Modernizing Threat and Hazard Identification for Healthcare

WRITTEN BY
Adam Lee MBA, MS, CEM
Katie Linn MS, CEM

2026

INSTITUTE FOR HOMELAND SECURITY
SAM HOUSTON STATE UNIVERSITY

ABSTRACT

Effective emergency management programs in healthcare depend on accurate, actionable threat and hazard identification. Despite this, the tools currently employed across the field including the Federal Emergency Management Agency's Threat and Hazard Identification and Risk Assessment (THIRA), the Kaiser Permanente Hazard Vulnerability Analysis (HVA), and related frameworks share fundamental methodological limitations that constrain their operational utility. This article critically reviews prominent threat and hazard identification tools used in healthcare emergency management and examines practitioner perceptions through a voluntary survey of 34 healthcare emergency managers across 15 states. The review and survey findings identify persistent concerns with static annual assessment cycles, subjective scoring, inconsistent hazard definitions, limited integration of organizational and external data, facility-level designs that do not readily scale across health systems or coalitions, and compliance-oriented practices that may weaken the connection between assessment results and operational decisions.

Rather than proposing a single replacement framework, this article identifies practical recommendations for advancing HVA methodology and use. These recommendations include establishing common operational definitions for threats and hazards; incorporating real-time or near-time external data and internal evidence such as incident history, exercise findings, training and competency gaps, staffing constraints, and unresolved corrective actions; requiring assessment priorities to inform mitigation, planning, training, resource allocation and partnership decisions; convening a national conversation to establish shared methodological expectations; and describing hazards with enough specificity to support meaningful action. Together, these recommendations outline a way forward for shifting HVA practice from a periodic compliance exercise toward a more continuous, evidence-informed risk-intelligence capability.

Table of Contents

INTRODUCTION 1
BACKGROUND: HAZARD ASSESSMENTS 2
Hospital Accreditation and Hazard Assessments 2
Review of Healthcare Hazard Assessments Tools 4
ANALYSIS SECTION 6
Section 1: Background Questions 6
Section 2: HVA Adoption and Tool Selection 7
Section 3: Motivation (Compliance vs Utility) 7
Section 4: Operational Integration 7
Section 5: Limitations and Recommendations 8
Analysis: Background Questions 8
Analysis: HVA Adoption and Tool Selection 9
Analysis: Motivation (Compliance vs Utility) 9
Analysis: Operational Integration 11
Analysis: Limitations and Recommendations 12
RECOMMENDATIONS / NEXT STEPS 14
Limitations 15
CONCLUSION 16
REFERENCES 18
AUTHOR BIOGRAPHIES 19

INTRODUCTION

Healthcare has never been a low-risk environment, but the convergence of three distinct and accelerating threat categories, workplace violence, natural disasters, and cyber-attacks, has created a risk landscape that current assessment tools were never designed to address. The result is a sector that faces compounding, interconnected threats while relying on compliance driven processes to identify and respond to them.

Workplace violence in healthcare is not merely elevated compared to other industries; it is in a different category. The CDC (2024) reports that healthcare workers experience 14 nonfatal violent injuries per 10,000 full-time employees requiring days away from work, a rate more than triple the rate of all other industries combined (4.3). The disproportion is concerning; healthcare workers represent approximately 10% of the U.S. workforce yet account for 48% of all nonfatal workplace violence injuries nationally. No comparable sector approaches this concentration of risk.

Natural disaster exposure is also intensifying. Analysis by USAFacts (2025) of billion-dollar disasters between 1980 and 2024 reveals that nine of the ten most active years for natural disasters occurred within the last decade, a pattern reflecting both intensifying severity and economic impact. Texas, home to a substantial share of the nation's healthcare infrastructure, leads all states with 190 events that met or exceeded one-billion-dollars in damages over this period, averaging 4.3 a year. For health systems operating across large geographic footprints, this is not a background risk. It is an operational reality.

Cyber threats present a third and increasingly dominant category of exposure. The American Hospital Association (2026), citing the FBI's annual Internet Crime Report, identifies healthcare and public health as the top target for malicious cyber actors in 2025. Healthcare recorded 460 ransomware attacks and 182 data breaches, meaning 642 successful cyberattacks occurred on healthcare in a single year. The next closest sector, financial services, recorded 447 total successful breaches. The gap is not incidental, healthcare's combination of critical infrastructure designation, life safety dependencies, and historically under-resourced cybersecurity posture make it an attractive target.

Taken individually, each of these threat categories demands serious attention. Taken together, they expose a more fundamental problem: the tools healthcare organizations currently

use to identify and prioritize risk were not built for this environment. Hazard vulnerability analysis (HVA) and threat assessments, as presently designed and deployed, remain largely static annual documents, shaped more by accreditation compliance timelines than the dynamic, interdependent nature of modern healthcare risk. The need for a more integrated, operationally embedded, and analytically rigorous approach to threat and hazard identification has never been more urgent. This article proposes such recommendations.

BACKGROUND: HAZARD ASSESSMENTS

Hazard Assessments are used by Emergency Management professionals in many Critical Infrastructure sectors, including healthcare, to systematically identify and evaluate potential threats to safety and security, allowing for prioritization of resources, establishing capability targets, and enhancing resilience. Hazard Assessments are also used in the development and evaluation of Emergency Operation Plans (EOP) to ensure plans are comprehensive, accurately reflect the threat landscape, and adapt to changes over time. Effective hazard assessments are an integral part of building upon and evaluating an Emergency Management program, as the threat landscape continues to change, widening existing vulnerabilities and expanding hazard types.

For federal, state, local, and tribal agencies receiving any preparedness grant funding, a Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) is required, following the guidance outlined in the Comprehensive Preparedness Guide 201 (CPG). The THIRA/SPR process is used by government agencies to "identify risks with the potential to most challenge their capabilities and expose areas in which the community is not as capable as it aims to be," focusing on community wide risk (FEMA, 2018). While this framework is a well outlined assessment process, its focus on community wide risk renders it less effective for a narrower focus.

Hospital Accreditation and Hazard Assessments

The Centers for Medicare and Medicaid Services (CMS) established Conditions of Participation (CoPs) that must be maintained for healthcare organizations wanting to participate in Medicare and Medicaid reimbursement programs. Effective November 16, 2016, the *Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers Final Rule* was published, establishing an Emergency Preparedness Rule (also known

as “Appendix Z”) for all CMS provider and supplier types. Four key elements of the rule include: Risk Assessment and Emergency Planning, Communication Plan, Policies and Procedures, and Training and Testing. The Risk Assessment and Emergency Planning section details the requirement for an emergency preparedness plan that takes into consideration a risk assessment.

The Joint Commission (TJC) and Det Norske Veritas (DNV) are two of the major accreditation agencies authorized as Deeming Authorities by CMS to survey healthcare organizations for compliance with CoPs without the need for a separate CMS survey. Each set a higher level of expectations for accreditation than outlined in CMS, including more detailed requirements for hazard analysis.

As of January 1, 2026, TJC updated their National Performance Goals (NPGs), 14 high-priority topics; establishing the importance of preparedness by making Emergency Readiness NPG #3 (The Joint Commission, 2026). Additionally, TJC has a separate Emergency Management Chapter, which includes the expectation that hospitals conduct a Hazard Vulnerability Analysis (HVA), EM.11.01.01. As of the September 2025 updates, DNV Emergency Management Standards are classified under Physical Environment, PE.6, and include an annual requirement for facilities to conduct a facility-based and community-based risk assessment. Both Deeming Authorities require that the HVA be conducted regularly (annual for DNV, biannual for TJC), taking an all-hazards approach, and including the likelihood and consequences of those hazards. Additionally, they explicitly state that the Emergency Operations Plan and training and testing programs be based on the results of the assessment.

Neither Deeming Authority designates a specific means or methodology for conducting the hazard assessment, nor do they outline specific hazards to be included (or standardized definitions of such hazards), individuals expected to contribute, or guidelines on effectively integrating results from an assessment into program priorities. Without clear expectations on format, several healthcare-specific tools have been adopted throughout the country.

Review of Healthcare Hazard Assessments Tools

The Kaiser Permanente Hazard Vulnerability Assessment was one of the first widely recognized and utilized healthcare-based hazard assessment tools and remains so today. The excel-based tool has pre-populated formulas to calculate risk scores on hazards and rank them in summary tab, based on what the facility manually inputs as probability of occurring, severity of three different types of impacts, and mitigation and preparedness efforts that have been undertaken. Real alerts and activations are also factored into the risk score and ranking. Lastly, one portion of the model allows for prioritization of hazards by inputting an action plan, goal and target date of completion. The Kaiser tool is easy to use, with embedded instructions and as such is often used as a base template for customized HVAs.

The American Society for Health Care Engineering (ASHE) provides a free HVA tool similar in structure to the Kaiser Model, with a few key differences. The ASHE model comes entirely customizable, providing a blank sheet that the user must input hazards into themselves, and ten vulnerability categories, including a few not in the Kaiser model such as written response plan, community mutual aid involvement, and two custom criteria columns. While it does provide a Total Score for each hazard added, it does not automatically sort or summarize the results. The tool is limited to the hazards identified by the facility, leading to potential for gaps in assessment.

The Risk Identification and Site Criticality 2.0 is a newer hazard assessment tool developed by ASPR, which provides objective national data to assist with assessing vulnerability of a particular facility in addition to the identification and consequence assessment sections. The tool sets itself apart from others by being web-based, providing a means of data aggregation for comparing facilities within a system or region, and including a cybersecurity risk module (ASPR, 2023). The automatic data fields remove some levels of subjectivity and the non-excel-based tool is more streamlined for end user use.

The Health Hazard Assessment and Prioritization (hHAP) developed by Los Angeles County Public Health, is designed to be community based in its data collection, pulling scores based on feedback from many partner agencies on Community Impact, Public Health System Impact, Healthcare System Impact, Mental Health System Impact, Responder Agency Resources, and Community Resource Agencies rather than the public health department alone. The tool follows the same excel formatting as the Kaiser model, however it adds a unique

“Health Severity” score that contributes to the overall risk of each hazard, and breaks the document into natural, biological, chemical/radiological, and technological hazards, allowing for more specific listing of hazards. The manual provided with the downloadable tool also provides specific qualitative descriptions for risk scores, allowing more objective data collection. The focus is more generalized on the community but does allow a wider set of hazards than the Kaiser model.

The Pennsylvania Public Health Risk Assessment Tool (PHRAT) differentiates itself by utilizing significantly more scoring categories per hazard. With only 21 included, its hazards are grouped significantly more generally than other assessments. PHRAT evaluates each on four domains; human health, healthcare services, community operations, and public health services, with well over 200 data points spread between them. While the input needed by the facility is considerably lengthier, summaries are provided in tables, graphs, and ranking, making PHRAT more informative post-assessment than others.

The Big Bend Health Care Coalition and the FHCA Emergency Preparedness Council HVA Tool (FHCA HVA) is another tool that expands upon the Kaiser model and format, limiting to more generalized hazards for easier end user experience. While the methodology is identical to the Kaiser model, the FHCA HVA was designed with long-term care, nursing home, and assisted living facilities in mind. This distinction is rarely identified in other models but also limits its usability to this smaller subset of healthcare providers.

Additional tools that could be utilized by healthcare organizations alongside emergency management hazard assessments include the Pediatric Pandemic Network Pediatric HVA, Climate Vulnerability Assessments, Cybersecurity Risk Assessments, Supply Chain Risk Assessments, Infection Control Risk Assessments, Community Needs Assessments, and many other specialty risk assessments. Some healthcare organizations have also opted to develop their own HVA models and methodologies.

Several commonalities exist across the more common healthcare hazard assessments outlined in this paper. While all assess a variety of hazard categories such as natural hazards (hurricanes, tornadoes, floods, wildfires, winter storms), biological hazards (pandemics, bioterrorism), technological hazards (power outages, cyberattacks, utility failures, medical gas failures), human-caused hazards (active shooter events, terrorism, workplace violence), hazardous materials incidents (chemical spills, radiological events), and some include

operational threats such as staff shortages and supply chain disruptions, they vary considerably in their specificity. Many assessments are derivative of the Kaiser Permanente model and have similar methodologies in that the designers recommend an assessment be conducted annually, data be input and evaluated by a multidisciplinary committee, and are empirically subjective in nature. While this methodology makes for a simplistic end user experience, significant deficiencies can be found across the board. This article outlines these deficiencies and presents a more organizationally effective solution to assessing hazards and threats.

ANALYSIS SECTION

To assess current perceptions and utilization of threat and hazard identification tools in healthcare, and to determine whether methodological change is warranted, a voluntary survey was distributed to healthcare emergency managers through the International Association of Emergency Managers Healthcare Caucus and professional word of mouth. The survey ran for two weeks and collected 34 responses from practitioners across 15 states: California (3), Colorado (7), Florida (1), Illinois (1), Indiana (1), Maine (1), Michigan (1), Minnesota (1), Nebraska (1), New York (1), North Carolina (1), Ohio (1), Pennsylvania (2), Tennessee (1), and Texas (11).

The survey comprised five sections totaling 23 questions, using a mix of multi-select, single-select, free-text and Likert-scale response formats.

Section 1: Background Questions

1. What state is your organization in? If located in multiple states, please put the location of your headquarters or flagship campus.
2. How many years have you worked in hospital Emergency Management?
3. Do you work at an individual care delivery site, in a corporate/system role, healthcare consulting or for a Regional Advisory Council/ Coalition?
4. How would you describe your organization?
5. What accreditation bodies or regulatory frameworks govern your Emergency Management program?

Section 2: HVA Adoption and Tool Selection

6. Does your organization currently conduct a Hazard Vulnerability Analysis or similar hazard assessment?
7. Which tool or methodology do you use?
8. Why does your organization use the tool that you selected in question 7?
9. How frequently is your HVA reviewed or updated?

Section 3: Motivation (Compliance vs Utility)

10. In your professional opinion, what is the primary reason your organization conducts an HVA?
11. If completing a HVA was not a regulatory requirement, in your professional opinion, do you believe your organization would still do it?
12. Has your HVA ever identified a hazard or vulnerability your organization was not previously aware of? If yes, what was the hazard?
13. To what extent does your organization's leadership (non-EM executives) engage with the HVA process?
14. If accreditation requirements for HVAs were eliminated tomorrow, do you believe your organization would continue conducting HVAs? Why or why not? Would you have the same support as you do now?
15. Does your organization engage or participate in a community, regional, or local governmental risk assessment, HVA, or THIRA?

Section 4: Operational Integration

16. Describe how HVA findings are translated into operational decisions (example, resource allocation, training priorities, or capital planning). If your HVAs do not translate to operational decision making an acceptable answer, is "they do not and is completed as a regulatory requirement".
17. Can you provide an example where your HVA directly influenced a preparedness decision or program change?
18. How are HVA results communicated across your organization to clinical leadership, administration, or frontline staff? If they are not please state that.

19. In your experience, how well does your HVA reflect your organization's actual risk environment, including community-level threats, infrastructure dependencies, and emerging hazards?

Section 5: Limitations and Recommendations

20. What do you see as the most significant limitations of current HVA tools or methodologies used in healthcare settings?
21. Have you encountered challenges in making your HVA process more dynamic or intelligence-driven rather than static annual exercise? What barriers exist?
22. What changes to HVA methodology, guidance, or regulatory expectations would most improve the tool's operational value?
23. Is there anything about your organization's HVA experience positive or negative that you believe is underrepresented in the current literature or professional conversation?

The detailed analysis to follow will be divided into the survey sections.

Analysis: Background Questions

The survey yielded 34 respondents across 15 states. Experience levels were well distributed: 11 respondents reported 6 to 10 years in hospital emergency management, 9 reported 15 or more years, 9 reported 0 to 5 years, and 5 reported 11 to 15 years. This distribution supports the generalizability of findings across experience levels and reduces the risk of skewing toward either newer or more seasoned practitioners.

Respondent role types were less balanced. Approximately 74% (n=25) indicated they work in a corporate or system-level emergency management role, compared to 6 at individual care delivery sites, 2 in healthcare consulting, and 1 with a regional healthcare coalition. While skewed, this distribution reflects current industry structure: emergency management roles are more commonly hired at the corporate or system level, and individual site practitioners are often embedded within larger health system, or other duties as assigned type roles. This context should be considered when interpreting findings, particularly those related to organizational decision-making authority and resource allocation.

Organization type was a multi-select question, given that a respondent can simultaneously represent a health system and an individual care delivery site. Of the 34 respondents 23 were part of a multi-hospital system, 16 belonged to an academic medical center,

11 represented ambulatory sites, 7 were community hospitals, and 5 were critical access hospitals.

Accreditation bodies were also multi-select. Thirty-two of 34 respondents identified The Joint Commission (TJC) as their accrediting body, consistent with TJC's position as the largest healthcare accreditor in the United States. Six respondents selected Det Norske Veritas (DNV) and three selected the Healthcare Facilities Accreditation Program. Twenty-three respondents also indicated CMS certification, which is expected, because to receive Medicare or Medicaid reimbursement your organization must meet Conditions of Participation (CoPs). This can be done through a state survey acting on behalf of CMS or an Approved Accrediting Organization (AO) such as TJC or DNV.

Analysis: HVA Adoption and Tool Selection

This section addressed three questions: whether organizations conducted an HVA, which tool they use, and why. As expected, given the regulatory requirement, 100% of respondents indicated their organization conducts an HVA or similar hazard assessment. Regarding tool selection, 56% (n=19) reported using the Kaiser Permanente HVA, 8 use an internally developed tool, 3 use a technology platform, 2 use the ASPR RISC 2.0 or THIRA framework, and 1 uses a consultant-developed tool.

Rationale for tool selection grouped into five themes: regional alignment, meaning the tool was used because the coalition or surrounding organizations used it; industry familiarity and accreditation acceptance; ease of use and shareability; customization capability; and data-driven preference. The first three themes were associated almost exclusively with Kaiser Permanente HVA users, reflecting adoption driven by external norms rather than independent evaluation of the tool's merits. Customization was the primary rationale among those who developed internal tools, and data-driven preference aligned with respondents using technology platforms.

Analysis: Motivation (Compliance vs Utility)

This section contained six questions and was designed to draw directly on practitioner experience. When asked the primary reason their organization conducts an HVA, 38% of respondents identified regulatory compliance, 11 identified training and exercise prioritization, 7 identified operational risk management, and 3 identified resource allocation or decision support. These responses mirror the core tension this article addresses: the compliance framing and the operational framing remain unreconciled in practice. Even respondents who articulated

operational value frequently framed it as a dual purpose, with compliance as parallel justification rather than a secondary one.

When asked whether they would continue conducting HVAs if the requirements were removed, 68% said yes, 21% said no, and 12% were uncertain or conditional. The 68% figure appears encouraging at first, but the qualitative responses complicated it considerably. Most affirmative answers were accompanied by qualifications: respondents would continue, but less frequently, less formally, and with reduced leadership support. Even among practitioners who believe in the tool's value, the honest reading of the majority response is that regulatory requirements are the primary structural force sustaining HVAs at their current frequency and organizational priority. The responses do not reflect organizations that would continue because the process materially advances their preparedness and or operational value. They reflect organizations that would de-prioritize it the moment external accountability was removed.

Leadership engagement was assessed using a Likert-scale item with four response options: not engaged, just signing the document, attending meetings to discuss threats and hazards, or very engaged. 58% of respondents reported that their executives attend meetings to discuss threats and hazards, 21% indicated executives only sign the document, and 18% described executives as very engaged. The combined figure of 79% at the attends meetings level or above might suggest meaningful organizational investment in the process. As will be discussed in the next section, engagement does not consistently translate into operationalization of preparedness priorities. Attendance and action are not equivalent. Separately, 97% of respondents indicated their organization participates in community, regional, or local governmental risk assessment processes including THIRA.

The final question in this section asked whether the HVA had ever identified a hazard the organization was not previously aware of. 50% of respondents said no, 32% said yes and provided specific examples, and 18% offered nuanced responses that fell between those positions. One respondent captured this middle category precisely: the HVA did not surface an unknown hazard, but it significantly elevated the perceived severity of hazards that had been underweight. The specific hazards cited by affirmative respondents included lithium battery fires, sinkholes, chemical transportation risk near facilities, and cyber and IT vulnerabilities. Notably, most of these exist as broad categories on current HVA instruments. This raises a meaningful question for methodology development: as the threat environment becomes more

specific and operationally complex, a framework built around generalized hazard categories is increasingly insufficient. The proposed recommendations in this article addresses this directly by moving away from static categorical lists toward a threat and hazard identification process anchored in intelligence, operational context, and continuous reassessment. The goal is not a longer list of hazards but a more defensible method for determining which hazards are relevant to a specific organization at a specific point in time.

Analysis: Operational Integration

The Operational Integration section comprised four questions examining how HVA findings are translated into operational decisions, how they influence preparedness programming, how results are communicated across the organization, and how accurately the HVA reflects the organization's actual risk environment.

Regarding operational translation, five themes emerged from open-ended responses:

1. Training and exercise prioritization.
2. Resource allocation and budgeting.
3. Plan and policy development.
4. Mitigation projects and capital planning
5. No operational translation.

Seventy nine percent (79%)of respondents indicated HVA findings influenced training and exercise prioritization, 44% resource allocation and budgeting, 38% plan or policy development, and 26% mitigation projects or capital planning. 8% stated that findings do not translate into operational decisions and that the HVA is completed solely as a regulatory requirement. While the training and exercise findings are encouraging, the data suggests that translation becomes progressively weaker as decisions require greater organizational commitment. Moving from training prioritization to capital investment represents a significant escalation in institutional will, and the drop-off across these categories reflects that threshold.

Communication of HVA results followed a similar pattern of uneven reach. 85% of respondents reported shared results through their Emergency Management Committee, and 55% through executive briefings. All other pathways were cited by 26% or fewer respondents and included intranet or SharePoint postings, integration into annual training, and board-level reporting. 7% indicated results are not communicated beyond the emergency management

function. Frontline staff communication was noticeably absent as a primary pathway in most responses, suggesting that even where results move upward to leadership, lateral and downward dissemination remains limited.

76% of respondents described their HVA as moderately or very accurate in reflecting their organization's actual risk environment. Those who questioned the tool's accuracy consistently raised the same concern: the HVA is only as dependable as the judgment and experience of those who complete it, making its output inherently variable across organizations, sites, and individual practitioners. This variability has practical consequences beyond internal reliability. Consider workplace violence as an illustration: if one organization defines workplace violence to include verbal altercations and others track only physical incidents, the resulting risk scores are not comparable across organizations in the same city, region, or state. When the unit of measurement differs, the data cannot support benchmarking, regional coordination, or evidence-based methodology improvement. This is not a minor limitation. It points to the absence of standardized operational definitions as a foundational gap in current HVA practice.

Analysis: Limitations and Recommendations

The Limitations and Recommendations section comprised four open-ended questions, the richest in terms of response depth across the entire survey. Two questions addressed limitations: the most significant limitations of current HVA tools, and the barriers practitioners have encountered in making their HVA more dynamic and intelligence driven. Two questions addressed recommendations: what changes to methodology, guidance, or regulatory expectations would most improve operational value, and what aspects of HVA practice are underrepresented in current literature or professional conversations.

Seven limitations emerged from responses. Subjectivity and inconsistent scoring were the most frequently identified, cited by 18 respondents. Static design and annual-only review cadence were identified by 12 respondents. Lack of real-time or external data integration was named by 10 respondents. Outdated and generic hazard lists were cited by 8. Compliance framing that undermines operational utility was identified by 7 respondents. Poor downstream impact and cascade modeling were raised by 5 respondents, and tool accessibility and user complexity by 4 respondents. Convergence across these themes points to a single underlying problem: current HVA tools look more scientific and objective than they are because they remain fundamentally dependent on subjective judgment, static inputs, and compliance-oriented

framing. The numerical outputs these tools produce are not the product of empirical measurement. They are the product of structured opinion, and the field has not fully reckoned with that distinction.

Seven themes also emerged from responses regarding barriers to creating more dynamic, intelligence driven HVAs, with 23 of 34 respondents identifying specific barriers and 11 respondents reporting no significant challenges. Event documentation gaps were a consistent theme, with respondents noting that lower acuity incidents that do not escalate to formal activation got untracked and therefore never fed back into risk analysis. Staffing and time constraints were widely cited as many emergency management practitioners carry multiple responsibilities with limited bandwidth for process improvement. Real-time data integration was identified as a structural gap, as most organizations lack mechanisms to automatically ingest live incident data, surveillance outputs, or operational metrics from existing platforms. IT and technology barriers reflect a broader organizational dynamic in which emergency management is not viewed as a function that warrants dedicated technology investment, and new tools require IT approval processes that slow or prevent adoption. Community and external partner engagement was described as inhibited by leadership reluctance to share HVA findings externally, with one respondent characterizing it plainly as leaders not wanting to air out the organization's dirty laundry. Annual compliance anchoring reflects the tendency to treat the HVA as a once-a-year exercise rather than a continuous risk management function. Finally, stakeholder disengagement was attributed in part to the fact that top ranked hazards change little from year to year, reducing perceived urgency and participation over time. Taken together, these barriers do not describe isolated operational problems. They describe a methodology that was designed for compliance performance rather than continuous risk-intelligence, and that generates its own disengagement over time precisely because it asks practitioners to repeat a structured opinion exercise on an administrative calendar rather than respond to an evolving threat environment. The barriers are not incidental to the tool; they are a predictable consequence of how the tool was conceived.

Recommended improvements showed less thematic convergence than the limitations questions, which itself is informative. The most consistently cited recommendation, data automation and artificial intelligence integration, was identified by only 26% of respondents. All remaining themes, including streamlining hazard lists, developing a continuous assessment model, standardizing methodology, strengthening the decision linkage between HVA outputs and

operational action, formalizing community integration requirements, and establishing a healthcare-specific national standard, were each cited by 21% or fewer. The low agreement on solutions, compared to the strong convergence on problems, suggests that the field has reached consensus that current tools are inadequate but has not yet coalesced around a preferred direction for reform. That gap represents both limitation of the current evidence base and justification for the recommendations proposed in this article.

The final question asked what aspects of HVA practice are underrepresented in current literature and professional conversation. The most frequently named theme was the gap between HVA completion and measurable operational change, which aligns directly with the central argument of this article and suggests that practitioners are experiencing a problem the literature has not yet adequately addressed.

RECOMMENDATIONS / NEXT STEPS

Based on survey findings and the broader analysis presented in this article, five recommendations should be prioritized to begin addressing the gaps identified.

First, the field needs universal definitions for each threat and hazard category being tracked so that scores are comparable across organizations, sites, and regions and can support benchmarking and evidence-based improvements. The entire purpose of regulations is to ensure a minimum standard is being met and develop benchmarks for quality improvement. This should be no different here, the example given earlier of workplace violence should be universal. The definition should be standard across all healthcare and not differ from facility to facility based on how it is defined or how incidents are counted.

Second, organizations should integrate real-time or near-time data sources into their risk assessment processes, replacing static annual scoring with a continuous intelligence-informed model. Weather history, floodplain mapping, crime data, chemical facility proximity, infrastructure reliability data, and public health surveillance are all publicly available. The ASPR RISC 2.0 tool already moves in this direction and was cited favorably by respondents who use it. Regulatory guidance should establish external data integration as a minimum standard rather than leaving it to individual organization initiative.

Third, whatever solution an organization uses must add value to daily operations rather than existing solely as a compliance artifact. If the tool does not inform decision between accreditation cycles, it does not function as a risk management instrument.

Fourth, the field requires a structured national conversation on HVA methodology reform, convened through a professional or regulatory body, to move from individual organizational workarounds towards a shared standard that reflects how risk behaves in modern healthcare systems.

Fifth, HVA methodology must be both comprehensive in scope and specific in application. Broad categorical groupings obscure the discrete threat types that drive actual preparedness decisions. A framework that cannot distinguish between a ransomware attack and a prolonged Electronic Health Record (EHR) outage, or between an active shooter event and pattern of patient-on-staff assaults, produces rankings too blunt to drive meaningful operational action. The goal is a complete picture built from specific threats, not a lengthy list of general ones.

Limitations

Several limitations of this study should be acknowledged so that future research in this space can address them systematically. First, sample size constrains generalizability. While the 34 respondents represented 15 states and a range of experience levels, the sample is insufficient to support statistically confident prevalence claims about the broader field. Future studies should extend the survey window and pursue broader distribution strategies to increase response volume and reduce the risk of underrepresenting less engaged practitioners.

Second, the sampling method introduces self-selection bias. Distribution through the IAEM Healthcare Caucus and professional word of mouth disproportionately reaches practitioners who are actively engaged in professional networks and likely to hold strong views on HVA methodology. Those working in under resourced settings, carrying emergency management as a collateral duty, or less connected to the national professional communities, are likely not captured in this article. This limits the degree to which findings can be applied to the full spectrum of healthcare emergency management practice.

Third, the corporate and system-level skew noted in the background analysis carries forward as a limitation. With 74% of respondents working at the corporate or system level, the experiences of individual site practitioners, critical access hospitals, and smaller community

organizations are likely underrepresented. These settings often face the greatest resource constraints and may experience compliance versus utility tension more acutely than the sample reflects.

Fourth, all findings are based on self-reported perceptions and cannot be validated against organizational outcomes. The survey captures how practitioners describe their HVA processes, not whether those processes produce measurable improvements in preparedness or resilience. Future research pairing survey data with outcome measures would strengthen evidentiary basis for the recommendations offered in this article.

Fifth, this study represents a single point in time. Without a baseline or longitudinal comparison, it is not possible to determine whether the compliance versus utility tension identified here is worsening, improving, or stable across the field. Establishing that baseline is an important next step for the research this article seeks to advance.

CONCLUSION

Healthcare does not need another spreadsheet that gets printed, put in a binder, and sits on the shelf until regulators ask for it. Healthcare needs a threat and hazard identification process capable of showing leaders how risk is changing, where preparedness is weakest, and which decisions should follow. The survey findings do not establish the prevalence of these problems across the entire field, but they reveal a consistent and important signal: practitioners see value in hazard assessment while also recognizing that subjective scoring, static review cycles, inconsistent definitions, and weak connections to organizational action limit that value.

Modernizing should not be understood as adding more hazards, more scoring columns, or an artificial intelligence layer to the same underlying process. It requires a change in what the HVA is designed to do. Common operational definitions must make results interpretable across facilities and regions. Internal evidence including incident history, exercise findings, training and competency gaps, staffing constraints, supply vulnerabilities, and unresolved corrective actions must be considered alongside external threat data. Assessments must be refreshed when conditions change, not only when an accreditation calendar requires it. Most importantly, every priority should connect to an accountable decision about mitigation, planning, training, resource allocation, or partnerships.

Regulators, accrediting organizations, professional associations, health systems, and healthcare coalitions all have a role in making that transition. National guidance can establish minimum expectations for definitions, data quality, methodological transparency, and interoperability while preserving the flexibility required by different care settings. Healthcare organizations need not wait for a national standard, however. They can begin now by connecting existing operational data to a living threat profile and requiring HVA priorities to inform measurable preparedness work. The necessary shift is from a compliance document to a continuous risk-intelligence capability. If an HVA cannot tell leaders where the organization is most vulnerable, where it is least prepared, and what should be done next, it has not yet fulfilled its essential purpose.

REFERENCES

Administration for Strategic Preparedness and Response. (2023, August). *RISC Toolkit 2.0*. U.S. Department of Health and Human Services. https://www.aspr.gov/health-resources-tools/risc-toolkit-20

American Hospital Association. (2026, April 10). *FBI: Health care was top target for ransomware, other cyberthreats in 2025*. AHA News. https://www.aha.org/news/headline/2026-04-10-fbi-health-care-was-top-target-ransomware-other-cyberthreats-2025

American Society for Health Care Engineering. (2015, March 6). *Hazard vulnerability assessment (HVA) tool*. https://www.ashe.org/hva

Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. (2024). *Prioritizing our healthcare workers: The importance of addressing the intersection of workplace violence and mental health and wellbeing*. NIOSH Science Bulletin. https://www.cdc.gov/niosh/bulletin/2024/prioritizing-healthcare-workers.html

Centers for Medicare & Medicaid Services. (2026, June 29). *Emergency preparedness rule*. U.S. Department of Health and Human Services. https://www.cms.gov/medicare/health-safety-standards/quality-safety-oversight-emergency-preparedness/emergency-preparedness-rule

Drexel University Dornsife School of Public Health, Center for Public Health Readiness and Communication. (2023). *Public health risk assessment tool (PHRAT).* https://drexel.edu/dornsife/research/centers-programs-projects/center-for-public-health-readiness-communication/our-projects/phrat/

Federal Emergency Management Agency. (2018, May). *Threat and hazard identification and risk assessment (THIRA) and stakeholder preparedness review (SPR) guide* (Comprehensive Preparedness Guide [CPG] 201, 3rd ed.). U.S. Department of Homeland Security. https://www.fema.gov/sites/default/files/2020-04/CPG201Final20180525.pdf

Florida Health Care Association. (n.d.). *Hazard vulnerability analysis tool*. https://www.fhca.org/facility_operations/hazard_vulnerability_analysis_tool

Kaiser Permanente. (2017). *Kaiser Permanente hazard vulnerability analysis (HVA) tool*. ASPR TRACIE. https://asprtracie.hhs.gov/technical-resources/resource/250/kaiser-permanente-hazard-vulnerability-analysis-hva-tool

Los Angeles County Department of Public Health, Emergency Preparedness and Response Program. (n.d.). *Health hazard assessment and prioritization (hHAP).* http://publichealth.lacounty.gov/eprp/hazardassessment.htm

The Joint Commission. (2026). *National Performance Goal #3: Emergency readiness*. https://www.jointcommission.org/en-us/standards/national-performance-goals/emergency-readiness

USAFacts. (2025, July 7). *Are major natural disasters increasing?* https://usafacts.org/articles/are-the-number-of-major-natural-disasters-increasing/

AUTHOR BIOGRAPHIES

Adam Lee is the Director of Emergency Management and Organizational Resilience for Memorial Hermann Health System. In this role, he oversees the development and implementation of comprehensive emergency management and business continuity programs, operational aspects of cybersecurity preparedness, and response. Additionally, Adam is an Adjunct Professor at Sam Houston State. His academic credentials include an MBA, a MS in Homeland Security, Certified Emergency Manager, and Master Continuity Practitioner certification through FEMA. He has authored articles in peer-reviewed and professional journals. Adam serves on the advisory board for the Homeland Security Institute's Partnership for Healthcare and Emergency Management, the Association of Continuity Professionals' Healthcare Special Interest Group, and as the At-Large board member for the Regional Healthcare Preparedness Coalition.

Katie Linn is the Manager of Emergency Management and Organizational Resilience for Memorial Hermann Health System. In her role, Katie oversees the development, improvement, and oversight of Emergency Management educational programs, as well as roll out of strategic initiatives and maintenance of regulatory compliance. Katie is a Certified Emergency Manager, has a Masters in Homeland Security Studies, is a Master Continuity Practitioner, and is a member of the FEMA National Continuity Instructor Cadre.

The Institute for Homeland Security at Sam Houston State University is focused on building strategic partnerships between public and private organizations through education and applied research ventures in the critical infrastructure sectors of Transportation, Energy, Chemical, Water/Wastewater, Healthcare, and Public Health.

The Institute is a center for strategic thought with the goal of contributing to the security, resilience, and business continuity of these sectors from a Texas Homeland Security perspective. This is accomplished by facilitating collaboration activities, offering education programs, and conducting research to enhance the skills of practitioners specific to natural and human caused Homeland Security events.

Institute for Homeland Security

Sam Houston State University

© 2026 The Sam Houston State University Institute for Homeland Security.

Lee, A, & Linn, K. (2026). Modernizing Threat and Hazard Identification for Healthcare. (Report No. 2026-1048). The Sam Houston State University Institute for Homeland Security.
https://doi.org/10.17605/OSF.IO/486YT

INSTITUTE FOR HOMELAND SECURITY
SAM HOUSTON STATE UNIVERSITY