

Patient Matching National Landscape Tour

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Importance of Patient Identity

Patient matching is defined as the process by which one patient is “matched” solely to a unique medical record within a healthcare system. Matching attributes can include: Last name, first name, birth date, address, telephone, gender/sex, and all or part of the patient’s social security number (SSN)¹.

Patient identification is at the center of the patient’s journey through our highly complex healthcare system(s). When the process of correctly identifying a patient fails, a patient’s quality of care and safety can be compromised.

Why is patient matching getting so much attention today? Critical errors are made in clinical settings whereby a patient is incorrectly identified. Unintended consequences include unnecessary testing, medication errors, serious incidents such as performing surgery on a wrong site, or fatal incidents resulting in death. One study estimated that 195,000 deaths occur each year because of medical errors, with 10 of 17 being the result of identity errors or “wrong patient errors.”²

National Initiatives

Our healthcare systems are merging, affiliations and data partnerships are being made, and payment models are changing. This rapid change results in our health information systems and integration strategies constantly growing and changing in size and complexity.

There are many nationally focused initiatives underway driving the awareness of patient identity accuracy and solutions on how to address this critical problem. Many professional associations, healthcare organizations and government agencies are engaged:

- The College of Healthcare Information Management Executives (CHIME) Challenge is underway, offering a \$1 million payout “to protect patients from life-threatening medical errors”³. The winner will be announced in February, 2017.

¹ RAND Corporation. 2008. *Identity Crisis; An Examination of the Costs and Benefits of a Unique Patient Identifier for the U.S. Health Care System*.

² Just, Beth, et al. 2016 Spring. *Why Patient Matching Is a Challenge: Research on Master Patient Index (MPI) Data Discrepancies in Key Identifying Fields*. Retrieved from: <http://perspectives.ahima.org/why-patient-matching-is-a-challenge-research-on-master-patient-index-mpi-data-discrepancies-in-key-identifying-fields/#.Vv8M3Lsm7IU>

³ CHIME. January 19, 2016. *Leading Healthcare IT Association Announces \$1 Million Initiative to Protect Patients from Life-Threatening Medical Errors*. Retrieved from: <https://chimecentral.org/wp-content/uploads/2016/01/NPID-Press-Release-updated.pdf>

- The ECRI Institute has formed a Patient Identification Workgroup. The workgroup “is examining these issues and others in an effort to identify safe practice recommendations for patient identification and to develop tools to facilitate implementation of those safe practices.”⁴
- The Sequoia Project published a white paper; *A Framework for Cross-Organizational Patient Identity Management*.
 - Findings in the report included:⁵
 - “Patient matching practices across organizations are inconsistent and often subpar, with match rates as low as 10-30%.”
 - “When the process of patient demographics collection is not governed among exchange partners, significant data quality issues can be introduced and the match rate can be as poor as 10-15%.”
- The American Health Information Management Association (AHIMA) surveyed its members last year with results published earlier this year. “*Survey: Patient Matching Problems Routine in Healthcare*”.
 - Findings in the report included:⁶
 - 57% of respondents do not measure data quality as it relates to patient matching
 - 53% of respondents do not have a quality assurance step
 - 55% of respondents were able to communicate the duplicate medical record rate, but additional questions in the survey showed a lack of standard definition for duplicate rate calculation.
 - 43% of respondents do not work possible duplicates regularly
- The Office of the National Coordinator (ONC) published a Data Maturity Model late last year; a result of a volunteer workgroup. “*Developing and Testing a Data Management Model and Maturity Scale Tailored to Improving Patient Matching Accuracy*”⁷. Work on this data quality model will continue this year; addressing patient matching best practices.

People, Process and Technology

There is not one single technology that will solve the patient matching problem. Numerous methodologies are being discussed, but all will require a multi-pronged approach to managing a patient’s identity in a constantly changing healthcare landscape. Solutions today require a daily remediation process which takes constant vigilance. Today’s systems are not “once and done” and there is no “silver bullet”.

⁴ ECRI Institute. Winter 2016. *Partnership for Health IT Patient Safety*. Retrieved from: https://www.ecri.org/Resources/HIT/Partnership_Newsletter_q42015.pdf

⁵ The Sequoia Project. November 10, 2015. *A Framework for Cross-Organizational Patient Identity Management*. Retrieved from: <http://sequoiaproject.org/wp-content/uploads/2015/11/The-Sequoia-Project-Framework-for-Patient-Identity-Management.pdf>

⁶ AHIMA Staff. January 6, 2016. *Survey: Patient Matching Problems Routine in Healthcare*. Retrieved from: <http://journal.ahima.org/2016/01/06/survey-patient-matching-problems-routine-in-healthcare/>

⁷ ONC. September 28, 2015. “*Developing and Testing a Data Management Model and Maturity Scale*”. Retrieved from: <https://www.healthit.gov/sites/default/files/ptmatchwhitepaper.pdf>

Reliance on technology tools such as medication dispensing for heightened decision support will only continue to increase. Great strides are being made to advance our technology, however, efforts must include “people and processes” to achieve a successful outcome.

Data analytics and informatics rely on trusted data that is complete and reliable no matter the source of truth. When there are significant amounts of duplicate and overlaid records, the value of analytics is significantly diminished.

Biometrics such as iris recognition and palm vein scanning techniques hold great promise in minimizing the creation of new duplicates. Implementation considerations should address historical records or multiple duplicates that already exist within a health system as these would not likely contain biometric images until many years down the road. The real value of the new technology will be realized once more of a critical mass has been achieved.

Advanced record matching algorithms are an important piece to the overall patient matching solution, but once again, they are not the “silver bullet”. Most provider organizations do not have access to such algorithms. The “black box” inside these products work differently across various products and have varying degrees of record match accuracy and error tolerance. In addition, the effectiveness of these advanced algorithms are at the mercy of the quality and completeness of the patient identity data attributes captured.

Policies are critical, but they must be reviewed and upheld. Some healthcare organizations have excellent policies regarding patient medical record number creation processes. However, unless they are monitored for compliance and updated as needed, they may become outdated and disregarded.

Training is essential to patient matching “baseline” practices. The data integrity (DI) team must be updated on current tools and expectations including topics like feedback protocols for the patient registration/access team.

Aspects, Contributors and Challenges of Patient Matching

Many factors contribute to creating duplicates, overlays and overlaps in a patient’s record.

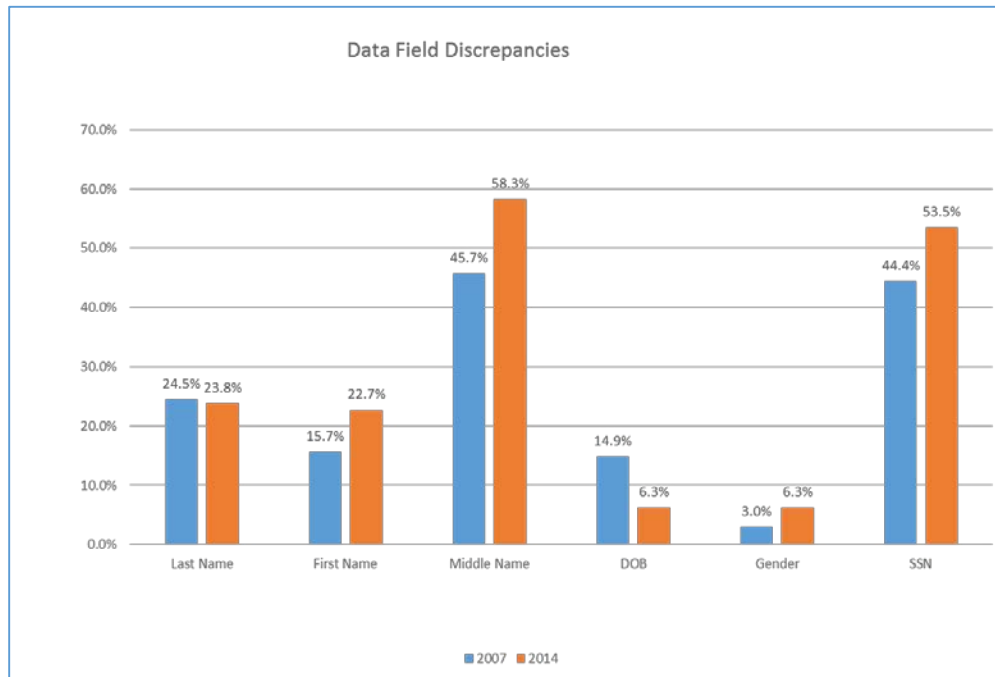
Data capture plays a tremendous role in the creation of duplicates. Front-end registration processes and optimizing algorithms on the back-end are equally important. If data is not captured accurately, according to policy, and complete in all required fields, the patient’s incorrect health information is initially fractured and subsequently cascades throughout multiple downstream health information systems.

Standardizing data capture by increasing the number of primary data values and incorporating secondary data values will support sharing accurate patient information across electronic health records (EHRs), to downstream systems, and to multiple data partners such as insurance payers or health information exchange organizations.

Current State of Patient Identity Issues

Identity issues and concerns facing healthcare organizations today include: Data discrepancies, a lack of national standards, and the fact that all EHRs vary in the way they function.

The following table shows data discrepancies for confirmed duplicate pairs compared over a seven (7) year period.

Figure 1⁸

Lack of national standards impedes true interoperability. Naming conventions and data definitions vary from facility to facility. EHR formats, outputs (reports) and integrations can widely vary. Patient match settings are not universal.

Strategies to Minimize Patient Matching Challenges

- Ongoing duplicate creation management is highly encouraged. There are differences in how the duplicate rate is calculated within healthcare organizations. A suggested calculation is as follows: # duplicate records divided by total records in database. Example: 20,000 records (not pairs) over 500,000 MPI records = 4% dup rate.
 - *ONC's Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap sets Milestones for Accurate Individual Data Matching*⁹:
 - 2015-2017: Internal duplicate rate of no more than 2% at the end of 2017.
 - 2018-2020: Internal duplicate rate of no more than 0.5% at the end of 2020.
 - 2021-2024: Internal duplicate rate of no more than 0.01% at the end of 2024.
- As mentioned above, standardized data capture should be a primary consideration in creating a level playing field. For example:
 - The social security number (SSN) is controversial due to many patients having privacy and security concerns. Many healthcare organizations struggle with capturing this important data element. However, this added data value can

⁸ Beth Haenke Just, et. al. "Why Patient Matching Is a Challenge: Research on Master Patient Index (MPI) Data Discrepancies in Key Identifying Fields". Perspectives in Health Information Management, Spring 2016.

⁹ONC. "Connecting Health and Care for the Nation: A Shared Nationwide Interoperability Roadmap. Final Version 1.0.

assist in positively identifying the patient. One facility may use a default number such as 000-00-0000 for all patients who are not willing to provide their SSN or may not have one (e.g. patient who is not US citizen) and 999-99-9999 for those patients who may not be able to provide the number at the time (unconscious, cannot recall, or they don't have one), however, another facility may use entirely different rules.

- Addresses can be standardized by following the United State Postal Service (USPS) guidance and confirmed through specialized applications that integrate with the patient registration system(s). Capture of addresses are often typed manually. If standards are not enforced, differences such as 1001 North Main Street, 1001 N. Main St., 1001 Main Str. N. may not be flagged as a match and therefore, creating potential duplicate record(s). Most EHR record matching algorithms would not recognize these addresses as the same address and therefore not “match” those addresses as the same.
- Competing projects within the organization may impede progress of maintaining a clean master patient index (MPI) environment. Many facilities have difficulty in prioritizing their duplicate queues; creating a backlog of residual volume. MPI clean-up costs will continue to rise if the organization does not remediate all residual volumes (those duplicates that don't get worked in a certain time frame with available staffing resources).
- Algorithmic optimization enhances performance in systems. An evaluation can improve patient matching capabilities and increase duplicate record identification. The end result is better data integrity across the healthcare enterprise, a higher level of patient care and quality data from which trusted analytics can be performed.

In summary, patient matching is a hot topic on the national stage and rightly so. To serve our patients and their families in the best possible manner, correctly identifying and matching every patient with their unique medical record is where the hope of true interoperability must start.