Healthcare Collaborative Network

Building bridges through open standards

Bruno Nardone, Managing Consultant
Business Consulting Services – Healthcare Strategy and Change

bnardone@us.ibm.com

May 2004

© 2004 IBM Corporation

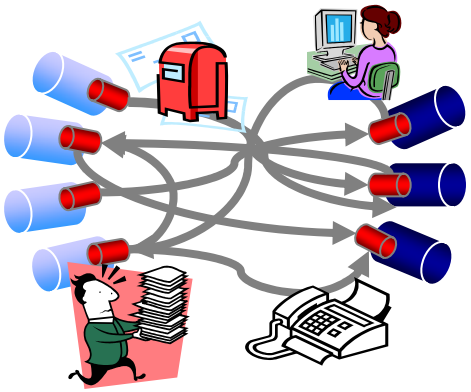
The healthcare industry desperately needs to improve the way stakeholders share information

Healthcare
Data Dynamic

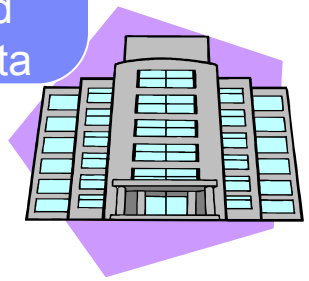
Typical: inefficient point to point either EDI, email files, fax or paper

Today's mess

Hospitals and Other Providers of Care



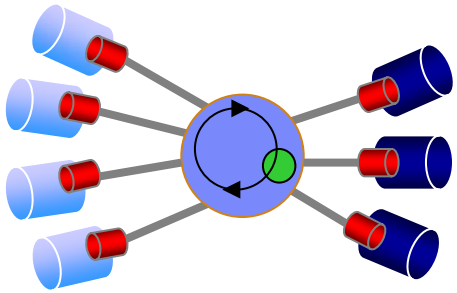
Health Agencies, Health Plans and others who need clinical data



Desired: automatic electronic interconnected network allowing open standards two way message flow

Tomorrow's Goal

Hospitals and Other Providers of Care



Health Agencies, Health Plans and others who need clinical data

© 2004 IBM Corporation

Healthcare leaders are backing a collaborative technology solution, that enables rapid sharing of health data and improved bio-surveillance

Healthcare Collaborative Network (HCN) Solution

- Enables rapid detection and response to adverse healthcare events including bio-surveillance
- Creates lower cost capabilities for collecting, aggregating, analyzing and reporting clinical information at near real time
- Establishes a common electronic healthcare information highway that supports government, non-profit, and private industry needs

Federal Agencies
(DOD, CDC, CMS, FDA)

Healthcare Providers
(Hospital. Nursing Homes, others)

HC Policy Advocates
(AMA, AAFP)

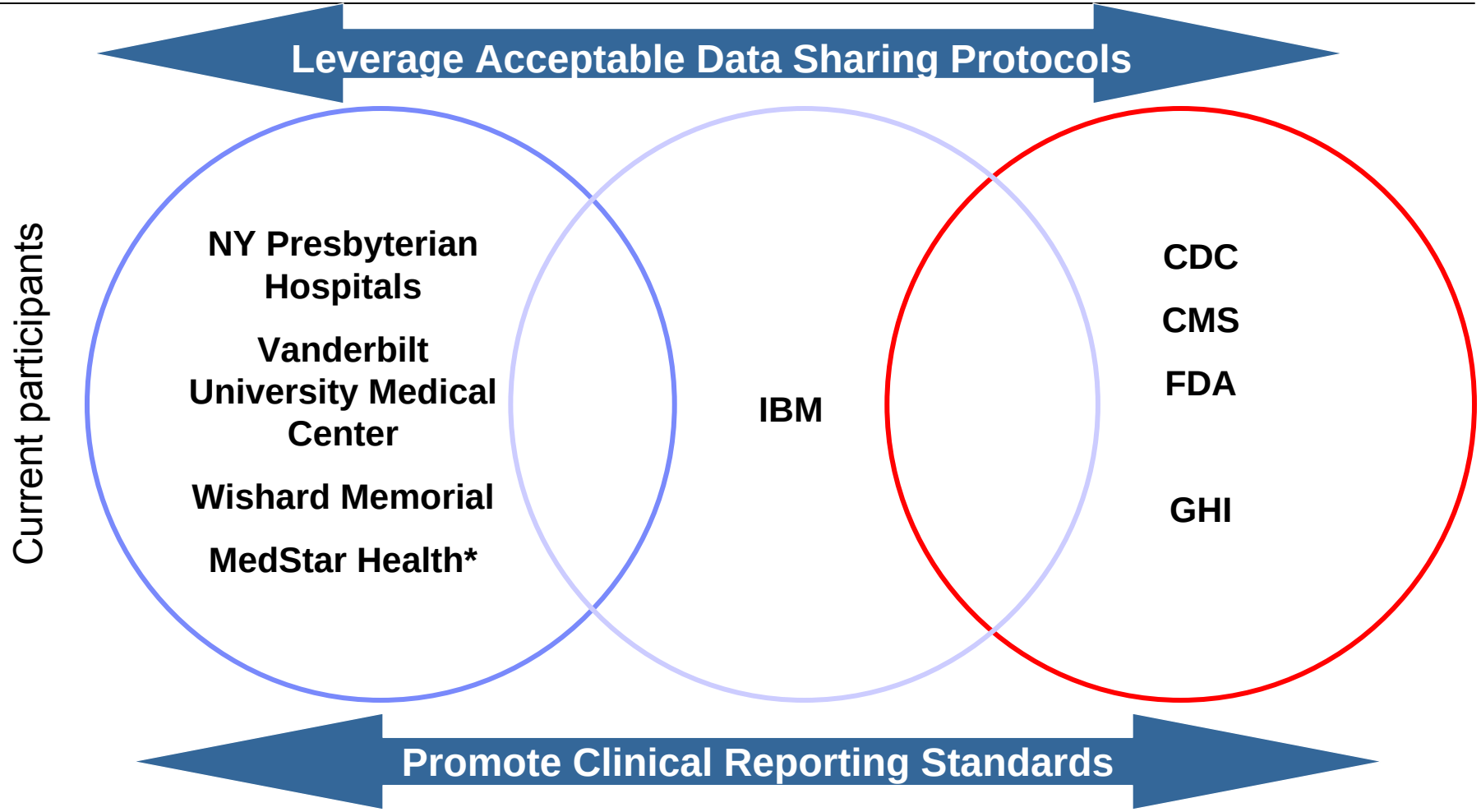
Healthcare Vendors
(Cerner, IBM, McKesson, Siemens,)

Health Plans

Industry Consortia
(eHealth Initiative, Connecting for Health)

© 2004 IBM Corporation

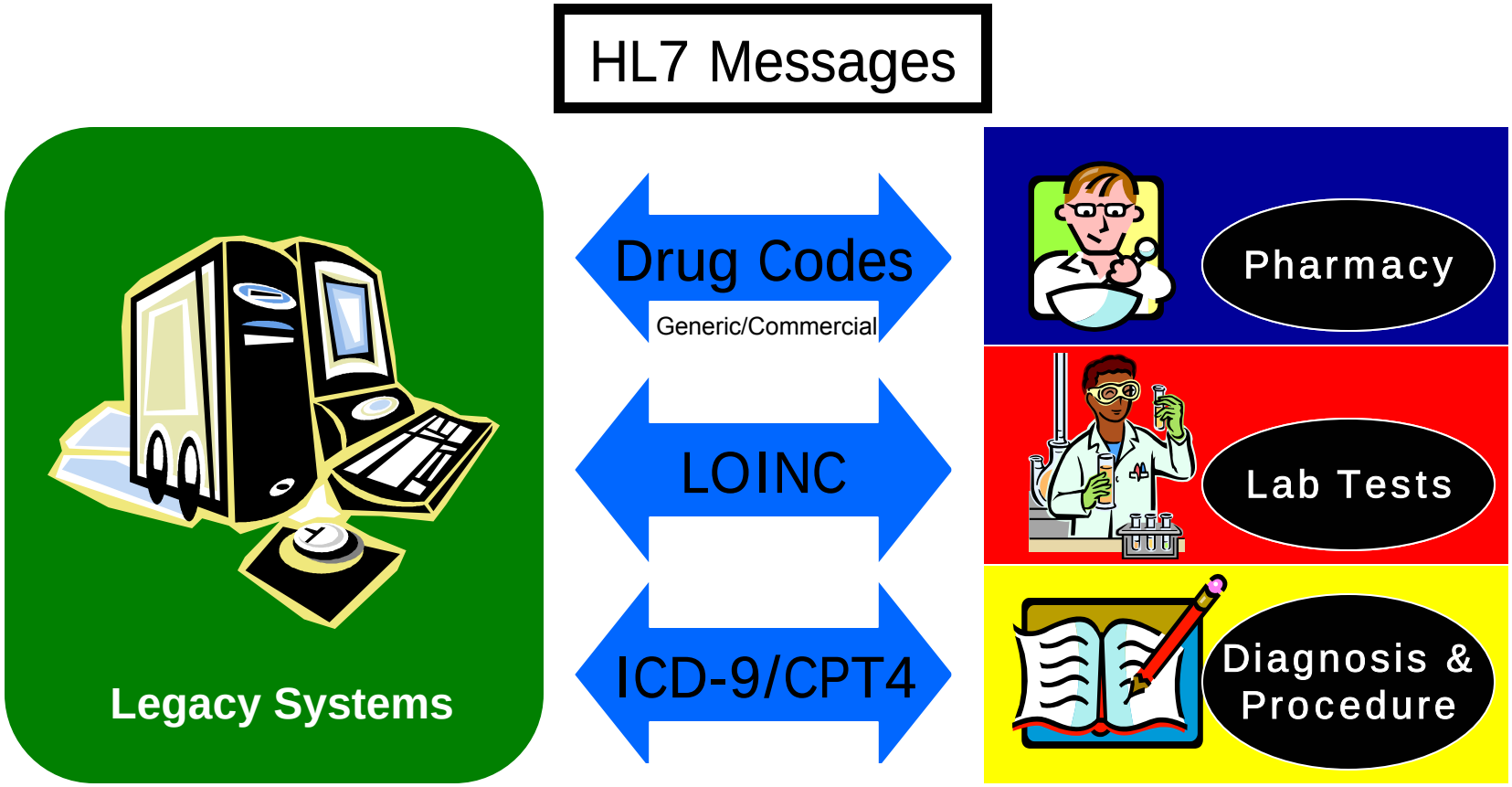
Federal healthcare agencies and industry leaders are the initial participants in the Healthcare Collaborative Network



* MedStar hospitals connected are: Franklin Square Hospital Center; Good Samaritan Hospital; Harbor Hospital Center; Union Memorial Hospital

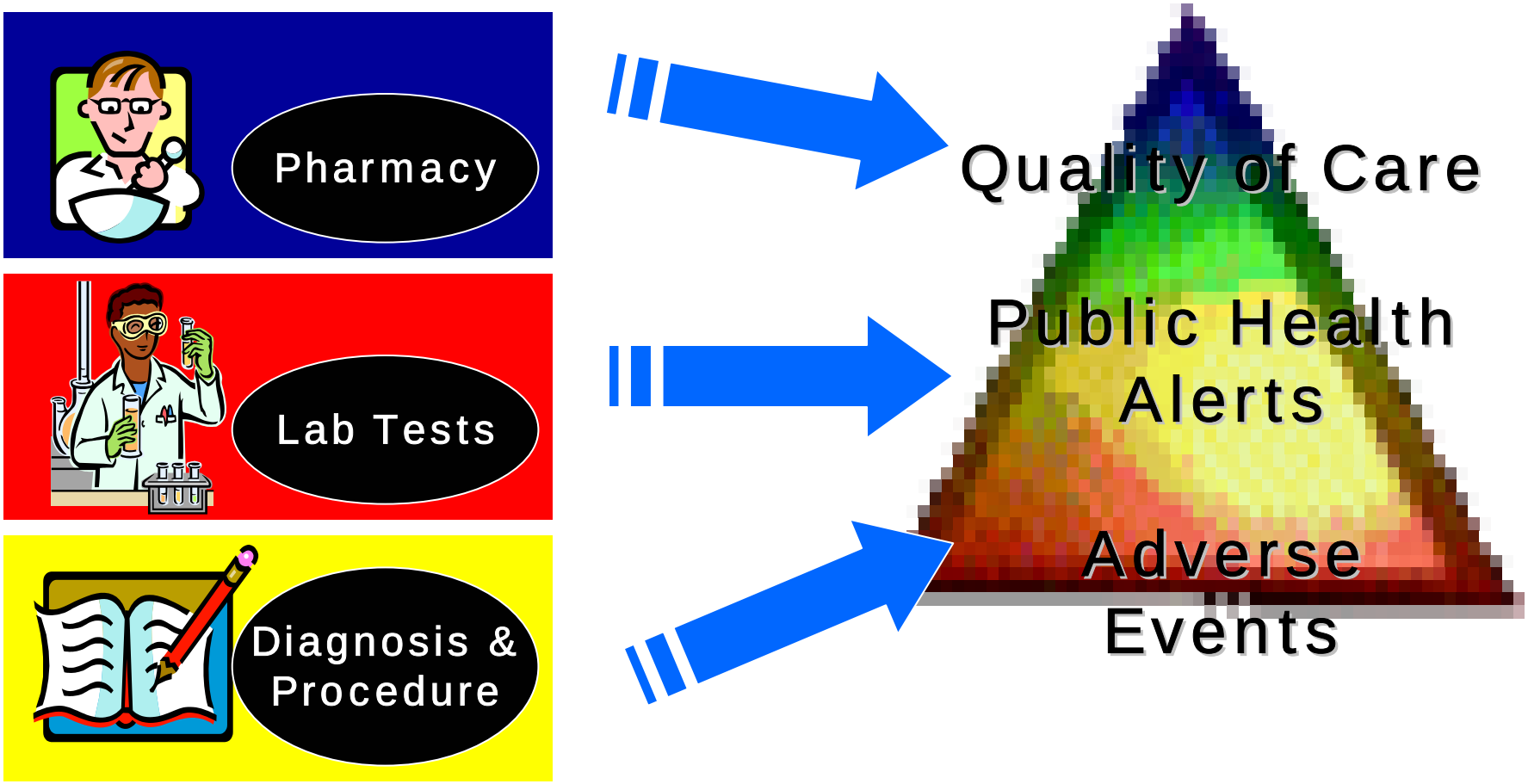
© 2004 IBM Corporation

The HCN approach to building relevant information for collaboration focuses on existing electronic information widely available in hospitals



© 2004 IBM Corporation

Integrating this information can improve the way we address a broad spectrum of health problems



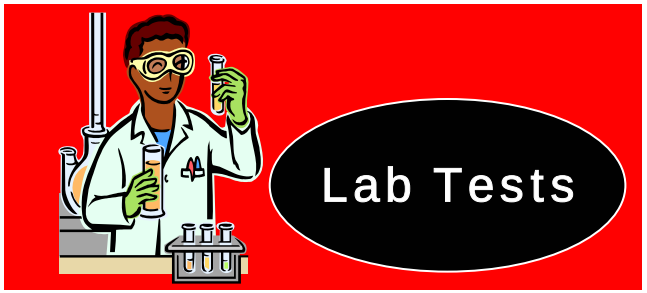
Example: 31% of Medicare Patients with **Acute Myocardial Infarction** were not administered β –blockers within 24 hours of admission

© 2004 IBM Corporation

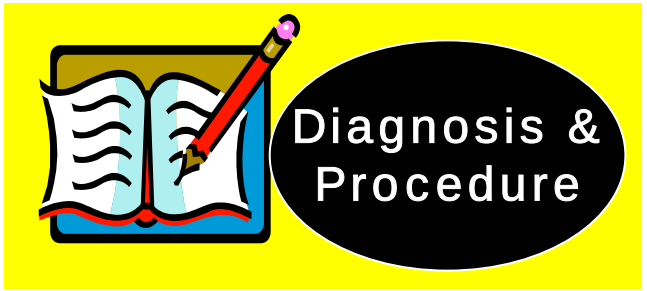
Disease surveillance topics can be sent to monitoring agencies as soon as they are available in source information systems

HCN can capture indictors of possible outbreaks in variety of ways as illustrated below

Increase in prescriptions for GI, respiratory, or other symptoms



Increase in test frequency as an indicator, or specific outcomes

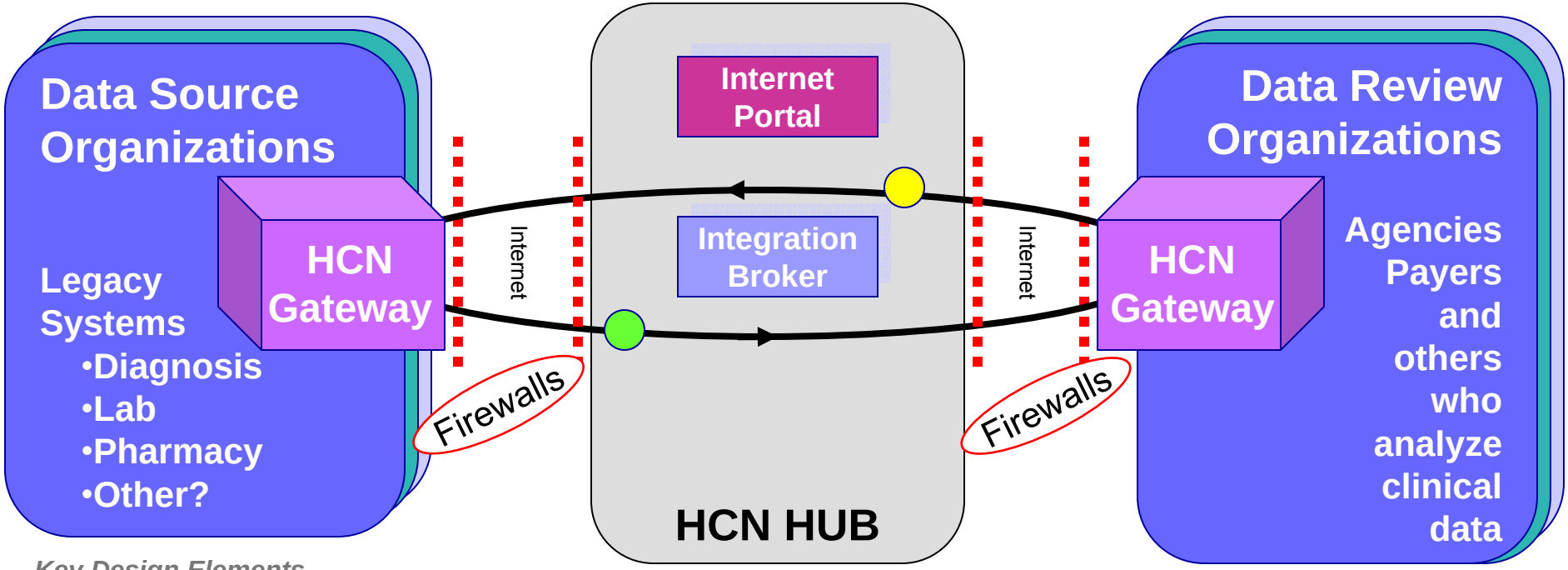


Sentinel events (neonatal mortality) or trends (increase number of spinal taps)

© 2004 IBM Corporation

The HCN architecture is designed to leverage open standards, be flexible and scalable, and facilitate easy adoption at participant sites

Demonstration Project Architecture for HCN Solution



Key Design Elements

- HCN uses existing data standards available in most provider settings (ICD, CPT, LOINC, NDC via HL7) - if necessary mapping done at the source gateway
- Meets highest security standards around authentication and encryption, and transmits non-directly identifiable data supporting the HIPAA requirements
- The system uses open standards and a non-proprietary implementation approach
- Once a health topic is satisfied all information available on the related patient event can be shared

© 2004 IBM Corporation

HCN benefits federal agencies specifically by providing the infrastructure for rapid and secure collaboration

HCN Value Focus

- CDC - Biosurveillance and Outcomes Analysis
  - Fast access to syndromic alerts and actual clinical outcome data
  - Improved geospacial observation opportunities
  - Complimentary to on-going initiatives
- CMS - Quality Reviews
  - Shift from retrospective to active quality monitoring
  - Standards driven consistency in submitted information
  - Improve efficiency for CMS and Hospitals (aggregation/analysis and reporting)
  - Enable quality scoring for program reviews and incentive programs
- FDA - Adverse Drug Events and Usage Analysis
  - Objective and scalable tools for adverse event alerts
  - Efficient post market release population analysis

© 2004 IBM Corporation

Adoption of HCN will be facilitated by demonstrating the value and multiple uses of participation back to varied stakeholder groups

Three examples we are currently exploring

- Hospitals - Internal collaboration for:
  - Outcomes Analysis
  - Quality Improvement Studies
  - Adverse Event Detections
  - Research
- Hospitals and Payers
  - Improved coordination for case management
  - Improved identification of disease management candidates
  - Reduced administrative cost of clearing claims
  - Support for quality incentive programs
- Hospitals and Pharmaceutical Researchers
  - Identification of candidates for clinical trials
  - Post market population analysis
  - Compliance observation for outcomes analysis

© 2004 IBM Corporation

HCN can be deployed today to maximize capabilities for collaboration in support of improved quality and reduced medical errors

Summary of HCN solution benefits:

- Enables rapid ability to **aggregate and share data**
- Enhances ability to **judge quality of care**
- Facilitates and **improves efficiency** of **mandatory reporting** and **collaboration** with business partners
- Provides a **secure environment for clinical data transmission** using SSL and the highest level of encryption
- **Leverages existing applications** minimizing barriers to implementation
- Enables monitoring groups (e.g. Local health jurisdictions, FDA, CMS, CDC) to **improve detection and response time** for bio-surveillance, adverse drug reactions, quality of care, and disease outbreaks

© 2004 IBM Corporation

Thank You

© 2004 IBM Corporation

eHealth Initiative Profile:
a public-private partnership aiming to improve Healthcare through the use of information technology

Mission *To drive improvement in the quality, safety, and cost-effectiveness of health care through information technology.* (www.ehealthinitiative.org)

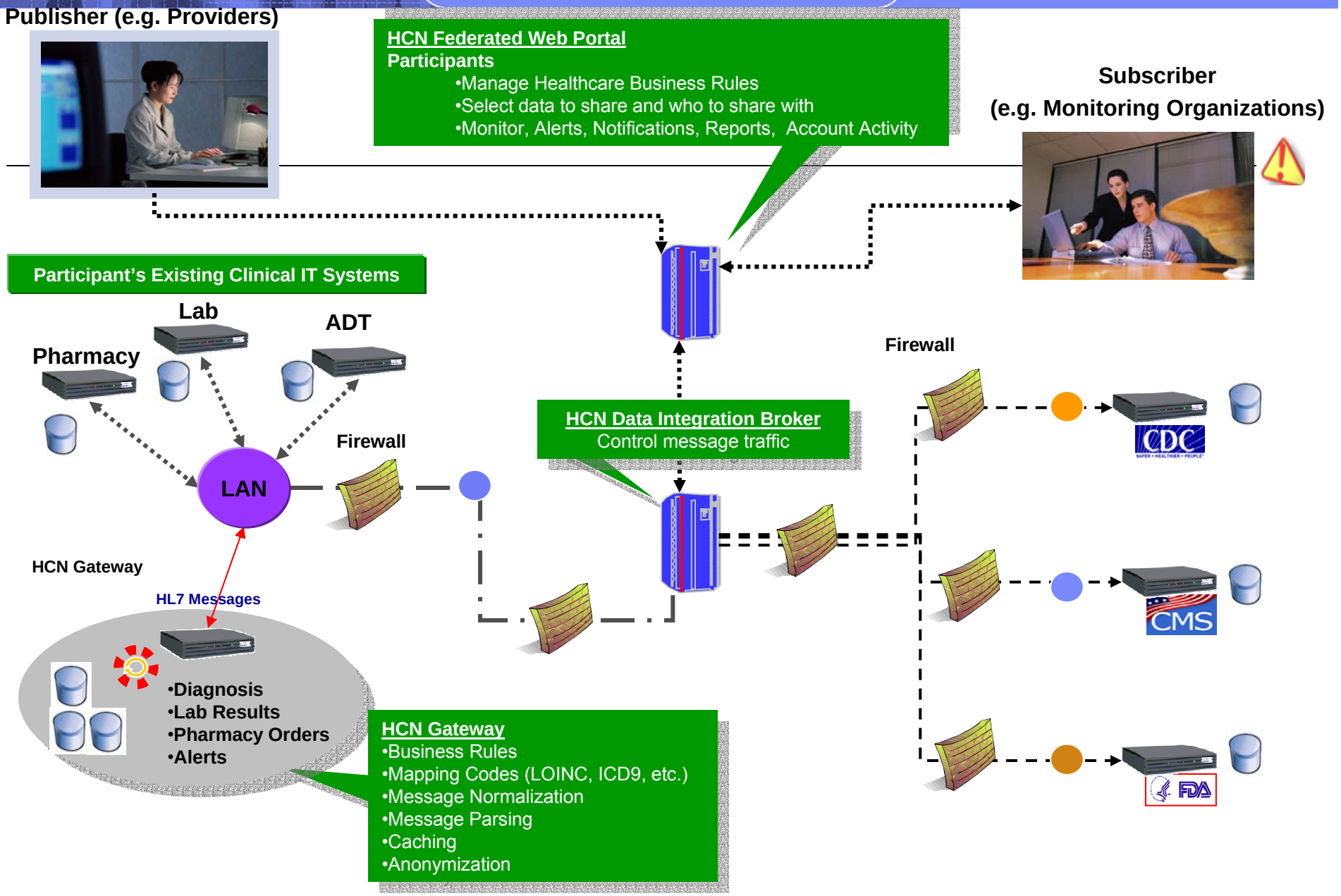
Vision Consumers, providers and those responsible for population health will have ready access to timely, relevant, reliable and secure health care information through an interconnected, electronic health information infrastructure.

… with the broad participation necessary for success

- **Practicing Clinicians**
- **Hospitals, Academic Medical Centers**
- **Payers**
- **Pharmaceutical companies**
- **Quality Improvement Organizations**
- **Government – CDC, CMS, FDA, State Organizations**
- **Researchers**
- **ISV's**
- **Application Vendors**

© 2004 IBM Corporation

Detailed Overview



© 2004 IBM Corporation

Sample HCN Message

The following slide is a sample HCN Message for a patient discharged with a stroke diagnosis. This is a topic requested by the CDC.

The message has been color coded in accordance with the following scheme:
The message includes all the prescriptions and lab tests that the patient received during the hospital stay. Some of the lab messages (in red) include results from multiple lab tests. Although the CDC has requested that this message is sent whenever a patient with stroke diagnosis is discharged, other topics require that pharmacy, lab, or diagnostic data be linked using a variety of rules including combinations of diagnosis, prescriptions and lab, and conditions for contents of each type of data (such as a particular drug(s) or lab result(s).

© 2004 IBM Corporation

Sample HCN Message includes Labs, Pharmacy, and Diagnosis Records for Patient

Message submitted successfully for publication:
Submission time: 2003-08-08 12:25:09.921
Publisher ID: 'Provider 1'
Publish Topic: 'Stroke Diagnosis'
Rule Name: 'Stroke Diagnosis'
Patient ID: '123153'
Message Timestamp: '2003-08-08T12:26:17-07:00'
Message:


```
'MSH|^~\&|<XXX>||<XXX>||200307190843||RDE^O11||<XXX>|2.4|
PID|||123153^^^&Provider 1|<XXX>|<XXX>||<XXX>|F|||||||||<XXX>|<XXX>|
PV1|||I|<XXX>|||<XXX>|<XXX>|<XXX>||||||HNA|||<XXX>|<XXX>||||||||||||||||||<XXX>||||||||<XXX>|
ORC|NW|100|18491559||SC||^QD&0900^INDEF^200307190900^^R^0||200307190839|<XXX>|<XXX>|<XXX>|<XXX>|
RXE||0000429160^PANTOPRAZOLE EC TAB 40 MG^L|40||^MG|TABLET EC||||1|EA|
RXR|^ORAL| ',
```

```
'MSH|^~\&|<XXX>||<XXX>|<XXX>|20030719084337||ORU^R01|<XXX>|<XXX>|2.4|
PID|||123153^^^&Provider 1||<XXX>||<XXX>|F|||||||||<XXX>|
PV1|||<XXX>|
ORC|RE|||||||||<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|||<XXX>|
OBR|||T44676BCBLUD037F^1|600-7^LOINC^BLOOD
CULTURE|||20030715160000||||||<XXX>|<XXX>|<XXX>|<XXX>|||||||<XXX>|P||^^^^^^R|<XXX>|
OBX|1|TX|36484^BLUD^MED|0|SPECIMEN DESCRIPTION: BLOOD||||||F|
OBX|2|TX|60187^NGB4^MED|0|CULTURE: NO GROWTH OF BACTERIA OR FUNGI AFTER 4 DAYS||||||F|
```

```
'MSH|^~\&|HIHLS21-215259|EAGLE 2000|||20030731200333||ADT^A08|2030727024001798320 1|P|2.3|||NE|NE|
EVN|A08|<XXX>||<XXX>|<XXX>|
PID|<XXX>||123153^^^&Provider 1||<XXX>|<XXX>|<XXX>|F|<XXX>|||<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|
PV1|<XXX>|I|<XXX>||||<XXX>|<XXX>|<XXX>|<XXX>|||<XXX>||<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|<XXX>||||||||||||||<XXX>|<XXX>||<XXX>|
DG1|<XXX>|I9|430^SUBARACHNOID HEMORRHAGE^I9|<XXX>|<XXX>|A|<XXX>|<XXX>|||||<XXX>|
DG1|<XXX>|I9|430^SUBARACHNOID HEMORRHAGE^I9|<XXX>|<XXX>|P|
DG1|<XXX>|I9|401.9^HYPERTENSION NOS^I9|<XXX>|<XXX>|S|
DG1|<XXX>|I9|307.9^SPECIAL SYMPTOM NEC/NOS^I9|<XXX>|<XXX>|S|
', 'MSH|^~\&|<XXX>|<XXX>|||20030723190145||ADT^A03|<XXX>|<XXX>|2.3|||<XXX>|<XXX>|
EVN|A03|<XXX>||<XXX>|<XXX>|
PID|<XXX>||123153^^^&Provider 1||<XXX>|<XXX>|<XXX>|F|<XXX>|||<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|<XXX>|
PV1|<XXX>|I|<XXX>||||<XXX>|||<XXX>||||||||<XXX>|<XXX>||||||||||||||<XXX>|<XXX>||<XXX>||<XXX>|||<XXX>|<XXX>|
```


© 2004 IBM Corporation

A Sampling of Data Elements from Demonstration Project Data Elements List

First Generation

DATA ELEMENT	DISEASE STATE	AGENCY REQUESTING
General		
Admitting Diagnosis	All	All
Discharge Diagnosis	All	All
Discharge Disposition	All	All
Gender	All	All
Admission Source	All	All
Race	All	All
Diagnoses		
Anthrax Diagnosis	Anthrax	CDC
Legionella Diagnosis	Legionella	CDC
AMI Diagnosis	AMI	CMS
Diabetes Diagnosis	Diabetes	CMS
Stroke Diagnosis	Stroke	CDC
Pneumonia Diagnosis	Pneumonia	CMS

© 2004 IBM Corporation

A Sampling of Data Elements from Demonstration Project Data Elements List

First Generation (continued)

DATA ELEMENT	DISEASE STATE	AGENCY REQUESTING
Observations		
Respiratory Viral Results	Respiratory	CDC
Varicella Test Results	Varicella	CDC
HDL Cholesterol	Diabetes	CMS
LDL Cholesterol	AMI, Diabetes	CMS
Triglycerides Result	Diabetes	CMS
Positive Pregnancy	Adverse Drug	FDA
Medications		
ACE Inhibitors	AMI	CMS
Antibiotic	Pneumonia	CMS
Felbatol	Epilepsy	FDA
Thalidomide	Leprosy	FDA
Antithrombotic	Stroke	CMS
Nifedipine	Stroke	CMS

© 2004 IBM Corporation

Second generation topics are focused on supporting direct process comparisons between current and HCN enabled processes

Sample Revised Topics for April 04

KEY DATA ELEMENT	ADDITIONAL	AGENCY REQUESTING
Observations		
AMI Diagnosis (GE 65)	All Labs and Med info	CMS
AMI Diagnosis LT 65	All Labs and Med info	CMS
HF Diagnosis GE 65	All Labs and Med info	CMS
HF Diagnosis LT 65	All Labs and Med info	CMS
Pneumonia Diagnosis GE 65	All Labs and Med info	CMS
Pneumonia Diagnosis LT 65	All Labs and Med info	CMS
Meningitis	All Labs and Med info	CDC
Medications		
Coumadin	Pro thrombin time	FDA, Vanderbilt

© 2004 IBM Corporation

Sample view of notifications on the HCN Portal

National Healthcare Collaboration Network - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Address I Team\Geoffrey's HTML Pages\html\publisher\index.htm Go Links Google Hotmail PDC - W3

hcn Healthcare Collaboration Network

home contact us legal help log out

Welcome: Rodney Gitzel **Publisher** **Role:** Publisher - PGW1234 Cornwal Change Role

IBM

Publications | Publication Requests | Authorization Requests | Health Topics | NHCN Notifications | Participants

NHCN Notifications

Click on a subject title to view the Notification Details.

Date	Time	Type	From	Subject
03/26/03	12:00	Email	Administrator	System Unavailable
03/25/03	13:25	Information	Administrator	Publication added to topic Anthrax
03/25/03	15:44	Information	Cornwall General Hospital	New Health Topic Diabetes has been added
03/24/03	10:27	Email	Cornwall General Hospital	New Health Topic Diabetes has been added
03/23/03	11:11	System	Cornwall General Hospital	New Health Topic Diabetes has been added
03/23/03	16:03	System	Cornwall General Hospital	New Health Topic Diabetes has been added

→ more NHCN notifications

Publications

Create Publication

Display Publications:

All publications

Containing the word: Display

→ more publications

Publication Requests

The following table lists subscriber requests for publications.

Topic Name	Requesting Organization
Accutane with no pregnancy test	FDA
ADR for Accutane	FDA
ADR for Accutane	Centers for Medicare and Medicaid

→ more publication requests

Authorization Requests

The following table lists subscriber requests for publications.

Topic Name	Requesting Organization
Accutane with no pregnancy test	FDA
ADR for Accutane	FDA
ADR for Accutane	Centers for Medicare and Medicaid

→ more authorization requests

Health Topics

Display Topics:

All topics

Containing the word: Display

→ more health topics

Participants

Display Participants:

All participants

Beginning with letters: Display

→ more participants

home | contact us | legal | help | log out

My Computer

© 2004 IBM Corporation

Sample view of reporting activity summary on the HCN Portal

National Healthcare Collaboration Network - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Address I Team\Geoffrey's HTML Pages\html\publisher\topics.htm Go Links Google Hotmail PDC - W3

hcn
Healthcare Collaboration Network

home
contact us
legal
help
log out

Welcome: Rodney Gitzel **Publisher** **Role:** Publisher - PGW1234 Cornwal Change Role

IBM

Publications | Publication Requests | Authorization Requests | Health Topics | NHCN Notifications | Participants

Health Topics

Display Topics:

All topics

Containing the word: Display

Topic Name	Topic Description
Accutane with no pregnancy test	Prescription of Isotretinoin for female with no pregnancy test administered.
ADR for Accutane	Prescription of Isotretinoin for a pregnant female.
ADR for Arava	A patient prescribed leflunomide (Arava) has elevated levels of AST and bil ...
ADR for Arava (2)	A patient prescribed leflunomide (Arava) has elevated levels of AST and bil ...
ADR for Clozapine	Agranulocitosis (as measured by neutrophil count) in connection with pres ...
ADR for Felbatol	A patient prescribed felbamate (Felbatol) has decreased red blood cell coun ...
ADR for Felbatol (2)	A patient prescribed felbamate (Felbatol) has decreased red blood cell coun ...
ADR for Felbatol (3)	A patient prescribed felbamate (Felbatol) has decreased red blood cell coun ...
ADR for Thalidomide	Prescription of thalidomide (Thalomid) for a pregnant female
AMI with ACE Inhibitor	A patient with a diagnosis of Acute Myocardial Infarction received an ACE in ...

Prev Page 1 of 49 Next

page Go

return to home page

home | contact us | legal | help | log out

My Computer

© 2004 IBM Corporation