

Medical Informatics and HERON Update
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Executive Summary

Medical Informatics strives to build, implement, tailor, and evaluate systems and knowledge bases to improve health by either discovering new knowledge or optimizing clinical care processes.

A fishing story, REDCap and HERON: two major tools and their integration. If time permits, view the live system. Take home: KUH is a CTSA partner. **You can use these tools!**

CTSA Grant Awarded. NCI Designated! What's next? Clinical Informatics!

My question to you: what are the highest needs for KUH at the intersection of clinical care processes where informatics and the EMR might help?

My background: electrical engineer undergrad, US Air Force hospital administrator/clinical engineer, biomedical engineer PhD in perioperative knowledge discovery, faculty in biomedical informatics at Vanderbilt: responsible for developing, operating, tailoring CPOE, responsible for commercialization effort with McKesson, responsible for other inpatient systems (nurse charting, bar code medication administration, developed medication reconciliation, outpatient whiteboards)

Progress

REDCap (**R**esearch **E**lectronic **D**ata **C**apture)

- Fairly easy to implement and allows a self service model
- Over 700 users, over 400 projects (in production and development)
- From simple surveys to extensive registries for Alzheimer's Disease Center
- Opportunity for hospital use?

HERON (Healthcare Enterprise Repository for Ontological Narration – an integrated data repository)

- Much harder but much larger payoff
- 850 million facts on 1.9 million patients
- Over 100 users, over 6000 queries
 - o Great support and collaboration between KUMC, UKP, and KUH with the Data Request Oversight Committee (DROC): Greg Ator, Terry Rusconi, Kay Grasso, Chris Wittkopp, Cathy Gardner, Rick Barohn, Karen Blackwell, Linda Wood, Theresa Neely, Jason Kentner. Oversight tools further insight from Bob Spaniol
 - o Faculty and Executives can sponsor students/fellows/ residents and staff

Repurposing HERON for Cancer Center NCI Designation

- Tumor Registry (great assistance by Tim Metcalf and Theresa Jackson)
- Biospecimens

- Social Security Death Index (long term mortality)
- Customized Survival Analysis
- REDCap -> HERON Integration for Triple Negative Breast Cancer Registry

Current activities with HERON: balancing general needs with starting to tackle informatics needs

- Brought in UHC data as a source for billing diagnoses (2009Q4 – 2012+)
 - o Secondary benefit: quality measures, MSDRG, Service line, etc
- Standardizing medications, later labs
 - o Goal: ability to participate in collaboration with top tier medical centers
- Embedded preliminary statistical visualizations
- Services, note titles/concepts, units, and decision support

Medical Informatics and Quality Example: **Warning: correlation does not imply causation**

- AHRQ CHF inpatient mortality (30 numerator; 1019 denominator)
- AHRQ CHF inpatient mortality denominator + BMI + Braden Score Assessed = 957 (mortality = 271; 28%)
- CHF+BMI+Braden+ Pressure Ulcer documented = 147 (mortality = 78; 53%)
- CHF+BMI+Braden+ Pressure Ulcer+Aminoglycoside = 23 (mortality = 15; 65%)

Clinical Informatics possibilities

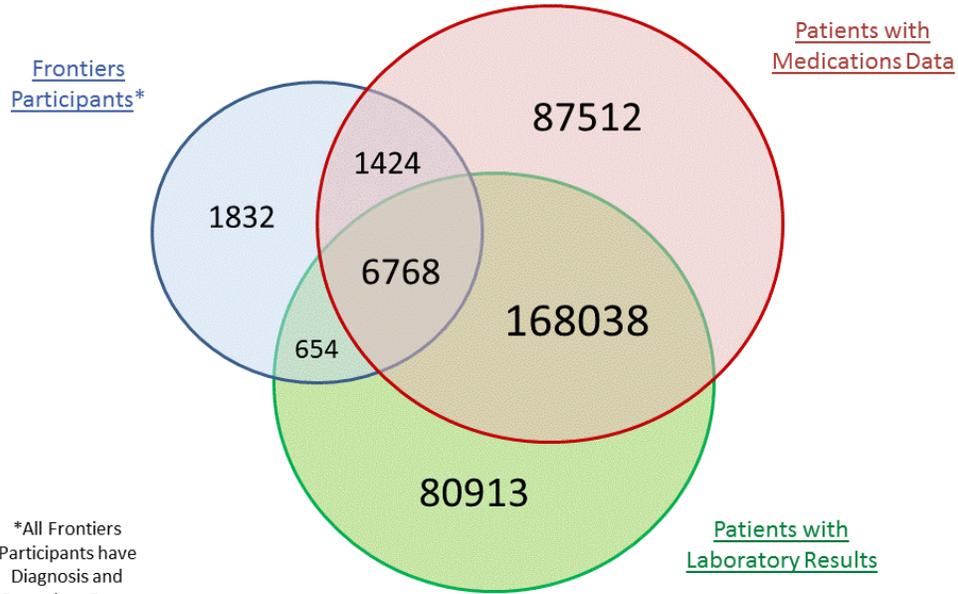
Medical Informatics in support of quality at hospital/clinics and informatics research versus general clinical research

- Quality, Efficiency, and Capacity
 - o EMR as source of “signals”
 - How rich of a signal do we have as we implement a EMR across inpatient and outpatient?
 - What are high quality signals? Where do we struggle? What do we document that is never used for clinical care and decision making?
 - Flowsheet example, lab ranges.
 - o Mining for highest variability in outcomes (Mortality, LOS, Readmission, etc)
- Clinical Decision Support
 - o Integrating into HERON to determine effectiveness of the EMR. What works? What doesn't? What is needed?
- National UHC interest in tools like HERON that integrate UHC data with detailed clinical data

Medical Informatics and the intersection of EMRs and emerging personal digital records

- Google fiber puts us in a unique position
- What are people likely do in their home with video and personal digital records?
- Are there opportunities for home consults and monitoring to dramatically improve outcome or convenience/concierge medicine?
 - o For providers as well as patients
- National Science Foundation Grant awarded for: In-Home Monitoring in Support of Caregivers for Patients with Dementia

Frontiers Participant Data Richness Today



*All Frontiers Participants have Diagnosis and Procedure Data.