EMRs - Realizing Personalized Medicine

Guna Rajagopal PhD

Executive Director, Bioinformatics, Cancer Institute of New Jersey

rajaragugu@umdnj.edu

Quality Care at Affordable Cost
The Personalized Medicine Mantra

We want –

- the **right dose of**
- the **right drug for**
- the **right indication for**
- the **right patient at**
- the **right time, for**
- **the right $$$!**
Individualized, Targeted Cancer Care

Ken Buetow, NCI
EMRs – Advancing the Practice of Genomic/Personalized Medicine

- **Ready access** to **anonymized** patient data for basic, clinical, translational research to advance cancer prevention, treatment, control & survivorship, health disparity etc.
- Facilitate patient **recruitment for clinical trials** – build on CINJ’s Network of Hospitals collaborative,
- **Continuity/longitudinal/prospective studies** including long term follow up studies in survivorship, drug side effects, drug repositioning, cancer biomarker discovery etc.,
- **QOS** and **comparative studies on efficacy of procedures and therapies**, including deriving accurate metrics to measure performance and quality of care delivered to patients,
- to advance drug discovery & pre/post-clinical trial research collaborations by **integrating research/clinical trial data with medical history** etc. EHR in a data warehouse and using machine learning to **mine the data**.
### Secondary uses of Electronic Health Record (EHR) data in Life Sciences

**Figure 2:** Potential benefits of integrating EHR data within drug development (Illustrative).

<table>
<thead>
<tr>
<th>Trial Design (Refining Inclusion / Exclusion Criteria)</th>
<th>Patient &amp; Investigator Recruitment (Patient Recruitment)</th>
<th>Execution Analysis (Patient Compliance Tracking)</th>
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| - EHR alerts increased enrollment rates from 2.4% to 22% of recruited patients (Prior knowledge of health status could drive further improvement) | - Studies show EHR data can drive:  
  - A 28% increase in eligible patient identification  
  - A doubling of monthly patient enrollment rate  
  - A near ten-fold increase in the enrolled to referred ratio | - Journaling compliance increased from 11% with paper-based methods to 94% electronically  
- EHR-based monitoring enables intervention before patient must be excluded from data set  
- Use of EHR data and patient alerts reduces attrition rate by 50%, reducing overall trial size |

| Potential Savings: $3.2 Million | Potential Revenue Estimate: $125 Million | Potential Savings: $1.8 Million |

**Assumptions for Calculating Savings & Additional Revenue**

- Phase III clinical trial  
- 40,000 patients screened given 5% “hit rate”  
- 2,000 patients enrolled in anticipation of 25% attrition rate  
- Recruitment expected to last 250 days  
- Per patient screening cost: $100  
- Cost per enrolled patient: $6,000  
- Anticipated product revenue: $1 M/day
The Data Must Flow!
The Data Must Flow

Interfacing RWJUH and GE with ARIA

SCM
Sunrise Clinical Manager
RWJUH EMR

RWJUH
Hospital System Feeds

Patcom Keane
Registration & Billing System
CINJ Registration in Patcom

Technical Billing

SCM Data/Notes...etc?

Interfaces that already exist
Interfases to be created
Manual Process
Order Entry

RWJUH Labs
Technical Billing

Rad Onc IEM

ARIA
Radiation Oncology Module

ARIA
Medical Oncology Module
CINJ EMR

MedOnc

CINJ
Scheduling in ARIA

Sync

Clinical Data

Caisis

Oncore

Clinical Data

Translational Research

DocuTrack

GE Centricity

RWJMS EMR

External Application launch

Manually generated ADT (HL7) feed

Professional Billing

Lab Corp

URG

Quest

AllType

SDM

AllType Transcription

Lab 1

1x Load ADT

Lab 2

1x Load ADT

RT-IDX

RT-IDX Load

RT-ARIA Scheduling

RAD TAT Load

CINJ-CAB(ChINJ)

INDEX Registration

Manually Triggered

Registration HL7 feed for CINJ-GE-RWJUH

RWJUH e-Gate

Orders to RWJUH

Professioal Billing

RT-IDX ADT (GE#)

1x Load ADT

Bidirectional Clinical Data, Notes...

Radiology Reports

AllType Transcription

1x Load ADT

1x Load ADT

1x Load ADT

1x Load ADT
Central Goal:
- Improve patient care & treatment outcome
- Advance CINJ’s Research Mission
- Enhance productivity throughout our three enterprises

Phase 2
Enable Clinical / Translational R&D
And facilitate practice at Genomic Medicine
To be operational by 2/1/2012

Phase 1
Making EMR Operational
Software Component (Guna)
Hardware Component (John)
Deliverables:
- CPOE + ePrescription
- sunset SDM (by Aug 2010)
To be operational by 2/1/2011

To execute:
- CIC Team - Neema, Kevin, Adam, John & Guna
- 11 Work Groups
- 1 Steering Committee
- 1 Leadership Committee
- 1 Tech. Group Committee
- 1 Physician Champions Committee

Phase 3
Project Popweb / TransMed
Goal: Linking data from bench and Bedside throughout NJ to advance CINJ’s mission in cancer prevention, treatment control and survivorship
To be operational by 2/1/2013
Facilitating Personalized Medicine Across New Jersey

Building on New Jersey’s Health IT Infrastructure

Building Public/Private Partnerships
= CINJ/RWJUH/RWJMS
+ CINJ Network
+ New Jersey Pharma
Thank You!