



WHITE PAPER

Enhancing Patient Safety With Electronic Trigger Tools

A hospital leader's guide to strengthening
safety event reporting systems with
automated detection.



Executive Summary

Patient safety leaders are under constant pressure to do more with less, while clinical teams are stretched thin. Yet many hospitals still rely on manual safety event reporting systems. The result is familiar: underreported events, delayed insight, and limited visibility into the true state of patient safety.

Explore how modern safety event reporting systems with automated detection help hospitals close these gaps and reporting loops. By continuously analyzing EHR data for signals of potential harm, electronic trigger tools identify adverse events and near misses that would otherwise go unnoticed without adding burden to already overworked staff.

For quality, risk, and patient safety leaders, this approach changes what's possible day to day. Instead of reacting to incomplete or late reports, teams gain earlier awareness of safety events, more accurate data for investigation, and the ability to intervene sooner. Automated detection also improves consistency in reporting, reduces reliance on voluntary submissions, and supports a stronger culture of safety across the organization.

Through real-world hospital examples, including a detailed case study, this guide shows how safety teams can move from fragmented reporting to a more proactive, data-driven model that not only improves patient outcomes, but also saves time, strengthens accountability, and helps leaders focus on prevention instead of damage control.

Patient safety in the United States reflects both meaningful progress and ongoing challenges. Despite advances in care delivery and safety practices, studies continue to show that adverse events and medical errors remain prevalent in hospitals, indicating that preventable harm still occurs far too often. As a result, improving patient safety has become an increasingly urgent priority for health system leaders.

Safety event reporting systems play a critical role in building and sustaining a strong culture of safety. These systems help organizations track, collect, manage, and analyze safety events while uncovering the root causes of harm. By identifying safety gaps in individual facilities and across the broader organization, effective reporting systems enable hospitals to reduce risk and improve patient outcomes.

However, many safety event reporting systems rely heavily on manual documentation by clinical staff. More effective solutions use human reporting as the foundation and add electronic trigger tools, also known as automated event detection or “autodetection,” to identify potential adverse events and errors. By analyzing data from the electronic health record (EHR), these tools surface safety incidents that may otherwise go unreported.

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Automated event detection improves the accuracy and completeness of safety event documentation while helping organizations overcome common reporting barriers. This approach empowers health systems to capture more events, gain deeper insight into safety trends, and take meaningful action to reduce risk.

Inovalon's [VigiLanz Safety Management™](#) is the only offering on the market that leverages automated event detection. This guide explores the benefits of electronic trigger tools, explains why every hospital should consider deploying them, and highlights how one innovative health system is using this technology to enhance patient safety.

What are Safety Event Reporting Systems?

Safety event reporting systems are used by forward-thinking inpatient and outpatient healthcare organizations to capture adverse events, near misses, medical errors, and other incidents that compromise the safety of patients, staff, or visitors. By collecting and analyzing this information, hospitals can identify patterns of risk, implement targeted interventions, and proactively prevent future harm.

Traditionally, these systems rely on manual detection and reporting processes, requiring clinicians and staff to document safety incidents themselves. While manual reporting plays an important role, it often captures only a portion of safety events, particularly in fast-paced clinical environments where time constraints, competing priorities, or uncertainty about what should be reported can limit participation.

Because of this, organizations that rely solely on manual reporting may lack a complete and accurate understanding of their safety performance, making it more difficult to identify systemic issues and drive meaningful improvement.



Automated event detection can be extremely helpful in terms of finding more events. The better sense you have of how many events there actually are, the better you can do in terms of managing safety going forward.”

David Westfall Bates, M.D.
Medical Director of Clinical and Quality Analysis, Mass General Brigham and Chief of General Internal Medicine, Brigham and Women's Hospital

What are electronic trigger tools?

Electronic trigger tools automatically identify potential adverse events that may otherwise go unnoticed or unreported. These events are detected through predefined criteria and automatically documented within the safety event reporting system for staff review.

When used alongside manual reporting, electronic trigger tools add an essential layer of protection for both patients and clinicians. By continuously monitoring clinical data from the EHR, these tools help ensure that more safety events are captured consistently and promptly regardless of whether a staff member submits a report.

Results snapshot:

Health systems gain a more accurate and comprehensive understanding of their overall safety performance.

With greater visibility into safety events and trends, organizations are better equipped to reduce the likelihood of future harm.

Why are these tools so important?

In many hospitals, manual reporting remains the primary method for capturing safety events. However, this approach comes with well-documented limitations. Common barriers such as time constraints, uncertainty about what should be reported, fear of negative consequences, or simply forgetting mean that only an estimated 10–20% of safety events are ever reported.¹ This leaves alarming gaps in a hospital's understanding of patient safety risks.

Relying solely on manual reporting can also result in:

- Less information captured when rushed staff document events
- Delayed reporting from lack of urgency when events are perceived as minor
- Missed documentation due to unclear reporting responsibilities or misunderstandings about what events should be reported

These gaps make it difficult for safety teams to identify trends, investigate incidents thoroughly, and implement effective preventive strategies.

Electronic trigger tools help address these challenges by automatically identifying potential safety events and documenting them in near real-time. By ensuring that more events are captured earlier and with greater consistency, these tools provide a more complete and reliable foundation for safety analysis and improvement.

How do electronic trigger tools work?

By continuously monitoring real-time patient information inside the EHR, automated event detection software searches this data for concerning patterns, trends, and anomalies that may indicate a safety event has occurred. Inovalon works with clinical leaders to create customized safety event triggers, often referred to as rules, that are tailored to the organization's preferences. As a result, each event that is automatically detected and documented is highly relevant and meaningful to the health system. By continuously monitoring near real-time patient information inside the EHR, automated event detection software searches this data for concerning patterns, trends, and anomalies that may indicate a safety event has occurred.

Inovalon works closely with clinical leaders to define and configure customized safety event triggers, often referred to as rules, based on the organization's specific priorities and risk areas. These rules are designed to identify safety events using relevant data points, ensuring that the automatic alerts detected are highly relevant and aligned with organizational goals.

Once a trigger is activated, the event is automatically documented within the safety event reporting system for the appropriate staff to review and investigate. This approach improves the timeliness and consistency of event capture, while ensuring that safety teams are working with high-quality data they can trust.

As a result, health organizations gain a clearer picture of how many safety events are truly occurring and where improvement efforts should be focused, enabling more effective safety management over time.

Automated Event Detection in Action: A CHRISTUS Health Case Study

[CHRISTUS Health](#) is an international Catholic, not-for-profit health system with more than 600 centers, including community hospitals, urgent care centers, health insurance companies, and physician clinics across Texas, Louisiana, New Mexico, and Latin America. With more than 45,000 team members and 15,000 physicians, CHRISTUS Health is focused on delivering individualized care and a complete healing experience that respects every individual.

The challenge

Adverse drug events (ADEs) represent a significant, and often preventable, patient safety issue in the United States. Each year, ADEs contribute to approximately 1.5 million emergency department visits, with almost 500,000 patients requiring hospitalization.² They are a serious public health problem, and many of them are preventable.

Despite established safety reporting processes, many ADEs go unreported or are documented without sufficient detail or context. This lack of visibility makes it difficult for clinical teams to fully understand what occurred, identify contributing factors, or prevent similar events in the future.

While CHRISTUS Health had patient safety event reporting procedures in place, the organization lacked automated event detection capabilities. Their event reporting was slow, manual, and not comprehensive, which limited the organization's ability to proactively identify and address risk.

The solution

CHRISTUS Health implemented Vigilanz Safety Management to automate the detection, reporting, and management of safety events. The solution integrates clinical data from multiple sources and continuously monitors EHR information including patient demographics, medication orders and administrations, laboratory results, radiology notes, and vital signs using CHRISTUS-defined safety event criteria. This approach enables their safety and pharmacy teams to identify, review, and address events more quickly, while reducing reliance on manual reporting alone.

Key Benefits



Improved efficiency, accuracy, and completeness of events reported



Near real-time documentation of safety events



Faster intervention by patient safety and claims managers



More comprehensive identification of ADEs

In addition to automated detection, the solution allows staff to self-report events using configurable forms, mobile access, mandatory fields, and anonymous reporting options, supporting more complete and consistent documentation.

Results snapshot:

400%

increase in adverse drug reactions (ADRs) reported compared to manual reporting

7X

more ADRs identified in facilities using automated detection versus voluntary reporting

<77%

of auto-detected ADEs led to investigation and analysis

66%

overall increase in ADRs reported for harm categories with automated detection



“Our number of reported events is increasing due to automated event detection and reporting,” said Collins. “The technology, which is now used across all of our hospitals, ensures we’re capturing more events and gathering more insights.”

Tina Collins, PharmD

Corporate Director of Medication Safety at the Division of Clinical Excellence and CHRISTUS Health

The outcomes

Over an 18-month period, CHRISTUS Health deployed 21 surveillance rules to automatically detect ADEs. By supplementing manual reporting with automated event detection, they significantly expanded visibility into medication-related safety events.

Their facilities using VigiLanz Safety Management identified 8.7 times more ADRs than facilities relying solely on voluntary reporting. In addition, 400% more ADRs were reported with automated detection compared to manual processes alone.

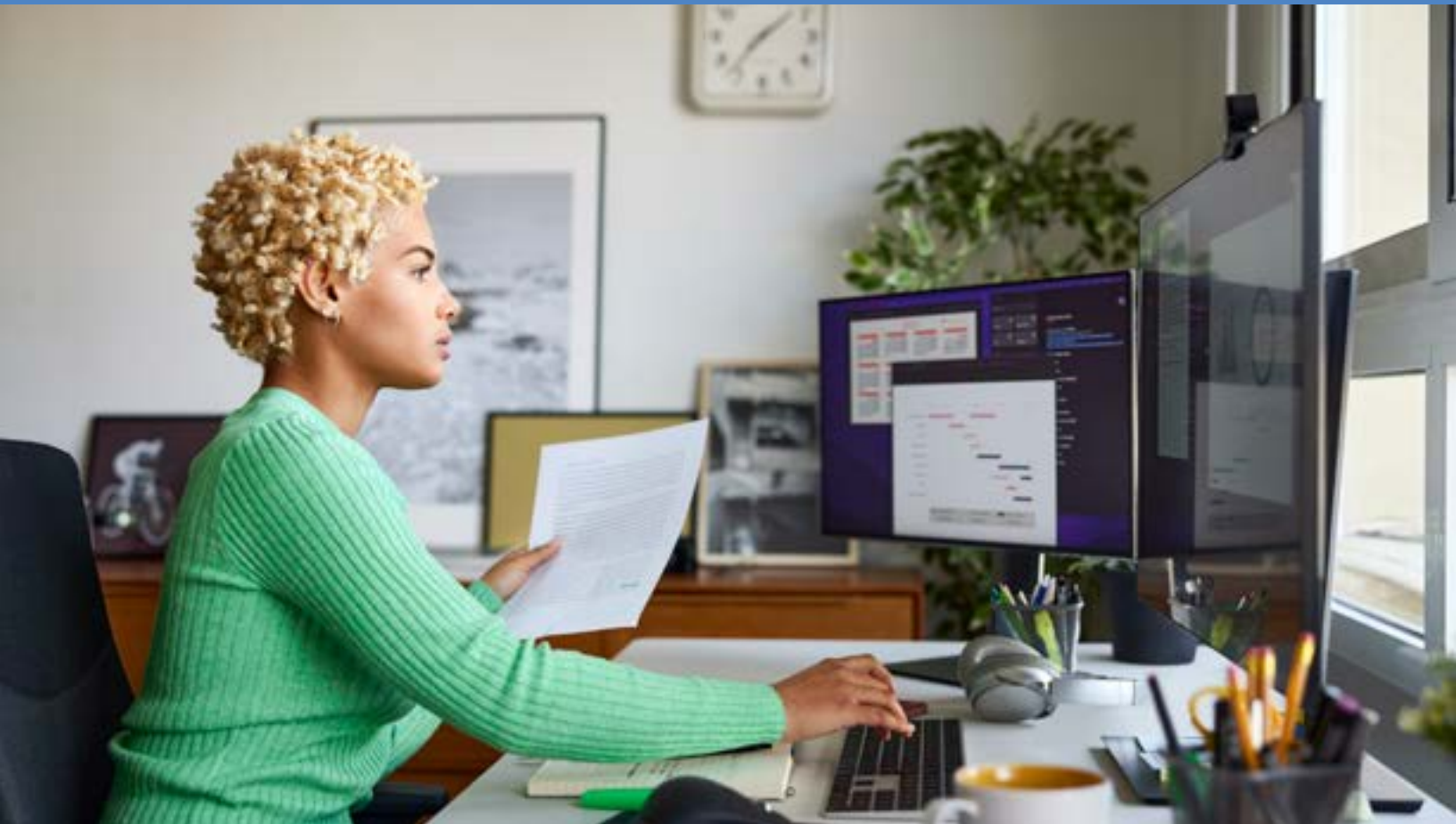
Importantly, the accuracy of automated detection supported meaningful follow-up. More than 77% of auto-detected ADEs led to investigation and analysis, demonstrating that the identified events were relevant, actionable, and worthy of clinical review.

CHRISTUS Health also experienced a 66% overall increase in ADRs reported across harm categories, including mild harm, moderate harm, severe harm, and death. Automated detection further uncovered 4.8 times more near-miss ADRs, 2.3 times more moderate-harm ADRs, and 1.6 times more mild-harm ADRs compared to manual reporting alone.

Building a More Proactive Culture of Safety

By combining manual reporting with automated safety event detection, modern safety event reporting systems help hospitals identify more events, investigate them sooner, and uncover hidden risk patterns without adding burden to clinical teams. As healthcare grows more complex, this proactive approach enables organizations to not only reduce preventable harm, but support staff and continuously strengthen quality of care.

[Request a Demo](#)



Sources

1. "Why is incident reporting important for healthcare organizations?", The Patient Safety Company, December 19, 2025, <https://www.patientsafety.com/en/blog/why-incident-reporting>
2. "FactStats: Medication Safety Data", CDC, April 17, 2024, <https://www.cdc.gov/medication-safety/data-research/facts-stats/index.html>

About us

Inovalon is a leading provider of data and solutions empowering data-driven healthcare. The Inovalon ONE® Platform brings together national-scale connectivity, real-time primary source data access, and advanced analytics into a sophisticated cloud-based platform empowering improved outcomes and economics across the healthcare ecosystem. The company's analytics and capabilities are used by over 50,000 active, licensed customers.

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