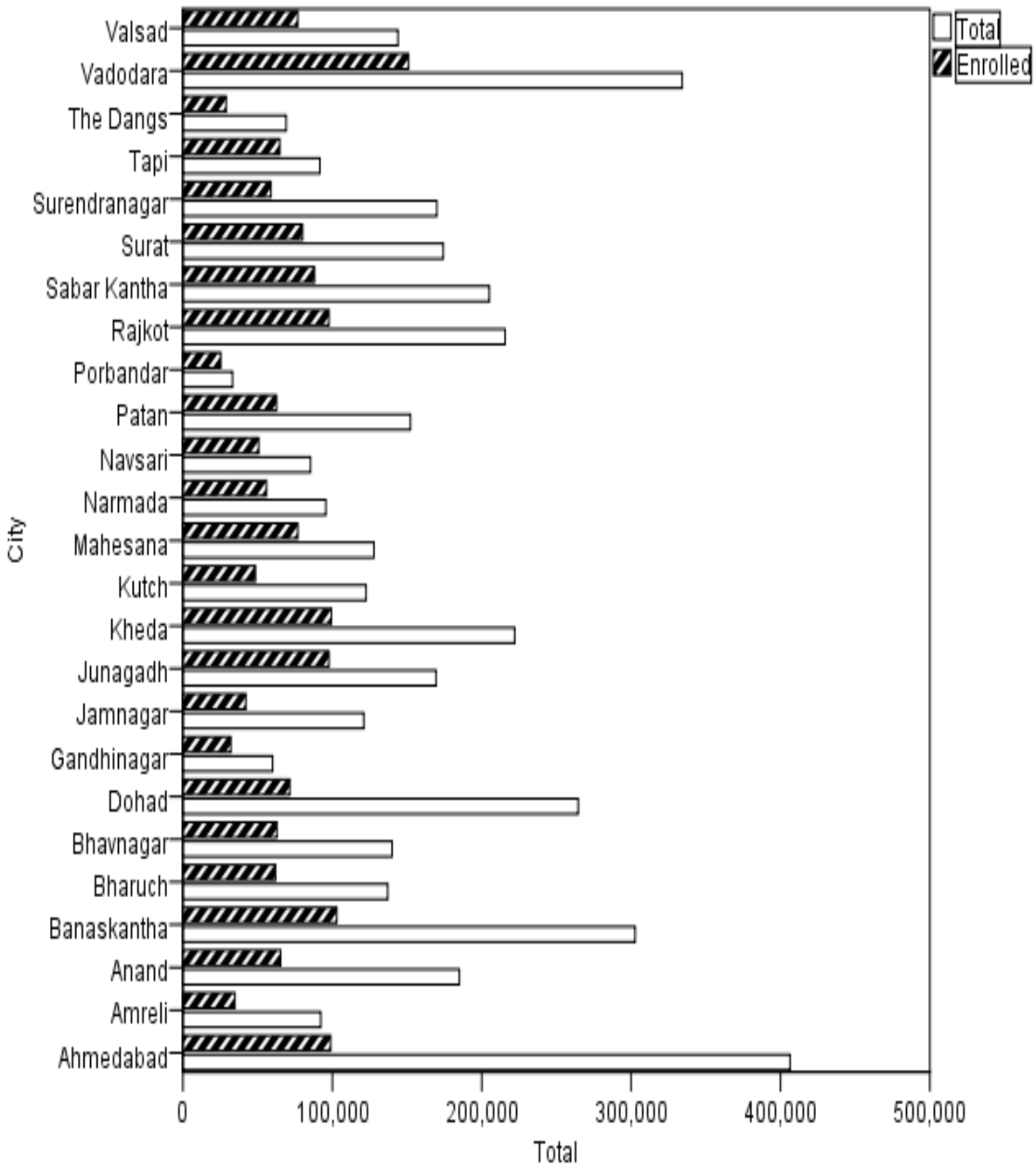
Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Premium * Enrolled	25	100.0%	0	0.0%	25	100.0%

OLAP Cubes

Enrolled: Total

	Sum	N	Mean	Std. Deviation	% of Total Sum	% of Total N
Premium	10887	25	435.48	109.820	100.0%	100.0%



Clustering of premium segments

Initial Cluster Centres

	Cluster		
	1	2	3
Premium	342	459	640

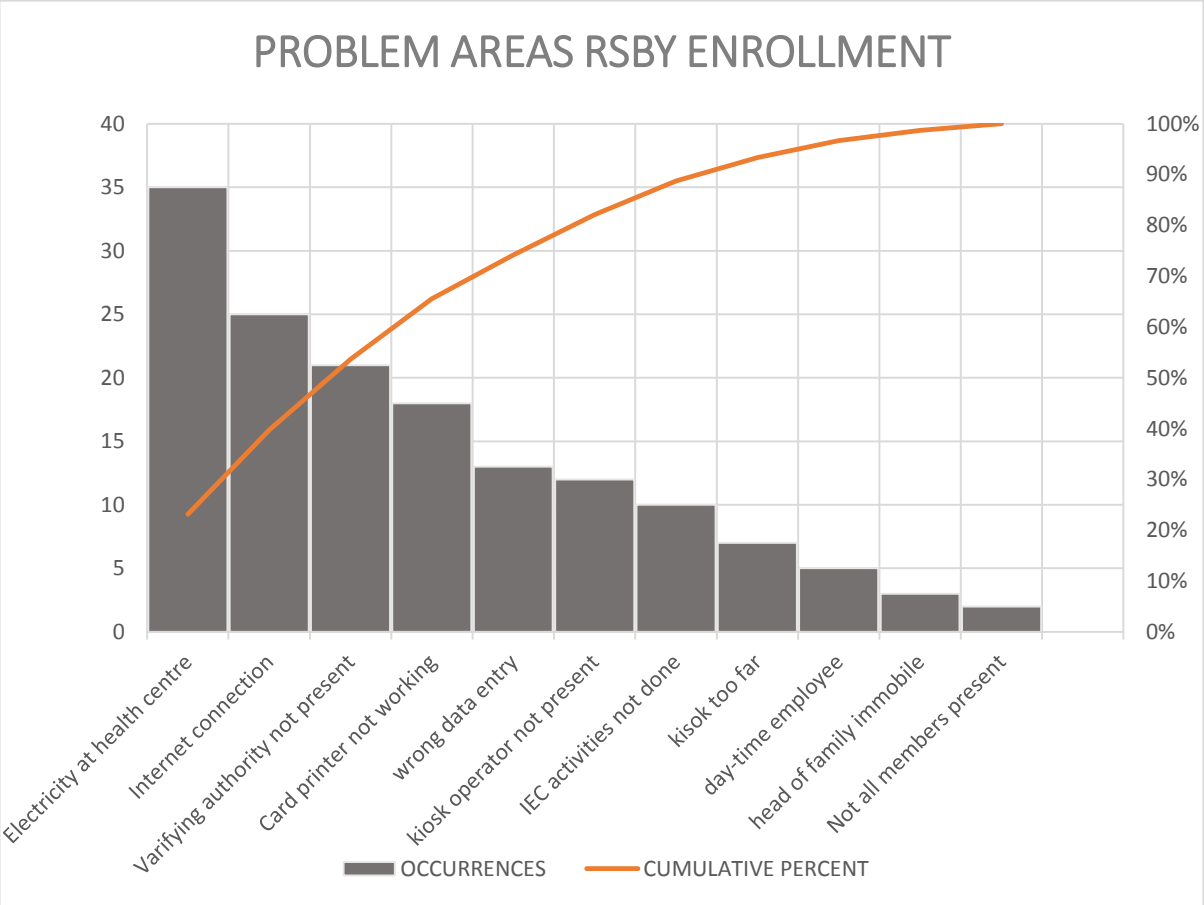
Final Cluster Centres

	Cluster		
	1	2	3
Premium	361	427	640

Number of Cases in each Cluster

Cluster	1	13.000
	2	7.000
	3	5.000
Valid		25.000
Missing		19.000

Pareto analysis of problems faced in RSBY enrolments in Jamnagar district.



PROBLEM DATA			
PROBLEM AREA	**OCCURRENCES**	**PERCENT OF TOTAL**	**CUMULATIVE PERCENT**
Electricity at health centre	35	23.18%	23.18%

Internet connection	25	16.56%	39.74%
Verifying authority not present	21	13.91%	53.64%
Card printer not working	18	11.92%	65.56%
wrong data entry	13	8.61%	74.17%
kiosk operator not present	12	7.95%	82.12%
IEC activities not done	10	6.62%	88.74%
kiosk too far	7	4.64%	93.38%
day-time employee	5	3.31%	96.69%
head of family immobile	3	1.99%	98.68%
Not all members present	2	1.32%	100.00%

RSBY CLAIMS ANALYSIS WITH DATA MINING

Initial Cluster Centres

	Cluster	
	1	2
Approved Amt.	0	28500

Iteration History

Iteration	Change in Cluster Centres

	1	2
1	3187.875	10946.309
2	787.992	2774.077
3	350.270	1048.834
4	81.337	293.832
5	.000	.000

a. Convergence achieved due to no or small change in cluster centres. The maximum absolute coordinate change for any centre is .000. The current iteration is 5. The minimum distance between initial centres is 28500.000.

Final Cluster Centres

	Cluster	
	1	2
Approved Amt.	1968	13437

Number of Cases in each Cluster

Cluster	1	1682.000
	2	409.000
Valid		2091.000
Missing		19.000

Statistics

		Approved Amt.	Hospital Name	ProcedureName
N	Valid	2091	2110	2110
	Missing	19	0	0
Mean		4211.55		
Median		1500.00		
Mode		1000		
Std. Deviation		5136.180		
Variance		26380340.691		
Range		28500		
Minimum		0		
Maximum		28500		
Percentiles	25	1000.00		
	50	1500.00		
	75	6000.00		

Hospital Name

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AADARSH HOSPITAL	12	.6	.6	.6
	ASHADEEP HOSPITAL	32	1.5	1.5	2.1
	BANSI MATERNITY HOSPITAL	30	1.4	1.4	3.5
	CHC Dwarka	50	2.4	2.4	5.9
	Falia Hospital	71	3.4	3.4	9.2
	Gen Hosp Jam Khambhalia	120	5.7	5.7	14.9
	Guru Gobindsingh Hospital	1258	59.6	59.6	74.5
	heet maternity home	135	6.4	6.4	80.9
	madhav hopspital jamnagar	66	3.1	3.1	84.1
	Payal Hospital	39	1.8	1.8	85.9
	Raninga Orthopaedic Hospi	101	4.8	4.8	90.7
	Rathi hospital	5	.2	.2	90.9

	RH CHC Lalpur	161	7.6	7.6	98.6
	SAKET HOSPITAL	26	1.2	1.2	99.8
	THAKKAR HOSPITAL	4	.2	.2	100.0
	Total	2110	100.0	100.0	

Procedure Name

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	COMBINED PACKAGES	96	4.5	4.5	4.5
	EAR	20	.9	.9	5.5
	ENDOCRINE	1	.0	.0	5.5
	ENDOSCOPIC PROCEDURES	6	.3	.3	5.8
	GENERAL SURGERY	164	7.8	7.8	13.6
	GYNAECOLOGY	241	11.4	11.4	25.0
	MEDICAL	1084	51.4	51.4	76.4
	NOSE	2	.1	.1	76.5
	ONCOLOGY	172	8.2	8.2	84.6
	OPHTHALMOLOGY	86	4.1	4.1	88.7
	ORTHOPAEDIC	205	9.7	9.7	98.4
	PAEDIATRIC	4	.2	.2	98.6
	THROAT	3	.1	.1	98.8
	Unspecified	2	.1	.1	98.9
	UROLOGY	24	1.1	1.1	100.0
	Total	2110	100.0	100.0	

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of Patient code occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
2	The categories of PatientGender occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
3	The categories of PatientAge occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The categories of HospitalName occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
5	The categories defined by HospitalType = Public and Private occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.000	Reject the null hypothesis.
6	The categories of ProcedureName occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
7	The categories of LOS occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
8	The categories of AmountClaimed occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
9	The categories of PackageName occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
10	The categories of claim-status occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
11	The categories of Payment Status occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
12	The distribution of Approved Amt. is normal with mean 4,211.55 and standard deviation 5,136.18.	One-Sample Kolmogorov-Smirnov Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

RSBY – District enrolment for category BPL and MNREGA.

Statistics

		EnrolledData	DistrictName	CatCode	TotalData
N	Valid	25578	25578	25578	25578
	Missing	0	0	0	0
Mean		71.96			173.30
Median		37.00			80.00
Mode		0			1
Std. Deviation		264.875			913.422
Variance		70158.572			834338.978
Range		22323			77303
Minimum		0			1
Maximum		22323			77304

Category Code

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bpl	18486	72.3	72.3	72.3
	Building & Other Construction	194	.8	.8	73.0
	mnrega	6880	26.9	26.9	99.9
	Railway porters	18	.1	.1	100.0
	Total	25578	100.0	100.0	

District Name

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ahmedabad	731	2.9	2.9	2.9
	Amreli	794	3.1	3.1	6.0
	Anand	566	2.2	2.2	8.2
	Banaskantha	1947	7.6	7.6	15.8
	Bharuch	742	2.9	2.9	18.7
	Bhavnagar	1019	4.0	4.0	22.7
	Dahod	991	3.9	3.9	26.5
	Dangs	381	1.5	1.5	28.0
	Gandhinagar	434	1.7	1.7	29.7
	Jamnagar	987	3.9	3.9	33.6
	Junagadh	1312	5.1	5.1	38.7
	Kheda	1151	4.5	4.5	43.2

	Kutch	1055	4.1	4.1	47.3
	Mehsana	895	3.5	3.5	50.8
	Narmada	878	3.4	3.4	54.3
	Navsari	547	2.1	2.1	56.4
	Panchmahal	1854	7.2	7.2	63.7
	Patan	928	3.6	3.6	67.3
	Porbandar	231	.9	.9	68.2
	Rajkot	1177	4.6	4.6	72.8
	Sabarkantha	1758	6.9	6.9	79.7
	Surat	937	3.7	3.7	83.3
	Surendranagar	984	3.8	3.8	87.2
	Tapi	753	2.9	2.9	90.1
	Vadodara	2028	7.9	7.9	98.1
	Valsad	498	1.9	1.9	100.0
	Total	25578	100.0	100.0	

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Total Data * Cat Code	25578	100.0%	0	0.0%	25578	100.0%
Enrolled Data * Ca t Code	25578	100.0%	0	0.0%	25578	100.0%

OLAP Cubes

Category Code: Total

	Sum	N	Mean	Std. Deviation	% of Total Sum	% of Total N
Total Data	4432626	25578	173.30	913.422	100.0%	100.0%
Enrolled Data	1840499	25578	71.96	264.875	100.0%	100.0%

Abbreviation

ASHA Accredited Social Health Activist

BPL Below Poverty Line

GDP Gross Domestic Product

DHS district health society

DPMU district program management unit

CDHO chief district health officer

MA Mukhya mantri Amrutam

MOHFW Ministry of Health and Family Welfare

MOLE Ministry of Labour and Employment

NRHM National Rural Health Mission

NSS National Sample Survey

RSBY Rashtriya Swasthya Bima Yojana

SIP System to Identify the Poor

WHO World Health organisation

FKO- Field Key Officer

TVA-Taluka Verifying Authority.

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