VA IMMERSIVE EXECUTIVE ROUNDTABLE 2023

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VA Immersive Executive Roundtable

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The rapid expansion of immersive technology in health care over the last several years reminds us that innovation generates both enthusiasm and apprehension. By pursuing the necessary balance between the two, we forge a path for embedding immersive technology into health care delivery.

To advance the implementation of immersive technology, defined as technology combining the user's physical world with an interactive digital overlay (e.g., augmented reality, or AR) or fully enveloping the user into a completely video-captured or computer-generated environment (e.g., virtual reality, or VR), the United States (US) Department of Veterans Affairs (VA) established the VA Immersive Executive Roundtable, convening stakeholders with diverse training and expertise. The initial gathering was held April 2023, with ongoing meetings planned over the next three years. Use of immersive technology in VA, the largest integrated safety net health care system in the United States, grew from ten frontline staff across five VA medical centers to more than 2,000 frontline staff across more than 160 sites of care across all 50 U.S. states, Guam, Puerto Rico, and American Samoa. Expansion occurred over the past six years, with most growth happening in the last three (Appendix, Figures 1 and 2). To optimize results and mitigate risks, ongoing growth requires visionary, practical, and equitable guidance.

Background: Rapid Emergence of Immersive Health Care

Medical center staff began initial VA adoption, laying the foundation for an engaged, end user-centered approach. Lasting implementation, however, requires intentional alignment with a broader group of stakeholders. Identifying challenges and needs

across diverse health systems will deliver a market signal to industry and academia, increasing the likelihood that budding development correlates with relevant health care needs. To guide discussion and drive the overall use in health care forward, the VA Immersive Executive Roundtable prioritized four topics: patient safety, knowledge dissemination, evidence gathering, and technology adoption beyond government.

I. Patient Safety

Patient safety is a critical factor when considering adoption of immersive technology. The Executive Roundtable postulated that VA could inform and guide design, development, and deployment, ensuring that immersive technology in health care is safe and patient-centric by design.

Recently published data demonstrated the lack of sustainable progress in patient safety over the last two decades. Improvement is marginal at best, and sustained improvement often involves technology. Based on this, immersive technology has a potential to have a meaningful and lasting impact on patient safety. Additionally, the utilization of immersive technology for training and education in health care sets a new standard for safety. For example, we must ensure the health system is adequately prepared for emergency situations. Emergency-related training through immersive technology allows objective assessment, asynchronous training, and the ability to practice perishable skills. Ensuring competence and compliance with processes and techniques in a portable and safe space helps mitigate common and inherent risk.

II. Knowledge Dissemination

The Executive Roundtable identified the need to work collaboratively across

government, academia, industry, and the broader health care ecosystem to disseminate the knowledge and expertise of VA and others. Rogers' Diffusion of Innovation theory, where early adopters rely on smaller studies, favorable safety profiles, and positive patient-reported outcomes, while late adopters and laggards have higher requirements, is valuable and relevant for use here. Communicating what early adopters have seen and experienced, as well as the knowledge they have gained through reasonable, early risk-taking, to late adopters and laggards is critical to broader scale implementation.

Additionally, when advocating for broader adoption, knowledge dissemination helps anticipate and mitigate barriers. Some of the most common barriers include lack of awareness of the current body of evidence, assumptions related to who might utilize or be interested in utilizing the technology, minimal or no awareness of the amount implemented in health care to date, and partial understanding of the potential cost of adoption and implementation. The Executive Roundtable encouraged VA to share knowledge more broadly, including lessons learned about engagement, relative ease of use and adoption, barriers and obstacles experienced, and the direct impact to the end-user: articulating the "why" needed to enact change management.

Establishing key roles and responsibilities across a health care organization helps drive knowledge dissemination and intercepts or even prevents barriers and inaccurate assumptions noted above. Ideally, the novel roles would be structured in a new organizational division (e.g., Immersive Health Care Lab) co-locating clinical, quality, and patient safety oversight with expertise in functional standards, information security, privacy, and logistics. (Appendix, Figure 3).

III. Evidence Gathering

The Executive Roundtable recognized that, while some of the biggest health care problems today might be supported and addressed through immersive technology implementation (e.g., access to care, increasing cost of care, etc.), a challenge for adoption beyond VA is reimbursement. For payers to support broader payment and reimbursement, the right evidence needs gathering. Identifying and prioritizing clinical use cases with the strongest potential for value in the private sector (e.g., mental health, pain management, and physical rehabilitation) should be a priority. For example, research supports the use of immersive technology to decrease opioid use during painful procedures, which in turn decreases exposure to opioids while still decreasing pain and improving the patient's experience. Given the size and scale of current efforts, VA can significantly contribute to clinical outcomes and cost of care-related evidence.

Collaboration with other government agencies and interested health care systems ensures the necessary and appropriate evidence is gathered for widespread use and commercial reimbursement of immersive technology. For example, by working with the Center for Medicare and Medicaid Services (CMS) and Food and Drug Administration (FDA), VA may better understand what evidence might be needed to provide broader support for adoption and could subsequently aim to provide such evidence through rigorous and large-scale evaluation.

As an increasing amount of health outcomes evidence is generated, an implementation science-related evaluation of *how, where,* and *why* this technology could (and should) be embedded into the clinical workflow and/or the patient's health care journey must also be prioritized. Ensuring patients, providers, staff, caregivers, and payers understand the motivation, opportunity, and value driving these efforts enables lasting adoption and meaningful care delivery transformation.

IV. Technology Adoption Beyond Government

The Executive Roundtable determined success for VA is the adoption of immersive technology for health care beyond the government. The VA possesses a wealth of experience in advancing innovation beyond government (e.g., nicotine patch, first clinically implantable cardiac pacemaker, and bar code medication administration [BCMA]), and immersive technology could and should join this lineage of innovation.

For adoption beyond VA, coverage and payment must be addressed. Given how health care is financed, private health insurers are more risk averse, closely following guidance from CMS, and generally slower to adopt new methods or technologies until significant research and analysis of cost and clinical outcomes is complete. As both payer and provider, VA is not hindered by a lack of coverage or reimbursement from CMS and is able to take on earlier risk and contribute significantly to research and analysis. Recently, CMS provided coverage of VR for at-home chronic low back pain management. Similarly, Food and Drug Administration (FDA) authorized the same VR platform as a de novo device. VA's role in future adoption, particularly through use of patient-reported outcomes in conjunction with traditional review standards, is to collaborate with other relevant agencies to streamline regulation and reimbursement.

Conclusion: Defining a New Reality in Health Care Delivery and Experience

Immersive technology is at a critical inflection point and, if approached with intention and collaboration, could define the future of health care delivery and experience. The Executive Roundtable identified now as the time for VA to formalize the use of immersive technology in health care. With mindful and communal attention to the articulated themes, VA can offer patients, clinicians, staff, caregivers, and payers a roadmap to accelerating improvement in

health outcomes, reducing cost and inequity, and fostering implementation of immersive technology in the broader health care community.

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Appendix

Figure 1: Locations of Immersive Technology Use in VA, 2023

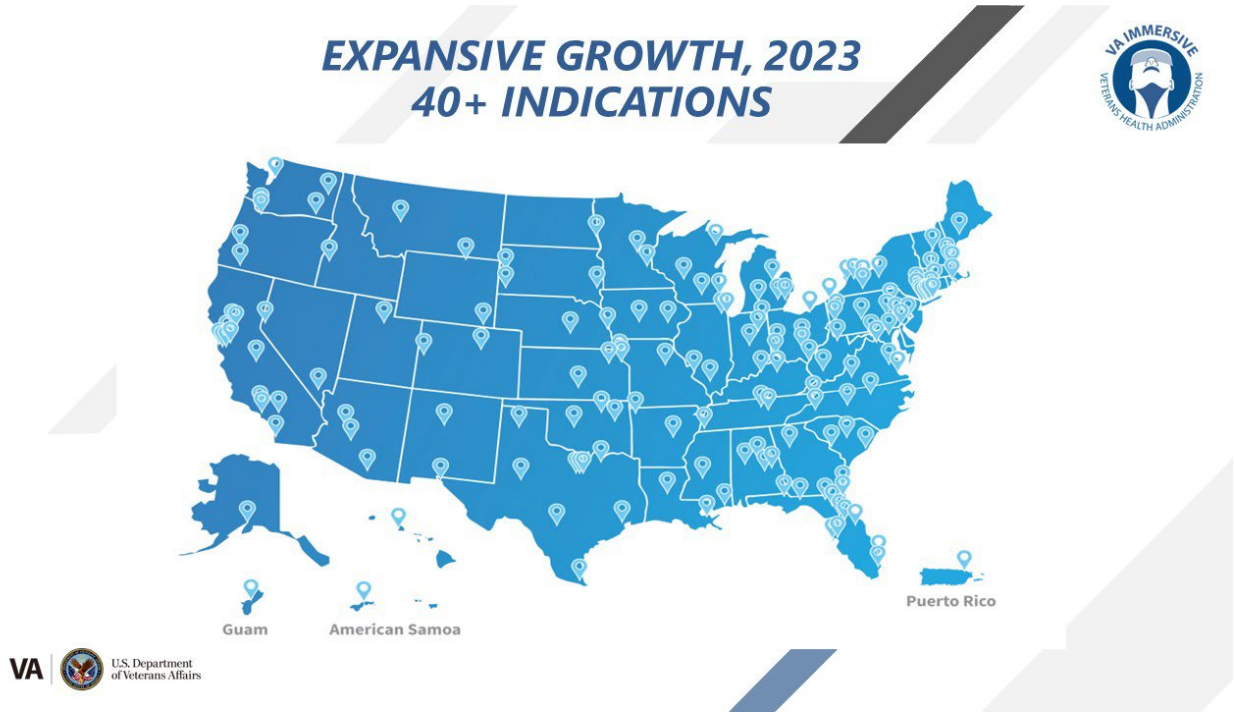

Figure 2: Sample Active Use Cases, 2023

Figure 3: Proposed Immersive Health Care Organizational Structure