



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 revealed a meningioma in her occipital lobe of her brain. The tumor was found to be non-malignant and growing slowly.
- TR went to a major university hospital for initial neurosurgical consultation.
- Elective surgery was planned.
- Upon admission to the University Hospital, TR was sent to the same-day surgical unit for preparation.
- The procedure went smoothly. TR was transferred to the neurosurgical postoperative course.
- On day 4 TR was discharged on pain 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 meningioma 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

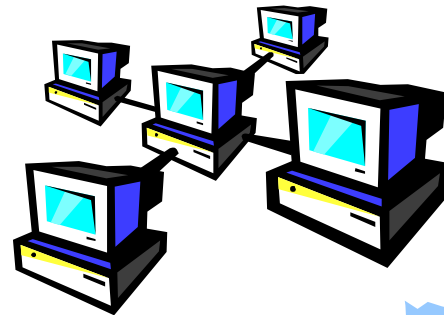
- Personal Health Records



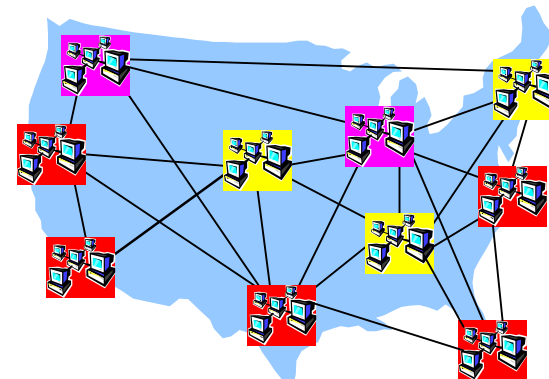
- Electronic Health Records



- LHIIIs/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"

Shared Care Plan - Microsoft Internet Explorer provided by Pfizer Inc

File Edit View Favorites Tools Help

Address: <https://www.sharedcareplan.org/registration.asp>

Links: Google, Y, Mac, AmEx, BCDS, BOA, Computron, FCB, Fidelity, GL&D, HST Gateway, LM Webware, Merrill, MSDW, PFE, SWBD, TRM, XMS

Shared Care Plan

YOUR PERSONAL HEALTH RECORD

Secure Login

Username:

Password:

[Forget your password?](#)

Quick links

- What is a [Shared Care Plan?](#)
- [Sign up](#) for a Shared Care Plan
- [Explore a sample](#) Shared Care Plan
- Paper version in English ([Word file](#), [PDF file*](#))
- Paper version in Spanish & English ([Word file](#), [PDF file*](#))
- Shared Care Plan brochure ([PDF file*](#))
- [Shared Care Plan main](#)

Free help!

- [Frequently Asked Questions \(FAQ\)](#)
- Where to [get help](#)
- Drop in for a free [Open Lab](#)

*(Click [here](#) to download the free Adobe Reader.)

Shared Care Plan Signup

Thank you for your interest in the Shared Care Plan! Fill out the form below to sign up for this free online tool.

Instructions

Please complete all fields marked with an asterisk and click the **[Next]** button at the bottom of the page. On the following screen, agree to the Terms of Use by clicking **[I agree]** at the bottom of the page and then sign the authorization by clicking **[Authorize]** at the bottom of the next page. (A request to create a Shared Care Plan will not be processed until all of these steps are completed.)

Please note: You must have information on file at a PeaceHealth facility or be able to come in person to one of our offices, [open labs](#) or info sessions for registration verification to be eligible for a Shared Care Plan.

** indicates a required field.

About You

First Name: *

Middle Initial:

Last Name: *

Date of Birth: -- *
(mm/dd/yyyy)

Gender: Male Female *

Social Security Number: -- *
(no dashes or spaces)

Email Address: *

Email Preference: Yes No *

Choose yes to receive occasional e-mail with news and events about the Shared Care Plan

Username: *
(for example, John Doe might choose jdoe; a password will be mailed to you)

Secret Question:



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

iHealthRecord Overview - Microsoft Internet Explorer provided by Pfizer Inc

Address: <https://my.medem.com/mymedem/ui/action/ihr/overview.do>

Physician finder | Account | Help | Logout

Home | Message Inbox | Education Programs | **iHealthRecord** | Clinicians

iHealthRecord
In Partnership with America's Physicians

iHealthRecord Overview [Print/View Full Record / Wallet Card / iHealthRegistration](#) [Help](#)

Basic Information

Registration Info

Patient I.D. & Notes

Medications

Conditions/Med History

Allergies

Additional Information

Clinicians

Immunizations

Surgeries/Procedures

Nutrition Support

Specialty Modules

Emergency Contact

Caregiver Info

Employment Info

Insurance

Hospitals

Pharmacies

Legal Documents

Access Privileges

The completion of this iHealthRecord does not mean that your clinician will see it. Be sure to directly communicate (in person, via phone, etc.) with your clinicians regarding any significant changes in your health.

Below is a summary of the iHealthRecord Information for **Steven Labkoff**.
LAST MODIFIED: October 10, 2005

This information can be updated or printed at any time. To go through the iHealthRecord page by page, click **Start** below.
To go directly to any section of the iHealthRecord, please click on the section name.

Some things to remember:

- Review and update this information at least every 6 months to keep it current.
- To print a copy of this iHealthRecord, click Print **Full Record**.
- Print a **Wallet Card** to keep your important health info with you at all times.
- No more filling out the clipboard!** Before your next doctor's appointment, click on **iHealthRegistration** at the top right corner of this page to generate a printable iHealthRegistration form that you can bring with you to your doctor's office.

[Tell a friend or family member about the iHealthRecord](#)

Start

Basic Information	Created/Modified Date	Options
Registration Information	Oct 10, 2005	Edit
Patient Identification and Notes	Oct 10, 2005	Edit
Medications	Current Medications	
	Atenolol	Oct 10, 2005 View/Edit Remove
	Lipitor	Oct 10, 2005 View/Edit Remove
Conditions and Patient's Medical History	Active Conditions	
	High Blood Cholesterol	Oct 10, 2005 View/Edit Remove
	Supraventricular Tachycardia	Oct 10, 2005 View/Edit Remove



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



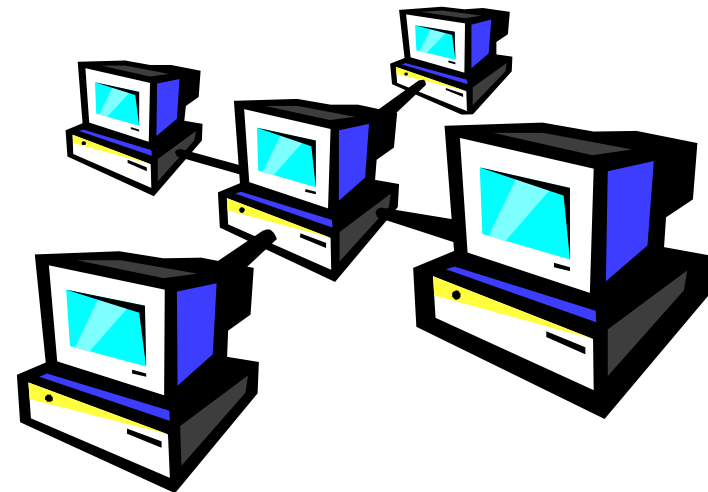
Electronic Prescribing

- 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

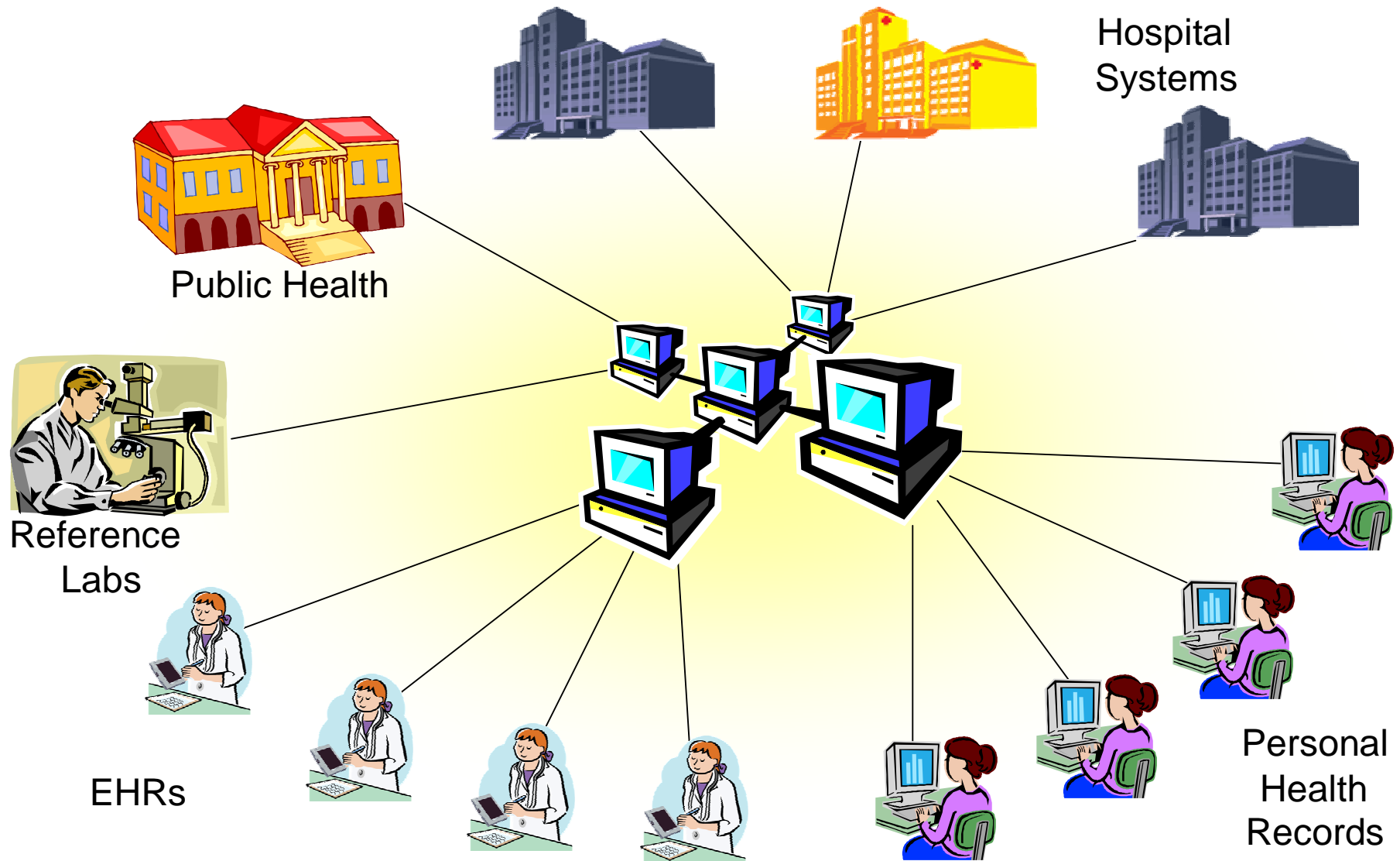


Local Health Information Infrastructure (LHII)/ Regional Health Information Organizations (RHIO)

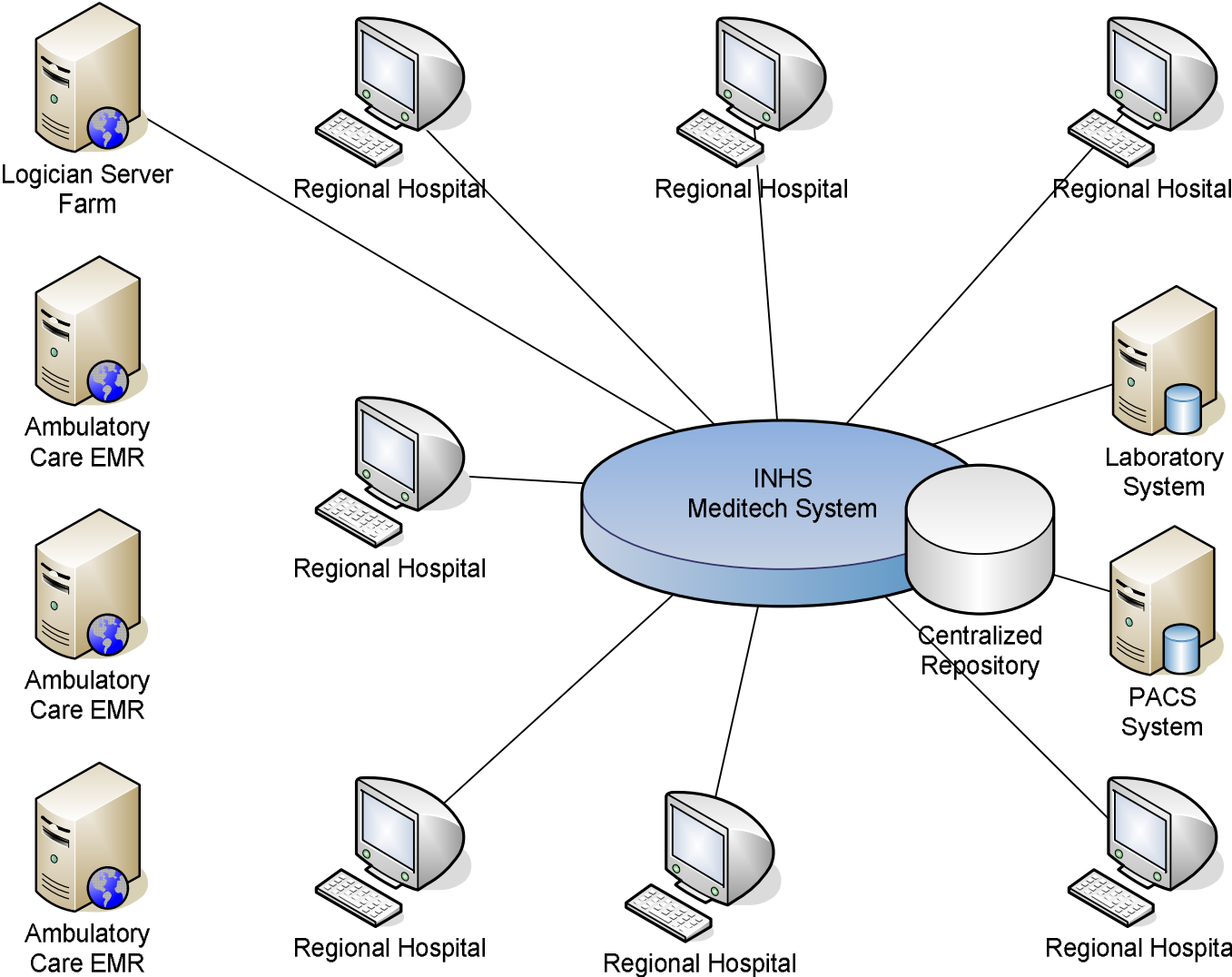
- Term coined by David Brailer, National Coordinator for HIT in 2004
- Community owned and operated medical data exchange
- All community parts are linked together to share medical information
- No competition over information; competitors continue to compete on clinical care
- Data leveraged for clinical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



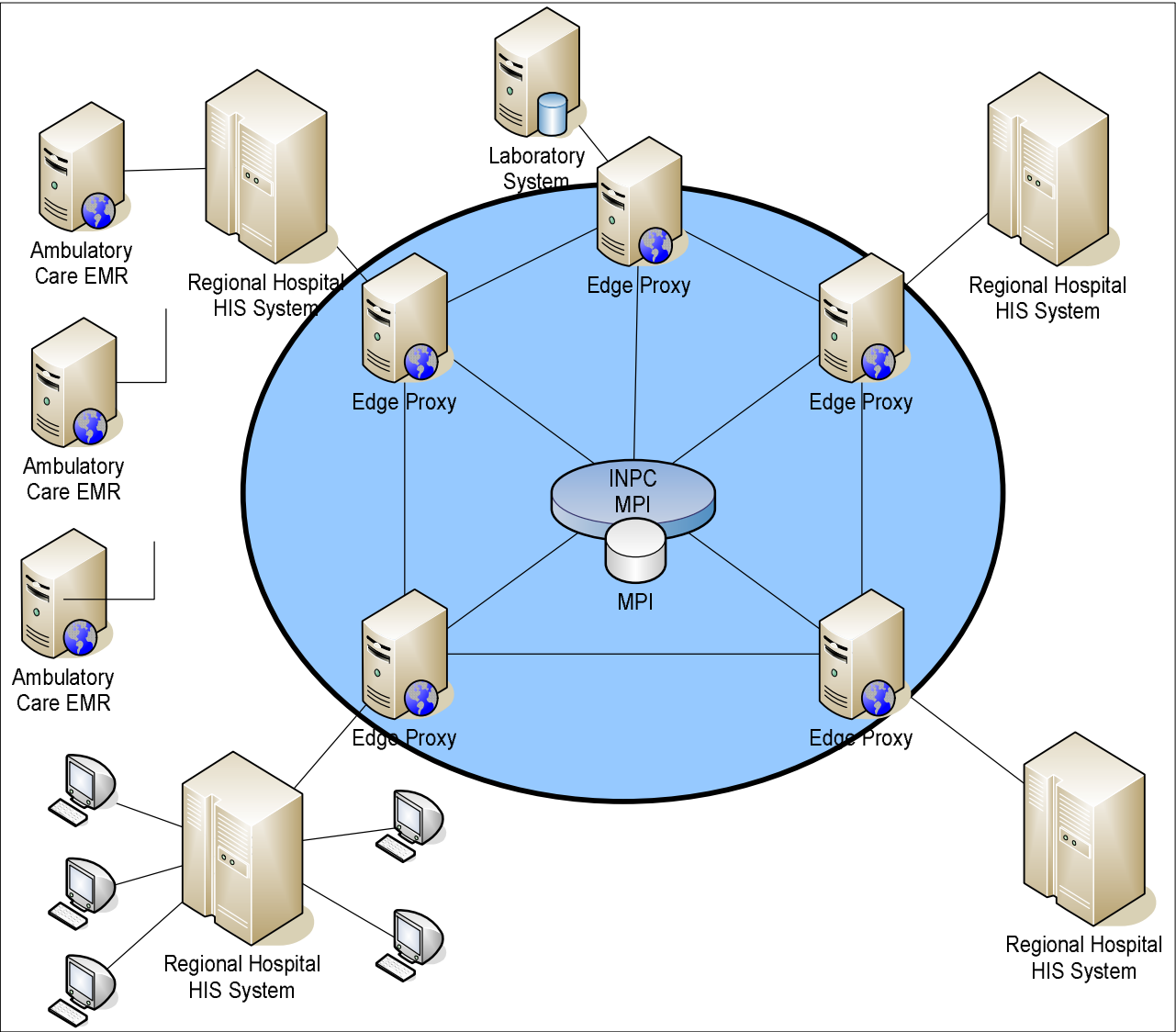
Components of a RHIO



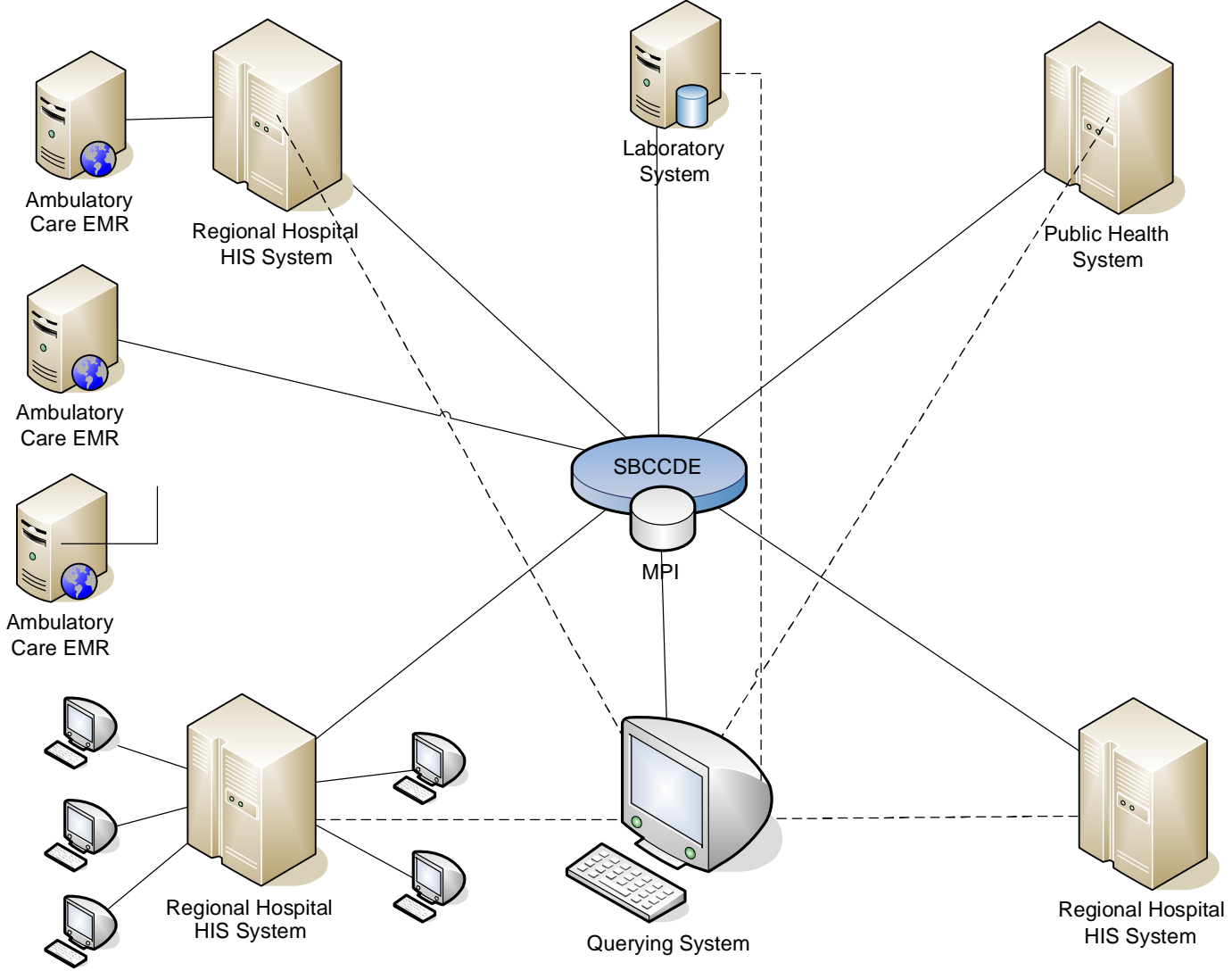
Model of a RHIO: Centralized



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

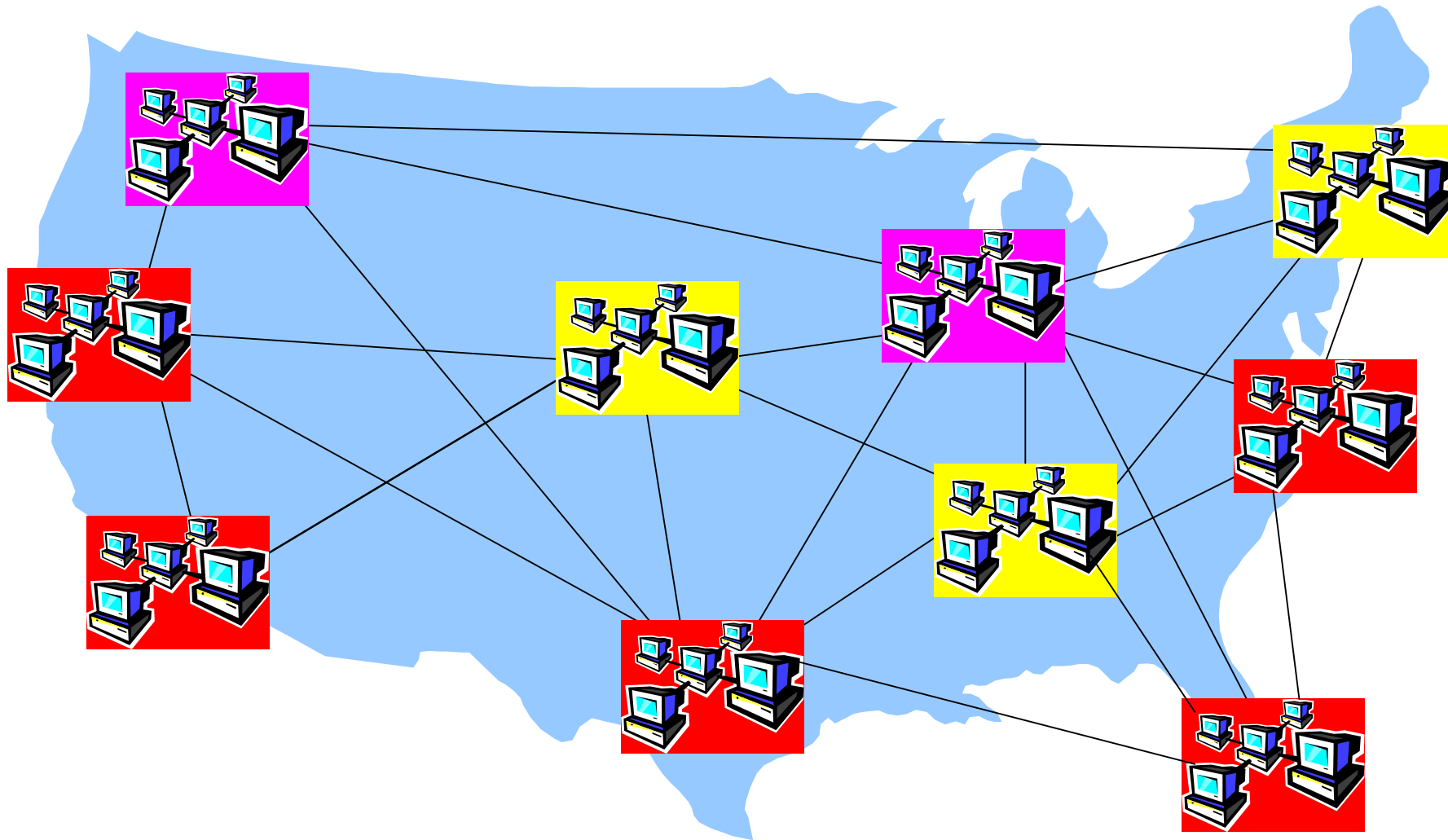


RHIOs Growing Across USA

- 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

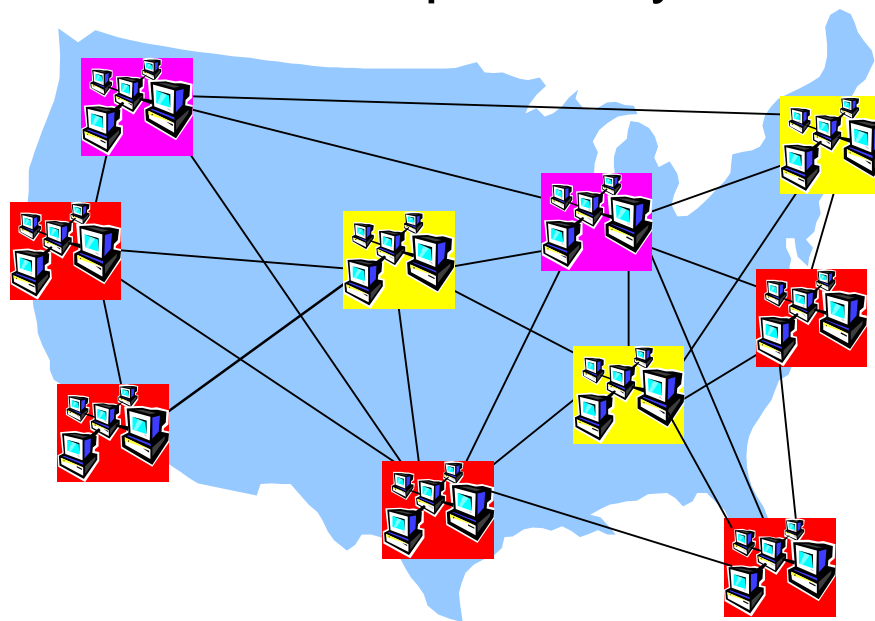


The National Health Information Infrastructure/Network NHII/NHIN



The NHII/NHIN

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

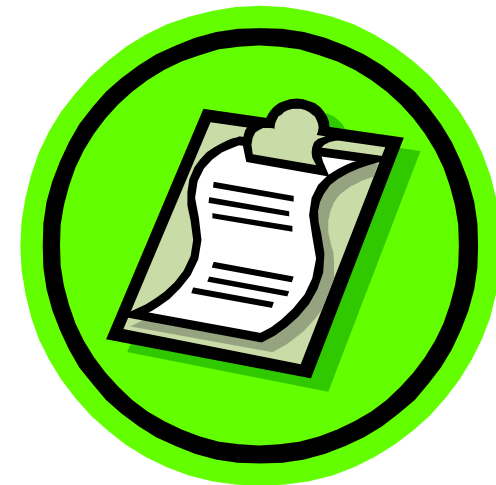


How the Case Will Play Out

- 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 meningioma. 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

