Healthcare Simulation 2050: Building a Better Future Together Forum: Official Proceedings

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Executive Summary

The Healthcare Simulation 2050: Building a Better Future Together Forum Official Proceedings is the final report from the immersive forum held over two days in Orlando, Florida, in January 2025, immediately preceding the International Meeting for Simulation in Healthcare (IMSH). The forum was structured to include plenary sessions, individual working groups, and large-group report-outs and discussions among all participants. The forum included a mid-program reception for participants, which allowed an informal discussion with the Society for Simulation in Healthcare Board of Directors to further the conversation.

Our report presents a vision for the future of simulation-based education across and within healthcare disciplines, underscoring its transformative potential to advance patient safety, workforce readiness, and systemic healthcare improvement. The forum was anchored by the Society for Simulation in Healthcare's (SSH) five strategic pillars:

Advocacy
Research & Innovation
Education & Learning
Credentialing
Organizational Sustainability & Growth

These proceedings synthesize insights from diverse practice domains, including physicians, nursing, advanced practice providers, EMS, health sciences, QI/Patient Safety, and health systems leadership.

Across all domains, participants emphasized the critical need for global standardization, faculty development, sustainable funding, and equitable access to simulation resources. Emerging technologies such as AI, VR, XR, and data-driven analytics are poised to revolutionize competency assessment and real-time learning. At the same time, ethical considerations and psychological safety remain foundational to practical implementation.

The report calls for continued collaboration among educators, institutions, policymakers, and industry partners to integrate simulation into accreditation systems, strengthen credentialing frameworks, and expand simulation's reach worldwide.

By aligning innovation with evidence-based practice and advocacy, Healthcare Simulation 2050 reports on the collective wisdom and thoughtfulness of over 200 simulation professionals. It will provide information to help guide a strategic path toward a more resilient, equitable, and technologically integrated healthcare education system, enhanced by the continued development and use of simulation.

Chapter 1: Forum Description

The *Healthcare Simulation 2050: Building a Better Future Together* Forum was held over two days, as a preconference event on January 9–10, 2025, in Orlando, Florida, immediately preceding the International Meeting for Simulation in Healthcare (IMSH). Designed as a forward-looking strategic convening, the forum brought together multidisciplinary leaders from across the healthcare simulation ecosystem to examine how simulation will evolve over the next 25 years to meet the needs of patients, healthcare professionals, health systems, and simulation professionals.

Participants represented a broad range of professional domains, including physicians, nurses, advanced practice providers, EMS and pre-hospital clinicians, health sciences faculty, quality improvement and patient safety leaders, simulation educators, and system-level executives. This diversity was intentional and central to the forum's design, reflecting the belief that the future of healthcare simulation must be shaped collaboratively across disciplines, practice settings, and organizational levels.

The forum was structured to promote both deep domain-specific exploration and cross-cutting synthesis. Plenary opening and closing sessions outlined the meeting's purpose, objectives, and expected deliverables. In contrast, facilitated breakout sessions enabled participants to examine current-state realities, articulate aspirational future states, and identify barriers to progress. Participants and facilitators were encouraged to set aside time and budget constraints to promote free and creative thinking. Breakout discussions were organized into defined tracks aligned with major domains of healthcare and healthcare education sectors, with multiple sessions devoted to each track throughout the forum.

Across three structured breakout themes, (1) current utilization and scope of healthcare simulation, (2) an aspirational vision for healthcare simulation in the year 2050, and (3) anticipated challenges to achieve that vision, participants were asked to move deliberately from reflection to imagination to strategic foresight. Discussions explicitly encouraged consideration of emerging technologies such as artificial intelligence, immersive and extended reality, data analytics, and personalized learning, alongside broader issues related to standards, regulation, workforce development, equity, and system integration.

A distinctive element of the forum design was the intentional engagement between participants and the Society for Simulation in Healthcare (SSH) leadership. A dedicated mid-program reception and informal discussion session created space for direct dialogue with members of the SSH Board of Directors. This interaction provided participants with insight into SSH's strategic priorities while offering the Board an opportunity to hear firsthand the perspectives, challenges, and forward-looking ideas emerging from across the simulation community. The exchange reinforced the bidirectional relationship between professional leadership and frontline innovators and helped situate the forum's discussions within the field's broader strategic direction.

The second day of the forum culminated in structured report-out sessions, during which each breakout track presented key insights, areas of alignment, and unresolved questions to the whole assembly. This collective synthesis highlighted a strong convergence of themes across disciplines, despite differences in clinical context and operational focus.

The forum was conceptually anchored by the Society for Simulation in Healthcare's five strategic pillars: Advocacy; Research & Innovation; Education & Learning; Credentialing; and

Organizational Sustainability & Growth, which served as a unifying framework for analysis and synthesis across all discussions. Framing the work through these pillars reinforced the forum's dual purpose: to envision the future of healthcare simulation and to inform actionable strategic directions to guide organizational, professional, and policy-level efforts in the years ahead.

Collectively, the Healthcare Simulation 2050 Forum functioned not as a consensus-building exercise around a single future state but as a catalyst for shared understanding, strategic alignment, and sustained dialogue. The proceedings that follow capture the collective intelligence and opinions of the participants and reflect a growing recognition that simulation will serve as foundational infrastructure, rather than a supplemental tool, in the future of healthcare delivery, education, patient safety, and system performance.

Chapter 2: Physicians

Introduction

This chapter analyzes the content of the Healthcare Simulation 2050: Physicians Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Regulatory Standards and Interagency Collaboration: The session emphasized the importance of integrating simulation into national and international healthcare policy requirements, aligning with SSH's advocacy efforts.
- Equity-Focused Simulation Programs: Participants discussed the role of utilizing simulation to address racial and socioeconomic disparities in healthcare training, while also helping to advocate for policy changes to ensure equitable access to healthcare.
- Breaking Down Silos and Enhancing Collaboration: The session emphasized the need for global cooperation for setting goals and priorities in simulation-based training and proposed the Society for Simulation in Healthcare (SSH) as a key player in global outreach efforts.
- Equity and Access to Simulation Resources: Discussions centered on the cost and accessibility barriers to simulation, advocating for policies that ensure equitable distribution of training tools worldwide.

Research & Innovation

- AI Integration and Bias in Healthcare: AI-driven simulation assessments were discussed as a tool for standardizing training, while also showing concern for systemic bias. These areas are supportive of SSH's focus on advancing ethical AI research.
- AI-Assisted Patient Safety Dashboards: Participants explored AI-powered tools to track patient safety metrics (with modeling) in real time, reinforcing SSH's push for healthcare innovation through the use of simulation.
- AI and Data-Driven Assessment: AI's potential to automate training and assessment while helping providers maintain core clinical skills was explored, aligning with SSH's push for simulation research to drive further innovation.
- The Role of Technology in Future Simulation: VR/AR, AI-driven holodecks, and automation were discussed as new frontiers in medical simulation.

Education & Learning

- Patient Safety and High-Reliability Training: Simulation education is increasingly integrated into daily clinical operations to prevent errors and improve safety, aligning with SSH's commitment to promote education that most effectively transforms the healthcare system.

- Experiential Training and Team Collaboration: The importance of interdisciplinary training using simulation was emphasized, reinforcing SSH's efforts to standardize team-based and in-situ learning approaches.
- Expansion of Simulation Beyond Training: The session reinforced the importance of integrating simulation into lifelong learning and sustainment programs for practicing physicians, not just medical students and residents.
- Competency-Based Learning Models: AI-driven "just-in-time" training and holographic learning environments were proposed as future solutions to enhance clinical decision-making and skill acquisition.

Credentialing

- National Simulation Accreditation Standards: Calls were made for standardizing benchmarks for simulation training effectiveness and integrating simulation into existing healthcare system accreditation standards. These support SSH's mission to evolve credentialing programs.
- Simulation-Based Competency Assessments: Participants discussed using simulation to track physician skill development in support of continuing education and certification requirements.
- Standardization and Scalability Issues: Participants highlighted the need for global simulation standards to ensure consistent training across healthcare systems as well as greater integration of simulation into physician and healthcare certification programs, aligning with SSH's mission to evolve credentialing programs.
- Reducing Administrative Burdens with Simulation: The use of simulation for streamlining licensing, certification, and compliance processes was discussed.

Organizational Sustainability & Growth

- System Integration and Healthcare Scalability: The session highlighted the need for scalable simulation programs that can be adapted to different academic institutions and across the spectrum of healthcare organizations.
- Public-Private Partnerships for Simulation Expansion: Encouraging collaboration between technology companies and healthcare organizations was identified as a key strategy for sustainable simulation growth.
- Simulation as a Global Standardization Tool: A proposal was made for an international governing body for simulation to ensure training consistency and widespread adoption.
- Investment in Simulation Infrastructure: Calls for increased funding and institutional commitment to support scalable simulation training programs.

Novel Ideas and Future Directions

- AI-Assisted Patient Safety Dashboards: AI-driven analytics for monitoring patient safety indicators.
- National Simulation Accreditation Standards: Establishing consistent benchmarks for simulation training and assessment.

- Public-Private Partnerships for Simulation Growth: Expanding simulation accessibility through industry collaboration.
- Ethics-Driven AI Models: Developing AI models that prioritize fairness and transparency in healthcare training.
- System-Wide Simulation Integration: Using simulation for continuous monitoring and improvement of healthcare workflows.
- AI-Driven Just-in-Time Training: AI-generated, real-time training scenarios for physicians facing unfamiliar procedures or critical cases.
- Holographic and Fully Virtual Training Environments: AI-driven "holodecks" that allow trainees to enter immersive, self-directed simulations.
- AI and Behavioral Assessment: Exploring AI's ability to assess human aspects of medical practice, including empathy and communication skills.
- Interdisciplinary Simulation Expansion: Encouraging collaboration between specialties to create integrated simulation training models.
- Global Simulation Certification Standards: Establishing an international certification process for simulation-based medical training.

Conclusion

The Healthcare Simulation 2050: Physicians Summary highlighted simulation's role in lifelong medical education, competency-based learning, and AI-driven assessment. Participants emphasized the need for standardization, interdisciplinary collaboration, and investment in scalable simulation programs. Moving forward, integrating emerging technologies while maintaining the human aspects of medical training will be essential to maximizing simulation's impact in healthcare.

Chapter 3: QI – Patient Safety

Introduction

This chapter analyzes the content of the Healthcare Simulation 2050: QI - Patient Safety Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Standardization and Scalability of Simulation Education: The session emphasized the need for a unified credentialing process and standardized curricula, aligning with SSH's advocacy for structured accreditation efforts.
- Equity in Simulation Access: Discussions addressed disparities in simulation-based training across different regions, advocating for multilingual platforms and resource-sharing initiatives.
- Patients have access to simulation resources to increase knowledge/skills for their own care
- Standardization and Global Adoption of Simulation: The session emphasized the challenges of inconsistent simulation practices across institutions and the need for international accreditation and curriculum standardization, aligning with SSH's advocacy for regulatory improvements.
- Expanding Simulation Access for Underserved Areas: Participants discussed the need for cost-effective training solutions to reach resource-limited regions.
- Standardization of Simulation-Based Training: The session emphasized the lack of universal simulation training standards and the challenges in accreditation, aligning with SSH's advocacy for regulatory improvements and structured credentialing efforts.
- Public Awareness for Faculty Engagement: Participants discussed the need for incentivizing faculty involvement in simulation training, supporting SSH's efforts to promote simulation in professional development.

Research & Innovation

- AI, VR, and Emerging Technologies in Simulation: AI-driven assessment tools, virtual reality (VR), and augmented reality (AR) were discussed as key innovations in training, supporting SSH's focus on advancing simulation research.
- Multilingual Simulation Platforms: AI-powered translation tools were proposed to make simulation training accessible worldwide, aligning with SSH's goals of leveraging technology for global impact.
- The Role of AI and VR in Simulation Training: AI-driven simulation tools and VR/AR-based learning environments were explored, supporting SSH's push to advance research in simulation technology.

- AI-Driven Clinical Decision Support Tools: AI-powered real-time feedback tools were identified as an emerging trend in clinical competency training.
- Simulation for Healthcare Workforce Training: Expanding simulation beyond medical education to include professional development and leadership training aligns with SSH's push for innovative workforce education strategies.
- Psychological Safety in Simulation: Discussions highlighted the importance of research into faculty and participant well-being in high-stakes simulation scenarios.

Education & Learning

- Simulation for Patient Safety and Crisis Training: The session reinforced the importance of simulation-based training for emergency response, hemorrhage management, and code blue scenarios to enhance patient safety.
- Simulation in Undergraduate and Postgraduate Medical Training: The varying levels of simulation use in medical and nursing programs were discussed, with a focus on expanding simulation in medical education.
- Competency-Based Training Models: The session reinforced the transition from time-based education to competency-based training, ensuring simulation learning translates into clinical effectiveness.
- AI-Enhanced Competency Dashboards: Real-time AI-driven competency tracking was discussed as a way to optimize individual learning progress.
- Faculty Development and Buy-In Challenges: The session reinforced the need for structured faculty development programs and incentives to encourage engagement in simulation-based learning.
- Simulation-Integrated Leadership Training: Expanding simulation-based leadership and crisis management training was identified as a key priority.

Credentialing

- Future of Simulation: Standardized Curricula and Credentialing: Participants discussed the need for a standardized certification process for simulation training across healthcare professions, aligning with SSH's goal to evolve credentialing programs.
- Simulation-Integrated Residency Onboarding: The session proposed structured simulation boot camps for new residents as part of credentialing and competency evaluation.
- Cross-Institutional Simulation Standardization: Calls for international accreditation and standardized simulation training frameworks align with SSH's mission to expand credentialing efforts.
- Simulation for High-Stakes Competency Evaluations: Discussions emphasized simulation's growing role in credentialing advanced practitioners and experienced physicians.
- Simulation Accreditation and Certification Standards: The discussion around implementing competency-based certification programs for simulation training aligns with SSH's mission to evolve credentialing programs.

- In-Situ Simulation for Code Blue Training: Calls for more frequent emergency response simulations to ensure competency-based skill development in hospital settings.

Organizational Sustainability & Growth

- Faculty Development and Leadership Buy-In: The session highlighted barriers to faculty engagement in simulation training and the need for structured faculty mentorship programs to ensure long-term sustainability.
- Financial and Administrative Barriers: Participants addressed funding constraints and proposed industry partnerships and alternative financing models to sustain simulation training programs.
- Global Simulation Collaboration Networks: Participants proposed platforms where educators and institutions can share best practices and training content, reinforcing SSH's goal of building a sustainable global simulation community.
- Remote VR-Based Training for Rural Healthcare Workers: The session highlighted the need for scalable, VR-based training programs to support rural and underserved healthcare providers.
- Faculty Development Incentive Programs: The session emphasized the need for financial support and protected time for educators engaged in simulation training.
- Collaboration for Simulation Standardization: Increased cooperation between institutions and regulatory bodies was highlighted as essential for developing standardized assessment frameworks.

Novel Ideas and Future Directions

- AI-Driven Personalized Training: AI-generated training scenarios tailored to individual learners based on performance data.
- Simulation for Healthcare Leadership Training: Using simulation to train administrators and policymakers in decision-making and healthcare crisis response.
- VR vs. In-Person Simulation Effectiveness Studies: Research comparing virtual and in-person training models to determine optimal learning outcomes.
- Simulation for System-Wide Safety Initiatives: Implementing simulation-based risk management strategies to improve patient safety.
- AI-Assisted Standardization Tools: Leveraging AI to create consistent training and assessment models across institutions.
- AI-Driven Clinical Decision Support: AI-powered simulation models that provide real-time guidance and performance assessments.
- Standardized Global Simulation Accreditation: Establishing an internationally recognized credentialing process for simulation training.
- Scalable VR-Based Learning Modules: Using VR to provide immersive, standardized training for remote and underserved healthcare workers.
- Interdisciplinary Simulation Training: Expanding simulation's reach across various medical disciplines to foster collaboration.
- Simulation for Policy Development: Using simulation models to inform healthcare policy and regulatory decisions.

- In-Situ Simulation for Code Blue Training: Structured emergency response training integrated into hospital workflows.
- Faculty Development Incentive Programs: Financial and time-based incentives for simulation educators.
- Global Simulation Accreditation Standards: A formalized accreditation framework for simulation educators and professionals.
- Simulation for Leadership Training: Expanding the role of simulation in leadership development and crisis management training.
- Psychological Safety in Simulation: Research into ensuring a supportive, stress-mitigated learning environment.

Conclusion

The **Healthcare Simulation 2050: QI – Patient Safety** discussions collectively underscored simulation's transformative role in advancing patient safety, competency-based education, and crisis preparedness through greater standardization, faculty engagement, and technological innovation. Across all sessions, participants emphasized the impact of AI, VR, and scalable training models in reshaping simulation-based learning, alongside the need for global accreditation, interdisciplinary collaboration, and sustainable financial and operational models. Ensuring equitable access, promoting faculty development and incentives, and fostering psychological safety were identified as essential to building a robust, future-ready simulation ecosystem—one driven by collective action among educators, institutions, industry leaders, and governing bodies.

Chapter 4: Advanced Practice Providers

Introduction

this chapter analyzes the content of the Healthcare Simulation 2050: Advanced Practice Providers Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Expanding Access to Simulation: The session emphasized advocating for simulation adoption in non-academic hospitals and healthcare systems. By promoting simulation as a tool for improving patient safety and training efficiency, this aligns with SSH's goal of engaging regulatory bodies and funding agencies.
- Equity and Access in Simulation: The discussion on low-cost, high-impact simulation methods in resource-limited settings highlights the importance of policy advocacy to ensure broader access to simulation technologies.
- Legislative and Advocacy Efforts for Simulation: The session highlighted the need for greater representation of simulation professionals in policy discussions. The push for standardized accreditation and certification criteria aligns with SSH's goal of engaging with regulatory bodies.
- Expanding Access to Simulation: Advocacy efforts should focus on promoting simulation as a tool for training healthcare professionals in resource-limited areas, including rural and underserved communities.

Research & Innovation

- Technological Innovation in Simulation: The session explored novel simulators for pulmonary and obstetrics (OB) training, as well as AI-driven competency assessments. This supports SSH's goal of fostering research and securing funding to advance simulation science.
- Integration of Generative AI: AI-driven simulations were discussed for competency tracking and automated assessments, aligning with SSH's push toward leveraging AI and digital innovations in research and practice.
- AI and Emerging Technologies in Simulation: AI is increasingly being used for assessment, feedback, and automation of simulation-based training. Ethical considerations regarding AI replacing human judgment were discussed, aligning with SSH's focus on securing funding for simulation research.
- Sustainable Simulation Technology: The discussion on using 3D printing and biodegradable materials to reduce waste in simulation training supports SSH's innovation initiatives.

Education & Learning

- Integration of Simulation into APP Education: The breakout session reinforced the importance of embedding simulation into curricula across all levels of education, from undergraduate programs to fellowships.
- Simulation as a Standardized Assessment Tool: Discussions on simulation for high-risk procedure credentialing and competency evaluations align with SSH's initiative to develop structured, competency-based learning pathways.
- Patient-Centered Simulation: The proposal for simulation-based patient training programs (e.g., physical therapy and chronic disease management) highlights the evolving role of simulation in healthcare education beyond providers.
- Simulation's Role in Patient Safety and Crisis Training: Hospitals are integrating simulation into patient safety initiatives, such as hemorrhage management and central line training. This aligns with SSH's goal of expanding educational content to improve real-world patient outcomes.
- Simulation-Integrated Patient Discharge Training: The session discussed the potential for simulation to be used in educating patients and caregivers about post-hospital care. This extends simulation's role beyond healthcare providers to include patient-centered education.

Credentialing

- Assessment and Accreditation: Institutions are leveraging simulation for formative and summative assessments, ensuring that providers meet accreditation standards. This supports SSH's mission to evolve credentialing programs.
- Simulation for Cross-Disciplinary Integration: The potential for simulation in credentialing interdisciplinary professionals (e.g., engineers and architects working in healthcare) aligns with SSH's vision of expanding certification initiatives.
- Competency-Based Simulation Assessments: The session emphasized the role of simulation in evaluating healthcare professionals' clinical competency. AI-driven tools are being explored to provide real-time learning analytics.
- Standardized Measurement Frameworks for Simulation: Developing universal competency metrics will help ensure consistency in credentialing processes. This supports SSH's mission to evolve credentialing standards.

Organizational Sustainability & Growth

- Faculty Development and Resources: The session emphasized the need for structured faculty onboarding and professional development, ensuring long-term sustainability for simulation programs.
- Workforce Development and Training Models: The discussion on apprenticeship models and hybrid simulation-clinical training highlights the need for structured pathways to sustain simulation as a core element of workforce education.
- Faculty Development and Interprofessional Education: The discussion highlighted the need for structured faculty onboarding and interprofessional collaboration to sustain simulation programs. Faculty engagement remains a key challenge.

- Financial and Administrative Challenges: Many simulation centers struggle with funding, requiring justification of simulation's return on investment (ROI) to hospital administrators. Industry sponsorships and alternative funding models were discussed as solutions.

Novel Ideas and Future Directions

- AI-Powered Simulation Assessment: AI-driven tools that provide real-time feedback and learning analytics.
- Mobile Simulation Units: Expanding traveling simulation centers to reach rural areas.
- Simulation-Integrated Leadership Training: Using simulation for executive training and crisis management in healthcare organizations.
- Public-Private Partnerships for Simulation Expansion: Encouraging collaboration between tech companies and healthcare organizations to improve simulation accessibility.
- Global Simulation Collaboration Networks: Platforms for educators to share best practices and training content worldwide.

Conclusion

The **Healthcare Simulation 2050: Advanced Practice Providers** discussions highlighted simulation's vital role in advancing patient safety, competency-based education, workforce development, and interdisciplinary collaboration. Emphasizing AI integration, faculty development, and sustainable funding models, participants reinforced the need for global collaboration and continued advocacy for simulation accreditation. Aligned with SSH's strategic pillars, the sessions affirmed that simulation is a cornerstone of healthcare quality and professional training, with ongoing efforts in advocacy, research, education, credentialing, and sustainability essential to shaping the future and impact of healthcare simulation.

Chapter 5: Health Sciences

Introduction

this chapter analyzes the content of the Healthcare Simulation 2050: Health Sciences Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Standardization and Legislative Advocacy: The session highlighted the need for standardized guidelines and legislative support to integrate simulation into healthcare accreditation and policy frameworks.
- Equity in Simulation Access: Participants discussed disparities in simulation availability, advocating for shared regional simulation hubs to address gaps in rural and resource-limited areas.
- Standardization of Simulation Curricula: The session emphasized the need for standardized simulation policies to ensure equal training opportunities, supporting SSH's advocacy for integrating simulation into accreditation requirements.
- Healthcare Equity in Simulation: Discussions highlighted disparities in access to simulation-based training and the need to develop policies that ensure diverse representation and equitable distribution of resources.
- Standardization and Accessibility in Simulation: The session emphasized the need for universal simulation standards to ensure consistency across institutions, aligning with SSH's advocacy for structured accreditation and certification requirements.
- Financial Incentives for Simulation Training: Proposals included government grants and tax incentives to increase institutional adoption of simulation-based training.

Research & Innovation

- Technology Integration in Simulation: Digital twins, virtual reality (VR), artificial intelligence (AI), and wearable technology were explored as innovative tools for enhancing simulation-based education.
- Integration of Research and Practice: The session proposed using simulation for testing new healthcare workflows, policies, and technologies before real-world implementation.
- Technology Integration and AI Ethics: The session explored the role of AI-driven simulations and the ethical concerns surrounding their implementation, aligning with SSH's focus on advancing research in simulation.
- Sustainable Simulation Models: Participants proposed eco-friendly simulation equipment to reduce costs and minimize environmental impact, supporting SSH's goal of fostering innovative simulation science.

- AI in Simulation-Based Learning and Assessment: AI-powered simulations are being explored for competency tracking, real-time assessment, and adaptive learning models, supporting SSH's mission to foster research in simulation technology.
- Simulation in Public Health Training: The use of simulation for large-scale public health emergency preparedness aligns with SSH's focus on advancing simulation's role in research and innovation.

Education & Learning

- Interprofessional Education (IPE) and Simulation: The session reinforced the importance of standardizing interprofessional simulation training to ensure consistency across healthcare disciplines.
- Simulation-Based Training for Humanistic Skills: Emphasis was placed on empathy, communication, and teamwork through simulation-based de-escalation training and challenging conversation scenarios.
- Decentralized Learning Models: Mobile and VR-based simulation setups were proposed to expand access to simulation training beyond traditional healthcare environments.
- Interprofessional Education (IPE) and Collaboration: The breakout session reinforced the importance of using simulation to train interdisciplinary teams and improve communication among healthcare professionals.
- Hybrid Learning Environments: The combination of physical task trainers with virtual and augmented reality was discussed as a method to enhance healthcare training.
- Faculty Training and Professional Development: The session reinforced the importance of structured faculty mentorship programs and training initiatives to ensure sustainability in simulation-based education.
- Patient-Centered Learning Models: Discussions focused on expanding standardized patient programs and integrating patient engagement strategies into simulation-based learning.

Credentialing

- Simulation's Role in Accreditation and Credentialing: The session explored how simulation-based competency assessments can be incorporated into professional certification processes.
- Professionalization of Simulation Experts: There was a call for formalized training programs and credentialing pathways for simulation educators, aligning with SSH's mission to evolve credentialing standards.
- Standardized Simulation Certification: The session proposed the development of a national certification process for simulation-based education professionals, aligning with SSH's efforts to evolve credentialing programs.
- AI-Assisted Patient Simulations: AI-driven adaptive simulations were identified as a tool for competency assessment and training validation, supporting credentialing and professional certification.

- Simulation-Integrated Certification Programs: Participants discussed the possibility of using simulation as a mandatory component of professional licensure, aligning with SSH's efforts to evolve credentialing programs.
- Virtual Standardized Patients: AI-generated patient simulations were proposed as a tool for medical training, supporting SSH's goal of expanding simulation-based certification opportunities.

Organizational Sustainability & Growth

- Infrastructure and Resource Allocation: Funding constraints and faculty workload were identified as major challenges in sustaining simulation programs, requiring centralized budgets and shared resources.
- Simulation as a Standalone Infrastructure: Participants envisioned independent simulation centers that serve as hubs for education, research, and healthcare workforce development.
- Simulation Infrastructure and Operational Efficiency: The session highlighted the challenges institutions face in maintaining dedicated simulation centers and the need for improved infrastructure to support growing demand.
- Virtual Simulation-Based Policy Testing: VR-based models were proposed for testing and refining healthcare policies before full implementation, aligning with SSH's strategic goal of integrating simulation into healthcare governance.
- Financial Sustainability and Industry Partnerships: The session emphasized securing long-term funding for simulation programs through industry collaborations, government support, and institutional investment.
- Collaboration Between Educators and Institutions: Increased cooperation among educators, institutions, and industry partners was highlighted as essential to sustaining simulation-based learning programs.

Novel Ideas and Future Directions

- Ethical Standards for Technology Integration: Proposals for updating ethical guidelines to include standards for AI and technology use in simulation-based training.
- Human and Machine Collaboration: Envisioning AI and robotics as partners in healthcare teams to support decision-making and improve efficiency.
- Expanding Legislative Support for Simulation: Advocacy for policy changes to mandate simulation in accreditation requirements across all healthcare disciplines.
- Cultural Shift Toward Simulation: Efforts to redefine simulation as an essential component of healthcare education rather than a supplementary tool.
- AI-Driven Competency Assessment: AI-powered real-time feedback models that assess clinical decision-making and procedural skills.
- Virtual Reality for Policy Development: Using VR to test new healthcare regulations before implementation.
- Eco-Friendly Simulation Equipment: Developing biodegradable and reusable simulation models to reduce costs and waste.

- Cross-Industry Collaboration: Partnering with tech and engineering firms to innovate simulation models for healthcare training.
- Standardized National Simulation Certification: Establishing a formalized credentialing process for simulation educators and professionals.
- AI-Driven Learning Analytics: AI-powered models that personalize simulation experiences based on learner performance.
- Virtual Standardized Patients: Expanding AI-generated patient interactions for advanced medical training.
- Simulation-Integrated Certification Programs: Using simulation as a standard component of professional licensing exams.
- Public-Private Partnerships for Simulation Expansion: Encouraging medical technology companies to support simulation-based training initiatives.
- Simulation for Workforce Development: Utilizing simulation for ongoing skill enhancement and competency evaluations in healthcare institutions.

Conclusion

The **Healthcare Simulation 2050: Health Sciences** discussions highlighted both the challenges and opportunities in advancing simulation-based healthcare education, emphasizing the need for standardization, equity, and interdisciplinary collaboration. Participants underscored the critical importance of ethical AI and VR integration, faculty development, and financial sustainability in shaping the future of simulation. As simulation evolves into a core component of healthcare training, efforts must focus on improving infrastructure, credentialing, and accessibility while promoting patient-centered learning and AI-driven assessments. Moving forward, collaboration among educators, institutions, and industry partners will be essential to ensuring equitable, evidence-based, and high-quality simulation-based education worldwide.

Chapter 6: Health Systems – Leadership

Introduction

this chapter analyzes the content of the Healthcare Simulation 2050: Health Systems - Leadership Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Standardization and National Advocacy for Simulation: The session emphasized the importance of national policy efforts to integrate simulation into healthcare accreditation and certification, aligning with SSH's advocacy goals.
- Public Awareness and Advocacy Initiatives: There was a call to promote simulation through media campaigns and engagement with policymakers, ensuring greater recognition of its value in healthcare.

Research & Innovation

- AI Integration and Automated Benchmarking: AI-driven tools are being explored for continuous feedback, performance tracking, and personalized learning experiences, supporting SSH's focus on advancing simulation science.
- Resilience Engineering in Simulation: A shift toward using simulation to study successful adaptations in high-risk environments rather than just focusing on error prevention was discussed.

Education & Learning

- Simulation for Healthcare Workforce Development: The session emphasized the role of simulation in supporting professional retention, particularly in high-stress fields such as nursing and emergency medicine.
- Longitudinal Assessment in Simulation: AI-assisted tracking of trainees from education through clinical practice was proposed as a way to enhance competency-based assessments.

Credentialing

- Return on Investment (ROI) and Measuring Simulation Impact: Administrators require standardized assessment frameworks to measure simulation's economic and clinical impact, aligning with SSH's mission to evolve credentialing and certification programs.
- Simulation-Based National Database: A centralized platform was proposed to track simulation training outcomes and performance metrics, ensuring data-driven improvements in credentialing processes.

Organizational Sustainability & Growth

- Resource Distribution and Equity in Simulation Access: The disparity in simulation resources between well-funded and underfunded healthcare institutions was highlighted, emphasizing the need for collaboration and shared simulation hubs.
- Interdisciplinary Collaboration for Simulation Standardization: Healthcare leaders, policymakers, and educators must work together to establish unified simulation training standards across professions.

Novel Ideas and Future Directions

- AI-Assisted Longitudinal Assessment: Using AI-powered analytics to track healthcare professionals from training through clinical practice.
- Standardized Measurement Frameworks: Developing universal impact metrics for simulation-based patient care and workforce readiness.
- Public Advocacy for Simulation in Healthcare: Promoting simulation's role in healthcare education through policy initiatives and awareness campaigns.
- Resilience Engineering in Simulation: Using simulation to study and improve high-stakes decision-making in dynamic environments.
- Simulation as a Core Component of Workforce Retention: Leveraging simulation to improve job satisfaction and reduce burnout among healthcare professionals.

Conclusion

The Healthcare Simulation 2050: Health Systems - Leadership Summary emphasized the need for standardized simulation practices, equitable resource distribution, and AI-driven innovations. Participants highlighted the importance of advocacy to demonstrate simulation's ROI and impact on patient care. Moving forward, national policy efforts, interdisciplinary collaboration, and sustainable funding models will be critical to ensuring the widespread adoption of high-quality simulation-based education.

Chapter 7: EMS – Prehospital

Introduction

this chapter analyzes the content of the Healthcare Simulation 2050: EMS - PreHospital Summary and maps its discussions to the five strategic pillars outlined by the Society for Simulation in Healthcare (SSH). Each theme discussed in the breakout session is categorized based on its alignment with SSH's strategic objectives: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Standardization in Simulation Practices: The session highlighted the need for accrediting bodies to define clear standards for EMS simulation. Ensuring uniformity in training aligns with SSH's goal of engaging with regulatory agencies and stakeholders.
- Expanding Access to Simulation: The discussion emphasized advocating for simulation expansion in underserved areas and resource-limited EMS providers, ensuring broader access to simulation-based training.
- Industry Collaboration and Simulation in Emergency Medicine: The session emphasized forming partnerships with organizations like the American Heart Association and the National League for Nursing to help shape simulation-based training content. This aligns with SSH's advocacy efforts to engage with industry and regulatory agencies.
- Regulatory Standardization for EMS Simulation: The discussion highlighted inconsistencies in simulation regulations across different states, emphasizing the need for national simulation training standards.
- Simulation's Role in Regulatory Compliance and Accreditation: The session emphasized how healthcare institutions are incorporating simulation to ensure compliance with evolving regulations. This aligns with SSH's advocacy efforts to integrate simulation into policy and accreditation discussions.
- Standardized National Simulation Certification: Participants proposed a unified certification process for simulation professionals, supporting SSH's goal of engaging with regulatory and accreditation bodies.

Research & Innovation

- Integration of Advanced Technologies: AI, VR, AR, and extended reality (XR) were discussed as scalable and cost-effective solutions for EMS training. The use of tools like HoloLens for live feeds and teleconsultation aligns with SSH's focus on advancing simulation science.
- Simulation as a Predictive and Analytical Tool: Participants envisioned simulation as a method to predict and prevent adverse events, aligning with SSH's goal of leveraging simulation research for systemic improvements.
- AI-Driven Assessment and Predictive Surveillance: AI-powered simulation models are being developed to assess learner performance, anticipate patient needs, and provide

real-time training feedback. This supports SSH's goal of fostering research and securing funding for AI-driven simulation advancements.

- Wearable Simulation Devices: The session explored integrating physiological tracking into simulation-based training to enhance realism and learner engagement.
- AI, Ethics, and the Future of Automated Training: AI-driven simulation models must balance automation with human oversight. Ethical concerns about AI replacing traditional instruction were discussed, aligning with SSH's research initiatives.
- Blockchain Credentialing for Simulation-Based Learning: The session explored blockchain-based credentialing for secure tracking of simulation training and certification, supporting SSH's innovation goals.

Education & Learning

- Simulation for High-Risk, Low-Frequency Scenarios: EMS training should focus on rare but critical events such as pediatric emergencies and trauma, ensuring healthcare professionals are adequately prepared.
- Patient-Centered Simulation: The proposal to involve patients and caregivers in simulation-based training aligns with SSH's initiative to expand simulation beyond healthcare providers.
- Simulations Embedded in Daily Workflows: Integrating simulation into routine EMS practices ensures continuous learning and real-time assessments, a key component of sustainable education models.
- High-Fidelity Simulators and VR-Based Training: The breakout session reinforced the importance of integrating virtual reality (VR) and augmented reality (AR) into EMS simulation to create immersive learning environments.
- Simulation for Workforce Development and Competency-Based Training: Discussions highlighted simulation's role in upskilling paramedics, emergency responders, and even engineers and software developers working in healthcare technology.
- Simulation for Disaster Preparedness: Virtual reality disaster simulations were proposed to train emergency personnel for large-scale crisis scenarios.
- Faculty Development and Training: The session reinforced the importance of structured faculty mentorship programs and engagement strategies to ensure long-term sustainability in simulation-based education.
- Simulation for Leadership and Crisis Management Training: Discussions focused on using simulation to train hospital administrators and emergency response teams in high-stakes decision-making.

Credentialing

- Recognizing Simulation as a Profession: Participants advocated for official recognition of simulation educators and specialists. Developing standardized career pathways aligns with SSH's mission to evolve credentialing.
- Democratizing Expertise Through Simulation: Using AI-driven digital twin models to replicate expert behaviors supports SSH's goal of expanding simulation-based certification opportunities.

- Standardizing Competency-Based Training Assessments: AI-based assessments are being used to measure clinical competency, ensuring that EMS professionals meet credentialing and certification standards. This aligns with SSH's mission to evolve credentialing programs.
- Simulation for Home Care Training: The session discussed using simulation to train caregivers on trach and ventilator care, expanding the application of simulation beyond EMS professionals.
- Simulation-Based Quality Improvement Programs: The use of simulation to assess and improve hospital quality assurance aligns with SSH's initiative to evolve credentialing programs.
- Simulation-Integrated Accreditation Programs: The session discussed how medical and nursing schools are increasingly incorporating simulation into accreditation requirements.

Organizational Sustainability & Growth

- Faculty Development and Interdisciplinary Collaboration: The session highlighted the importance of engaging professionals from non-healthcare sectors (e.g., robotics, engineering) to enhance simulation technology.
- Financial and Administrative Challenges: EMS simulation programs face funding constraints, requiring justification of return on investment (ROI) to sustain long-term training initiatives.
- Financial and Operational Barriers to Simulation Adoption: The session identified challenges related to funding EMS simulation programs, requiring industry sponsorships and government funding to sustain training initiatives.
- Cross-Industry Collaboration for Simulation Expansion: Proposals were made for interdisciplinary partnerships with engineering and robotics teams to enhance EMS simulation technologies and workflows.
- Financial Sustainability and Cost Management: The breakout session highlighted the importance of securing long-term funding for simulation programs through industry partnerships, government grants, and external training contracts.
- Virtual Reality for Policy Development: Participants explored VR-based policy testing, allowing healthcare leaders to simulate the impact of new regulations before implementation.

Novel Ideas and Future Directions

- AI-Driven Real-Time EMS Training: AI-assisted simulations that provide immediate feedback on EMS procedures and decision-making.
- Mobile Simulation Units: Traveling simulation labs designed for on-site EMS training in rural and underserved areas.
- Simulation-Integrated Leadership Training: Using simulation for crisis management and team coordination training in EMS settings.
- Cross-Industry Collaboration for Simulation: Partnering with aerospace and military sectors to adapt high-fidelity simulation models for EMS.

- Public-Private Partnerships for EMS Simulation: Encouraging medical technology companies to invest in simulation-based EMS training programs.
- AI-Driven Real-Time Simulation Feedback: AI-powered systems that provide immediate feedback on EMS procedures and decision-making.
- Mobile Simulation Units for Rural EMS Training: Deploying traveling simulation centers for on-site training in underserved communities.
- 3D Printing for Simulation: Using printed anatomical models for hands-on procedural training, such as chest tube insertion and tracheostomy replacements.
- Embedding Simulations in Daily Workflows: Using integrated simulation training modules in routine EMS protocols to reinforce learning and decision-making.
- Public-Private Partnerships for Simulation Growth: Encouraging technology companies to invest in AI-driven simulation models for EMS training.
- AI-Enhanced Faculty Training: AI-generated coaching tools for simulation educators to improve teaching effectiveness.
- Blockchain-Based Credentialing: Secure tracking of simulation-based learning and certifications through blockchain technology.
- Simulation-Driven Quality Improvement: Integrating simulation into hospital accreditation and performance improvement programs.
- Virtual Reality for Policy Testing: Using VR simulations to model healthcare policy changes before real-world implementation.
- Standardized National Simulation Certification: A unified certification pathway for simulation professionals to improve recognition and consistency in training.

Conclusion

The **Healthcare Simulation 2050: EMS – Prehospital** discussions highlighted simulation's transformative and evolving role in advancing pre-hospital and EMS training through expanded access, faculty development, and AI-driven innovation. Participants emphasized the importance of standardization, competency-based assessments, interdisciplinary collaboration, and ethical AI integration to strengthen workforce readiness and patient safety. Leadership training, regulatory compliance, and financial sustainability emerged as key priorities for the continued growth of simulation-based education. Aligned with SSH's strategic pillars, sustained collaboration among educators, policymakers, researchers, and industry leaders will be essential to advancing operational sustainability, expanding access, and driving systemic improvements in EMS and pre-hospital care.

Chapter 8: Nursing

Introduction

This chapter analyzes the key discussions from the Nursing 2050 breakout sessions, aligned to the Society for Simulation in Healthcare (SSH) Strategic Pillars: Advocacy, Research & Innovation, Education & Learning, Credentialing, and Organizational Sustainability & Growth. Participants discussed the current state of nursing simulation, envisioned its evolution by 2050, and anticipated major challenges and opportunities.

Key Themes Mapped to SSH Strategic Pillars

Advocacy

- Regulatory Support for Simulation: Support from regulatory bodies such as NSCBN, JCAH, Magnet, ICN, and WHO is vital for expanding simulation into all nursing education and practice environments.
- Promotion of Simulation Value: Advocacy efforts must continue to position simulation as an essential part of healthcare practice, patient safety, and initial education/licensure.
- Licensure and Reimbursement Integration: Future simulations may be tied directly to licensure requirements and insurance reimbursement models, reinforcing the importance of simulation advocacy at policy levels.

Research & Innovation

- AI-Generated Simulation Scenarios: There is a vision to integrate artificial intelligence into scenario development, including sourcing data from large language models.
- XR (Extended Reality) and CAVE Integration: New technologies like XR and CAVE environments will be critical for immersive, high-fidelity training experiences.
- Customization of VR/EMR Products: Participants emphasized making virtual reality and electronic medical record (EMR) products more customizable for educational use cases.
- Caregiver Inclusion in Simulation: Simulation experiences will increasingly include caregivers for discharge teaching and transition to home care scenarios.

Education & Learning

- Standardized Nursing and Simulation Curriculum: Participants envision a national standard for nursing simulation curriculum, ensuring consistency in education across academic and clinical settings.
- Dissemination of Best Practices: Broad adoption of Healthcare Simulation Standards of Best Practice (HSSOBP) and theory-based debriefing techniques is crucial for advancing quality education.
- Satellite Internet for Remote Access: Investment in satellite technology will help bring virtual simulation access to rural and underserved areas.
- Professional Development for Simulation Facilitators: Continued facilitator education and academic degree pathways for operations specialists are necessary to sustain excellence in simulation delivery.

Credentialing

- Simulation Component in Licensure: Participants anticipate that simulation will become a requirement for nursing licensure examinations.
- Credentialing for Operations Specialists: The role of simulation operations specialists will evolve into a professional discipline requiring formal academic degrees and certifications.
- Evaluation of Outcomes and Trends: Formalized methods for evaluating simulation outcomes both at the student and post-licensure levels will become a key component of credentialing.

Organizational Sustainability & Growth

- Institutionalization of Simulation: Simulation will be fully integrated into hospital and academic systems by 2050, including resource allocation and guideline-driven program structures.
- Addressing Funding Barriers: Continued recognition and dedicated funding streams for simulation are necessary to sustain programs and promote long-term growth.
- Operational and Infrastructure Improvements: Removal of technological barriers, such as EMR/VR interoperability issues, will support the seamless integration of simulation into healthcare workflows.

Novel Ideas and Future Directions

- AI-Powered Simulation Development: Leveraging AI to create dynamic, personalized, and diverse healthcare simulation scenarios.
- Simulation as a Core Component of Licensure and Insurance Models: Positioning simulation as a requirement for regulatory and reimbursement frameworks.
- Primary Care Simulation Expansion: Increased simulation of primary care environments to mirror shifts in healthcare delivery trends.
- Cross-Functional Simulation Teams: Merging clinical, operations, and educational expertise into interdisciplinary simulation teams.
- Expanded Access to Virtual Simulation Globally: Using satellite and mobile technology to extend simulation access to remote, underserved communities.

Conclusion

The Nursing 2050 breakout sessions outlined a bold, ambitious vision for the future of healthcare simulation in nursing education and practice. By 2050, simulation is expected to be fully embedded in licensure processes, clinical training, policy development, and patient safety initiatives. Advancements in AI, XR, and data-driven customization will play a key role in making simulation accessible, personalized, and scalable. Moving forward, continued advocacy, faculty development, investment in innovation, and structured credentialing pathways will be essential to achieving this vision and transforming healthcare through simulation.

Chapter 9: Cross-Cutting Themes Identified Across All Groups

Despite representing diverse disciplines and practice environments, participants consistently identified a common set of themes that transcend individual domains and reflect shared needs for the future of healthcare simulation. These cross-cutting themes illuminate foundational priorities, such as standardization, equity, technological integration, faculty development, and sustainability, that must be addressed collectively to enable meaningful, system-wide impact

1. Standardization and Accreditation

A universal theme across sessions was the call for national and global standardization of simulation-based education:

- Common curricula, assessment frameworks, and competency expectations
- Credentialing pathways for simulation educators and operators
- Integration of simulation into professional certification, licensure, and accreditation

Participants consistently emphasized that without standardization, simulation remains unevenly implemented and difficult to scale.

2. Artificial Intelligence and Emerging Technology

AI was discussed in every session as a transformative—and potentially disruptive—force:

- AI-driven competency assessment and adaptive learning
- Virtual and augmented reality for scalable, immersive training
- Digital twins and predictive analytics for patient safety
- Ethical concerns related to bias, automation, and human oversight

Simulation is increasingly viewed as the testing ground for responsible AI deployment in healthcare.

3. Workforce Development & Competency-Based Training

Across professions, simulation is recognized as essential for:

- High-risk, low-frequency procedures
- Interprofessional and team-based training
- Longitudinal skill tracking from education through practice
- Leadership, communication, and crisis management development

Simulation is transitioning from episodic training to continuous professional competency maintenance.

4. Equity, Access, and Global Reach

Participants highlighted persistent disparities in simulation access:

- Rural and resource-limited hospitals
- Global regions without simulation infrastructure
- Nontraditional learners (patients, caregivers, community health workers)

Solutions proposed included mobile simulation units, multilingual AI-powered platforms, and regional shared simulation hubs.

5. Faculty Development and Psychological Safety

Faculty engagement remains one of the largest barriers to effective simulation programs. Key needs include:

- Formal onboarding and structured faculty development pathways
- Protected time and financial incentives
- Psychological safety for instructors and learners
- Reducing variability in debriefing and assessment

Without investment in the human infrastructure, technology alone will not achieve meaningful outcomes.

6. Organizational Sustainability and Return on Investment

Leaders stressed the need to articulate and measure simulation's impact:

- Aligning simulation outcomes with patient safety and operational metrics
- Developing ROI frameworks for administrators
- Exploring public-private partnerships and alternative funding models
- Creating centralized resources to support system-wide scalability

Sustainability requires that simulation be integrated into the business and quality strategy of healthcare systems.

Chapter 10: Strategic Insights from the Forum

This section distills the key strategic insights from cross-cutting discussions throughout the forum, highlighting areas of strong alignment and critical challenges that must be addressed. Collectively, these insights inform a forward-looking agenda for healthcare simulation that emphasizes standardization, innovation, equity, and sustainability across disciplines and systems.

Simulation as Core Infrastructure

Rather than an educational adjunct, simulation is becoming:

- A component of **institutional readiness and resilience**
- A mechanism for workforce retention, safety culture, and burnout reduction
- A driver of quality improvement and system redesign

Several groups envisioned simulation centers as essential organizational assets similar to libraries, laboratories, and IT departments.

Simulation as a Policy and Accreditation Lever

Multiple breakouts recommended:

- National advocacy for standardized simulation requirements
- Integration of simulation into certification, licensing, and reaccreditation
- Government and regulatory incentives to expand simulation access

Simulation is increasingly positioned as a **public good** and a **policy priority** for the healthcare workforce of 2050.

AI-Enabled Future of Credentialing and Assessment

AI will enable:

- Real-time competency dashboards
- Objective performance scoring
- Automated coaching and decision support
- High-fidelity virtual standardized patients

Simulation may become the backbone of AI-augmented credentialing systems over the next two decades.

Chapter 11: Synthesis: What the Future Requires

Drawing together insights from all disciplines and stakeholder groups, this section synthesizes the shared priorities, tensions, and opportunities that emerged across the forum. It attempts to inform what the future of healthcare simulation will require, strategically, operationally, and culturally, to realize its full potential in advancing patient safety, workforce readiness, and system-level transformation.

1. Advocacy & Policy

National and global standardization, expansion of access, responsible AI governance.

2. Research & Innovation

AI, VR/AR, predictive analytics, eco-friendly models, digital twins, blockchain credentialing.

3. Education & Learning

Competency-based curricula, interprofessional simulation, patient-centered simulation, hybrid and virtual learning ecosystems.

4. Credentialing

Simulation-integrated licensure, AI-driven competency tracking, formal pathways for simulation professionals.

5. Sustainability & Growth

Funding models, faculty development, system-wide integration, simulation as a strategic organizational asset.

Chapter 12: Closing Statement

The Healthcare Simulation 2050 Official Proceedings underscores the critical role that simulation will play in shaping the future of healthcare delivery, education, workforce development, and patient safety.

The integration of AI, VR, and data-driven assessment tools offers unprecedented opportunities to enhance learning and competency tracking. However, challenges remain, including standardization, funding sustainability, faculty engagement, and equitable access to simulation resources.

Moving forward, interdisciplinary collaboration, advocacy efforts, and continued research will be essential to advancing simulation as a core pillar of healthcare training. By addressing these challenges and capitalizing on emerging technologies, simulation-based education will not only improve clinical competency but also drive systemic improvements in patient safety and healthcare outcomes worldwide.

By aligning innovation with evidence-based practice and advocacy, this proceeding reports on the collective wisdom and thoughtfulness of over 200 simulation professionals. It provides information to help guide a strategic path toward a more resilient, equitable, and technologically integrated healthcare education system, enhanced by the continued development and use of simulation.

Chapter 13: Acknowledgements

The Healthcare Simulation 2050: Building a Better Future Together Forum was made possible through the leadership, expertise, and collaboration of an exceptional group of professionals dedicated to advancing the future of simulation in healthcare.

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- **QI / Patient Safety:** Lisa Barker and Allison Perry

Their collective efforts, through rigorous discussion, expert facilitation, thoughtful analysis, and forward-looking collaboration, have laid a foundation for shaping simulation-based healthcare education, workforce development, and patient safety for decades to come.

*Denotes members of the SSH Fellows Academy