MPI Clean Up: It’s a Must!

Webinar
July 21, 2009

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MPI Clean Up: It’s a Must!

Agenda

- Function & Importance of the MPI
- Statistics
- Why Does It Matter?
- Advocating for Action
- What Can Be Done?
- Case Studies

Function and Importance of the MPI

AHIMA 2009 HIM Webinar Series
National Healthcare Mandate

- The creation of a seamless national health information system—including an electronic health record for virtually every American—within the next 10 years (by 2014).
  
  President George Bush, 2004 State of the Union Address

- ARRA Stimulus Package of 2009

First Things First

Clinical Information Systems Plan

1. Infrastructure, Devices, Interfaces, MPI Cleanup
2. Medical Records Document Management
3. Clinical Repository
4. PDA/Handheld Clinical Results
5. Orders, Clinical Documentation
6. Pharmacy & Medication Management
7. Physician Order Management
Evolution of the MPI

- Card file
- Facility master patient index
- Enterprise master patient index
- Electronic health records (EHR)
- Health information exchange (HIE)

Why is MPI Accuracy Important?

- Quality Care for Patients
  - Critical link among disparate health information systems
  - Facilitates information exchange
- Financial Health for the Organization
  - Operational efficiency
  - Risk and cost reductions
  - Accurate billing and reimbursement
The Key to Information

- Unique patient identifiers are necessary to collect and access patient information for delivery of care and administrative functions
  - data interchange & interfaces
  - retrieval of reports and records
  - longitudinal health information
  - financial management

The Foundation

- The Master Person Index (MPI) identifies all patients treated within a healthcare organization
  - The MPI may also identify other people, such as employees and physicians
  - The EMPI identifies all patients treated within an enterprise, or group of related healthcare organizations

- Each patient should have a unique identifier
**Connected Healthcare Community**

- Patient Centric Design
- Disparate IT systems are unified through a shared identifier architecture
**Duplicate Statistics**

- An average hospital MPI contains 500,000+ patient records
- HIEs have 1M to 150M records
- The average duplication rate is 8% - 12%

**Common MPI Data Errors**

- Duplicate record: a patient has two or more assigned MRNs
- Overlap records: a patient has different MRNs in separate facilities that are linked in one EMPI
- Overlay records: one MRN contains information on two separate individuals

The Patient Matching Dilemma

- **False Positives:**
  High probability matches may contain false matches. A high probability match does not guarantee records are duplicates and should be linked.

- **False Negatives:**
  Low probability match does not guarantee records are not duplicates.

Duplicates and Overlays

Records that *seem* to match
(same name, similar birth date)

Overlay
(False Positive)
2 records linked to 1 MRN

<table>
<thead>
<tr>
<th>Clare Wheatley</th>
<th>Claire Wheatley</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOB: 02-04-71</td>
<td>DOB: 02-14-95</td>
</tr>
</tbody>
</table>

Records that *should* match
(but he looks completely different!)

Duplicate / Overlap
(False Negative)
2 MRNs created

<table>
<thead>
<tr>
<th>Michael Jackson</th>
<th>Michael J. Jackson</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOB: 08-20-58</td>
<td>DOB: 08-29-58</td>
</tr>
</tbody>
</table>
**Causes of Duplicates**

- Discrepancies in name, address, numerical identifiers and other patient-unique attributes
- Undefined or inadequate processes for patient registration and MPI maintenance
- Multiple information systems and databases
- Prior data conversions
- Poor system integration, or no integration

**Data Integrity Issues**

- ~10% of all records have blank, missing or default values in key data fields:
  - LN, FN, DOB or Gender
  - Increases to ~40% when SSN included
- ~25% of all records have errors in at least one of four key data fields:
  - LN, FN, DOB or Gender
- >80% of duplicates have a discrepancy in one or more of six key fields:
  - LN, FN, MN, SSN, DOB, Gender
  - ~40% have a discrepancy in the first or last name

**Computing Duplicate Rates**

**Existence Rate**
A 500,000 record MPI file contains 15,000 duplicate pairs involving 30,000 records. The duplicate rate is 3%.

$$\frac{15,000 \text{ duplicates}}{500,000 \text{ total MPI}} \times 100 = 3\%$$

**Creation Rate**
A facility has 10,000 pre-registrations and admissions per month. 250 duplicate records were created. The creation rate is 2.5%.

$$\frac{250 \text{ duplicates}}{10,000 \text{ reg. events}} \times 100 = 2.5\%$$

*Source: “Managing the Integrity of Patient Identity in Health Information Exchange”, AHIMA Practice Brief, July 2009.*

**How Clean Is Your Data?**

- Average duplicate rate in a hospital setting is 10%
- Best practice duplicate rate is suggested to be below 5% (depends on setting)
- Where do you stand relative to industry benchmarks?
Polling Question #1

Have you assessed the MPI duplicate existence rate at your facility?

A) Yes
B) No

Polling Question #2

What was the duplicate rate at your facility?

A) <2%
B) 2% to 7%
C) 8% to 13%
D) 14% to 19%
E) >20%
Why Does It Matter?

Why Does Data Integrity Matter?

- Healthcare personnel working with partial information on the patient in their care
- Errors create enormous waste and additional expense
- Inability of authorized clinicians to access vital patient records in the event of an emergency
- Increased number of tests being re-run because the original results cannot be located
- Risks of negative drug interactions because physicians do not know a patient’s current conditions or medications
- Delays critical diagnosis
- Exposes patients to unnecessary invasive procedures

Source: 2005 Connecting for Health Report, Markle Foundation
### Alarming Clinical Statistics

- 30% - physicians could not find information previously recorded
- 11% - same drug or radiology exam ordered, half of which ended up being performed
- Physicians not aware of 1 in 4 prescriptions (25%)
- 1 in 7 admissions and 1 in 5 lab/ radiology exams ordered due to retrieval barriers
- Data collection/ transfer costs range from $12 - $28 per visit

*Source: Electronic Medical Records – Getting it Right and Going to Scale. Commonwealth Fund background paper, Jan. 2004*

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### Duplicates Are Costly

- **Duplicates/ Overlaps: $100 +**
  - Time & materials wasted by creating new records unnecessarily
  - Time & materials wasted by researching, identifying & correcting “on demand”
  - Delays in billing & accounts receivable
  - Duplicate tests and treatments
  - Missing clinical information

- **Overlays: Catastrophic**
  - Risk of Clinical Error
  - Potential confidentiality breaches
  - Cost of litigation
**Impact of Poor MPI Data Integrity**

| Clinical Implications          | • Inability to locate information  
|                                | • Patient safety concerns          |
| Adoption of Technology         | • Inefficient care delivery        |
|                                | • Decreased confidence in clinical information systems |
| Community Relations            | • Patient dissatisfaction          |
|                                | • Physician and provider dissatisfaction |
| Operational Efficiency         | • Increased expenses              |
|                                | • Wasted resources                |
|                                | • Decreased revenue               |
| Organizational Compliance      | • HIPAA                          |
|                                | • CMS 72 hour rule                |
|                                | • Joint Commission                |
|                                | • Confidentiality breaches        |

**Polling Question #3**

Has your facility experienced any patient safety issues as a result of duplicate records?

A) Yes  
B) No
Data Integrity Intervention

- Data Integrity “is achieved by preventing accidental or deliberate but unauthorized insertion, modification or destruction of data in a database…”
  
  *PCmag.com: Encyclopedia of IT terminology*

Challenges

- Diversity of systems not unified in data collection conventions and person identification processes
- Most hospital information systems actually contribute to the problem due to poor query technologies and reports, difficult correction mechanisms
- Business Processes - trauma registration, reference labs, newborns
- Human Factors - training, turn-over
- Other Factors - conversions, mergers
**Realities**

- Must be an executive priority to be successful
- Takes time to achieve results
- Involves people, process, and technology
- Typically requires new product and services investments
- Will not happen without coordinated efforts across facilities and departments

**Polling Question #4**

Does your organization have a multi-disciplinary committee to address MPI data integrity?

A) Yes  
B) No
Advocating for Action

Advocate for an MPI Assessment

- Knowing the problem enables evaluation of appropriate solutions
  - Determine the quality of the MPI data
  - Interview others to understand the operational impact of MPI data issues
- Quantify and explain risks
  - Quality of care
  - Operational effectiveness
  - Compliance with standards & regulations
  - Adoption of new technology
- Identify benefits of solution
Call for Action

- MPI systems link data within & across organizations - the MPI facilitates Health Information Exchange
- The average hospital duplicate rate is 10%. We need to determine the quality of our data.
- Our target duplicate rate should be ___% (below 5%)
- MPI errors impact cost, quality and effectiveness of patient care. (Share ROI statistics for your facility.)
- Emphasize the need for a Data Integrity program.
- Obtain sponsorship for a project.
- Establish a multidisciplinary team including representatives from IT, HIM, Registration, and Clinical areas.

Compare to Best Practice

- **Determine the gap**
  - **Current state**
    - Industry average duplicate rate 8%-12%
    - Industry average overlap rate >40%
  - **Best practice**
    - Duplicate rate <2%
- **Set a data quality goal**
  - Duplicate rate <5%
  - Overlaps properly linked
  - Minimize overlays
Prepare a Business Case

- Prepare a return-on-investment or cost-avoidance business case
  - Risk cost per dup = $100+
  - Correction cost per dup = $15 to $60
- Show financial benefit of solving the problem!

ROI: Calculating Risk Costs

<table>
<thead>
<tr>
<th>Risk</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality &amp; Continuity of Patient Care</td>
<td>&gt;$100</td>
</tr>
<tr>
<td>Duplication of Tests &amp; Treatment</td>
<td>&gt; $100</td>
</tr>
<tr>
<td>Success of Strategic Initiatives</td>
<td>Variable</td>
</tr>
<tr>
<td>Impact on Operations</td>
<td>$10 - $1,000</td>
</tr>
<tr>
<td>Breach of Confidentiality</td>
<td>Variable</td>
</tr>
<tr>
<td>Liability Risk</td>
<td>Variable</td>
</tr>
<tr>
<td>Regulatory Noncompliance</td>
<td>&gt; $10,000</td>
</tr>
<tr>
<td>Customer Dissatisfaction</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>TOTAL RISK COST PER DUPLICATE</strong></td>
<td><strong>$100 or more</strong></td>
</tr>
</tbody>
</table>
ROI: Calculating Correction Costs

<table>
<thead>
<tr>
<th>Department</th>
<th>Time</th>
<th>Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Information Management</td>
<td>15 min - 240 min</td>
<td>$4 - $60</td>
</tr>
<tr>
<td>Radiology</td>
<td>15 min - 100 min</td>
<td>$4 - $25</td>
</tr>
<tr>
<td>Laboratory</td>
<td>15 min - 60 min</td>
<td>$4 - $15</td>
</tr>
<tr>
<td>Business Office</td>
<td>15 min - 60 min</td>
<td>$4 - $15</td>
</tr>
<tr>
<td><strong>TOTAL CORRECTION COST PER DUPLICATE</strong></td>
<td>60 min - 460 min</td>
<td><strong>$16 - $115</strong></td>
</tr>
</tbody>
</table>

* Labor costs based on average wage rate of $15/hour

Make the Commitment

- C-level sponsorship
- HIM leadership and influence
- Cross-functional participation
Collaborate

- Partner with IT
  - Technology is the tip of the iceberg
  - Policies and process are essential elements of a successful program
- Engage other stakeholders in Health Information Management, Business Office, Registration, Clinical areas

“As healthcare databases get larger and as more integration ... occurs, the proper oversight of these databases from a record linking perspective is of high importance.”

J AHI MA Practice Brief January 2006
Surveying the RHIO Landscape
Seize the Opportunity

- Leadership is needed
- Act now and make a difference

Would your organization benefit from your leadership?

What Can Be Done?
Communicate

- Talk about this issue frequently
- Present in different forums - leadership committees, medical staff committees
- Educate your colleagues

Educate: A 10-Step Program

1. Define project scope
2. Define data to be analyzed
3. Complete data analysis
4. Kick off the project
5. Complete a detailed project plan
6. Finalize the budget & timeline; assign resources
7. Verify duplicates
8. Merge duplicates
9. Report & evaluate
10. Implement maintenance strategies
**Act**

- Develop an action plan
- Identify and engage vendors, if appropriate
- Get started!

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**Set Up the Data Integrity Program**

- Obtain the right knowledge
  - Educate yourself & your staff
  - Hire the expertise
- Formulate your DI Program
- Identify High Risk Areas Up Front
- Sell your DI Program on ROI
Establishing a Data Integrity Program

- Stakeholder involvement
- Dedicated resources
- Education of all staff on importance of standards
- Establish an ongoing monitoring program
- Technology tools

Data Integrity Program Components

1. Technology
2. Standards
3. Training
4. Ongoing monitoring
5. Feedback
6. Enforcement
Technology

- Realize that most HIS vendor systems provide rudimentary matching and reporting tools
- Invest in sophisticated algorithms for external data analysis to assess your problem
- Invest in advanced tools for front-end and back-end processes

Standards

- Data Standards
  - Dictionary of Data Definitions
  - Representations & Expressions
  - Data sets
  - Valid Value ranges
  - Mapping across vocabularies & systems
  - HL7 messaging
- Performance Standards
  - Productivity & quality
  - Processes
Training

- **Who:**
  - All staff: Clinical, Admin, IT, HIM, etc.
  - Special focus on registration/ access/ data entry personnel

- **What:**
  - Data Definitions
  - Data Entry Conventions
  - Consistency in Default Values

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Monitoring

- **Transmissions and Processes**
  - Was what was sent actually received?
  - Did the required function or process actually occur?

- **Business Processes**
  - Test to verify success
  - Institute processes to reduce data error

- **Monitor Data Values & Attributes**
  - Validity
  - Completeness
  - Consistency
  - Reliability
### Feedback

- Resolve problems as they are identified
- Communicate what you learn from monitoring
- Modify the process as needed
- Re-train when and where necessary

### Enforcement

- Enforce data definitions & conventions
  - Report
  - Corrective Action
- It is an organization-wide effort
**Best Practices for MPI Correction**

- Advanced person matching technologies
- Rigorous review of existing MPI systems and maintenance procedures
  - Data entry/ naming conventions
  - Interfaces
  - Merges & updates
- Real-time error identification
- Structured error resolution process
- Monitoring and reporting

**Best Practices for MPI Maintenance**

- Integrate technology, people, and process to solve patient identification issues
  - Involve all stakeholders
  - Evaluate Patient Access operational processes
- Implement Data Integrity Best Practices
  - Naming conventions
  - Search routines
  - Error Correction
- Educate staff on the relationship of the EMPI to the EHR
- Provide feedback
  - to Patient Access
  - to Executives and Medical Staff
Case Study #1
Achieving EHR Data Quality through Maximization of Patient Data Integrity

A Patient’s Perspective

- Registration Delay
- Waited in ED while staff searched for previous record
- Blood sample taken again for repeat test
- Initial antibiotics changed after organism ID’d on 2nd test
- Paid for 2 prescriptions
- Sick for additional 2 days—missed work, lost wages
- Follow-up visit at family doctor confused due to duplicate test results from ED
- Time spent clarifying billing with insurance company
A Physician’s Perspective

- **Lack of Confidence & Frustration**
- **Survey Findings**
  - 45% routinely found duplicate medical record numbers
  - 30% re-ordered tests due to inability to find results in record
  - 25% felt duplicate records impacted the quality of care they were able to deliver

One Hospital’s Perspective - The Cost of Duplicate Records

- **Study performed on Confirmed Duplicates**
- 1,000 Records included in Study
- **Costs Captured**
  - Readmissions with Bad Debt
  - Clinical Issues
  - Treatment Delay
  - Operational Costs for Rework
- **Average Cost of Duplicates**
  - $96.25 per duplicate record
- **Clinical and/or treatment issues**
  - 4% of duplicates
  - Average Cost per duplicate $1099
- **Bad Debt**
  - 11% of duplicates
  - Average Cost per duplicate $867
Improving the EHR: Actions Taken to Resolve Data Integrity Issues

- Multi-disciplinary task force convened
  - HIM Director
  - IT Director
  - Patient Financial Services/Access Director
  - Ambulatory Director
- Hired EMPI consultant to evaluate processes
  - Registration process in every location
  - Training and QA programs/P&P
  - Queries on database to identify data anomalies
  - Evaluated interface feeds into and out of EMPI

Improving the EHR: Actions Taken to Resolve Data Integrity Issues

- Education on EMPI data model and its relationship to EHR
- Improved search routines during registration
- Developed P&P with standardized naming conventions
- Increased data integrity requirements to add a new record
- Completed EMPI clean up program
- Evaluated user create statistics
- Installed record search software with advanced search algorithm
- Worked with downstream systems to ensure integrity
**Success**

- Duplicate medical record creation rate at 0.4%
- Physician complaints stopped
- Duplicate Medical Record Hotline - lost it’s popularity
- Patient Access and HIM QA program, good inter-departmental relationships
- Daily feedback to department with immediate improvement
- Accountable to organization’s executives and Medical Record Committee

**Critical Path to Success**

- Measure data quality within your information system using proven technology
- Identify root causes of problems and data integrity issues
- Take steps to address both the root cause and the existing problem data
- Implement data standards
- Educate, monitor, communicate

*Remember: If the data can’t be located in the EHR system, it might as well be misfiled, misplaced or just plain missed...*
Lessons Learned

- Process Improvement is as important as technology
- EHR success critically dependent on the accuracy of the underlying data
  - Physicians have a low tolerance for error – One error is one too many if it’s your patient or your child!
  - Clinical systems put the “errors” at the clinician’s fingertips
  - Patient care improvement won’t be realized from the EHR without high data integrity
- Without high data integrity, linking clinical records across systems is impossible
  - Disparate systems within a facility
  - Different facilities in an enterprise
  - Provider organizations in regional health information network

Best Practices - EHR Data Integrity

- Record search and matching software - advanced algorithms
- Patient Access training based on
  - Consistent naming policies and search routines
  - Understand downstream implications of errors
- Daily review and correction of possible duplicates, overlaps and overlays
  - Patient Access QA process
  - HIM QA process
- Feedback on errors to Patient Access
- Results reporting to Executives/ Medical Staff
Sustaining Results - Duplicate Rate

- 2003 = 22%
- 2004 = 5%
- 2005 = 0.32%
- 2006 = 0.19%
- 2007 = 0.08%
- 2008 = 0.14%
- 2009 = 0.34% YTD - System Conversion

Case Study #2
Cost/ Benefit Analysis
Gaston Memorial Hospital
CaroMont Health
The Problem Hit HOME …

- Sentinel Event - “Near Miss”
- Patient scheduled for cardiovascular surgery
- Lab problem cross-matching blood
- Delay in Surgery (additional cost for hospital stay)
- 2 Medical Record Numbers were found

Cost of Additional Hospital Day

- Additional $$$ for room/ board
- Cost in terms of potential insurance denial
- Cost in terms of patient satisfaction
- Cost in terms of increased risk for nosocomial infections or other complications
Cost to Correct Duplicate MRNs

- Analysis by vendor determined duplicate creation rate was about 8% or 2100 duplicates/month
- 40 minutes @ $13.44/ hour = $8.96
- At 2100/ month = $225,792/ year

Options for Preventing Duplicate MRNs

- **Option A: Temporary Solution**
  - Hire staff to clean up identified DMRNs and be available for blood bank issues 24/7
  - Cost = $83,179

- **Option B: Prevention**
  - Implement registration software to prevent further DMRNs
  - Cost = $204,569 + annual maintenance fees/ staff ($40,479)

- **Option C: Prevention & Cleanup**
  - Implement registration software to prevent further DMRNs and clean up the MPI database
  - $584,138 + annual maintenance fees/ staff ($40,479)

- **Option D: Optimal Prevention**
  - Implement registration software to prevent further DMRNs; clean up the MPI database; and use biometric technology to prevent duplicates
  - $1,084,138 + annual maintenance fees/ staff ($40,479)
**Cost of Options**

![Cost Effectiveness of MPI Cleanup](image)

**Success Factors**

- Cleanup project eliminated historical problem
- Registration processes are more defined (centralized training for a decentralized process) through computer-based learning module
- Established ownership in each department that has a role in maintaining data integrity
- Tools are available to provide feedback to managers about their employees’ work quality
**Benefits of a Clean MPI**

- MRN is a dependable identifier for clinical results reporting
- Clinicians have increased confidence in having all clinical results when queried for
- Increased patient satisfaction - no longer being asked for Social Security number as an identifier during registration
- Fewer corrections = lower costs

**Proven Track Record**

Cost Savings of $44,000 to $125,000 Per Year
Resource/Reference List


Audience Questions
Audio Seminar Discussion

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July 30, 2009

Developing Your Records Retention Schedule: It’s Bigger than Just Health Records
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Appendix

Resource/ Reference List

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