2019 Pathway Award® winner

Pathway to Excellence® standards promote virtual reality innovation at the Charles George VA Medical Center

By Caitlin Rawlins, BSN, RN, and Maricon Dans, MSN, RN, NE-BC

The American Nurses Credentialing Center launched the Pathway Award® sponsored by Cerner in 2011, which supports the efforts of Pathway-designated organizations to develop initiatives that promote the use of innovation and technology to enhance and enrich a positive practice environment for nurses. This article details how 2019 award winner Charles George VA Medical Center (CGVAMC) implemented an innovative technology to address pain experienced by its patients with a $25,000 award purse.*

"Today's nurses face more complex challenges and greater demands than ever before. Cerner is honored to help recognize organizations that are advancing the nursing profession and transforming the delivery of care," said Eva Karp, DHA, MBA, RN-BC, FACHE, senior vice president and chief clinical and patient safety officer for the Cerner Corporation. "We commend Charles George VA Medical Center for their innovative work to improve the quality of patient care."

Nurses, who comprise the largest group in healthcare by profession, spend the most time with patients and are in a unique position to explore the problems they see their patients dealing with every day. The spark of recognizing a problem and searching for new solutions leads to innovation. One such problem, the national opioid epidemic, has raised opportunities for nurses to discuss the pain experienced by their patients and contribute to developing and evaluating the effectiveness of associated interventions.

Background

In 2017, a multidisciplinary team was created at CGVAMC to design, plan, and implement the Enhanced Recovery After Surgery (ERAS) protocol to improve patient outcomes. ERAS uses a multimodal approach throughout the perioperative experience to aid in early recovery from surgery.[1] Included in the CGVAMC protocol are efforts to decrease opioid use and promote nonpharmacologic modalities to help alleviate postoperative pain and improve the patient experience. The most innovative adjunct therapy to stem from CGVAMC's ERAS protocol was virtual reality (VR) immersion therapy—the Veterans Health Administration's (VHA) first distraction-focused VR program. In line with a nationwide call for decreased opioid use and VHA Directive 1137—Provision of Complementary and Integrative Health (CIH), VR immersion therapy addresses the need for patient-centered, nonpharmacologic care that focuses on veterans' well-being.[2,3]

VR is a CIH therapy that uses immersive distraction to improve pain management, decrease stress and anxiety, and improve the patient experience.[4-6] VR includes a three-dimensional, computer-generated environment that an individual interacts with in a seemingly real or physical way.[7] At CGVAMC, VR hardware includes a laptop, VR headset, and two handheld wireless controllers. The customizable software, developed by clinicians, uses high-quality graphics cards and other hardware to create a fully immersive environment. VR draws the patient's attention into a different "reality," leaving less attention to process incoming pain signals and distracting from adverse sensations or emotions.[8,9] In addition to its positive impact on the patient, VR therapy empowers licensed staff to use a nonopioid, whole-health approach to better care for veterans.

A quality improvement (QI) pilot study of VR was initiated in July 2018 on the postsurgical unit.

2D image of one of the VR environments

VR has proven successful with postoperative patients to decrease pain/discomfort, stress, anxiety, and boredom and improve the overall patient experience. Based on data collected from 18 respondents via an embedded, voluntary QI survey during the initial 3 months of the pilot study, 100% of users felt a reduction in stress and were distracted from their pain/discomfort, 89% experienced a reduction in pain, and 100% would recommend VR to their fellow veterans. In addition, use of VR contributed to a decrease in opioid usage: The data collected for ERAS showed an approximate 72% decrease in post total knee arthroplasty opioid use and an approximate 21% decrease in overall opioid use for all of surgical services.

Award proposal

Following the initial success of the pilot, CGVAMC's proposal for the Pathway Award detailed plans to spread VR immersion therapy to the Community Living Center (CLC), including short-term rehabilitation, long-term care, hospice, and the other four acute care areas. Licensed nursing staff members were to be trained to promote professional development. The proposal included purchase of three additional units, bringing the total in the facility to five to be available for use in the CLC and all acute care areas.

To put the impact of this intervention into perspective, imagine a wheelchair-bound veteran "walking" through a forest, "climbing" rocks, and getting to look closely at streams and wildflowers. This experience happened in the CLC at CGVAMC when a wheelchair-bound veteran with mild cognitive impairment and chronic pain used VR immersion therapy for the first time. This allowed the veteran to be temporarily distracted from those negative aspects of her reality, pain, immobility, and boredom while having a positive impact on her quality of life.

VR immersion therapy advances the Pathway to Excellence® practice standards as an innovative adjunct therapy. The initial pilot study of surgery patients arose from and continues to require collaboration with shared governance councils for approval and support. VR approval at CGVAMC included clinical nurses' proposals, demos, and presentations to the nursing practice council, nurse executive board, and equipment committee. Shared decision-making continues to drive the spread of VR throughout the CLC and acute care areas.

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VR therapy is easily replicated. Implementation requires minimal training to use the hardware with downloaded software. Along with the low cost, the ease of use/setup, and the lack of heavy equipment, the VR platform collects no patient-identifying information, doesn't connect to hospital networks, and requires no local information technology department support. Feedback collected from an anonymous patient survey is useful to help

Caitlin Rawlins, BSN, RN, assists a veteran with using VR therapy following a total knee arthroplasty

PHOTOS COURTESY OF CGVAMC

prove and improve the therapy's efficacy, and the survey questions are customizable to the facility or patient population.

To determine nursing staff perceptions of VR and nonpharmacologic interventions, a pre-/post-VR nursing satisfaction survey was included in the implementation plan.

Project outcomes

The VR immersion therapy project has successfully spread to the CGVAMC CLC and all inpatient areas. Options for therapy have expanded since the initial implementation to include two relaxation environments with different techniques (breathing exercises/guided meditation), two interactive/exploratory environments (woods/beach), two interactive games, virtual painting, an art/music museum, panoramic views, and a puzzle game.

Session length is 30 minutes and patients continue to complete the voluntary Likert-scale survey at the end of their experience. In addition, since September 2019, data have been collected via the computerized patient record system (CPRS) template for use with all CIH modalities, allowing CIH practitioners to track indications for use and patient responses to treatment. Qualitative statements have also been collected.

To promote professional development, two CIH nurses and 33 other nurses were trained to provide VR to patients. Implementation guides were created to aid in the training and standardization of VR.

Preintervention survey responses were received from 32 CLC staff members over a 2-week period in July 2019. Results indicated that only 34% of those individuals were satisfied with current nonpharmacologic interventions for patients and 97% believed their unit would benefit from more nonpharmacologic options. Although only 69% of those surveyed had heard of VR previously, 94% were interested in VR as an option for patients and 96% thought VR would improve quality of life.

Postintervention survey responses were retrieved in March 2020 from 38 staff members, 7 months after VR was implemented in the CLC. Of these, 50% stated they were satisfied with current nonpharmacologic interventions and 74% indicated that they had observed VR being used with veterans. Regarding the perceived efficacy of the intervention: 44% believed that VR helped decrease pain, 74% stated VR was helpful for anxiety, 77% saw a reduction in boredom, and 71%

Figure 1: Percentage of patients with 1-point or more decrease on DVPRS following VR session

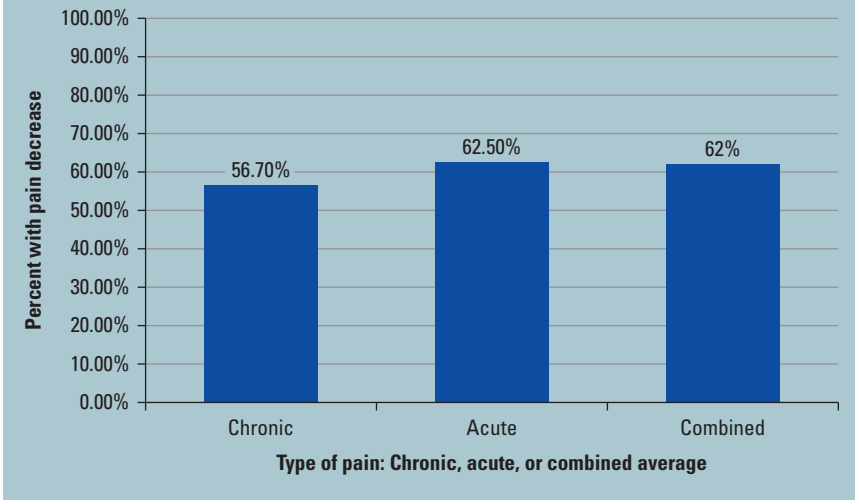


Figure 2: Pre-/post stress/anxiety levels

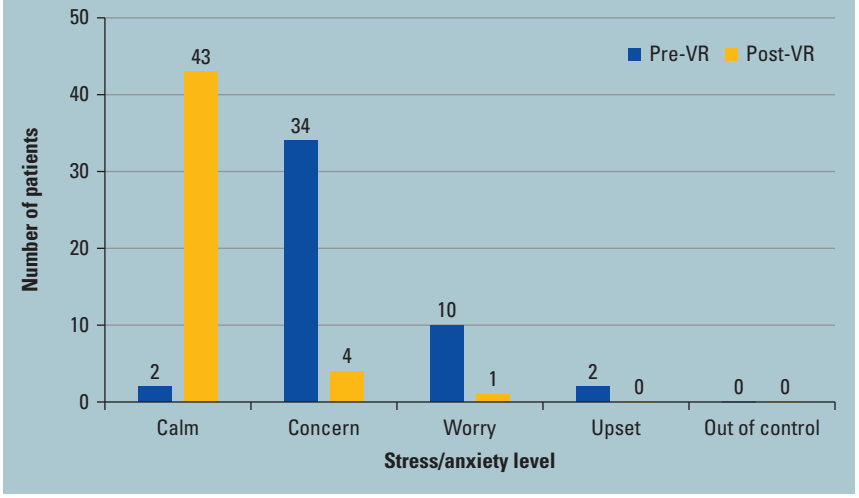


Figure 3: Relaxation before and after session

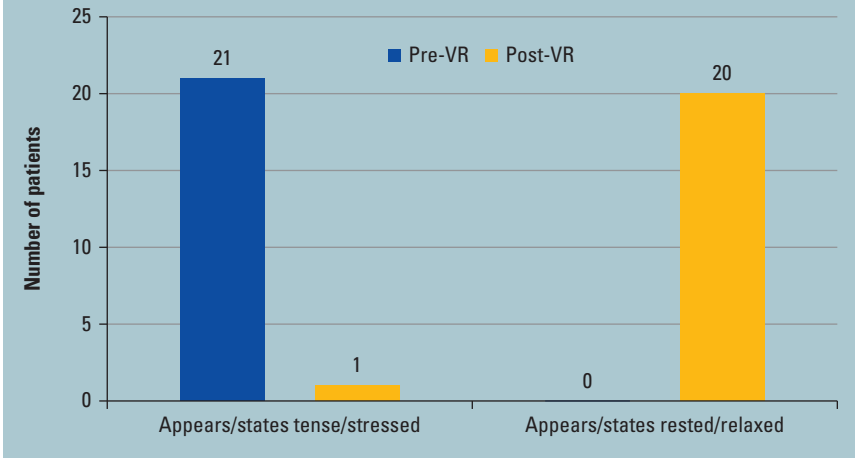
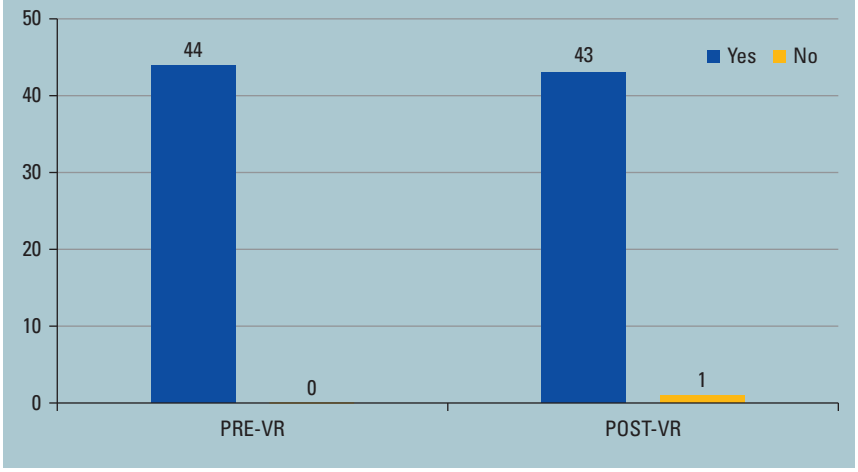


Figure 4: Are you bored? Comparison of pre- and postsession responses



indicated that VR was beneficial for improving quality of life. Overall, 71% of the staff respondents agreed that VR as a nonpharmacologic intervention had been positive for the veterans.

Since the program's initiation in July 2018, 128 patients have responded to the QI survey and 101 sessions have been documented since the use of the CPRS template was made mandatory. The average age of participants was 66 years, with the oldest participant being 88 years old, and 96% of the participants were men. Descriptive analysis has been completed for both the survey and CPRS documentation.

For each VR session, one or multiple indications may be chosen: pain, stress/anxiety, relaxation, boredom, or behaviors. The most commonly selected indications were pain (54%), stress/anxiety (48%), and/or boredom (44%).

Figure 1 shows CPRS data collected from September 1, 2019, through July 2, 2020, demonstrating that VR has successfully decreased pain levels, both acute and chronic. Of the 54 participants who used VR for pain, 62% stated a reduction in pain, defined as a decrease of at least one point on the Defense and Veterans Pain Rating Scale (DVPRS).[10] Of those with chronic pain, 56.7% (average 1.30 points) stated a decrease in pain score and 62.5% (average 1.00 points) of those experiencing acute pain stated a lower pain score following a VR session.

Figure 2 shows VR's success with stress or anxiety. The scale used and developed by CGVAMC includes the following options: calm, concern, worry, upset, or out of control. Forty-eight of the 101 participants in CPRS documentation felt upset, concerned, or worried as an indication for VR use, and 89.6% of those participants stated that they felt calm following a session.

Twenty-one of the participants appeared or stated feeling tense/stressed before the VR experience as an indication for use. Of those, 95.2% felt or appeared rested/relaxed following a session. (See *Figure 3.*)

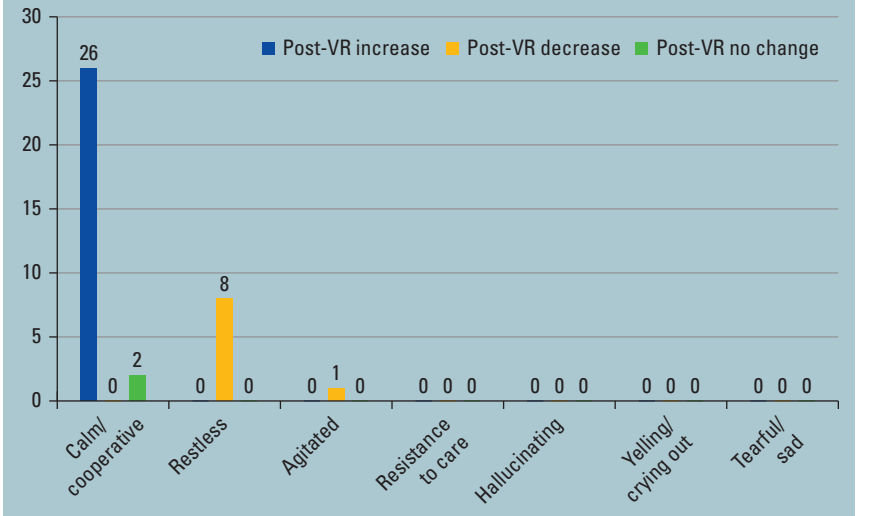
Boredom was the indication for 44 of the 101 veterans. Following a VR session, 97.7% of these veterans no longer felt bored. (See *Figure 4.*) Behaviors as an indication for VR use include the following: calm/cooperative, restless, agitated, resistance to care, hallucinating, yelling/crying out, and/or tearful/sad. Based on data collected from the 101 CPRS documented sessions, 100% of veterans using VR to aid with restless behaviors felt a decrease in restlessness following a session and 67% of those veterans also exhibited an increase in calm/cooperative behavior. (See *Figure 5.*)

According to the data collected from 128 respondents between July 18, 2018, and April 17, 2020:

- 98% would recommend VR to their fellow veterans
- 98% stated that nurses explained things in a way they could understand
- 96% indicated that they enjoyed the VR experience
- 92% said that VR distracted them from their discomfort
- 92% found the VR experience to be useful
- 89% responded that VR decreased their stress
- 87% specified that VR helped them feel calm and relaxed.

Data collected since the initiation of this project, which has a strong focus on veterans' experience and perception, demonstrate VR immersion therapy has been effective for managing pain, stress, and anxiety; relieving boredom; promoting relaxation; decreasing negative behaviors; and enhancing positive behaviors. Based on the qualitative statements collected from 101 participants, the VR experience has been overwhelmingly positive and allows veterans to temporarily escape to an alternate reality devoid of negative stressors. Secondary benefits of VR sessions have included increased participation in physical and/or occupational therapy, decreased opioid and anxiolytic use, increased stability of vital signs, and overall improvements in patient satisfaction.

Figure 5: Post-VR session behavior change



Nursing implications

VR immersion therapy is a nurse-driven CIH option at CGVAMC, allowing nurses to identify need, determine eligibility, implement the therapy, and assess patient response. VR is one of many CIH options available when placing a Nursing Integrative Health consult, making it easy for nurses to request. Any nurse with access to the CPRS may place a consult for an eligible patient, triggering a VR-trained nurse to evaluate the patient. Spreading this therapy throughout CGVAMC continues to improve the quality of care delivered to veterans.

Based on veterans' feedback about the therapy in the CLC and acute care areas, patient outcomes are improved through decreases in pain, discomfort, stress, anxiety, and boredom while also enhancing the veterans' overall experience. VR also empowers nursing staff by increasing options for safe, nonopioid interventions that distract from pain and discomfort via clinician-developed software that's both noninvasive and nontriggering. Through the ERAS protocol and VR, patients have needed less antiemetics and opioid pain medication, in turn enabling nurses to spend more time at the bedside.

Research already exists in the private sector on the use of VR for decreasing pain, stress, and anxiety, showing success in a variety of acute care situations.[8,9,11-14] Data collected from this project contribute to general knowledge by demonstrating efficacy in multiple veteran patient populations and improving holistic care for veterans. Overall, VR therapy has improved recovery, as well as physiologic and psychological

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well-being, and expansion throughout CGVAMC has continued.

Future developments

This project has recently received additional funding from the VHA Innovators Network to expand use of VR to preoperative holding, postanesthesia care, oncology infusion, and outpatient mental health. Moreover, funding has supported the creation of VR immersion therapy programs at four other VA medical centers in Biloxi, Reno, Memphis, and Little Rock.

With new VR software in development, CGVAMC's future plans for VR include aiding veterans enrolled in the outpatient integrative pain management clinic to manage chronic pain and programming for outpatient physical therapy in which VR will be used at home by postoperative orthopedic patients.

In keeping with a culture of innovation, CGVAMC was the first VA medical center to utilize VR for veterans as a nurse-driven distraction therapy for improving the patient experience. The possibilities remain limitless as VR becomes a growing trend in healthcare within the VHA and private sector. This technology is part of the future of healthcare and will play a significant role in research and care delivery while providing a continued avenue for alternative and adjunct therapies.

Propelling forward

As David Przestrzelski, MS, RN, associate director for patient care services (CNO) at CGVAMC, noted, "Beyond the excellent results for our veterans that came from this innovation, it's most gratifying that Caitlin Rawlins proposed VR through our shared governance councils during her first year of practice as an RN as her RN transition to practice project. These projects stimulate clinical inquiry among even our newest nurses who then become the professional practice leaders that Pathway standards seek to stimulate."

Living the Pathway standards fosters innovation from the bedside as highlighted by CGVAMC's VR immersion therapy project. Nurses empowered through participation in shared governance can bring forward ideas to address issues they see in their practice, as demonstrated by the frontline nurses at CGVAMC. When nurses are engaged and inspired to perform at an optimum level, they can innovate, advance nursing, and contribute to propelling their healthcare organization forward. NM

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*Beginning in 2020, the Pathway Award sponsored by Cerner will be $50,000.

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