



CHOP HIE Roadmap: A Children's Hospital Journey to HIE

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CHOP

- Health system consisting of the main hospital and a comprehensive network of care in PA and NJ
- Regional, national and international referral center
- 530 inpatient beds (203 intensive care beds)
- 30 primary care sites, 12 specialty care sites, affiliations with 12 community hospitals, 2 urgent care centers
- 1.4 M outpatient visits
- 10,716 employees
- ~1,900 licensed medical practitioners
- 450 research investigators
- \$2B expansion plan for the next 6 years



The CEO's Vision (Steve Altschuler, MD)

- Almost a decade ago, we envisioned a future in which the electronic health information of our patients would exist on a common platform between our caregivers to improve quality and safety
- We will improve the health of children using information to transform pediatric healthcare, accelerate learning and create new scientific knowledge

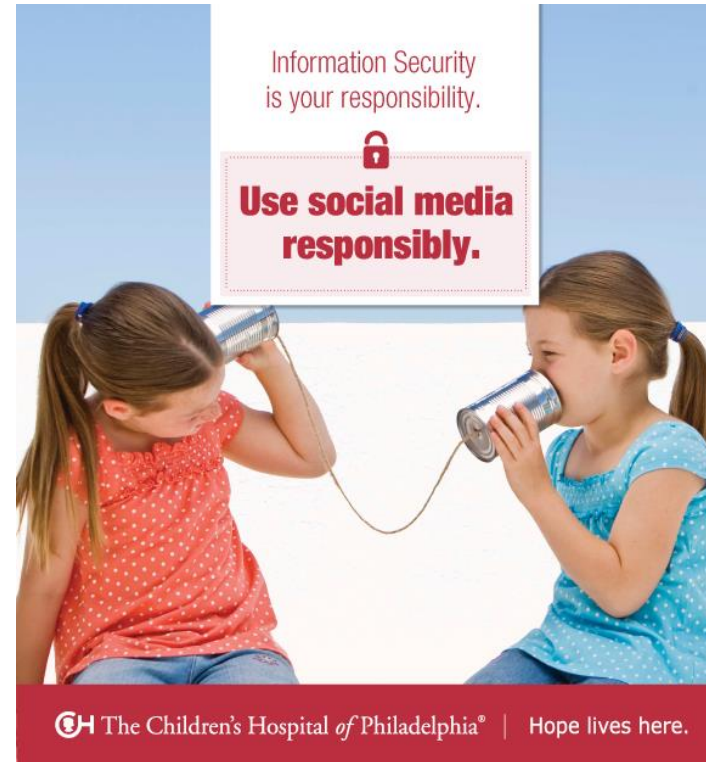
My Journey to CIO

- 1984: MD/PhD from the University of Paris
- 1984-1990: Trained in Clinical Pathology at Washington University in St. Louis and Barnes Hospital. Research in Biochemistry
- 1990: Joined the University of Pennsylvania School of Medicine
- 2001-2008: Chair of Pathology and Laboratory Medicine and pathologist-in-chief at CHOP
- 2008-present: CHOP CIO



CHOP IS

- 493 FTE
- 2 remote data centers
- >400 applications
- Aligned with CHOP goals
- Epic is our EHR
- Focus on Analytics
- Continuous implementation mode since 2005



Teamwork, Accountability, Transparency & Patient Safety

Epic Implementation at CHOP

2001

Epic Ambulatory at Cobbs Creek

2003

Rollout Epic Ambulatory

2006

Epic Specialty Care

2007

Epic PARC

2011

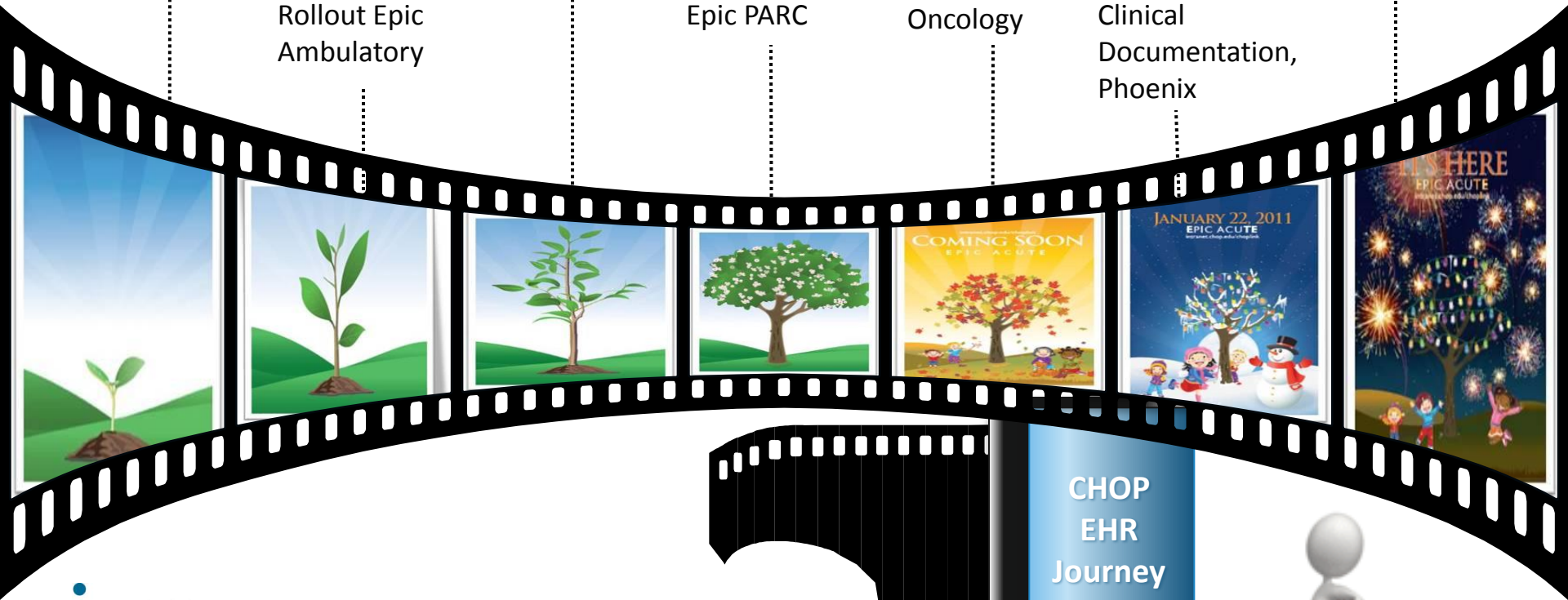
Epic Acute: Inpatient, ED, Pharmacy, Radiology, Oncology

2012

Clinical Documentation, Phoenix

2013

OptTime E-Health



CHOP
EHR
Journey



CHOP Annual Visits in Epic



eHealth Initiatives at CHOP

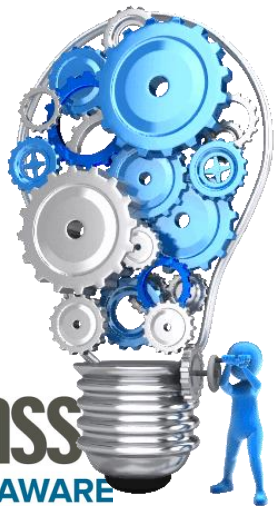
Name	Description	Timeframe
E-prescribing	Electronic prescriptions	Live
Epic immunization interface	Electronic exchange of immunization information	Live
MyChart	Patient portal	Live & expanding
EpicCare Link	Referring physician portal	Live
Care Everywhere	Epic's provider network	Live
Solutions for the Care Network	Expanding support structure for IT services in Care Network	On-going work
Meaningful Use	Participation in government incentive program	In process
Telemedicine	Remote consultations	Piloting
Community Connect	Hosting our Epic instance for non-CHOP practices	In process

Key Drivers of CHOP Strategy

- Turbulence and Uncertainty
- Regional-National-International Growth
- Customer Engagement
- Competitive Advantage
- Care Delivery and Business Transformation
- Technology Innovation
- Cost Reduction

IT Strategy

1. IT infrastructure positions CHOP to be successful in a turbulent and uncertain healthcare environment
2. Patient-centered, evidence-based care using the integrated electronic health record is coordinated to support quality and improve patient outcomes
3. Customer-focused service using state-of-the-art IT tools results in patient, family, and referring provider loyalty



4. Innovative use of consumer technology integrates wellness behavior into patients' daily activities
5. Implementation of key IT automation results in clinical and operational efficiency to streamline workflows and lower the cost of providing care
6. Researchers have access to data and technology that allows them to advance knowledge of pediatric medicine

What is Health Information Exchange?

- Health Information Exchange (HIE) is based on two fundamental elements:
 1. The ability to store and maintain patient demographic and health information - typically via an electronic health record (EHR).
 2. The ability to electronically share the information in a secure and trusted manner with other entities according to nationally recognized standards - typically through a HIE services provider.
- While an EHR enables information to be shared within a single organization,
A HIE provides the mechanism to securely share patient information outside the boundaries of the single organization as patients seek medical assistance from different providers in different locations.
- **Health Information Organizations (HIOs)** have emerged to govern, standardize, and facilitate the exchange of information among entities.
- **Health Information Service Providers (HISP)** are organizations that provides services on the Internet to facilitate use of Direct. A HISP is a logical concept that encompasses certain services that are required for Direct-mediated exchange, such as the management of trust between senders and receivers.

CHOP Health Information Exchange Vision

- CHOP clinicians and clinicians from other providers who treat our patients have the **ability to exchange clinical information**, filtered based on the specific need and in compliance with regulatory, privacy and security requirements to facilitate optimal patient care.
- HIE facilitates both the exchange of clinical information and administrative information with CHOP Care Network Affiliates.

HIE Recommended Roadmap



Goal: Establish electronic exchange capability between CHOP, its affiliates, non affiliated providers and healthcare industry at large

Phase 1

Pilots with Selected Affiliates and Non-affiliates

Key Outcomes

- Implement Epic's **Care Everywhere** to exchange health information with all participating Epic providers. Start in ED and expand institution wide.
- **Pilot programs** for one non-Epic affiliate and one non-affiliate provider to validate HIE approach
- **Define** future detailed HIE requirements
- Select an initial **HISP** and pilot **Direct** message exchange

Engaged Entities

- CHOP/other Epic providers
- One CHOP/Affiliate - non Epic
- One CHOP/Non-Affiliate non Epic
- HISP

Phase 2

Rollout to All Affiliates and Selected Non-affiliates

- **Rollout** standard CHOP HIE capability available **across all affiliates**
- Include standard CHOP HIE capability available to **selected non-affiliate** providers
- **Implement a Master Patient Index (MPI)** to support clinical exchange services for affiliates
- **Build a Provider directory** for clinical referral processes

- CHOP Affiliates (Epic/ non Epic providers)
- Selected Non-Affiliates

Phase 3

Extend Capability and Reach

- **Implement Fully functional HIE services** to all providers (affiliates and non-affiliates) desiring information exchange with CHOP
- Extend clinical exchange to **local, regional, state and nationwide** exchanges
- Make **Full query capability** available across CHOP network providers for collection of **all desired and available patient clinical data**
- Create ability to aggregate clinical data for use by CHOP physicians from the entire healthcare continuum for CHOP and affiliate patients

- CHOP Affiliates
- Non-Affiliates
- Regional, State and Federal HIEs
- International Entities/Providers

HIE - Key Strategic Outcomes to CHOP

The key benefits below, identified during stakeholder interviews, support the desired outcomes of CHOP HIE services and achievement of Meaningful Use objectives.

Improved Patient Care

- Sharing information across locations regardless of specialty gives clinicians the best opportunity to provide the highest quality of care regardless of location of service
- Reduction in rework and duplication
- Faster decision making – quicker access to clinical data
- Fewer delays in treatment
- Aggregation of data over patient life provides continuity of care

Enhanced Patient/Family Experience

- Fewer delays in treatment due to information accessibility
- Reduces need for patients and families to transport personal records or binders
- More complete patient information available to provide better treatment

Reduced Operating Expense

- Reduces manual effort to exchange clinical and financial data across CHOP and among affiliates
- Workflow /time savings in bill creation and distribution
- Reduction in treatment delays improves utilization of services
- Better eligibility/authorizations – reduces risk of reimbursement denials

Improved CHOP Image

- CHOP becomes “partner of choice” because of ability to provide information to referring physicians and patients
- Enables CHOP to maintain leadership position in community
- CHOP will be viewed as an active participant in state and regional HIE efforts

Increased Volume

- Drives current affiliate network volume via ease of interaction
- Incentivizes non-affiliate providers to work with CHOP
- Enables CHOP to increase participation with community and regional physicians and drive new referrals
- Enables growth outside normal service area (such as International) due to ease of access and completeness of clinical information

Better Data Analytics in Support of Quality Metrics and Research

- Enhances clinical quality metrics for trending and analysis
- Ability to look at the type and quality of care of referring physicians in support of CHOP’s treatment protocols
- Enables access to data required for participation in ACO or other advanced models of care
- Enables access to other provider sources for clinical information in support of research activities

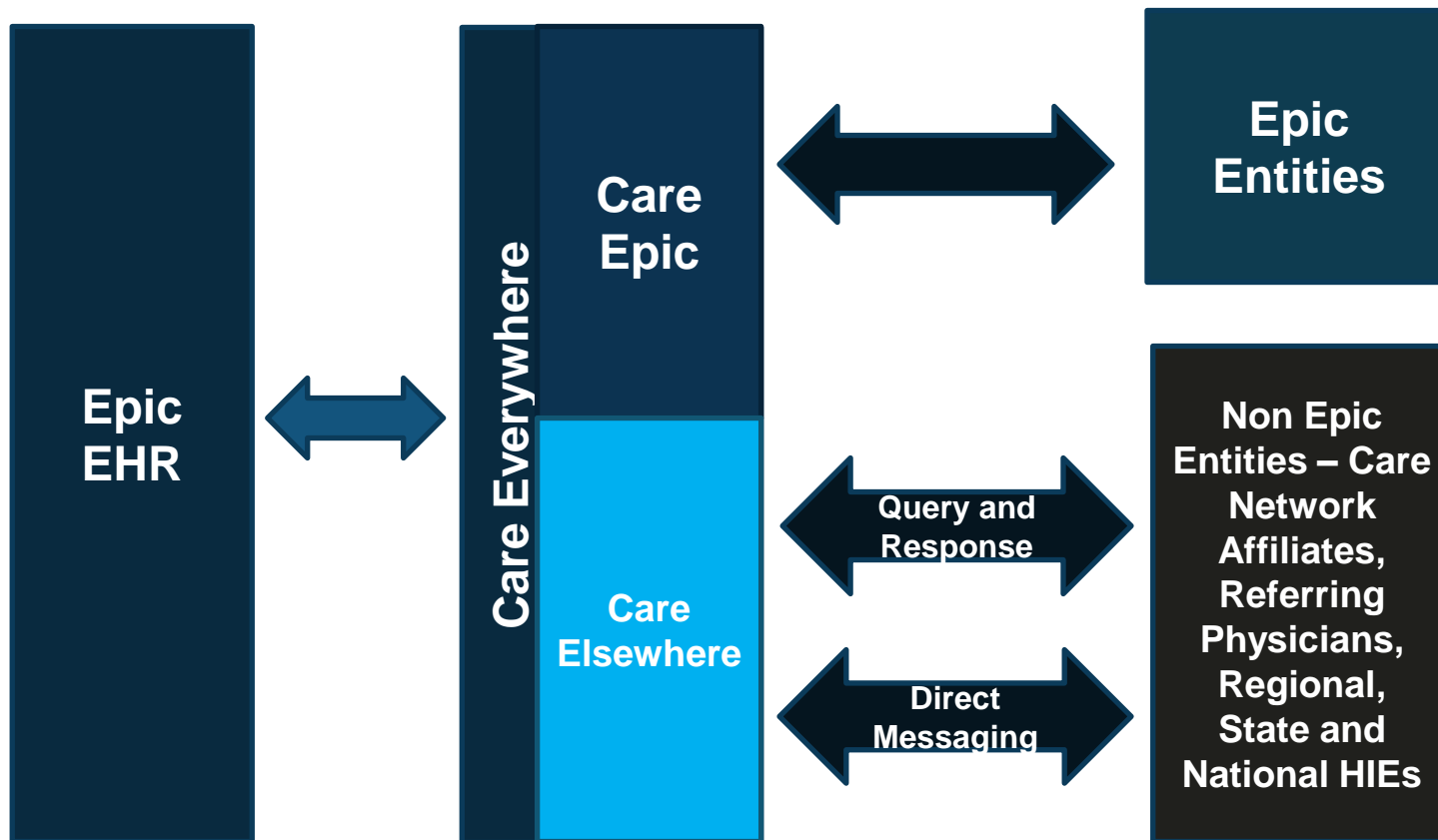
Requirements for CHOP HIE Solution

- Health Record Repository
- Security / trust services
- Support for the DIRECT project for document / information exchange
- Record locator service / Ability to query another system for patient data
- Master Patient Index and rules engine for patient identity reconciliation
- Provider Registry
- Robust clinician viewer
- Consent Management
- Clinical Message Delivery
- Ability to connect to other HIEs at the region, state and national levels
- Referral facilitation
- Connectivity to reporting registries (i.e. immunization)
- Analytics
- Customization capabilities to handle non-standard scenarios

CHOP HIE team evaluated offerings from multiple vendors and concluded that **Epic's** Care Everywhere module supports all of these requirements.

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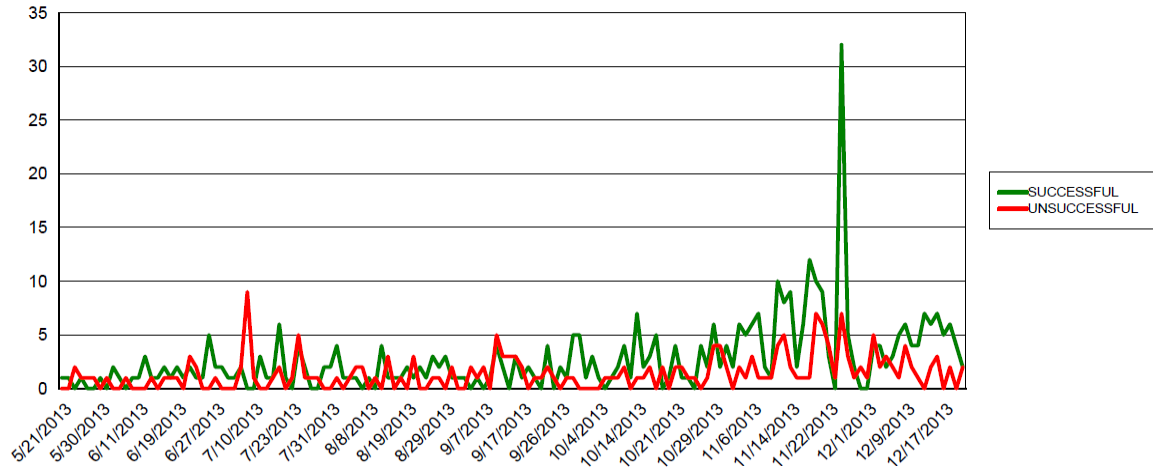
HIE Architecture



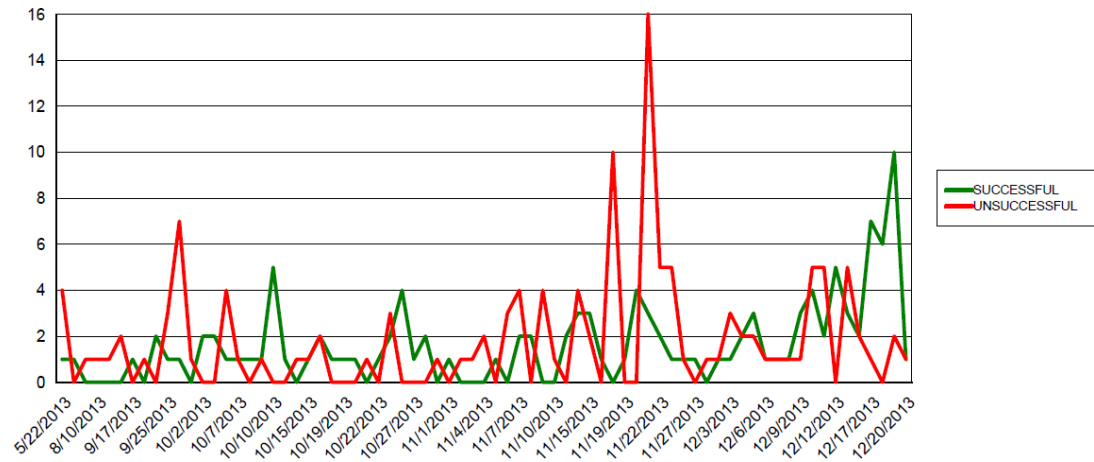
Care Everywhere Deployment

- May 2013: Pilot in ED - September 2013: Big bang Deployment

CEW001 Care Everywhere Incoming Queries



CEW002 Care Everywhere Outgoing Queries



Care Everywhere last 3 months

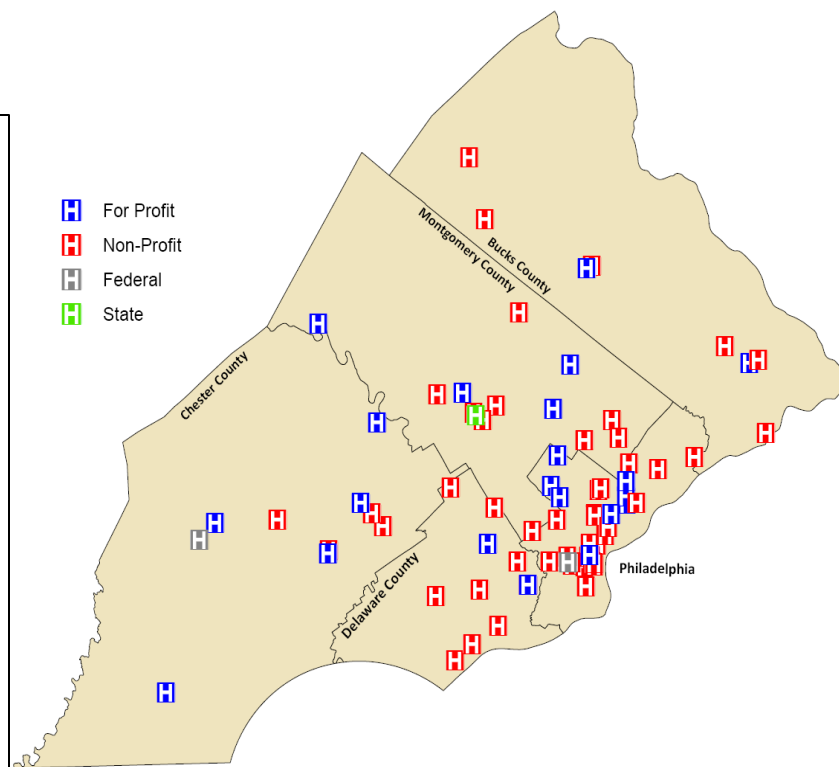
Row Labels	Count of Source Org
Bon Secours Health System	1
Catholic Health Partners	1
Children's Hospital & Medical Center of Omaha	2
Children's Hospital of Wisconsin	1
Cincinnati Children's Hospital and Medical Center	3
Cleveland Clinic	5
Edward Hospital & DuPage Medical Group	1
Froedtert & Community Hospital	3
Johns Hopkins Medicine	1
Lancaster General Health	34
Legacy Health	2
Meriter Hospital, Meriter Medical Group, and Community Connect Partners	2
Nationwide Children's Hospital	1
Nemours	253
Novant Health	1
Oregon Health & Science University	1
Park Nicollet Health Services	1
Premier Health Partners	2
Sentara Healthcare	1
Sisters of Charity of Leavenworth Health Systems / Exempla Healthcare	1
Swedish Medical Center	1
The Children's Hospital of Philadelphia	242
UC Health	2
University of Pennsylvania Health Systems	73
University of Rochester Medical Center	6
UW Health - Wisconsin	3
Grand Total	644

HealthShare Exchange of Southeastern PA

- Initiative of the Delaware Valley Health Care Council (DVHCC)
- About 40 health care organizations including 3 Health Plans

CHOP:

- Is using HealthShare Exchange as our HISP
- Completed successful testing of Direct Messaging
- Meeting the Meaningful Use requirement to send a percentage of transitions of care documents electronically
- Use case: send summary of care documents and discharge to PCP and Referring MD via Direct (currently using Fax)
- Very much interested in query capability of HealthShare Exchange



PA eHealth Partnership Authority Overview

- Pennsylvania has at least 10 organizations that are offering or planning to develop an HIE within and beyond the state.
- Of the 10, some are planning regional efforts serving several county areas while three are planning statewide coverage, and there is little overlap either in standards adopted or technology vendors used.
- Given the reality of the marketplace, the commonwealth is evolving into a network of networks, with an overarching HIE-Network governing entity being established to provide a thin layer of Community Shared Services (CSS).
- These services will enable secure, confidential information exchange from one organization to another to give providers relevant timely patient data needed to make treatment and care decisions.
- **NO data will persist in the system.**
- CHOP does not plan to connect directly to the CSS. We plan to connect via HealthShare Exchange.

Concluding Thoughts

- The success CHOP has had implementing one EMR for the hospital as well as across a large network of primary and specialty care practices has made the development of a hosted HIE service to the community a low priority.
- Therefore we chose a strategy to leverage Epic, regional and state HIEs. Now it is a “waiting game” for them to mature.
- HIE is hard to do. You cannot do it alone. You need partnership.
- The environment in Southeastern PA is immature but evolving quickly.
- It is important to stay involved and continually evaluate the best approach for your institution.