

NYCLIX Overview

Goals for Public Health and Clinical Care



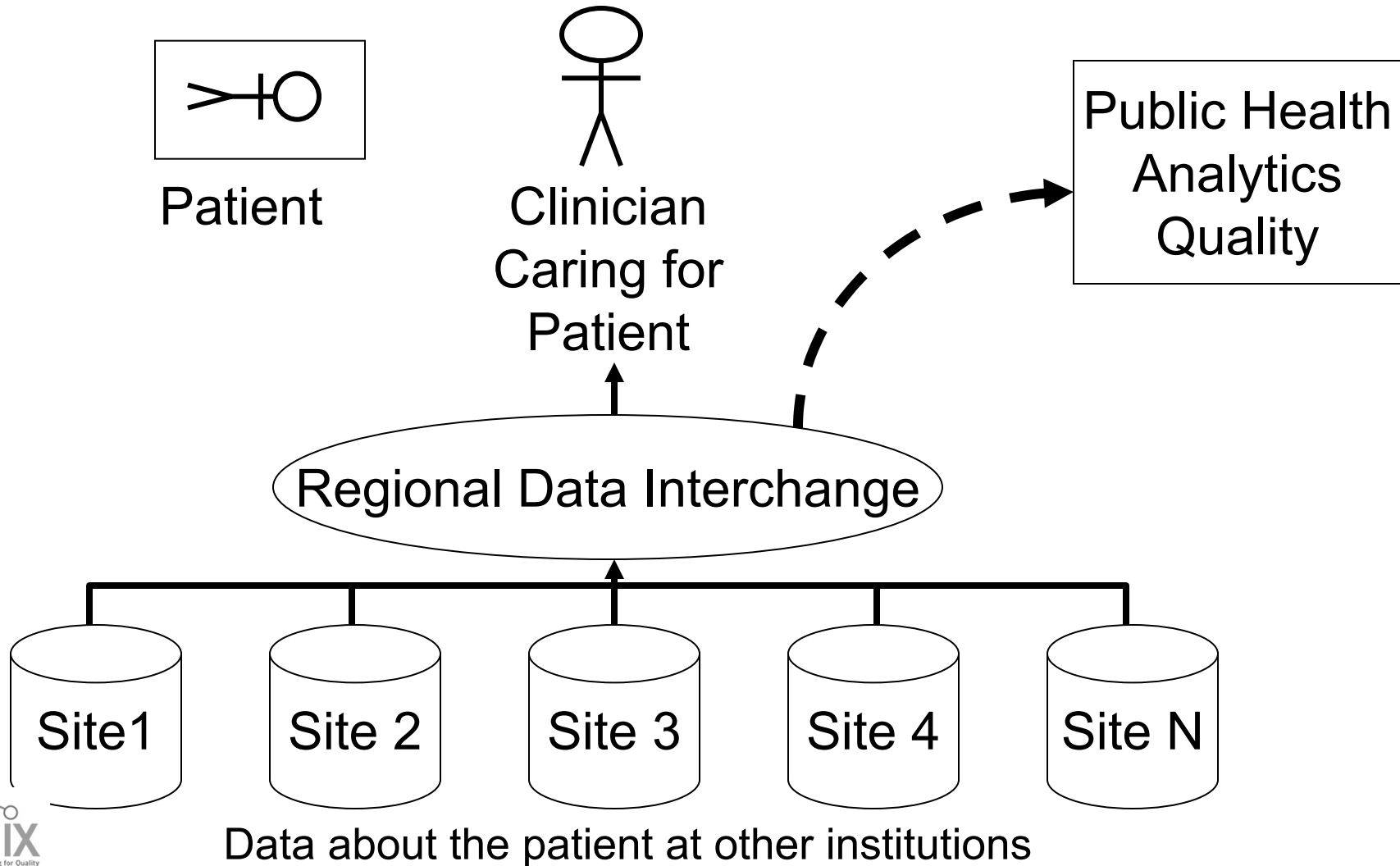
Gilad Kuperman, MD., PhD.
Chair, NYCLIX, Inc.

02/02/2010

NYCLIX, Inc.

- “New York Clinical Information Exchange”
- Not-for-profit, 501(c)(3) corporation
- Mission
 - Improve health by providing a clinical data exchange capability among its participants
 - Provide a health information infrastructure that enables innovative programs of care

NYCLIX vision



Origins of NYCLIX

- June 2004
 - Idea emerged at Greater NY Hospital Association
- Rest of 2004
 - Discussed competitive concerns
 - Decided care of patients is paramount (!)
 - Identified initial scenario
 - Make data available to ED physician
- GNYHA served as “honest broker”
- Obtained \$300K planning grant from National Library of Medicine

HEAL NY grant program

- NY Health Efficiency and Affordability Law
- 4-year \$1B bond act for health restructuring and health IT
- October 2005 – Phase 1 announced
 - Had to include > 1 organization
 - Had to be aligned with Federal HIT policy

NYCLIX's HEAL 1 proposal

➤ Goals

- Build a technical infrastructure inter-connecting the participants
 - Implement data exchange in ED setting
 - Support public health activities
 - Reporting, etc.
 - Evaluate impact on cost, quality, safety
 - Create an extensibility plan
- NYCLIX awarded \$2.3M from NY State
- Matching program; total project costs \$4.7M

NYCLIX participants

Hospitals -- Manhattan

- Beth Israel
- Mount Sinai
- NewYork-Presbyterian
- New York University MC
- St. Luke's-Roosevelt
- St. Vincent's

Home care

- Visiting Nurse Service of New York

Hospitals – outside Manhattan

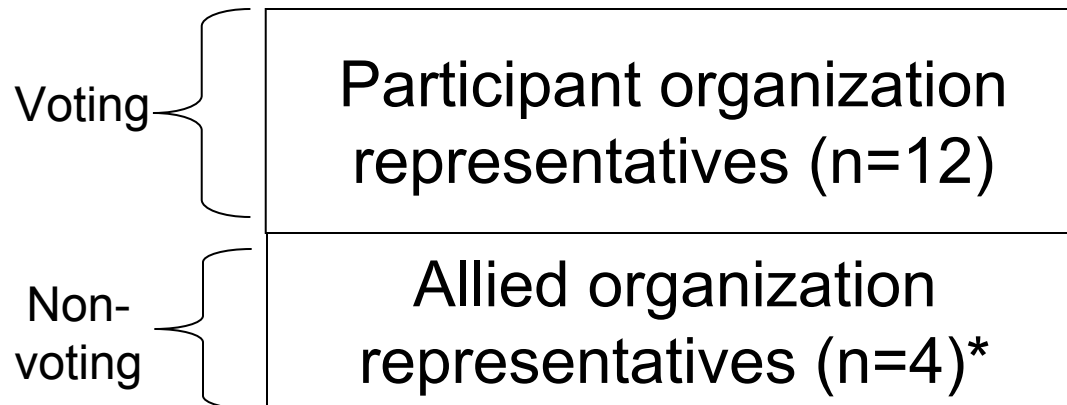
- Kings County Hospital
- Staten Island Hospital
- Downstate

Ambulatory

- Institute for Family Health
- ColumbiaDoctors

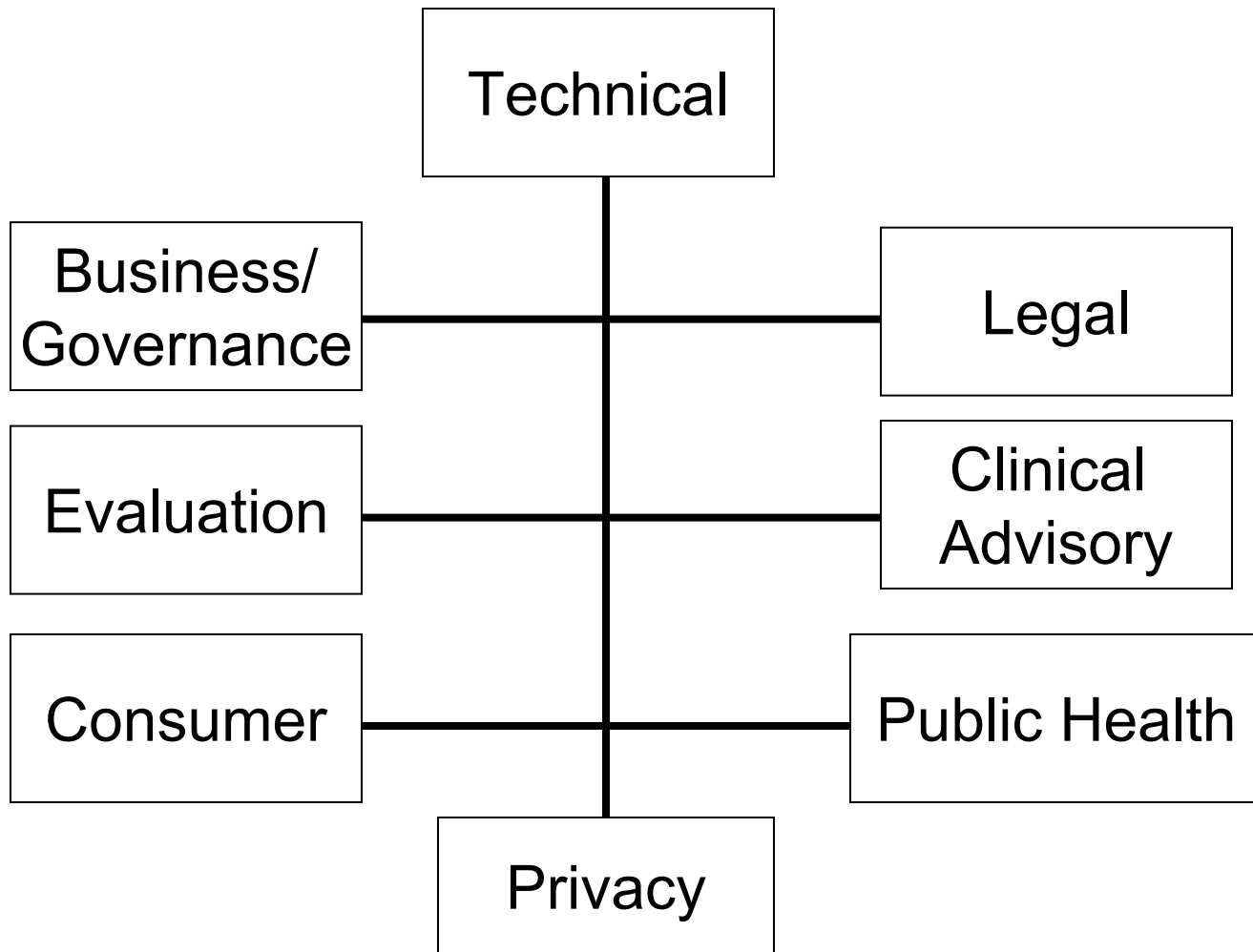
Governance

NYCLIX Board of Directors



*United Hospital Fund, NYCDOHMH,
New York Business Group on Health, IPRO

NYCLIX Committees

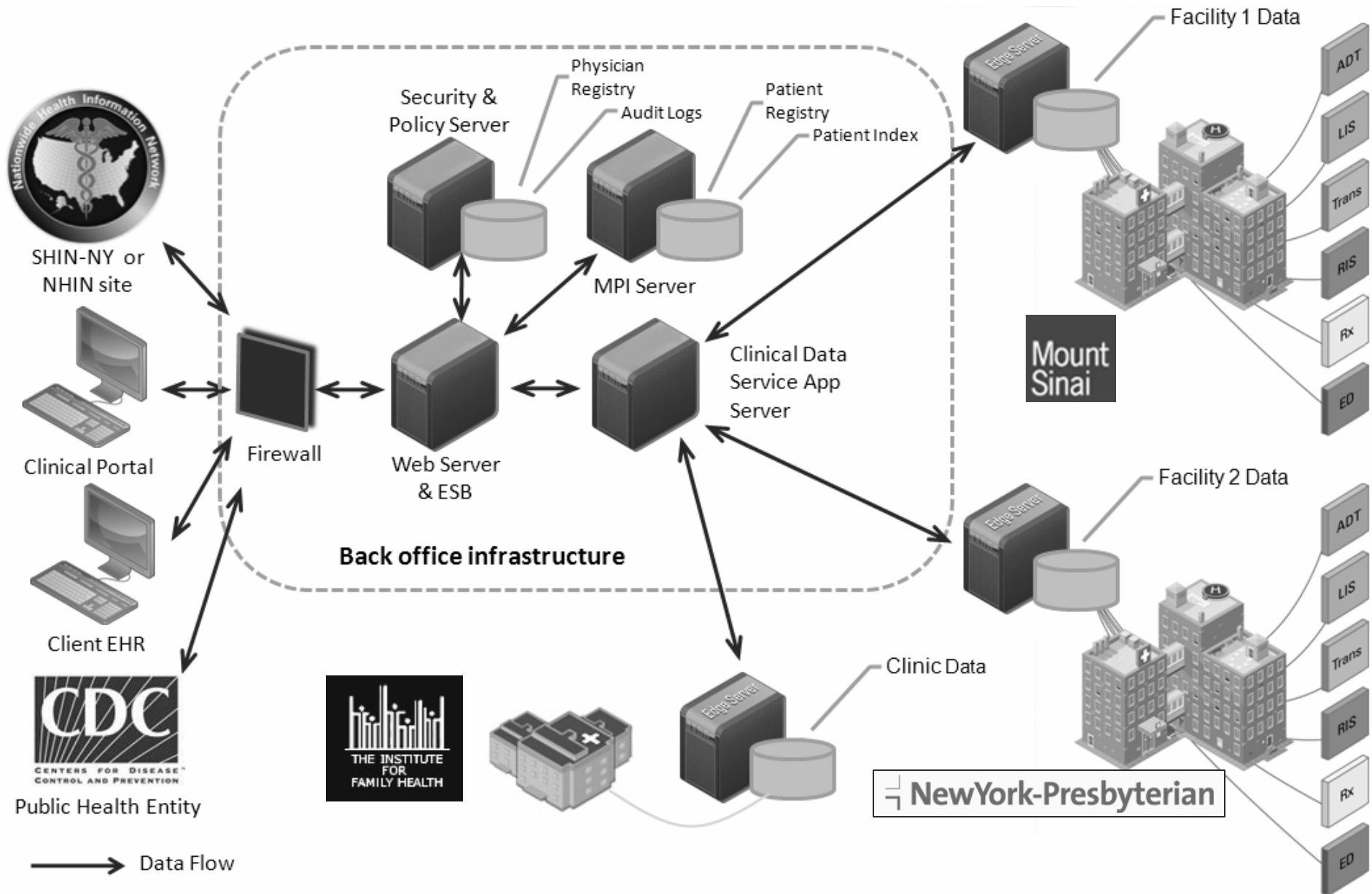


NYCLIX Privacy Policy

- Consent
 - Based on patchwork of Federal and State laws
 - 2-year consensus development process
 - Patient must give the organization consent to access data
- Provider commitments
 - Users must be authorized; use must be appropriate
 - May integrate data into its records
 - May communicate data to other providers
 - Accept responsibility for breaches
 - Provider will audit its compliance w/ these commitments
- NYCLIX commitments
 - Maintains an audit log
 - Oversees the auditing process

NYCLIX technical model

Federated database with central MPI



Status of NYCLIX Platform

- Technical Platform Running
 - Eight organizations contributing data
 - 80 logical data feeds across 42 physical interfaces
 - Federated data architecture
 - MPI is at a central hub for MPI; clinical data on edge servers
 - Functional clinical results viewer
- Governance in Place
 - Privacy and Security Committee; policies
- Six Organizations Collecting Consent
 - Must obtain patient's consent to access NYCLIX
- Clinician Usage Began in October

Summary Screen Sample

Patient Search

Patients in ED

Summary

Medications

Labs

EKG's

Diagnostic Reports

Clinical Documents

Data from multiple facilities

Visit History (4 of 4)

| Date | Facility | Medical Record Number | Visit Type | Reason For Visit |
|------------|--------------|-----------------------|------------|------------------|
| 05/17/2009 | VNS-NY | | Outpatient | |
| 03/11/2009 | BI-Petrie | | Outpatient | |
| 03/04/2009 | NYU Med Cent | | Emergency | |
| 12/19/2008 | NYU Med Cent | | Emergency | |

Diagnoses (5 of 5)

| Description | Date | Coding Scheme | Code | Type | Facility |
|--------------------------|------------|---------------|--------|------|-----------|
| COPD W/ EXACERBATION | 05/14/2009 | I9 | 491.21 | | VNS-NY |
| DIFFICULTY IN WALKING | 05/14/2009 | I9 | 719.7 | | VNS-NY |
| HYPOTHYROIDISM | 05/14/2009 | I9 | 244.9 | | VNS-NY |
| MTH SUS STPH AUR ELS/NOS | 05/14/2009 | I9 | 041.11 | | VNS-NY |
| ROUTINE MEDICAL EXAM | 03/31/2009 | I9 | V70.0 | P | BI-Petrie |


Procedures (2 of 2)

| Description | Date | Coding Scheme | Code | Facility |
|------------------------------|------------|---------------|-------|-----------|
| OFFICE/OUTPATIENT VISIT, EST | 03/11/2009 | C4 | 99211 | BI-Petrie |
| GENERAL PHYSICAL EXAM | | I9 | 89.7 | BI-Petrie |

Clinicians (5 of 8)

| Name | Visit Role | Visit Date | Facility |
|------|------------|------------|--------------|
| | Ordering | 07/15/2009 | VNS-NY |
| | Referring | 05/17/2009 | VNS-NY |
| | Attending | 03/11/2009 | BI-Petrie |
| | Referring | 03/11/2009 | BI-Petrie |
| | Attending | 03/04/2009 | NYU Med Cent |

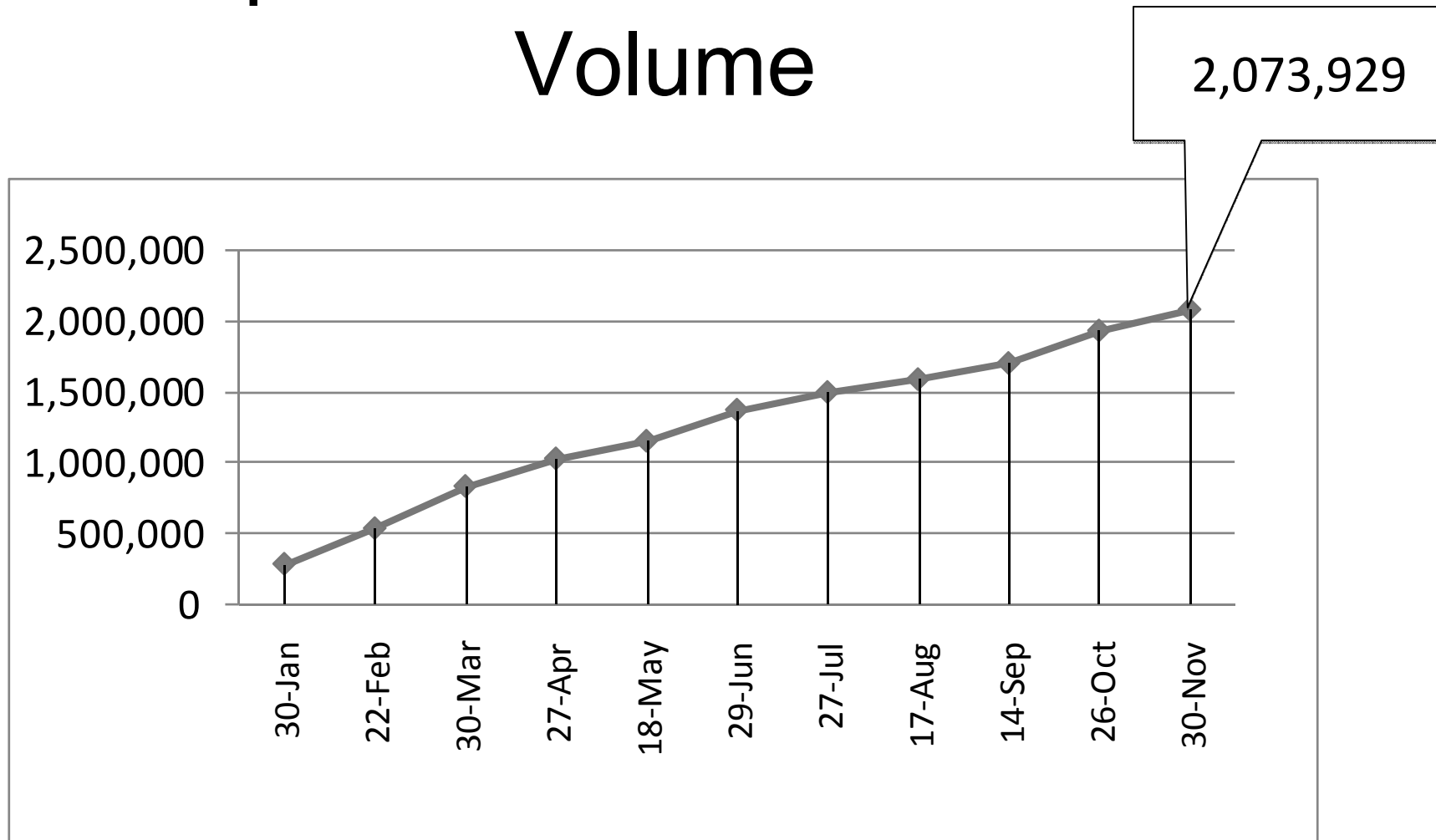
Data Element Grid



HEAL 1 Interface Status
October 16, 2009

| Feed | Data Feeds | CHP-BI | CHP-SLR | Kings Co | IFH | NYU | NYP | MSMC | SVMC | SIUH | SUNY | VNSNY |
|---------------|------------------------|----------------|---------|----------|-----|-----------------|-----|------|------|------|------|-------|
| ADT | Registration & Updates | P | P | T | P | P | P | P | P | P | P | P |
| ADT | Allergies | | | | | P | P | | P | P | P | P |
| ADT | Diagnoses | P | P | T | P | P | P | P | P | P | P | P |
| ADT | Procedures | P | P | | P | P | P | | P | P | P | |
| Laboratory | Laboratory | P | P | D | | P | T | P | P | T | P | |
| Radiology | Radiology | P | P | D | | P | T | P | P | P | P | |
| Pathology | Pathology | P | P | | | P | T | P | P | P | | |
| Cardiology | Cardiology | | | | | P | | | | P | D | |
| Endoscopy | Endoscopy | P | P | | | P | | | | P | | |
| Medications | Medications | | | D | | | | | | | | P |
| EKG | EKG Reports | | | | | | T | | | P | | |
| EKG | EDG Images | | | | | | | | | | | |
| Reports | Discharge Summaries | | | | | P | T | | | | | |
| Reports | Personal Health Record | | | | T | | | | | | | |
| Immunizations | Immunizations | | | | P | | | | | | | |
| ED Systems | Vital Signs | P | | | | P | | | P | | | |
| | | P = Production | | T = Test | | D = Development | | | | | | |

Unique Patients / Transaction Volume



Prepublication
-- do not cite

Patients Who Have Been to > 1 Site

Prepublication
-- do not cite

| Number of Sites Visited | Count |
|-------------------------|----------------|
| 2 | 142,009 |
| 3 | 17,599 |
| 4 | 2,336 |
| 5 | 357 |
| 6 | 68 |
| 7 | 31 |
| 8 | 16 |
| 9 | 2 |
| 11 | 2 |
| 12 | 1 |
| Total | 162,421 |

Patients Providing Consent

| | |
|----------|---------|
| VNS | 64,823 |
| NYU | 54,099 |
| Mt Sinai | 19,917 |
| St Vinc | 17,944 |
| SUNY | 6,320 |
| BIPD | 7,041 |
| BIKH | 51 |
| BISC | 1 |
| STLH | |
| RVTH | |
| IFH | 12 |
| Totals | 170,208 |

Prepublication
-- do not cite

ED Patients with Data at >1 Site

One week of data

Prepublication
-- do not cite

| Site | Total ED Visits | Pts with data elsewhere | % of Total Visits |
|--------------|------------------------|--------------------------------|--------------------------|
| BIPD | 1,650 | 318 | 19% |
| NYUMC | 548 | 112 | 20% |
| SVCMC | 981 | 227 | 23% |
| UHB | 1,121 | 111 | 10% |
| MSMC | 1,032 | 221 | 21% |
| Total | 5,332 | 989 | 19% |

User Testimonials

- “... had a patient who had an ultrasound at SLR 1 week ago to r/o DVT, and I was able to pull it up in NYCLIX and document it in our EHR”
- “I heard from one of the senior residents that they looked up a cardiology study from NYU on another pt last week that allowed them to discharge her, when they otherwise would have certainly admitted her”
- “...another pt who we were going to admit until we saw that the lab work from 5 days ago at SLR was actually now improved”
- “I saw a patient who said she had a recent stress test at NYU that was “abnormal”. I was able to locate the test which was negative. I was able to discharge the patient instead of either admitting or redoing her stress test.”

Next steps

- Connection to Nursing Homes
- Ambulatory EMR Outreach and Connectivity
- Patient Portal Services and Integration

CCITI (Continuum of Care Improvement Through Information)

- Facilitating transfer from hospital to nursing home
 - RHIO data assembled
 - Discharge planner adds data to database
 - Sent to nursing home

PCIP (Primary Care Information Project)

link to NYC DOH eCW practices



Clinical Data Exchange

- Bi-directional exchange of CCDs
- Authentication management
- Consent management



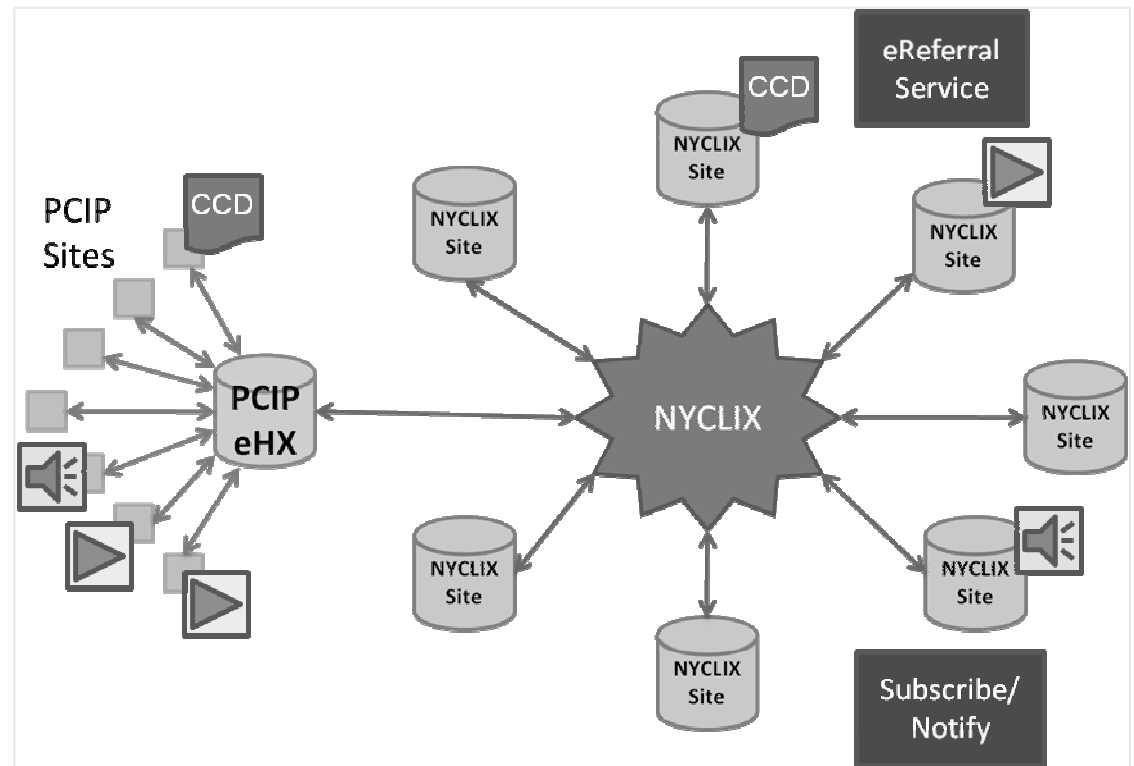
eReferral

- Communication between primary care MD and specialist
- Send the clinical data
- Status tracking (“sent”, “appt scheduled”, “visit completed”)



“Subscribe and Notify”

- Event detection
- E.g., send primary care physician a message when patient has been admitted or to ED



Patient portal trial

- “Special needs plan” (SNP)
- IT-enabled care coordination program
- Clinician portal, medication claims data, patient portal
- Extend NYCLIX platform to include patient portal
- Medication claims data becomes part of the exchange

NYCLIX strategic vision

- Identify and implement interoperability-based services of value
 - Access to data at point of care
 - Results delivery
 - Quality reporting
 - Support for chronic disease management
 - Support for transitions of care
 - Public health
 - Support for the consumer
- Support for “meaningful use”

HIE beyond NYC

- Nationwide Health Information Network
- Statewide Health Information Network for NY
- CDC -- HIE for Biosurveillance

NHIN Trial Implementation

- Demonstrated the secure exchange of data among operational HIEs around the country
- Delivered summary record data according to standards-based services
 - Data services
 - Transport services
 - Authentication services
- Data constructs / services used in this project will serve well in an eventual nationwide health information network

NY State HIE Activities

NYCLIX is a full participant in NY State activities

- Clinical Priorities Document
- RHIO Consent Policies
- RHIO Privacy and Security Policies
- Technical documents
 - Technical Architecture Overview
 - EHR Requirements Document
 - Medication Services Specification
 - Security Requirements

<http://www.nyehealth.org>

CDC HIE for Biosurveillance

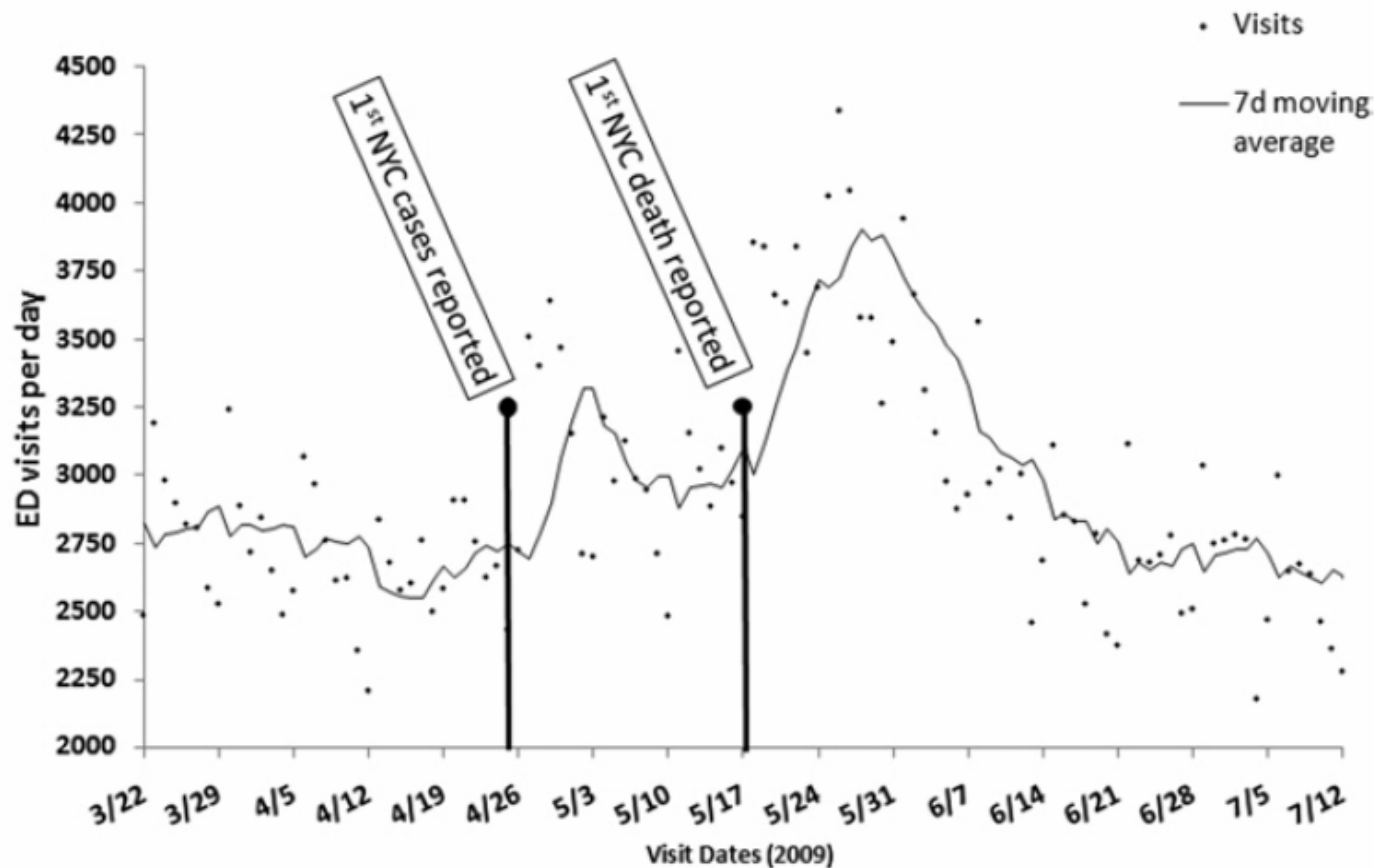
- 5-year CDC Project; Started February 2008
- 3 Awardees
 - NY, Indiana, Washington
- Goals
 - Determine how HIEs can be used to support biosurveillance
 - Eventually, bidirectional flow of data between provider organizations and public health authorities
 - Understand availability of data, timeliness of data, workflows, other issues, etc.

HIE to Support Public Health – Use Cases

1. Mandated reporting of laboratory diagnoses
2. Non-mandated reporting of laboratory data
3. Mandated reporting of physician diagnoses
4. Non-mandated reporting of clinical data
5. Public health investigation
6. Clinical care in public health clinics
7. Population-level quality monitoring
8. Mass-casualty events – look up
9. Disaster medical response
10. Public health alerting—patient level
11. Public health alerting—population level

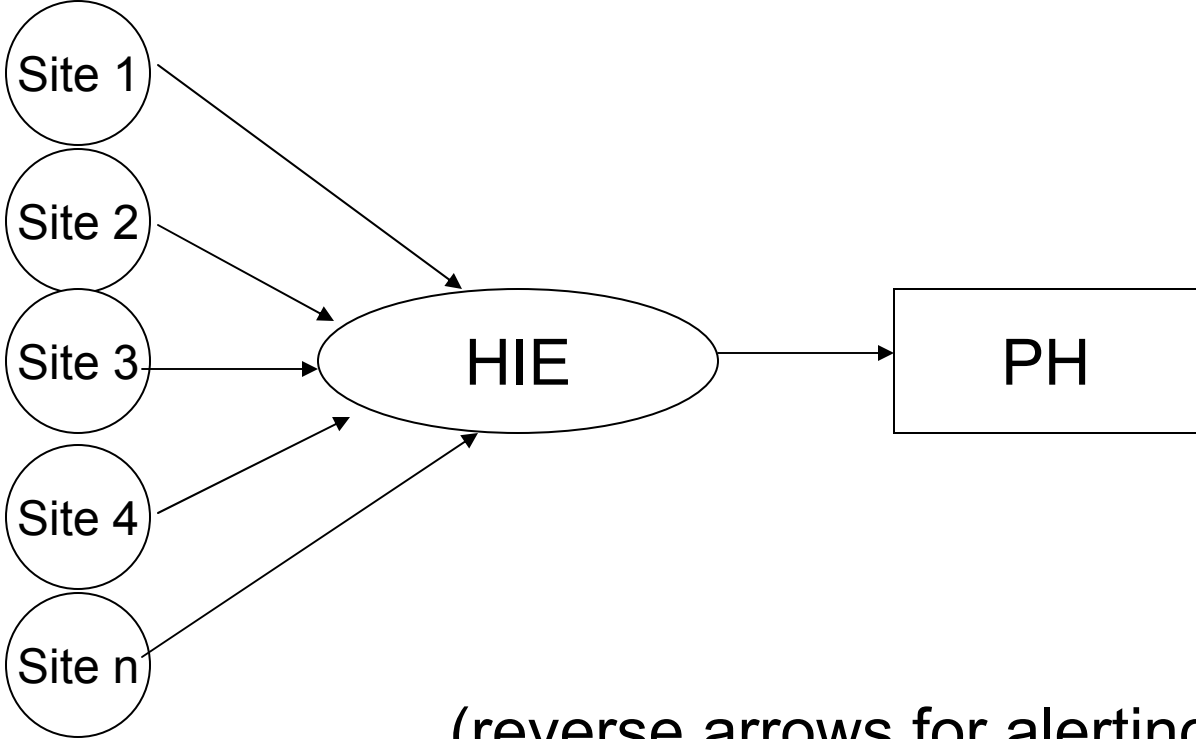
Health Information Exchange, Biosurveillance Efforts, and Emergency Department Crowding During the Spring 2009 H1N1 Outbreak in New York City

Annals of
Emergency Medicine



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HIE to support public health



(reverse arrows for alerting)

Using HIE for Public Health -- Challenges

- HIE as organizational broker, as well as a technical
- HIE knowledge about nuances of sites' data
- Public health's knowledge / assumptions about NYCLIX data
- Comparison with other sources of same data
- Need for resources to validate understanding
 - Hospitals, DOH, HIE; must be coordinated
- Replicating, not replacing current functionality
 - Different parts of the organization
- Incompleteness of NYCLIX data matrix
- Inconsistently provided data elements
 - E.g., chief complaint, reason for visit
- Uncoded data
- Inconsistent coding schemes (labs, meds, dx)
- Alerting would require workflow changes

Summary

- NYCLIX's HIE is in early clinical use
 - More to learn
- Tracking the development of care models that encourage efficiency
 - Still not mature in NYC
- Growing membership to cover the continuum
- Gaining experience with public health use cases
- Activities at the State and Federal level are shaping NYCLIX's directions