Analyze the Remaining Gaps as Data Exchange is Expanded to Broader Stakeholder Groups in Support of Innovation

Session INT3, February 11, 2019

Steven Lane, MD, MPH, FAAFP
Clinical Informatics Director - Privacy, Information Security & Interoperability, Sutter Health

Conflict of Interest

Steven Lane, MD, MPH, FAAFP has no conflicts of interest to report

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Presentation Purpose

The push for advancing interoperability and increased demand for health information exchange has given rise to expanding stakeholder groups

This has exposed a variety of gaps in data exchange

In this session, we will identify and explore what gaps exist and discuss innovative ways in which data is being exchanged to help diminish these gaps

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Learning Objectives

1. Identify barriers in data reciprocity and data exchange when it comes to expanding stakeholder groups
2. Recognize the impact of stakeholder gaps in regards to patient and value-based care
3. Describe innovative ways in which some stakeholders are addressing disparities in data exchange

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Outline

- Background
- Current State
- Stakeholders
- Gaps
- Federal support
- Innovations
- Conclusions

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Background

- Definitions
- Degrees of Interoperability
- Benefits

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21st Century Cures Act

"The term 'interoperability', with respect to health information technology, means health information technology that –

a. enables the secure exchange of electronic health information with, and use of electronic health information from, other health information technology without special effort on the part of the user

b. allows for complete access, exchange, and use of all electronically accessible health information for authorized use under applicable State or Federal law

c. does not constitute information blocking as defined in section 3022(a) of the Public Health Service Act as amended

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- Interoperability is the ability of different information systems, devices or applications to connect, in a coordinated manner, within and across organizational boundaries to access, exchange and cooperatively use data amongst stakeholders, with the goal of optimizing the health of individuals and populations

HIMSS, *Defining Interoperability in the Health Ecosystem*

- Available for public comment until March 23, 2019
- https://www.himss.org/library/interoperability-standards/what-is-interoperability

Degrees of Interoperability

- Technical
  - Foundational connectivity
- Syntactic – *Data Liquidity*
  - Common data formatting
  - Maintain field level interpretation
- Semantic – *Data Portability*
  - Codified data mapped to standard vocabularies
  - Maintain meaning
- Functional – *Data Utility*
  - Integration into local workflows, clinical, and analytical processes

Benefits of Interoperability

- Triple Aim
  - ⬆ Value – Quality / Cost
  - ⬆ Health – individual, population
  - ⬆ Satisfaction / experience – patient, provider, care team
- Impact on care
  - Direct patient care
  - Population health management
- Value based care: Alignment of incentives > ⬆ exchange
- Patient safety
  - 250,000 deaths / year due to preventable medical errors

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Current State

- Interoperability Methodologies
- Connectivity Landscape
- Evolving Capabilities
- Metrics

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Interoperability Methodologies

- Telephone, postal mail, FAX
- Secure file transfer
- HL7 Version 2 interfaces – *PUSH*
  - Within and between institutions
  - Focused use cases: Orders/results, ADT, registry reporting
- Document Exchange – *PUSH & PULL*
  - Clinical Document Architecture (CDA) – HL7 Version 3
  - Consolidated CDA (C-CDA) – 12 document types, 70 sections
- Fast Healthcare Interoperability Resources (FHIR®) – *PULL > PUSH*
  - Modular data element exchange
  - Supports Application Programming Interfaces (APIs)

Connectivity Landscape

- Health Information Exchanges (HIEs)
  - Centralized data stores +/- value added services
  - Regional and use-specific (e.g., payers, research)
- Direct Interoperability
  - DirectTrust
  - Health Information Service Providers (HISPs)
- National networks
  - eHealth Exchange
  - Single and multi-vendor networks
- Exchange frameworks – Connect networks
  - Carequality
  - Trusted Exchange Framework & Common Agreement (TEFCA)

Evolving Capabilities

Traditional	Transitional	Innovative

• Point-to-point connections
• HL7 V2 interfaces
• Individual and community trust agreements
• ADT feeds to central repositories (HIEs)
• Ad hoc CDA document query, push
	• HIPAA/HITAC, MU/PI
	• Transitions of Care
	• Treatment use cases
	• Federated architecture and trust
	• Automated queries at point of care
	• Patient summary CCD
	• Discrete PAMI data
	• Minimum necessary challenges
		• More:
		  • Participants
		  • Use cases
		  • Discrete data
		  • C-CDA templates
		• Automation
		  • Pop health bulk query
		  • Patient Centered Data Home
		• FHIR: Read > write

• **Individual** access: portal, PDF	• **Individual** access: VDT capability, CCD	• **Individual** access: apps / APIs

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Metrics

While there are, as yet, no accepted standards by which to measure interoperability, there have been dramatic and progressive increases in the volume of transactions and the types and utility of data exchanged

Sources:

- Office of the National Coordinator for Health Information Technology (ONC) reports
- American Hospital Association (AHA) surveys
- Carequality document exchange metrics
- DirectTrust transaction volume

ONC Measurement Framework

Concepts to Measure Movement of Interoperable Electronic Health Information

Send	Receive	Find	Use

Barriers to Interoperability

Availability

Electronic Health Information from outside sources routinely available

Gaps in information exchange experienced by individuals

Use

Electronic Health Information from outside sources routinely used for decision-making and managing care

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ONC

- 2017 Data:
  - **70%** of hospitals **participated** in nationwide HIE networks
  - **51%** of hospitals had necessary patient data **available** from outside of their systems at point of care
    - **53%** of those organizations able to **integrate** received health data into their EHR

- Small, rural, and critical access hospitals had lower rates of using electronic methods to exchange summary of care records compared to their counterparts

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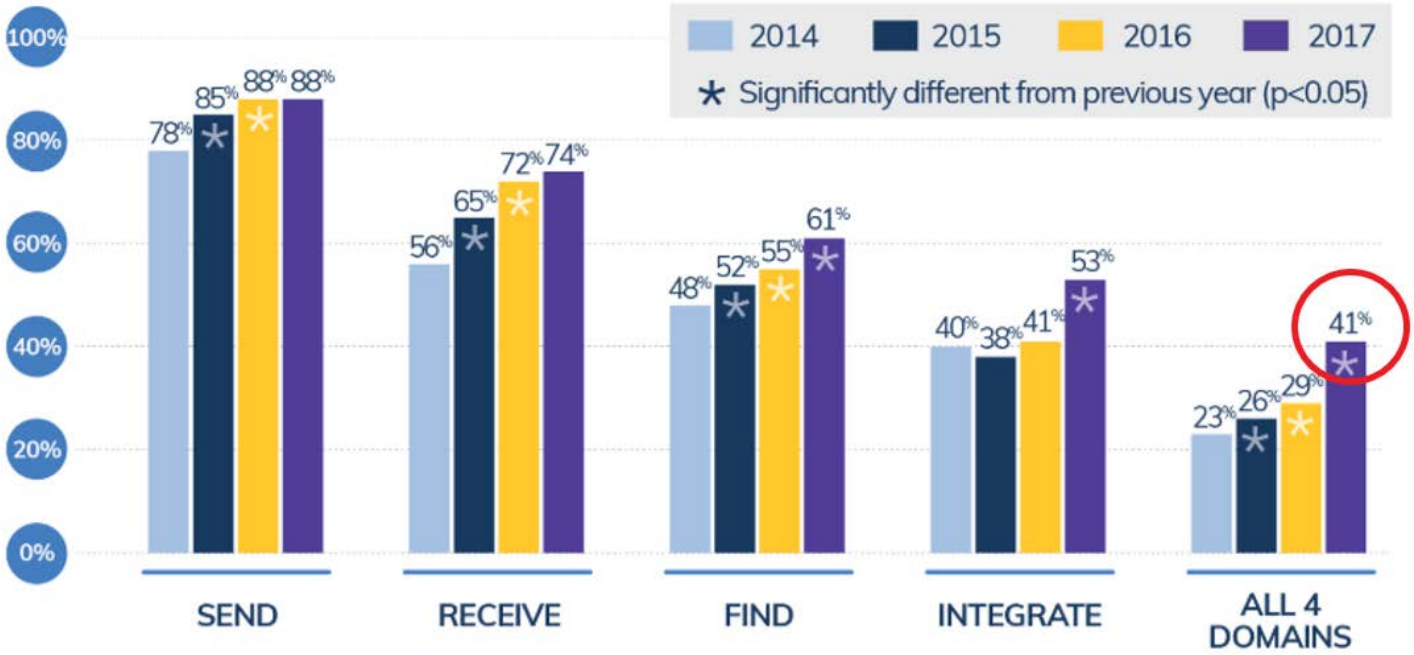
AHA Survey

American Hospital Association™
Advancing Health in America

Hospital Interoperability



SOURCE: 2014-2017 AHA Annual Survey Information Technology Supplement.

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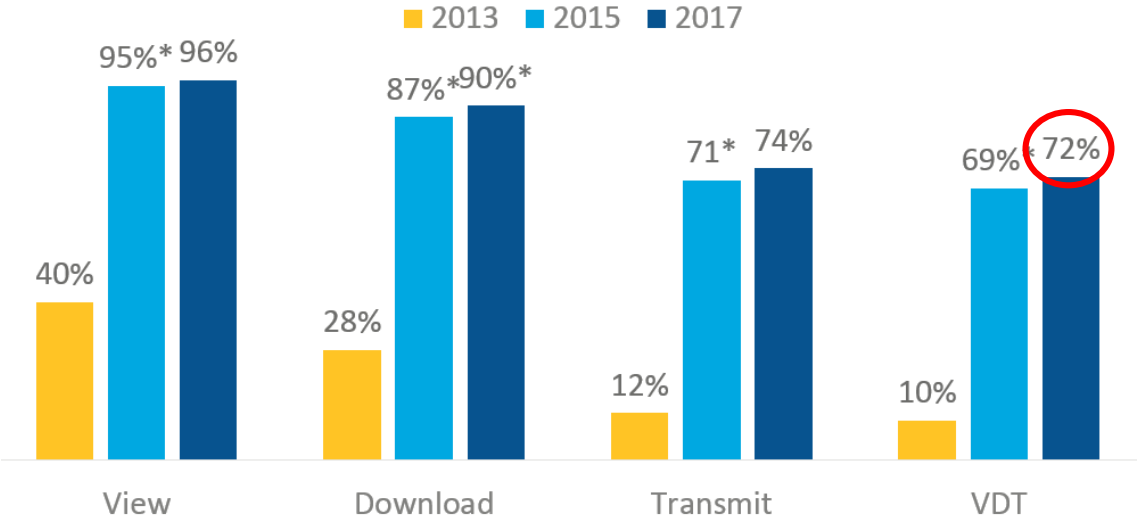
AHA Survey

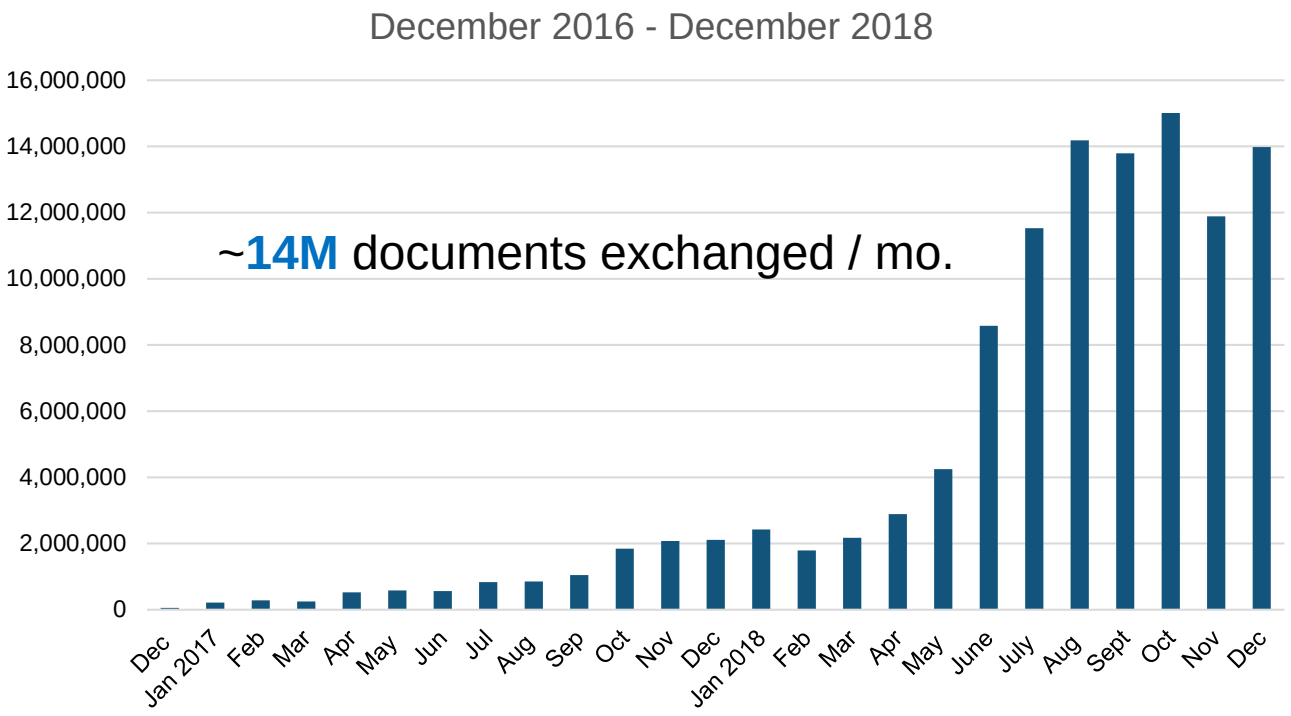
Patient Access & Exchange

- **72%** of hospitals have the capability for patients to electronically view, download and transmit their health information



SOURCE: 2013-2017 AHA Annual Survey Information Technology Supplement.
NOTES: *Significantly different from previous two years (p<0.05).

Carequality – Document Exchange



Cumulative total = 114 M

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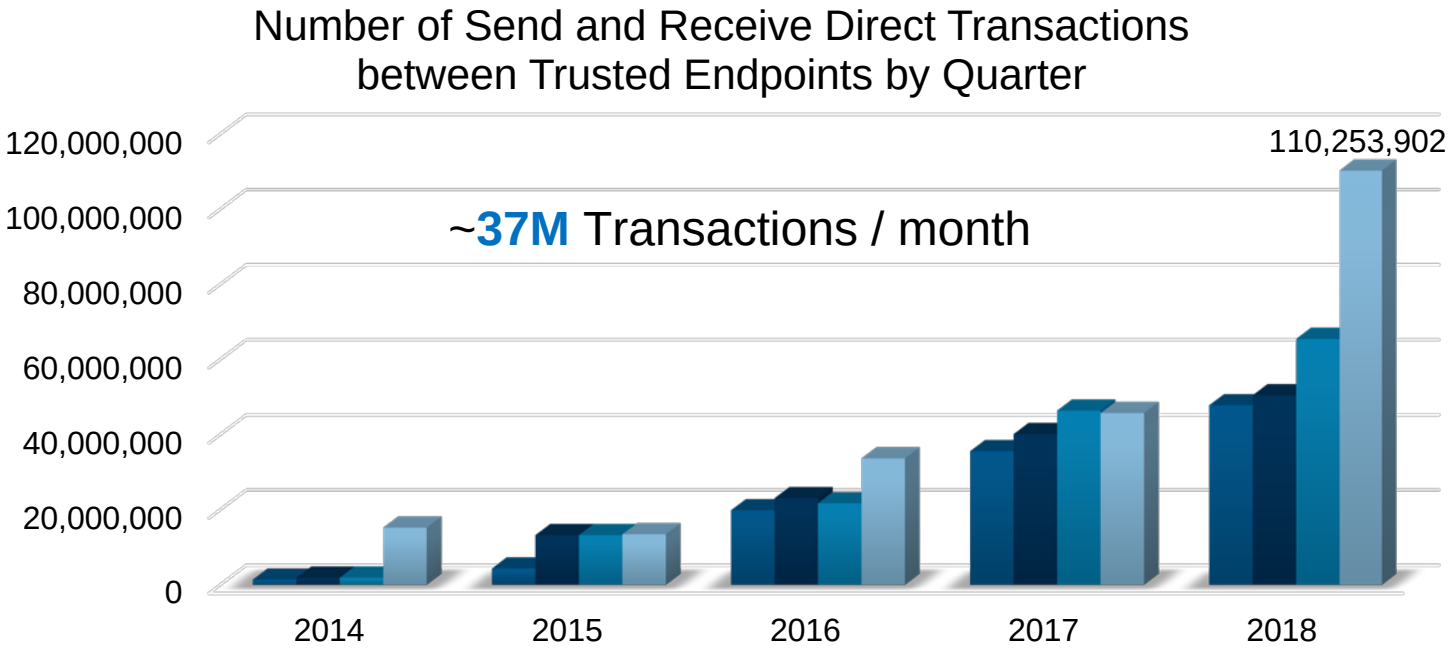
DirectTrust – Transactions



Cumulative total = 607 M

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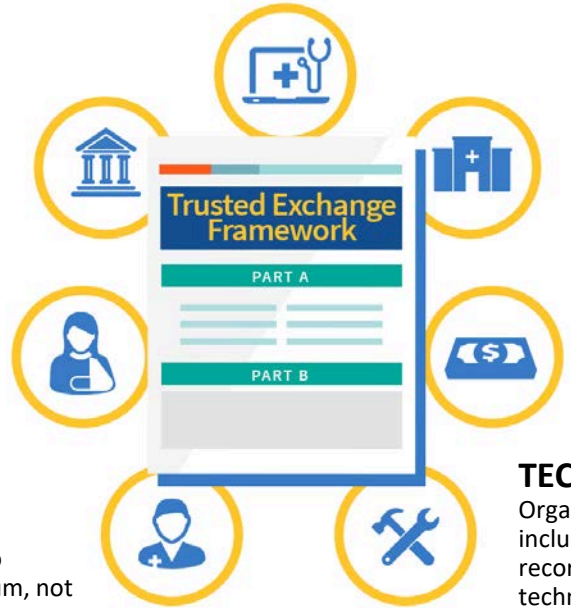
Stakeholders Identified in TEFCA-1

HEALTH INFORMATION NETWORKS



FEDERAL AGENCIES
Federal, state, tribal, and local governments

PUBLIC HEALTH
Public and private organizations and agencies working collectively to prevent, promote and protect the health of communities by supporting efforts around essential public health services

INDIVIDUALS
Patients, caregivers, authorized representatives, and family members serving in a non-professional role

PAYERS
Private payers, employers, and public payers that pay for programs like Medicare, Medicaid, and TRICARE

PROVIDERS
Professional care providers who deliver care across the continuum, not limited to but including ambulatory, inpatient, long-term and post-acute care (LTPAC), emergency medical services (EMS), behavioral health, and home and community based services

TECHNOLOGY DEVELOPERS
Organizations that provide health IT capabilities, including but not limited to electronic health records, health information exchange (HIE) technology, analytics products, laboratory information systems, personal health records, Qualified Clinical Data Registries (QCDRs), registries, pharmacy systems, mobile technology, and other technology that provides health IT capabilities and services

More than meets the eye

- Public Health
  - Surveillance and reporting
  - Clinical services: health centers, dental, nursing, EMS, disaster services, shelters, outreach, environmental
  - Coroners

- Federal / Government Agencies
  - Clinical services:
    Corrections, DoD/DHA, Indian Health Serv., Schools, VA
  - Research / administration:
    AHRQ, CDC, DoC, HHS, HRSA, NIH, NLM, ONC
  - Law enforcement

Providers with limited connectivity

- Small, rural and critical access hospitals and clinics
- Pediatrics – Excluded from Meaningful Use incentive program
- Telehealth
- Non-physicians – Dentistry, Optometry, Audiology, Podiatry
- Therapies – Physical, Occupational, Speech, etc.*
- Behavioral Health *
- Substance abuse treatment
- DME
- EMS
- LTPAC
- Home health
- Complementary care – Naturopaths, chiropractors, acupuncturists, homeopaths, etc.

* Included in 2019 Quality Payment Program

Additional Stakeholders

- Research
  - Public, private, academic, networks
- Pharmacy
  - Retail pharmacies
  - Pharmacy Benefit Management
  - Pharma companies – e.g., post marketing surveillance
- Insurance
  - Life
  - Disability
  - Casualty

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Gaps

- Evolving/competing standards
- Data Utility
- Other Barriers

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Multitude of Standards

- Governance – Varies by technology, network, HIO
- Security and trust – Varies by technology, network, push vs. pull
- Format and transport
  - HL7 V2, C-CDA, FHIR – *Which to use?*
- Content
  - Data – SDOs, Information modeling initiatives
  - Common Clinical Data Set – Evolving 2014 > 2015 CEHRT standard
  - US Core Data for Interoperability (USCDI) glide path – 2019 and beyond
  - C-CDA templates
  - FHIR – Argonaut profiles, US Core
- Privacy
  - Varies by state, data type
  - Personal data beyond HIPAA covered entities??

Data Utility

- Access / view
- Ingest
- Interpret
- Integrate / reconcile
- Incorporate into standard workflows

#WithoutSpecialEffort

Other Barriers

- Economic barriers
  - Business models and practices
  - Information Blocking – *Pending final rulemaking*
- Inefficiency
  - System design
  - Procurement
  - Implementation
  - Integration
  - Support

NATIONAL ACADEMY OF MEDICINE - *Procuring Interoperability: Achieving High-Quality, Connected and Person-Centered Care*, Washington, DC: 2018

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HHS / ONC Support for Interoperability

- EHR certification program – 2015 Edition requiring patient API access
- Interoperability Standards Advisory
- Interoperability Proving Ground – Implementations
- Tech Lab Standards Coordination

ONC TECH LAB

- *DRAFT* US Core Data for Interoperability (USCDI)
- *DRAFT* Trusted Exchange Framework & Common Agreement
- *PENDING* proposed Information Blocking clarifications

- OCR RFI regarding potential changes to HIPAA to improve information sharing for treatment and care coordination

CMS Support for Interoperability

- Meaningful Use > “Promoting Interoperability”
- MyHealthEData
  - Blue Button 2.0
    - Beneficiary access to CMS claims data via FHIR APIs
    - Required use of 2015 Certified EHR Technology (CEHRT)
    - Includes patient data access via APIs, exchange of the Common Clinical Data Set, Patient-directed exchange
  - Performance Measures
    - Include electronic referral loops, clinical information reconciliation, real time drug formulary and PDMP queries
- Proposals
  - Require interoperability as Medicare Condition of Participation
  - Require Medicare Advantage plans to provide Blue Button 2.0 capabilities

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Innovations to close the gaps

- Direct
- Consolidated Clinical Document Architecture (C-CDA)
- Fast Healthcare Interoperability Resources (FHIR®)
- Provider-Payer data exchange
- Consumer-mediated exchange

…PLUS MANY MORE!

Direct - Beyond ToC

- Broadly implemented to support Transitions of Care (ToC) as required by Meaningful Use Stage 2
- Successfully implemented innovative use cases:
  - Query and push based on ADT events
    - Current CCD requested by & sent to ED upon patient arrival
    - Care team notifications at time of hospital/ED discharge – To PCP, care manager, home care team
  - Results delivery – without point-to-point interfaces
  - Care coordination messaging between care team members
  - Closed loop referrals – Now required by CMS
    - Cross-organization, cross-vendor
  - Fax > Direct conversion – improved security, integration

https://www.directtrust.org/wp-content/uploads/2018/11/Master-List-of-Direct-Interoperability-Success-Stories.pdf

360X

- Leverages established technical interoperability standards to facilitate closed loop ambulatory referrals via Direct
  - Supports the exchange of clinical and scheduling information between providers
- Successfully tested across multiple EHR vendors
  - Being demoed in the HIMSS Interoperability Showcase
- Future focus:
  - Acute to LTPAC transfers
  - Insurance pre-authorization

Improving C-CDA Exchange

- Clinicians identified challenges related CCD quality and usability:
  - Unacceptably large documents
  - Lack of clinical notes
  - Desire for encounter-specific documents in addition to patient summary documents
  - Need for document version management

- Carequality-CommonWell Joint Document Content Workgroup

carequality

commonwell HEALTH ALLIANCE

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Improving C-CDA Exchange

- Workgroup Recommendations:
  - Implementers shall support encounter-specific documents utilizing specific C-CDA document templates:
    - Progress Note Document – Outpatient encounters
    - Discharge Summary Document – Inpatient encounters
  - Limit data included in encounter documents to:
    - Information generated at the time of the encounter
    - Patient level data, e.g., Problems, Medications, Allergies, reviewed / validated during encounter
  - Respect time parameters for encounter document queries
- Supports a consolidated longitudinal view of patient records including encounters from multiple institutions and vendors

C-CDA Document Types

- Release 1
  1. Consultation Note
  2. **Continuity of Care Document (CCD)**
  3. Diagnostic Imaging Report
  4. Discharge Summary
  5. History and Physical
  6. Operative Note
  7. Procedure Note
  8. Progress Note
  9. Unstructured Document
- Release 2
  10. Care Plan
  11. Referral Note
  12. Transfer Summary
- eHealth Exchange Content Testing Program

VA Innovations

- Implementing Direct messaging
- Improvements to CCD section contents
- C-CCD Data Quality Initiative
  - Analyze received documents for completeness, quality, adherence to standards
  - PAMI data, procedures, vitals
  - Focus on critical data access and patient safety
  - White Paper: *Interoperability Progress and Remaining Data Quality Barriers of Certified Health Information Technologies*

https://www.intersystems.com/isc-resources/wp-content/uploads/sites/24/Interoperability_Progress_Remaining_Data_Quality_Barriers_Certified_Health_Information_Technologies.pdf

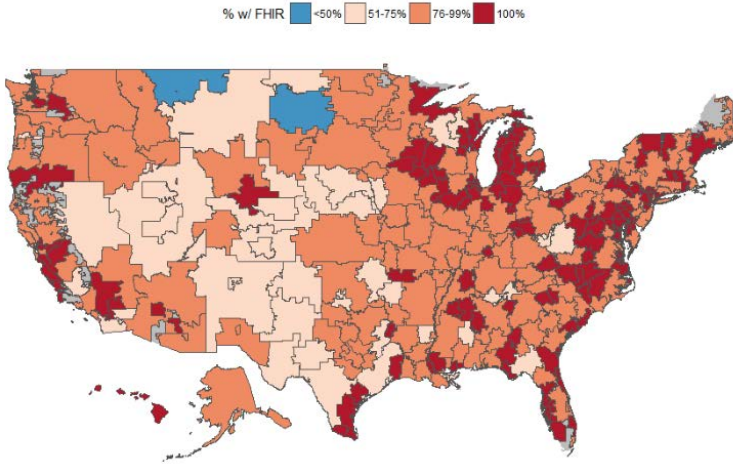
HL7® FHIR®

- Release 4 – Published January 2, 2019
  - Normative standard:
    - RESTful API, XML and JSON formats
    - Terminology layer, conformance framework
    - Basic data types
    - Key Patient and Observation Resources
  - Future changes will be backward compatible

Heat Wave: The U.S. is Poised to Catch FHIR in 2019

HealthITBuzz
The Latest on Health Information Technology from ONC

Percent of hospitals with a 2015 Edition certified-API enabled with FHIR
By Hospital Referral Region



Percent of clinicians with a 2015 Edition certified-API enabled with FHIR
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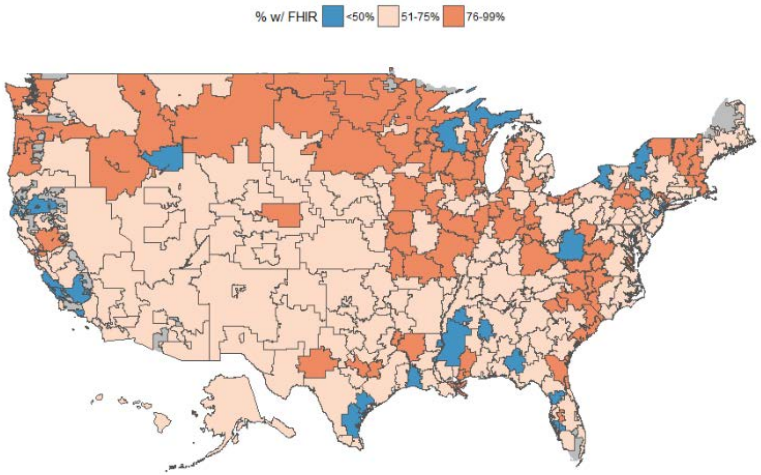

87% of hospitals, 57% of clinicians using EHRs certified to use FHIR Release 2

10/01/2018

Payer-Provider Data Exchange

- Use cases
  - Treatment
    - Case management – acute, chronic
    - Care coordination
  - Healthcare Operations
    - Prior authorization
    - Quality reporting – HEDIS, STARS
    - Formulary management
  - Payment
    - Utilization and appropriateness of care review
    - Risk adjustment – HCC coding
    - Claims adjudication

Payer-Provider Data Exchange

- Policy issues
  - Minimum necessary requirements – vary by use case
  - Self-pay restrictions
  - Release restrictions / confidential data
  - Re-purposing data

Payer-Provider Data Exchange

- Technology solutions
  - Central repositories
    - Manifest Medex (CA)
  - C-CDA exchange
    - Carequality
  - FHIR®
    - ONC-led FAST Initiative – Governance, policy
    - HL7 Da Vinci Project – IGs, reference implementations
  - Vendor network solutions
    - Moxe Health
    - Epic Payer Exchange

Da Vinci Project

- Leveraging FHIR® for payer-provider data exchange
- High priority use cases to support value based care:

Data Exchange for Quality Measures	Coverage Requirements Discovery	Documentation Templates and Coverage Rules
Health Record Exchange: Clinical Data Exchange	Health Record Exchange: Payer Data Exchange	Prior-Authorization Support
Gaps in Care & Information	Risk Based Contract Member Identification	Alerts: Notification (ADT), Transitions in Care, ER admit/discharge,…
Performing Laboratory Reporting	Chronic Illness Documentation for Risk Adjustment	Patient Cost Transparency

- **Quality Measure Collection**
- **Clinical Data Exchange**
- **Pre-order Burden Reduction**

In HL7 ballot reconciliation as draft standard

Under active development

Planned 2019 Use Cases

Future Use Case

Interoperability Showcase: 9100-49

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Consumer-Directed Exchange in an Evolving App Ecosystem

newwave

SAFE HEALTH

Medisafe

HealthTap

PATTERN HEALTH

ONE DROP

Glow

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Leveraging Blue Button 2.0

- NewWave Telecom & Technologies
  - **MyCareAI** app – “Standards-based, consumer-controlled health data convergence hub”
    - Participating providers enroll Medicare beneficiaries
    - App requests claims history via Blue Button (FHIR)
    - Query for clinical data from providers based on claims
    - Aggregate and assemble longitudinal patient record
    - Evaluate quality metrics, identify risks for patient and population
    - Feedback to patient and providers (via regional health information network)
    - Offer services
- www.NewWave.io HIMSS Booth #509

newwave

Telehealth Integration

- **SAFE Health**
  - Initial focus on sexual health, STD testing, and treatment
  - Integrate with Dating Apps to incentivize regular testing and sharing of sexual health status
  - Home-grown EHR + interoperability
    - Labs for testing > historical data access (FHIR)
    - Pharmacies for e-prescribing & delivery (HL7 V2)
    - EHRs via Carequality for bidirectional exchange (C-CDA)
    - Developing to the Apple Health API (FHIR)
- www.SafeHealth.me

Apple Health Records

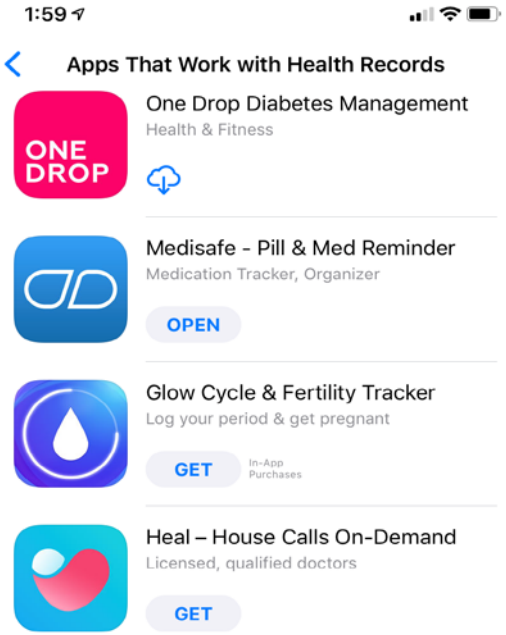
- Beta launch - January 24, 2018
- 1/16/2019: 167 healthcare organizations offering FHIR API-based access to data from 3 EHR vendors – AthenaHealth, Cerner, Epic
- LabCorp and Quest lab data access / integration
- Recent user survey: 90% of users endorsed:

  "The smartphone solution improved their understanding of their own health, facilitated conversations with their clinicians, or improved sharing of personal health information with friends and family."

Dameff C, Clay B, Longhurst CA. Personal Health Records: More Promising in the Smartphone Era? *JAMA.* 2019;321(4):339-340.

Apps using Health Records data

- Patient-facing:



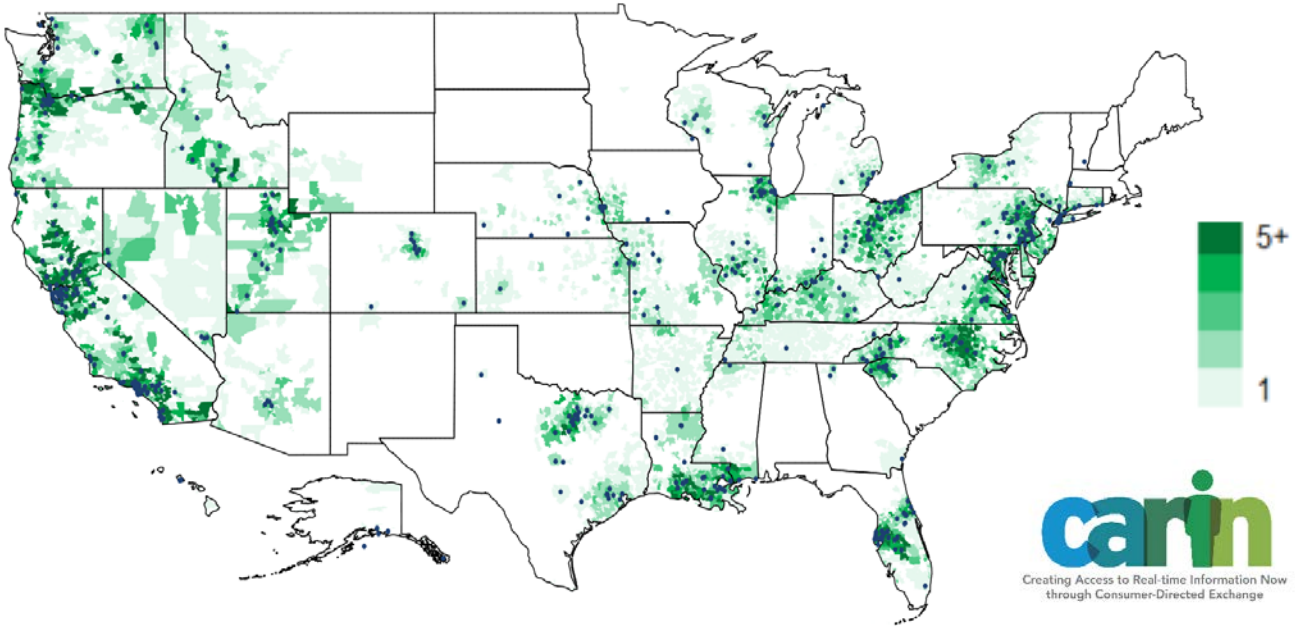
- Service Providers:

HealthTap
- Telehealth

PATTERN HEALTH
- Care plans, patient monitoring

Apple Health Records Market Penetration

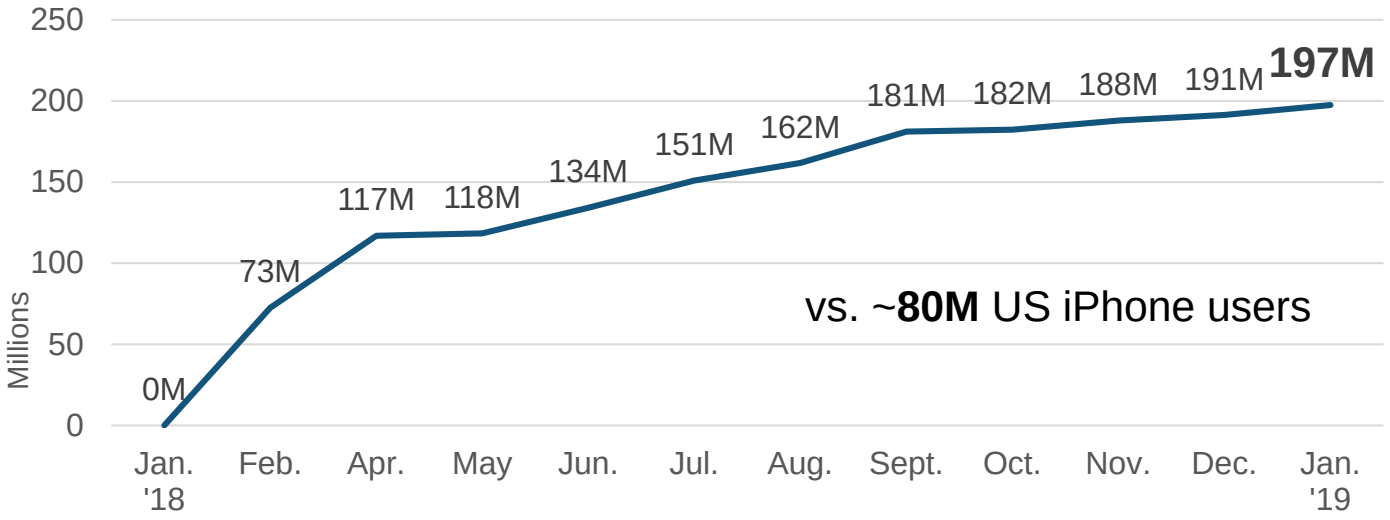
Number of hospitals by Zip Code live with Apple FHIR API access



- Source: https://support.apple.com/en-us/HT208647; as of 01/16/2019

Patient access to EHR data via APIs

Individuals with potential access to the common clinical data set information in their EHR(s) via API access



- Source: https://torchinsight.com/

LEAVITT PARTNERS

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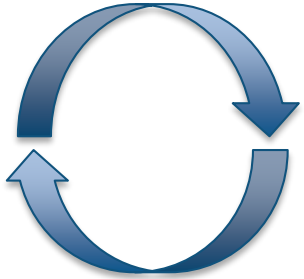
Interoperability is within our reach!

- **WE HAVE:**
  - Stakeholder engagement
  - Mature standards – must continue to evolve
  - Increasing Connectivity – varies across users, technologies
  - Trust frameworks
    - Federal DURSA – eHealth Exchange
    - DirectTrust
    - Carequality
    - SHIEC
    - NATE
  - Government support
  - HIT investment – **$9.5B** in 2018!



Interoperability is within our reach!

- **WE NEED:**
  - *Interoperability by design*
  - Vendor development and user implementation to:
    - Automate exchange
    - Integrate data in workflows
    - Extend APIs beyond patient access and use
  - Continued evolution of standards: C-CDA, FHIR, Argonaut profiles
  - Clarification and enforcement of Information Blocking rules
  - Finalize and implement a comprehensive TEFCA
  - Implement the proposed USCDI glide path
    - "Omics" data
    - PGHD
    - Device data
    - SDoH
  - To #KillTheFax

KLAS – *Interoperability 2018*

- With CommonWell and Carequality linked, the biggest technical obstacle to widespread patient-record sharing has been removed
- The healthcare industry is rapidly approaching the point where an organization using any of the major acute care/ambulatory EMRs should be able to easily connect to other provider organizations with minimal cost and effort
- Today, the biggest barriers preventing widespread participation are governance and the need for organizations to decide to participate

KLAS

Opportunities for Participation

- HHS / ONC Federal Advisory Committees – *Work Groups and Task Forces*
  - https://www.healthit.gov/topic/federal-advisory-committees/membership-application
- ONC FHIR at Scale Taskforce (FAST) – *Tiger Teams*
  - https://oncprojectracking.healthit.gov/wiki/display/TechLabSC/Tiger+Teams
- The Sequoia Project – *Interoperability Matters Workgroups*
  - https://sequoiaproject.org/interoperability-matters/
- Carequality – *Advisory Committee, Workgroups*
  - https://carequality.org/get-involved/
- DirectTrust – *Task forces*
  - https://www.directtrust.org/

Questions

- Contact information:
  - LaneS@SutterHealth.org
  - @emrdoc1
  - www.linkedin.com/in/steven-lane-md/

- **Please complete online session evaluation**

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