Advanced Healthcare IT Solutions that Help to Improve Patient Care

Challenges and Opportunities of HIT to the Pharmaceutical Industry

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US Business Technology
& Information Science

Agenda

- A Patient's point of view of Health Care today
- Advanced Healthcare IT Solutions that Help to Improve Patient Care
- Challenges to Pharmaceuticals

The Patient's Experience Today

- In September 2004, TR went to her ENT for an evaluation of repeated sinusitis. A history was taken.
- A routine CT scan revea n meninginoma in her occipital lobe of her to be non-malignant and growing slowly.
- TR went to a major univ er home for initial neurosurgical consultati
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- The procedure went sm lications. TR was transferred to the neuros day uneventful postoperative course
- On day 4 TR was discha covery on 2 medications
- One month post op, TR was asked to go to an out patient neurologist for follow up due to new onset migraines and scintillations. An MRI was done at the clinic.
- Six months post op TR again went to the neurosurgeon for an uneventful follow up

The Patient's Experience Today

Information Collection and Transfer

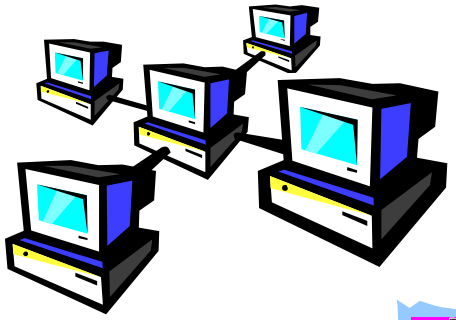
- In September 2004, TR went to her ENT for an evaluation of repeated sinusitis. A history was taken.
- A routine CT scan revealed a serendipitous finding - a 2 cm meninginoma in her occipital lobe of her brain. The tumor was determined to be non-malignant and growing slowly.
- TR went to a major university hospital 45 min away from her home for initial neurosurgical consultation. A history was taken.
- Elective surgery was planned for early January 2005
- Upon admission to the University Medical Center, she was sent to the same-day surgical unit for preparation for her procedure. A history was taken.
- The procedure went smoothly and had no immediate complications. TR was transferred to the neurosurgical intensive care unit for a 3 day uneventful postoperative course
- On day 4 TR was discharged to home for an uneventful recovery on 2 medications
- One month post op, TR was asked to go to an out patient neurologist for follow up due to new onset migraines and scintillations. An MRI was done at the clinic.
- Six months post op TR again went to the neurosurgeon for an uneventful follow up

Available Tools for Changing the Paradigm for Patient Care

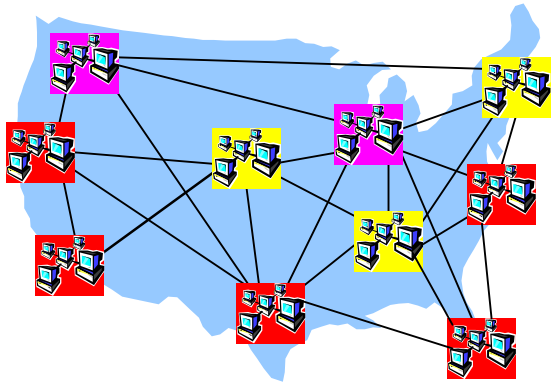
- Personal Health Records

- Electronic Health Records

- LHIIs/RHIOs



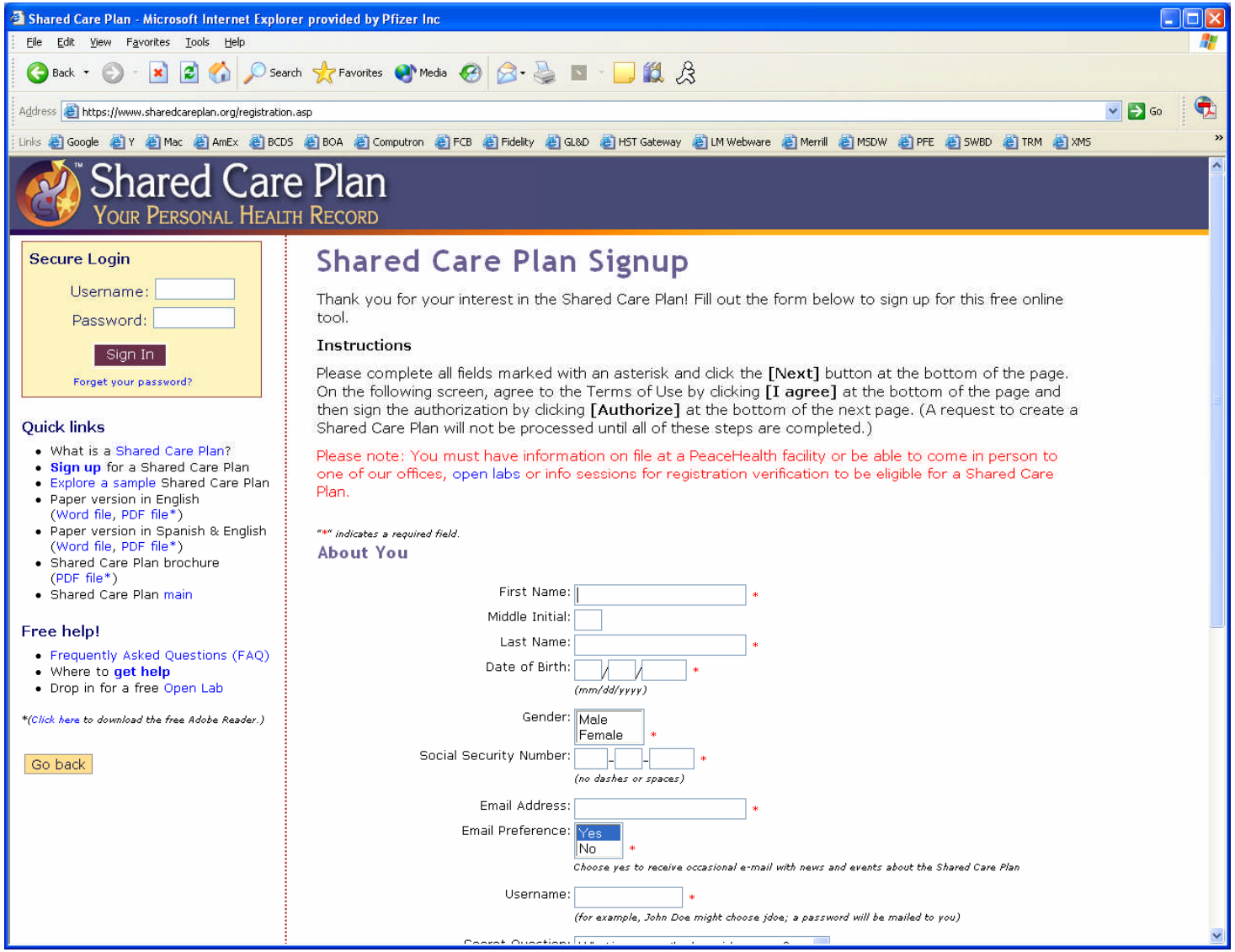
- NHII



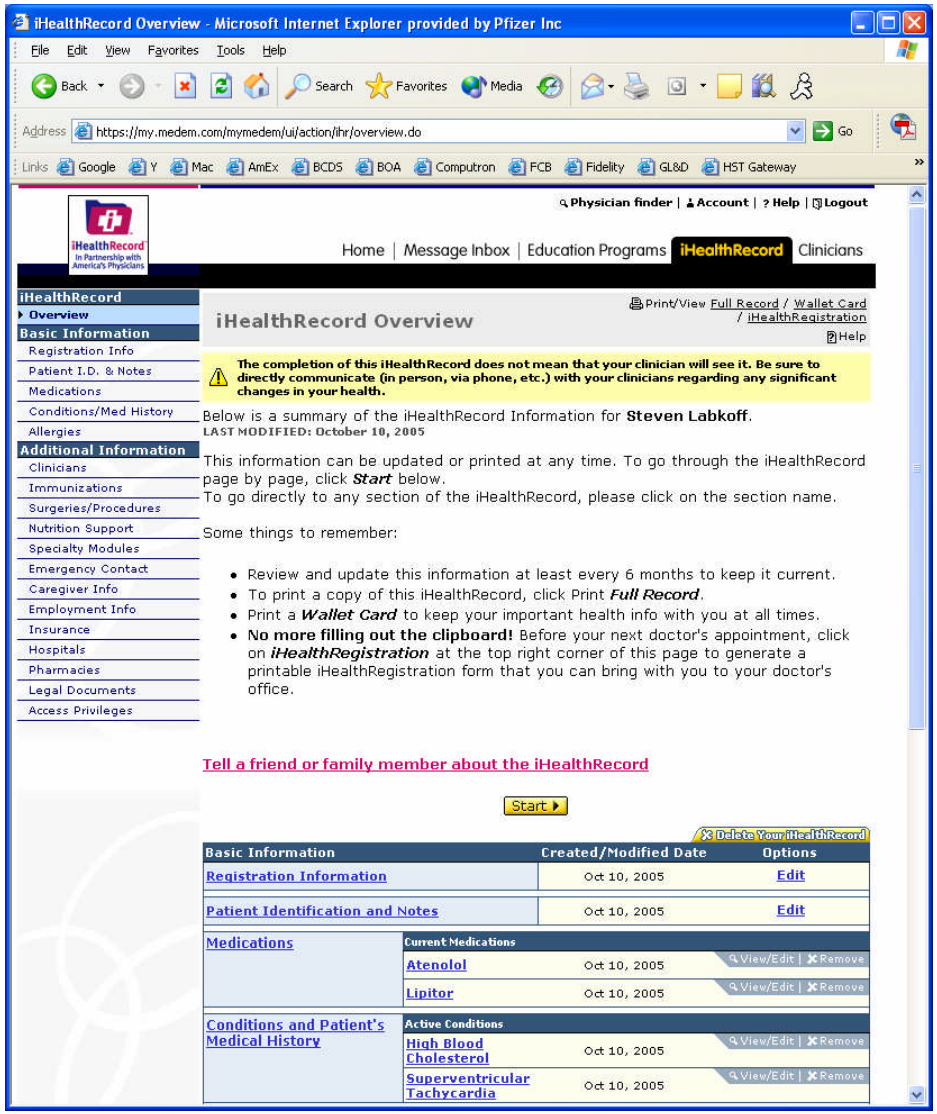
Personal Health Records

- The patient is the hub of the medical record.
- The patient takes responsibility (and to some degree accountability) their own information
- Usually web-based tool (can be paper) to give the patient the opportunity to track and control their own medical information
- Information in a PHR can include
  - Insurance and demographic information
  - Historical laboratory results (possibly live from lab)
  - Medication history (possibly from eRx source)
  - Allergy history
  - Family history
  - Information from recent consultations
  - Relevant medical records
  - Secure and private means to communicate to doctor or nurse

Examples of PHRs: Peace Health's "The Shared Care Plan"



Examples of PHRs: Medem's iHealth Record (iHR)

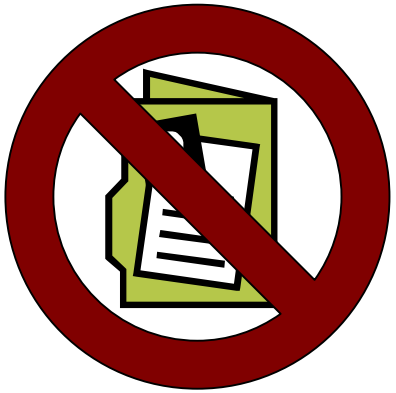


Statistics on PHRs

- CMS recent RFI on PHR standards – the results are due out in next 4 weeks
- Not many PHRs available or in use today
- General user may not be patient but care giver
- Can have profound effect on patient's adherence to care plans
  - Peace Health studied adherence to plans and found marked increase in patients following clinician's instructions
- Can facilitate care management for chronic diseases
- Many EHR companies offer PHR portals via their EHR products
- Standards current do not exist for PHRs for interoperability

Electronic Health Records

- AKA Electronic Medical Records
- Contains everything needed for patient care
  - Clinician's notes
  - History (HPI, Family, Allergies, etc)
  - Physical Exam
  - Labs (integrated info from laboratory companies)
  - Medication history
- May be integrated to
  - Practice Management System
  - ePrescribing Tool (could be imbedded)
  - PHR
  - Diagnostic Decision Support Tools



Electronic Health Records: Pros and Cons

Pros

- May provide a much more comprehensive view of patient's active problems, medications and the like
- Can provide links to other HIT infrastructure
  - PHRs modules
  - eRx (SureScripts/RxHub)
  - Laboratory data
- Charts are never lost
- Well tuned staff can increase efficiency
  - Initial drop in productivity
- Once records online, records never lost

Cons

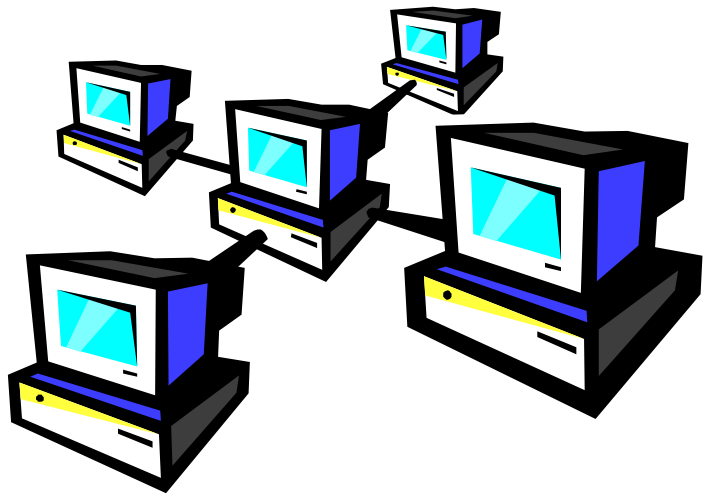
- About 15% of MDs in US using EHRs
- At the moment they are islands of information – not much interconnectivity between systems
- Currently create islands of information
  - Standards not yet finalized for interconnecting records
  - ONCHIT RFP 4 will help solve
- Expensive for small practices
- Generally, a fairly complicated for installation
  - Significant change management needed
  - Office staff retraining
  - New work flow

Electronic Prescribing

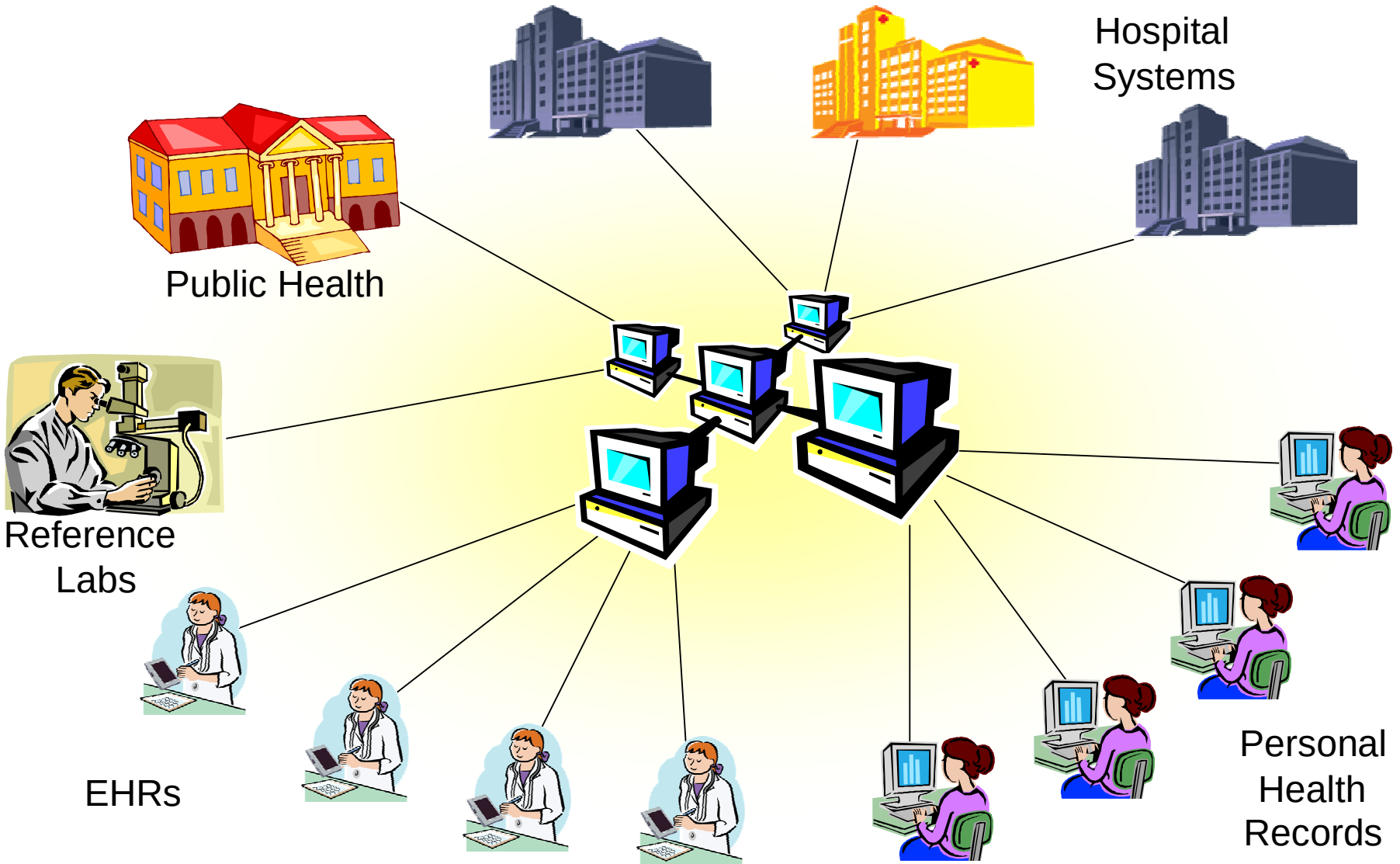
- Seen as a stepping stone for EHRs
- Generally imbedded in EHRs
- Transmission of prescription information from clinician to pharmacy
- Prior authorization converted to digital work flow
- Closing the loop on prescribing
  - Know when patients fill scripts
  - Increased opportunity for clinicians to affect compliance/adherence

Local Health Information Infrastructure (LHII)/ Regional Health Information Organizations (RHIO)

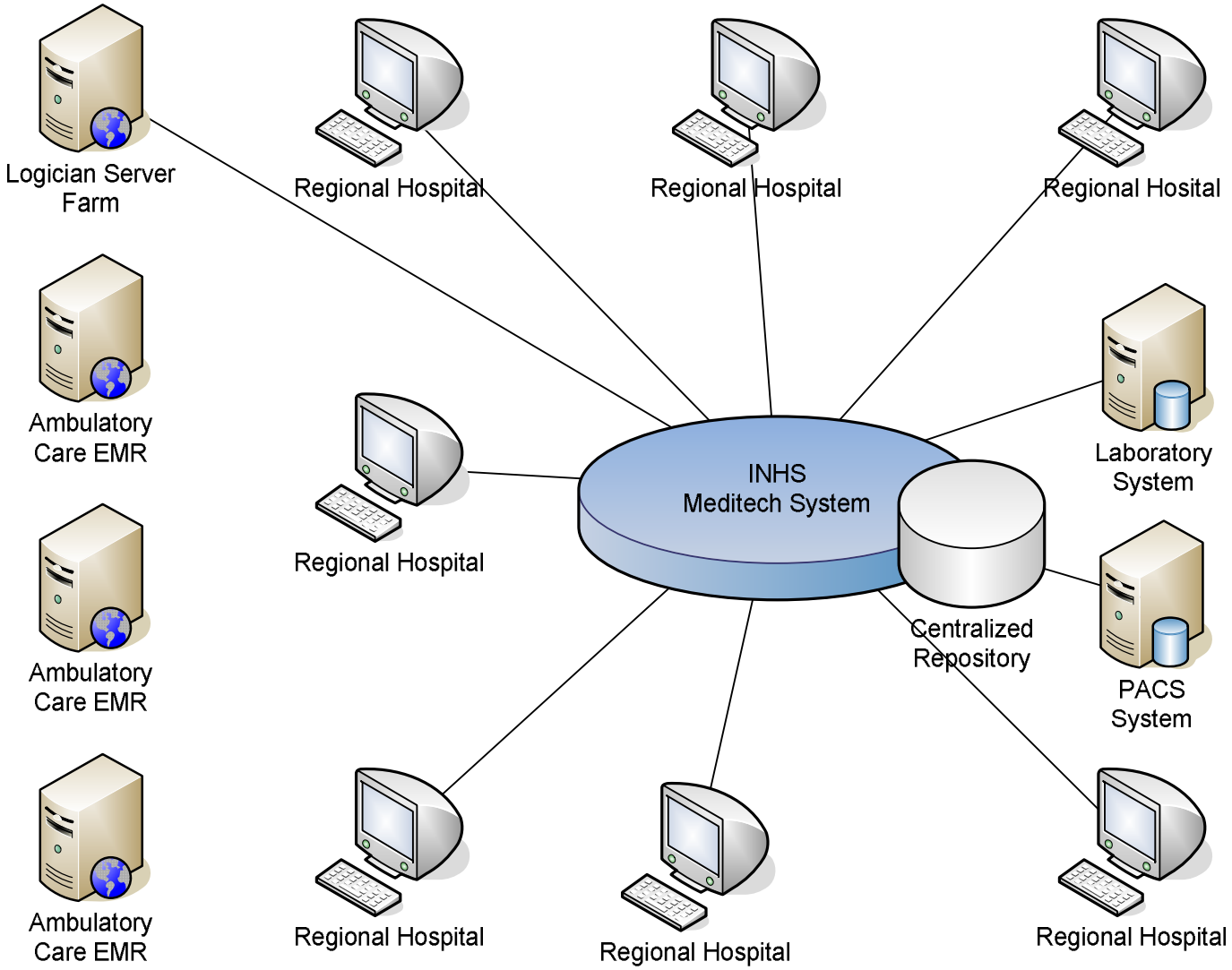
- Term coined by David Brailer, National Coordinator for HIT in 2004
- Community owned and operated medical data exchange
- All community parts are linked together to share medical information
- No competition over information; competitors continue to compete on clinical care
- Data leveraged for clinical care (and to some extent research)
- Several models
  - Centralized
  - Federated
  - Indexed pointers
- Self sustaining



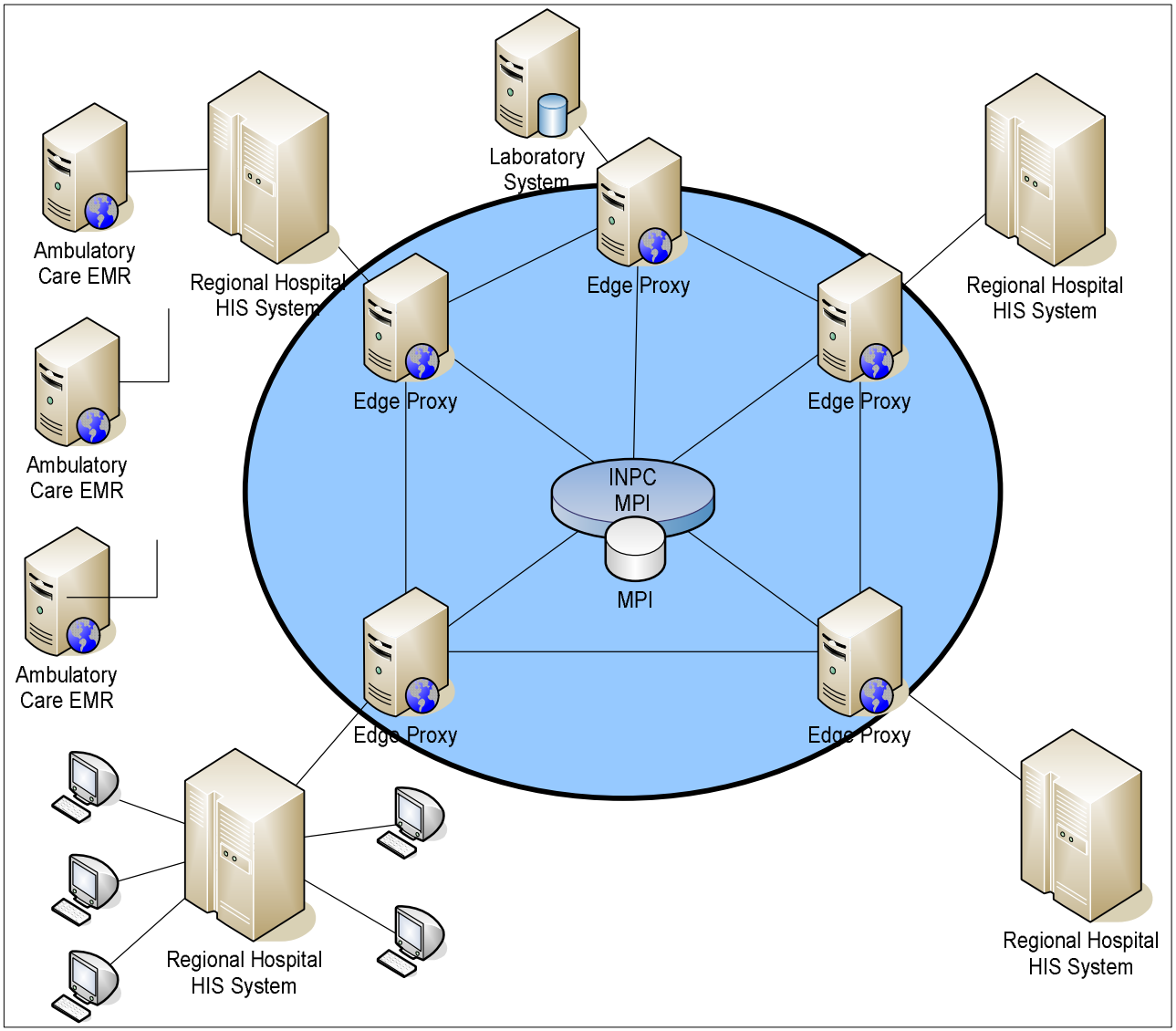
Components of a RHIO



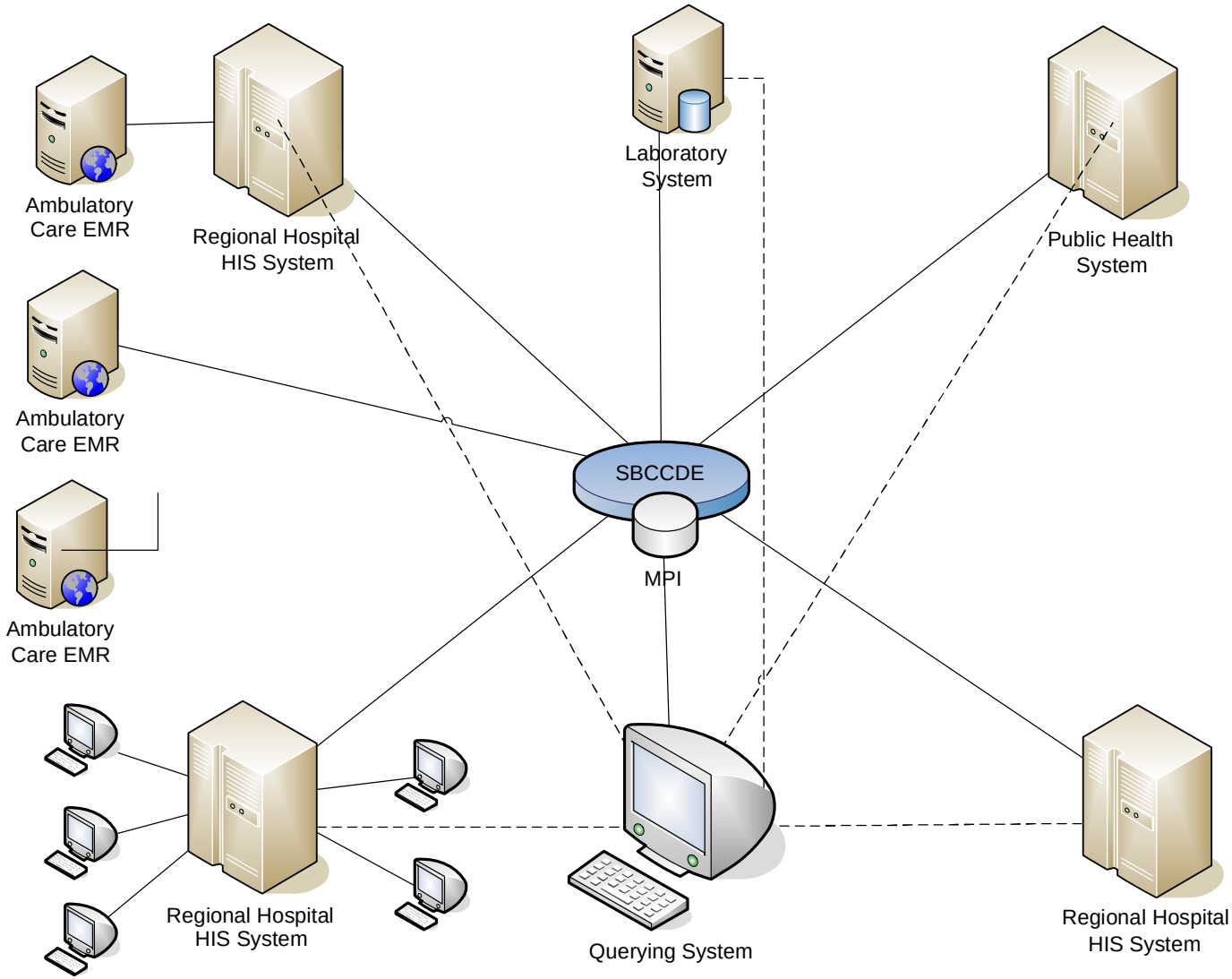
Model of a RHIO: Centralized



Model of a RHIO: Federated Centralized



Model of a RHIO: Indexed Peer-to-Peer



RHIOs Role in Patient Care

- Provide complete information on patient's record at all locations of care in the community
  - Labs, Medications, ePrescribing, histories, clinician notes, radiology, clinical decision support, etc.
- All HIT assets available via the RHIO (EHR, HIS, PHR, eRx, etc.)
- Everyone in the community uses the RHIO both for information retrieval and entry
- Data can provide guides to individualized therapy
- Patient care enhanced due to complete medical information available at the point of care anywhere in the region

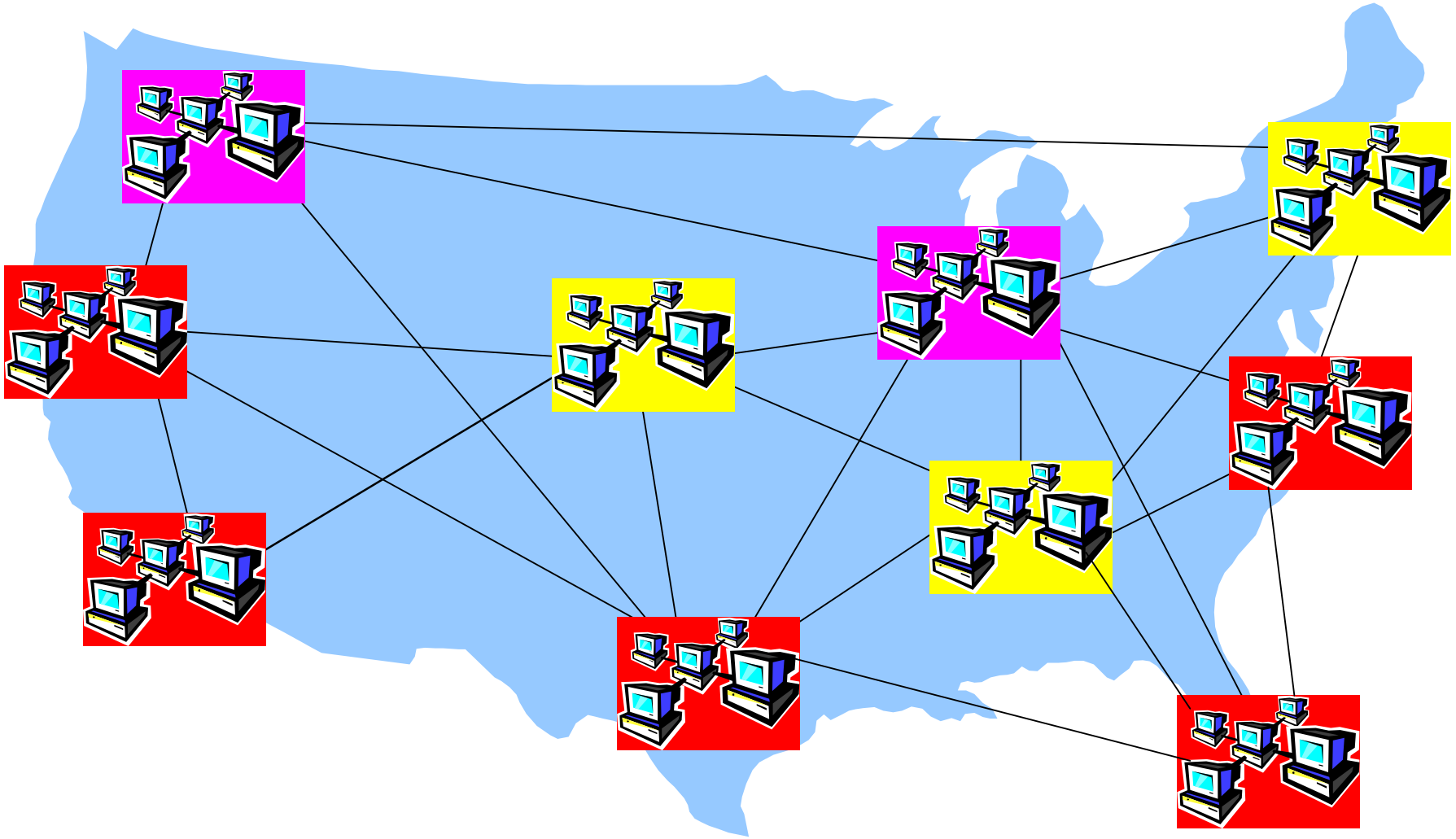
RHIOs Role in Research

- Centralized or federated RHIO have vast data stores of clinical data
- Data in the RHIO could be (and is) used for exploring clinical outcomes, P4P, care management (blinded)
- Pharmaceutical companies are only beginning to examine the value of these data sets (where they are available)
- Research possible
  - Surfacing & qualification of clinical trial candidates
  - Post marketing surveillance
  - Prospective and retrospective studies
  - Efficacy or ADEs on pharmaceutical agents
  - Help drive individualized therapy

RHIOs Growing Across USA

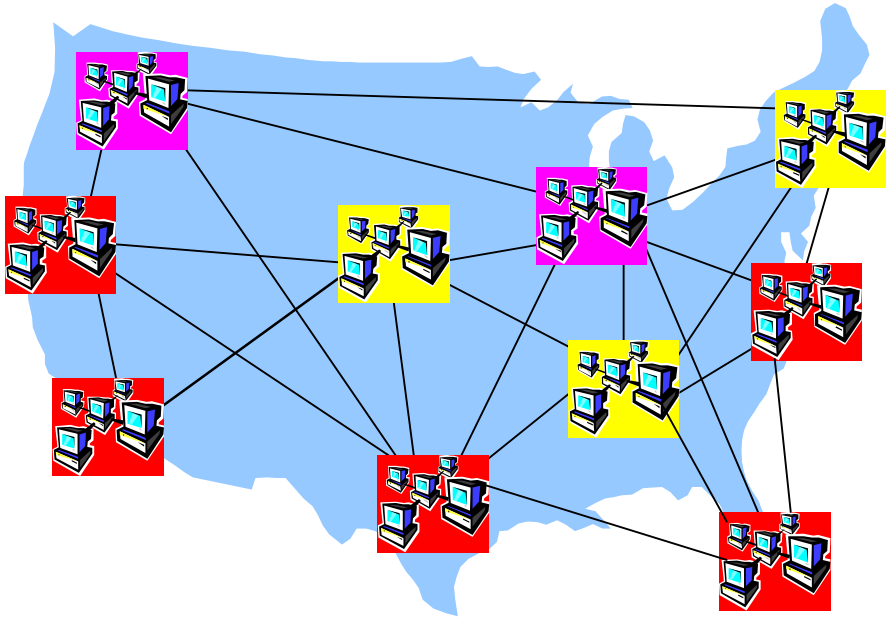
- Since 2003 over 100 reported RHIOs exist in varying degrees of completion
- Only a few RHIOs are financially sustainable
- RHIOs near completeness include
  - Regenstrief Institute, Indianapolis, IN
  - Inland Northwest Health Services, Spokane, WA
  - Santa Cruz, CA
  - Cincinnati, OH
- Announcements of new RHIOs occurs every few days
- Value proposition for RHIO difficult to make due to misaligned incentives

The National Health Information Infrastructure/Network
NHII/NHIN



The NHII/NHIN

- Network of networks
- Total interoperability between RHIOs of all kinds
- Data exchangeable through out NHIN
- Highly dependant on standards for interoperability



How the Case Will Play Out

- In September 2004, TR went to her ENT for an evaluation of repeated sinusitis. A history was taken and placed into her EHR at the ENT office
- When she gets home, TR inputs comments about her ENT issue into her PHR
- A routine CT scan revealed a 2 cm meninginoma. The CT Scan is stored in the RHIO's PACS System
- TR went to a major university hospital 45 min away from her home. Her history is reviewed from PHR and incremental questions asked. Medication and allergies and outpatient notes obtained from her PHR.
- Elective surgery was planned for early January 2005. A case manager works w/ TR to place preop reminders and test schedules into her PHR. The PHR sends out reminders for appointments 10 days before each new test is needed.
- Upon admission to the University Medical Center, the admitting resident reviews the patient's PHR and EHR notes from the neurosurgeon. Admitting takes 1/4 time
- The procedure went smoothly. Post Op notes are input into the hospital EHR and a copy sent to TR's PHR. TR was transferred to the neurosurgical intensive care unit.
- On day 4 TR was discharged to home on 2 medications. The scripts were sent electronically to her home town pharmacy for pickup the same day
- One month post op, out patient neurologist follow up requests MRI due to scintillations. An MRI was done at the clinic and reviewed against discharge MRI
- Six months post op TR again went to the neurosurgeon for an uneventful follow up. TR places all notes into her PHR for further record keeping.

What You Should Not See:

What Does This All Mean to Pharmaceuticals

- Medicines will compete based upon evidence generated from large scale observational data
- Increased transparency around drug efficacy
- Drug safety problems will be apparent much earlier
  - ADEs and signal detection sooner due to newly available data sources
  - Monitoring drug safety with ongoing data mining to detect & respond to problems promptly
  - Possible to targeted prescriptions to sub-populations
- Wide spread use for Care Management -> Increased adherence to care plans

What Does This All Mean to Pharamceuticals

- ↓↓ Cost of Clinical Information
- ↑↑ Speed of Access
- ↑↑ Opportunities for Research
- Individualized Care
  - Decision support
    - MDs & patients
    - Available at point of care
  - Genomics
- Information widely available
- Decision support tools could change the nature of how drugs are prescribed – strictly enforcing formularies