The Interoperability Challenge - What should we focus on?

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Today’s Talking Points

• Interoperability is an essential capability to enable transparent access to data across the continuum of care, patients, and research/analytical environments.

• Considering the experiences and challenges since the introduction of the 2011 Edition certification criteria and standards in support of the EHR Incentive Program:
  ▫ What should we focus on next to improve on the state of interoperability?
  ▫ Which process, standards, and regulatory challenges must we overcome to move the needle?

• We will provide some thoughts, ideas, and perhaps some provocative perspectives on how to make practical progress.
How far have we come with Interoperability?

*Depends on how you define Interoperability:*

- Intra or Inter Provider?
- Within a Network or across Networks?
- Messages, Documents, or Services?
- SOAP or REST?
- Push or Pull?
- Direct or XDS/.../XCA?
- API or ??
Interoperability is a \textit{means to an end}

- Focusing on the goal and process support for the goal can be more important than focus on exchange standards only:
  - Medication Reconciliation emphasized interoperability:
    - Exchange of medication lists
    - Consumption of appropriate medications
    - Standards well defined and validated
  - But securing clinical processes was the bigger challenge to medication reconciliation adoption than were technology challenges.

- Not focusing on interoperability makes us miss the boat:
  - CPOE has the promise of speeding quality care: decision support on order entry, ubiquitous order availability, avoidance of transcription / communication errors.
  - Key organizations declared 100% CPOE adoption, but don’t have any interfaces in place which delays orders, requires transcription.
  - Without interoperability the value of CPOE is severely limited

\textit{Start with the end in mind.}
Interoperability is a *means to an end*

- DIRECT SMTP is mandated for patient transmission of health data.
  - But support does not exist for secure person identification.
  - Sunk real and opportunity costs into efforts toward an impractical and incomplete standard mandate that, in the end, did not achieve the goal: VoDT

- Documents have defined standards: C-CDA
  - But documents are not always appropriate
  - Data element queries may be more appropriate; if what I need is active medications, is a full document too much?

*Not an end itself.*
So....?

- Interoperability is a **means to an end**:  
  - Start with the end in mind.
  - Not an end itself.

- Therefore:
  - Define the goal – what is the end?
  - Derive and validate the processes to meet that goal
  - Define/apply the interoperability methods and standards that support the goal most efficiently
And then...

- Recognize that interoperability must evolve incrementally to be efficient and effective.
  - Focused, practical progression will do more to successfully improve on interoperability than a rush to the finish line
  - “Build it and they will come” without verification of appropriateness to goal and process support risks wasted time and effort.

- Imposing the pain of innovation, the inevitable learning, ON ALL is demoralizing and diverts our focus from more important and effective efforts.
What is “The End”? 

- Quality improvement and cost containment via Care Coordination through:
  - full health record available to and contributed by all stakeholders, including patients,
  - where/to whom it’s needed,
  - when it’s needed,
  - in the form it’s needed.

- That is a tall order:
  - Prioritization and derivation needed.
We must prioritize!
Nothing is Free, Bandwidth is limited

- Is problem list interoperability a priority given the state of clinical processes re problem list maintenance and problem list reconciliation among physicians? Now that we can, does that mean we will?

- If closed loop referral/transition management is a known clinical gap (25% missed?), should that be a priority?

- What’s the highest priority goal for collecting and using patient generated health data? For automated tracking of diabetes (or hypertension or...) compliance which might prioritize structured/coded interop for glucose and BP and not wait for that to accommodate all patient data.

- Is universal “must not” clinical decision support a primary contributor to the end goal?

- How does broad notification of an event move us closer to the finish line?
What is involved?

- Directories — *Who is who?*
- Record Location — *Where is the data?*
- Trust framework — *Who is allowed to access and use?*
- Workflow — *When to Push or Pull?*
- Payload — *What to communicate? How is it needed?*
  - Syntax - *Format*
  - Semantic - *Terminology*
- Transport — *How does it get from here to there?*
- Edge Behavior — *What to do with it?*
- Infrastructure — *Is it practical and reliable?*
What process makes interoperability successful?

- Use Case Elaboration – *Focus on practical, sustainable goals and processes that support them*
- Proof of Concept – *Demonstrate Value. Validate process.*
- Pilots – *Refine implementation guidance to practical, implementable solutions*
- Testing – *Validate software AND provider adherence*
- Maturation – *Honing large-scale roll-out beyond pilots*
- Staged Roll-Out – *Wide, national adoption through attestation programs*
What is missing?

• Focus

• Process validation. Incentives.

• Unambiguous implementation guides and corresponding testing tools

• Sustainable infrastructure

• Patience
Example: View, Download, & Transmit

The End:
- Patient Engagement in their healthcare.
- Patient-portal affinity for further engagement; e.g., provider communication, patient generated health data

The Means:
- EHR – Portal connectivity missing – Creating portal proliferation
- No infrastructure for patients – no certificates.
- C-CDA document type/content inappropriate in some cases as specified or process supported (e.g., all results, problems, etc.)
- Patient desire / ability to participate not adequately defined

The Result:
- Providers implementing multiple portals. Patients having multiple access points and no affinity.
- Providers unhappy with content/process of C-CDA. Patients?
- “Transmit” does not work.

The Recommendation:
- Establish trusted person identity framework
- Establish edge protocols for EMR-Portal interoperability to support consolidation
- Establish provider discretion and vet value of C-CDA implementation
Example: Public Health

The End:
- Federal and State insight into population health to manage overall health status and combat outbreaks. (comprehensive push)
- Provider and patient access to patient data to make appropriate point-of-care decisions (effective view)

The Means:
- Patient identity and privacy and security not harmonized.
- Any one patient’s data may be in many repositories.
- Incomplete contribution by providers; e.g., neighborhood pharmacies
- Multiple federal implementation guide options to push data to the state and federal level registries, with multiple state variances that are not synchronized.

The Result:
- Continued development costs for duplicate and/or conflicting implementations driving costs up, reducing investment in other things, while not achieving the end goals

The Recommendation:
- Establish person identity framework
- Ensure value / completeness of available data
- Curtail additional push standards where value does not warrant expense
- Establish record location and valuable view interoperability for provider-patient point of care goal
- Consider health agency communication of best practice guidance? Infobutton?
Example: ToC vs Continuity of Care vs Closed Loop Referral

The End:

- Not clear? ... or maybe not aligned?
- Market movement toward continuity of care — making health data available in HIEs for authorized access when and in the form other providers needed — I push, you pull
- TOC is push of information to directed person(s)/venue(s) known when the patient transfers but does not secure the referral/transfer (CLR) nor make the information available for unpredicted destinations

The Means:

- Transport nicely defined with DIRECT. XDR/SOAP nicely defined as cost effective option
- Lacked provider directories and trust frameworks making directed recipient routing inefficient and challenging for P&S
- Push only, thus not fully fitting Transitions of Care, Continuity of Care
- No “order” for referral(s)/transfer with C-CDA as the payload so no means for tracking the referral source, destination, accomplishment
- Provider concerns with C-CDA implementation similar to VoDT
- Patient identity / matching challenges for efficiency and accuracy

The Recommendation:

- Vet and align goal(s)
- Vet and align workflow processes and related interoperability method within the goal(s), always push, push and pull, “order” and “result” or “acknowledge”?
- Establish person identity, directory and trust frameworks
Example: Upcoming UDI

**The End:**
- Not yet defined.
- Order, implant, and track the right device for the right patient, across care venues and oversight stakeholders.

**The Means:**
- Device identity established. Good start.
- Use Cases / process flows from ordering to selecting/patient verification, documentation at point of care, communication to EMR, communication to other venues/providers/registries/vendors not defined
- Standards promoted or evolving without vetted view of use case and process flow
- MU measures promoted similarly to “lists”. Anticipated interoperability approach forecasts workflow, process, and interoperability gaps.

**The Recommendation:**
- Vet the prioritized goal(s)
- Vet the use cases / process flows
- Validate the end-to-end interoperability standard coverage and appropriateness to the use cases and goal(s)
Example: Upcoming AUC/CDS

The End:

- Not yet defined? or at least aligned and steps prioritized?
- Ensure that the defined quality measurements are efficiently enabled in real time decision support so that systems can support providers making the right decisions at the point of care that will drive the desired outcomes.
- Make CDS implementation more efficient; build once, use many

The Means:

Broad infrastructures proposed for

- data models – without addressing flaws and gaps in quality measure data models and authoring process
- for APIs without addressing person identity and trust framework
- Broad scope (all Knowledge artifacts including business processes, CPOE, conditional logic in documentation, etc) and narrow scope (“Must Never”, AUC) without clear alignment

The Recommendation:

- Address existing foundational flaws and gaps; data definitions, governance
- FOCUS on prioritized use cases; e.g., using AUC because it is mandated by law
- Address identity and trust framework
- Define / validate the standards against the use case goals
- Incubate implementation
- Pilot and validate
Clinical Decision Support and Quality Measures

- CDS standards focusing on:
  - Exchange of rules (Knowledge Artifacts)
  - Services to invoke external CDS capabilities (Decision Support Services)
- Clinical Quality Measures (CQM)
  - Based on a Quality Data Model (QDM)
  - Convergence across programs
  - Derivable from EHR/HIT
- Clinical Quality Framework driving to harmonize CDS and CQM standards:
- Update cadence a major challenge

- Key Drivers:
  - CMS, ONC, HL7, EHRA
Example: Interoperability we are not talking about, but maybe we should?

- How about basic and effective UI interoperability? Leveraging:
  - Patient identity
  - Provider identity
  - Trust framework
  - Record location
  - Efficiency of context sharing

So at least a provider can view to act if not process to act?
Example: The JASON Architecture

Define an architecture to replace the current collection of HIT with a common, federated HIT structure to support both operational, informational, research, and other emerging healthcare IT needs.

It intends to inform HHS agencies on what architectural components to promote through such programs as Meaningful Use, the VA, DoD, etc.

There is clarity that systems of the future must be open, using standard APIs, and effectively have a high-level of SOA to enable applications developed by others to build on top of these.

- Meaningful Use APIs
  
  *Identity, Authentication, and Privacy Services
In Summary

• Vet an aligned set of prioritized use cases. Keep the end in mind!
  ▫ Increase the Signal to Noise ratio. Curtail activity in the “noise” to allocate resources to what will move the needle.

• Ensure the “must haves” are in place:
  ▫ Process support/incentive
  ▫ Person identification
  ▫ Trust framework
  ▫ Reliable infrastructure

• Use Public-Private organizations to drive definition of standards / implementation guides AND associated testing tools

• Establish interoperability incubation programs
  ▫ From idea to guide to connectathon to pilot(s) to initial roll-out to national roll-out

• Avoid “build it and they will come” approaches that curtail innovation or risk investment without outcome achievement
ONC’s 10 Year Vision

• ONC establishes a 3-, 6-, and 10-year outline of key achievements to move interoperability forward.

“It’s about health IT beyond EHRs, health beyond healthcare, and levers beyond Meaningful Use (MU).”
Karen De Salvo

• Principles:
  • Build upon the existing health IT infrastructure.
  • One size does not fit all.
  • Empower individuals.
  • Leverage the market.
  • Simplify.
  • Maintain modularity.
  • Consider the current environment and support multiple levels of advancement
  • Focus on value.
  • Protect privacy and security in all aspects of interoperability
Three-Year Agenda

Send, Receive, Find, and Use Health Information to Improve Health Care Quality

- Develop an interoperability roadmap
- Focusing on query-based health information exchange, or the ability to appropriately search for and retrieve health information, in addition to point-to-point information sharing.
- Further standardize the vocabulary and structure of essential information
- Address critical issues such as data provenance, data quality and reliability, and patient matching to improve the quality of interoperability
- Operationalize a common framework to enhance trust by addressing key privacy, security, and business policy and practice challenges to advance secure, authorized health information exchange across existing networks.
- Advance payment, policy, and programmatic levers that encourage use of this information in a manner that supports care delivery reform, improves quality, and lowers costs
Six-Year Agenda
Use Information to Improve Health Care Quality and Lower Cost

• The care delivery system will realize **enhanced interoperability**

• Individuals, care providers, and public health departments will send, receive, find and **use an expanded set of health information across the care continuum to support team-based care.**

• **Remote monitoring** will be enabled through better interoperability between medical devices, home-monitoring tools, and health information technology, including EHRs.

• **Multi-payer claims databases, clinical data registries, and other data aggregators** will incrementally become more integrated as part of an interoperable technology ecosystem.

• We will work with stakeholders to **refine standards, policies, and services** to automate **the continuous quality improvement process and deliver targeted clinical decision support** that fits into a clinician’s workflow to close care gaps and improve the quality and efficiency of care.
Ten-Year Agenda
The Learning Health System

• The nation’s health IT infrastructure will support better health for all through a more connected health care system and active individual health management.
• Information sharing will be improved at all levels of public health, and research will better generate evidence that is delivered to the point of care.
• Advanced, more functional technical tools will enable innovation and broader uses of health information to further support health research and public health.
• CDS will improve care by taking into account information such as an individual’s genetic profile, local trends in disease prevalence, antibiotic resistance, occupational hazards, and other factors.
• Public health surveillance will be dramatically improved through better outbreak detection and disease incidence and prevalence monitoring. Interoperable health IT will also help contain outbreaks and manage public health threats and disasters.
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