

# ***MPI Clean Up: It's a Must!***



**Webinar**

*July 21, 2009*

***Practical Tools for Seminar Learning***

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## ***Agenda***



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

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## **Function and Importance of the MPI**

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## 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).

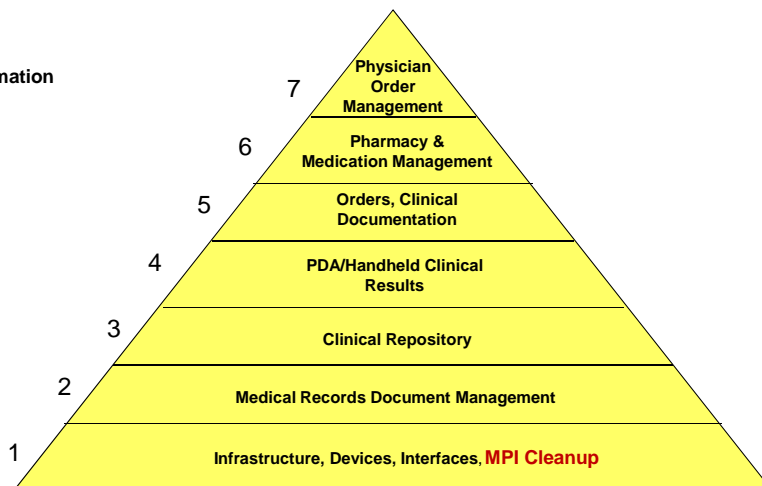
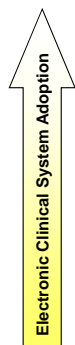
*President George Bush, 2004 State of the Union Address*

- ◆ ARRA Stimulus Package of 2009

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## First Things First

Clinical Information Systems Plan



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## ***Evolution of the MPI***

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

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## ***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**

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## *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

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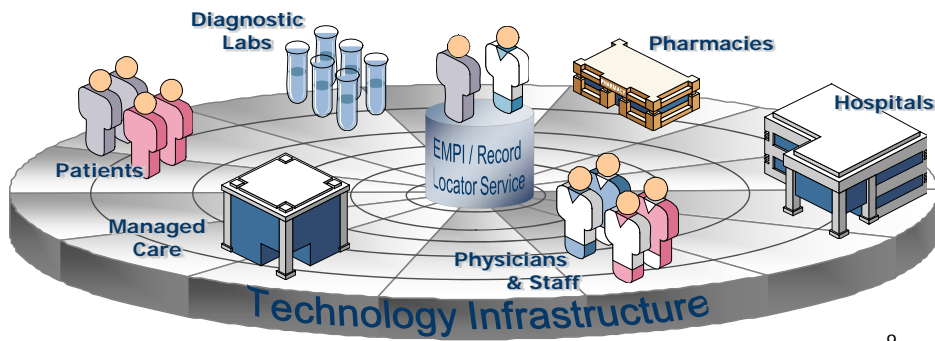
## *The Foundation*

- ◆ **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****

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## ***Connected Healthcare Community***

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



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## **Statistics**

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## ***Duplicate Statistics***

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

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## ***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**

*Source: "Building an Enterprise Master Person Index", AHIMA Practice Brief, January 2004.*

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## 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.

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## Duplicates and Overlays

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

**Overlay  
(False Positive)**  
2 records linked to 1 MRN



Clare Wheatley  
DOB: 02-04-71

Claire Wheatley  
DOB: 02-14-95



Michael Jackson  
DOB: 08-20-58

Michael J. Jackson  
DOB: 08-29-58

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

**Duplicate / Overlap  
(False Negative)**  
2 MRNs created

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## ***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**

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## ***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

*Source: Technology Influence on Data Integrity & Impact on Patient Safety, Privacy & Security. AHIMA Convention Proceedings, September 2008.*

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## ***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%.

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

### **Creation Rate**

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

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

Source: "Managing the Integrity of Patient Identity in Health Information Exchange", 17  
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?**

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***Polling Question #1***



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

- A) Yes**
- B) No**

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***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%**

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## **Why Does It Matter?**

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### ***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**

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*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**

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## ***Impact of Poor MPI Data Integrity***

Clinical Implications	<ul style="list-style-type: none"> <li>▪ Inability to locate information</li> <li>▪ Patient safety concerns</li> </ul>
Adoption of Technology	<ul style="list-style-type: none"> <li>▪ Inefficient care delivery</li> <li>▪ Decreased confidence in clinical information systems</li> </ul>
Community Relations	<ul style="list-style-type: none"> <li>▪ Patient dissatisfaction</li> <li>▪ Physician and provider dissatisfaction</li> </ul>
Operational Efficiency	<ul style="list-style-type: none"> <li>▪ Increased expenses</li> <li>▪ Wasted resources</li> <li>▪ Decreased revenue</li> </ul>
Organizational Compliance	<ul style="list-style-type: none"> <li>▪ HIPAA</li> <li>▪ CMS 72 hour rule</li> <li>▪ Joint Commission</li> <li>▪ Confidentiality breaches</li> </ul>

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## ***Polling Question #3***



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

- A) Yes**
- B) No**

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## ***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*

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## ***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**

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## ***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**

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## ***Polling Question #4***



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

- A) Yes**
- B) No**

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## **Advocating for Action**

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### ***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**

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## ***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.

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## ***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

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## ***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!**

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## ***ROI: Calculating Risk Costs***

<b>Risk</b>	<b>Cost</b>
Quality & Continuity of Patient Care	>\$100
Duplication of Tests & Treatment	> \$100
Success of Strategic Initiatives	Variable
Impact on Operations	\$10 - \$1,000
Breach of Confidentiality	Variable
Liability Risk	Variable
Regulatory Noncompliance	> \$10,000
Customer Dissatisfaction	Variable
<b>TOTAL RISK COST PER DUPLICATE</b>	<b>\$100 or more</b>

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***ROI: Calculating Correction Costs***

<b>Department</b>	<b>Time</b>	<b>Cost*</b>
Health Information Management	15 min – 240 min	\$4 - \$60
Radiology	15 min – 100 min	\$4 - \$25
Laboratory	15 min – 60 min	\$4 - \$15
Business Office	15 min – 60 min	\$4 - \$15
<b>TOTAL CORRECTION COST PER DUPLICATE</b>	<b>60 min – 460 min</b>	<b>\$16 - \$115</b>

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

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***Make the Commitment***

- ◆ **C-level sponsorship**
- ◆ **HIM leadership and influence**
- ◆ **Cross-functional participation**

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## ***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**

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**“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.”**

**JAHIMA Practice Brief January 2006  
*Surveying the RHIO Landscape***

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## *Seize the Opportunity*

- ◆ Leadership is needed
- ◆ Act now and make a difference

*Would your organization benefit from  
your leadership?*

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## **What Can Be Done?**

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## ***Communicate***

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

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## ***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**

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## ***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**

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## *Establishing a Data Integrity Program*

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

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## *Data Integrity Program Components*

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

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## ***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**

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## ***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**

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## ***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

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## ***Feedback***

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

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## ***Enforcement***

- ◆ **Enforce data definitions & conventions**
  - **Report**
  - **Corrective Action**
- ◆ **It is an organization-wide effort**

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## ***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**

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## ***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**

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## Case Study #1

### Achieving EHR Data Quality through Maximization of Patient Data Integrity



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### *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 2<sup>nd</sup> 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

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## *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

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## *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

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## ***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

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## ***Improving the EHR: Actions Taken to Resolve Data Integrity Issues***

- ◆ **Education on EMPI data model and it's 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**

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## ***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

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## ***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...*

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## ***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**

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## ***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**

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## ***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*

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## **Case Study #2**

### **Cost/Benefit Analysis**

### **Gaston Memorial Hospital**

### **CaroMont Health**

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***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**

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***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**

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## ***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**



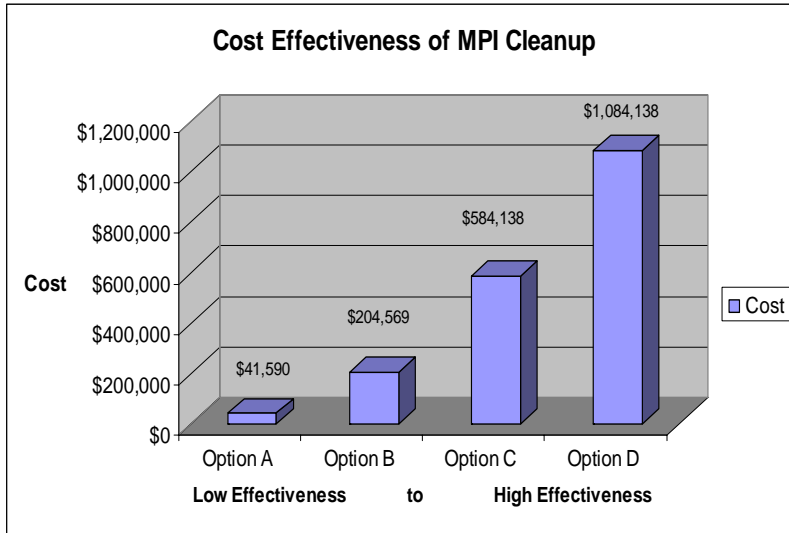
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## ***Options for Preventing Duplicate MRNs***

- ◆ **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)

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## *Cost of Options*



## *Success Factors*

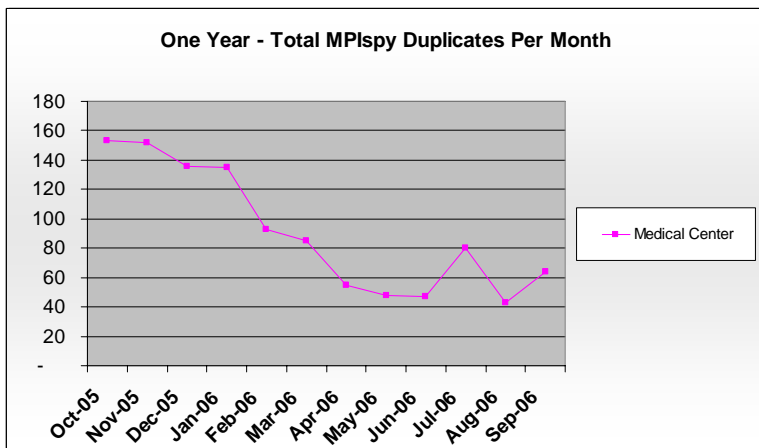
- ◆ Cleanup project eliminated historical problem
  - ◆ Registration processes are more defined (centralized training for a decentralized process) through computer-based learning module
  - ◆ Established ownership in each department that has a role in maintaining data integrity
  - ◆ Tools are available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

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## ***Proven Track Record***



**Cost Savings of \$44,000 to \$125,000 Per Year**

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## ***Resource/Reference List***

- ♦ Baucom, Jan. "Dealing with Data Double Vision". [For the Record](#), May 1, 2006.
- ♦ Demster, Barbara. "Technology Influence on Data Integrity & Impact on Patient Safety, Privacy & Security". AHIMA Convention, September 2008.
- ♦ Hammond, W. Edward. "Electronic Medical Records - Getting it Right and Going to Scale". [www.cmwf.org](http://www.cmwf.org) #695, Commonwealth Fund background paper, January 2004.
- ♦ Just, Beth H. and Katherine Lusk. "Keep It Clean: Optimizing EHRs Starts with Ensuring Data Quality", [Journal of AHIMA](#), June 2006.
- ♦ Practice Brief: "Managing the Integrity of Patient Identity in Health Information Exchange". [Journal of AHIMA](#), July 2009.
- ♦ Wheatley, Victoria. "Patient ID: Managing the Systems and Technology". AHIMA on-line course, 2007.

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## ***Audience Questions***





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Schedule: It's Bigger than Just Health  
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Policy: Mitigating Medical Identity Theft**

**September 22, 2009**

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# Appendix

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CE Certificate Instructions	

## Appendix

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### Resource/Reference List

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