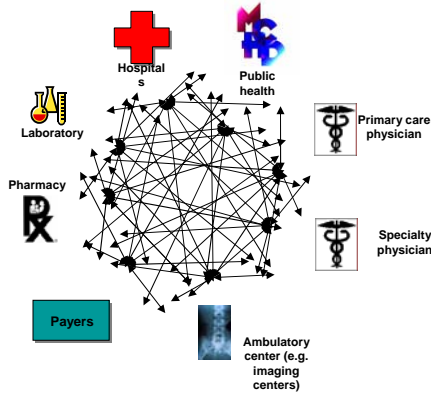
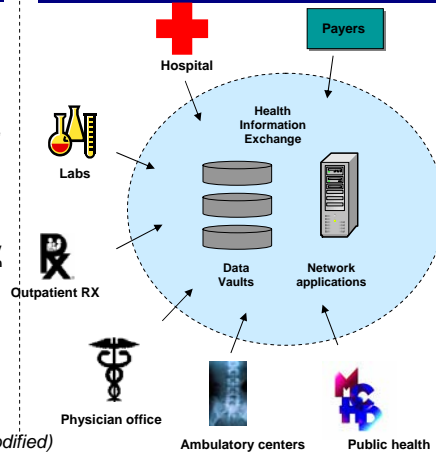


“Wiring” Healthcare

Current system fragments patient information and creates redundant, inefficient efforts



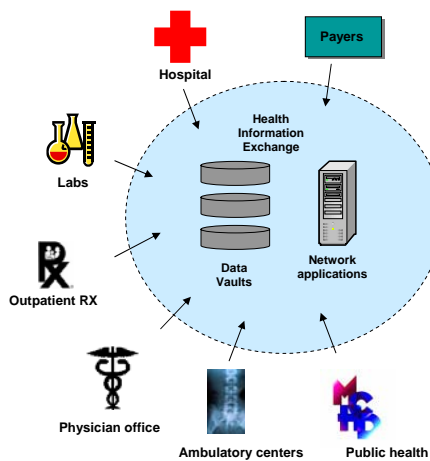
Future system will consolidate information and provide a foundation for unifying efforts



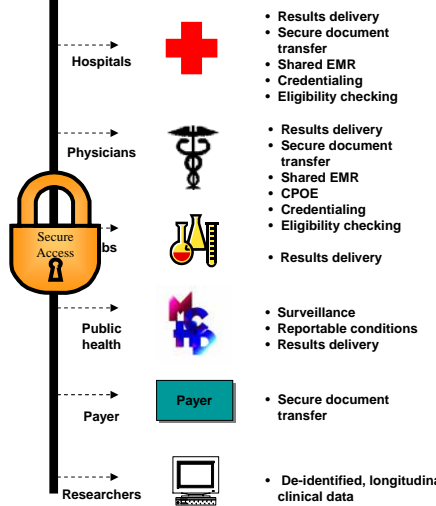
Source: Indiana Health Information Exchange (modified)
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Data Reuse

Data management

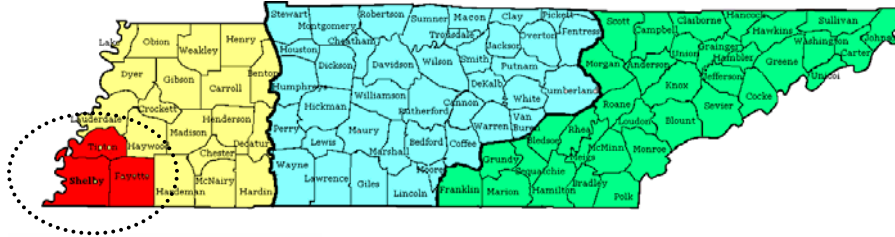


Data access and use



Source: Indiana Health Information Exchange
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A regional effort in Memphis



Three-county region that includes Memphis TN; Approximately 1 million residents
Serious community health problems
Major public hospital
Multiple competing providers
This is not a state-wide Medicaid initiative

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3

A regional effort in Memphis

- Based on real patient data, not claims
- Governance through a 501(c)(3) corporation
- Participation of major hospitals and clinics
- Participation of state and local government
- Involvement of the business community
- University participation
 - Tennessee Tech
 - University of Memphis (pending)
 - University of Tennessee
 - Vanderbilt University
- National collaborators
- Cost: \$12 million over 5 years

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4

Goal: To understand what the market should be

- Legal / policy framework
- Public Health (Robert Wood Johnson grant)
- E-prescribing (AHRQ contract expansion)
- Quality (AHRQ contract expansion)
- Community Action (Robert Wood Johnson; Healthy Memphis Common Table)
- Understanding of emergency department use
- Extension to safety-net clinics to strengthen “medical home” concepts
- Technology – Vanderbilt technologies, Tennessee Tech
- Retail pharmacy (coming soon)
- Commercial vendors (coming soon)

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5

The real opportunity: find alternatives to ED care

The screenshot shows a medical software interface with a list of radiology orders for a patient in 2006. The orders are as follows:

Date	Order
10/18/06	Radiology: •Xr Abd Compl W/Flat/Erect [BMHCC-Coll]
11/06	Radiology: •Xr Abdomen 2 Views [SFH]
01/06	Radiology: •Ct Abd+pelv W/Con O# [BMHCC-Coll]
01/06	Radiology: •Ct Abd+pelv W/Con O# [BMHCC-Coll]
01/06	Radiology: •Ct Pelvis With Contrast [SFH] •Ct Ab-domen With W/O Contrast [SFH] •Xr Abdomen 2 Views [SFH]
01/06	Radiology: •Xr Abdomen 2 Views [BAR]
01/06	Radiology: •Abdomen Acute Series [BMHCC-Mem]
01/06	Radiology: •Ct Pelvis With Contrast [BAR] •Ct Ab-domen With W/O Contrast [BAR]
01/06	Radiology: •Nm Gastric Emptying Study [SFH]
01/06	Radiology: •Ct Ab-domen With W/O Contrast [SFH]
01/06	Radiology: •Xr Chest 1 View [SFH]
01/06	Radiology: •Xr Abdomen 2 Views [SFH] •Talk Report [MED]
01/06	Radiology: •Abdomen Flat And Upright [BMHCC-Mem] •Chest Pa/Lat [BMHCC-Mem]
01/06	Radiology: •Ct Abd+pelv W/Con O# [BMHCC-Coll]
01/06	Radiology: •Ct Abd+pelv W/O Contrast [BMHCC-Mem]
01/06	Radiology: •Xr Abdomen 2 Views [SFH]
07/01/06	Radiology: •Xr Abdomen 2 Views [SFH]

This individual had over 40 ED visits to multiple emergency departments within a 7-month periods.
Options:
- more effective treatment in ED
- more effective care outside of ED

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6

What we have not resolved

We believe much more work is required:

- Public trust
- Provider trust
- Appropriate use
- Transparency
- Auditing and reporting
- Identity management
- Cost-effective integration with all certified clinical information vendors
- Medicaid vs. future medical markets
- Population data use vs. individual care

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7



Links:

- <http://www.volunteer-ehealth.org>
- <http://www.connectingforhealth.org/>
- http://www.mc.vanderbilt.edu/vcbh/ds/0606_privacy/
- <http://www.volunteer-ehealth.org/frisse/>
- <http://www.volunteer-ehealth.org/frisse/frisse-policy-confidentiality/>
- <http://www.volunteer-ehealth.org/news/info/2006/09/midsouth-ehealth-alliance-data-sharing.php>

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8

Additional slides

Screen shots of current system
Data are from a fabricated test data set

We can locate records and allow “opt out

Patent Search

Name: [text] [clear] [new]

Search/DOB/Gender

First name: [text]

Last name: [text]

Date of birth: [text] / [text] / [text]

Gender: [dropdown]

Search

Mark Unchecked All. (1) of 14 (1) of 14 (1) of 14

Please use the plus, minus, and hide button to toggle your selection.

ID	NAME	DOB	SEX	SSN	SITE	OPT
0000010001	T L VEH	02/01/1954	F	XXX-K3-5649	The Regional Medical Ctr	X
0000010002	TEST L VEH	02/01/1954	F	XXX-K3-5649	Baptist Memphis (East)	X
0000010001	TEST L VEH	02/01/1954	F	XXX-K3-5649	Baptist Women	07/04/2006
0000010001	TEST L VEH	02/01/1954	F	XXX-K3-5649	Baptist Collerville	10/11/2006
00001000101	TEST L VEH	02/01/1954	F	XXX-K3-5649	Memphis Managed Care - TLC	X
0000010005	JESSICA L VEH	02/03/1954	F	XXX-K3-5640	Baptist Collerville	10/18/2006
0000020005	JESSICA L VEH	02/03/1954	F	XXX-K3-5640	Baptist Women	06/13/2006
10005	JESS VEH	02/03/1954	F	XXX-K3-5640	Methodist Healthcare	12/18/2006
0000010007	JESS L EHEALTH	02/03/1954	F	XXX-K3-5640	Baptist Memphis (East)	X
00001000105	JESSICA V VEH	02/03/1954	F	XXX-K3-5640	Memphis Managed Care - TLC	X
0000010005	JESSICA V VEH	02/03/1954	F	XXX-K3-5640	The Regional Medical Ctr	X

We can show encounter data

The screenshot displays a medical software interface with the following sections:

- Top Navigation:** Includes tabs for Clinical, Labs, Calendar, Encounters, Claims, Demographics, and Print Summary.
- Patient Search:** A form with fields for Name, SSN, MRN, and Date of Birth, along with a gender dropdown and a search button.
- Patient Selection:** A list of patient records with checkboxes and buttons for 'View Selected' and 'View All'.
- Encounter Data:** A table showing encounter details for patient 0000010007. The table has columns for Facility, MRN, PafName, Service Date, Type, Visit Reason, and Diag. Code & Description.

Facility	MRN	PafName	Service Date	Type	Visit Reason	Diag. Code & Description
Methodist-TEST	10005	VEH, JESSICA L		E	CHEST AND RIGHT LEG PAIN	796.50 Unspecified chest pain<< 792.3 Pain in limb
Methodist-TEST	10005	VEH, JESSICA L		E	CHEST PAIN	796.50 Unspecified chest pain
BMHCC-C&D-TEST	0000030005	VEH, JESSICA L		O	VASC INSUFF DTEST NOS	557.9 Unspecified vascular insufficiency of aortic
BMHCC-C&D-TEST	0000030005	VEH, JESSICA L		O	SEM/CROUS CYST US IF NEEDED	
BMHCC-Wom-TEST	0000100005	VEH, JESSICA L		I	UTERINE LEIOMYOMA NOS	218.9 Leiomyoma of uterus, unspecified
BMHCC-Wom-TEST	0000030005	VEH, JESSICA L		O	MENSTRUAL DISORDER NEC	626.0 Other disorders of menstruation and other abnormal bleeding from female genital tract

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11

Our user interface is based on user feedback

The screenshot displays a medical software interface with the following sections:

- Top Navigation:** Includes tabs for Clinical, Labs, Calendar, Encounters, Claims, Demographics, and Print Summary.
- Patient Search:** A form with fields for Name, SSN, MRN, and Date of Birth, along with a gender dropdown and a search button.
- Patient Selection:** A list of patient records with checkboxes and buttons for 'View Selected' and 'View All'.
- Lab Data:** A table showing lab results for patient 0000010007. The table has columns for Blood Gas, Cardiac, All, Albumin, and ALP.

Blood Gas	Cardiac	All	Albumin	ALP
Chem	Home	ALT	Anion Gap	AST
Micro	Other Labs	BUN	Calcium	Chloride
		CO2	Creatinine	Glucose
		HDL	Hemoglobin A1C	LDL
		Potassium	Sodium	Total Bilirubin
		Total Cholesterol	Total Protein	Triglycerides
		TSH		
- Lab Panels:** A list of lab panels including CMP, HEPP, Lipids, CBC, PT/INR, LAB, UA, and BMP.
- 'Chemistry' labs:** A list of chemistry lab results for patient 0000010007, including Sodium, Potassium, Chloride, Carbon Dioxide, Urea Nitrogen, Glucose, Creatinine, Alkaline Phosphatase, and Anion Gap.

We can now display data across institutions

The screenshot displays a web-based interface for a medical information system. At the top, there are navigation links: Home, Lab, Calculator, Encounter, Orders, Demographics, and Print Summary. Below this is a 'Patient Search' section with fields for Name (Last, First), Date of Birth (MM/DD/YYYY), and Gender (Select gender). A 'Search' button is located below these fields. To the right of the search fields are buttons for 'Blood Chem', 'Chem', 'Micro', 'Carb', 'Home', and 'Other Labs'. Below the search section is a 'Patient Selection' table with columns for Site, NIN / DOB, and a list of test results. The main content area shows a 'Lab' section with buttons for 'Blood Chem', 'Chem', 'Micro', 'Carb', 'Home', and 'Other Labs'. Below this is a 'Lab Panels' section with buttons for 'CMP', 'HDL', 'Lipid', 'CBC', 'PT/INR', 'LAB', 'UA', and 'DM'. The main data area displays a table for a 'CMP (Comprehensive Metabolic Panel)' for patient ID 0000010007. The table has columns for Date, Location, Ab, ALP, ALT, Amis, Cop, AST, Bilirub, BUN, Ca, Cl, CO2, Creat, Glu, K, Na, and Ppt. The data rows show results for various dates and locations, with some values highlighted in green or red to indicate abnormal results.

Date	Location	Ab	ALP	ALT	Amis	Cop	AST	Bilirub	BUN	Ca	Cl	CO2	Creat	Glu	K	Na	Ppt
07/10/06 21:47	MH-South-TEST	4.4	72	25	9		25	0.9	10	9.4	105	23	1.3	115	3.8	137	8.6*
06/17/06 18:15	MH-South-TEST	4.1	69	19	10		29	0.6	12	8.5	103	21*	1.1	88	4.8	134*	7.7
05/21/06 13:25	EMHCC-West-TEST	4.0	78	33			14	0.3	10	9.3	104	28	0.9	98	5.0	140	7.4
05/21/06 17:23	MH-South-TEST	4.1	76	21	4*		20	0.5	12	9.1	107	26	1.0	108	4.0	137	8.1*
05/11/06 04:23	EMHCC-Cab-TEST	1.9	79	35			11*	0.52	6*	8.2	111	31	1.0	99	4.2		
05/10/06 06:45	EMHCC-Cab-TEST	1.7	90	45			14*	0.55	14	9.1	108*	26	0.9	90	3.4		
03/17/06 08:42	MED-TEST	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0*	-	-
03/17/06 00:08	MED-TEST	-	-	-	5.0	-	-	-	11*	9.0	102	31	0.9	125*	5.1*	138	-
03/16/06 06:59	MED-TEST	3.6	93	18	8.0	24	0.4	6*	9.4	101	29	0.8	166*	4.7*	138	7.7	
03/15/06 18:11	MED-TEST	-	-	-	4.8	-	-	8	8.3*	99*	30	1.0	140*	2.8*	134*	-	-

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13