

**Chris Giancola**  
NEHEN Member Relations  
781.290.1687 [chris.giancola@csc.com](mailto:chris.giancola@csc.com)

**CSC**

# NEHEN Briefing

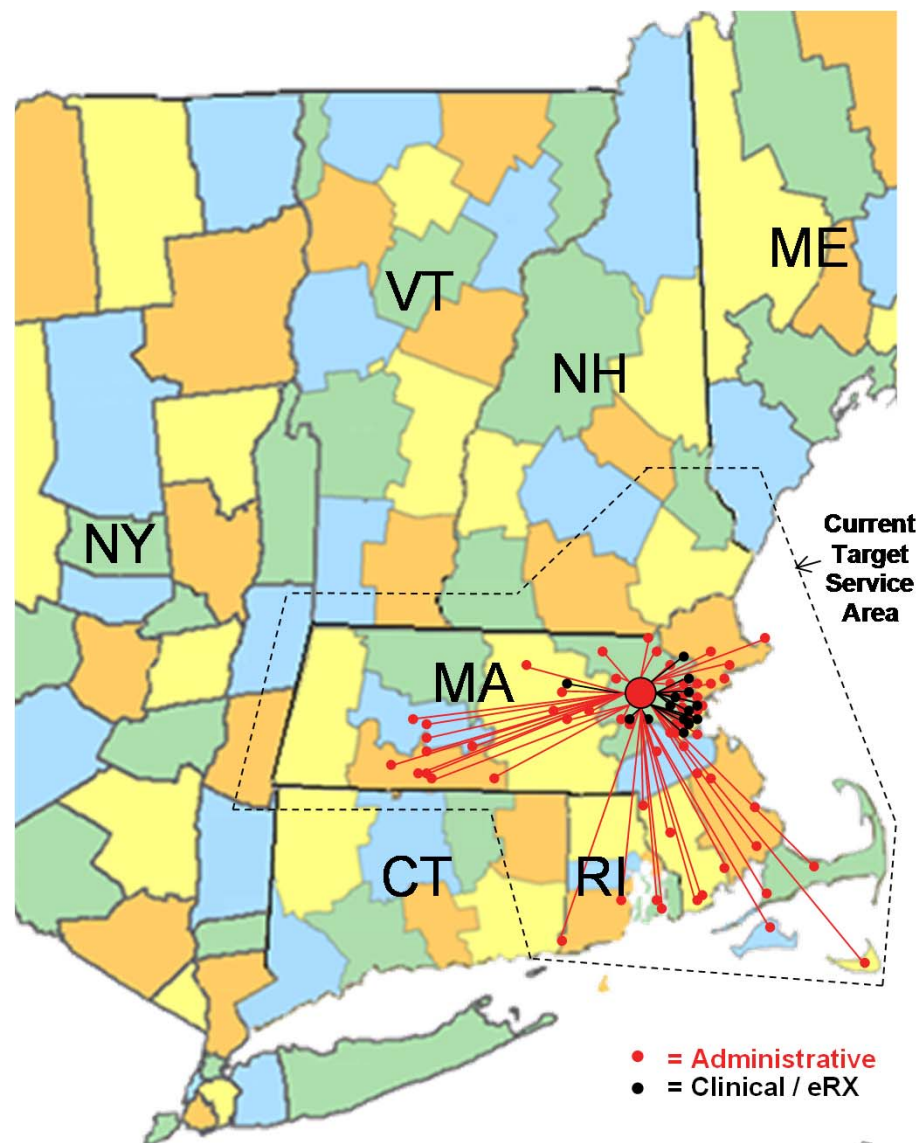
## Clinical Exchange Services

June, 2011



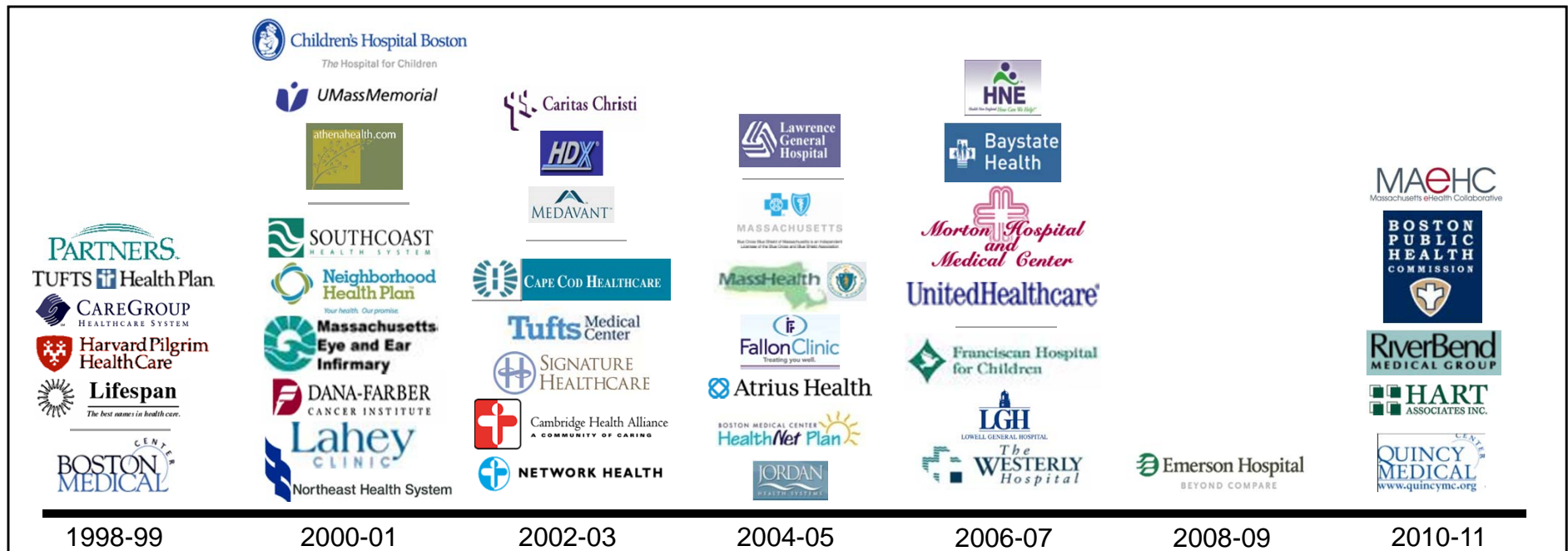
## What is NEHEN?

- **NEHEN is the most widely-adopted HIE solution in New England**
  - Spanning the state and Rhode Island
  - Longest sustained and most widely scaled
    - 100M+ annual transactions
- **Serving organizations of all types and size, public and private**
  - Federated and hosted options
- **Expanding clinical HIE**
  - Based on broad customer base for reimbursement-related administrative services
- **Aligned with state and interstate HIE**
  - Provider directory, NHIN pilot, etc.



# Level Set: NEHEN Organization Recap and Overview

- **NEHEN is the New England Healthcare Exchange Network:**
  - 50+ hospitals, 5,000+ physicians, 4.5M+ health plan members
  - 8 health plan participants
  - 170+ small provider subscribers, encompassing >3,000 users
- Clinical exchanges such as clinical summaries, immunization records
- Connectivity to national insurers (e.g., Aetna, Cigna, Medicare, United)



CSC

# Clinical Exchange

Overview



# Why do any Clinical Information Exchange?

- **It's what doctors want<sup>1</sup>**
  - 74 percent of the doctors said they would prefer computer-based means to paper and fax when sharing patient information with each other
  - However, only 17 percent of the doctors surveyed said they use computer-based means predominantly to communicate with other doctors today
- **It's required for earning incentives in Stage 2 of Meaningful Use**
  - The proposed Stage 2 requirements state three clinical HIE-related requirements:
    1. Exchange with three trading partners with disparate technologies or membership in a bidirectional HIE
    2. Syndromic surveillance reporting to a local public health authority
    3. Immunization registry reporting to a local public health authority

1. Markle, **The 3 in 4 Doctors Would Prefer Computerized Means to Share Patient Information with Each Other** *Markle Foundation* 2011 31-Jan. <http://www.markle.org/publications/1439-3-4-doctors-would-prefer-computerized-means-share-patient-information-each-other> (Last accessed 2/17/2011)

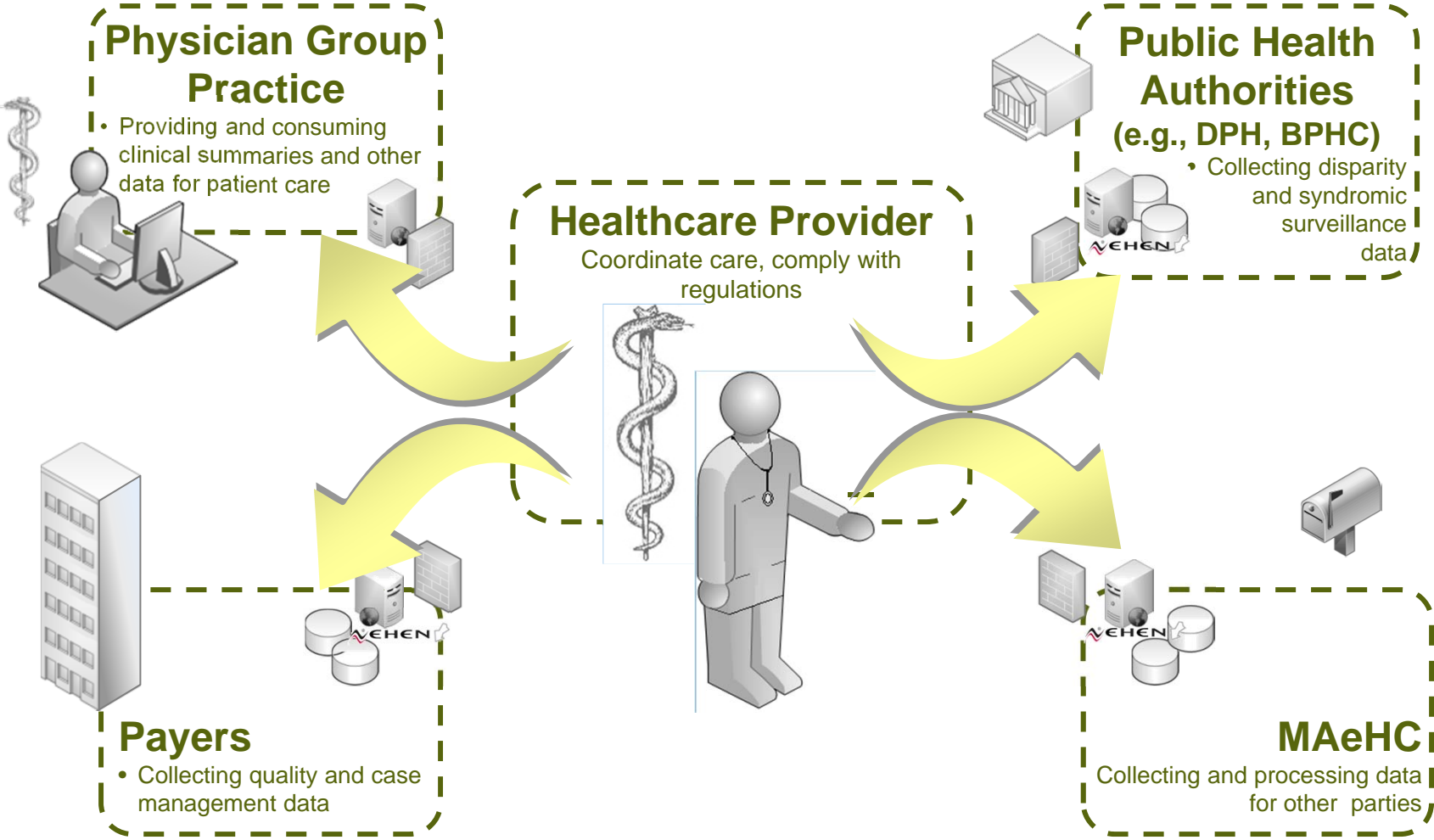
# Why do any Clinical Information Exchange? (continued)

- **You can reduce medical errors**
  - ePrescribing reduces errors, adverse events from drug interactions<sup>1</sup>
  - CPOE reduces patient mortality<sup>2</sup>
- **You can reduce the cost of healthcare delivery**
  - Clinical referrals and collateral contacts are manual, labor-intensive processes which can be automated to save significant costs<sup>3</sup>
  - Discharge and encounter summaries reduce redundant lab tests
  - Referrals within your ACO/network keeps revenue local, incentives in-tact
- **You can improve patient loyalty and satisfaction**
  - Continuity of care is facilitated, automated with clinical information exchange, fostering patient loyalty and likelihood to seek future care within the network

1. Ammenwerth E, Schnell-Inderst P, Machan C, Siebert U. **The effect of electronic prescribing on medication errors and adverse drug events: a systematic review.** *J Am Med Inform Assoc.* 2008 Sep-Oct;15(5):585-600. Epub 2008 Jun 25.
2. Christopher A. Longhurst, Layla Parast, Christy I. Sandborg, Eric Widen, Jill Sullivan, Jin S. Hahn, Christopher G. Dawes, and Paul J. Sharek **Decrease in Hospital-wide Mortality Rate After Implementation of a Commercially Sold Computerized Physician Order Entry System** *Pediatrics*, May 2010; doi:10.1542/peds.2009-3271
3. Jan Walker, Eric Pan, Douglas Johnston, Julia Adler-Milstein, David W. Bates, and Blackford Middleton **The Value Of Health Care Information Exchange And Interoperability** *HealthAffairs* 2005 19-Jan. <http://content.healthaffairs.org/cgi/content/full/hlthaff.w5.10/DC1> (Last visited 5/7/2010)



# Provider-centric Clinical Information Exchange



# What does NEHEN Clinicals encompass?

## Supported Services

NEHEN Administrative Exchange
NEHEN Clinical Data Exchange
NEHEN e-Prescribing Exchange

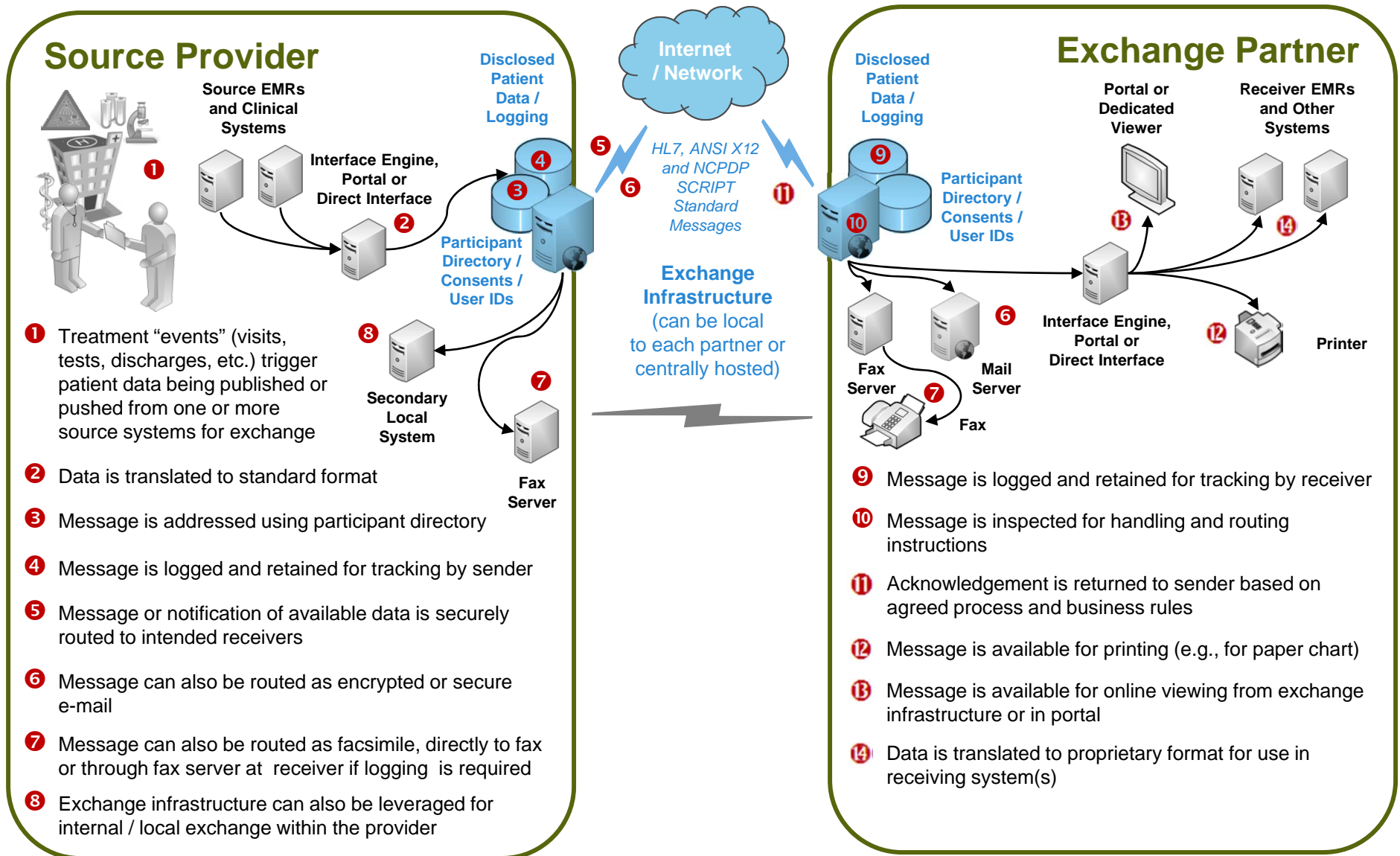
Clinical Exchange Features/Functions	
Use Cases	<b>Provider-to-Provider Clinical Summary Exchange</b> Clinical Summary Supporting Multiple Use Cases (e.g., Discharge Summary, Visit/Encounter Summary, Referral Summary, Admission Notification)
	<b>Provider-to-Payer Exchange</b> Clinical Summary for Case Management & other Use Cases Lab Results for Quality Measurement & other Use Cases
	<b>Quality Reporting</b> Clinical Summary for Quality Analysis
	<b>Public Health Reporting</b> Clinical Summary for Health Equities Analysis Lab Results Immunizations Syndromic Surveillance
Enabling Technologies	<b>Clinical Summary Viewer</b> Built into NEHENExpress
	<b>Community Participant/Provider Directory for Message Routing</b> Centrally hosted by NEHEN
	<b>Secure Messaging</b>
	<b>Audit Control</b> Reportable Event Logging NEHENExpress Audit Report Viewer



# Clinical Exchange Participation Options

- **As a SENDER**
  - Use your hospital information system's CCD or HL7 2.5.x interface
  - Build an adaptor (yourself, via interface engine, third-party interface)
- **As a RECEIVER**
  - Use your hospital information system's CCD interface
  - Use *NEHENExpress* – Clinical Viewer
  - Use *NEHENAdapter Services* to your secure email
  - Use *NEHENAdapter Services* to your fax server
- **Or Both SENDER and RECEIVER**

# NEHEN Messaging, Conceptual Architecture and Workflow



Blue / Highlighted = NEHEN components



# NEHEN Clinical Exchange Members and Participation

Participant	Clinical Summaries <sup>1</sup>		Lab Results <sup>2</sup>		Immunizations <sup>3</sup>		Syndromic Surveillance <sup>4</sup>	
	Send	Receive	Send	Receive	Send	Receive	Send	Receive
Atrius Health	Planned						Planned	
Beth Israel Deaconess	✓	✓						
BI Deaconess – Needham								
BID Provider Organization								
Children’s Hospital	✓	✓			Planned			
Fallon Clinic					Planned			
Mount Auburn Hospital								
Mass. Eye & Ear Infirmary	Planned	Planned						
New England Baptist		Planned						
Northeast Health Systems		✓						
Partners HealthCare	Planned							
Signature Health	Planned	Planned						
Tufts Medical Center								
Winchester Hospital	Planned	Planned						
Boston Public Health Comm.		<sup>5</sup>				Planned		
MA Dept. of Public Health				Planned				
Mass. eHealth Collaborative		<sup>6</sup>						
Network Health								

1 HL7 CDA R2 CCD, HITSP C32, CCR Receive  
 2 HL7 2.5.1, LOINC  
 3 HL7 2.5.1, CVX  
 4 HL7 2.5.1, CVX  
 5 For health equities analysis  
 6 For quality reporting

Legend:  
 ✓ Production  
 Testing  
 In Design/Development



# Activation Schedule for Group 1

- **Group 1**
  - BIDMC Quality Data to Massachusetts e-Health Collaborative
  - Children's CCDs to Northeast
- **Group 1 Milestones:**
  - Wed, May 25 Group 1 Opt-in deadline
  - Thurs, June 2 eGatewayCDX Core Software installations begin
  - Mon, June 6 Testing Cycle begins
  - 7/5 - 7/15 Production Activations spread over 2 weeks

\*

# Activation Schedule for Group 2

- **Group 2**
  - BIDMC CCDs to Partners
  - BIDMC CCDs to Network Health
  - BIDMC Lab Results to Network Health
  - BIDMC Lab Results to Boston Public Health
  - BIDPO Quality Data to Massachusetts e-Health Collaborative
  - Tufts Discharge summary CCDs to Northeast
- **Group 2 Milestones:**
  - Wed, Jun 1      Group 2 Opt-in deadline
  - Mon, Jun 13    eGatewayCDX Core Software installations begin
  - Mon, Jun 20    Testing Cycle begins
  - 7/18- 8/12      Production Activations spread over 4 weeks

# Activation Schedule for Use Case Group 3

- **Proposed Group 3**
  - BIDMC Syndromic Surveillance to BPHC
  - BIDMC Health Disparity CCDs to BPHC
  - Proposed: Atrius Providers registered in Atrius 2.0 gateway.
  - Tufts Discharge Summary CCD to Network Health
- **Group 3 Milestones:**
  - Wed, Jun 22 Group 3 Opt-in deadline
  - Mon, Jun 27 eGatewayCDX Core Software installations begin
  - Mon, Aug 1 Testing Cycle begins
  - 8/22- 9/23 Production Activations spread over 5 weeks

# Activation Schedule for Group 4

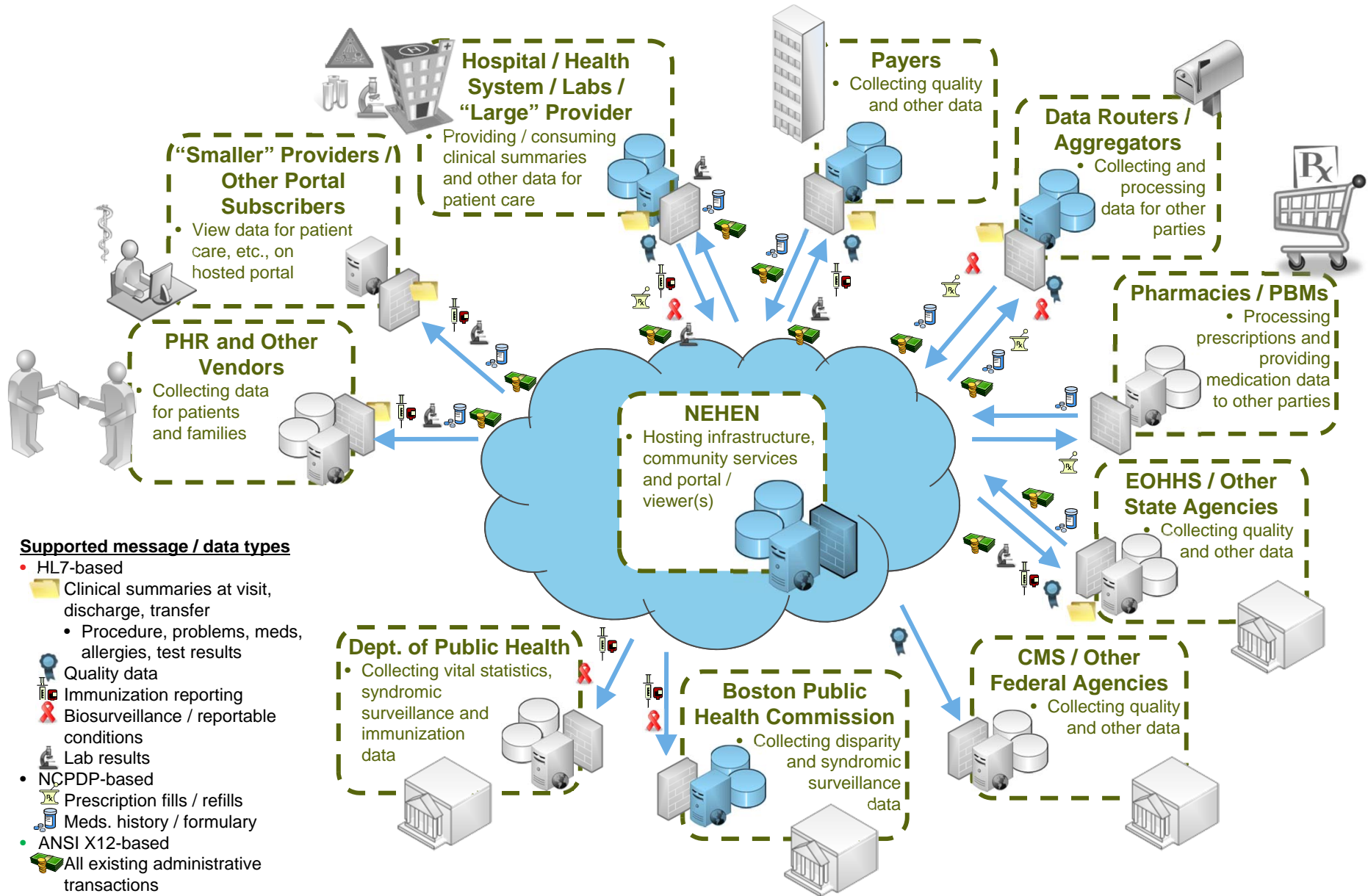
- **Proposed Group 4**

- Atrius Immunizations to MDPH registry
- BIDMC Immunizations to MDPH registry
- BIDMC CCDs to Atrius

- **Group 4 Milestones:**

- Wed, July 6     Group 4 Opt-in deadline
- Mon, Aug 15    Estimated MPDH Handler installation at NEHEN
- Mon, Aug 22    Testing Cycle begins
- 10/3- 10/21    Production Activations spread over 3 weeks

# Planned NEHEN and Massachusetts HIE Capabilities





[www.nehen.org](http://www.nehen.org)    [www.nehennet.org](http://www.nehennet.org)

[www.csc.com/health\\_services](http://www.csc.com/health_services)

**Chris Giancola**  
NEHEN Member Relations  
781.290.1687 [chris.giancola@csc.com](mailto:chris.giancola@csc.com)

CSC

# Clinical Information Exchange Details



## Messaging and Vocabulary Standards

Message Type	Messaging / Vocabulary	Implementation Guide
Clinical Summary	HL7 CDA R2 CCD ICD9 or SNOMED-CT LOINC RxNorm mappable	NEHEN Clinical Data Exchange Implementation Guide, based on HITSP Summary Documents Using HL7 CCD/C32
Lab Results	HL7 2.5.1 LOINC	NEHEN HL7 2.5.1 Implementation Guide, based on HL7 Version 2.5.1 Implementation Guide : Electronic Laboratory Reporting to Public Health, Release 1 (US Realm)
Immunizations	HL7 2.5.1 CVX	NEHEN HL7 2.5.1 Implementation Guide, based on HL7 Version 2.5.1 Implementation Guide for Immunization Messaging Release 1.0
Syndromic Surveillance	HL7 2.5.1 Vocabulary as required by Public Health Agency	NEHEN HL7 2.5.1 Implementation Guide, based on HL7 Version 2.5.1 Messaging Guide for Syndromic Surveillance Reporting (draft in development by CDC and other public health agencies)
Provider Registration	Custom provider registration message	NEHEN Clinical Data Exchange Implementation Guide

## Transport and Security Standards

Requirement	NEHEN Standard
Transport	SOAP 1.2, within profiles: <ul style="list-style-type: none"> <li>•IHE ITI TF v6 XDR</li> <li>•Public Health Defined</li> <li>•CAQH CORE Phase II (to payers)</li> </ul>
General encryption/decryption of electronic health information	Symmetric 128-bit AES
Encryption/decryption of electronic of electronic health information for exchange	TLS
Secure hashing to verify that electronic health information has not been altered in transit	SHA-1
Cross-enterprise authentication	Not required for “push” messaging
Record disclosures of health information for treatment, payment, and operations	Logging service using profile: IHE ITI TF v6 ATNA (RFC 3881)
Record actions related to electronic health information	Logging service using profile: IHE ITI TF v6 ATNA (RFC 3881)



# Production Server Requirements

Server	Annual Message Volume	RAM	Processors	Disk Space
<b>Application:</b> <ul style="list-style-type: none"> <li>• Enterprise Class Server</li> <li>• Windows Server 2008 R2 Std Edition</li> <li>• Hyperthreading enabled if available</li> <li>• Network card full duplex enabled</li> <li>• Hard disk space RAID5+1 configuration</li> </ul>	Under 5M	4 GB	Two 3GHz or better	10 GB
	5M to 10M	8 GB	Four 3GHz or better	10 GB
	10M to 20M	16 GB	Eight 3GHz or better	10 GB
	Over 20M	See NEHEN Support		
<b>Database:</b> <ul style="list-style-type: none"> <li>• Enterprise Class Server</li> <li>• Windows Server 2008 R2 Standard Edition, or if separate server, Windows server 2003 or newer</li> <li>• Hyperthreading enabled if available</li> <li>• Network card full duplex enabled</li> <li>• Hard disk space RAID5+1 configuration</li> <li>• MS SQL Server 2008 Standard Edition; SQL Server 2005 also supported</li> </ul>	Under 5M	4 GB	Two 3GHz or better	150 GB
	5M to 10M	8 GB	Four 3GHz or better	300 GB
	10M to 20M	16 GB	Eight 3GHz or better	600 GB
	Over 20M	See NEHEN Support		
Minimum baseline recommendation				
Recommend but do not require separate application and database servers. MDTC required if separate.				
Depending on site configuration, may require additional servers for adapter services				
Experience to date with large clinical message volumes and sizes is limited, specifications may change				

## NEHEN and Participant Responsibilities

NEHEN	Participant
Develop/execute data sharing agreement	Execute clinical data sharing agreement
Provide documentation of business and technical requirements for NEHEN participation, assistance with understanding requirements, and guidance for assessing readiness for clinical data exchange	Understand business and technical requirements for NEHEN participation, and assess internal business processes, applications, and operational procedures for clinical data exchange readiness
Review proposed scope of participation	Document scope of design, development, and integration, and review with NEHEN
Review project plan, and integrate with NEHEN plans and schedules	Develop project plan for design, development, and integration for business processes, applications, and operational procedures
Acquire/deploy NEHEN test and production environments	Acquire/deploy Participant test and production environments
Provide business and technical guidance, deploy NEHEN components as needed	Design and implement new features and changes
Provide test plans for NEHEN interface testing, and assist with testing	Test internal systems and NEHEN interfaces
Certify Participant for clinical data exchange	Participate in certification for NEHEN clinical data exchange
Deploy NEHEN components as needed	Deploy changes to business processes, applications, and operational procedures
Maintain agreed-upon service levels	Maintain agreed-upon service levels