

HIMSS 2018

Successful Patient Matching Without A National ID

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## The Sequoia Project's Role

The Sequoia Project is a trusted, independent convener of industry and government

Works to address the challenges of secure, interoperable nationwide health information exchange (HIE).



**SECURE**



**INTEROPERABLE**



**NATIONWIDE**

# The Blind Spot: Cross Organizations Patient Matching

## Why is Patient Matching still an unsolved problem?

All organizations perform patient matching and have controls in place to keep track of patient identity  
This is key to **providing care** while **ensuring privacy**



## Matching across organizations is *different* than identifying the patients locally

- **Vastly different data characteristics**
  - Data quality
  - Data completeness
  - Data field consistency
  - Default or temporary values
  - Vocabulary adoption and versioning
- **Vastly different scope of data (specialty practice vs. large integrated delivery network)**
  - Presence/absence of an enterprise-wide active master patient index (MPI)
  - Use of multiple MPIs
  - Research Institutional Review Board stipulations
  - Legal jurisdictions and requirements (minors, reproductive health, etc.)
- **Organizational size, resource allocation, project timelines, commitment, skill levels**
  - Corporate cultures (being “friendly” to clients vs. being meticulous for registries)
  - Different tolerances in terms of matching accuracy
  - Different patient matching rules and algorithms
  - Human and system workflows (latency, variations, definitions, etc.)
  - Consent, security, sensitive data sharing, and other policies
- **Vendor engagement, version updating strategy, staffing**
  - Software (vendors, update lifecycle, configuration)
  - Change management
  - Internal enterprise software architecture
  - Services levels/response times
  - Data exchange latency

# Framework for Cross-Organizational Patient Identity Management Updated

- **Case Study:** How Intermountain Healthcare and exchange partners increased matching success rates from 10% to over 95%
- **Proposal:** Patient Matching Maturity Model
- **Proposal:** Patient Matching Minimal Acceptable Principles

**Download the paper:**

<http://bit.ly/1O1nixl>



Framework for  
Cross-Organizational  
Patient Identity Management

# Cross-Organizational Maturity Model

A tool to assess and adopt more advanced patient identity management in a methodical manner



## Level 0

- Ad hoc
- No oversight
- Unpredictable



## Level 1

- Data quality
- Basic processes
- Limited oversight



## Level 2

- Increasing algorithm use
- Quality metrics gathered
- Standards use



## Level 3

- Advanced technologies
- Management controls quality metrics
- Community involvement



## Level 4

- Ongoing optimization
- Active management
- Leadership

# Cross-Organizational Minimal Acceptable Principles

## Overview of Proposed Framework



### Traits & Identifiers

- Specific identifiers
- Temporary/default identifiers
- Assumptions



### Matching Algorithms

- Normalizing
- Tracking Changes



### Exception Handling

- Consent
- Revoke
- Decommissioning

# Cross-Organizational Minimal Acceptable Principles

## A list of rules that set the “floor”

- ✓ **Do** make clear corresponding responsibilities on both partners to an exchange of patient data
- ✓ **Do** use normalized traits
- X **Don't** use exact character-by-character matching
- X **Don't** rely on any specific identifier (such as a social security number)
- X **Don't** make assumptions about the life cycle of a patient identifier

## Language to elevate the “floor”



At Level 1 rules are interpreted as SHOULD or SHOULD NOT



By Level 4 rules are interpreted as stringent pass/fail standards, becoming MUST or MUST NOT

# Traits and Identifiers



## Patient Discovery Initiating Gateway

### Should:

- Use consistent, unchanging, and individualized patient identifiers
- Query using all traits required by underlying specifications
- Query using all high-quality optional traits

### Should Not:

- Require use of specific identifier\*
- Transmit any temporary/ default value for patient traits
- Make assumptions about expiration of partner's identifiers
- Supply more than one patient identifier per assigning authority



# Traits and Identifiers

## Patient Discovery Responding Gateway



### May:

- Return multiple ambiguous matches per assigning authority

### Should:

- Use consistent, unchanging, and individualized patient identifiers
- Handle multiple ambiguous matches per Assigning Authority

### Should Not:

- Require use of specific identifier\*
- Transmit any temporary/ default value for patient traits
- Make assumptions about expiration of partner's identifiers
- Require identical traits on subsequent requests
- Return duplicate patient records in such a way that a duplicate record will be created

# Matching Algorithms

## Patient Discovery Responding Gateway



### Should:

- Track patient identity trait changes and respond based on prior or current demographics
- Match based on normalized traits
- Use case insensitive matching

### Should Not:

- Use exact character-by-character matching

# Exception Handling



## Patient Discovery Initiating Gateway

### Should:

- Permanently decommission the identifier or identifiers formerly used to represent the patients after merging/ unmerging

### May:

- Use the XCPD “revoke” transaction to indicate that a previous correlation made by a partner should be revoked

### Should Not:

- Reuse a patient identifier

# Exception Handling

## Patient Discovery Responding Gateway



### Should:

- Permanently decommission the identifier or identifiers formerly used to represent the patients after merging/ unmerging

### May:

- Accept the XCPD “revoke” transaction
- Return an error indicating additional patient consent may allow different information to be returned

### Should Not:

- Reuse a patient identifier

## In Summary

- The Patient Matching Minimal Acceptable Principles is a list of rules based on real-world production experience
- The purpose of the rules is to:
  - Create a “floor” for data sharing behavior
  - Clarify corresponding responsibilities on both partners to an exchange of patient data
  - Increase cross-organizational patient match rates nationwide through standardized identity management practices
- We encourage public feedback on the rules proposed to-date and participation in developing further principles
- As a non-profit organized for the public good, we view this as a key area where we can assist in capturing and sharing knowledge





## Discussion

# Other Concepts –

## Cross Organizational Patient Matching

- Improved patient matching via novel analysis of all commonly available patient matching traits
- Using dynamic logic to determine what traits uniquely identify a person
- Creating a (draft) authoritative list of the traits needed to match people with a certain confidence interval
- Publish various industry and or academic papers analyzing various novel patient matching strategies using public and semi public patient matching
  - Database has been procured of 139m persons with many demographic traits representing 250m million households
- Various impact analysis (quantified)
  - Patient safety considerations of patient matching errors
  - False positive, false negative costs
  - Unlink and unmerge costs
- Piloting other national system approaches such as the previous French system

Thank You!