Patient Identity Integrity in a Brave New World

Accurate, complete & consistent information linked to an individual patient in healthcare systems
Some Key Definitions

• MPI - Master Patient (Person) Index
  • electronic demography database with information on every patient registered within a healthcare organization

• EMPI - An Enterprise Master Patient (Person) Index (EMPI)
  • database that contains a unique enterprise identifier & tables connecting the EMPI identifier to records stored in all of the contributing registrations systems throughout an Integrated Health System.

• NHIN - National Health Information Network
  • linking authorized users to healthcare information across the United States (AKA HIE – Health Information Exchange)
Duplicate Records

- Duplicate Medical Record Numbers
  - 2 different records for the same individual at the same facility
- Overlaps
  - 2 different records for the same individual at different facilities within an Integrated Health System (in the EMPI)
- TBD – Label not yet defined
  - Multiple records for the same individual in an HIE
- Overlays
  - 2 different patients sharing the same record – at any level of the healthcare delivery system
Costs of Duplicates

- **Administrative**
  - Estimated cost for correcting = $25 – $65 per duplicate
  - Industry experts estimate 8% - 12% duplication rate
    - Records in database X % of duplication X cost to resolve
    - $500,000 X 3% X $30 = $450,000

- **Outside consultants**
  - 2005, Twin Cities hospital
  - ID’d 65,000 potential duplicates & resolved 1/3 of them
  - 2/3 not resolved due to missing or conflicting info
  - Consultants paid $700,000

- **Resource consumption**
  - Sharp Healthcare
  - > 400 of MPI team time to resolve a complex overlay
Costs of Duplicates

- Regulatory Impacts
  - TJC requires unique medical record
  - OIG duplication of services – fraud & abuse

- EMR implementation
  - Children’s Medical Center, Dallas 2001
  - 45% of physicians encountered duplicates
    - 25% said impacted quality of care
    - 30% re-ordered tests due to lack of availability of previous results

- CHIME survey 2012
  - 19% of respondents reported an adverse event due to patient mismatch
  - 76% involved in interoperability among providers, states and other stakeholders
Why is Patient Identity Integrity so Important?

“Either this is the wrong chart or—let’s just hope this is the wrong chart.”
Underlying Causes of Duplicates:

- Registration is challenging, staff turnover is high
- Poorly defined, un-enforced standards
- Emphasis on speed, throughput
- Insufficient training on impacts
- Decentralized registration
- Reference Labs, “temporary” registrations
- Other factors
  - Poor patient query tools, insufficient error reporting
  - Search results ambiguous, non-intuitive
  - Corrective measures difficult to perform
  - Past System/MPI Data conversions
Medical ID Theft and Fraud
(Ponemon Institute Survey)

- **Economic Impact** - $41.3 billion annually
  - Estimate—1.85 million Americans impacted
  - Average cost per victim - $22,346

- **Impacts:**
  - **To Patient:**
    - Financial;
    - False entries in Medical Records (Blood bank issues, information about STD, drug use, etc);
    - Law enforcement (child custody)
    - Employment
  - **To Provider:**
    - Loss of Confidence;
    - Consumer expectation of reimbursement for costs to find another provider

- **Causes**
  - Family member theft (35%)
  - Fraudulent billing by providers (22%)
  - Provider’s office staff theft (7%)
Improving Patient ID Integrity

• Raise organizational awareness and propose solutions
• Education
  • Avoiding
  • Impacts
  • Trends
• Creation, implementation, enforcement of national patient ID standards
• Technology solutions
  • Advanced Matching Algorithms
  • Smart cards
  • Biometrics
Michael Trader, President, M2SYS

• Co-founder, M2SYS (Mind to System)
• NAHAM presentations:
  • aIPAM, GNHAMA, ARKHAM, CAHAM
• published articles:
  • *Advance for Health Information Professionals*, August 2012 “Defining Patient Verification & Identification in Healthcare”
  • *Becker's Hospital Review*, September 2012 “Is Biometrics the Answer to Healthcare Data Integrity” (co-author with John Trader)
• Podcast with HIT Consultants – Biometric Patient ID Technology
• Recipient 2011 Frost & Sullivan North American New Product Innovation Award
Biometrics for Patient Identification
Agenda

- Quick Lesson on Biometrics
- Proper Due Diligence
- Biometric Patient Identification Options
- Case Study and ROI
A Quick Lesson on Biometrics

If **Apple** believes in it…

It’s probably here to stay.

(and will get more popular)
Biometric Capture

Scan → Capture image → Biometric identity template

One-way algorithm
### Authentication Examples

#### 1:1

<table>
<thead>
<tr>
<th>Med Rec</th>
<th>DOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
</tbody>
</table>

**Matches one record**

**Are you who you claim to be?**

#### 1:FEW

<table>
<thead>
<tr>
<th>Med Rec</th>
<th>DOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
</tbody>
</table>

**Searches a few records**

**Are you part of this group?**

#### 1:N

<table>
<thead>
<tr>
<th>Med Rec</th>
<th>DOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
<tr>
<td>488774</td>
<td>10/19/1987</td>
</tr>
<tr>
<td>380453</td>
<td>7/17/1995</td>
</tr>
<tr>
<td>514354</td>
<td>1/25/1991</td>
</tr>
<tr>
<td>594082</td>
<td>1/27/1990</td>
</tr>
<tr>
<td>910166</td>
<td>3/10/1980</td>
</tr>
</tbody>
</table>

**Searches every record**

**Who are you?**
Takeaways

• Biometrics is not going anywhere

• Real-time 1:N de-duplication is needed to prevent ALL duplicates, overlays and fraud (you should only need to scan to identify)

• Some biometric technologies excel at this
Type of authentication (e.g. 1:N)?

Accuracy?

Hygiene?

Can it work for all ages?

HIE/IDN?

Future-proof and flexible?
Is it Future Proof & Can it Scale?

- Save biometric data in NIST format
- Easily and affordably scale the matching system
- Avoid being tied into one biometric device from a single manufacturer
- What’s important is FLEXIBILITY (platform concept)
What Options are Available?

- Fingerprint, Finger Vein, Palm Vein, Iris, Face, Voice … even EAR recognition!
Palm Vein

- Originally made for Japanese ATMs
- Designed for 1:1 or small 1:Few
- Proprietary data format
- Low social stigma
- Can’t use with small children
Iris

- Extremely fast 1:N search speed (2.5 million/sec)
- The most accurate form of biometrics – chance of two being identical is $10^{78}$
- Template has long-term stability; iris formed at 10 months
- Contactless
- Simultaneous face capture
- Meets NIST data standards
The iris is **not** the retina…
Iris Misconceptions

The iris camera is **just like any other digital camera**. There is **no** red laser...
Case Study and ROI

Switched from palm to iris in August 2012

Some stats:
- Reduced registration time by 2 min per patient
- Dec. 2011 (with palm) – 11 patients used system
- Dec. 2012 (with iris) – 445 patients identified

Non-contact iris modality supports hospital infection control
Recap

• The right biometrics system can prevent duplicates, overlays & fraud while increasing patient safety

• Know how things work under the hood

• There are different options for biometrics but what’s most important is a PLATFORM that’s FLEXIBLE and can SCALE (ACO, HIE, etc.)

• Biometrics is already becoming mainstream (Apple acquisition)
Committee Member for Insurance Identity Cards for W.E.D.I.
- Nonprofit advisor to HHS focused on healthcare technology – to enhancing quality of care, improving efficiency and reducing costs.
- Tiger Team Member for National Security of Trusted Identity in Cyberspace (NSTIC/NIST)
- Board Member of the Smart Card Alliance
- Vice Chair for “Emerging Technology in Healthcare”

One Identity Solution Should Adapt to Government, State or Individual Healthcare Providers
Key I – Smart Card Adoption Facts - March 2013

US Government and Private Research on Replacing Health ID and Insurance Cards with “Smart Cards”

- National Committee on Vital and Health Statistics hearings on Smart cards
  - AARP, Medical Group Management Association (MGMA) and Secure ID Coalition
- U.S. Senate bill $25M to conduct a pilot smart card for Medicare
- State Initiatives - Medicaid Projects
  - North Carolina, Mississippi, Vermont
- The CMS - reviewing credit-card terminals as a resource for Health ID cards
- AMA/CDC - 3-year study of smart cards to assist victims of natural disasters
- W.E.D.I. reporting to HHS on implementing insurance ID Smart Card
Goal: Unifying Patient Identity, Connectivity and Mobile Access
Sample: Nationwide Health Information Network
Key II - Interoperability Between Healthcare Providers, Government and Identity Vendors

- Universal connectivity to valid identity between separate and competing Providers and identity Vendors
- Seamless integration to all healthcare providers and identity vendors
- Interoperable solution
  - Providers, Government and State
- Upgradable Technology
- Fully HIPAA-compliant
Bridging Identity with Disparate Groups
Using Current Payment Terminals for Healthcare ID Card
One Identity = One Record
at each provider location...ALWAYS

Past

Repairing Duplicate or Overlay Records
$300K - $2M every 2–3 years.

Present

Future

CMS, Insurance & Provider ID Cards - No more Duplicates
Positive Patient Identity = ROI

One Identity for all Visits

- Patient Identity Authentication
- Diminish Duplicate, Overlays Records and Keystroke Errors
- Workflow Automation 20 Second Paperless Registration
- Increase Patient Safety, Satisfaction and Data
- Increase Administrative and Claims Efficiencies

- Reduce Identity Fraud Patient Activity Reports
- Key-Increase Database Integrity...Forward
- Decrease Administration Requirements
- Increased Revenue Growth
- Proven 6-8 Month ROI Average Hospital <$600K
CASE STUDY – Smart ID Card solution is saving us over $300,000 in Annual Administrative Costs

- Increased patient satisfaction - Press Ganey scores to top 5% of all providers nationwide – all patients carry card
- Diminished keystroke, billing errors and fraud to less than 1%
- Reduced accounts receivable collection time over 25% - less than 38 days
- Reduced average admission time to less than 1 minute
- Eliminated duplicate & overlay records
- Helps protect patients in emergencies
- ROI in less than 8 months
30 Second Paperless Registration
Patient Satisfaction

New Card Pre-Issued by Government or Healthcare Facility

Re-Visit to any Provider with Health Security ID Card

Automatic Updates at Sign-Out for Most Current Data
- Bridges one identity to all medical records
- No changes in workflow
- Integrates to all providers
Smart Card Data
(Online or Offline - Emergency Patient Data)

Patient Demographics
- First Name
- Middle Name
- Last Name
- Date of Birth
- Primary Care Physician Name
- Address
- Address2
- City
- Country
- State/Province
- Postal Code
- Medical Record Number
- Emergency Contacts
- Telephone Number
- Gender
- Advance Directives
- Marital Status
- SSN
- Drivers License Number
- Driver License State
- Blood Type
- Organ Donor
- Language
- Faith
- LifeMed Corporate ID Number

Update Date
- Date Last Modified/Updated

Allergy (multiple)
- Allergy Type
- Name / Allergen
- Reaction
- Source (personal / discharge summary / clinical note)
- Severity

Medical Problems (multiple)
- Diagnosis/Problem description
- ICD-9-10/SnoMed expression problem

Surgeries and Procedures (multiple)
- Description
- Date
- Re-Rout pipeline to additional data

First Responder, FEMA/FRAC Access
- Authority to read Smart Cards, date stamp, audit trail, time limit
- Enables immediate patient identification and Data access
- Provides authentication override to info when patient is impaired
- Facilitates accurate evaluation and rapid care at the scene or en route to hospital
- Transmit Patient Data to ER via Cloud

Insurance/Guarantor
- Insurance Data (multiple)
- Guarantor Data
- Name (First, Middle Initial, Last)
- Relationship
- Address (detail)

Medications (multiple)
- Generic Name
- Brand Name

Configurable for additional patient information
- Implanted devices
- Artificial valves
- Pacemakers
- Defibrillators

Patient Identity Verification
- Personal Identification Number(s) PIN
- Patient Photo (low res), Biometric
- Note: Identity Management (Algorithm of Multiple Fields and Encryptions)

Configurable for Payments
- VISA/MasterCard
- Debit
- HSA
- Medicare, Medicaid, etc.

Smart cards and Continuity of Care data dependent on provider, type of card and access points
Over 8,000 agencies use Identity Card systems to track responders, patient/victims and volunteers
Bridging Identity Across ALL Disparate EHR’s
Protecting Patient with Seamless Integration

One Identity for all Visits
One Solution Adapts to Government, State or Individual Healthcare Providers

- Smart Card
- Magnetic Strip Card
- Palm Vein
- Iris - Photo Scan
- Retail - Payment
Minor IT Requirements
Easy Plug and Play for Self-Expansion
- Branded cards accepted by local & national merchants
- Builds brand recognition
- Rewards and points…the more Members use your card…the more rewards
Thank You

Nancy Farrington, CHAM, EMPI Administrator, HIM - Main Line Health System
Michael Trader, President – M2SYS Technology
David Batchelor, CEO - LifeMed ID, Inc.

Patient Identity Integrity in a Brave New World

Accurate, complete & consistent information linked to an individual patient in healthcare systems
references

- “Children’s Dallas Case Study” Just Associates (www.justassociates.com)
- "Master Patient Index Overlaps (2 Patients, 1 Record): We Don't Know What We Don't Know." 2009 AHIMA Convention Proceedings, October 2009 Greenwald, Constance Z.; Broad, Jason.
- “Second Annual Benchmark Study on Patient Privacy & Data Security; Published December 2011 by Ponemon Institute LLC http://www2.idexpertscorp.com/assets/uploads/ponemon2012/Third_Annual_Study_on_Patient_Privacy_FINAL.pdf)
- Third Annual Survey of Medical Identity Theft; Published June 2012 (http://www.ponemon.org/local/upload/file/Third
- http://www.hitconsultant.net/2012/11/14/biometric-patient-id-technology-with-m2sys-president-michael-trader/