

Regional Health Information Organizations

Building the Health Information
Infrastructure for the 21st Century

Agenda

- The Value of a RHIO
- How Does a RHIO Working
- Starting a RHIO
- How are RHIOs like Paul Revere?

The Case for RHIOs

- \$1.7 Trillion US Healthcare Economy
 - Adversely Effecting Overall Economy
- Quality Issues
 - 44,000 to 98,000 preventable deaths¹
 - 7,000 deaths from medication errors alone
- Parallel Effort with EHR Adoption
 - Investment in Interoperable Systems
- \$78B in National Annual Savings!²

1. Institute of Medicine, To Err is Human, 2000

2. Center for Information Technology Leadership, Healthcare Information Exchange and Interoperability (HIEI)

Current State

- 90% of healthcare transactions conducted via mail, fax, or phone.
- 81% of outpatient cases missing pertinent patient data
- Increasing interaction with multiple providers in multiple care settings

HIE Costs and Benefits

Costs

Implementation

Initial startup costs (year 1) for defined community

Cost Drivers

- Hardware
- Software
- Development
- Installation
- Training

Support

Annualized costs for maintenance of CDE from years 2-5 (assumes a 5-year CDE life cycle)

- Maintenance contracts for hardware/software
- Application support
- Ongoing help desk/systems administrator

Benefits

Web Enablement

Benefits to individual constituent of bringing own information online

Benefit Drivers

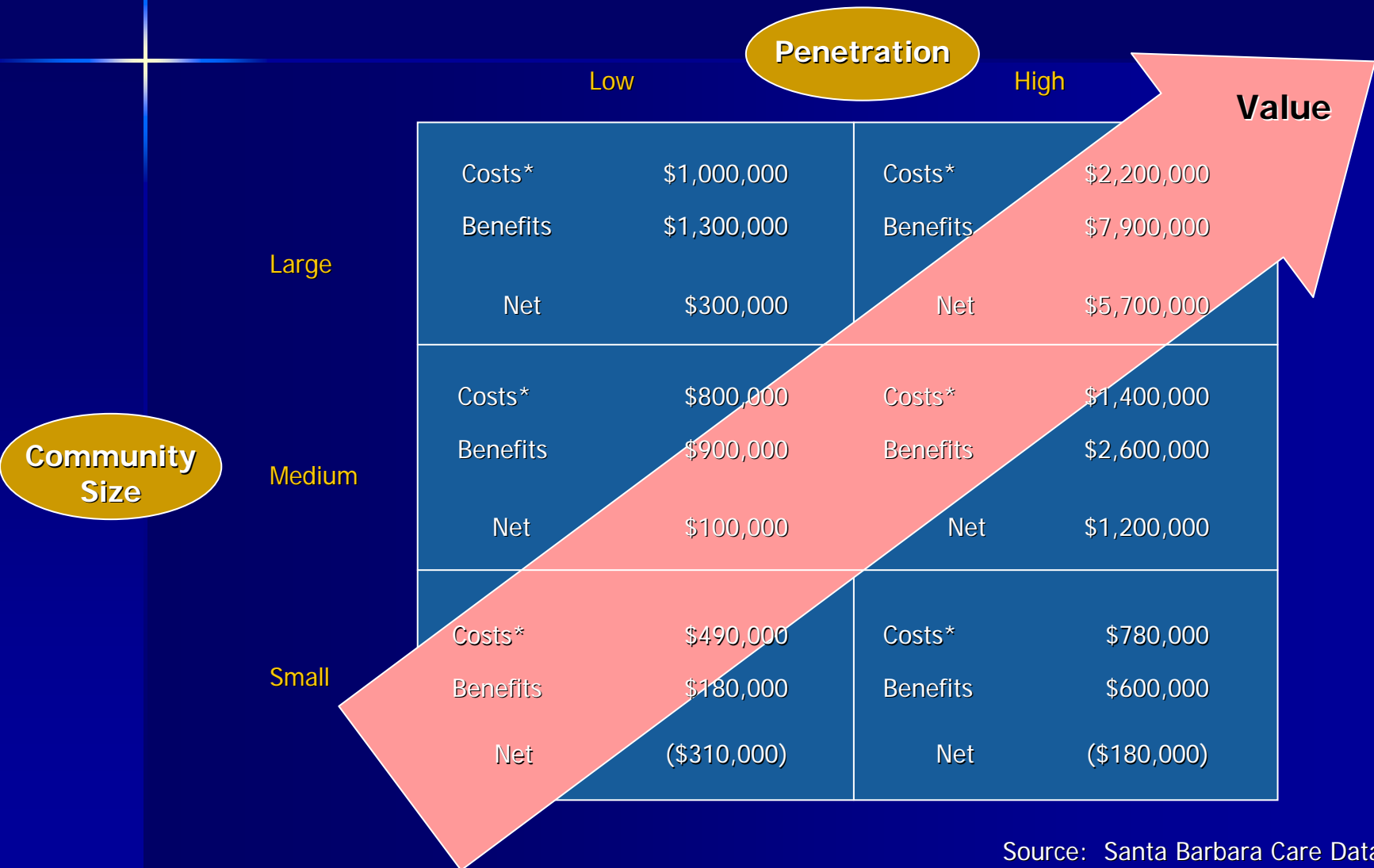
- Lab savings
- Radiology savings
- Staff savings
- Fewer readmissions

Network Benefits

Benefits to individual constituent of different health care constituents joining the network

- Fewer medical errors
- Enhanced lab revenue from proper coding
- Test duplication avoidance
- Staff savings

Community Size



Source: Santa Barbara Care Data Exchange

Levels of Interoperability

- Level 1: Non-electronic data
 - No use of IT to share information
 - Mail, telephone
- Level 2: Machine-transportable data
 - IT used to exchange of non-standardized information
 - Fax or PC-based exchange of scanned documents, PDFs
- Level 3: Machine-organizable data
 - Transmission of structured messages containing non-standardized data
 - E-mail of free text, proprietary file exchange, HL7 messages
- Level 4: Machine-interpretable data
 - Transmission of structured messages containing standardized and coded data
 - Discrete lab results using LOINC, problem list in ICD9-CM, etc.

Value of HIE

(\$ billions)	Cumulative, Years 1-10	Steady State, Year 11+
Level 2		
Benefit	14.1	21.6
Cost	0.0	0.0
Net Value	14.1	21.6
Level 3		
Benefit	286.0	44.0
Cost	320.0	20.2
Net Value	-34.2	23.9
Level 4		
Benefit	613	94.3
Cost	276	16.5
Net Value	337	77.8

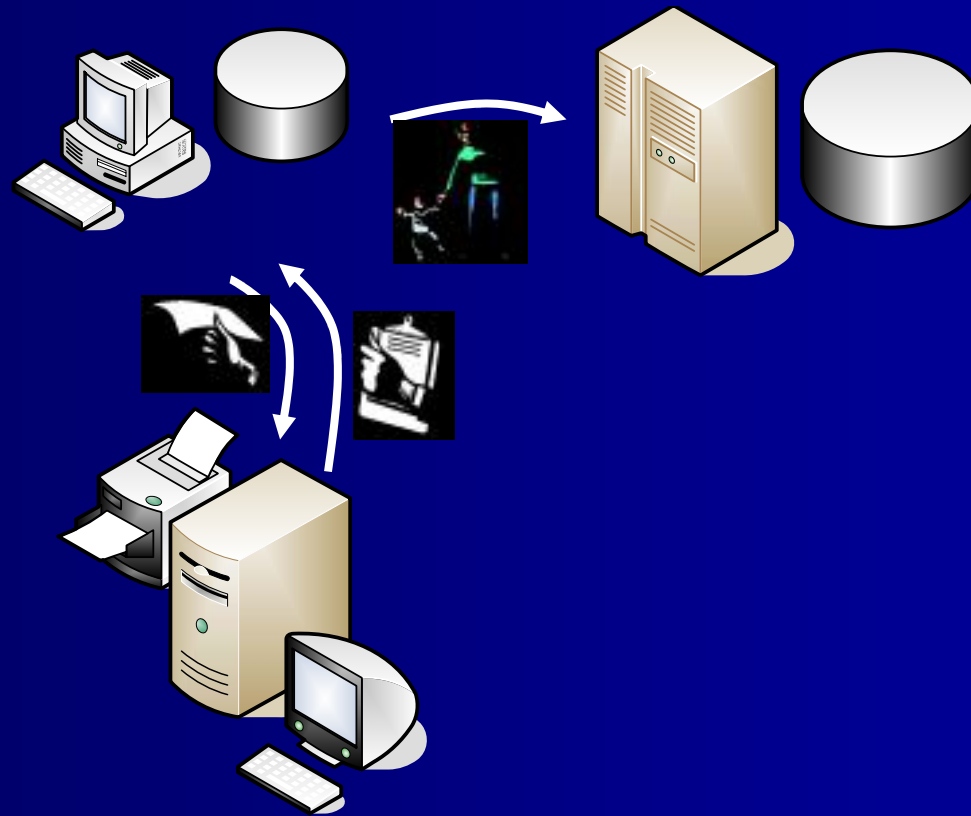
The Case for RHIOs



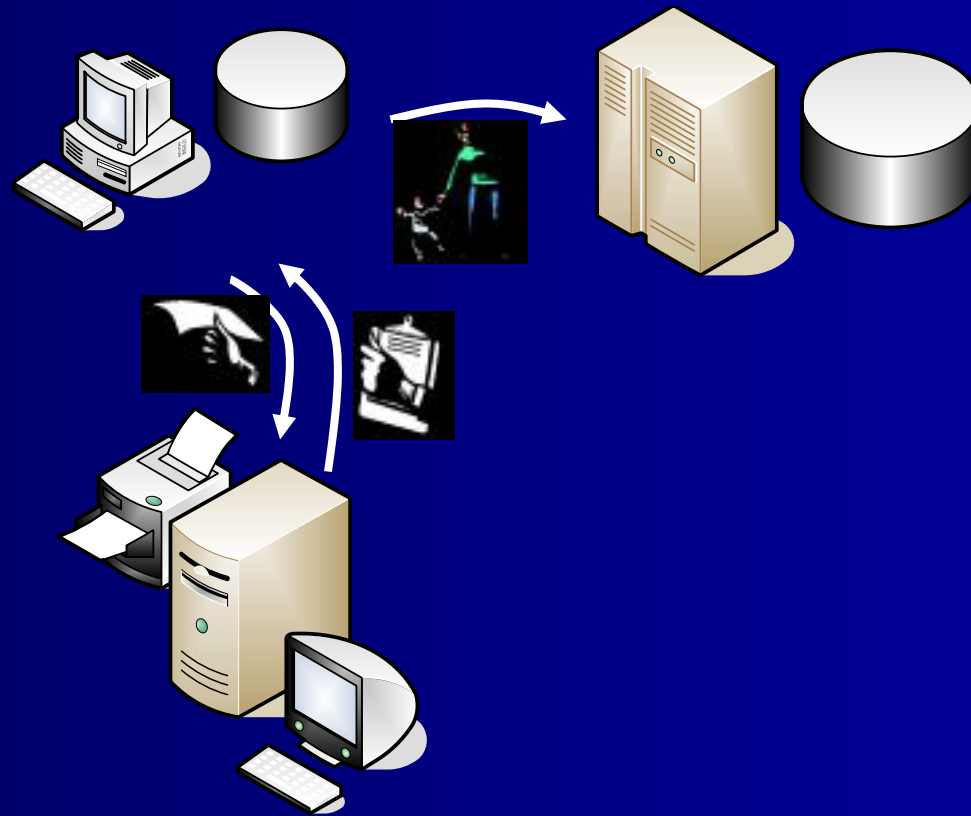
The Case for RHIOs



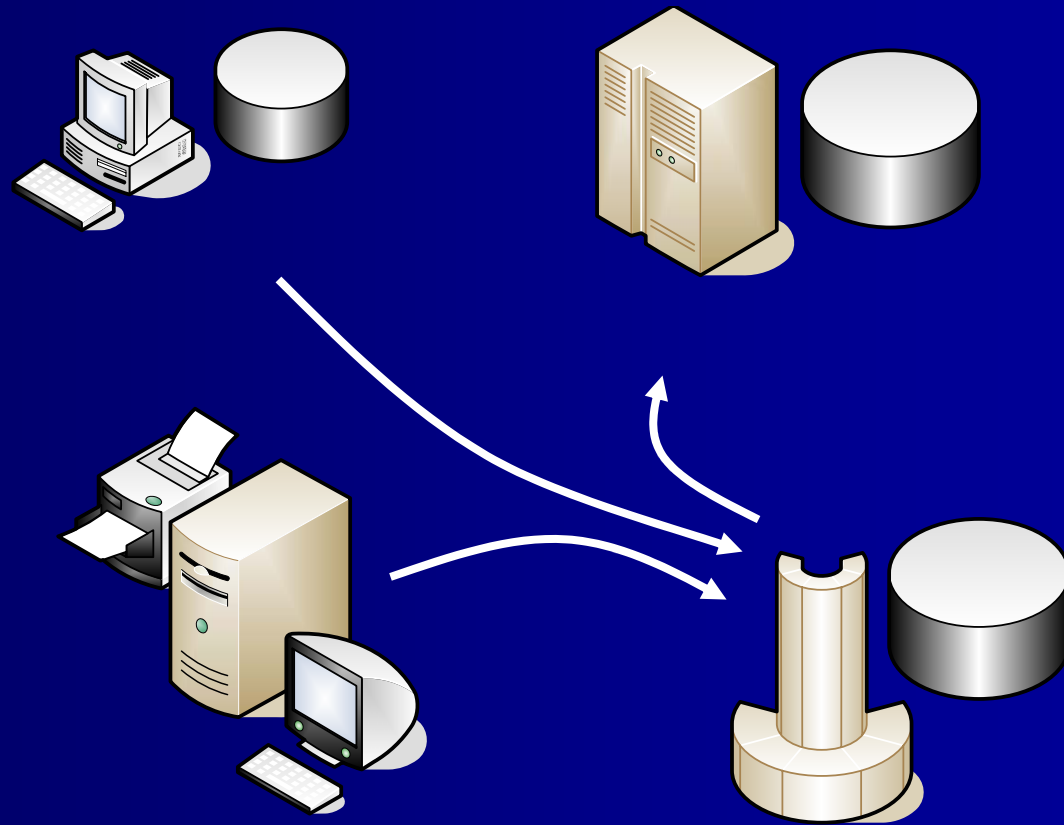
Islands of Automation



Centralized RHIO



Centralized RHIO



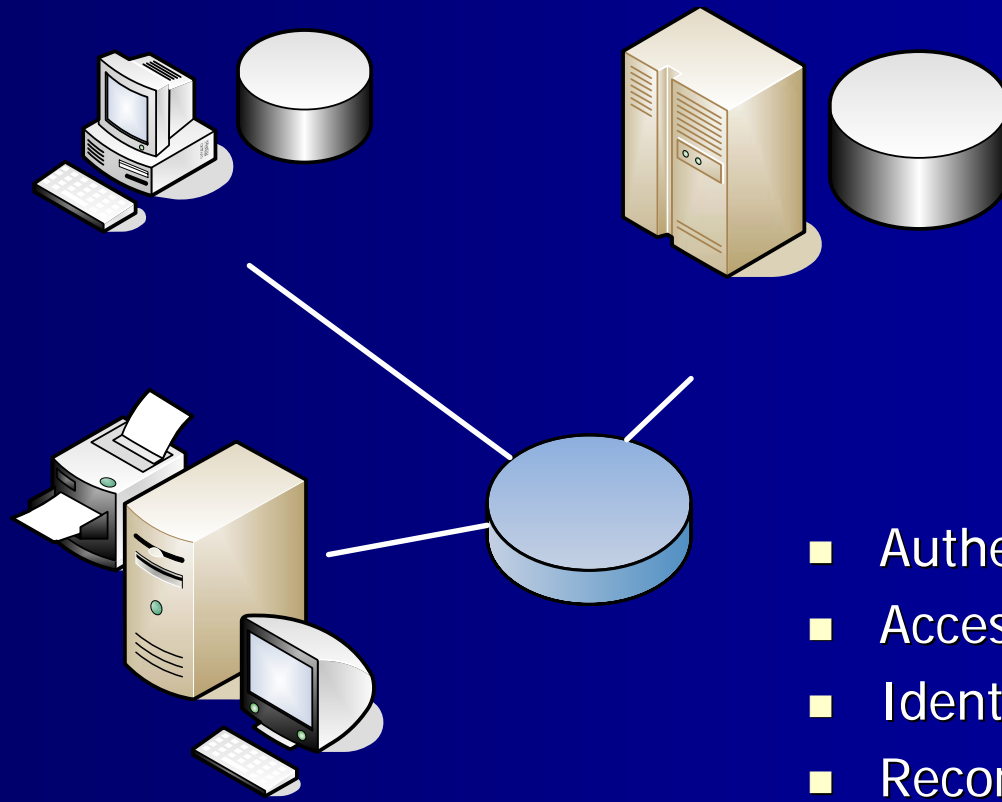
Benefits

- Clinical data access
- Quality
- Services reduction
- Performance

Challenges

- Data ownership
- Data replication
- Scalability
- Governance
- Funding

Distributed (Virtual) RHIO



- Authentication
- Access Control
- Identification
- Record Locator

Benefits

- Clinical data access
- Quality
- Services reduction
- Data ownership
- Data Replication
- Scalable

Challenges

- Governance
- Funding

RHIO Architecture

Users



– Physician Practices

- Thin client portal
- Connectivity to EHR
- Send and receive
- Access, authentication



– Consumers

- Thin client portal
- Connectivity to PHR
- Personal Information



HIE



– Authentication

- Account management
- Access control
- Permissions
 - Opt-in, opt-out
- Audit records



– Person Identification

- Correlates multiple identifier sources
- Patient matching
- Provider matching



– Record Locator

- Index to patient data
- Control at source

Sources

Hospitals



Reports



Rx



Radiology



Labs

Payers



Eligibility



Coverage

Service Providers



Rx



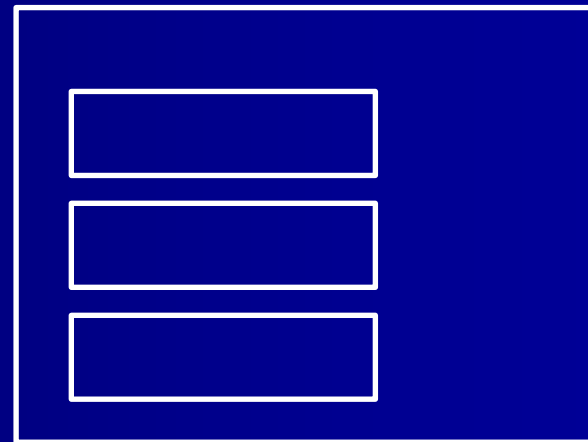
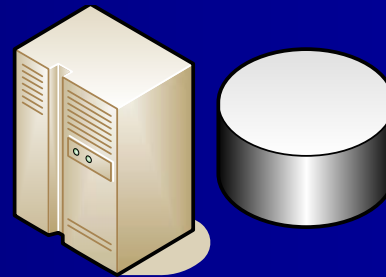
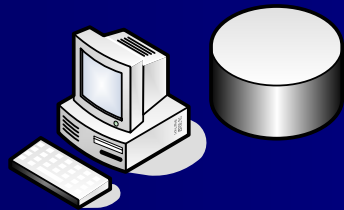
Radiology



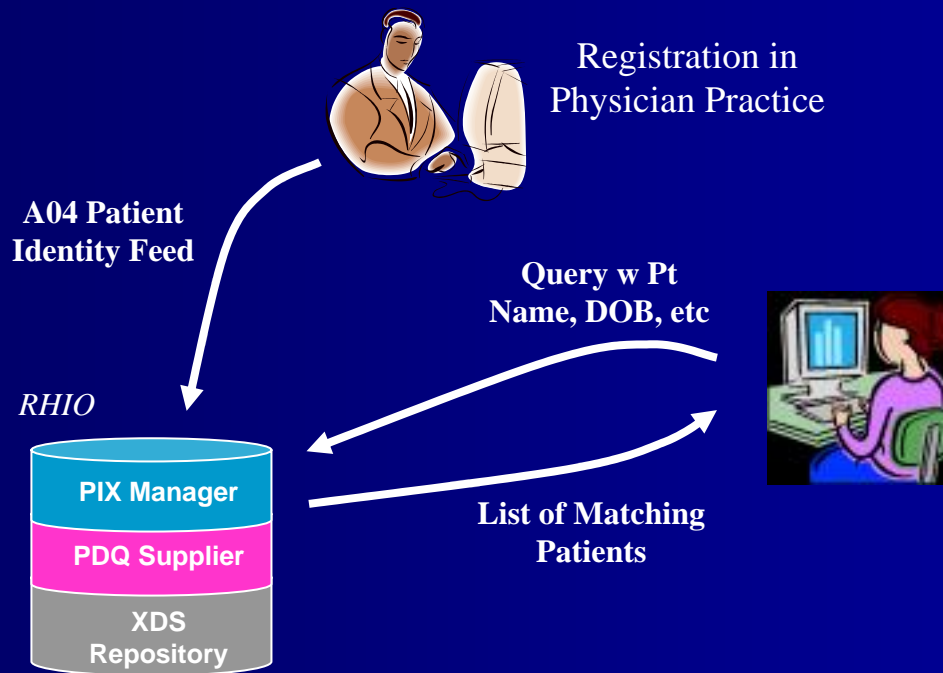
Lab



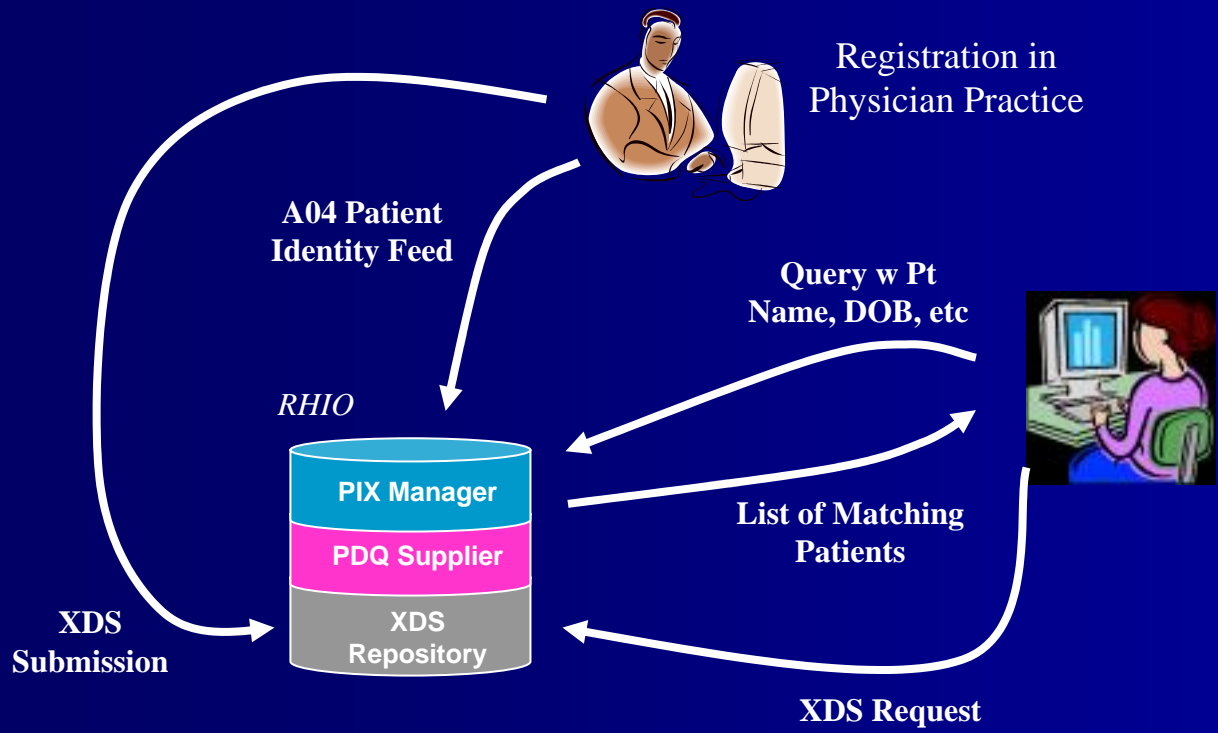
RHIO Information Flow



Patient Registration

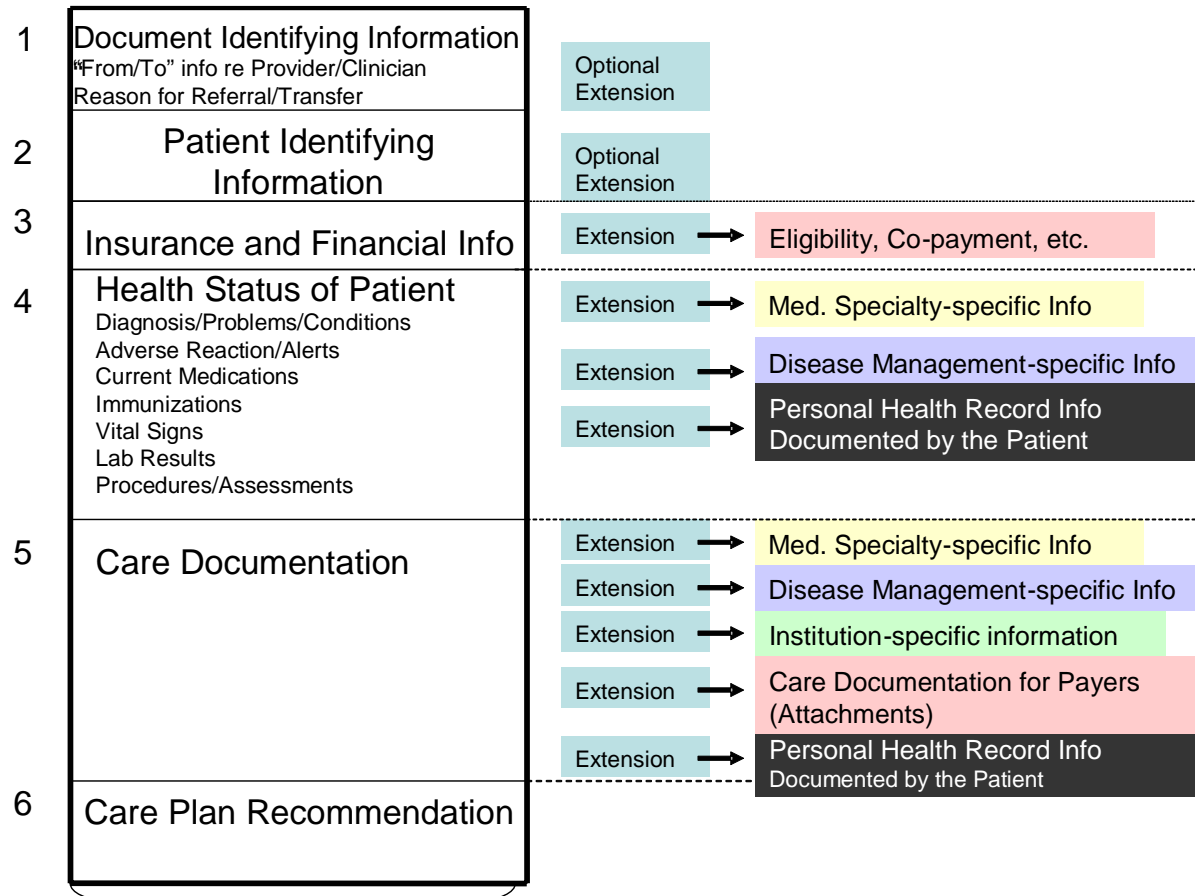


Document Management



Continuity of Care Record

Conceptual Model of the CCR



Mandated Core Elements of the CCR

Care Record Summary

- HL7 Version 3 Clinical Document Architecture (CDA)
 - Leverages HL7 MIB
- Similar content to ASTM CCR

View: **Generated**

Created	Purpose	Created By
06/14/05	Referral	David Ford
06/14/05	Request	David Ford
06/14/05		David Ford
06/13/05	Update	David Ford
06/13/05	data	David Ford
06/13/05	Update	David Ford
06/13/05		David Ford
06/13/05		David Ford
06/13/05	Referral	David Ford
06/13/05		David Ford
06/11/05		David Ford
06/10/05	Update	David Ford
06/10/05		David Ford
06/10/05		David Ford
06/09/05	before mod 1	David Ford
06/09/05	after mod 1	David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05		David Ford
06/09/05	Update	David Ford
06/08/05	Referral	David Ford
06/08/05	Demo	David Ford
06/08/05	Update	David Ford
06/08/05	Referral	David Ford
06/08/05	Demo	David Ford
06/08/05		David Ford

Document History

Date Created	Purpose
06/14/2005 03:30 PM	Referral
From	To
Madison Medical Center P. A. 34 Sycamore Street Suite 3 Madison, CA, 95653 (916) 555-7654	Carlson, Richard T.

Patient Detail for Steven W Carlson

Steven W Carlson 3456 West Palm Madison, CA, 95653 (916) 555-3293 (Home)	Date of Birth 11/14/1933 Gender Male Race Caucasian Marital Status Married
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Problems

Date	Type	Diag Code	Description	Status
06/19/2002	Condition	428.0	Congestive Heart Failure	Inactive
01/27/2003	Condition	726.10	Bursitis, Shoulder	Active
02/23/2003	Condition	250.2	Diabetes Mellitus, Adult, Type II	Active
11/11/2002	Condition	401.1	Essential Hypertension, Benign	Active
11/11/2002	Condition	276.0	Hyperlipidemia	Active

Alerts

Alert	Type	Date	Code	Description

Export

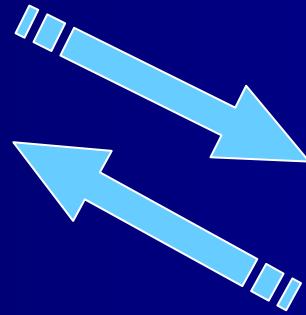
Print

Void

Generate

Retrieve

Patient Practice Portal



- Practice to Patient
 - Results
 - Reminders
 - Responses



- Patient to Practice
 - New Patient Registration
 - Appointment Request
 - Results Inquiry
 - Rx Renewal
 - Quick Question

Practice Portal Request

Logout | Edit fredharmon's Profile

INTERGY from *WebMD* Practice Services

Home | About Us | Health Services | Contact

Appointment Request

Appointment requests submitted will be processed by our clinic staff as soon as possible. You will hear from us within one business day. This should not be used in the case of an emergency. If you are having an emergency, please call the clinic or emergency personnel (911) directly.

Provider:

Earliest Date:

Preferred Time:

Preferred Days:

- Any Day
- Any Weekday
- Mondays
- Tuesdays
- Wednesdays
- Thursdays
- Fridays

Reason for Appointment:

Comments:

Home | About Us | Health Services | Contact

Practice Message Worklist

The screenshot shows the Intergy software interface for Madison Medical Center P. A. The 'Secure Messaging' window is open, displaying an 'Inbox Messages' list. The user is logged in as admin@clinic.com. The messages table contains the following data:

Messages	Type	Size	Sender	Subject	Received
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Johnathon Doe	Tue 10/18/2005 12:43 PM
<input type="checkbox"/>	DEM	6KB	mick@jagger.com	Demographics/Insurance Update Request for Bob Jon..	Mon 10/17/2005 5:45 PM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Mick Jagger	Mon 10/17/2005 5:20 PM
<input type="checkbox"/>		1KB	ddodds@webmd.net	Medication renewal for patient Fred Harmonex	Fri 10/14/2005 2:21 PM
<input type="checkbox"/>	DEM	6KB	ddodds@webmd.net	Demographics/Insurance Update Request for Bob Jon..	Tue 10/11/2005 3:32 PM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Peter Frampton	Tue 10/11/2005 11:27 AM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Cassie Evans	Tue 10/11/2005 7:01 AM
<input type="checkbox"/>	DEM	6KB	test@tester.test	Demographics/Insurance Update Request for Joe Bob	Wed 10/5/2005 1:52 PM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Joe Bob	Wed 10/5/2005 1:50 PM
<input type="checkbox"/>	DEM	6KB	ddodds@webmd.net	Demographics/Insurance Update Request for Bob Jon..	Wed 10/5/2005 10:35 AM
<input type="checkbox"/>	APT	2KB	ddodds@webmd.net	Appointment Request for Bob Jones	Wed 10/5/2005 10:33 AM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for matt chavez	Wed 10/5/2005 10:18 AM
<input type="checkbox"/>	DEM	6KB	ddodds@webmd.net	Demographics/Insurance Update Request for Bob Jon..	Tue 10/4/2005 5:35 PM
<input type="checkbox"/>	DEM	6KB	ddodds@webmd.net	Demographics/Insurance Update Request for Bob Jon..	Mon 10/3/2005 4:13 PM
<input type="checkbox"/>	APT	2KB	saggy@mit.edu	Appointment Request for Sagara Person	Mon 10/3/2005 10:42 AM
<input type="checkbox"/>	DEM	6KB	saggy@mit.edu	Demographics/Insurance Update Request for Sagara ..	Mon 10/3/2005 10:41 AM
<input type="checkbox"/>	REG	3KB	admin@clinic.com	New Patient Enrollment for Sagara Person	Fri 9/30/2005 2:26 PM

Process Request

Appointment Search for Requested Appointment

Start Date: End Date: # Results:

Reason

Code: Class:
Length: mins. Search non-templated slots

Requested Resource : Provider Room Equipment

Provider: Ford, David E MD
Position:
Specialty:
Location:

Preferences

Full Day Any Day
 AM Any Weekday
 PM Monday
 Select Tuesday
 Wednesday
 Thursday
 Friday
 Saturday
 Sunday

Reason:

Comments:

Patient Response

The screenshot shows a web-based email interface titled "Secure Messaging". The user is logged in as "admin@clinic.com". The interface includes a left-hand navigation pane with sections for "Messages" (containing "New Message", "Inbox", "Sent", "Drafts", "Deleted", and "Manage Folders") and "User" (containing "Address Book", "Change Password", and "Logout"). The main content area displays an "Inbox Message" from Fred Harmonex [ddodds@webmd.net] to admin@clinic.com, with the subject "Appointment Request for Bob Jones". The message body contains the following information:

Jones, Bob Yeh DOB: 10/25/1975 SSN: 111-22-3333 Patient ID: Intergy ID

Appointment Request

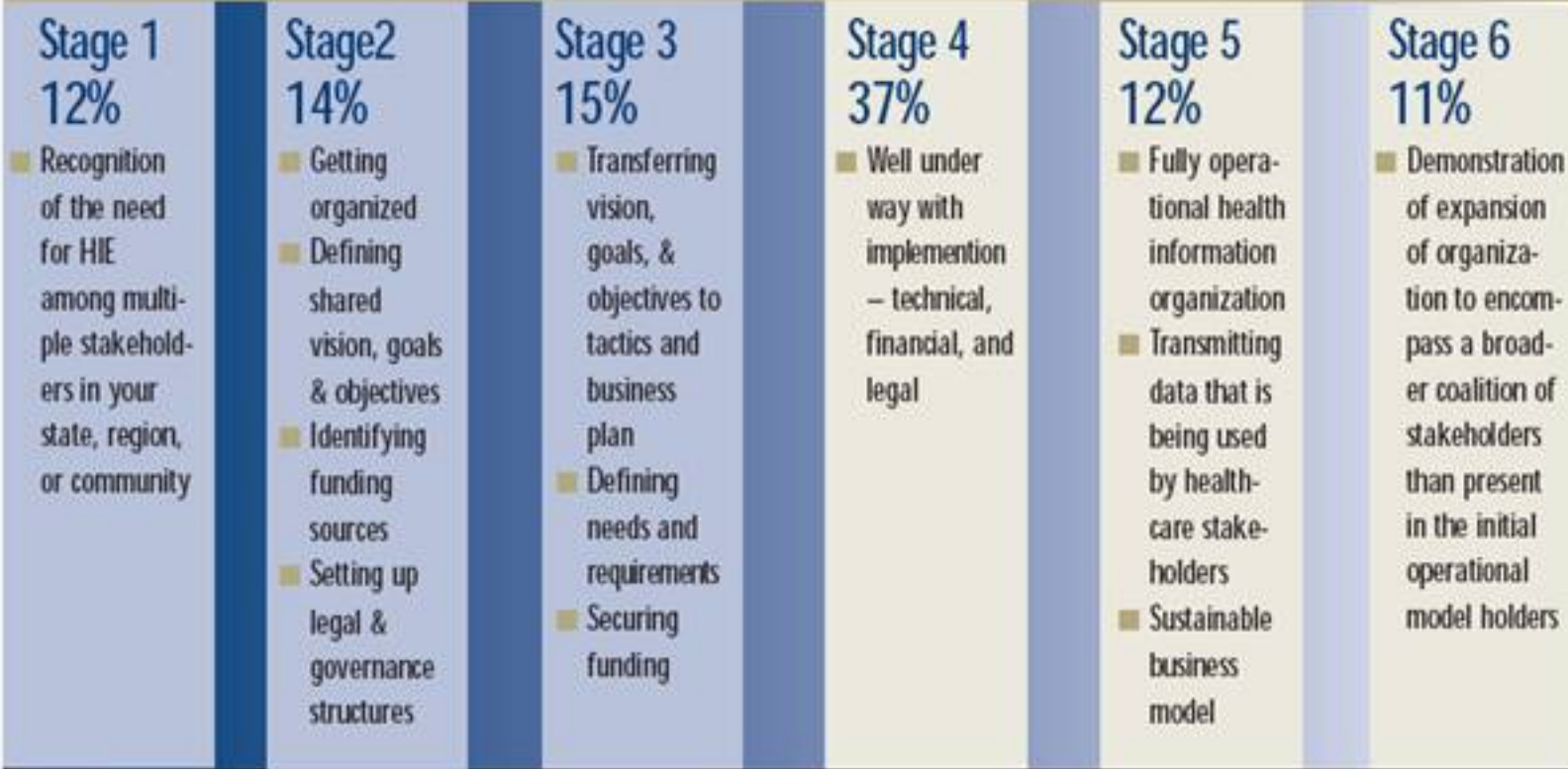
Provider: Harry Winston Earliest Date: 10/05/2005
Preferred Time: AM Preferred Days: Any Day, Any Weekday, Mondays
Reason: test
Comments: comment test

RHIO Game Plan

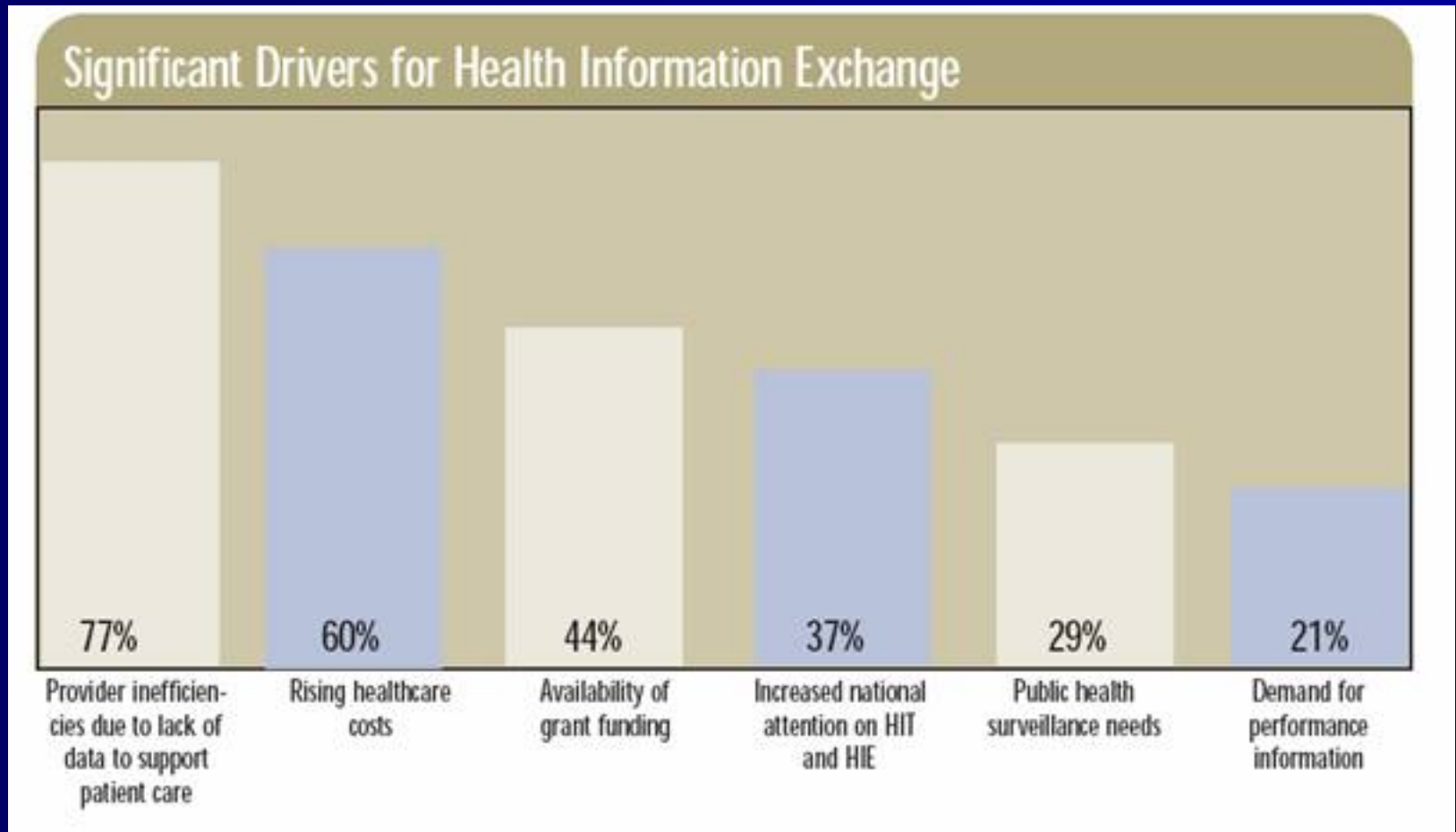
1. **Assess Community's Readiness**
2. **Get Organized**
3. **Tackle the Issues**
 - a. **Funding**
 - b. **Operational**
 - **Privacy and Security**
 - **Legal**
4. **Sustain and Adapt**

RHIO Development Stages

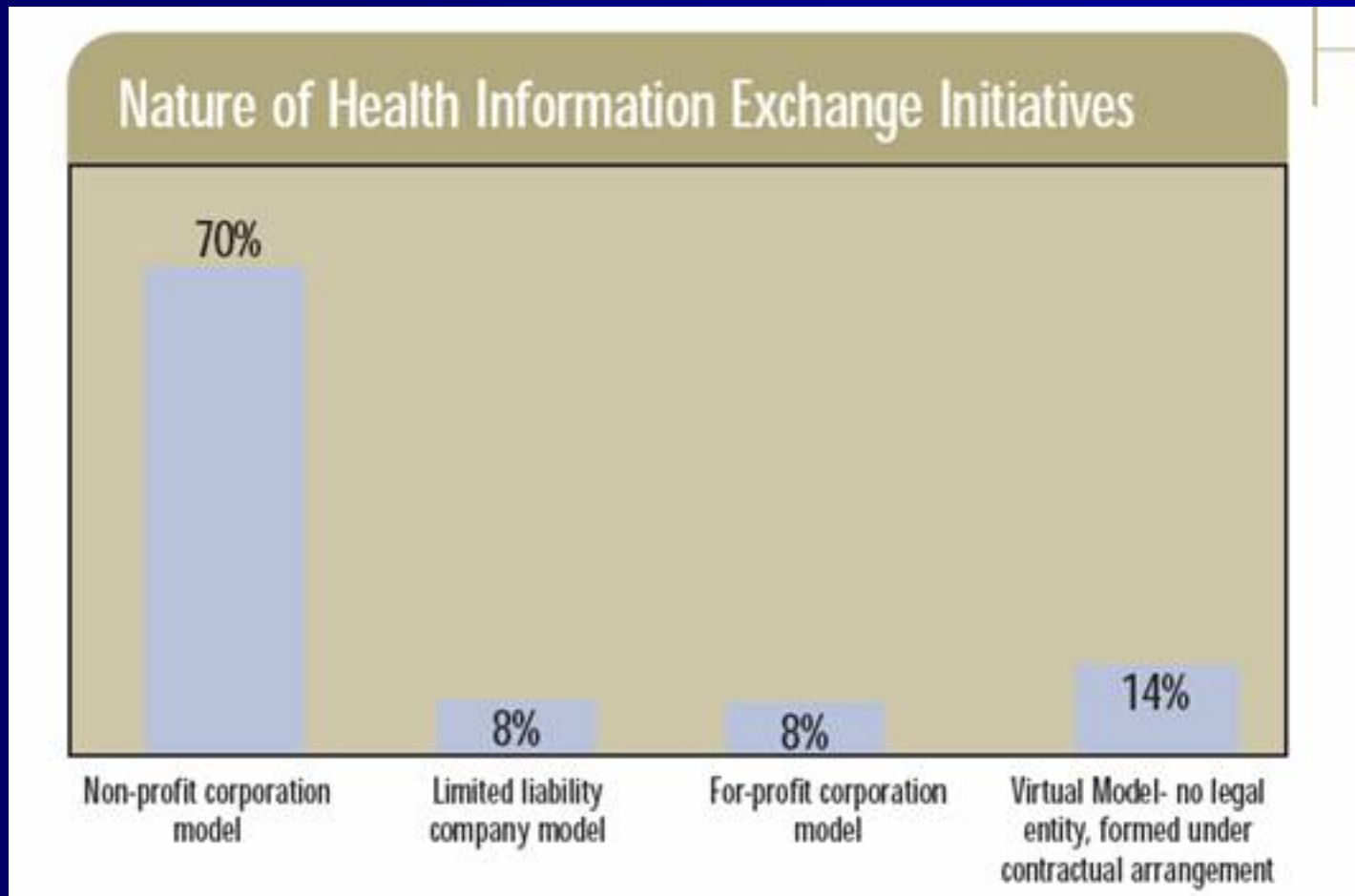
Stages of HIE Development



HIE Drivers

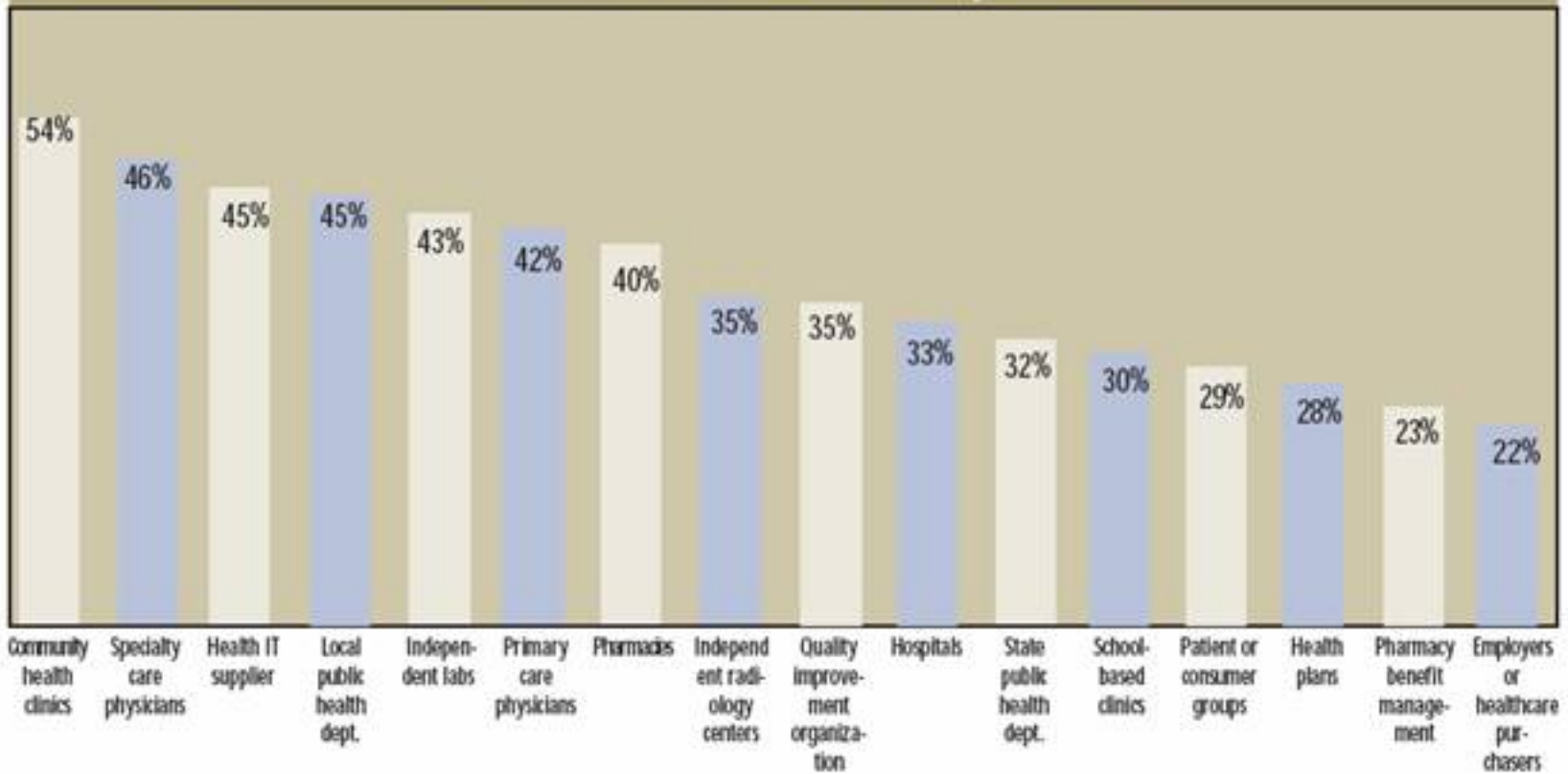


HIE Organizations

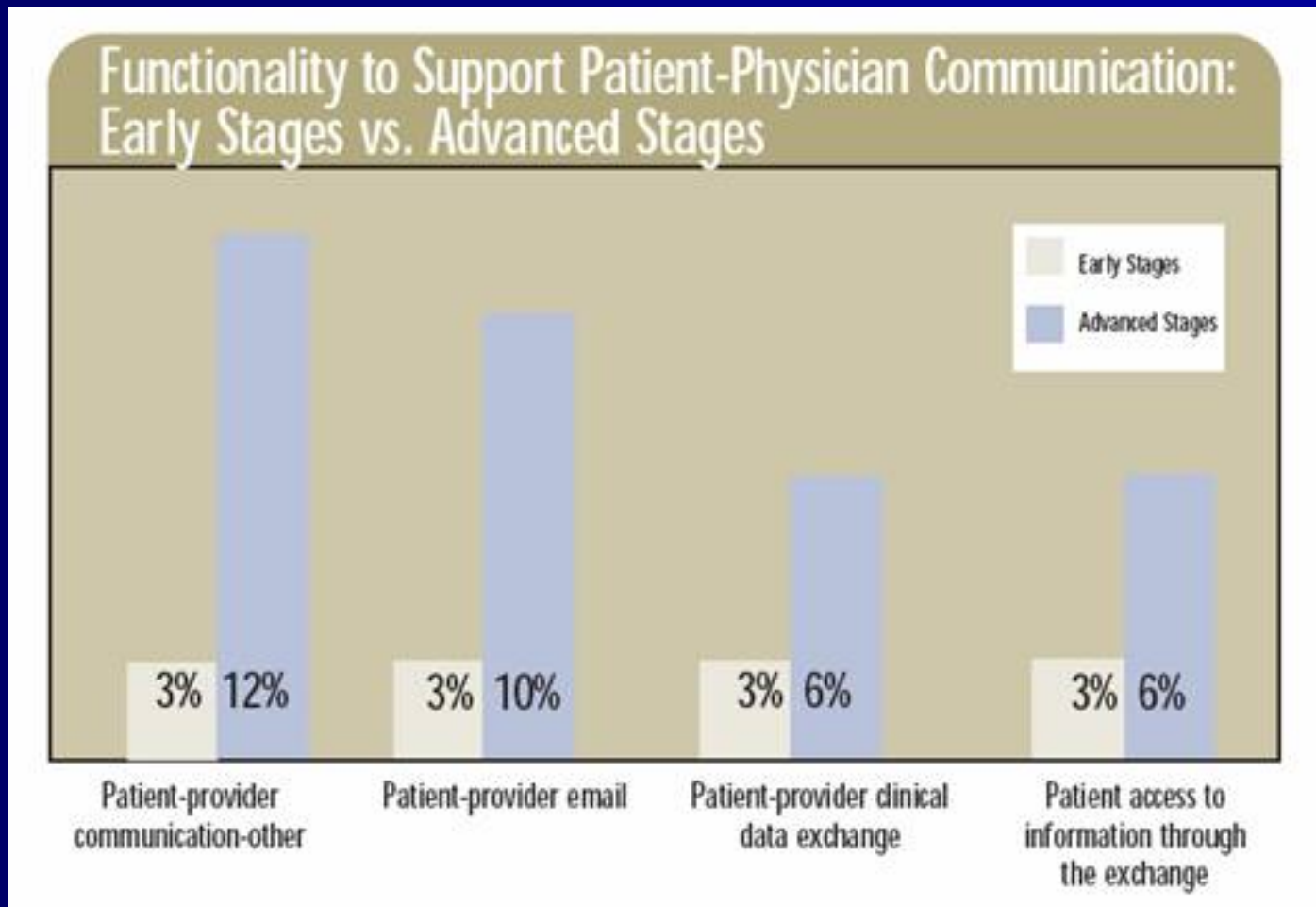


HIE Stakeholders

Stakeholder Involvements in HIE Efforts: All Respondents



HIE Connectivity Initiatives

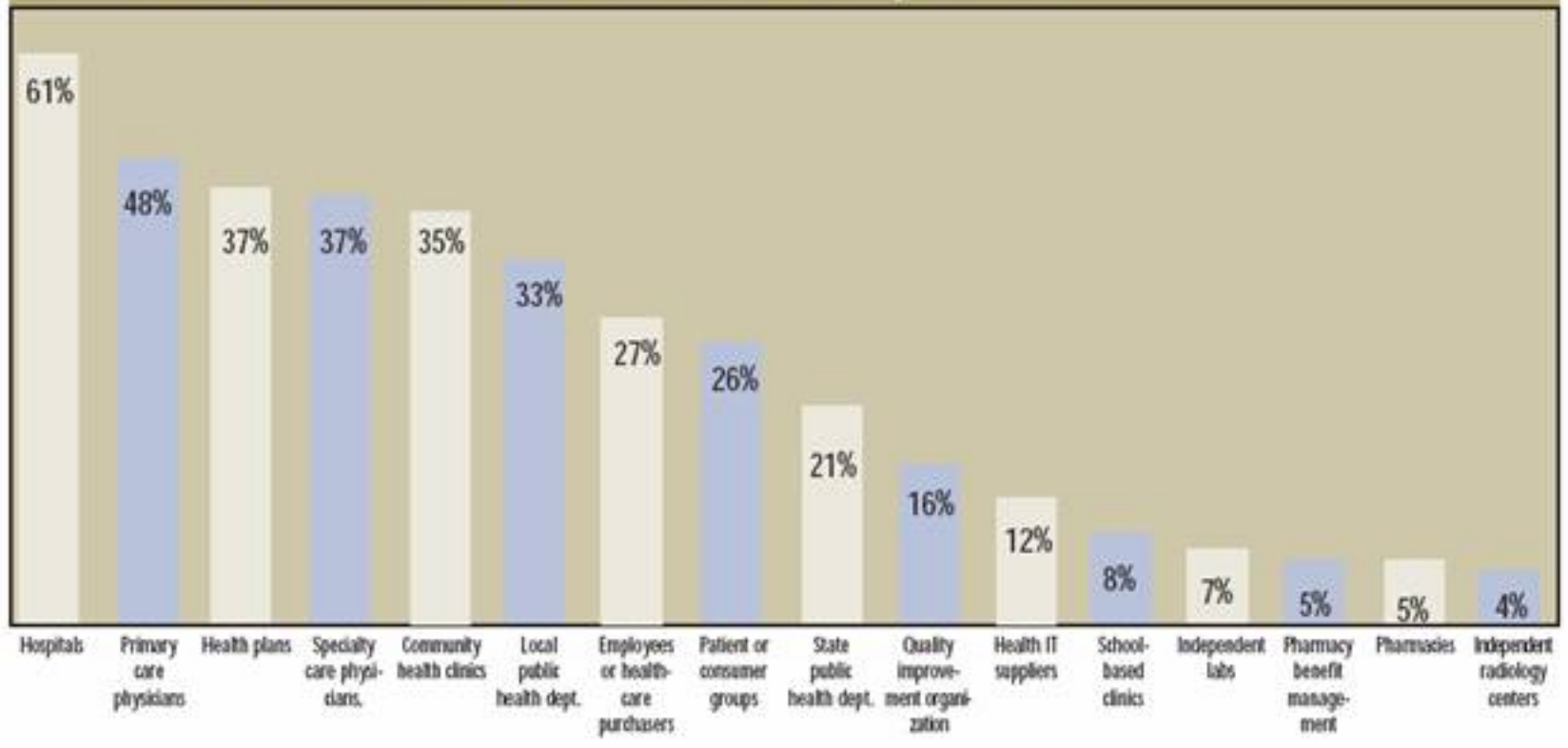


Are You Ready?

- Capabilities Assessment
 - Technical, clinical, organizational, public, community commitment, leadership
- Business Case
- Participation
 - Clinical leadership
- Initiator
 - Respected community leader(s), major provider, payer, business coalition, employer, government

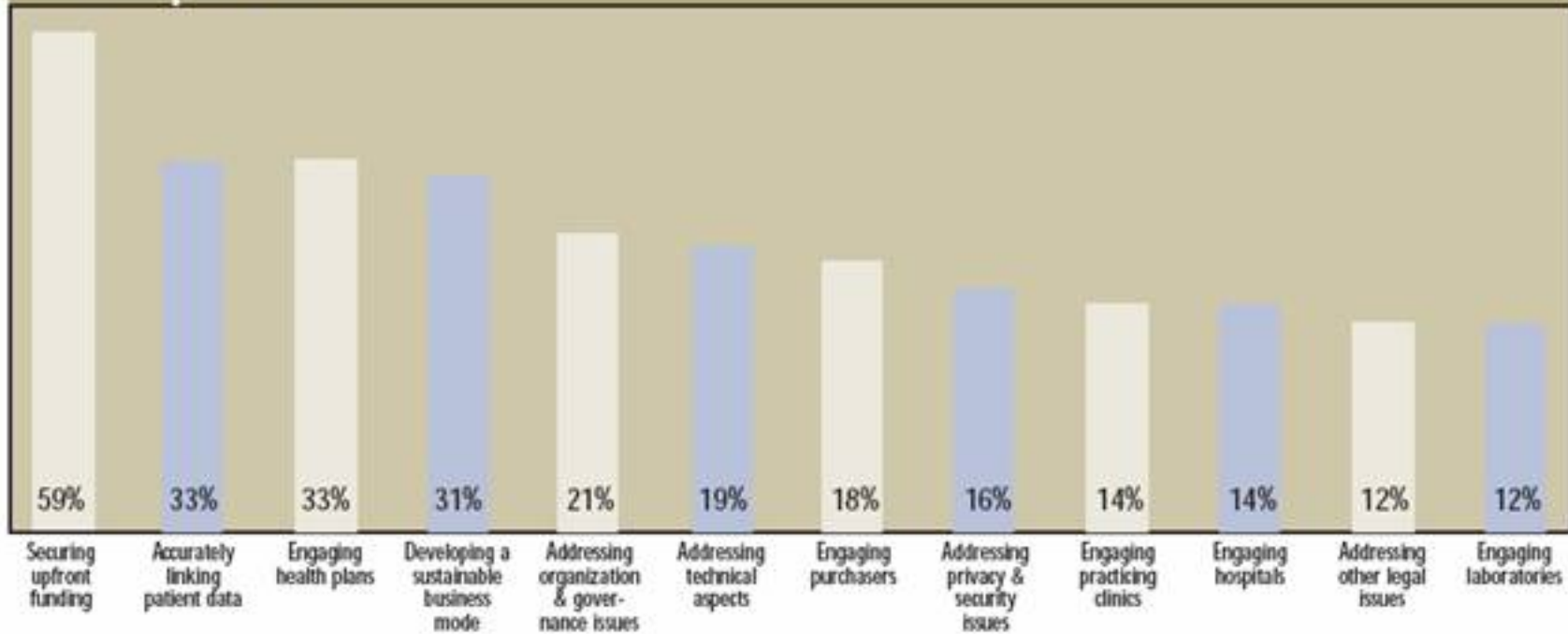
HIE Stakeholders

Role of Stakeholders in Governance: All Respondents



HIE Challenges

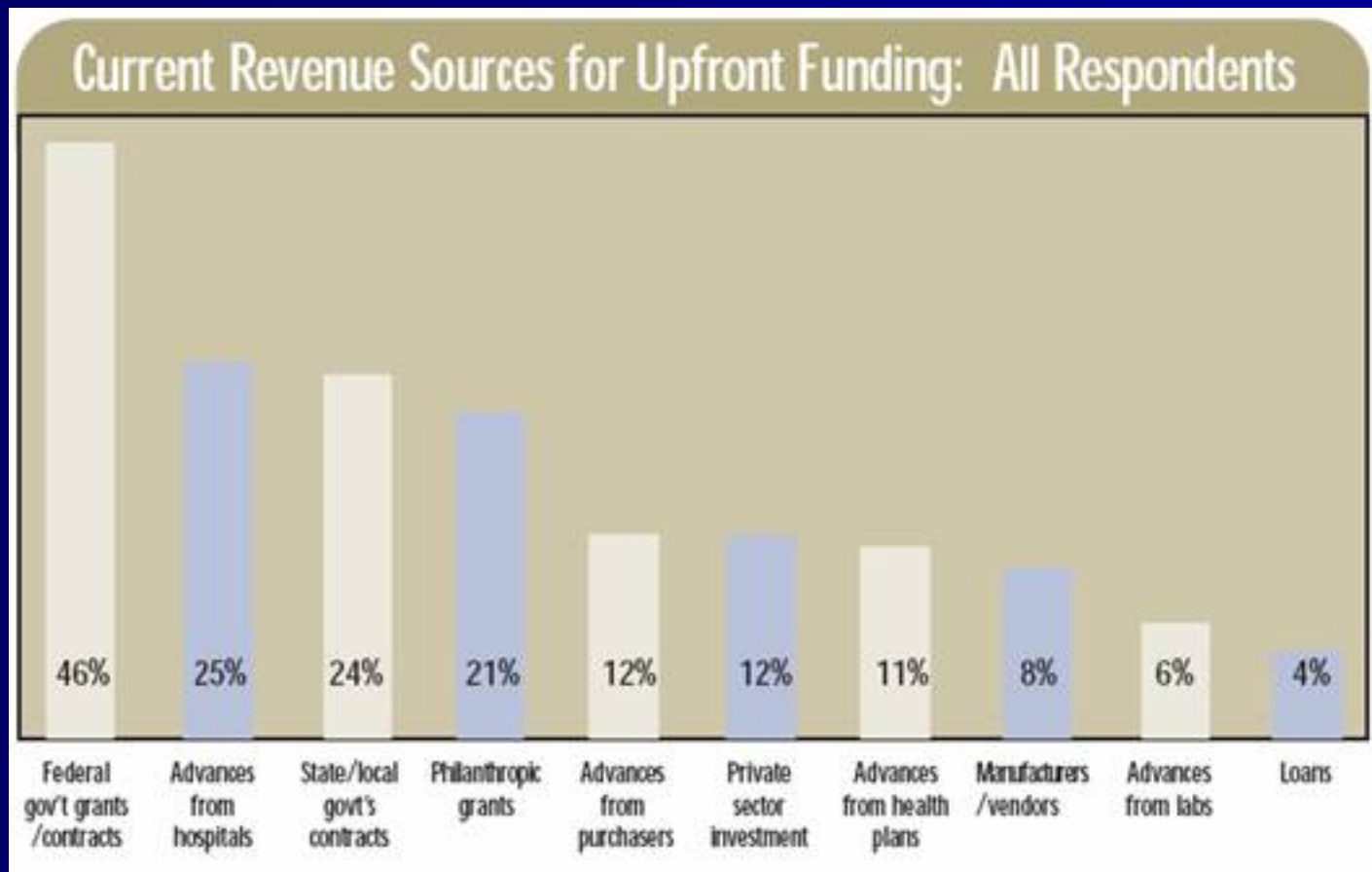
Very Difficult Challenges for Health Information Exchange: All Respondents



Funding

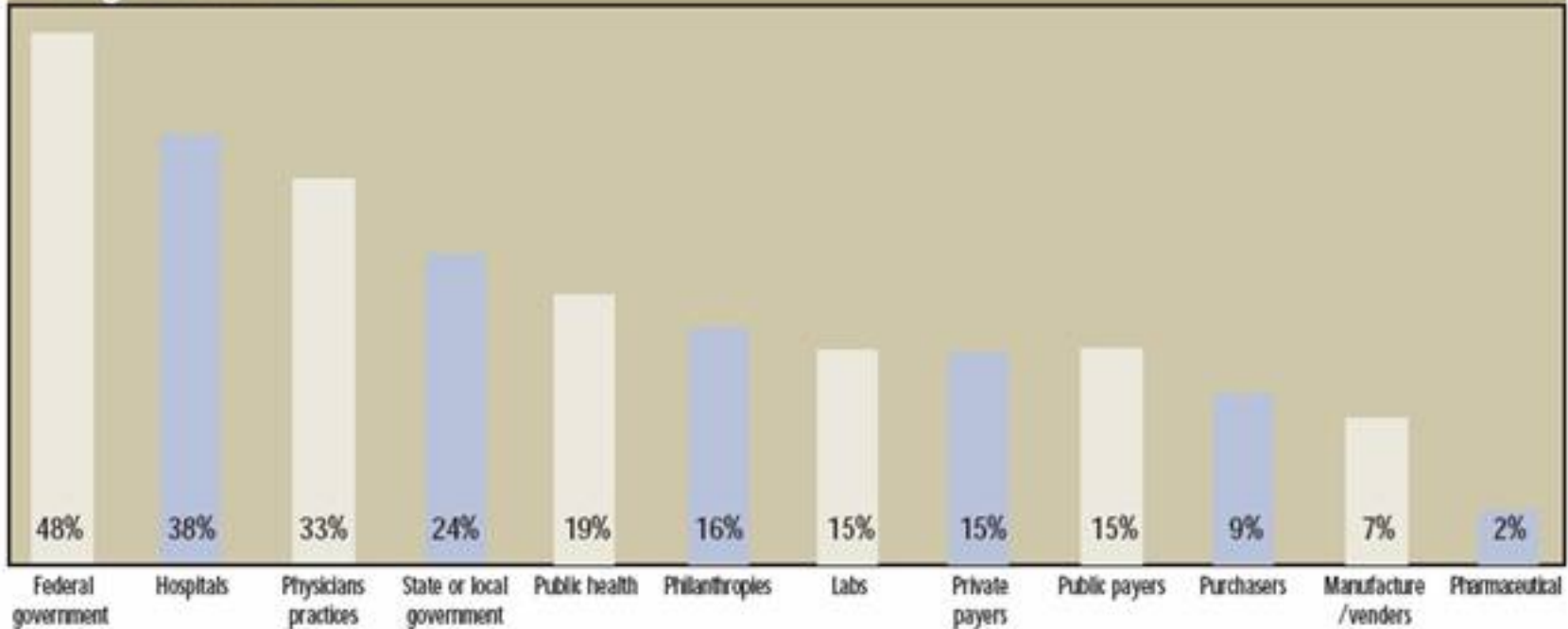
- RHIO Member Organizations
 - Major Providers, Provider Groups
- Payers
 - Increased Payments
- Government
 - State, Federal
 - Payments, Loans, Tax Incentives
- Grants
 - Government (AHRQ), Philanthropies
- Cash or In-Kind Contributions

HIE Revenue Sources



HIE Operational Costs

Current Revenue Sources for Ongoing Operational Costs Advanced Stage Initiatives

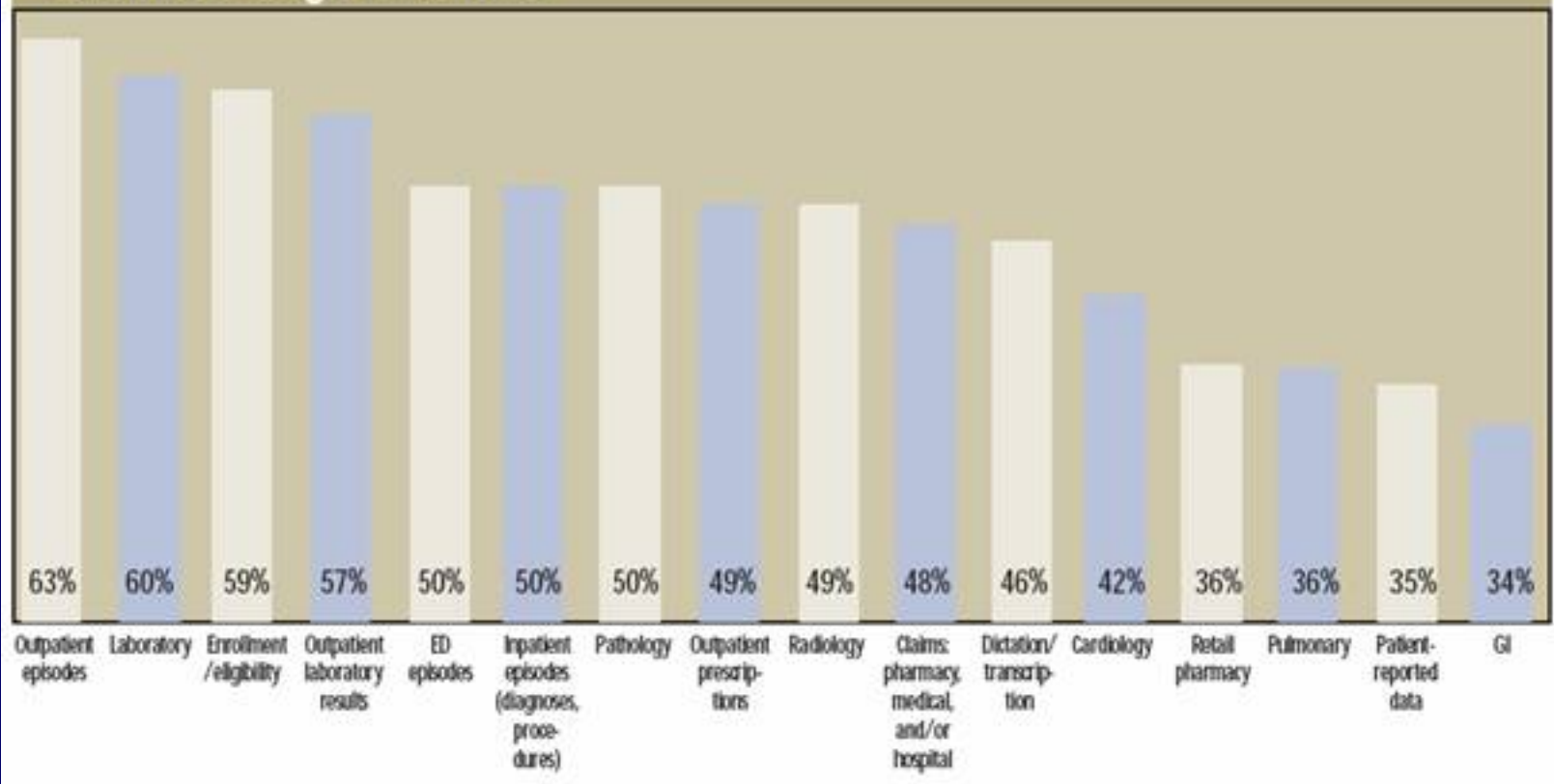


RHIO Operations

- Management and Legal Issues
 - Privacy and Security protections
 - Existing law
 - Contracts
 - Protection from professional liability and medical malpractice.

Data Being Exchanged

Data Currently or Expected to be Exchanged Within Six Months
Advanced Stage Initiatives



Resources

- HIMSS, Integration & Interoperability
- Markle Foundation, Connecting for Health
- eHealth Initiative

How RHIOs are like Paul Revere

- "RHIOs are coming!"
- As goes RHIOs, so goes the nation
- There will be winners and losers
- Take heed or take flight



Thank You

David H. Kates

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