IT PROGRAM AT RGCI & RC

Why? When? How?

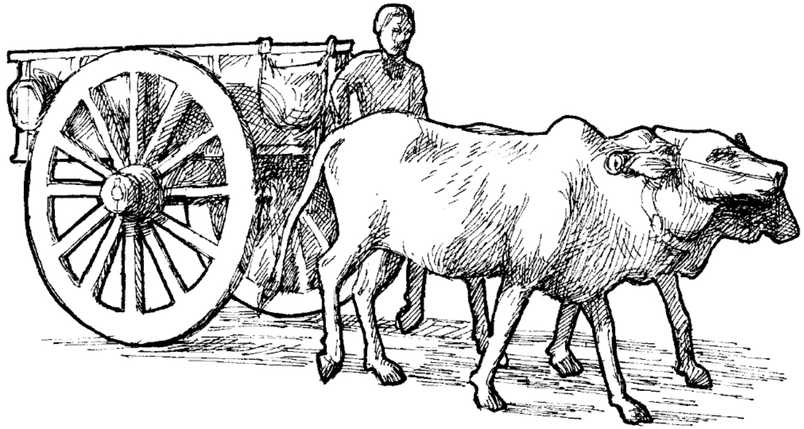
Dr. Dewan A.K.

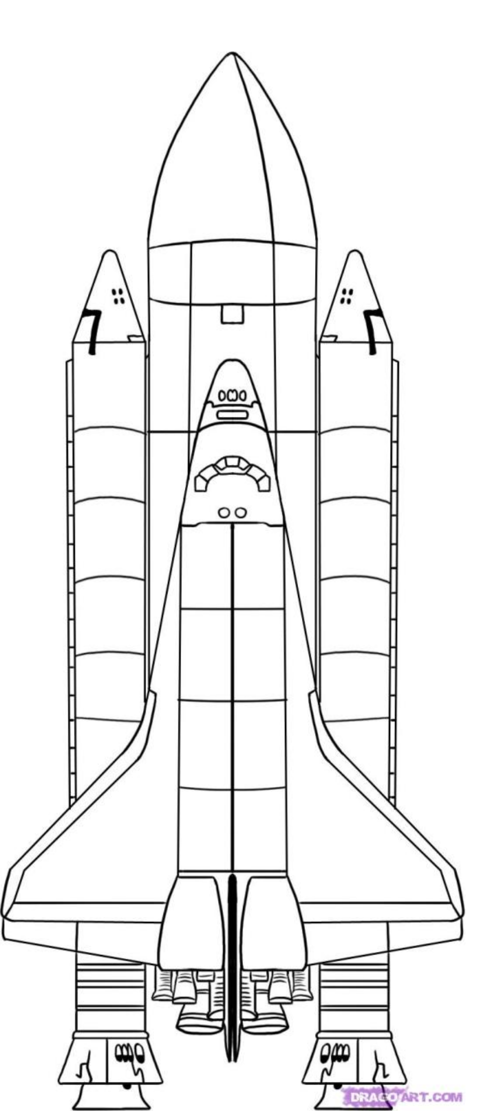
Sr. Consultant, Surgical Oncology,

RGCI & RC, Delhi, INDIA.

AGENDA

- **About RGCI & RC**
- **IT Initiative at RGCI**
- **How VistA is being Implemented**
- **Challenges Faced**
- **Clinical Adoption processes**
- **Feedback to VistA Community**
- **How can we Collaborate?**





DAY IN THE LIFE OF RGCI…..

A Comprehensive Cancer Centre , All facilities under one roof, A Non Profit Organisation run by Indraprastha Cancer Society (14 Year Old).

PET,CT IGRT
MRI OT,Robotics
Gamma Camera BMT
Basic Science Research Dept.

BRIEF BACKGROUND

- 300+ Nurses, Basic & Advanced Trg.
- Avg. Exp 2 yrs
- 64% Staff Turn over/year
- 75% No computer exposure

Largely, Clinical Team Not Computer literate

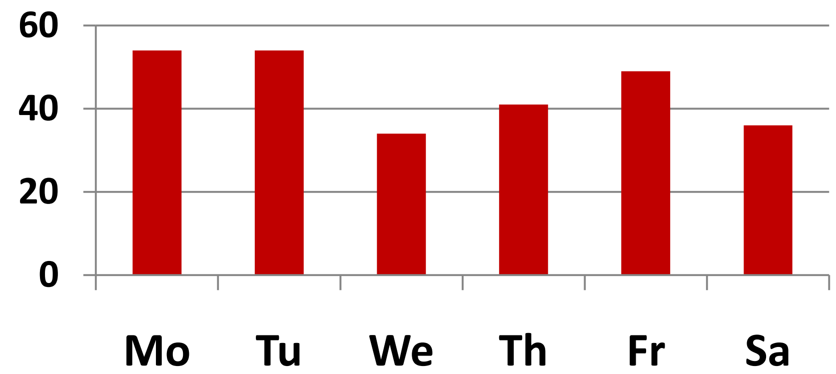
- Total of 250 Beds,
- 4 O T, Post OP 14 beds , ICU (14 Beds)
- Always a rush and waiting period for inpatients to get admitted.
- Average waiting is about 2-3 days

- 14 Sr. Consultants, >15 yrs
- 35 Consultants + Associates (<=10 yrs)
- 60 Residents (<5 yrs)
- 25% Doctors not computer Savvy

RECEPTION AT PEAK TIME

MEDICAL ONCOLOGY OPD

SOME NUMBERS

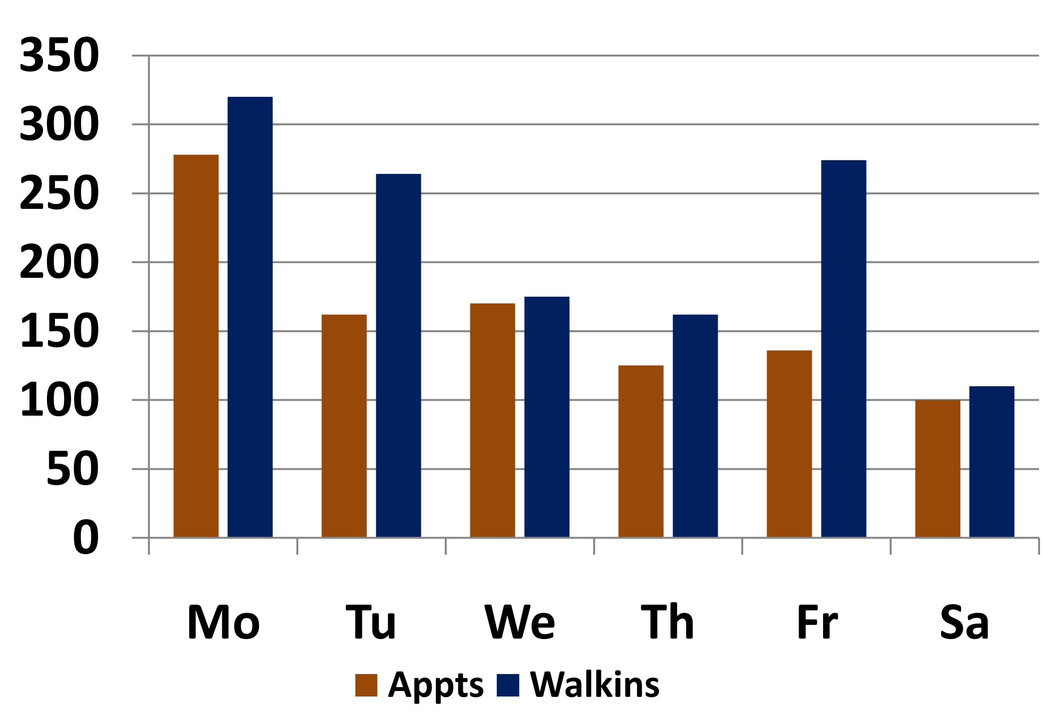


Tuesday, Friday Free OPD at Rs. 5/- (~10 cents 0.1$)

A Doctor reviews about 60-80 patients /day

Total of 124,000 patients in RGCI Cancer Registry

Patients / Day



MEDICAL RECORD STORAGE

Total of 124,000 files stored in the Records room

Total of 15 employees to manage the files

Files issued in the morning

Collected and checked in the evening

MEDICAL RECORD STORAGE

24/05/2010

24/05/2010

LOCATING A FILE IN MRD

On Patient Reaching the OPD the file is located and sent to the OPD Reception

Files are many a times 100+ pages and have case history, Investigations, Discharge Summary, Tumor Board Discussions

OPD CONSULTATION

EACH OPD HAS MORE THAN 1 DOCTOR

OPD PROCESS

Visit
Consultant

Reception/
Registration

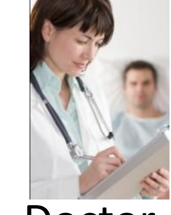
Waiting Time

Billing

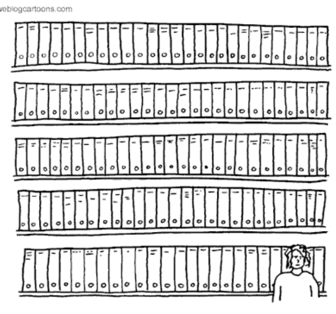
Results
Collection

Phlebotomy
& Radiology
Consults

Doctor
Consultation



Appointment/
File Retrieval



IP DISCHARGE

4 to 6 hours

IP Discharge Decision

Discharge Summary

Account for Services

Approvals

Discounts

Final Billing

Physical Discharge

CLINICAL NOTES

F-12

ISO 9001 ISO 14001

F/RECE/01

RAJIV GANDHI CANCER INSTITUTE AND RESEARCH CENTRE

Sector - V, Rohini, Delhi - 110 085
Tel. : 47022222(30 Lines) 27051011-1015 Fax : 91-11-2705

CASE SHEET

C.R. No.

I. P. No.

NAME

AGE 65

UNIT DOCTOR

WARD/BED

DATE OF ADMISSION

DATE & TIME	CLINICAL NOTES
27/4/10 9.30am	S/B Dr
	Adv
	- IVFs - NS 3 + KCl
	2 Isolyte M
	(100 ml/hr)
	Parathat - Ref Dr VATS
Pl. Specify	- Ref Dr Rajiv Goel
	CST
	Dr

CLINICAL NOTES

F-12

F/RECE/01-06-07

RAJIV GANDHI CANCER INSTITUTE AND RESEARCH CENTRE

Sector - V, Rohini, Delhi - 110 085
Tel. : 47022222(30 Lines) 27051011-1015 Fax : 91-11-27051037

CASE SHEET

C.R. No. ...

NAME ...

UNIT DOCTOR

DATE OF ADMISSION ...

I. P. No ...

AGE ... 45 ... SEX ... F ...

WARD/BED ...

DATE & TIME	CLINICAL NOTES
5/5/1?	No H/o DM/CAD/HTN/Angina/Syncope Palpitation
	O/E - P - 86/min
	BP - 96/60 mmHg
	pt+ / Ict° / Lymph / clubbing / Edema / JVP-NR
	CVS - S1 S2 (N)
	No murmur of LVS
	P/S - NVB / BL
	No added sound.
	Adv - At present no active cardiac intervention needed
	As per her age, clinical history, examination, ECG, & Echo, pt can be taken for surgery with fair risk & control of pulse & B.P. after correcting Anaemia.

CAN WE DO SOMETHING?

Documentation of Records
OT Scheduling, RT Planning, Daycare
Reduce Medical Errors

Nursing Notes
Prevent Prescription errors
Alerts and Notifications

↑Patient Care

↓ Waiting Time

Research facilitation
Data Storage & Analysis
Records of Trials

Streamline Administration
Space Utilization, Cost Savings
Improve Image of Institute

Needed Scalable, Efficient, Effective processes

Needed a Clinical system. For Sure!

Key Areas

- *ADT Process*
- *Medical Records,*
- *OP & IP Billing*
- *Ward Management/Nursing*

Of course, Infrastructure upgrade

Hospital Management System (HMS) in place from 1998, in Non-Clinical Areas

CAN WE DO SOMETHING ABOUT THIS?

Needed Scalable, Efficient, Effective processes

Needed a Clinical system. For Sure!

5 Key Areas

ADT Process, Medical Records, OP & IP Billing and Ward Management/Nursing

Of course, Infrastructure up gradation

Hospital Management System (HMS) in place from 1998, in Non-Clinical Areas

TRANSCEND was Born

TRANformation of

Servi**C**e **E**ffectiveness

a**N**d **D**elivery

Thought was to TRANSCEND Barriers

Initiative kicked off in late 2007 to plan for an advanced, integrated framework that enables long term patient EMR, Clinical Decision Support specific to Oncology and Clinical Information Analysis for Research.

THE THOUGHT PROCESS

- Case Sheets, Consultations, Lab and Diagnostic Reports, Surgery, Radiation Therapy

- Billing, Fin, HR, Materials & Purchase, Front Office

A Clinical Software

Non Clinical

Pharmacy

PACS

- Integrate existing outsourced Pharmacy Clinical and Non Clinical Systems

- MRI, CT, PET CT, X-ray Ultrasound, Path Lab

CHOICE OF SOFTWARE

Clinical Software	Non Clinical Software
• No experience at RGCI • Time consuming to develop custom solution • Products seen but, with proprietary with expensive Tech. and Vendor Lock-in • Data Migration from existing system for Lab, Demographics etc – not known	• Software operating for 12 years • Relatively known and simple functionality • Product implementation roadmap clear • Migration issues clear • Too many products
No Sufficient Knowledge	**Problem of Plenty**

FOG ALL AROUND

Integration

Out Patient

Radiation Therapy

In Patient

Clinical Notes

Radiology

Data Migration

Treatment Protocols

NABH Certification

Lab equipment interface

Finance & Audit

Custom Development
vs.
Product Implementation

????

PLATFORMS SELECTED

MIRTH

VistA Clinical

- Best Clinical Software
- Framework supports OPD, IPD, Pharmacy, Radiology
- Open Source
- Industry Standard Protocols
- Clear Roadmap by Vendor
- Local skill-set available

Synapse PACS

- Best features amongst PACS
- Implementation Experience
- Integration capabilities
- Web enablement

Paras Non Clinical

- Implementation Exp
- Open Architecture & Integration
- Clear Roadmap by Vendor
- Open to adding features

MANY FIRSTS…….

Five Challenges

- First full-fledged VistA commitment in India
- First Project for Clinical IT Partner
- First Clinical Software for the Institute
- First time complex Integration - Small IT Team
- First time Doctors, Nurses and paramedics

HIGH RISK

No Deterministic Path

PROGRAM STRUCTURE I

Program Steering Committee

- Overall Responsibility of the program
- Mgmt, Admin, and Finance

Sub Committees

- Clinical Committee for all clinical areas
- Non Clinical Committee for all Hosp. Mgmt

CEO, Med.Dir, Sr. Consultants, G.M(fin). Med.Supdt., Nursing Supdt., Dept. HoDs

PROGRAM STRUCTURE II

Program Mgmt Team (outsourced)

- Align efforts of stakeholders in the program
- Coordinate & Manage the Implementation

Program Management Team

VistA Clinical Software

Non -Clinical Software

Radiology - PACS

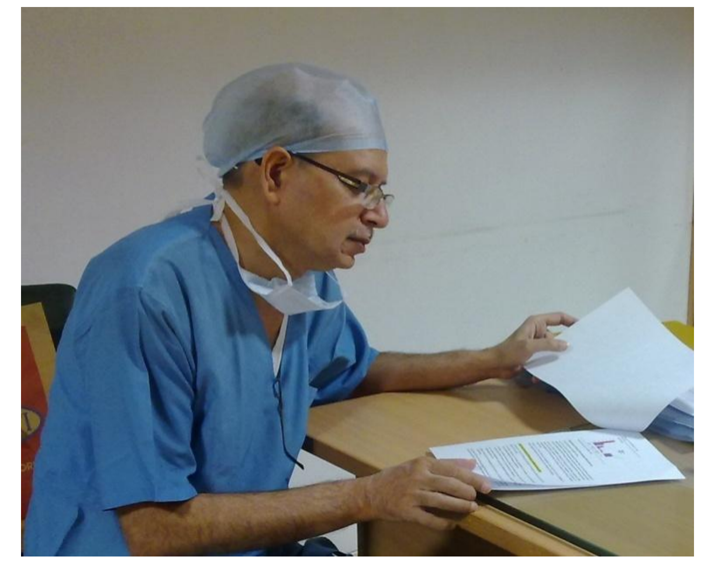
Outsourced effort for Implementations – in all 4 partners

TEETHING PROBLEM

- Clinical Workflows - Pushback
  - Clinicians complained of Too much of work
  - Concept of Minimal Data Sets for Clinical templates not understood
  - Ready made Vs. Customized templates
  - Doctors are hard nuts to crack
- Alignment meetings went out of control
  - Project adjourned *Sine a die* (Aug 2009)

Institute Governing Council Debated and searched for a volunteer

A Computer Illiterate Surgeon Volunteered to go ahead on “Trial Basis” for Head & Neck set of Diseases



PROGRAM IN TWO TRACKS

Clinical Track	Technical Track
• Approach elusive – No Oncology specialist at IT partner – MDS approach given up and started “Build -&- Try” • Detailed inputs on Head & Neck diseases – Case Sheet , Consultation, Follow up, Nursing Notes, Surgery Notes, Discharge Summaries etc – Ordering and Order sets	• Configuration – Health Org, Module Configuration, Services with CPT codes • Technical Factors – Interface design and Tech. Lockdown – Prototypes developed • Deployment guidelines – Common across all partners – User Roles & Security

CHANGE IN STRATEGY

Templates based on Group of Diseases.

Common Templates for all cancers.

Change in Strategy from Specialty (Medical, Surgical and Radiation) based implementation to Disease based templates

OHUMVistA CPRS in use by: Manager,System (10.1.1.31)

File Edit View Action Options Tools Help

BANWARI,GUPTA 120057 Mar 08,1961 (49) | POST-OP POPT5-POP Provider: MANAGER,SYSTEM | Primary Care Team Unassigned Attending: Dr Dewan,A K | No Postings

Last 100 Signed N Visit: 05/31/10 CASE SHEET, RADIATION ONCOLOGY UNIT-B, PURI DR ABHISHEK (May 31,10@14:19)

All signed

```
 LOCAL TITLE: CASE SHEET
DATE OF NOTE: MAY 31, 2010@14:19     ENTRY DATE: MAY 31, 2010@14:19:35
      AUTHOR: DR ABHISHEK,PURI      EXP COSIGNER:
     URGENCY:                             STATUS: COMPLETED

                     CASE SHEET ORAL CAVITY

CR. NO.:       120057
Date:
Age:           49
Sex:           MALE
Weight:        116.84 lb [53.1 kg] (05/25/2010 11:51)
Height:
BSA:           0.00 sq.m
BMI:           UNK
--------------------------------------------------------
HISTORY:
*******
 Patient has symptoms of :
  Oral ulcer:
   Present for
  Local pain
   Present for
   MILD, NON RADIATING, AGGRAVATED BY FOOD INTAKE, RELIEVED BY ANALGESICS

  Halitosis:
   Absent

  Swelling in the mouth:
   Present for 30 Day(s)
   PROGRESSIVE
```

Templates | Encounter | New Note

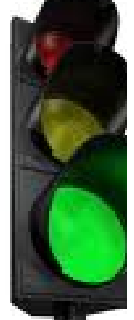
Cover Sheet | Problems | Meds | Orders | Notes | Consults | Surgery | D/C Summ | Labs | Reports

CRP - Conference Room Pilot

- Several batches of clinicians reviewed initial templates and Changes made based on feedback
- Skepticism came down considerably
- Few Roadblocks identified for adoption

EVOLVING THE INTEGRATED SYSTEM

- Mock-up Providing a flavor
  - Rigged up stations for all major stakeholders
  - Few stakeholder champions extensively trained on new system
- Demonstrations of activities based on roles
  - Front Office: Registration, Appointments, Billing
  - OPD: Case History, Notes, Ordering, Consults, Notes,
  - IPD: Nursing: Vitals, Medication, Pre-OP Checks, Notes, Transfers
  - Billing: Approvals, Discharges
- Step-by-step approach
  - Lights went green!



Mock Up – Seeing is believing!

Entire Hospital Simulated in one conference room

SOME NUMBERS

Team

- Program Management Team – 2 Persons
- Clinical Implementation Team – 11 persons

Interfaces and Templates

- 46 interfaces (Registration, ADT, Lab, Billing, Radiology, etc)
- ~~100 Head n Neck , 200 Commonly usable templates

Doctors

- 3 - One Doctor for each disease
- 6 - Head of Dept. for work flows

Budget

- Phase 1 – Rs. 9 Crores, ~~US$2.5m
- Phase 2 and Support

OUT PATIENT FLOW IMPLEMENTED

Front Office → Registration → Generation Of EMR → Consult fee billing → Consulting

Consulting → Ordering

Ordering → Lab

Ordering → PACS Sched

Ordering → Pharmacy

Lab → Billing

PACS Sched → Billing

Pharmacy → Billing

Billing → Lab Reporting

Billing → Radiology Reporting

Billing → Order Dispense

Lab Reporting → Clinical Consulting

Radiology Reporting → Clinical Consulting

Order Dispense → Clinical Consulting

Clinical Software | Non Clinical Software | PACS - Radiology

IN-PATIENT FLOWS

Admission Ordering

Estimation

Bed Status Check

Bed Allotment

Admission Deposit

Ward Nursing Care

Ordering

Surgery request

Surgery

Surgery Reporting

Nursing Procedure

Nursing Notes

Transfer to Ward

Chemo/RT Consult

Chemo/RT

Billing

Billing

Clinical Software

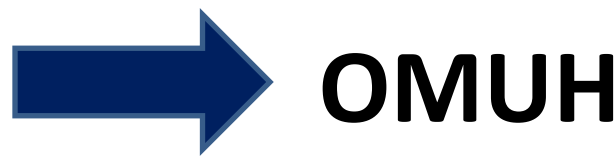
Non Clinical Software

CHANGE MANAGEMENT

Large number 300+,
Form the backbone of Patient Care
Computer Literacy
10% are new every month
Training on VistA was a Major problem
Identified 20 Champions for in-depth Training
Trained the trainers for sustainable skill set

Involvement In Reviews
Lectures and interaction with experts
1 on 1 Training, Data Entry Assistants
Residents completely trained

OHUM



PROGRAM REVIEWS

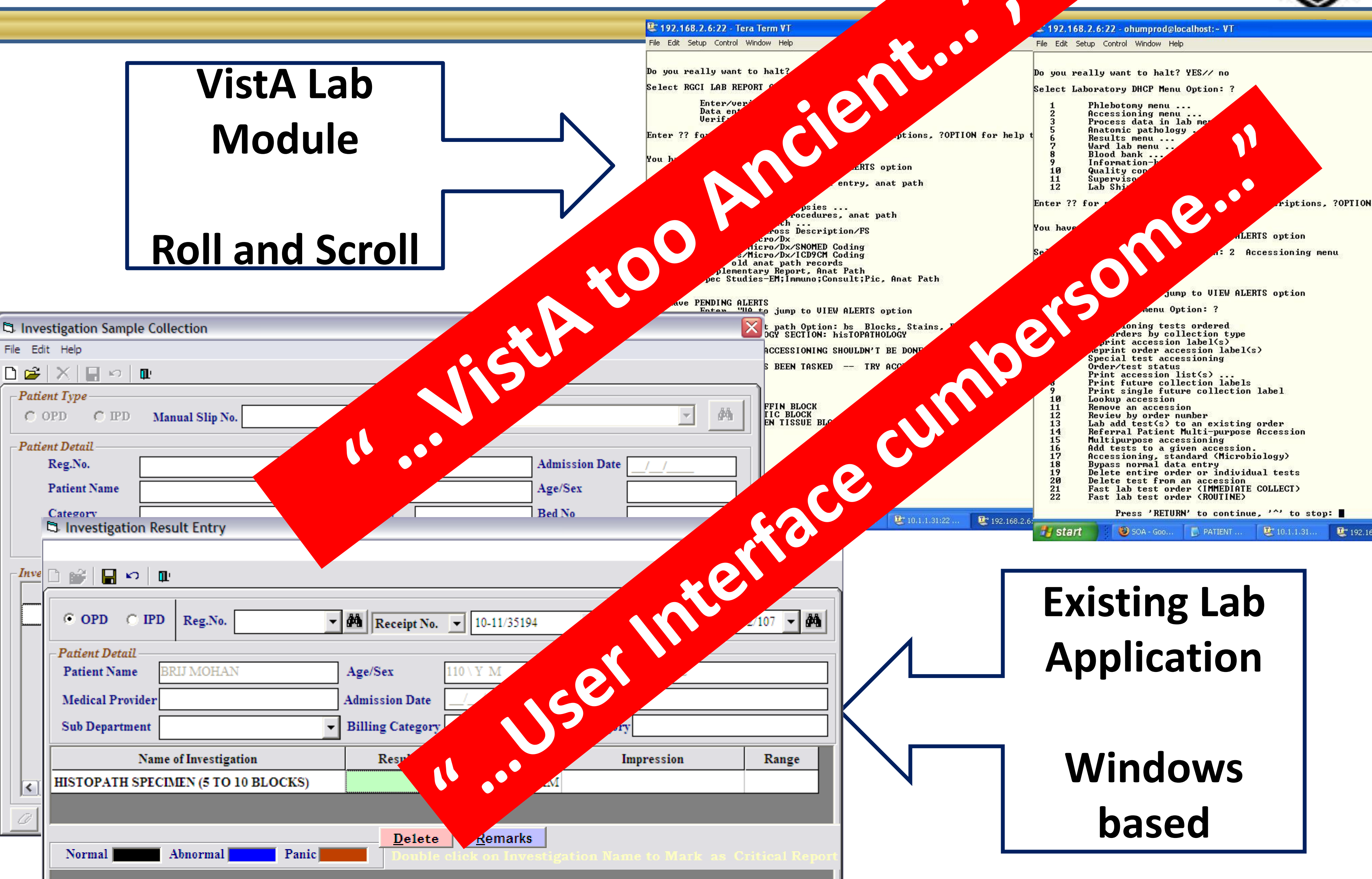
- Every Month Steering Committee Met
  - Presentations by Partners
  - Program Status review , tracking feedback from user community
  - Bottle necks to be addressed
    - Administrative as well as Infrastructure
  - Risk and Mitigation
  - When Possible Progress was shown on Mock up environment

ROLL OUT STRATEGY

PROGRAM PLAN

Phase	Step 1	Step 2	Planned	Actual
Phase 1	Clinical workflows	CPOE	May 2009	Sep 2009
Study	Clinical Workflows	Integration	Sep 2009	Dec 2009
CRP	Integrated System	CPOE ordering	Oct 2009	Feb 2010
Change Mgmt	Training	Trial runs	Dec 2009	Feb 2010
Parallel Runs	Area by Area rollout	Go live	Mar 2010	May 2010

CHALLENGES… LAB MODULE IN 2010



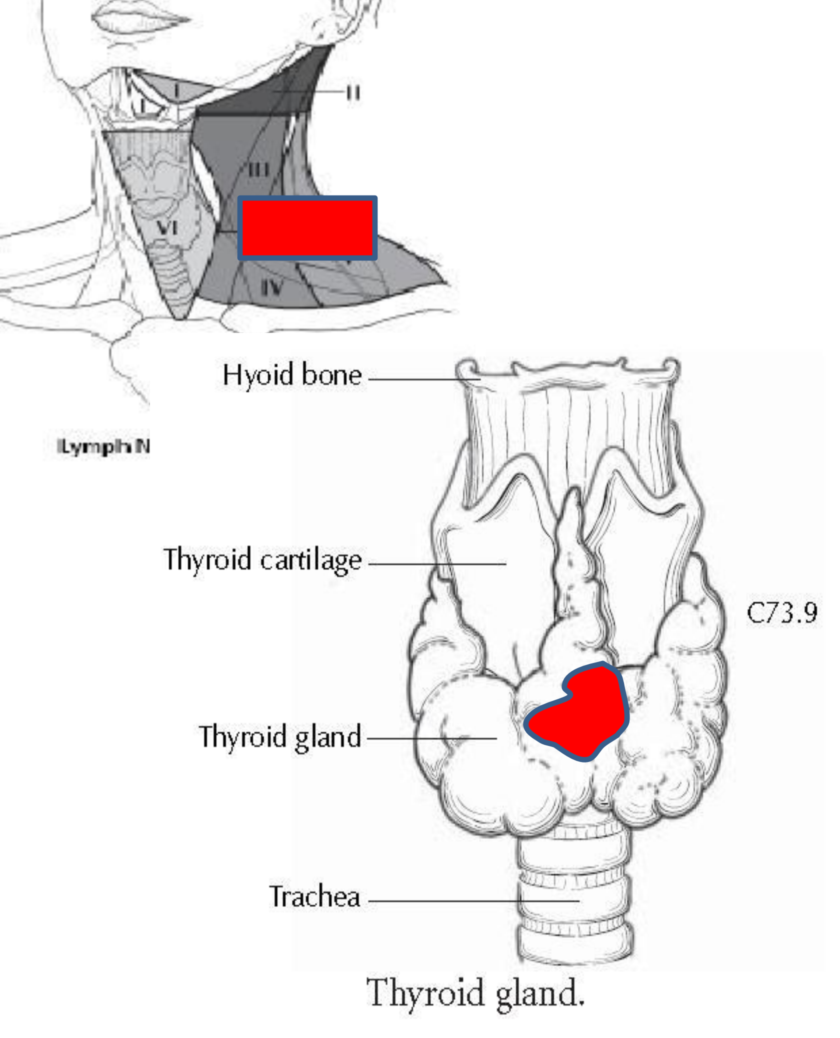
CHALLENGES … LAB

- Evalua from “ Vendo interfa
- Compa 2 prod to cha
- Browse modul Clinica

- **Short Term: Provide a Link in VistA for clinicians to view results for the patient (3 - 4 months)**
- **Long Term: Interface Lab resulting VistA so that EMR is complete**

CHALLENGES … ANNOTATION

- Present Practice is to use paper based images, Annotate and store in physical files
- VistA does not have the provision for placing images in templates
- Workaround
  - Custom Application used with standard shapes
  - However, need "free hand" drawing with tablets support



CHALLENGES …PHARMACY

- Practices in India are different
  - Brands are generally used as against Generics
  - VistA infrastructure works on Generics
  - Linking Brands to Generics
    - Data entry takes 20 min per drug
    - Needs expertise of a Pharmacologist
  - Dropped for the phase 1
- Workaround
  - Short Term: Brands from the present formulary loaded to an external Database
  - Long Term: Replace Drug Database with linkages over the next 4 months

CLINICIAN ADOPTION

- Many Clinicians are not familiar with Typing
- Eye Contact is important with patient
- Time per Patient with VistA

  - Patient Interaction: ~5-7 mins
  - Average time for complete Case History Template, pharmacy, Ordering, etc: ~8 – 12 mins
  - Total Time: 15-20 mins
  - Not practical with the patient load, patients waiting get restless

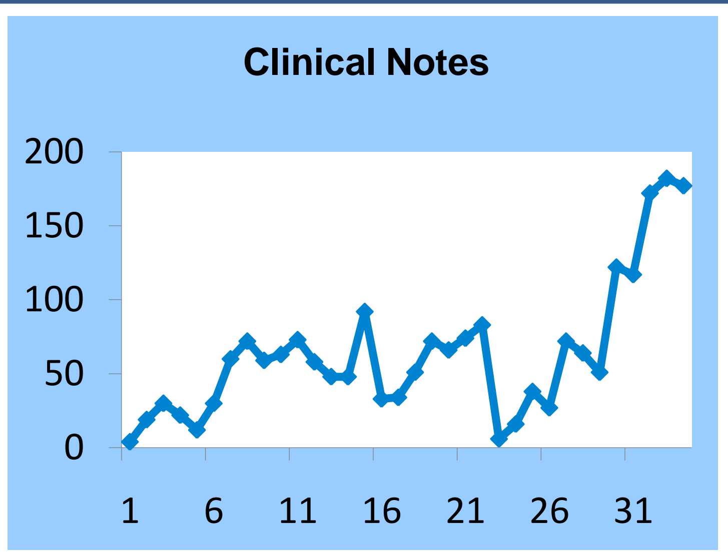
CLINICIAN ADOPTION

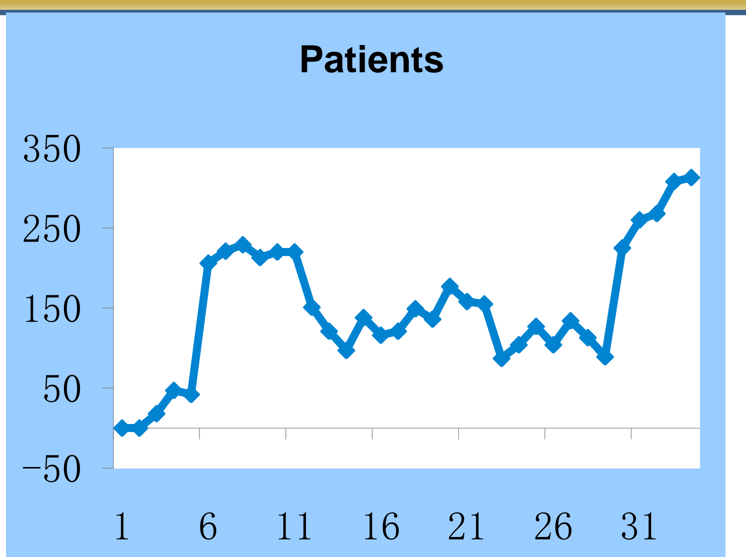
- To increase adoption
  - Short Term
    - Medical Assistants recruited trained to help senior Doctors
  - Long Term:
    - With EMR, Physical file handling, Charge slip accounting will reduce
    - Hope to free up Front Desk Assistants, Ward Secys
    - Redeployment with Clinicians after training

WHERE ARE WE?

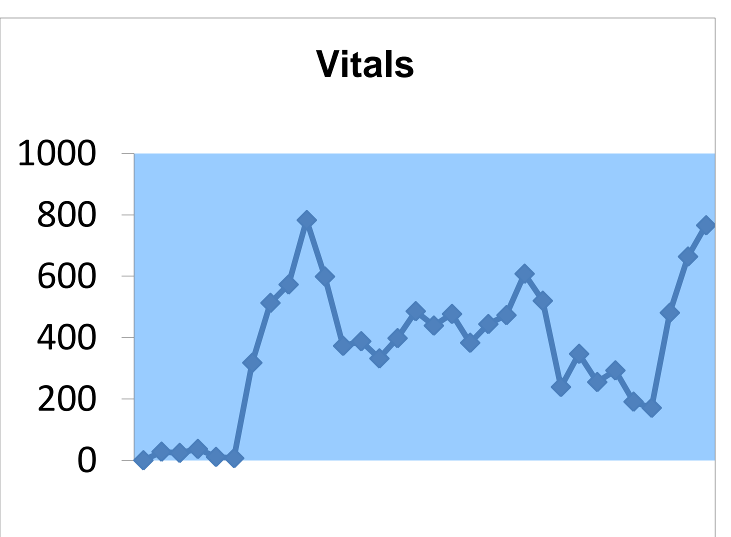
- Parallel Runs from May 15th, 2010
- Diseases
  - Head and Neck: Live & being used
  - Breast Cancer: Ready and being reviewed. Trials to start from June 10th
  - Thoracic: Ready for review
- Adoption for OPD: Slowly but surely happening
- Adoption for IPD: Nursing group on Vitals, Nursing Notes
- Estimates
  - ~ by June CPOE will be adopted
  - ~ by July Disease based templates will be used

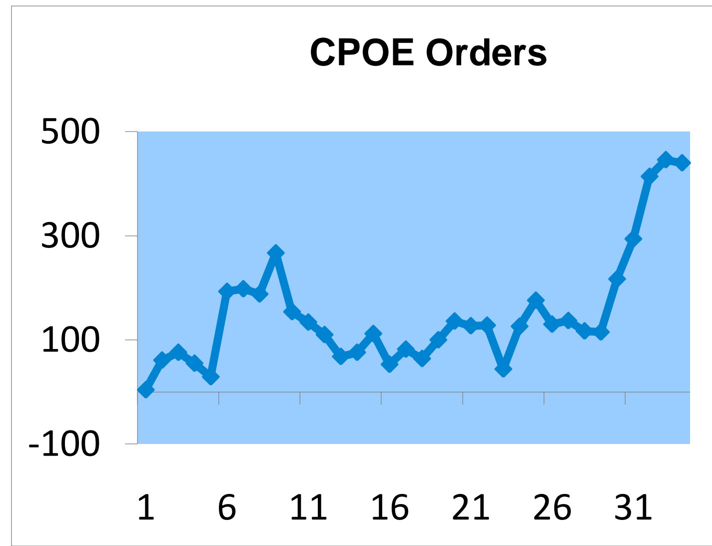
ADOPTION PATTERNS





About 40% Adoption for CPOE – May 2010





NEXT FEW YEARS

- 5-year target defined for overall implementation
- Activities defined along the following parameters
  - Quality of Healthcare Benefits
  - Patient Care Improvements
  - Clinical Data registry for research
  - Enabling timely, accurate & comprehensive information to doctors
  - Work environment & work quality improvements to all stakeholders
  - Financial Benefits and Payback

Its better to make use of a chance to change rather than to change your chance…

CLINICIAN ADOPTION

Inhibitors

- User Interface is dull
- Alerts Notifications – Need to grab Attention
- Coversheet – Highlight Lab results, Alerts, Appointments,
- Printouts need to be better to be given to patients

Accelerators

- Data Searchable for Research and MIS: Template data, Prescriptions, Ordering etc
- Anytime, Anywhere, Any device access – Mobiles, Handhelds, iPAD, Plain Browser
  - **Web Paradigm is a MUST**

FEATURE ENHANCEMENT???

- Roadmap to upgrade ICD9 to ICD 10
- Alerts – Coversheet, Bio Hazard Marks
- Pull the image with free hand utility Annotation inside Templates
- Alerts for Nursing with easy configuration
- Prescription and orders (medicate + dispensable)
- Presentable - Configure the template with bold Colored and headings
- Interfacing to Radiation Therapy Planning System

RESEARCH ENABLERS

- Automated method to extract data from templates (Tagging)?
- Gathering Health Factors from patient records?
- Leveraging VA Data Warehouse architecture?

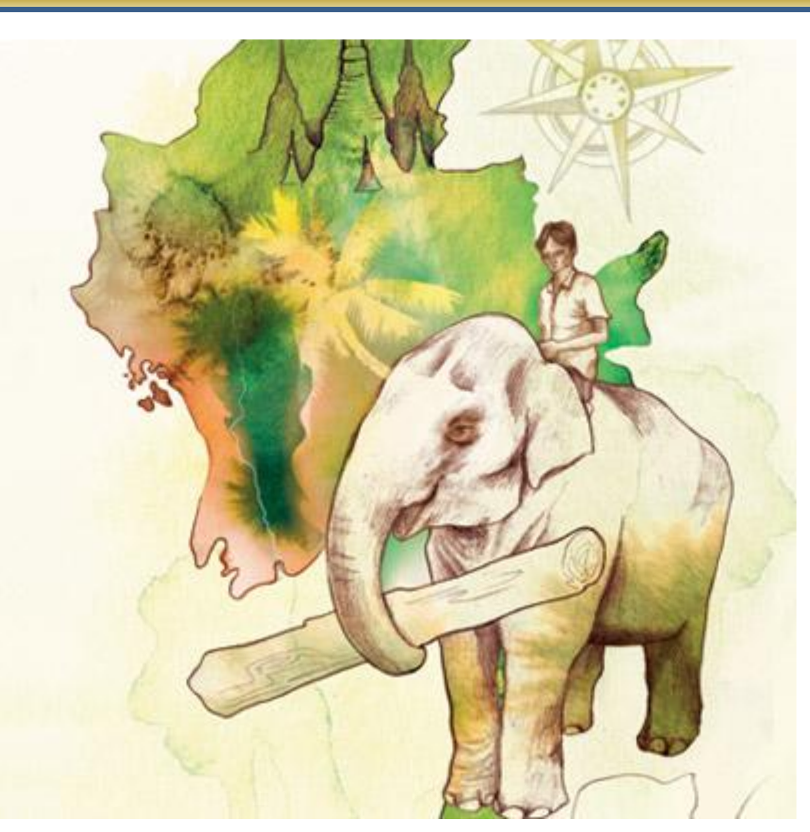
VistA has all that we need, but….

Move From Square Wheels of Today

to

Round Wheels for Tomorrow

Elephant and Not a White Elephant!



**While an elephant to do "heavy lifting" is great,
a delicately balanced "white elephant" serves no purpose**

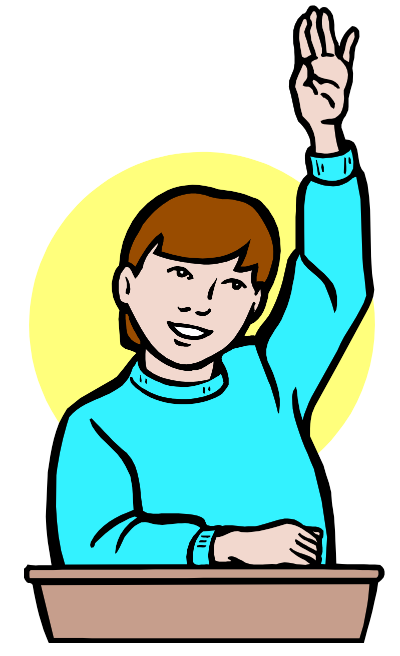
ADOPTION MAKES THE DIFFERENCE

Acknowledgements

Several teams have worked to make this Program happen.

RGCI Management Team
eGestalt Program Management Team
OHUM Project Team
Srishti Project Team

Suggestions/Questions ?



Thank You…