



## **PATIENT IDENTIFICATION AND THE BENEFITS OF BIOMETRICS**

Innovative healthcare organizations are adopting more accurate, fast, and secure technologies



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# Patient identification and the benefits of biometrics

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## Introduction

Ensuring accurate patient identification is critically important to healthcare organizations, yet it has been one of their more challenging goals. According to industry research cited by RAND, 7%–10% of patients are misidentified when they present to the healthcare system, including at a hospital.

The implications of patient misidentification are tremendous, creating a ripple effect of unintended clinical and financial consequences across the entire healthcare system. “One of the most serious is the threat to patient safety and the unnecessary risk and costs that brings,” says Sean Kelly, MD, an ER physician and CMO at Imprivata. “Currently, medical errors are the third leading cause of death in the United States, behind only heart disease and cancer, killing hundreds of thousands of patients per year.” Research shows that patient misidentification can play a role when it comes to harm, near misses, adverse events, and even patient deaths. According to the Emergency Care Research Institute (ECRI), 9% of misidentification events analyzed led to harm.

## Why are patients misidentified?

Patients are misidentified for multiple reasons. Patient identification is a complex issue, especially for large hospitals and healthcare systems, which include many providers and millions of patients. Misidentification typically happens during registration when the registrar, a nurse, or a practice assistant searches a database using demographics to match a patient to a local data set, usually an electronic health record (EHR). Most healthcare organizations still rely on methods that are error-prone, such as using a person's date of birth and state-issued identification card.

Technical issues and human factors can interfere with the patient identification process. Many potential error and failure points exist due to language barriers, hearing problems, medical conditions, misspellings, cultural differences, common names, and fraud. These factors can lead to the creation of duplicate medical records, or to medical record overlays in which a chart contains the health information of more than one patient, as well as identity theft and insurance fraud. Duplicates and overlays are costly, time-consuming, and labor-intensive problems to fix.

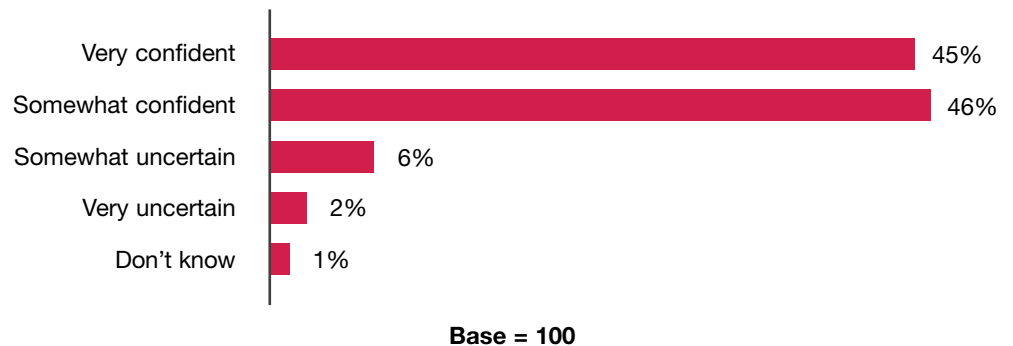
A recent HealthLeaders Media and PSQH survey polled 100 health system and hospital senior-level executives, as well as quality, safety, infection control, and risk management leaders, on patient identification

trends. The survey found that more than half of respondents (54%) are not very confident in their patient identification methods. “It is alarming that over half of us in hospital positions feel some lack of confidence about whether the data is correct,” says Kelly. “This is definitely a red flag we need to address.”

With so much at stake, it is crucial that healthcare organizations consider new strategies, systems, and technologies for improving patient identification practices. “New patient identification technologies, including biometrics, are available today to improve accuracy rates. Biometrics have a one in 10 million chance of making a mistake when it comes to patient identification, instead of a one in 10 chance with current patient identification practices,” says Kelly. In fact, healthcare innovators are already adopting this technology with great success.

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**Confidence level in methods – health systems/hospitals** | What is your confidence level in the methods that you use to match patients with their appropriate records?



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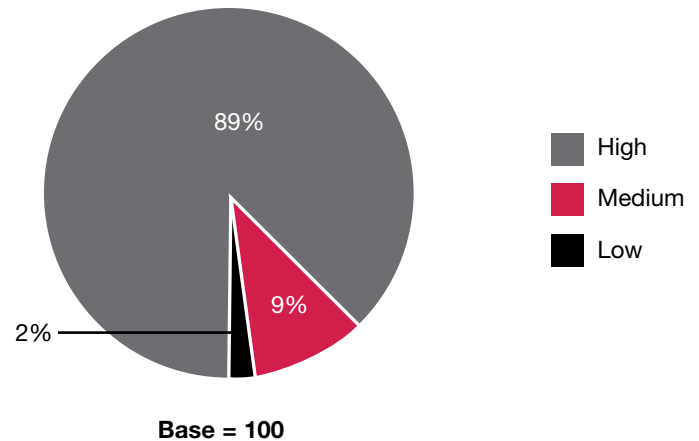
### Healthcare organizations see patient identification as a top priority

Research shows that healthcare leaders are clearly aware of the importance of identifying patients correctly each and every time. According to the HealthLeaders-PSQH survey responses, 89% of respondents say ensuring accurate patient identification is a high priority for their organization. “It is top of mind in our experience, regardless of hospital size or patient demographics,” says Kelly.

“Patient identification is the first step in the patient journey, and everything that follows depends on getting it right, both clinically and financially,” says Jonathan Bees, senior research analyst at HealthLeaders Media.

### Patient identification level of priority—health systems/hospitals |

What is your level of priority in ensuring accurate patient identification for your organization?



Healthcare organizations understand that every process, interaction, and treatment relies on accurately identifying and registering the patient. “Every decision I make as an ER doctor, and those that other providers make who work with the same patient, are predicated on the data that we can see,” says Kelly. The bottom line: Hospitals want to avoid duplicate or unnecessary testing, wrong treatments and procedures, medication errors, and increased patient risk.

Industry research also shows that patient misidentification contributes to the following:

- 27% of radiation errors<sup>1</sup>
- 29% of medication errors<sup>2</sup>
- 5% of wrong-patient/wrong-site surgeries<sup>3</sup>
- 850 medical errors and 20 deaths related to blood transfusions<sup>4</sup>

### The financial impact of patient misidentification

Patient identification is important to financial, operations, and health IT leaders as well. For example, misidentification may lead to a bill being generated for the wrong patient. This in turn causes increased insurance denials and reduced reimbursement, as well as expensive clawbacks and increased HIM costs. CIOs—who have the chief goal of maintaining data integrity of their EHR systems, in which they have invested millions—

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1. PA Department of Environmental Protection  
2. Patient Safety Authority  
3. U.S. Department of Health & Human Services  
4. Journal of Nursing



also want to prevent patient misidentification. “If 10% of their data is corrupt going in, from a leadership and strategic standpoint, they have a data integrity problem,” says Kelly. “It can be quite costly to try to clean the data on the back end if a duplicate or overlay is created.”

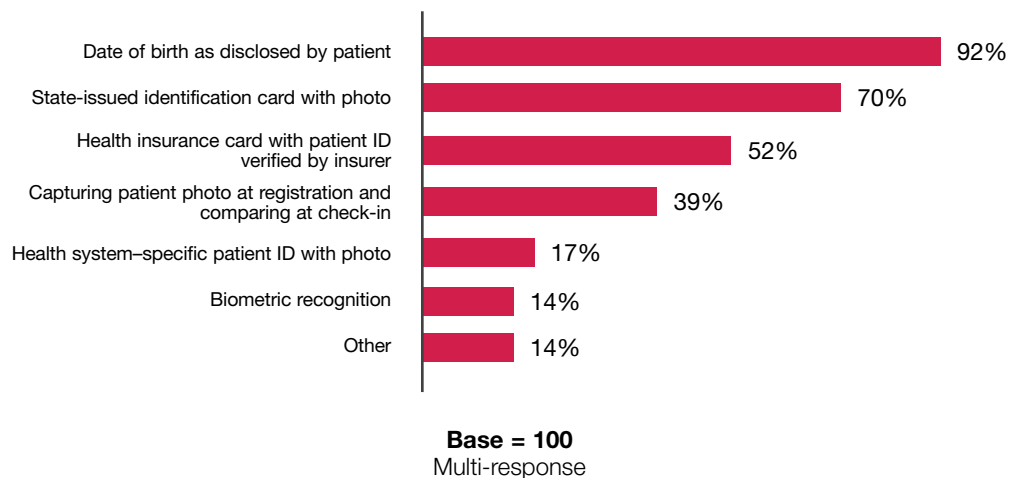
### Lack of confidence and inaccuracies in current processes and systems

While healthcare organizations overwhelmingly agree that maintaining accurate patient identification is a high priority, their current methods do not instill much confidence.

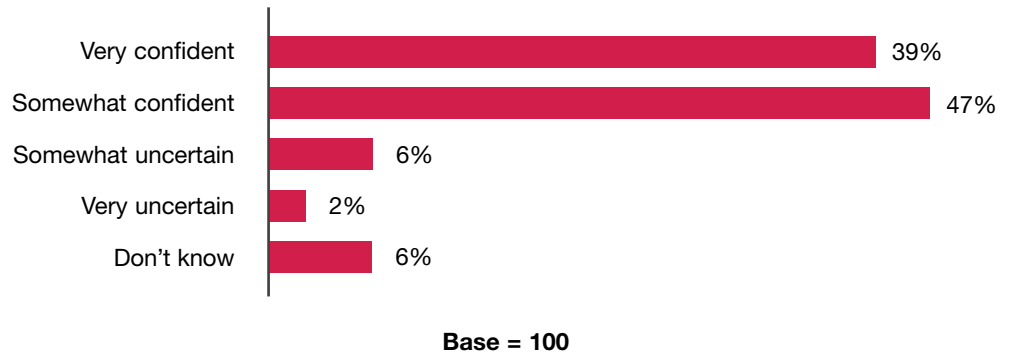
According to the HealthLeaders-PSQH survey, only 4% of respondents say their patient identification process is 100% accurate, and 83% say their process is 80%–99% accurate. “This leaves huge room for error and a lot of potential harm and cost in the system, amounting to hundreds of thousands of lives per year and potentially billions of dollars,” says Kelly.

Survey respondents also say date of birth (92%), state-issued identification cards with photo (70%), and health insurance cards (52%) are their top three methods of matching patients with their appropriate records. “It’s not surprising that almost all places use date of birth, but registering or triaging a patient is a very complex process,” says Kelly. “Sometimes people don’t actually have a driver’s license or other photo ID with them, especially in my work scenario, where people end up in the ER.”

### Methods used to match patients with records—health systems/hospitals | What methods does your organization currently use to match patients with their appropriate records?

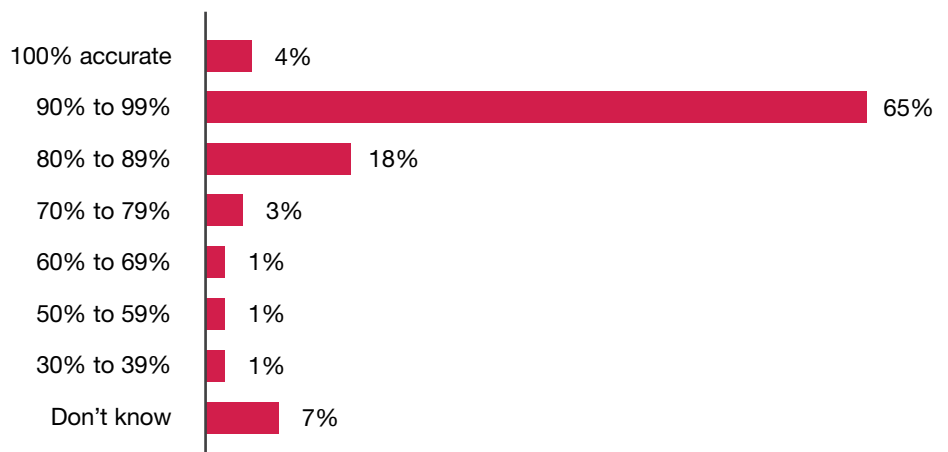


**Confidence level in EMPI records—health systems/hospitals** | What is your confidence level in the integrity of patient records within your organization’s enterprise master patient index (EMPI)?



At the same time, more than half of those polled (55%) are not very confident in the integrity of patient records within their organization’s enterprise master patient index (EMPI). “What this tells us is that their initial investments aren’t enough as it stands today,” says Kelly. “Although they have created a master record across multiple sites, they are still vulnerable to the same issues they had before, such as trying to match the person to that record set using demographics.” As a result, more hospitals are investing in new patient identification systems, such as biometrics, which can bring significant value to the entire organization.

**Accuracy of patient identification process—health systems/hospitals** | How accurate is your patient identification process today?



\* No responses were received for the following ranges: 0% to 9%, 10% to 19%, 20% to 29%, and 40% to 49%.

Base = 100

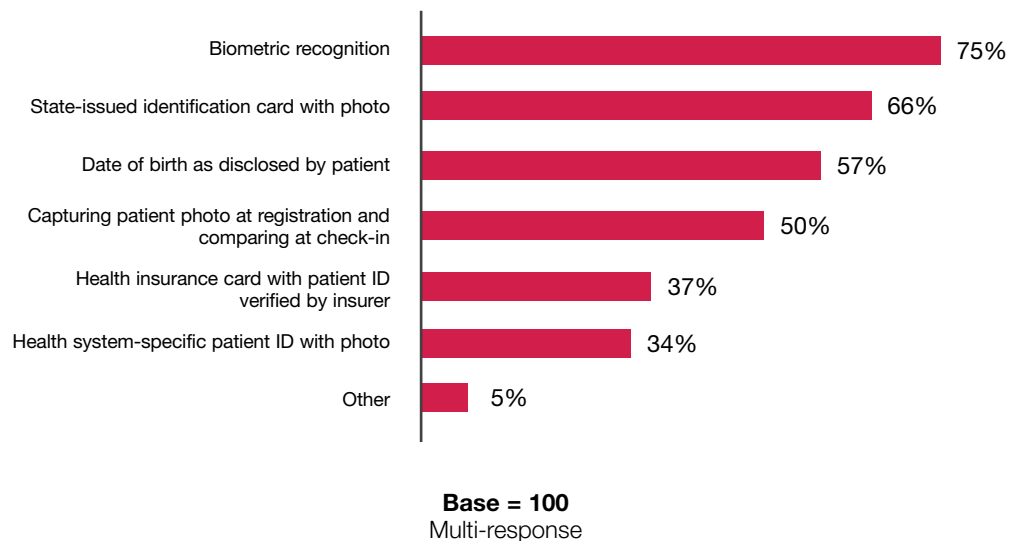
### Biometrics transform patient identification processes

As healthcare organizations become more committed to improving patient identification methods, biometrics offer an excellent solution. Biometric technology benefits multiple hospital areas and departments. The majority of those surveyed (75%) say biometric recognition is the best methodology for patient identification and record matching, followed by a state-issued identification card (66%) and date of birth as disclosed by the patient (57%).

The keen interest in biometrics shows that the market is developing. “There is strong recognition throughout the industry that there is better technology out there,” says Bees. “There’s no denying that whether it’s a palm vein, thumbprint, or iris scan, survey respondents clearly favor these technologies.”

Kelly agrees. “We’re starting to see greater adoption, usage, and a network effect. As more patients enroll using biometric identifiers, the technology will become exponentially more valuable.” According to a May 2017 Gartner report on patient identification and biometrics, “by 2022, 40% of all healthcare providers will use some form of identity biometrics to enhance positive patient identification.”

### Best methodologies for patient identification/record matching – health systems/hospitals | Which methodologies do you think result in the best patient identification and record matching?





### Benefits of biometrics

- Patient safety
- Improved quality
- Physician confidence
- Cost savings
- Revenue cycle improvements
- Faster registration process
- Patient satisfaction

Indeed, the high accuracy rate of biometrics is appealing to health systems and hospitals. The biometric system involves an entirely different patient identification process. Rather than relying on a human being to ask questions or use demographics to manually look for a record, a biometric system identifies patients through their unique biological characteristics. Biometrics can include palm vein scans, fingerprints or thumbprints, facial recognition, voice identification, and iris scans.

Among biometric modalities, a palm vein scan that creates a one-to-one relationship between an individual and his or her medical record is virtually 100% accurate. This biometric is potentially a thousand times more accurate than a fingerprint, because it collects thousands of data points, whereas a fingerprint only collects dozens. “The likelihood of a false positive is about one in 10 million,” says Kelly.

**“ Preserving that data integrity can be incredibly powerful, because any small error, such as transposing two digits in a date of birth or a Social Security number, can cause ripple effects downstream that are exponential.**

—Sean Kelly, MD, an ER physician and CMO at Imprivata

Thus, biometrics solve key patient identification challenges and facilitate rapid, accurate identification. Once patients are enrolled, the system recognizes them, usually within seconds, reducing questions and computer searches, and speeding up registration times and throughput. Even if patients are unable to provide a history, the registrar can quickly identify exactly who they are and match them to their data. When enrolled patients return for a visit and get their palms scanned, the system recognizes them almost immediately. Because biometrics reduce the need for manual data entry, they also eliminate the potential for human error, misunderstanding, or mistyping. “Preserving that data integrity can be incredibly powerful, because any small error, such as transposing two digits in a date of birth or a Social Security number, can



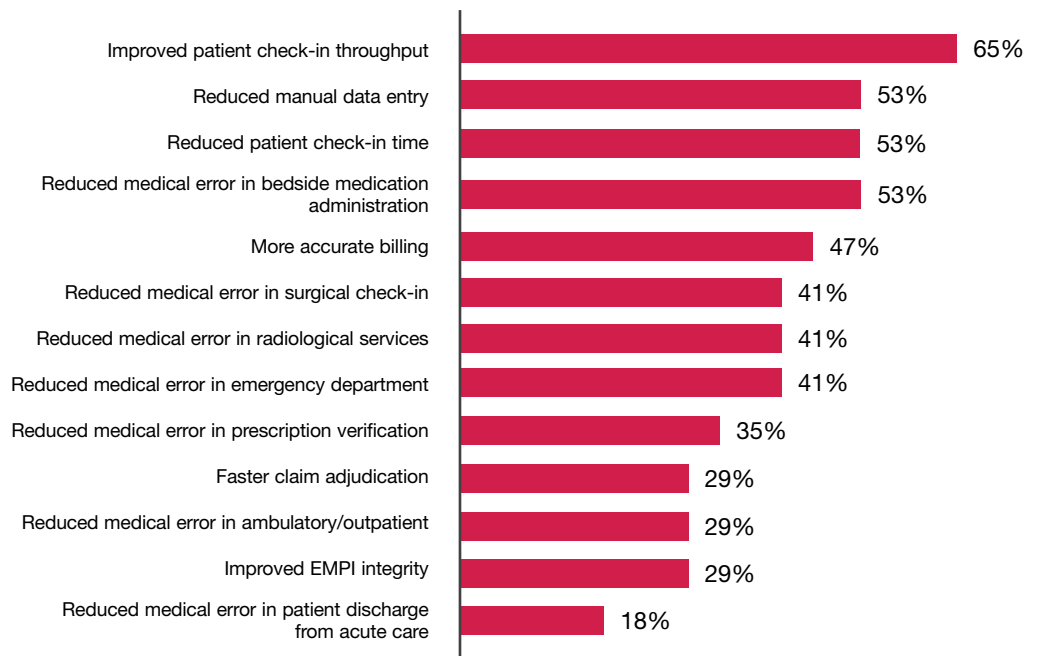
cause ripple effects downstream that are exponential,” says Kelly. From an operations standpoint, all of these factors impact quality metrics in areas such as the ER, including door-to-doctor time.

According to the HealthLeaders-PSQH survey, a growing number of forward-looking healthcare organizations that are using biometrics report the following benefits:

- Improved patient throughput (65%)
- Reduced manual entry (53%)
- Reduced patient check-in time (53%)
- Reduced bedside medication errors (53%)
- More accurate billing (47%)

Biometrics represent a significant advancement for healthcare organizations looking to improve quality, outcomes, and their financial health. “A paradigm shift occurs when providers can instantly recognize patients and treat them properly,” says Kelly. “The doctor has correct clinical information instantly, which improves care quality, patient safety,

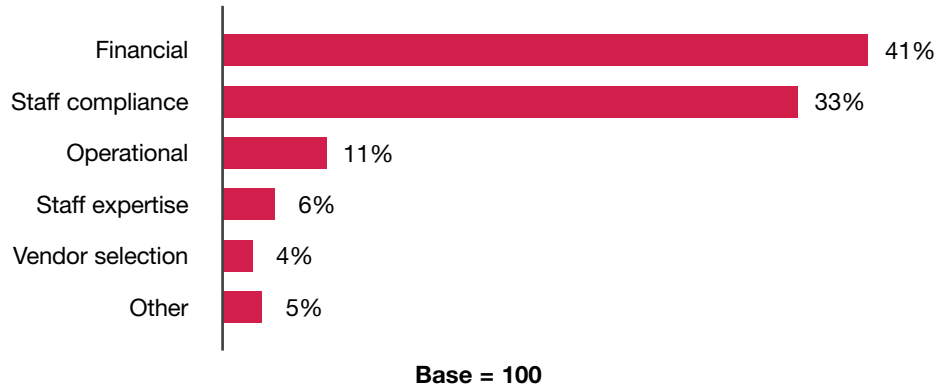
**Benefits of biometric patient identification— biometric users, health systems/hospitals** | If your organization uses biometric patient ID at admissions, what benefits have you seen?



Base = 17  
Multi-response

**Greatest patient identification challenge—health systems/hospitals** |

Which area represents your organization’s greatest challenge for effectively deploying patient identification technologies?

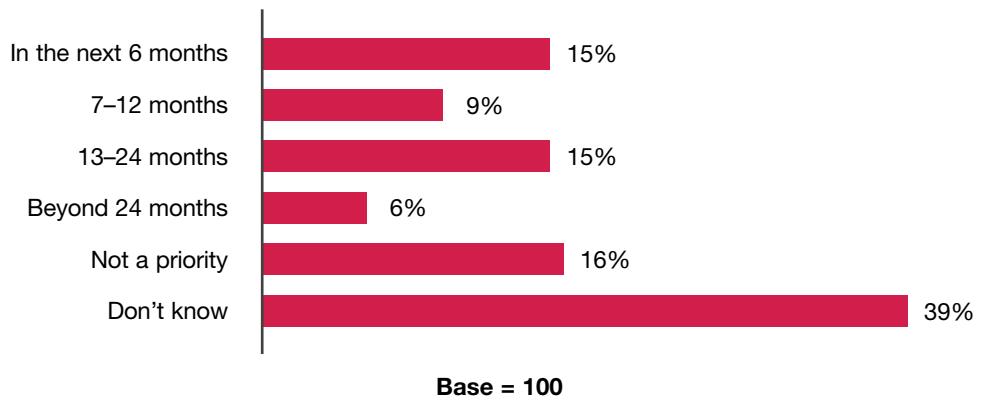


and physician confidence. It also has an enormous impact on patient throughput.” Additionally, the physician now knows about a patient’s problems from a medical standpoint, avoiding potential errors and redundant treatments and tests. The result is higher quality of care, reduced liability, faster billing, and fewer clawbacks and claim denials—all leading to stronger outcomes and significant cost savings.

**How to bring biometrics to your health system**

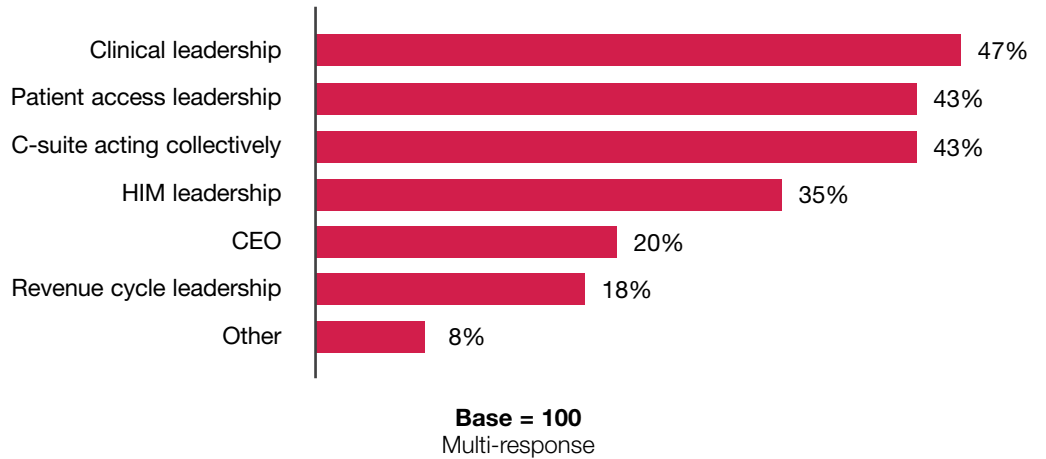
Organizations interested in starting a biometrics program should have a plan for addressing adoption barriers. Forty-one percent of survey respondents say financial challenges are their greatest hurdle to deploying patient identification technologies, followed by staff compliance

**Timeline for improving patient identification – health systems/hospitals** | What best describes your organization’s timeline for improving your patient identification methodologies?





**Responsibility for patient identification strategy—health systems/hospitals** | Who in your organization is responsible for overall patient identification strategy?

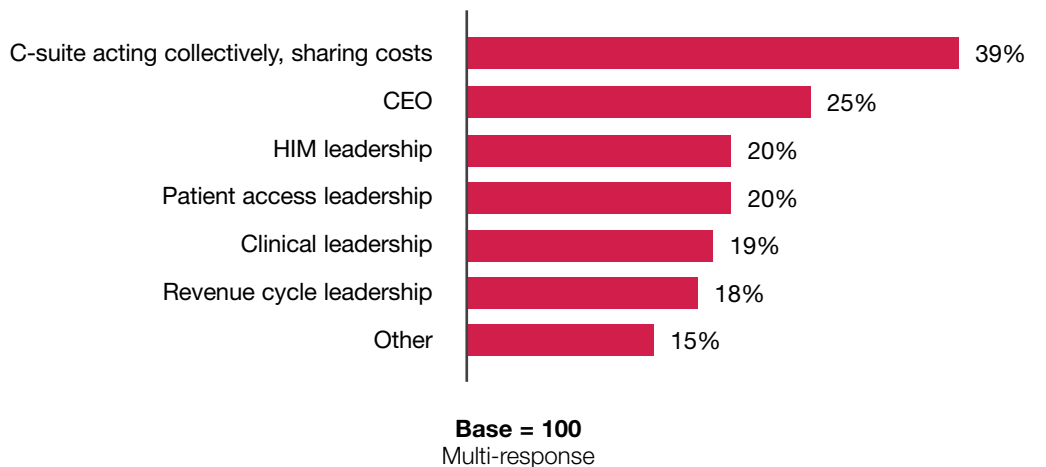


(33%) and operational concerns (11%). Still, healthcare organizations are beginning to prioritize patient identification initiatives, with nearly 40% of respondents indicating they plan to improve patient identification methodologies in the next six to 24 months.

**Securing a budget**

It is important to begin securing the budget today and to developing a plan that supports an investment in biometrics. “One way to do so is

**Patient identification solutions budget—health systems/hospitals** | Who in your organization holds the budget for implementing patient identification solutions?





by performing an analysis of the cost of doing business using traditional patient identification methods,” says Kelly. “Most hospitals don’t truly recognize how much cost they’re incurring, the amount of revenue they are losing, and how much liability and risk they are subjecting themselves to due to patient misidentification.”

### **Building organizational support**

Implementing biometrics is a team effort. Rolling out a fully funded program requires cooperation across multiple areas within the hospital. According to the HealthLeaders Media-PSQH survey, various hospital

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—Sean Kelly, MD, an ER physician and CMO at Imprivata

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leaders are responsible for a patient identification strategy: Clinical leadership (cited by 47% of respondents), Patient Access leadership (43%), and the C-suite (43%). Additionally, 39% say the C-suite oversees the budget for implementing patient identification solutions, while 25% say it is the CEO, and another 20% say HIM holds this role.

Hospital leadership should develop a communication plan focusing on the value biometrics bring to the entire hospital enterprise. However, the key to a successful project is identifying a champion who can bring together the appropriate clinical, IT, financial, and operations leaders and ensure an effective decision-making process. “Because biometrics affect revenue cycle and health information management systems, these leaders generally come to the table first and lead purchasing decisions around such technology,” says Kelly. “It is also essential to bring in patient safety, quality, and clinical leaders, as they will reveal the true impact of the technology,” he explains.

### **Palm vein is number one in accuracy**

A palm vein scan is virtually 100% accurate. This biometric identifier is potentially a thousand times more accurate than a fingerprint, with the likelihood of a false positive being about one in 10 million.

Indeed, clinical and patient safety champions are a critical component to any biometrics initiative. Clinical leaders are able to convey that beyond easier billing, higher revenue, and decreased costs, biometrics also lead to better care quality and improved patient safety and satisfaction. For example, biometrics can improve patient flow and other metrics that impact HCAHPS scores. “This is a great way to optimize systems and leverage one technology across multiple departments,” says Kelly. “We see increased interest, purchase, and adoption rates when clinical, quality, and safety leadership gets involved and understands the patient safety benefits.” Moreover, making biometrics the responsibility of an interdisciplinary committee usually elevates it to a higher priority in the budget.

### **Successful deployment strategies**

The organizations that are most successful in rolling out biometric patient identification technology place a high importance on developing appropriate messaging to patients and staff through targeted campaigns designed to drive awareness. This begins with change management, keeping in mind the obvious: Any interaction with patients has a human element. Start a communication campaign ahead of deployment. Clearly describe what “biometrics” means, how the concept works, and how it can successfully improve quality and safety. For example, staff and patients need to understand that biometrics are especially effective when patients present to the ER with life-threatening conditions that prevent them from communicating.

Be sure to address potential concerns around privacy and security. “As you can imagine, many people want to make sure their biometrics can’t be stolen and used elsewhere or against them,” says Kelly. “That is one of the reasons we find that palm vein scans have been well adopted.” Unlike fingerprints, palm vein scans are not used by law enforcement or governmental agencies. A palm vein image also cannot be left at the scene of a crime—it requires a person’s hand to actually be there with blood flowing through it. “So it doesn’t have forensic value,” notes Kelly. “As a result, we see a greater than 99% adoption rate in most hospitals that take this approach.”

### **Top reasons for patient misidentification**

- Language barriers
- Hearing problems
- Medical conditions
- Misspelled names
- Cultural differences
- Common names
- Fraud



### Best practices in staff compliance

It's also important to develop best practices around staff compliance. Patient access and registration team training is integral to a patient identification strategy and to its success within an organization. Managers play a key role in reinforcing the message to their teams that they are at the “front lines” of patient safety by registering patients using biometrics. Staff compliance also depends on having a solution that is successfully integrated into existing workflows. This solution should complement and streamline what registrars are already doing, not add to their overhead. “Be respectful of the workflow of those who have to register patients,” says Kelly. “Try to initially enroll patients in scenarios where there is less pressure to check them in for a visit. For example, consider registering them during an enrollment fair.” An experienced partner can drive rollout and utilization strategies, ensuring a successful project.

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### Conclusion

Biometrics are steadily gaining ground as hospitals and health systems come to understand that traditional patient identification methods are unavoidably fraught with errors. Biometrics offer distinct advantages when it comes to patient identification, including a highly accurate and secure technology that reduces human error and systemizes the patient registration process. Ultimately, the organizations that find the greatest success with this state-of-the-art approach are the ones that are ready for a complete organizational shift in how to ensure positive patient identification.

About Imprivata

**Imprivata, the healthcare IT security company, enables healthcare globally to access, communicate, and transact patient information, securely and conveniently. The Imprivata platform addresses critical compliance and security challenges while improving productivity and the patient experience.**

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