Recommendations & Implementation Strategies

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Acknowledgments

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Introduction

Patient identification errors can result in grave consequences when one patient’s record contains information commingled with another patient’s information or when information is not recorded in a single record for that same patient. There is no single solution that can eliminate all misidentifications, but there are things that can be done today. Using health information technology (IT) standards to facilitate patient identification can ensure ready and continued access to current and updated information, playing a vital role in providing safe, quality care.

Overview

The implementation strategies recommended are a resource for electronic health record (EHR) vendor/developers, clinicians, and healthcare organizations and their staff.

The Partnership for Health IT Safety (Partnership’s) patient identification workgroup reviewed data, evidence-based practices, and available technologies to derive safe practices for health IT improvements in patient identification. Patient identification issues are multifactorial with no single sufficient solution. The approach began by looking at those frequently reported misidentification issues. What became apparent is that there were two areas of concentration: attributes and technology.

Attributes. Addresses the information-gathering aspects of patient identification, including the fields and the formats that are available to accommodate acquisition of required information.

Technology. Addresses new technologies to improve identification and ways to leverage existing technologies for safe patient identification.

A three-pronged analysis of these issues involved looking at catching, matching, and display using health IT. Correct identification through catching, matching, and displaying is accomplished using both human functions and technology. This implementation guide, derived from the recommendations for patient identification, focuses on using technology to improve identification.
Recommendations

The workgroup summarized the safe practices, which focused on four recommendations for attributes and four recommendations for technology, by using the mnemonic IDENTIFY. They are outlined below and can be found in the full report. Implementing these safe practices can be accomplished by focusing on catching, matching, and display.

**IDENTIFY: Attributes and Technology—Safe Use of Health IT for Patient Identification**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Technology</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Include A-1</td>
<td>Tailor T-1</td>
<td>Electronic fields containing patient identification data should consistently use standard identifier conventions.</td>
<td>Include distinguishing information on screens, printouts, and those areas that require interventions.</td>
</tr>
<tr>
<td>Detect A-2</td>
<td>Innovate T-2</td>
<td>Use a confirmation process to help match the patient and the documentation.</td>
<td>Integrate new technologies to facilitate and enhance identification.</td>
</tr>
<tr>
<td>Evaluate A-3</td>
<td>Follow-up T-3</td>
<td>Use standard attributes and attribute formats in all transactions to improve matching.</td>
<td>Implement monitoring systems to readily detect identification errors.</td>
</tr>
<tr>
<td>Normalize A-4</td>
<td>Yield T-4</td>
<td>Use a standard display of patient attributes across the various systems.</td>
<td>Include high-specificity active alerts and notifications to facilitate proper identification.</td>
</tr>
</tbody>
</table>
Accurate information gathering: Catching

Catching addresses the information-gathering aspects of patient identification, including the fields and formats that are available to accommodate acquisition of required information. These recommendations address catching.

- Electronic fields containing patient identification data should consistently use standard identifier conventions
- Use standard attributes and attribute formats in all transactions to improve catching

**Rationale:** Gathering identifying information involves the choice of what data are collected and how that data is obtained and recorded—“catching” data. Using a standard and consistent set of data in standard data fields is vital to this process.1

**What is technology's role in catching?**

It is important that health IT systems have the fields available to gather standard identifiers, use a standard display of those patient attributes across all technologies, and use standard data formats. Technology can distinguish when information is missing or if “null” values have been used as a way of monitoring for the accuracy of the information obtained.

**What can stakeholders do?**

Stakeholders should establish and adopt standards to catch patient identification data in a consistent, computable manner that will allow for the exchange of information within and across systems. Examples include gathering legal and not common names; using standard conventions for dates, hyphenated names, and apostrophes; using capital letters; and the order of the family name and individual's name.

**How can this be done?**

- Identify the information to be captured for correct identification and matching
- Establish standards for naming conventions, standard data format, and standard data positions
- Capture information using the greatest level of granularity
- Provide and capture data in their own data fields
- Use technology as a check on errors, “null values,” and missing information
- Identify procedures for information capture, use, and verification
- Train and retrain
- Monitor and regularly assess and correct issues
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| EHR developers                   | - Normalize and structure data  
- Allow for discrete fields to capture information  
- Capture and store information in the same format  
- Allow for consistent formats for capturing information that displays  
- LAST NAME, First Name, Middle Initial  
- Use standard conventions that users cannot modify  
- Facilitate easy monitoring and reports on identification errors |
| Clinicians                       | - Review and verify information for correctness and completeness  
- Use the individual’s legal, not common name for all transactions  
- Use appropriate data elements and information (e.g., cell numbers) |
| Healthcare organizations and providers | - Conduct uniform gathering and recording of information in a centralized location  
- Use Master Patient Index or other appropriate central tool  
- Use an established standard for hyphenated names, prefixes, and suffixes (current last or family name and previous last or family names used in combination)  
- Inventory systems for consistent capture of information  
- Update or upgrade technology as needed  
- Provide training for appropriate capture of information  
- Develop policies and procedures for data governance  
- Provide regular monitoring, review, and correction |
Facilitation of accurate information: Matching

The elements and information obtained impact how that information is correctly and consistently matched. Matching techniques, including algorithms, determine the searches performed and the accuracy of those searches. How the data are managed, corrected, and sustained additionally impact the ability to correctly match information for identification. “It is only through good ‘information stewardship’ that the data can be associated with the correct individual for the process of ‘matching’.”

- Use a confirmation process to help match the patient and the documentation
- Integrate new technologies to facilitate and enhance identification
- Implement monitoring systems to readily detect identification errors
- Include high-specificity active alerts and notifications to facilitate proper identification

**Rationale:** The use of standard attributes and attribute formats should be part of all transactions to improve patient matching. How the information is obtained impacts how that information is correctly and consistently matched.

**What is technology’s role in matching?**

The use of technology facilitates matching of the appropriate patient and his/her record to ensure that the correct treatment, testing, or other modalities can be accomplished. Algorithms, electronic monitoring, alerts, and coding facilitate proper matching.

**What can stakeholders do?**

Stakeholders should develop policies and workflows to support matching. Monitoring and assessing correctly matched, overlaid, and duplicate records is a first step to evaluating matching and ensuring that the correct information appears in its associated record. Using standard formats, standard data elements, and reliable sourcing provides the foundation for accurate matching.

**How can this be done?**

- Use a master patient index whenever possible
- Enforce standard data collection practices
- Know and monitor the rates of incorrect, duplicate and overlaid records
- Automate monitoring of systems that can detect and prevent duplication and record overlays
- Create highly specific alerts and notifications
- Use actionable alerts when users attempt to create a new record for an individual who has a current record
- Assess the accuracy of matching algorithms
Table 2. Matching Patients to Their Information

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>EHR developers</td>
<td>• Provide both proactive and reactive automated monitoring systems to detect inconsistencies and reduce error</td>
</tr>
<tr>
<td></td>
<td>• Enable matching algorithms with consideration of needed number of data elements for the greatest accuracy</td>
</tr>
<tr>
<td></td>
<td>• Identify ways to incorporate additional data elements or cues to facilitate matching</td>
</tr>
<tr>
<td>Clinicians</td>
<td>• Assess and evaluate technical, workflow, and usability issues prior to implementing new technologies</td>
</tr>
<tr>
<td></td>
<td>• Identify and monitor rates of duplicate and overlaid records</td>
</tr>
<tr>
<td></td>
<td>• Ensure compliance with policies and procedures for verifying identity</td>
</tr>
<tr>
<td></td>
<td>• Verify information, correcting duplicate and overlaid records in a timely manner</td>
</tr>
<tr>
<td>Healthcare organizations and providers</td>
<td>• Incorporate system back ups:</td>
</tr>
<tr>
<td></td>
<td>- “Check digits” to identify transpositions</td>
</tr>
<tr>
<td></td>
<td>- Other technologies that verify identity</td>
</tr>
<tr>
<td></td>
<td>- Alerts that present when users attempt to create a new record for an individual who has a current record</td>
</tr>
<tr>
<td></td>
<td>- Alerts to users when they access the record of an individual who has a similar name, sound-alike name, or nickname</td>
</tr>
<tr>
<td></td>
<td>- Alert user when required information is missing</td>
</tr>
<tr>
<td></td>
<td>• Incorporate alerts to detect errors in fields, including typographical errors</td>
</tr>
<tr>
<td></td>
<td>• Recognize that change may require updates, upgrades, or future technology developments</td>
</tr>
<tr>
<td></td>
<td>• Evaluate and weigh the use and cost of new technologies</td>
</tr>
<tr>
<td>Regulatory</td>
<td>• Encourage the use of standards to improve interoperability</td>
</tr>
<tr>
<td></td>
<td>• Encourage the use of all tools to improve identification</td>
</tr>
</tbody>
</table>
Display of information to enhance patient identification

The visualization or display of the information is important for proper identification. To facilitate and improve patient identification, visual displays—including screens, printouts, and other commonly used print information—should include distinct visual cues. Display considerations include visual distinctions; the use of white space; alternate line shading for items such as lists; providing complete, not truncated, information; the incorporation of visual tools such as photos; and newer, scannable sources to facilitate identification.¹

- Use a standard display of patient attributes across the various systems
- Include distinguishing information on screens, printouts, and those areas that require interventions

**Rationale:** The information available and how it is displayed is vital to correct patient identification. It is essential to include distinguishing information on screens, printouts, and those areas that require interventions. This information should be displayed in a standard manner across various systems.

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**What is technology’s role in displaying?**

Consider usability, human factors, and workflow when configuring displays. Visual distinctions, white space, consistent information location, along with the addition of other technologies, (e.g., photos, barcodes) in combination can facilitate accurate identification and selection.

**What can stakeholders do?**

Stakeholders should indicate preferences for visual distinctions (font, color, distinguishing features) after inventorying all the areas where such information is displayed. Identify ways to uniformly display names and other information. Identify which areas can accommodate and share the information.

**How can this be done?**

- Display information similarly across applications (e.g., headers, banners, wristbands)
- Inventory systems to ensure consistent capture and display of information
- Make information visually distinct to improve identification (e.g., use of fonts, white space, shading, photos)
- Incorporate other identifiers, such as age and gender, to facilitate identification
### Table 3. Display of Patient Information

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| EHR developers                | • Enable consistent display of patient information in the same order: LAST NAME, First Name, Middle Initial (if available), date of birth in the format MMDDYYYY or MM/DD/YYYY, and age to enable users to readily recognize that information³  
  • Use CDA R2 header formats to represent patient attributes (Clinical Document Architecture, release 2, became an HL7® and ANSI standard in 2005, and later became an ISO standard in 2009)⁴  
  • Allow display of the information in the same location regardless of scrolling or other movements within the EHR³  
  • Accommodate the available space to ensure uniformity in identification on wristbands, banners, headers, and various displays  
  • Allow for display of current photo, or other external technology identifier  
  • Enable consistent transfer and display of information regardless of the system |
| Clinicians                    | • Verify identification using standard protocols  
  • Update information regularly  
  • Use the visual clues provided to confirm identification |
| Healthcare organizations and providers | • Inventory systems for consistent capture of information  
  • Identify a standard data set  
  • Ensure display of patient information in the same order: LAST NAME, First Name, Middle Initial (if available), date of birth in the format MMDDYYYY or MM/DD/YYYY, is possible across systems³  
  • Adopt a standardized protocol to verify a patient’s identity (include time-outs)  
  • Give consideration to the available space in areas such as wristbands, banners, headers, and various displays  
  • Provide policies and procedures that enforce training |
Conclusion

The causes of misidentification errors are multifactorial, as are the solutions. Patient identification issues existed before the incorporation of technology and the electronic exchange of information. While technology can introduce its own set of risks, harnessing the benefits of technology to facilitate accurate and complete identification is imperative to mitigating safety risks introduced by the rapid and diffuse propagation of incorrect identifications. We have seen that patient identification errors are common, that they occur in multiple clinical care settings, and that they are accentuated when that incorrect information is exchanged within and between networks. Use the information here and that which is found at www.hitsafety.org to implement change and improve identification.
References


About ECRI Institute and the Partnership for Health IT Patient Safety

ECRI Institute is an independent, nonprofit organization improving the safety, quality, and cost effectiveness of care across all healthcare settings. The combination of evidence-based research, medical device testing, and knowledge of patient safety makes ECRI uniquely respected by healthcare leaders and agencies worldwide. For more than 50 years, ECRI Institute has had an unwavering dedication to transparency and strict conflict-of-interest policies. The organization has earned a reputation as the trusted voice of unbiased, research-based assurance for tens of thousands of members around the world using its solutions to minimize risk and improve patient care.

ECRI Institute has the only medical device testing labs in North America and the Asia Pacific where engineers conduct hands-on independent device testing for safety and human factors usability. ECRI Institute is designated an Evidence-based Practice Center by the U.S. Agency for Healthcare Research and Quality. ECRI Institute PSO is listed as a federally certified Patient Safety Organization by the U.S. Department of Health and Human Services. Visit ecri.org and follow @ECRI_Institute to learn more.

In 2013, ECRI Institute convened the Partnership for Health IT Patient Safety (Partnership), in part because of ECRI Institute’s long history of cutting-edge patient safety initiatives, and in part, in response to the growth in recognition that action was needed not only to fully realize the benefits of health information technology, but to involve the appropriate parties in the identification, classification, aggregation, analysis, and development of solutions to the ever-increasing concerns attributed to health information technology. The Partnership was established to make healthcare safer by understanding and mitigating health IT hazards and safety events. For more information on the Partnership, please visit our website.
Use standard attributes and attribute formats in all transactions to improve matching.

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NORMALIZE

DOE, John
DOB: Apr 4, 1944
73 yo M

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