Nationwide Health Information Network Forum

Overview of Indiana HIE Activities

Victoria M. Prescott, JD
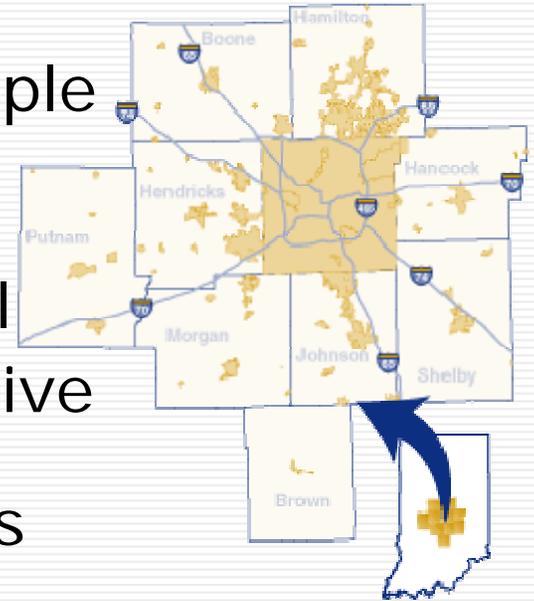General Counsel and Business Development Specialist
Regenstrief Institute

Presented – January 26, 2007

Indiana Landscape

- Indiana state laws favorable to HIE uses:

  Treatment, Research, Public Health, Healthcare Operations (*e.g.,**** Quality)***

- Indianapolis MSA has 1.6MM people which is 25% of state population

- Indianapolis has 5 major hospital systems that are highly competitive

- ~3,900 physicians in Indianapolis

Current HIE Activities in Indiana

- Results Delivery / Clinical Messaging
- Sharing Patient Clinical Data at POC
- Deliver Med Hx for Med Reconciliation
- ePrescribing
- Decision Support (e.g., reminders)
- Quality Reporting
- Research (e.g., de-identified)
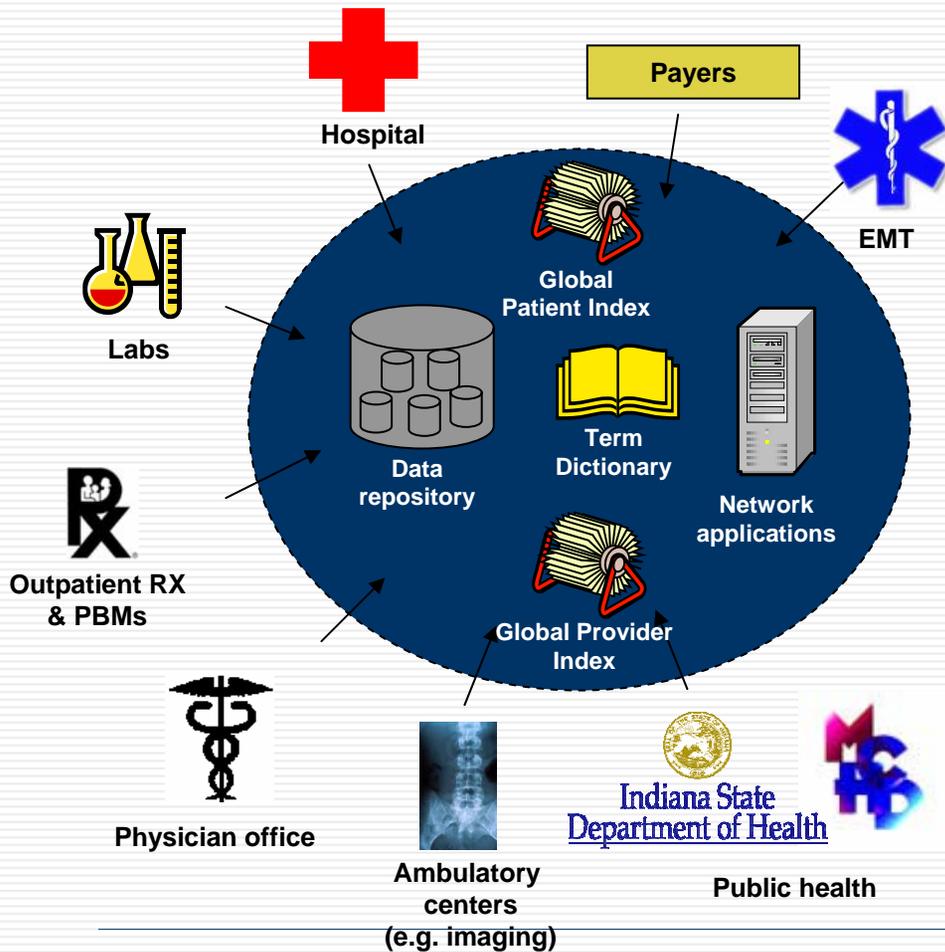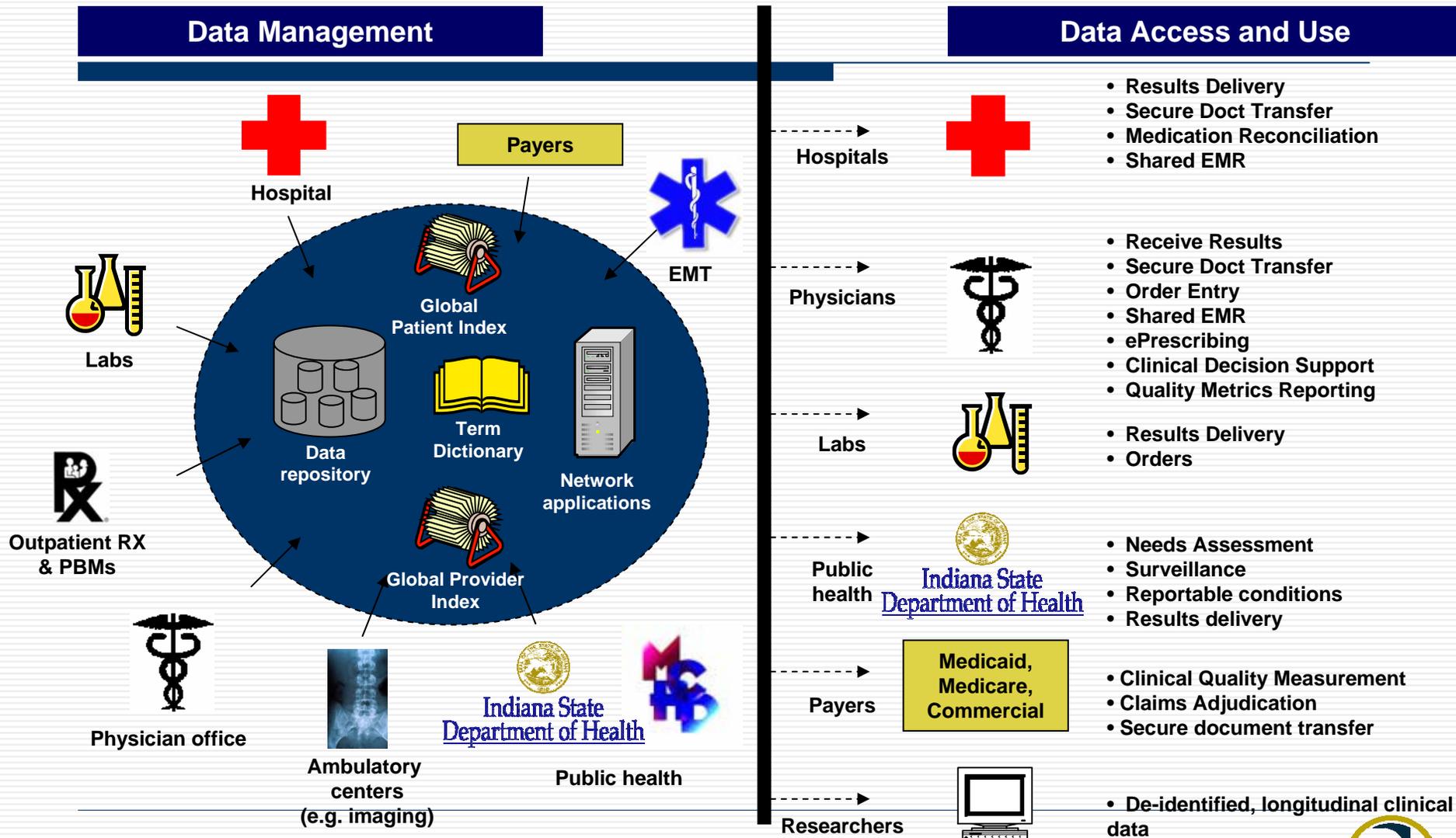- Public Health (e.g., biosurveillance)

Indiana Approach

- Did not happen overnight
- Trust-building over time
- Started small (just 2 Hs, just labs)
- Focused on what is most valuable info for providers to know for treatment
- Mutual agreement on uses
- Considered multiple uses of data from day one

Mantra: *Data Reuse*

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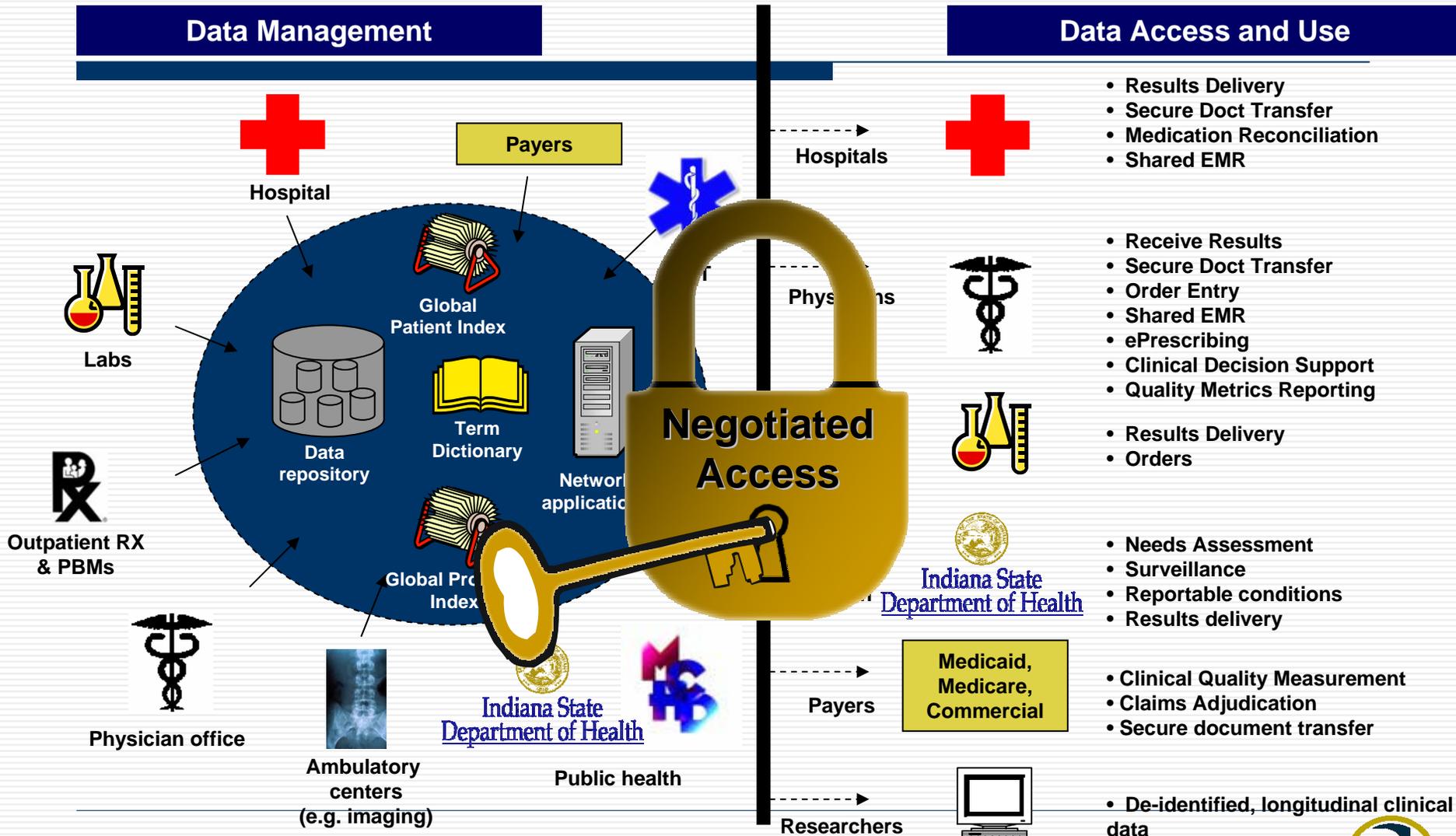
Mantra: *Data Reuse*

Data Management

Data Access and Use

Hospital

Payers

Global Patient Index

Labs

Data repository

Term Dictionary

Network application

Outpatient RX & PBMs

Negotiated Access

Global Provider Index

Physician office

Indiana State Department of Health

Ambulatory centers (e.g. imaging)

Public health

Hospitals
- Results Delivery
- Secure Doct Transfer
- Medication Reconciliation
- Shared EMR

Physicians
- Receive Results
- Secure Doct Transfer
- Order Entry
- Shared EMR
- ePrescribing
- Clinical Decision Support
- Quality Metrics Reporting

- Results Delivery
- Orders

Indiana State Department of Health
- Needs Assessment
- Surveillance
- Reportable conditions
- Results delivery

Payers — Medicaid, Medicare, Commercial
- Clinical Quality Measurement
- Claims Adjudication
- Secure document transfer

Researchers
- De-identified, longitudinal clinical data

Indiana Network for Patient Care

- Data Sources:
  - 29 hospitals (99% of non-office care)
  - Regional and national labs
  - 4 homeless care systems
  - Local radiology centers
  - Public health departments (county and state)
  - > 1/3 ambulatory physicians
  - Pharmacy Benefit Managers
  - Payers (Medicaid, commercial)

Indiana Network for Patient Care

- Types of Data:
  - Lab Results
  - Radiology
  - Pathology
  - Transcribed Notes
  - EKG
  - Admission, Discharge, Transfer
  - Medications
  - Physician Orders
  - Death records
  - Vital signs
  - Immunizations

Indiana Network for Patient Care

- Statistics:

- > 95 data feeds coming in

- > 900,000,000 records

- Data on > 3,000,000 patients

- Receive > 5,000,000 messages per month

- > 10 terabytes of data

Indiana Network for Patient Care

- Push clinical abstract to printer in ED

DEMO,JOHNATHAN DOE   #99999999-8 Phone:925-1443 Age:54yr Race:B Sex:M

EMERGENCY CARE ABSTRACT

ER CHIEF COMPLAINT
VOMITING/DIARRHEA/BACK PAIN/HEADACHE 06-MAY-98

HISTORY & PHYSICAL

DX & COMPLAINTS		14-JAN-97
diabetes mellitus		
TB active		
anemia othr		
foot ulcer[s]		
urine retention		
decubitus ulcer		

E.R. DIAGNOSIS		24-APR-97
hyperglycemia		
otitis media		
crush injury		

BLOOD TYPE

PRENATAL ABO RH		24-APR-97
INDIRECT AGT	NEGATIVE	
Rh	positive	
ABO GROUP	AB	
ANTIBODY SCREEN	neg	05-FEB-91

VITALS

OUTPATIENT VITALS		24-APR-97
WEIGHT LBS	98 LBS	
SYS BP SITTING	116 MM HG	
DIAS BP SITTING	81 MM HG	
PULSE	71 /MIN	
TEMPERATURE	98.7 (a) DEG F	
(a) From MEDICINE		

INPATIENT VITALS		12-FEB-91
WEIGHT AUTO	91.6 LBS	
TEMP AUTO ORAL	97.5*L DEG F	31-JAN-91
PULSE AUTO	80 /MIN	12-FEB-91

CHEMISTRY (continued)

CHEM 16		24-APR-97
SGPT (ALT)	28 UNITS	
CK	109 UNITS	16-JAN-91
AMYLASE	<30*L UNITS	
GGT	40 IU/L	24-APR-97

HEMATOLOGY

BLOOD CELL PROFILE		24-APR-97
WBC	3.5*L THOU/CU MM	
RBC	3.88*L MILL/CU MM	
HGB	12.5*L (a) G/DL	
HCT	37.3*L %	
MCV	95.9*H fl	
MCH	32.2*H PG	
MCHC	33.6 G/DL	
RDW	15.5*H %	
(a) From IUMC Lab		

DIFFERENTIAL		24-APR-97
PLT EST	DECREASED	

COMMON HEMATOLOGY STUDIES		24-APR-97
PLT CT	82.0*L THOU/CU MM	
RETIC CT	5.7*H %	06-FEB-91
VITAMIN B12 LVL	1013 PG/ML	16-OCT-89
FOLATE LVL	6.0 NG/ML	11-MAY-87
IRON-SATURATION	38*H %	02-NOV-90

ROUTINE COAG		24-APR-97
PT CONTROL	12.0 SEC	30-JUL-87
PROTIME (ISI1)	17.8*H SEC	24-APR-97
INR	1.4*H	
APTT PATIENT	DUPLICATE(a) SEC	

URINE STUDIES (continued)

COMMON URINE STUDIES		27-JAN-91
CREAT:URN	47 MG/DL	14-AUG-90
CREAT-TM:URN	0.56*L G/TV	16-DEC-89
CREAT CLR RATE	NO SPECIM(a) ML/MIN	
		24-APR-97
CREAT SER	0.6 MG/DL	16-DEC-89
CREATININE:URN	19.0*L MG/DL	
(a) NO SPECIMEN RECEIVED IN LAB		

THYROID STUDIES

THY		05-JAN-90
T3 UPTAKE RATIO	0.78*L	

PULMONARY

BLD GAS PANEL 1		24-APR-97
TEMPERATURE	98.7 (a) DEG F	
HGB	12.5*L (b) G/DL	
(a) From MEDICINE		
(b) From IUMC Lab		

CARDIOVASCULAR

CARDIAC ECHO		22-NOV-89
cardiomegaly mod		
LV motion nml		

EKG		30-MAR-98
normal sinus rhythm, normal ECG		

RADIOLOGY/NUCLEAR MED

CHEST PA & LATERAL		11-FEB-91
HOSP		
right		
fluid NOS		

Indiana Network for Patient Care

- Online access to clinical data on a patient in the hospital is limited by:
  - Time
  - Location
  - User

years [WISHARD]   OVERHAGE,JOSEPH M

| Select a patient | Browse Patient Record | Other |

Browse Patient Record»Flowsheet

| Hide Menu | Graph | Setup | Next | Prev | Praxis [   ] | Logout | Help |

Active Labs
Flowsheet
Clinical Synopsis
REPORTS
  ALL REPORTS
  Admission/Discharge
  Cardiology
  Operative
  Pathology
  Radiology
  Visit/Procedure Notes
  Nurse/PA/PT/OT/Diet
  Cytology
  GI Procedures
Face Sheet
Appointment History
Orders
ENCOUNTERS
  Brief
  Detailed
PRESCRIPTIONS
  Inpatient
  Outpatient
Surgery Log

| ACA TESTS | ☐ Bili-tot | ☐ Bili dir' | ☐ Bili indir |

	Bili-tot	1.5*H {m} ♀	1.8*H {n} ♀	1.2 {n} ♀	1.9*H {o} ♀	1.2 {o} ♀	Units
☐ Sgot					42*H {l} ♀	42*H {l} ♀	43*H {l} ♀	UNITS/L
☐ Lactate							mmol/L
☐ Ggtp	Bili dir'	0.5*H {n} ♀	0.3 {n} ♀	1.1*H {o} ♀	0.7*H {o} ♀	UNITS/L
☐ Lipase						UNITS/L
☐ Aca panel 1	Bili indir			0.8 {o} ♀	0.5 {o} ♀

{l} - From WISHARD,

{m} - From Methodist Lab (SQLAB),
{n} - From Methodist Archive Lab, 70
{o} - From WISHARD, 0879309-3 Y

BILIRUBINS												3-Nov-86 20:40	U
☐ Bili-tot													2.0*H {o}	m
☐ Bili dir												{o} ♀		2.0*H {o}	m
☐ Bili indir				0.8 {o} ♀	0.5 {o} ♀	1.3*H {o} ♀	2.0*H {o} ♀	2.0*H {o} ♀	1.2*H {o} ♀	1.2*H {o} ♀	1.0*H {o} ♀	1.5*H {o} ♀	m

{m} - From Methodist Lab (SQLAB)
{n} - From Methodist Archive Lab, 7
{o} - From WISHARD, 0879309-3 Y

SMA12'	16-Aug-87 06:00	15-Aug-87 18:58	14-Jul-87 17:13	24-Mar-87 06:00	10-Mar-87 16:02	18-Dec-86 06:29	30-Nov-86 14:43	27-Oct-86 06:00	Units
☐ Albumin (sma)	3.2*L {p} ♀	3.6*L {p} ♀	3.4*L {p} ♀	3.1*L {p} ♀	4.2 {p} ♀	3.4*L {p} ♀	3.8 {p} ♀	3.9 {p} ♀	g/dL
☐ Alk phos (sma)	169*H {p} ♀	205*H {p} ♀	212*H {p} ♀	324*H {p} ♀	143*H {p} ♀	145*H {p} ♀	123 {p} ♀	122 {p} ♀	UNITS/L
☐ Bun (sma)	3*L {p} ♀	2*L {p} ♀	5*L {p} ♀	3*L {p} ♀	6*L {p} ♀	2*L {p} ♀	2*L {p} ♀	6*L {p} ♀	mg/dL
☐ Calcium (sma)	8.3*L {p} ♀	8.7 {p} ♀	8.4 {p} ♀	8.7 {p} ♀	9.1 {p} ♀	8.7 {p} ♀	9.2 {p} ♀	8.9 {p} ♀	mg/dL
☐ Chol (sma)	85*L {p} ♀	88*L {p} ♀	107*L {p} ♀	100*L {p} ♀	109*L {p} ♀	104*L {p} ♀	104*L {p} ♀	94*L {p} ♀	mg/dL
☐ Creat (sma)	0.5 {p} ♀	0.4 {p} ♀	0.6 {p} ♀	0.5 {p} ♀	0.4 {p} ♀	0.4 {p} ♀	0.3*L {p} ♀	0.5 {p} ♀	mg/dL

New Messages

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address http://falcon.iupui.edu:7713/:REGEN/0//load/top.subdoc Go Links

DEMO,JONATHAN DOE #99999999-8 @REGEN_DEVELOP M Age: 57 years   BARNES,MIKE

Select a patient   Browse Patient Record   Other   Browse Patient Record»Flowsheet

Chronologic Results
Flowsheet
Clinical Synopsis
REPORTS
    ALL REPORTS
    Discharge Summaries
    Miscellanous
    Operative
    Pathology
    Radiology
    Face Sheet
    Orders
ENCOUNTERS
    Brief
    Detailed
PRESCRIPTIONS
    Inpatient
    Outpatient
Advance Directive
Surgery Log
nrf_inq_tst_one
Echocardiogram

DEMO,JONATHAN DOE #99999999-8 @REGEN_DEVELOP M 57yr

Zoom Out Fully Zoom Out Zoom In Left Right Help

Up to Top Up One Down One Delete **WBC #**

T H O U / C   31 21 11

Up to Top Up One Down One Delete **RBC #**

M I L L / C

Up to Top Up One Down One Delete **HCT Bld**

%   55 45 35 25

TIME ▶   1987   1988   1989   1990   1991

[OLDER] May 25, 1986   **Years and Months**   Nov 17, 1991 [NEWER]

Hide Menu   Logout Help   Return to flowsheet

form: FORM_0   Internet
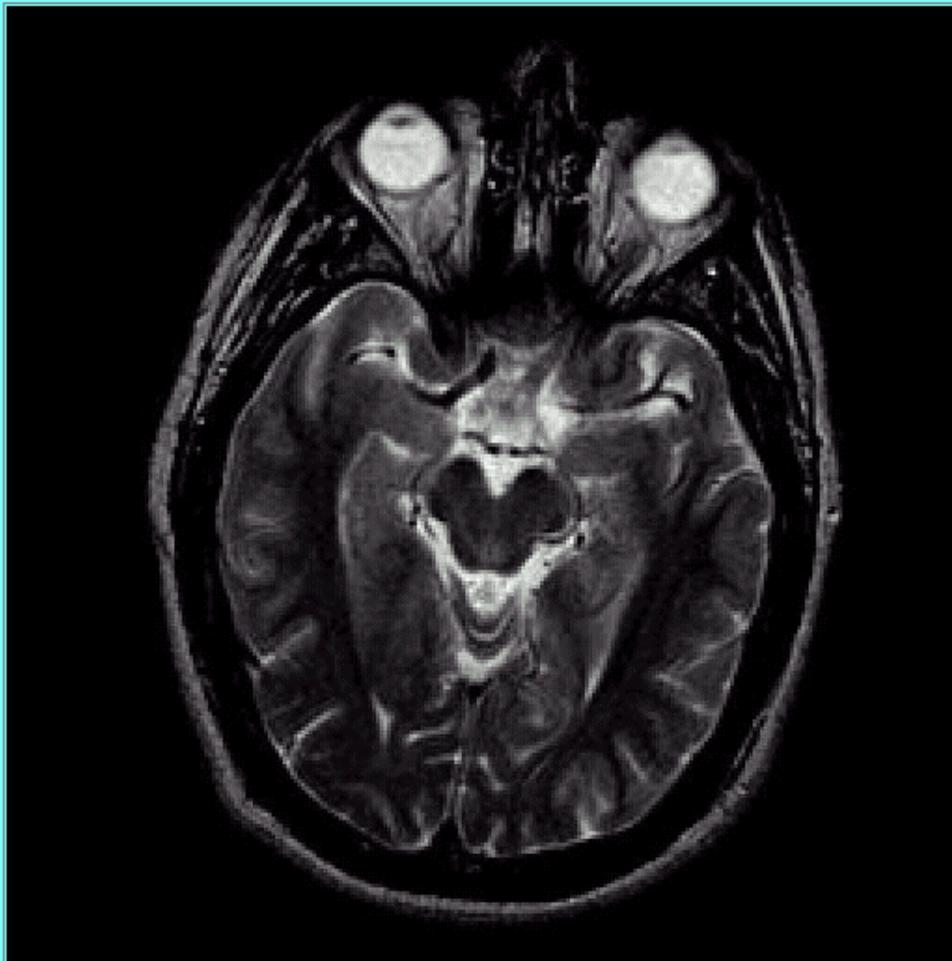
Help   Logout   Cancel   OK

SELLA TURCICA MRI
MRI SELLA-PITUITARY
W/CONTRAST
11-May-00 08:02 AM

StepSize: 1

Series:4 Image:8 Of: 19
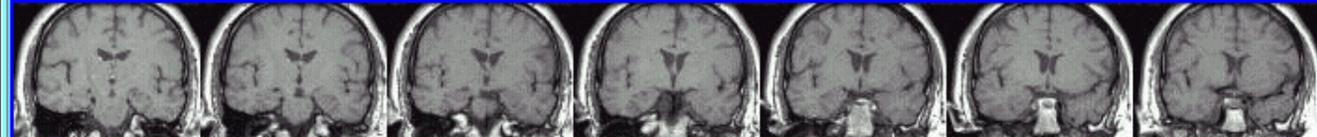
Zoom:
1/4   Full   4x

Window Level Controls:
W: 0   L: 0   apply
or pick preset: Uniform

Select series:
(1)[15] T1;Spin Echo;SAG T1
(2)[15] T1;Spin Echo;COR T1
(3)[15] T1;Spin Echo;COR T1
(4)[19] Series 4;Spin Echo;AX
(5)[19] Series 5;Research Mo
(6)[16] T1;Spin Echo;SAG LC

Atlas

i008   i009   i010   i011   i012   i013   i014

Contact Sheets for T1;Spin Echo;COR T1 **ScanSequence**:SE **ScanOptions**:GRAPH_GEMS\NPW \CS_GEMS \SP [15] leveled for MRA

DOCS4DOCS® Clinical Messaging

- Clinical results (e.g, lab) delivered:
    - Directly into the physician's EMR
    - To physician practice electronic inbox
    - Via fax
    - None are mailed
- 3,900 physicians
- Deliver > 1,000,000 results / month

DOCS4DOCS®

#2 Gross, Betsy
Dr. Cushing

DOCUMENT

Document INBOX

General
Inbox
Inbox History
Report Search
System Messages
Help
Logout

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Holds all new documents.

Filters: | Select All | Unselect All | Selected Providers | Selected Patients | Checkmark first-last |

Actions: | Review Selected | Print/Keep | Print/Remove | Remove Selected | Forward Selected |

	Provider	MRN	Patient Name	Arrival	!	Doc Type	Doc Details
☐	Cushing, Herbert E.			2006 01/27 01:00 PM	❗✉	Lab	**STAT** AMYLASE SERUM [Forwar
☐	Cushing, Herbert E.			2006 01/26 03:20 PM		Transcription (Clarian)	New Patient Evaluation
☐	Cushing, Herbert E.			2006 01/26 05:50 PM		Lab (Clarian Indiana University)	ALT SerPl QN
☐	Cushing, Herbert E.			2006 01/26 05:50 PM		Lab (Clarian Indiana University)	AST SerPl QN
☐	Cushing, Herbert E.			2006 01/19 10:50 AM		Lab (Clarian Indiana University)	Creatinine SerPl QN
☐	Cushing, Herbert E.			2006 01/19 10:50 AM	⚠	Lab (Clarian Indiana University)	Lipid Panel SerPl QN
☐	Cushing, Herbert E.			2006 01/19 04:50 PM	⚠	Lab (Clarian Indiana University)	CD4 Followup
☐	Cushing, Herbert E.			2006 01/20 06:20 AM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/19 02:10 PM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/26 10:40 AM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/25 11:21 AM	⚠	Lab (Clarian MW)	CBC
☐	Cushing, Herbert E.			2006 01/25 11:21 AM	⚠	Lab (Clarian MW)	Auto Diff
☐	Cushing, Herbert E.			2006 01/25 12:20 PM		Lab (Clarian MW)	Creatinine SerPl QN
☐	Cushing, Herbert E.			2006 01/25 02:30 PM	⚠	Lab (Clarian MW)	Vancomycin Pre SerPl QN
☐	Cushing, Herbert E.			2006 01/19 02:10 PM		Transcription (Clarian)	New Patient Evaluation
☐	Cushing, Herbert E.			2006 01/20 01:30 PM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/19 04:00 PM		Transcription (Clarian)	Discharge Summary
☐	Cushing, Herbert E.			2006 01/20 09:50 AM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/25 09:20 AM		Radiology (Clarian)	CT Lower Extremity With Contra
☐	Cushing, Herbert E.			2006 01/26 10:30 AM		Transcription (Clarian)	New Patient Evaluation
☐	Cushing, Herbert E.			2006 01/19 02:10 PM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/26 02:20 PM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/19 02:10 PM		Transcription (Clarian)	Return Clinic Visit
☐	Cushing, Herbert E.			2006 01/20 10:10 AM		Transcription (Clarian)	Return Clinic Visit

Medication Reconciliation

Methodist Hospital
Emergency Medicine and
    Trauma Center
1701 North Senate Blvd
Indianapolis, IN 46206

MEDICATION HISTORY

Name: Mkhemtest, mhtest
MRN: 007222030
DOB: 09/10/67 **Sex:** Female
Home: (457) 348-9794

Date: Mon 05/22/2005 01:23 PM   Visit: #04-054-000014   Account: 010001000234
Attending: Rougraf, Bruce T   Location: EMTC

PROPOXY-N/APAP 100-650 TAB

Dispensed: 2005-05-13   #16   at: CVS PHARMACY 1518729

NITROGLYCERIN 0.4 MG/HR PTC   ordered: AZ1044685
Dispensed: 2005-05-12 #30 at CVS PHARMACY 1518729

VERAPAMIL 240 MG TABLET SA   ordered: AB1315200
Dispensed: 2005-05-04 #60 at CVS PHARMACY 1518729
              2005-03-28 #60
              2005-02-15 #60
              2005-01-13 #60

a light green,
oblong, scored,
film-coated tablet
imprinted with
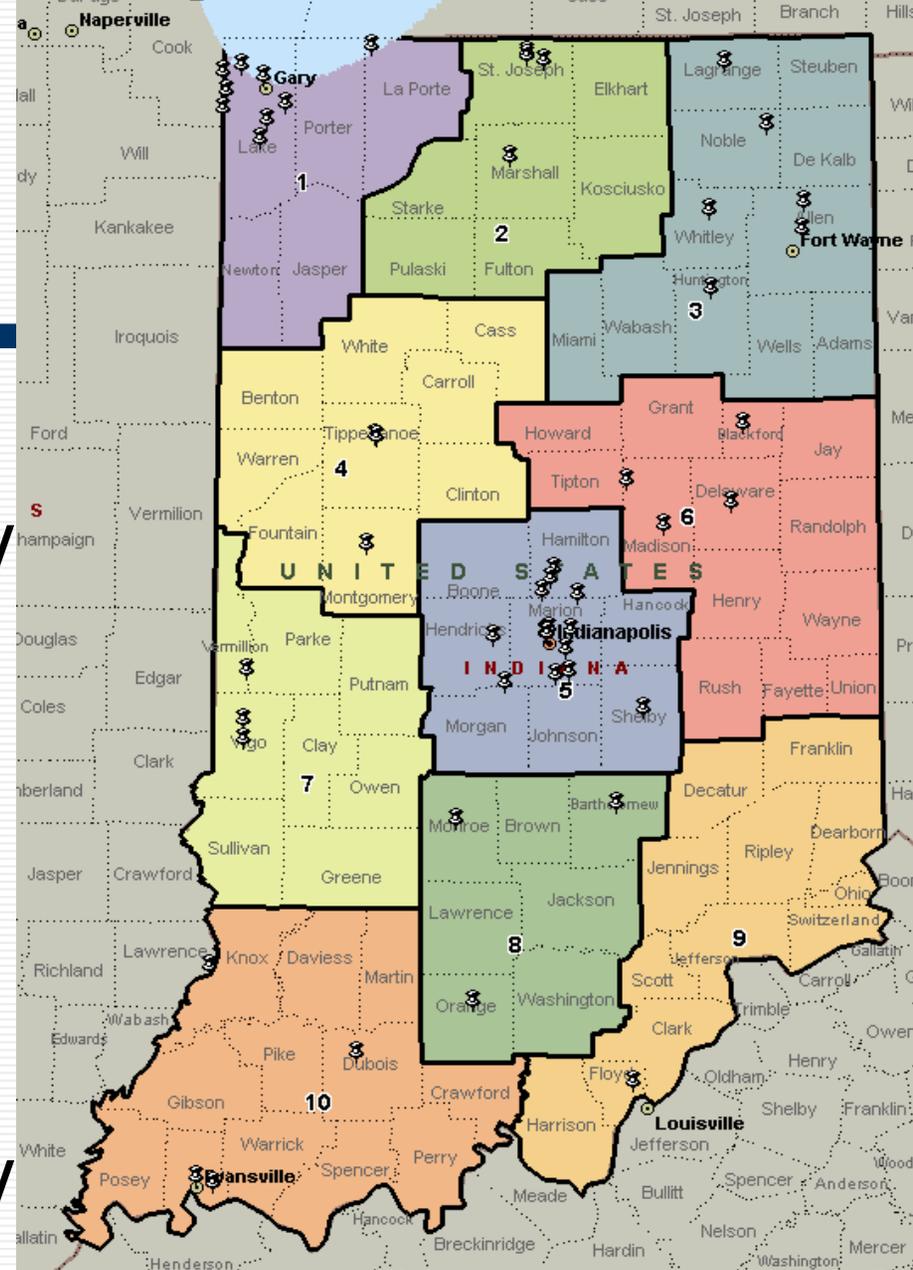"logo and logo"
and "ST".

Medication Possession Ration 1.4

Public Health

- Disease Reporting
- Lab Result Delivery
  (thru DOCS4DOCS®)
- Syndromic
  Surveillance
  - 69 hospital EDs
  - 6,000 visits/day
- Other data delivery

Quality Reporting (Quality Health 1st^{SM})

- Pay-for-Value with common measures across payers including efficiency and participation (~$10,000-$20,000/Dr.)
- Commercial, Medicaid and Medicare Payors (> 50% of market)
    - 880,000 lives
- Combines clinical *and* claims data
- Initially focused on primary care
    - Cardiovascular and Oncology to follow

Quality Reporting (cont'd)

- Physicians
  - Full detail measures on their own patients
  - Summary comparisons
    - Overall
    - Population (commercial, Medicare, Medicaid)
- Health Plans and PHOs
  - Full detail measures on their own members
  - Summary information across all patients by:
    - Participating physician
    - Specialty
    - Population (commercial, Medicare, Medicaid)

Future

- Continued expansion of INPC and DOCS4DOCS®

- Continue to find ways to use the data to improve care

- Continue to add new data sources

- Continue to work with public health

- Explore possibilities with pharma

- Helping other communities/states

Thank you

Questions?

Victoria M. Prescott, JD
General Counsel and Business Development Specialist
Regenstrief Institute
Tel: (317) 630-6277
Email: vprescott@regenstrief.org