

Secure **A**rchitecture **F**or **E**xchanging
Health Information

**A Sustainable HIE with a
Novel Patient Consent Architecture**

HIMSS Chapter HIE Liaison Roundtable Call

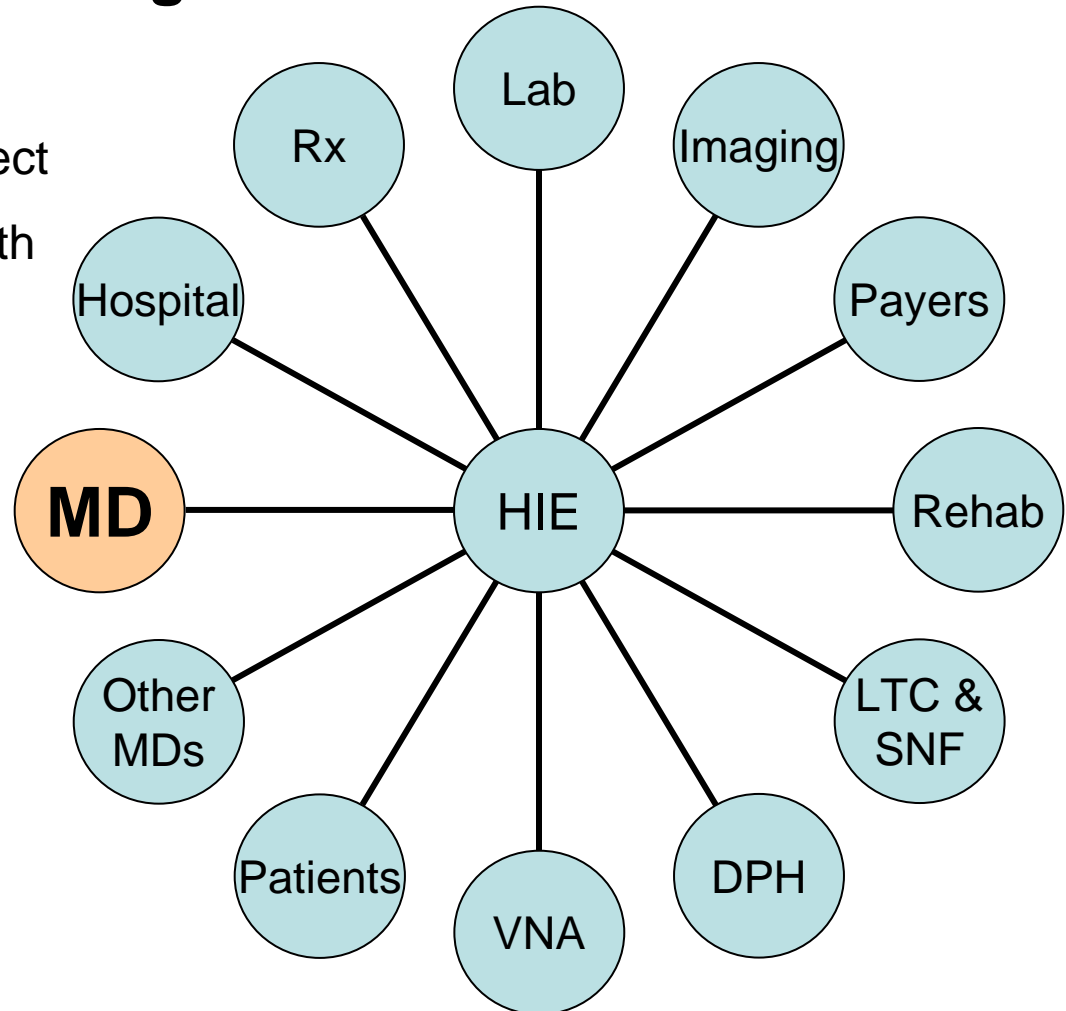
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Agenda

- Review of SAFE Health project
- Current status of SAFE Health



Objective of SAFE Health

Build and operate a regional health information exchange infrastructure to enable secure, real time transfer of patients' health information between multiple different organizations with patient consent in order to improve patient safety, quality of care, and efficiency of healthcare delivery.

Funding for SAFE Health

- \$1.5 Million Agency for Healthcare Research and Quality (AHRQ) Grant #1 UC1 HS015220 (10/2004 →9/2009)
- \$4 Million donated by:
 - Fallon Clinic
 - Fallon Community Health Plan
 - HealthAlliance Hospital
 - UMass Memorial Medical Center

Timeline

- 2004 – Fallon Clinic, UMMMC and FCHP awarded \$1.5 Million AHRQ HIE Grant
- 2005 – MD and patient Focus Groups
- 2006 – Fallon Clinic develops Interface Engine
- 2007 – Search for software vendor stopped
- 2008 – Partnership with HealthAlliance Hospital
- 6/24/09 – SAFEHealth go-live

Spent \$4.5M “learning” in first 3 years

Spent \$1M “building/implementing” in last 2 years

SAFE Health Architecture

High Level Design Goals

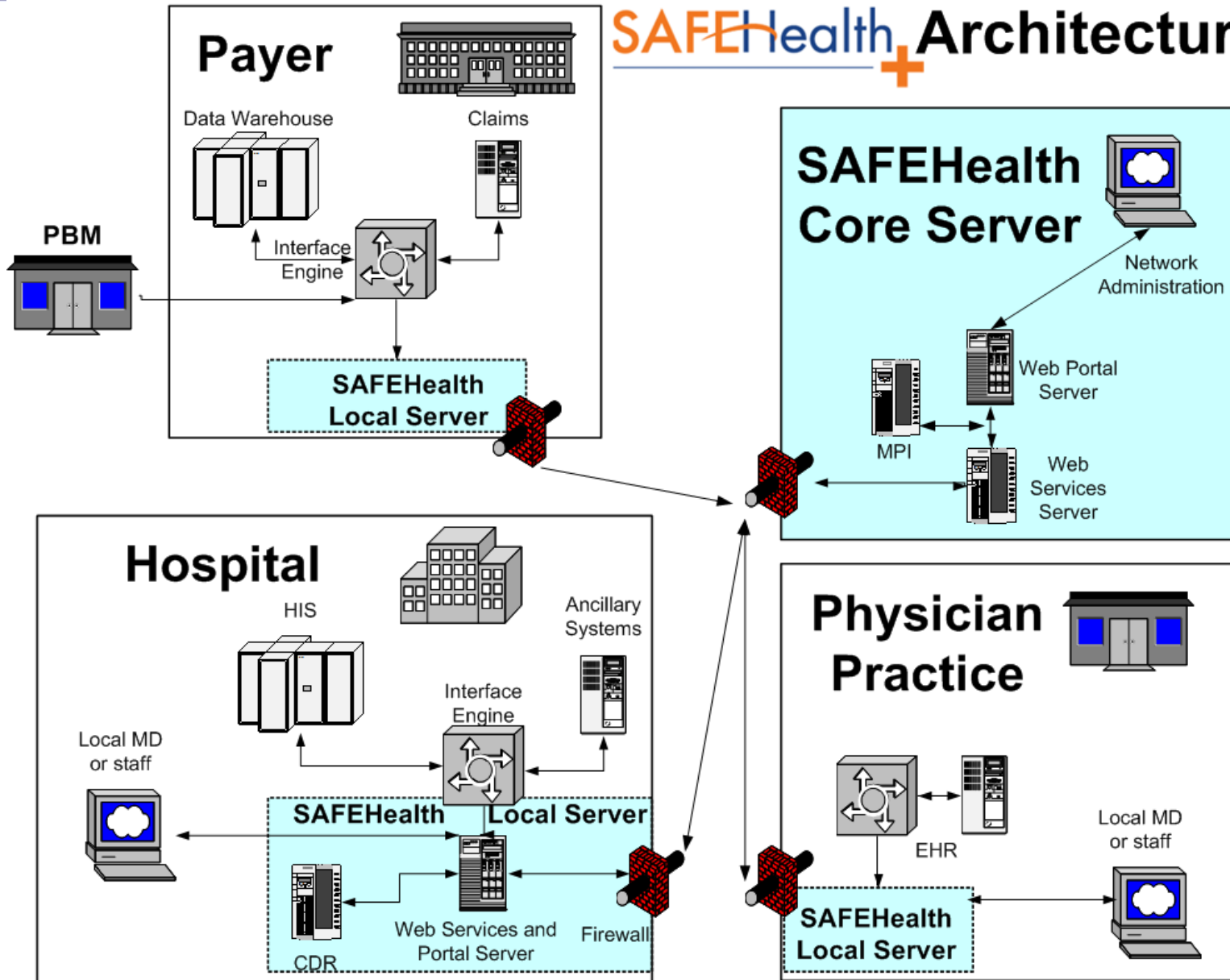
- One central demographic repository (EMPI)
- No central clinical data repository
- Patients opt-in once at the connected entity level for all data content/types for TPO uses only
- All authorized entities can access entire patient record
- Clinical data flows from EHR to EHR, and is viewed by clinicians directly in their EHRs
- User authentication and role-based access is performed by each connected entity through EHR
- ✦ Minimize duplicate data from multiple sources
- ✦ Scalable and high performance
- No rip and replace – leveraging existing systems with minimal modification
- Integrate seamlessly into physician & staff workflows

Types of Authorizations

All data transfers fall into two categories:

- Order/result transactions
 - e.g., Lab orders/results, referral requests/authorizations
 - Covered by HIPAA Privacy Notice
 - Patient cannot refuse authorization
- Consent-authorized data queries /subscriptions
 - e.g., Patient self-refers to ER or Derm or Gyn and MD queries for patient history
 - Requires “opt-in” consent by patient
 - Authorizations from consents stored in “local servers”
 - **This is the current data flow used in SAFEHealth**

SAFEhealth+ Architecture



Local SAFEHealth Server

- Integration Engine
- Edge Proxy Cache Server (XDS.b-like)
 - Document Repository (Local copy of data organization willing to share)
 - Document Registry (Document Metadata)
- Consent Portal/Repository (BPPC-like)

All of these can run on one server

Standard Data Terminologies

- Data is transformed to a standard vocabulary as it moves between the local EHR and the local SAFE Health server
- Enables interoperability with NHIN, decision support, and data consolidation
- NPI currently used for providers and organizations
- Currently using LOINC and SNOMED-CT for clinical data

Local Consent Portal/Repository

- SOA written in MS .NET and MS SQL Server
- Manages the local consent form printing
- Manages the consent entry worklist for registrars in a local Web Portal
- Is the “Content Creator for Consents”
- Also maintains a local copy of the consent directives, which are kept in synch with the consent directives stored on other servers

Patient Identification Architecture

- All patients from participating entities are first registered and matched in a central “Core Server” (PIX-like) EMPI
- Basic demographics and the Universal SAFEHealth Identifier number are stored in the “Core Server” EMPI
- The Universal SAFEHealth Identifier numbers are also stored in the “Local Server”
- Necessary for efficient patient matching between organizations and enables consents to be signed at any organization

Probabilistic Patient Matching

- Uses name, gender, date of birth, and zip code for matching purposes
- Normalizes names for variations in data entry at different organizations
- Has flexibility in how middle names and addresses match
- Accommodates aliases and gender changes

Patient Opt-in Consent Automation

- When patient who has been at more than one participating entity, arrives at a participating entity and a consent directive hasn't been entered, a consent form automatically prints at the check-in desk's local printer.
- Consent is to authorize a participating entity to both disclose as well as receive all patient information, including sensitive info (e.g., HIV, STDs, mental health, genetic testing).

Patient Opt-in Consent Automation

- Patients can authorize any or all of the current entities participating in SAFEHealth, or they can authorize any current or future healthcare provider in the entire state of Massachusetts in case they were to seek care there.
- Patients can also authorize their medical insurance carrier(s) to provide claims data to SAFEHealth.

Patient Opt-in Consent Automation

- Consent needs to be signed only once at one organization to authorize any or all entities.
- Consents are forever; consent can be revoked by a patient for any or all entities for future disclosures and viewing, but past disclosures cannot be revoked.
- When a parent or guardian consents for a minor, an expiration date of their 18th birthday is automatically entered into the consent record.

Patient Opt-in Consent Automation

- After the consent form is signed, clerk clicks next to patient's name in the worklist of the Consent Portal to acknowledge that form was or was not signed and which entities were authorized, triggering clinical data to be exchanged between these authorized entities and allowing import into the local EHRs.
- Can be done asynchronously with standard registration/check-in workflow.

MRN	MPI	First	Last	DOB	Date Added	Opt In For	Forms
584758	242811	PATIENTV	TEST	11/02/1941	06/18/2009 02:38	<input type="button" value="All SAFEHealth+Insur"/> <input type="button" value="All Mass+Insur"/>	Print Consent Print Revocation

Patient TEST, PATIENTV

Patient Information

Demographic Information

MRN 584758
MPI 242811
First Name PATIENTV
Middle Name
Last Name TEST
DOB 11/2/1941
Sex
SSN

Address Information

Address Line 1
Address Line 2
City
State
Zip Code
Check in Location

Safe Health Consent

Emancipated Minor?

Opt In For

Consent (Double click to deselect)	Group	Expiration Date
<input type="radio"/> Consented <input type="radio"/> Revoked	Massachusetts	<input type="text"/>
<input type="radio"/> Consented <input type="radio"/> Revoked	Fallon Clinic	<input type="text"/>
<input type="radio"/> Consented <input type="radio"/> Revoked	Health Alliance	<input type="text"/>
<input type="radio"/> Consented <input type="radio"/> Revoked	St Vincent's Hospital	<input type="text"/>
<input type="radio"/> Consented <input type="radio"/> Revoked	My medical insurance carriers	<input type="text"/>

Consent?

- Signed
- Refused
- Not Entered

Last Date/Location
Consent Form Printed: 6/19/2009 9:29:46 AM at department

Patient Opt-in Consent Automation

- Patients who do not consent to all current participating providers will only have consents printed once/year to re-request consent for other organizations.

Patient Opt-in Consent Automation

- Authorized organizations continuously have new clinical information from other authorized organizations pushed to them, and can have this information uploaded into the local EHR for up to 1 year from the last contact in that organization (for handling telephone calls from patient). Clinical info after 1 year is “held” without EHR upload.
- When a patient is seen again after more than 1 year, any “held” clinical information is uploaded into the local EHR when the patient arrives.

Current Status of SAFE Health

Current Status of SAFE Health

- Local servers were installed and connected at Fallon Clinic and Health Alliance Hospital Leominster Campus
- Core Server is hosted by Fallon Clinic
- 1 million patients were pre-loaded into EMPI
- 2 years of clinical data pre-loaded into CDR
- HealthAlliance is currently providing ER notes

Current Status (Continued)

- Fallon Clinic is currently providing notes with:
 - Medication list
 - Allergies
 - Problem list
 - Immunization history
 - Code status
 - Advance directive status
 - PCP and phone number
 - Vital signs
 - Recent lab/rad results

Statistics as of 2/16/2010 (8 months)

- 1,500 patients have signed consents
- 4 people revoked their consents
- 50% have consented for all of Massachusetts
- 75% agreed to receiving payer data
- 14,000 documents have been securely exchanged

Sustainability of SAFEHealth

- Focus has been on reducing operating expenses
 - Internally-developed software
 - No formal third-party organization/RHIO
 - Hosting core server in Fallon Clinic's data center
- Just need a **Data Use and Reciprocal Support Agreement (DURSA)** in order to establish trust and baseline requirements for HIPAA and state regulations (e.g., minimal requirements for authenticating users)

Sustainability of SAFEHealth

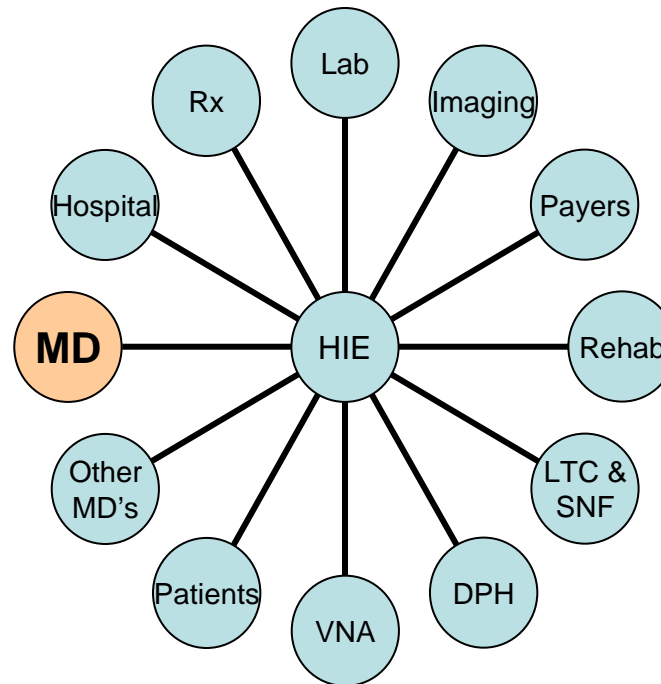
- Each organization is responsible for their own server maintenance/license and data mapping costs...
- Currently \$7,000/year **total!**

Summary

A successful HIE needs to:

- Fit into real-world workflows
- Earn the trust of the community stakeholders
- Provide value at the right price

Questions?



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