Enhancing Perioperative Emergency Readiness Through Simulation, ICS, and After-Action Review

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Background

Natural disasters, mass-casualty incidents, fires, power outages, pandemics, terrorism, and severe weather can rapidly overwhelm healthcare systems and threaten patient safety. **Perioperative teams are essential to emergency response through surgical intervention, triage, specialized resources, and skilled personnel.**

The **2022 Tops Friendly Markets mass shooting in Buffalo, NY**, proximity to the **Ginna Nuclear Power Plant**, and recurrent severe winter weather demonstrate the region's diverse emergency risks. These threats underscore the need for **comprehensive preparedness, coordinated response, and staff readiness**.

Following September 11, 2001, healthcare organizations strengthened emergency preparedness efforts, with continued emphasis on communication, coordination, education, and continuity of care (**Eiland et al., 2004**).

The Joint Commission similarly emphasizes ongoing disaster planning and emergency response training.

Role of Simulation Training

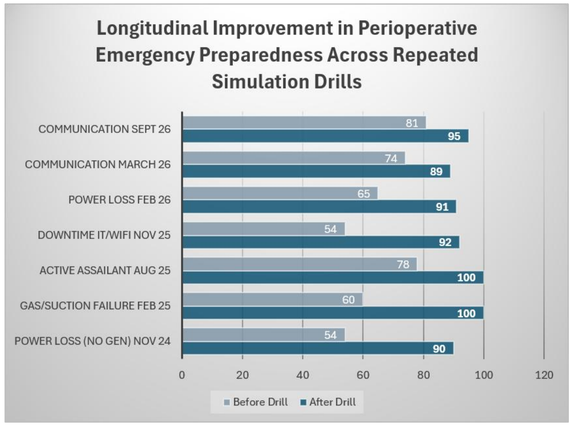
- Provides Safe Practice for High-Risk Situations
- Strengthens Psychological Readiness
- Builds real-world Decision-Making Skills
- Improves coordination Between Agencies
- Supports Continuous Improvement
- Tests Emergency Plans and Infrastructure

Scan our QR Code to watch our Emergency Preparedness Drill

Regular simulation exercises and disaster drills are essential to emergency preparedness, as knowledge of response protocols alone is insufficient; simulation allows healthcare staff to apply their knowledge and skills in high-pressure situations and strengthens readiness for emergency response (Singh et al., 2025).

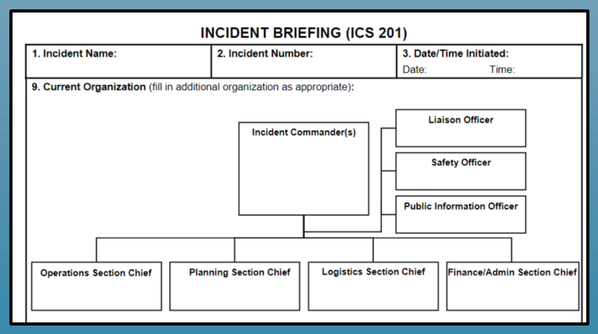
Importance of Perioperative Preparedness

A run chart of sequential perioperative emergency drills demonstrates sustained high staff preparedness with peak performance following high-fidelity simulation training and minor variability associated with complex downtime scenarios, followed by recovery after targeted interventions.



Incident Command System (ICS)

A standardized approach to the command, control, and coordination of emergency response operations is widely used throughout the United States. Standardized management hierarchy and procedures for managing incidents of any size.



After Action Review (AAR) Process

After every exercise or event, structured After Action Reviews transform lessons learned into measurable improvements,
ensuring continuous enhancement of emergency preparedness and patient safety.

- Conducted following each emergency drill or real event.
- Brings together multidisciplinary team members to evaluate performance and outcomes.
- Compares exercise objectives with actual actions taken.
- Identifies strengths, gaps, and opportunities for improvement.
- Develops corrective actions with assigned ownership and follow-up.
- Incorporates lessons learned into policies, education, and future exercises to support continuous preparedness.

Lessons Learned & System Improvements

- **Exterior doors were numbered and clearly labeled** to improve wayfinding, communication, and coordination with first responders.
- **Enhanced access control procedures** were established to support visitor management and protect patient care areas during emergencies.
- **Expanded multidisciplinary involvement** strengthened communication and clarified team roles and responsibilities.
- **Staff accountability tools were improved** through updated sign-in sheets, unit maps, and processes for tracking personnel during events.
- **Emergency response resources and roles were refined**, including walkie-talkie utilization, Incident Command checklists, and designated leadership responsibilities.
- **Ongoing education and drills continue to improve preparedness,** communication strategies, and response effectiveness.



Recommendations

Continue regular training and emergency exercises.
Increase multidisciplinary involvement in preparedness activities.
Standardize Incident Command roles and checklists.
Enhance communication and staff accountability processes.
Provide ongoing training on emergency equipment and response tools.
Incorporate lessons learned into policies, education, and future drills.

Conclusion

Perioperative emergency preparedness is essential to maintaining patient safety, operational continuity, and effective response during disasters and high-risk events. Simulation-based training supports clinical decision-making, psychological readiness, and multidisciplinary coordination, while the Incident Command System (ICS) provides a standardized framework for command, communication, and resource management. Regular emergency drills demonstrated strong staff performance, with improvements following high-fidelity simulation training and system enhancements. Structured After Action Reviews (AARs) translated
performance findings into actionable improvements, reinforcing a continuous cycle of evaluation and refinement. These processes led to system improvements such as enhanced wayfinding, improved access control, strengthened accountability, and clearer communication and role delineation. Ongoing recommendations focus on sustaining multidisciplinary training, standardizing ICS roles and tools, and integrating lessons learned into policy, education, and future drills. Together, these strategies build a resilient preparedness program grounded in continuous learning and a shared commitment to safe patient care during crises.



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References

Eiland, J.E., Pritchard, D.A. and Stevens, D.A. (2004), Emergency preparedness—Is your OR ready?. *AORN Journal, 79(6),* 1275-1283. https://doi.org/10.1016/S0001-2092(06)60882-X

Singh, P., Sapkota, S., Achour, N., Ragazzoni, L., & Lamine, H. (2025). Exploring challenges and opportunities in hospital disaster preparedness: A qualitative study on the perspectives of hospital incident command system members. *Risk Management and Healthcare Policy, 18*, 3499–3515. https://doi.org/10.2147/RMHP.S528810