DISSERTATION REPORT

IN

RAJIV GANDHI CANCER INSTITUTE, NEWDELHI

(JANUARY 23- APRIL 23, 2012)

A REPORT ON

HIS ADOPTION STUDY

BY

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POST-GRADUATE PROGRAMME IN HOSPITAL and HEALTH MANAGEMENT, NEW DELHI

(2012-13)

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH

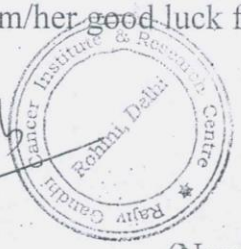
CERTIFICATE OF INTERNSHIP COMPLETION

Date:.....

TO WHOM IT MAY CONCERN

This is to certify that Mr. DINESH JHAWAR has successfully completed his 3 months internship in our organization from January 23, 2012 to April 23, 2012. During this intern he has worked on **"Study on Effectiveness and Efficiency of HIS-PARAS in various department"** under the guidance of me and my team at Rajiv Gandhi Cancer Institute & Research Centre.

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



(Signature)

_____(Name)

_____Designation

Certificate of Approval

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

Dissertation Examination Committee for evaluation of dissertation

Name	Signature
Prof. Dr. S.V. Mani	
Dr. Anandki Ramachandra K	
Prof. (Dr.) T. Muthukumar	2/5/12

CERTIFICATE FROM DISSERTATION ADVISORY COMMITTEE

This is to certify that **Dinesh Jhawar**, a graduate student of the **Post- Graduate Diploma in Health and Hospital Management**, has worked under our guidance and supervision. He is submitting this dissertation titled "**Study on Effectiveness and Efficiency of HIS-PARAS in various Departments**" in partial fulfillment of the requirements for the award of the **Post-Graduate Diploma in Health and Hospital Management**. This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Faculty Mentor:	Organizational Advisor:
Designation:	Designation:
IIHMR	RGCI & RC
New Delhi	Rohini, New Delhi
Date	Date

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Last but not the least, an honorable mention goes to my family and friends for their invaluable support.

EXECUTIVE SUMMARY

1. BACKGROUND:

The planning and implementation of new clinical or non-clinical systems involves various challenges and has a significant impact on the entire organization – not only from a technology standpoint, but from patient, staff, and process perspectives as well**.** So in order to create the synergies among people, processes, and technologies to drive the transformation required to advance healthcare goals, a strong leadership with long term vision is the key factor in achieving the desirable outcome.

2. INTRODUCTION:

Srishti's HMIS automates and supports total information/data needs of RGCI-RC. The PARAS HIS is a centralized, well-integrated, real-time solution that plays a key role in the everyday working of the hospital.

3. OBJECTIVE:

The primary aim of my paper is to study and analyze

- Process during Implementation and post-implementation phase PARAS HIS.
- The functioning & effectiveness of different modules of PARAS HIS being used in the hospital according to the original requirement specification.

4. METHODOLOGY:

This is a primary study conducted over a period of 3 months. Besides, A cross-sectional, descriptive survey design was used to collect data needed to answer research questions.

5. FINDINGS:

Results indicate that users use the system and that access to information was improved as a result of HIS. The results and findings of this study has broken the myth.

6. PROBABLE OUTCOME OF THE STUDY:

The overall study of the existing system help us to understand the smooth functioning of the application, analyze gap in the system and thus help us to resolve the validation issue, defects or bug fixation if they exists as such.

Abbreviations and Keywords:

- EHR - Electronic health record.
- EMR - Electronic medical record.
- VISTA - Veterans Health information and technology
- CPRS - Computerized patient record system.
- BCMA - Bar-coded medical administration.
- COW - Computer on wheels.
- PACS - Picture archival communication system
- MSSH - Max super specialty hospital.
- SCORM - Shareable content object reference model.
- TAT -Turn around time.
- DBMS - Database management system.
- LMS -Learning management system.

1. BACKGROUND

Hospitals are complex organizations with intensive information needs. Effective management of information within hospitals is crucial for higher service effectiveness and
efficiency levels. HIS is a necessary component of modern hospital infrastructure. HIS is considered a prerequisite for the efficient delivery of high quality health care in hospitals

A HIS is a comprehensive and integrated information system designed to store, manipulate, retrieve and use information concerned with the administrative and clinical aspects of a hospital. This encompasses paper-based information processing and computer-based information processing. This study is concerned with computerized hospital information systems.

The healthcare industry is in the process of transforming itself using technology. These transformation efforts focus on moving from manual processes, often based on historical practices, to technology-enabled or even automated processes. The overall effort involved in such a transformation creates a tremendous amount of disruption to all aspects of the organization,
Creating the absolute need for a commitment to managing change.

The scope of clinical and cultural transformation in healthcare today is profound and all-inclusive. It requires collaboration between all clinical and technical areas of a healthcare organization, necessitating new governance and organizational structures.
The transformation is multi-dimensional, taking on medical, clinical and cultural implications. On the medical and clinical sides, efforts focus on determining and implementing best-practice, evidence based processes that support the adoption of clinical technologies. On the cultural side, the clinical transformation efforts require healthcare organizations to work collaboratively, bringing together groups of physicians, nurses, pharmacists, ancillary care providers, and information system personnel to challenge the way things are done today. The results of such collaboration are new care processes and practices, as well as data standards and integrity that better support a patient-centric approach to care. These developments will ensure patient safety, quality of care, workflow efficiencies, care timeliness and effectiveness, and overall caregiver productivity.

The overall effort creates a tremendous amount of disruption to all aspects of the organization, creating the absolute need for a commitment to managing change at every point along the way.

Because the scope of this clinical and cultural transformation is so profound and all-inclusive, organizations must create new governance and organizational structures that ensure collaboration across clinical and technical areas. To succeed, organizational change structures, committees and teams should ensure:

- Leadership alignment at the senior executive level, including board-level support
- Participation of multi-disciplinary end-user work teams
- Sponsorship by clinical, operational and physician leaders.
- Facilitation from IT personnel.

Clinical Transformation is creating sustainable change in care delivery to improve quality, safety, service and financial outcomes. It is achieved through the integration of processes, technology and organizational culture.

The components of clinical transformation follow the methodology and include:

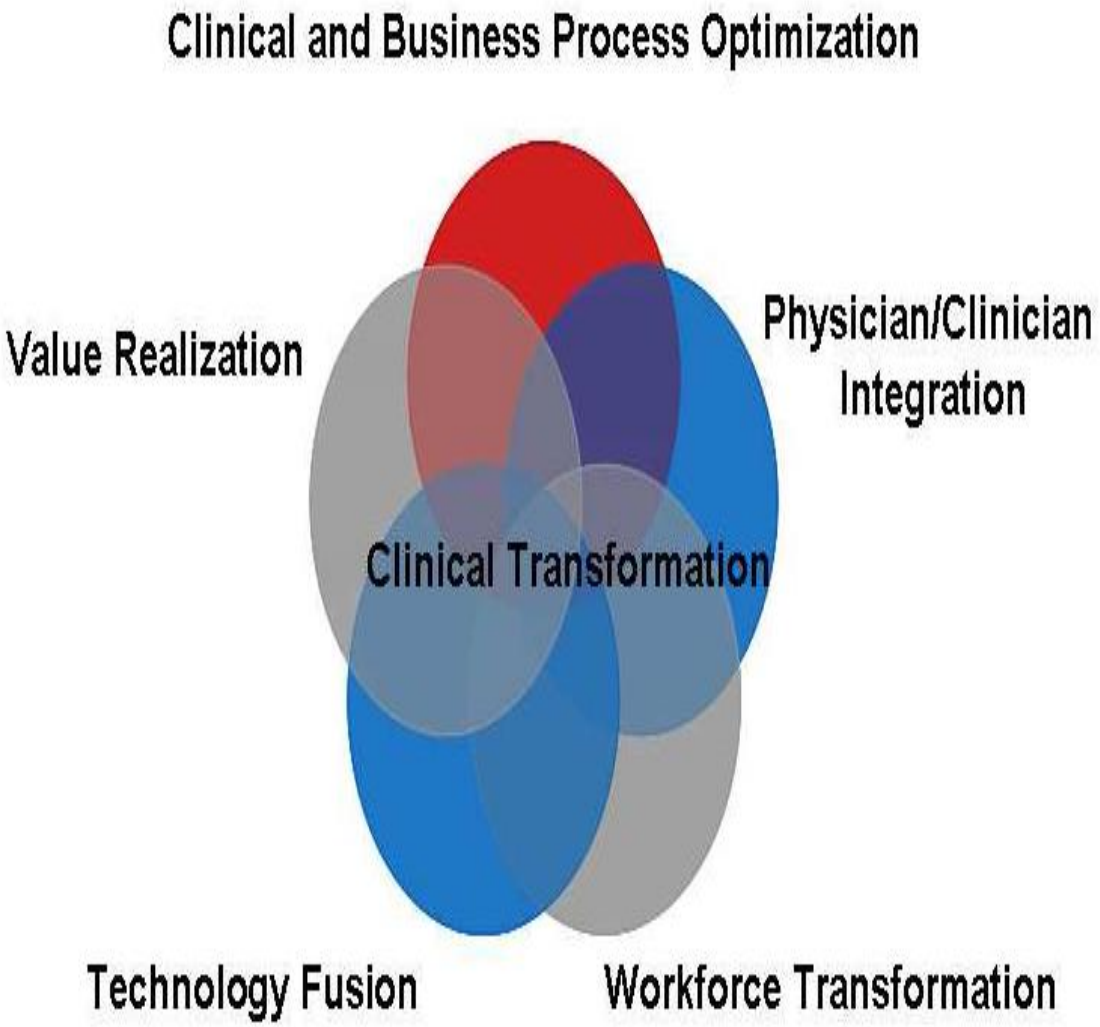
- **Clinical and Business Process Optimization** – reducing variation, improving efficiency and optimizing utilization in care delivery and administrative processes

- **Value Realization** – defining metrics, measuring, monitoring and realizing benefits for targeted processes.

- **Physician/Clinician Integration** – the process by which physicians and other clinicians are engaged in the development, adoption, acceptance and accountability for care delivery processes

- **Workforce Transformation** – achieving change through communication, Governance/leadership, e-learning and knowledge management while focusing on Organizational culture.
- **Technology Fusion** – the merging of technology and operational processes to achieve value and intelligence for clinical care delivery.

Clinical & Business Optimization Framework



Common Elements/Underlying Principles:

* Decreased Variation * Governance * PMO Infrastructure

* Clinical Care Supported by Technology; People, Process and Product Knowledge

2. INTRODUCTION:

ABOUT RAJIV GANDHI CANCER INSTITUTE AND RESEARCH CENTRE

Rajiv Gandhi Cancer Institute & Research Centre (**RGCI&RC**) started functioning on 1st July, 1996 is a comprehensive cancer care set-up with all the facilities for diagnosis and treatment of all types of cancers, available under one roof. Initiated as a 152-bedded hospital the Institute has been growing steadily and presently is a 238-bedded hospital with an impinching need for further expansion in terms of beds and other facilities to meet the growing demand. As part of its efforts to provide the best medical technologies for patient care, the hospital has added a Bone Marrow Transplant Unit in the year 2000, IMRT (Intensity Modulated Radiotherapy Technique) & Color-Doppler technique in the year 2002 and a current-generation PET-CT Scan facility in 2008. The Department of Surgical Oncology, Radiation Oncology and Medical Oncology of Rajiv Gandhi Cancer Institute & Research Centre have set up high standards in the medical field.

Since its inception on 1st July 1996, the Institute has proved its capability as a center of Excellence. The hospital has registered over 100,000 Patients from Delhi, neighboring States as well as from Foreign Countries. RGCI&RC is an exclusive Oncology Tertiary Cancer Care Centre.

3.LITERATURE REVIEW:

An extensive study of the existing study was carried out regarding the efficiency and effectiveness of Hospital Information system in various hospitals. Among the database of literature referred, it was found out that very few study of this kind were conducted in India.

The following two study carried out in countries of Africa were studied elaborately.

Study A:

In 1995, the National Department of Health (NDOH) established a National Committee to develop a National Health Information System Strategy for South Africa (NHIS/SA). The

committee was made up of members from each of the nine provinces. The objective of the NHIS/SA was to provide management information for managers and health workers. The committee identified patient care and financial information systems as crucial for health care management in the country.
As a response to national strategy and in recognition of provincial need, in 1998 the Northern Province started to implement an integrated computerized Hospital Information System (HIS) in its 42 hospitals. The decision to implement HIS in this province coincided with the provincial need to restructure services, which involved shifting resources from tertiary and secondary care levels to the primary care level. Hospital Information System (HIS) was one of the restructuring strategies in the Northern province.

The two main objectives of the HIS were as follows:
- *Improve patient care by providing patient information within and between hospitals.*
- *Improve health system management in general, beyond patient care.*

Establishing an Evaluation Programme
In view of the considerable expenditure and importance of implementing HIS for provincial as well as national health care services, it was important to evaluate implementation of HIS. The aim of the study was to assess how the HIS had met its objectives and to provide lessons that can be learned from this evaluation process.

Objective of the study
- To assess the efficiency and effectiveness of HIS.

Findings:

- The system was able to provide high level reports to supritendantants of the hospitals.
- The overall competency of using the system was good among the users.
- There are several factors associated with poor integration: poor computing competence amongst key informants; lack of co-ordination of patient IDs in the province; unavailability of other modules within the system and security and confidentiality issues. The findings also reveal that the system increased time efforts for certain activities and decreased time efforts for others. It appears that overall, time efforts were decreased with significant gains for other activities.

- The general lack of knowledge of how the system functions can be identified as the major source of increased time efforts in some areas. To conclude, there is an apparent qualitative association between how the systems perform and the level of computer competence amongst health workers.

STUDY B:

A computerized hospital information system (HIS) used to support clinical and administrative processes was implemented in a large Jordanian teaching hospital in 2003.
Physicians' acceptance and perceptions of the HIS is known to be one important factor in influencing successful implementation of hospital information systems. The aim of this study was to describe physicians' use, perceptions, and knowledge regarding the implemented HIS. A descriptive survey design was used. The setting is a large teaching hospital. An investigator-developed questionnaire comprising 38 questions was distributed to a convenient sample of 29 staff physicians who practiced in the hospital in the periods before and after implementation of the system. Results indicate that staff physicians use the system and that access to information was improved as a result of the HIS.

Results:

A. Sample

The average age of respondents was 46 years with a standard deviation of 8.8. Respondents' average years in medical practice were 20.3 years with a standard deviation of 9. Respondents' average years of practice in the hospital where the study was conducted was 3.7 years with a standard deviation of 0.57. Respondents were from almost all medical specialties practicing in the hospital.

B. Use of Computers

The findings of the study show that staff physicians enjoy using computers. In fact seventy two percent (72%) of the respondents reported that they enjoy using computers in general.

C. Use of the HIS

Although fifty two of respondents reported that they think the system is not easy to use, seventy two percent (72%) of them reported that they use it on a daily basis. A slight majority (52%) reported that they like to use the system.

D. Physicians' Knowledge about the System:

The questionnaire included three items that test respondents' knowledge about certain features of the HIS. The results show that physicians are not completely aware of all features of the system. The study found that seventy six percent (76%) of respondents reported that they are aware of"Patient Drug Profile" feature of the system. On the other hand, eighty six percent (86%) and fifty nine percent (59%) of the physicians reported that they are not aware of the "Patient's Allergy Profile" feature and "Vital Signs" feature, respectively.

E. Access to Information

Results show that seventy six percent of the physicians (76%) reported that the system had improved access to patients' medical information; ninety percent (90%) reported that the system had improved the speed of access to patients' laboratory results; eighty three percent (83 %) reported that the system had improved the timeliness of access to patient information; fifty nine

percent (59%) reported that the system had made accessing patient demographic information easier than before. Only forty five percent (45%) of respondents reported that the system had improved the speed of access to radiology results.

F. Security and Privacy of Information

Larger percentages (48% vs. 41%) of the physicians believe that the system did not help in protecting the confidentiality of private patient information. Additionally, fifty one percent (51%) of the physicians believe that the system allows for easy access to patient information to unauthorized individuals.

G. Communication Effectiveness

Findings show that sixty two percent (62%) of the physicians reported that the system had improved communication effectiveness. Additionally, seventy six percent (76%) of them reported that the system improved communication effectiveness between physicians and the laboratory. Despite the general perception that communication effectiveness was improved, only 39%, 38%, and 27% of respondents reported that the system had improved their communication effectiveness with nurses, radiology, and other physicians, respectively.

H. Quality of Services:

About half (48%) of the physicians reported that the system had helped in improving the quality of services. Eighty six (86%) and fifty two (52%) percent of the physicians reported that the system had improved the accuracy of laboratory results and patient information, respectively. Fifty percent (50%) of them reported that the system had made medical decision making more based on information. On the other side, eighty percent of respondents reported the system did not help in making administrative hospital procedures simpler and seventy nine percent (79%) reported that the system did not help in reducing the time patients take to complete administrative hospital procedures.

I. Efficiency:

Findings show that seventy two percent (72%) of the physicians reported that the system helped in preventing the provision of unauthorized free health care as a result of nepotism (WASTA). Sixty one percent (61%) of the physicians reported that the system did not influence or alter their productivity levels. Seventy nine percent (79%) and fifty five (55%) of the physicians did not agree that the HIS helped in reducing the consumption of material resources or the cost of providing health services, respectively. It was obvious that physicians had difficulty deciding whether the system had helped in reducing the cost of services or not (38% of them chose "I don't know" answer to this question.

J. Human Resource Performance:

Forty one percent (41%) of the physicians reported that the system had improved job performance of hospital employees. On the other hand, an equal number did not agree with this finding. Fifty five (55%) of the physician did not agree with statement indicating that the system had helped in improving their job performance. Additionally, fifty nine percent (59%) of the physicians reported that the system did not help in clarifying employees' responsibilities.

Findings of this study:

A notable finding of this study is the ability of the HIS in achieving its intended objectives related to the laboratory application. Specifically, speed of access, accuracy of results,
and effectiveness of communication. These findings indicate a case of "best practice" that needs to be studied and analyzed for lessons to be inferred and applied in other similar situations. In general, study findings indicate that the HIS was in general effective in improving access to information. Still there seems to be a problem in protecting information confidentiality and security. This issue requires further study and analysis to find the causes of this phenomenon and identify solutions. More stringent information security policies and procedures is one suggestion to pursue. The results indicate that the HIS was moderately effective in improving communication effectiveness. This find conforms to the fact that the system does not include an application for transferring messages between individual providers or between groups of providers. It is recommended to implement such application for enhancing communication between all involved providers of care.

4.Research Methodology:

HIS successes and failures would be assessed by considering the objectives set prior to implementation. This primary study was conducted over 3 months time periods of ongoing HIS implementation. Data were collected before as baseline and for sixth months after implementation.,

In short, Both qualitative and quantitative approach was used.

RESEARCH TOOLS USED:

- **Paras issue tracker.**
- **Delloite HIS assessment document.**
- **MASTER Tables from HIS.**
- **Service rate list.**
- **Lab procedures master.**
- **Unstructured Interviews with staff**

4.1: Data and Methods:

STUDY DESIGN:

ACTIVITIES						
1*.Exploring and Operational work of IT deptt.*						
2.*Literature Review*						
3.*Learning and Practicing HIS on Test Server*						
4. *Visits to various deptt. of hospitals where HIS being Implemented and its interface with EHR*						
5. *Data gathering*						
5.*Survey(Questionnaire design, distribution and analysis)*						
8. *Report writing*						
TIMELINE-per 5 days	23/1- 30/1	31/1-20/2	21/-18/3	19/3-2/4	3/4-11/4	12/4-22/4

5. Broad Objective of the study:

To assess the efficiency and effectiveness of HIS modules in various department.

This study is an attempt to explore, and assess the need of HIS felt in the hospital, analyzing workflow changes thereafter, benefits realization of technology to the stakeholders.

Specific objective of the study:

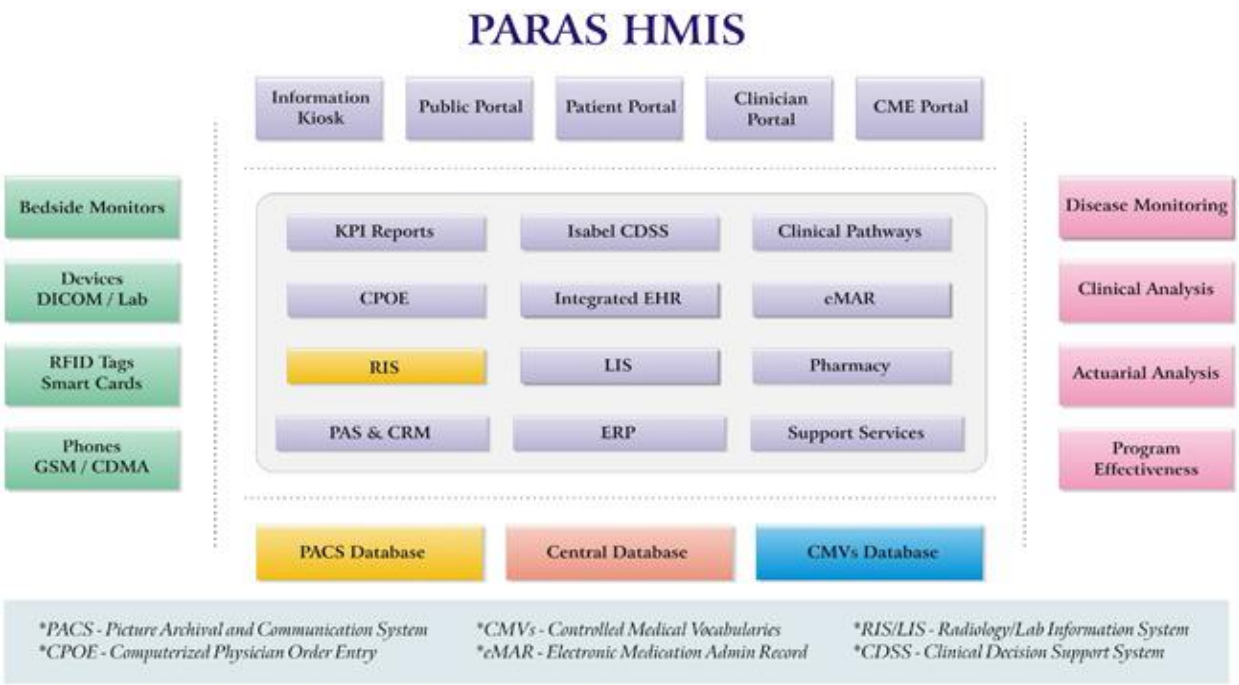
The main objective of this project is to study the implementation of HIS i.e., PARAS in RGCI and ensure smooth and uninterrupted running of the same as this will enable the hospital to have a whole range of data in comprehensive form including patient demographics, Admission, Discharge & Transfer, laboratory test results, and billing information.

- Review of SRS document and change request issues of ongoing Billing, Finance and HR module.
- Besides the linkages of different modules of PARAS with CIS- VistA and the Interfacing, Interoperability and Operational issues.
- Process during implementation and post implementation phase PARAS HIS.

6. About HIS PARAS:

RGCI HMIS login page

A fully integrated computer system was implemented in the hospital starting February 2003. The HIS is available on more than 400 terminals throughout the hospital. Hospital IT team worked in conjunction with HIS vendor, and was also
responsible for communicating with and training the users. Clinical as well as administrative applications were implemented.



6.1 Features of HIS:

- Master Patient Index; this provides a record of all patients registered at the hospital, through a unique identification number. It holds demographic, financial and medical details which are of long term significance.
- Duplicate Registration; this searches for probable duplicate records based on user-selectable criteria. It allows for confirmation and merging / removal of duplicate records.
- Patient File Management; this assists the Medical Records department in tracking of patient folders across wards, clinics, doctors, service departments and external locations.
- Appointment Scheduling Application; this allows flexible scheduling of clinics and doctors to enable booking of outpatient appointment, generation of appointment slips / letter, confirmation/ rescheduling / cancellation of appointments.
- Outpatient Management Application; this provides for registering of outpatient visits of various clinics either as walk-in or with appointments, once registered, the consultation / treatment information can be undated for the current visit with a facility to view the past history.
- Inpatient Management Application; this helps in streamlining the patient admission, transfer and discharge processes including booking for beds. It provides for ward / bed assignment and management and produces bar-coded label and admission forms to facilitate proper identification of patients.
- Patient Billing Application; this provides a flexible and comprehensive means of tracking and consolidating patient charges from the time of patient registration to the time of discharges.
- Accounts Receivable Application; this helps in tracking of receivables from debtors. It helps in receipt management, journal entries, automatic production of reminders and account statements.
- Order Entry Application; this maintains requests made from wards, clinics and departments for various services. Results can be entered using word processing facilities or accessed from relevant modules including interface to analyzer.
- Laboratory Application supports patient's specimen registration and verification, tests resulting, result releasing, and results reviewing. Many types of result types are supported such as numeric result, textual report, organism sensitivity to group of antibiotics, and result comments. Also the system is interfaced to patient billing. Finally the system is capable to communicate with different models of Analyzers such specimen requests are uploaded to analyzer and result is downloaded from analyzer automatically.

Present Areas Computerized in the Hospital. (Current Status)

RGCI had introduced integrated HIMS Software for computerization of administrative, Finance & other related services / functions right from starting of the hospital in June 1996 on a Novell Netware Client Server Platform under DOS. Windows based HIMS software was introduced in April 2003 with Windows 2003 Advanced Server, MS SQL Server 2003 and a supporting Client Server Platform using VB6.0 as development tool.

Following are the **HIMS** integrated modules currently being used in the hospital:

1. Facilities Management
2. Contract Management
3. Outpatients Registration, Billing & Collection
4. Reception & In-Patients Management
5. Patient Billing and Collection Management
6. Procurement Management
7. Central Stores Management
8. Drug Stores
9. Lab Information Services (LIS)
10. Radiology Information Services (RIS)
11. OT Billing
12. Ward Management
13. MRD Management
14. Financial Accounts Management (Includes Doctors Accounting)
15. HR & Payroll Accounting System
16. System Security & Administration

6.2The following were final outcome variables used to evaluate HIS:

a. Does HIS improve the quality of decisions by making information readily available to health workers and health managers?

b. Is the information being utilized to improve the efficiency and effectiveness of Services?

c. Can HIS improve the efficiency of revenue collection in Billing department?

d. To what extent can HIS reduced waiting time in OPD?

e. Does HIS provide hospital outcome indicators with ease?

7. GENERAL FINDINGS:

Although HIS already exists in but still the paper documentation is still done at many stages which could be minimized once all the basic and urgent modules are rolled out. This can be done provided if Contract permits or depending on feasibility to Apply this changes at Advance phase of Implementation later.

The following observations were made w.r.t other modules of Paras in 3 deptt till now.

PART 1: Detailed description of 1 department ….

Medical O.P.D-

Medical O.P.D in Rajiv Gandhi Cancer Institute caters to an average of 200 patients per day. The medical O.P.D consists of following Units –

Documentations being done at the main counter are as follows.

1) PATIENT REGISTER- i.e. consist of list Patients being attended to each day which includes
   a. Patients with appointment.
   b. Patients without appointment.
   c. Patients referred from elsewhere.
   d. New patients.

   Observation: Patient who did not come even after appointment scheduled. cannot be distinguished in the Appointment list.

   Impact: A separate register need to be maintained.

   Recommendations: Checkbox can be made on the right side of the appointment list where they can put either right or wrong sign to distinguish. Hence search list becomes easier.

2) FILE MOVEMENT REGISTER – i.e. the register of file movement from Medical O.P.D`s to other department e.g. - radiotherapy/ day-care etc.

   Observation: Currently maintained in Register.

   Impact: Unnecessary usage of paper.

   Recommendation: An option can be created in that role which can be updated and viewed from any department centrally to locate the file movement.

3) SENDING REGISTER- The files sent back from O.P.D to the M.R.D department at the end of the day.

   Observation: TAT increases while the ward boy collects and dispatch the file from the department to MRD or Vice and versa.

   Recommendation: Online Information should go to the respective department.

4) MULTI-SPECIALITY CLINICS REGISTER- the Files being taken for multi-speciality clinics.
5) LAUNDRY REGISTER is also maintained in these department.

PART 2: Random Observation of Multiple departments till now: (OVERVIEW only which still need to cross check from various angles)

- *During Admissions at Front office*, Whenever, the bed is vacated…although it shows in PARAS but it doesn't confirm whether its ready for another patient, it just shows the bed is under Maintenance or Vacant in the system…So, it causes delay in new patient shift to vacated bed….. Therefore, Patient or Attendant has to come and keep on asking regarding the status of the bed, if ready and FDA have to call and ask Ward secretary intermittently. Hence patient gets Impatient and FDA get disturbed while dealing with other patient's attendant.

- As the bed occupancy rate is higher, at the time of retrieval of data from HIS, the system gets hang and slow. This Increases patient rush. (Sir, I can understand this is an open ended problem, but this is the major cause of dissatisfaction in using although they know HIS Paras has benefitted a lot in day today operation).

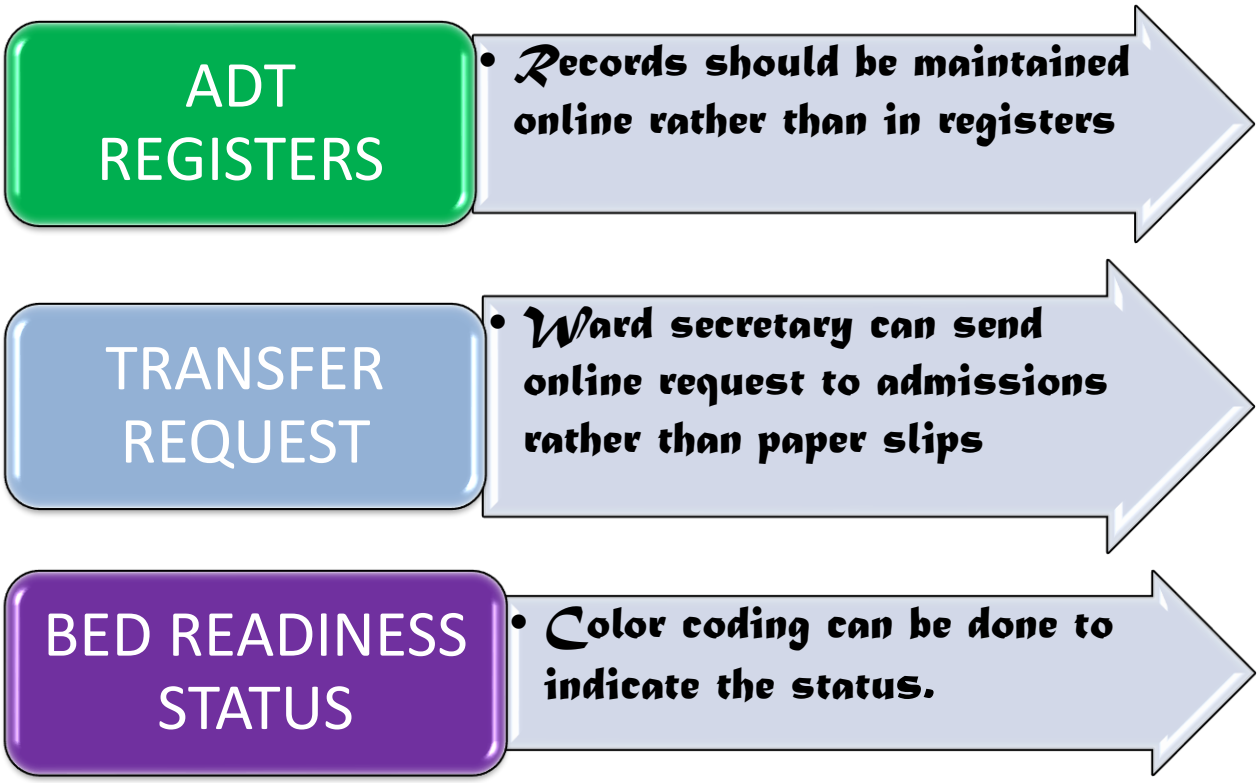
- *For O.P laboratory investigations,* the hospital is utilizing pre printed Bar code labels, which could be done for IP Patients too once IP VistA is roll out begins.

- *In Radiology deptt.* , In spite of PACS already available, the various radiological tests results are still made available on the expensive radiological films. ie, 1 film is given to patient still. Hence PACS is still to be fully utilized to get its real benefits and even reaching break-even point or get the ROI.

8. Gap Analysis:

- Following are the problem areas observed in processes & workflow even after Implementation of HIS.

- Patient's documentation still maintained manually.
- Duplication of work at different levels. (Charge slip entry).
- Orders sent manually. (e.g.: Transfer note, Patient movement list).



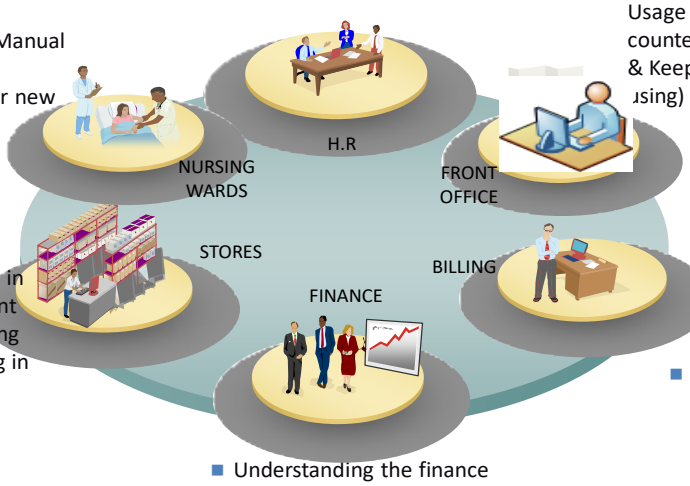
AUDIT TRAIL	• This option need to be activated to keep a track on user's activity.
FILE MOVEMENT REGISTERS	• Not necessary.
BACK BUTTON	• Should not be given on Screens to each and every users.

Other Contributions .....

- Verification & Validation of new Requirement for the speedy implementation of concerned module.

- Documentation & Manual work
- Understanding their new requirement.

Usage of Validate Option by Cash counter executives in HIS (Training & Keeping track of while they are using)



- Spending long time in Material department with Users Analyzing the defects and bug in the system.

- ssisted in the Mapping f new rates into the system
- Reported and documented the defects in this module.

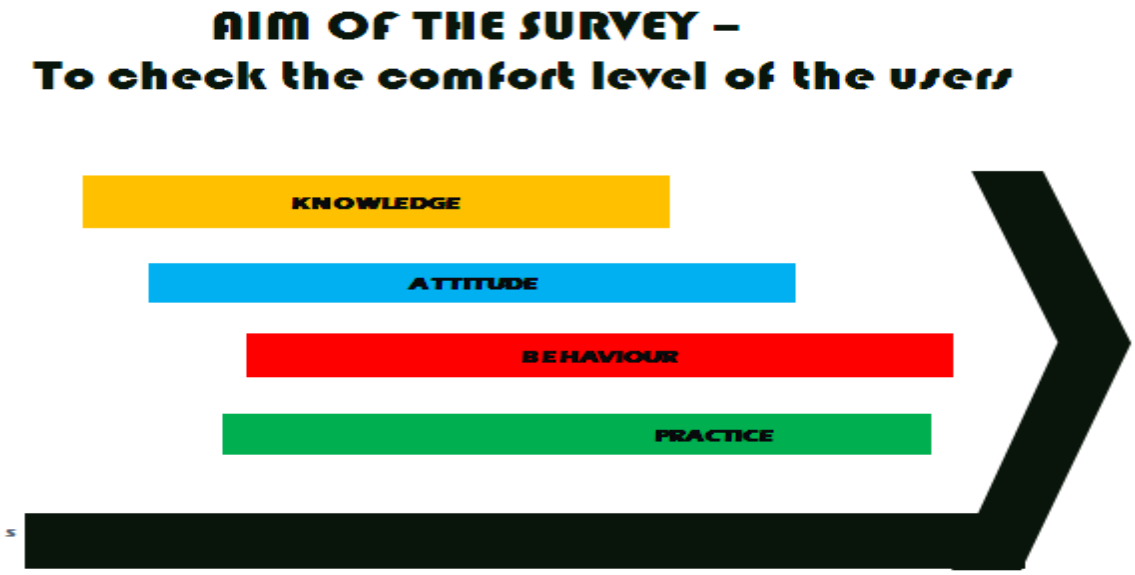
- Understanding the finance module from user's point of view.
- Practicing this module on test server.

3

- ❑ Additional Requirement gathering.
- ❑ Change Request.
- ❑ Review of RFP.
- ❑ Analyzing System requirement specification (SRS).

9. SURVEY CONDUCTED:

A cross-sectional, descriptive survey design was used to collect data needed to answer research questions. The population consists of all staff physicians employed by the hospital at the time of data collection and who were employed by the hospital during the period before and after its Implementation. A convenient sample of 45 users participated in the study and completed study questionnaire.
The study is a before –and-after, Prospective in nature which includes collection of primary and secondary data.



Hence, Questionnaire was designed in order to check their knowledge, attitude, behavior and practice.

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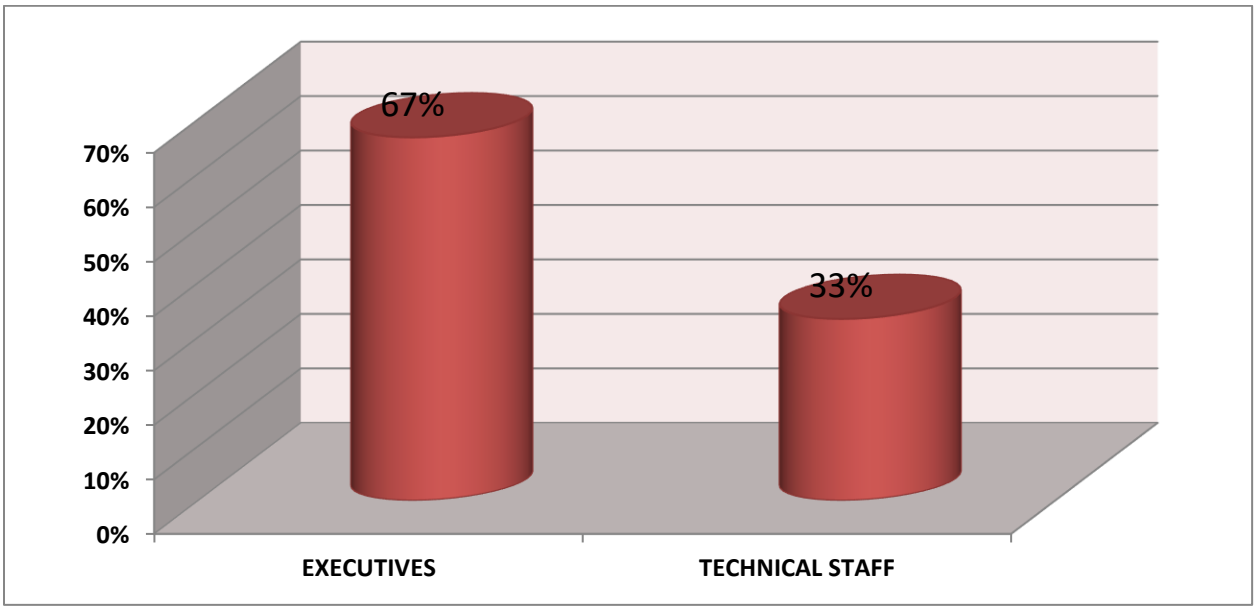
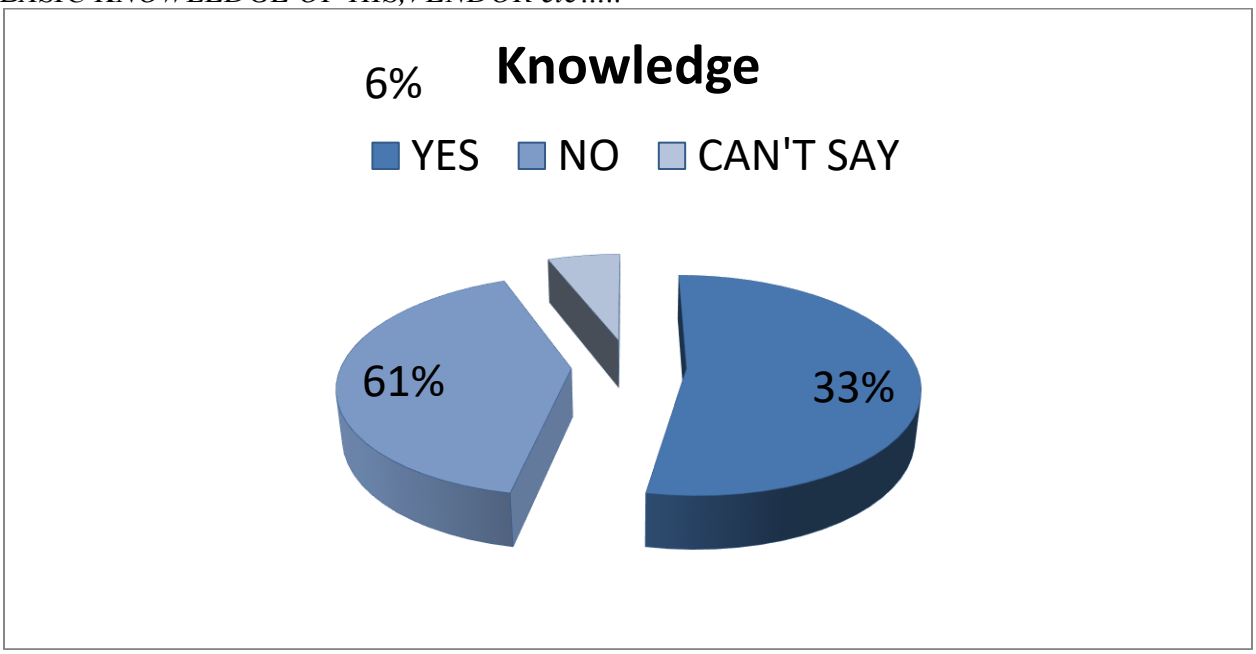
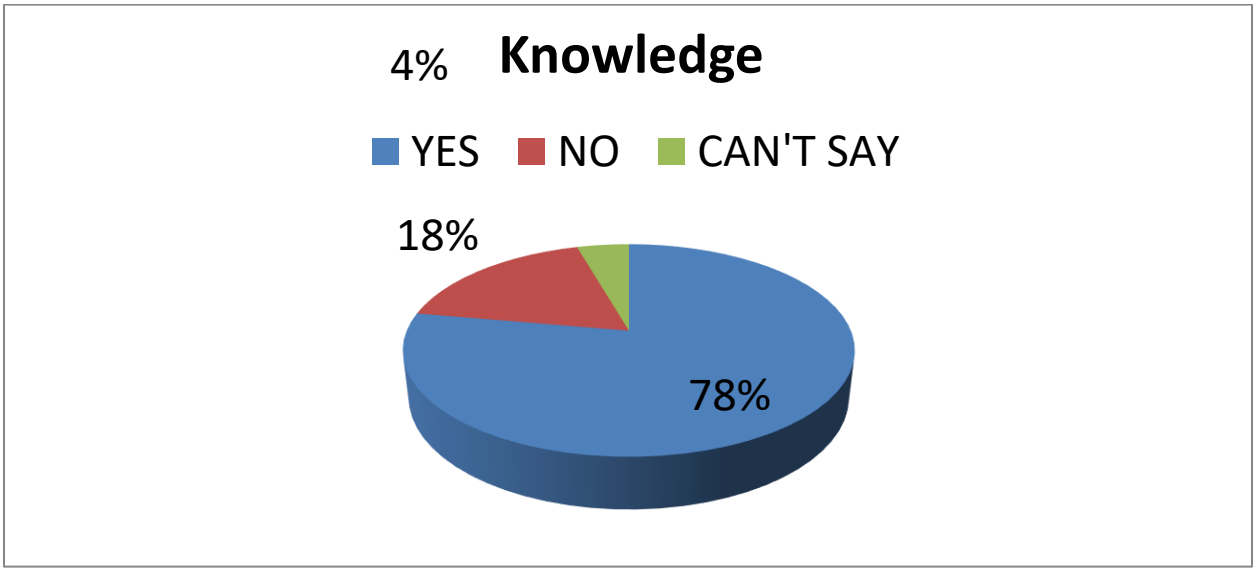


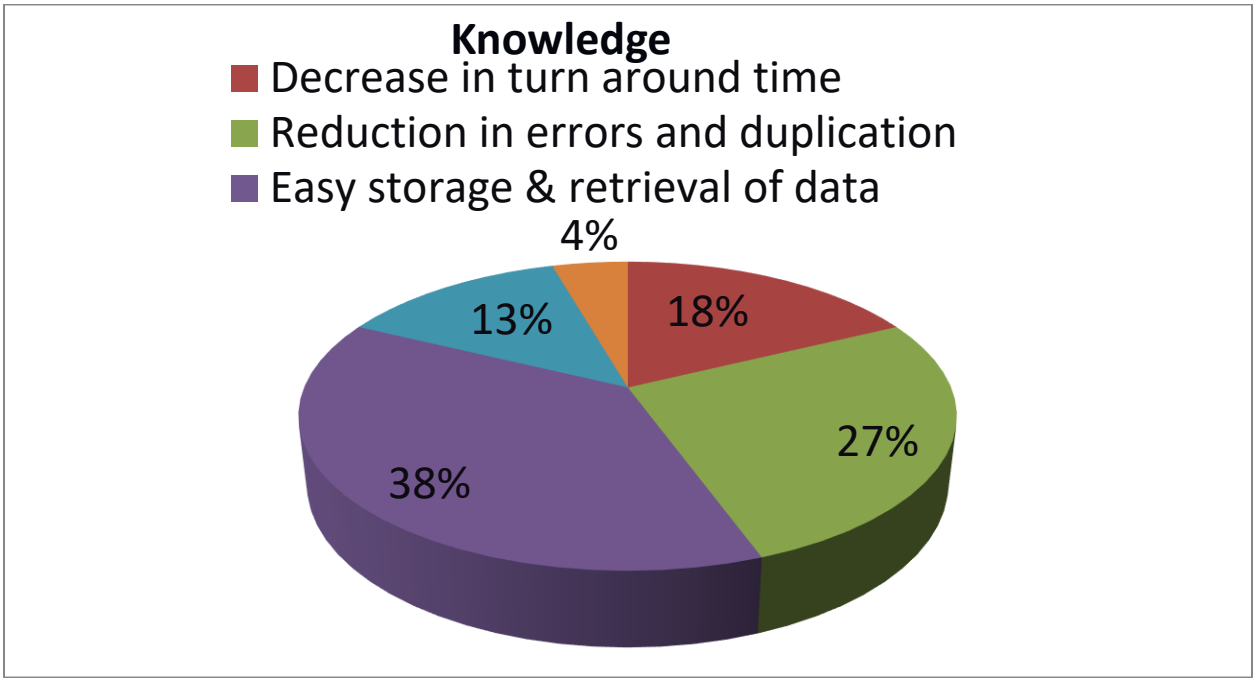
BASIC KNOWLEDGE OF HIS,VENDOR etc…..



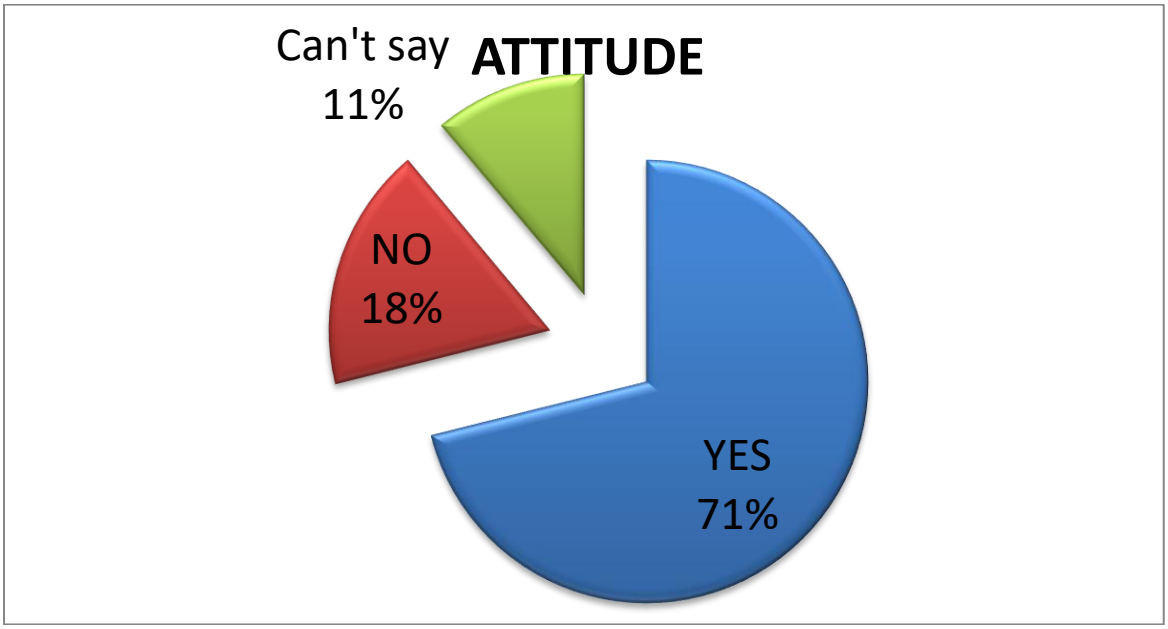
Improvement & Overall functioning of your deptt./ hospital .....



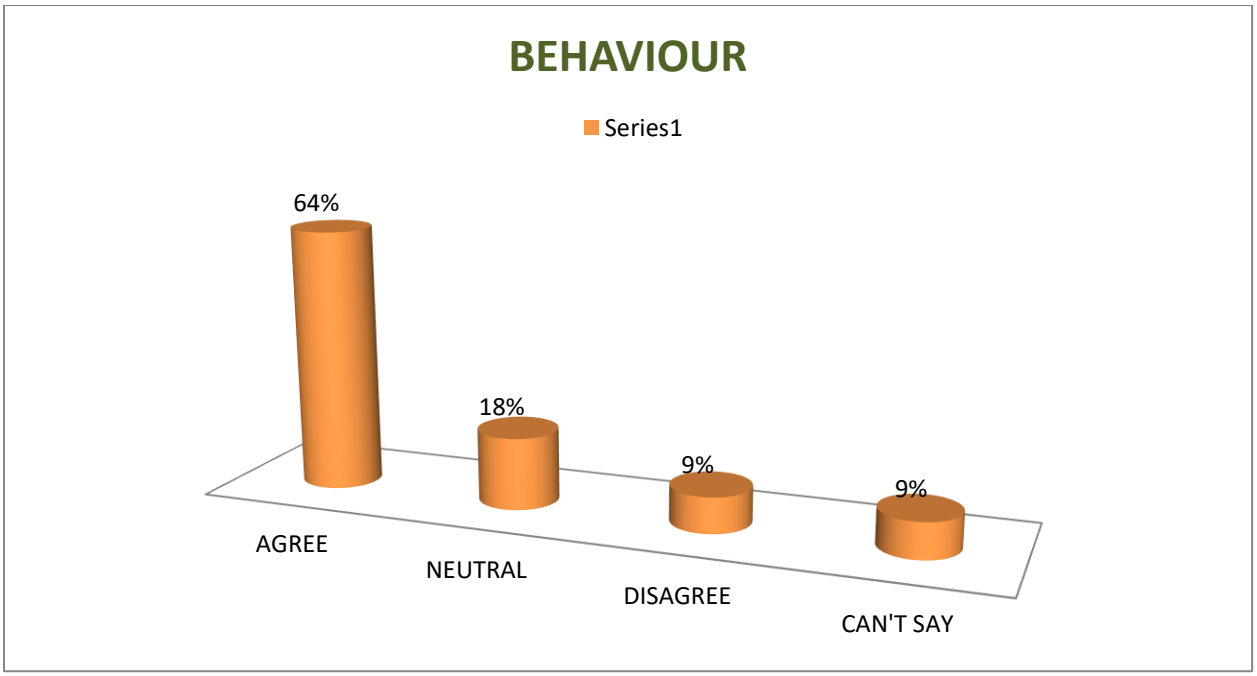
HOW IT HAS IMPROVED?



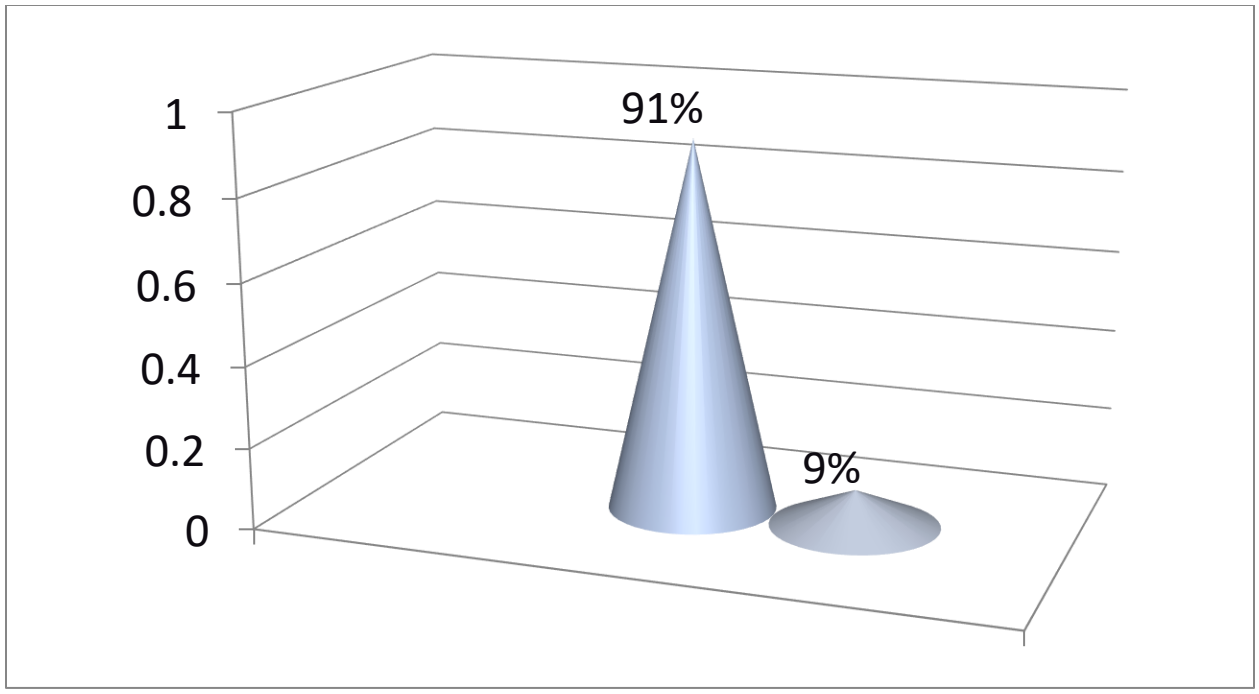
Enthusiastic & will to learn HIS?



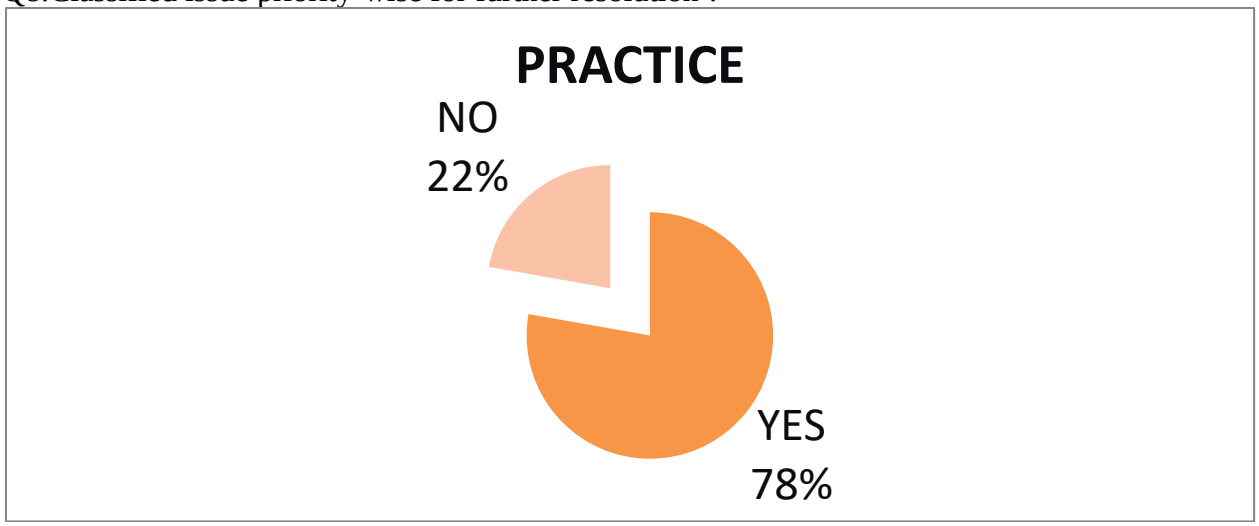
Is HIS USER FRIENDLY & MEET YOUR EXPECTATIONS ?



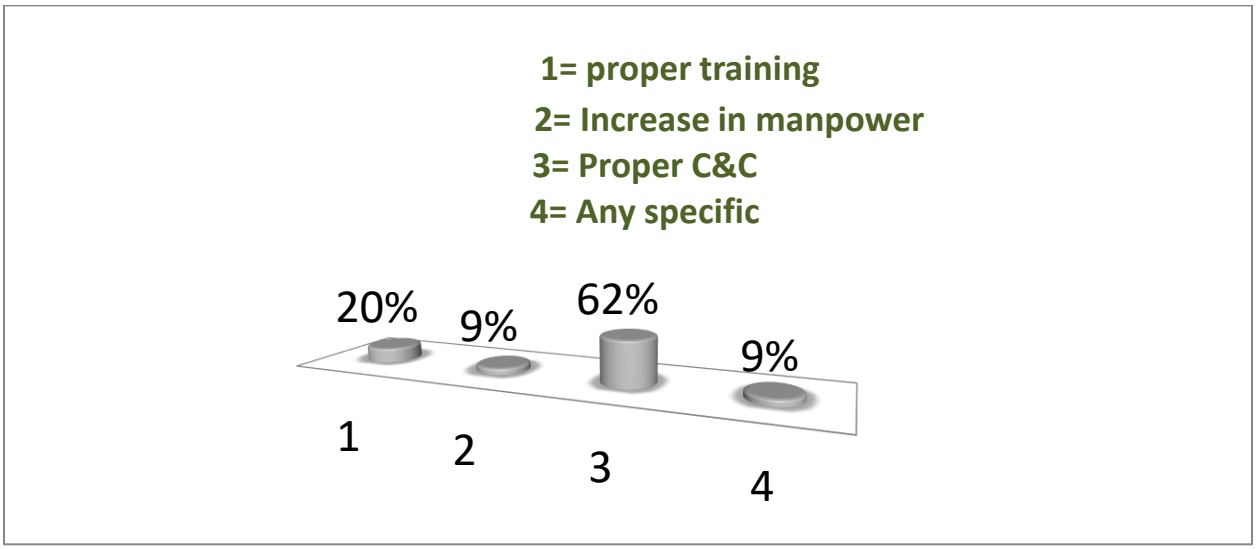
Do you report it timely ?



Q8.Classified issue priority-wise for further resolution ?



Your views to resolve the issues ?



10. FINDINGS of the Survey……..

The survey was completed in nearly 15-20 days. It included designing of Questionnaire, Interviewing Nurses and Physicians, Distributing Questionnaires and Finally Analyzing and interpreting results in Excel.

The results were thoroughly analyzed and interpreted and the results for were positive and encouraging.

The End users and technicians were mostly willing and enthusiastic about the HIS implementation. They understand, how it can bring overall improvement in patient-care by process redesign. Hence, the successful implementation of the new system can help the organization to achieve its long term goals.

There were initially hiccups regarding few features, of using the new system in place but the problems are being identified and no stone is left unturned or steps are being taken from the organization to make it more customized and user friendly.

Specific findings:

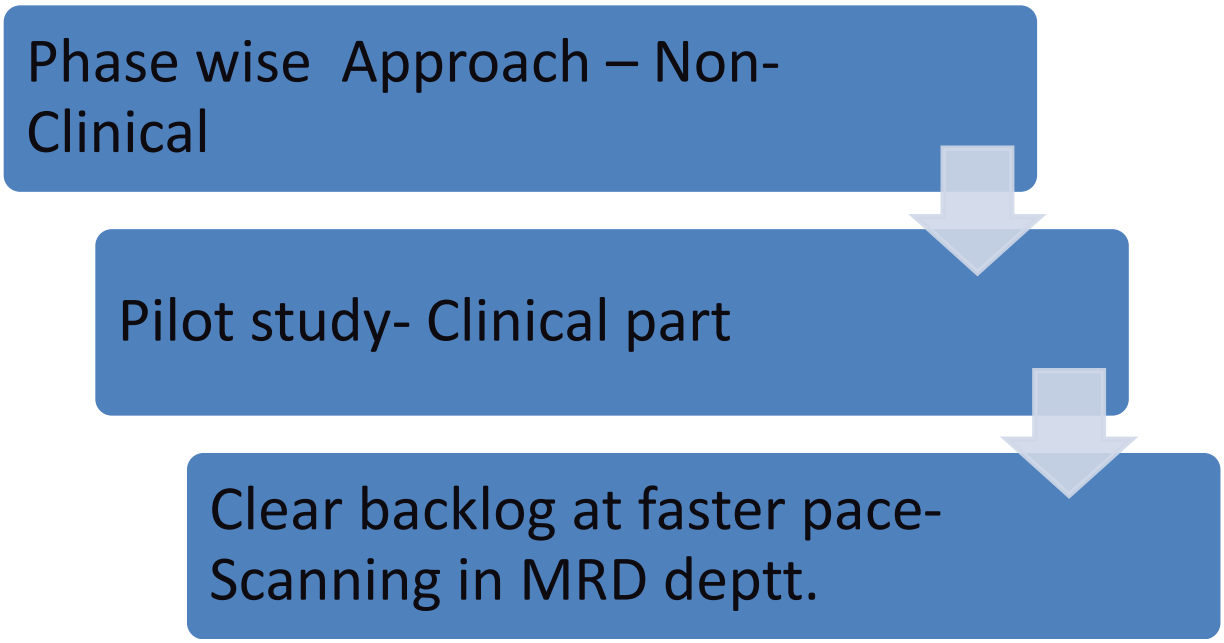
- ✓ *Paper work reduced up to an extent.*
- ✓ *Easy storage & retrieval of data.*
- ✓ *TAT decreased.*
- ✓ *Formalities after discharge has become faster.*
- ✓ *Few users were disinterested which implies they will complain but when it comes to give feedback, they pull back.*
- ✓ *User's not happy with the response time of the vendor.*

X Slow speed.
X Some users even said HMS was better.

11.BENEFITS OF HIS-PARAS:

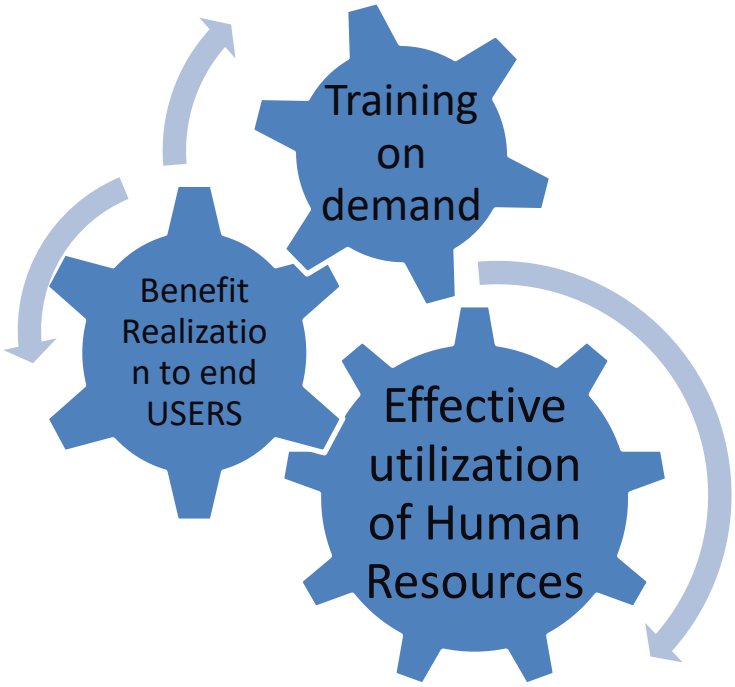
- Easy to customize as per our needs.
- Integrated functionality & Interoperability.
- Integrated with Auto lab Analyzers & Time Accounting system.
- Support for maximum hospital procedures.
- Shortcut keyboard features.
- GUI.
- Statistical Reports & MIS reports.

12. IMPLEMENTATION PLAN:



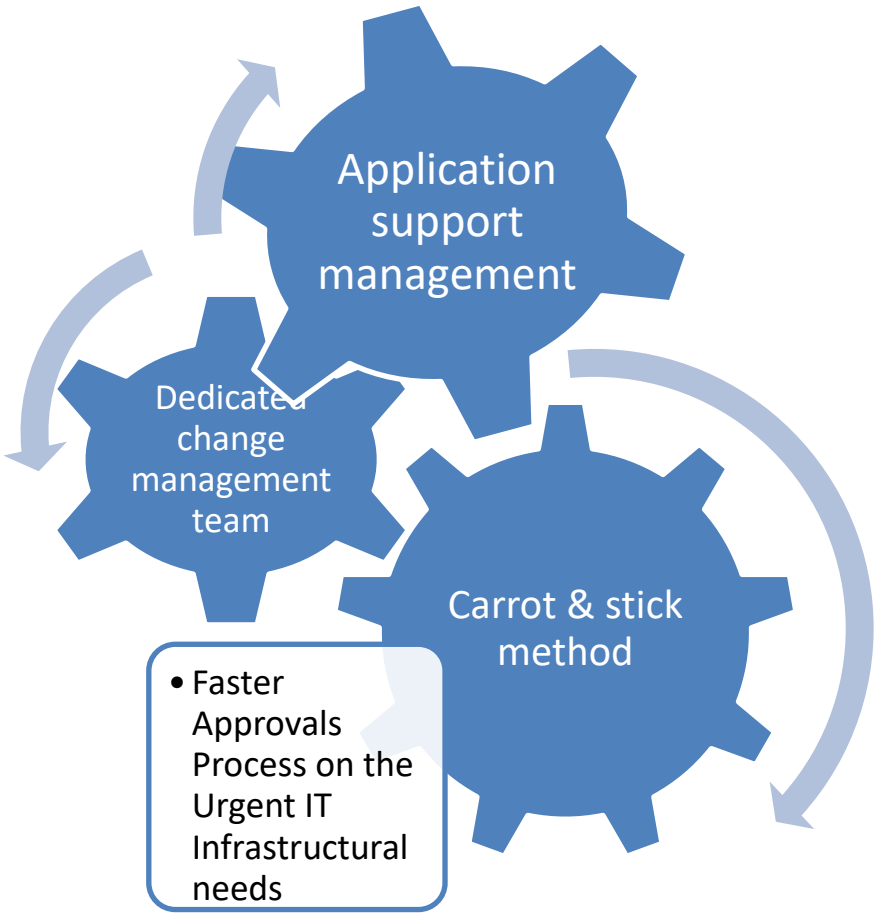
- Finance Module Implemented few days back is on parallel run for next 3 months.
- While H.R module roll-out would be taken on priority- wise.
- HIS would be interfaced with Time Accounting system.
- Pay slip to be generated from HIS.
- H.R advanced features also to be implemented like Exit Interview or Attrition Analysis.

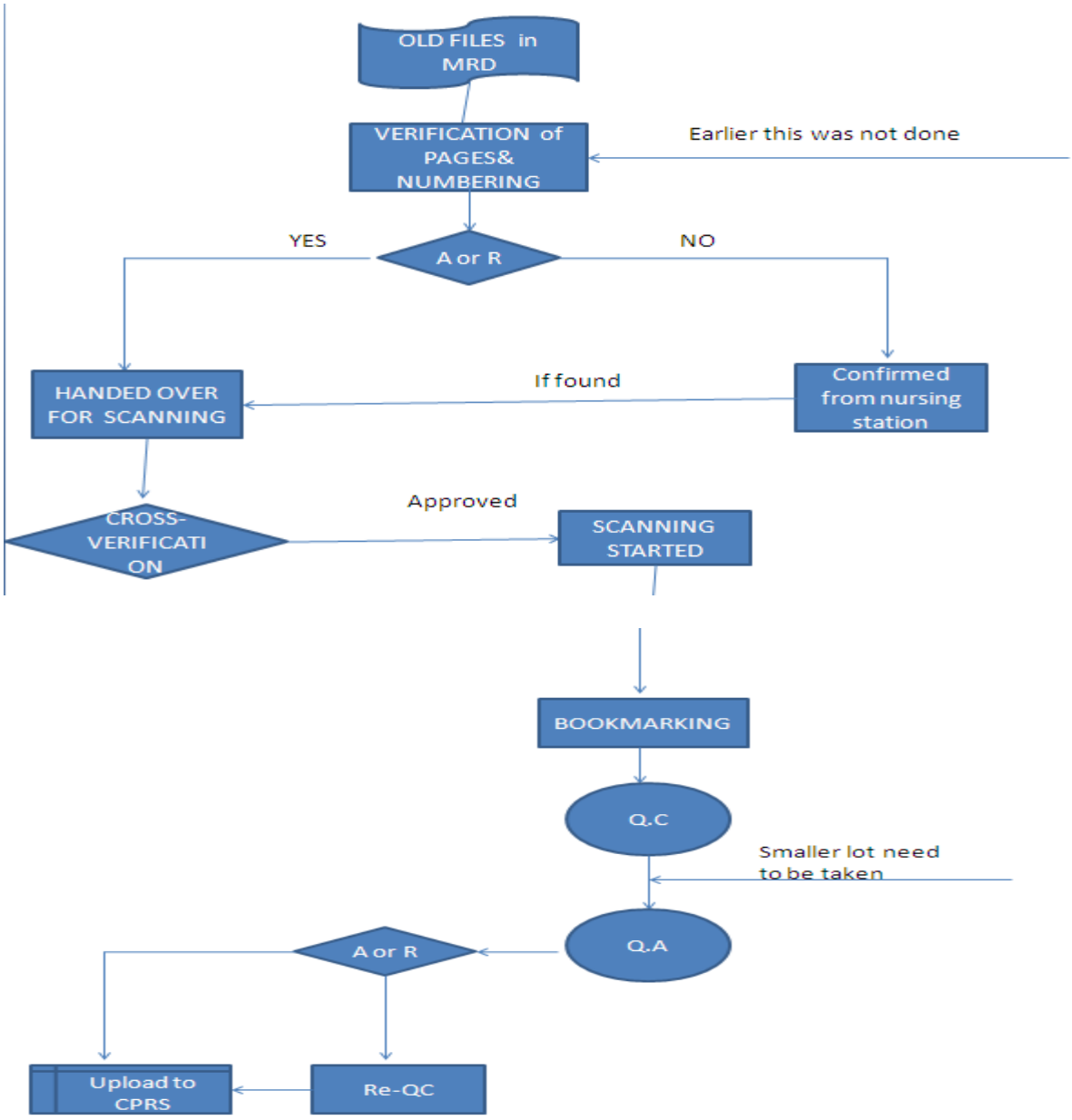
13 .RECOMMENDATIONS



Generally we find there are a few things that predict the degree of success that each Organization will have. These are the things you need to "get right" in approaching C.T

- Making templates more user-friendly by customizing it more, (for eg: by including free text options) if possible.
- Video recording of training should be made, if possible. Availability of training at asynchronous mode or training at demand or video recording of training so doctors can use it in spare time which can be supervised by the supervisor.
- Communicate benefits realization to end users, demonstrating the end-to-end value of the clinical system.
- Real-time Application support management.


Application support management
Dedicated change management team
Carrot & stick method
• Faster Approvals Process on the Urgent IT Infrastructural needs


OLD FILES in MRD
VERIFICATION of PAGES& NUMBERING
Earlier this was not done
YES
A or R
NO
HANDED OVER FOR SCANNING
If found
Confirmed from nursing station
CROSS-VERIFICATION
Approved
SCANNING STARTED
BOOKMARKING
Q.C
Smaller lot need to be taken
Q.A
A or R
Upload to CPRS
Re-QC

14. LIMITATIONS OF MY STUDY:

- Sample size was bit less as we included only super-users of the department and not each and every staff……
- Being an Intern, Had limited access to resources.
- Early resistance by few staffs initial days of my joining.

15. DISCUSSIONS:

Hence Both the qualitative and quantitative results suggested that implementing a HIS is an challenge for the hospital. However, there are also evidence that HIS can improve activities. The clerks considered HIS more efficient in their respective departments. Furthermore, an important qualitative association emerged between the system and the easy retrieval of patients' record during second and third visits to the hospitals.

It is clear on the basis qualitative data that there is a need to develop a fertile ground before the implementation of HIS. There is also a need for users to develop a framework of understanding about how the systems function. To implement HIS for users who do not understand it may lead to the failure of the system. Users are drivers of the system if they do not have reasonable knowledge about it, it is difficult for it to be optimally driven to provide objectives. There is a general ignorance of information systems amongst health workers. This highlights an urgent need to educate end users about health information systems. The major aspect that creates problems is computer incompetence amongst users. This is a major threat to the success of HIS. While technological problems can be attended to by an Information Technologist, it is not yet clear whether solutions are available for the socio/health/political problems which also influence success rate of these systems.

Whereas Quantitative data suggests that :

$$\text{Efficiency Ratio} = \frac{\text{Time taken to resolve the issue after Implementation of HIS.}}{\text{Time taken to resolve the issue before Implementation of HIS.}}$$

$$= 16.08\text{min}/24\ \text{avg.} * 100 = 66\%$$

- ❑ Hence ,It can be concluded that, efficiency has increased up to 68 %.
- ❑ The data was analyzed by calculating Arithmetic mean of all the 45 respondent from different department.
- ❑ Then Efficiency ratio formula was applied to find the result.

16. CONCLUSIONS:

The planning and implementation of new clinical systems has a significant impact on the entire organization – not only from a technology standpoint, but from patient, staff, and process perspectives as well**.** So in order to create the synergies among people, processes, and technologies to drive the transformation required to advance healthcare goals. Following needs to be done:

- Integrate key transformation enablers: employ a holistic approach.
- Identify the drivers: understand the environment.
- Realizing maximum effectiveness: execute the transformation.

Integrate Key Transformation Enablers: employ a holistic approach:
Top management, Clinical transformation team, Change management, IT team need to work in collaboration and employ a holistic approach to address and manage the changes that accompany every new clinical system implementation. The strategy should involve strategy involves:

- Creating synergy among the three key components that must be aligned: people, process and technologies.
- assessing results, optimizing outcomes, and ensuring sustainability
- executing repeatable methodologies

Identify the Drivers: understand the environment:
In order, to achieve the desired clinical transformation is a process driven by an understanding of clinician needs, the changes required in clinical processes, and performance improvements coupled with effective design and implementation has been going on since last two – three years.

Realize Maximum Effectiveness: execute the transformation : With a thorough understanding of the clinical systems and processes, RGCI will achieve the optimum blend of people, processes, and technology.

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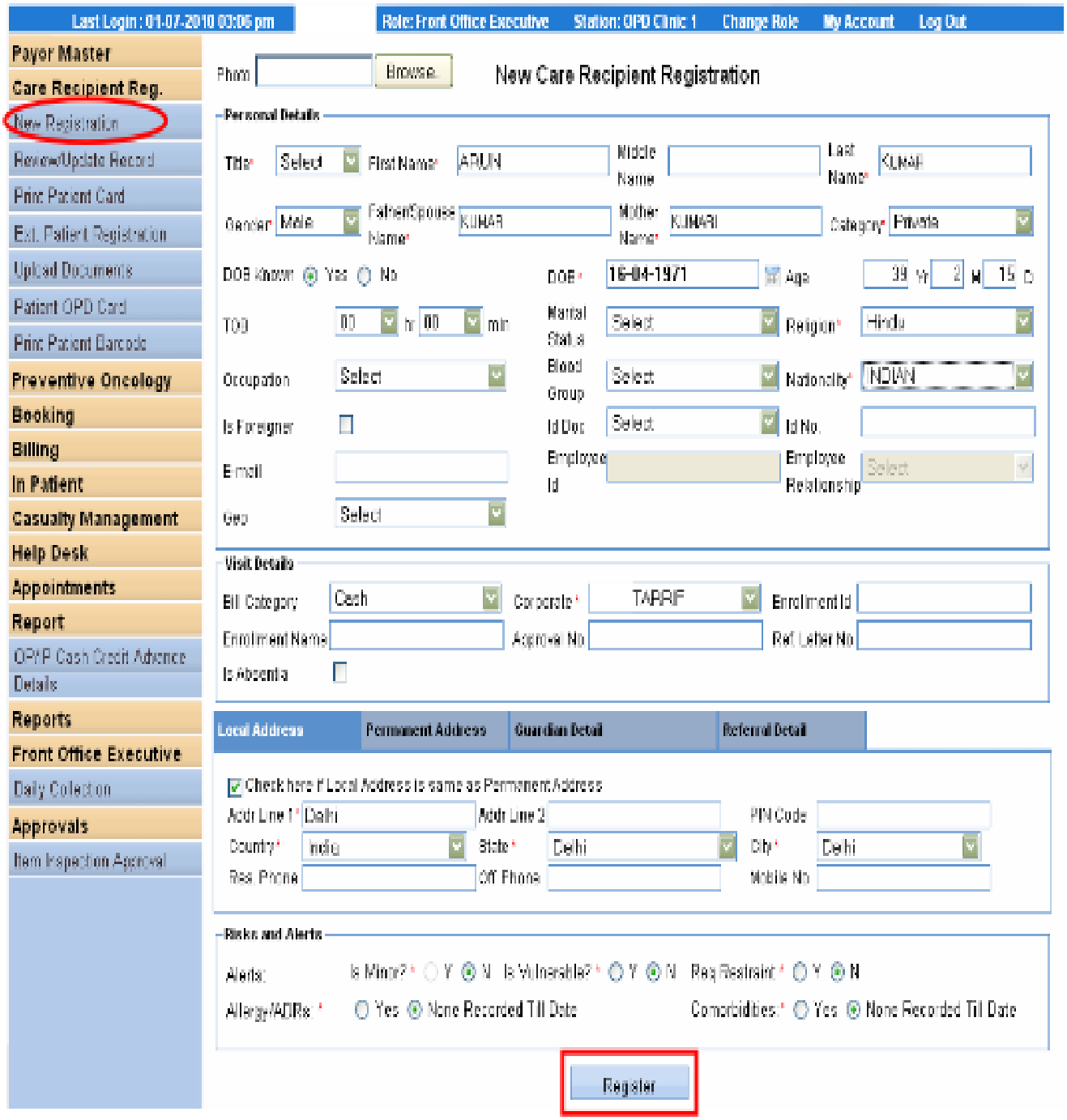
18. ANNEXURES

2.1. Registering a New Patient

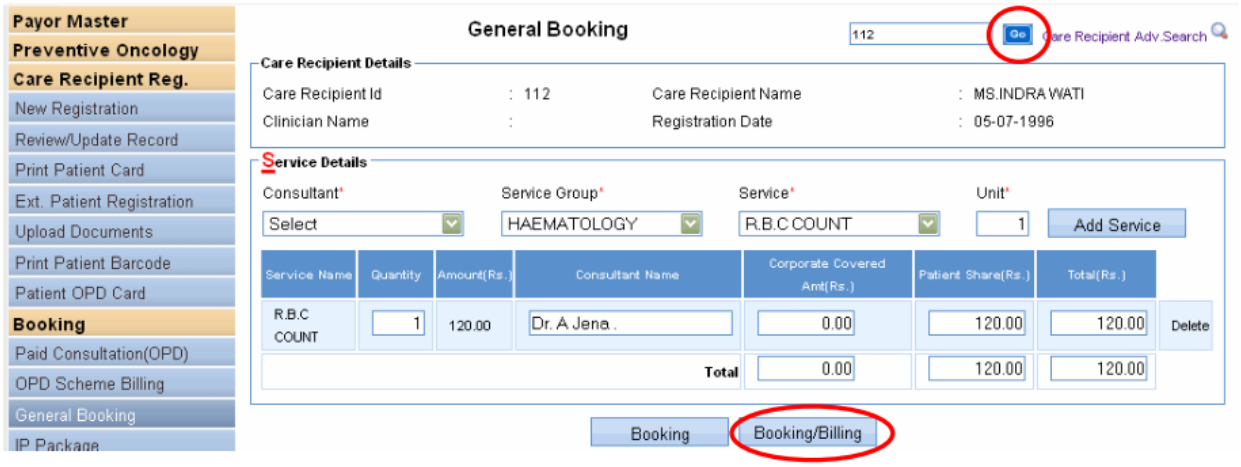
To register a patient, do the following:

1. Click **New Registration**



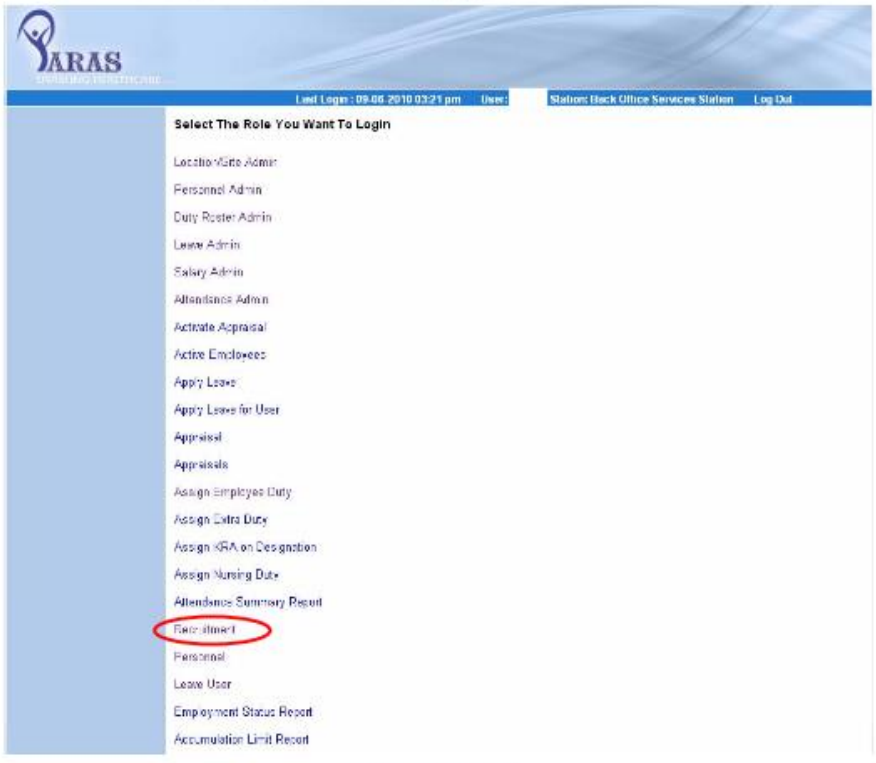
New care recipient registration page

1. Click **Booking → General Booking**
2. Type patient id in **Care Recipient id** box
3. Click **Go**



Booking for lab services

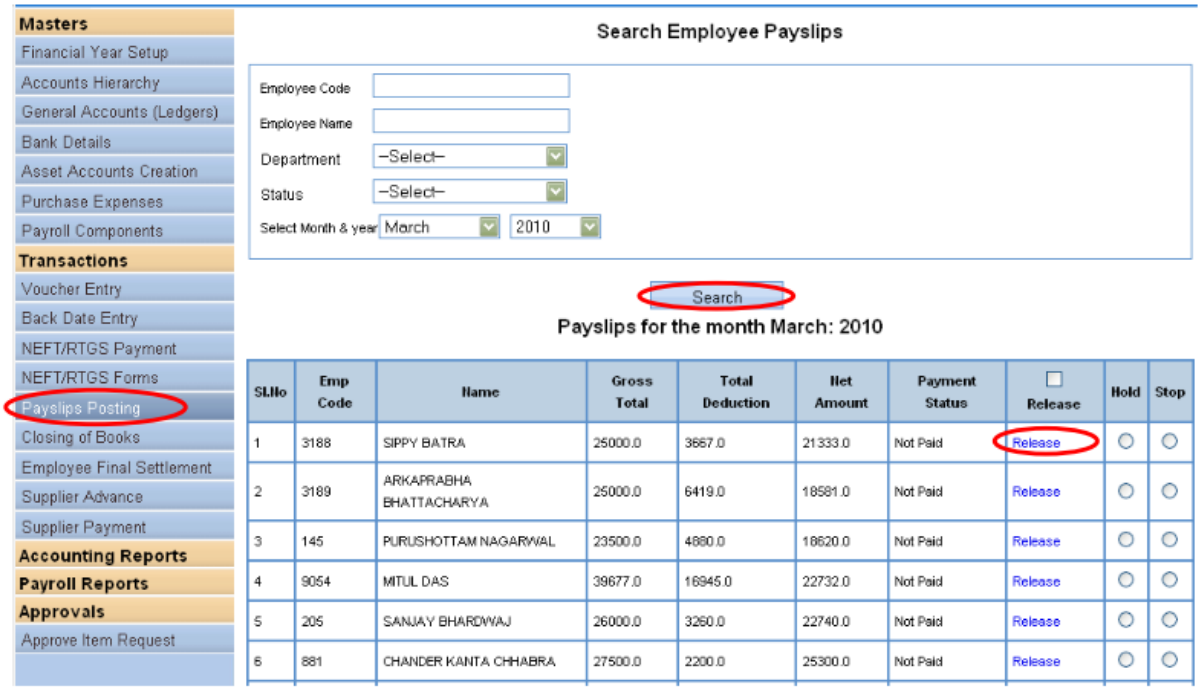
1. Click **Recruitment** on *User selection* page



User selection page

2. Select voucher type

Voucher entry



Payslip posting page

Bank Payment - Voucher

Voucher Entry

Voucher Type: Bank Payment

Date: 09-09-2010

DD/Cheque No*: 121556

Dr Ledger*	Cr Ledger*	Txn Amount*
All Patients	Axis bank sb - 431010100077622	3200

Narration*: Patient bill

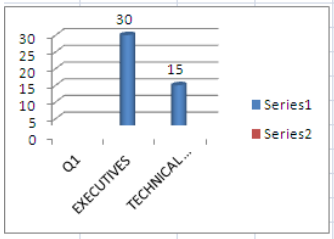
Dr SubLedger	Amount		Cr SubLedger	Amount		
Consultant: AASHISH C	3200	Add	Select		Add	Add

Narration | Narration

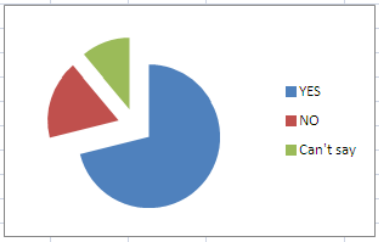
Dr.Sub Ledger(s)	Narration	Amount	Cr.Sub Ledger(s)	Narration	Amount

Save

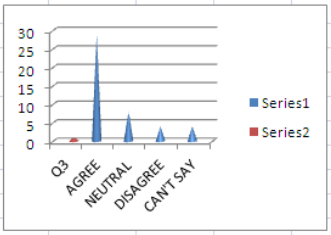
Q1	
EXECUTIVES	30
TECHNICAL S	15
TOTAL	45



Q2	
YES	32
NO	8
Can't say	5



Q3	
AGREE	29
NEUTRAL	8
DISAGREE	4
CAN'T SAY	4



Q4	
YES	35
NO	8
CAN'T SAY	2

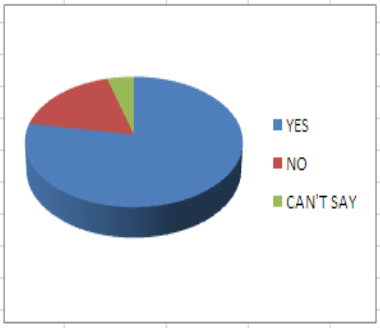
Q5	
Decrease in turn around time	8
Reduction in errors and duplication	12
Easy storage & retrieval of data	17
Quality patient care	6
Reduced Paper usage	2

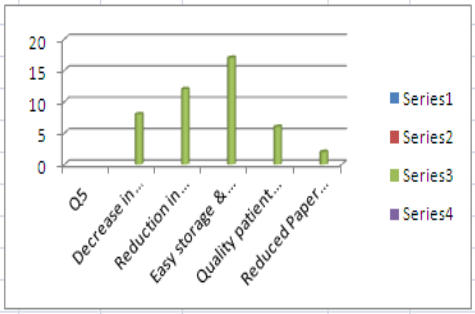
Q6	
System hang	23
Delay in loading	7
Delay in fixing	15
Any other	0

Q4	
YES	35
NO	8
CAN'T SAY	2

Q5	
Decrease in turn around time	8
Reduction in errors and duplication	12
Easy storage & retrieval of data	17
Quality patient care	6
Reduced Paper usage	2

Q6	
System hang	23
Delay in loading	7
Delay in fixing	15
Any other	0





	A	B	C	D	E	F	G	H	I	J	K	L
1		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11
4		A	C	A	B	D	C	A	B	D	B	C
17		B	C	A	C	C	A	A	A	D	B	C
25		A	C	B	A	A	C	A	B	A	B	A
29		A	C	B	A	D	A	A	A	D	C	C
30		A	C	A	C	B	A	A	A	D	B	B
51												

ADOPTION STUDY:

This Short Survey or readiness worksheet (designed carefully) after complete Analysis will provide us with an basic overview of the organization to successfully adopt the modules remaining modules in Hospital Information system (i.e. PARAS) solution and analyze the smooth functioning of the modules already implemented.

Highly Thankful to CIO sir, my Mentors, the whole EDP team, HODs of every deptt. Quality Manager and few of my friends for their constant support.

General Instructions for filling the Questionnaire:

- respond to each of the statements by placing a checkmark in the column that most closely aligns with your situation.
- no answers should be marked twice.
- your identity will be kept confidential.
- last but not the least, your invaluable feedback will help us to serve u better.

PART A

1. Are you a:
(a) End users (Executives) (b) Technical Staff .

2. Have you been enthusiastic about learning and working on HIS?
(a)Yes (b) No (c) can't say.

3. Is HIS user friendly and meet your expectations or provide you the information you need?

(a)Agree (b) Neutral (c) Disagree (d) Can't say

4. Has it improved the overall functioning of your department/hospital?
(a) Yes (b) No (c) Can't say.

5. How it has improved?
(a) Decrease in Turn Around Time(TAT)
(b) Reduction in Errors & Duplication.
(c) Easy storage and retrieval of data..
(d) Quality Patient Care.
(e) Reduced Paper usage.

6. What are the major problems being faced at your department in implementing HIS or Operational issues in using HIS?
(a)System hang (b) Delay in Loading the template(screen) (c) Delay in fixing the issue. (d)Any other

7. Have you reported it to the concerned department?
(a) Yes (b) No

8. Did you classify the issue on Priority wise while forwarding to IT deptt. for further resolution?
(a)Yes (b) No

9. What time it takes the issues to get resolved?
(a)>5-15 mins(b) >15-30 mins (c) >30-45mins (d) > More than that.

10. What are your views which can be used to resolve the issues?
(a) Proper training (b) Manpower increase (c) Proper co-ordination & communication (d) Any specific.

11. What are the general issues which lead to resistance to use the system sometimes ?
(a)Voluminous (Huge) Data entry (b) Unable to Adapt Change (c) Slow speed (d) Complexity in using (e) High patient load

12. **Any specific requirements or expectation from the system?**
Ans:
13. What are your suggestions, if any?
Ans:
