

Why are non-pharmacological alternatives to pain management important?

Pain management is critical not only to a patient's recovery, but also to their positive engagement with a healthcare facility. Patient satisfaction is under greater scrutiny by hospital executives as it impacts CMS reimbursement rates. High patient satisfaction is also a competitive advantage as the healthcare industry becomes increasingly commoditized. On a public health level, each day 44 people die from prescription drugs overdoses — these deaths have quadrupled over the last 15 years. The CDC has emphasized non-pharmacological pain management treatment to address this rising epidemic.

How is anxiety related to pain management?

According to multiple studies, anxiety can directly impact pain levels in patients with either acute or chronic pain. Anxiety reduction techniques have proven to reduce the pain associated with medical procedures and pain episodes by disengaging the hippocampus.

Why is VR better than other distraction techniques?

Based on selective attention theory — the idea that we cannot consciously attend to all sensory input at the same time — immersive VR is extremely effective at absorbing attention away from perceiving pain, thinking about pain and experiencing anxiety that can exacerbate pain.

We designed our content based on these proven principles:

1

VR pain reduction is more significant, immersive and interactive than traditional distraction techniques.

Severe burn patients engaging in physical therapy and a virtual "SnowWorld" reported a 44% decrease in pain tolerance, a 32% reduction in anxiety and bother, and a 27% reduction in sensory pain while using VR, an effect which did not diminish over multiple treatments.¹

4

Immersive VR has the benefit of causing patients to underestimate the length of time spent in treatment.

Adult participants report a 32% greater reduction in time spent thinking about pain when using active vs. passive distraction.³

2

Pain reduction is sustained over multiple treatments.

VR continues to be effective in reducing pain when used for three (and more) treatments during severe burn wound debridement.²

3

The more immersive, interactive and high-tech the VR is, the more effective it is.

- When comparing interactive VR to passive VR (where the digital environment is merely viewed), adult participants reported a 75% greater reduction in attentive pain (anxiety and bother).³
- Among children, increasing the demand for central cognitive processing by using interactive VR assisted distraction over passive distraction enhanced its pain attenuating effects and resulted in improvements in pain tolerance.⁴

1 Schmitt YS, Hoffman HG, Blough DK, Patterson DR, Jensen MP, Soltani M, Carrougher GJ, Nakamura D, Sharar SR. (2011). A randomized, controlled trial of immersive virtual reality analgesia, during physical therapy for pediatric burns. *Burns*, 37(1), 61-8.
 2 Faber AW, Patterson DR, Bremer M. (2013). Repeated use of immersive virtual reality therapy to control pain during wound dressing changes in pediatric and adult burn patients. *Journal of Burn Care & Research*, 34(5), 563-8.
 3 Wender R, Hoffman HG, Hunner HH, Seibel EJ, Patterson DR, Sharar SR. (2009). Interactivity influences the Magnitude of Virtual Reality Analgesia. *Journal of Cyber Therapy and Rehabilitation*, 2(1), 27-33.
 4 Law EF, Dahlquist LM, Soumitri S, Weiss KE, Herbert LJ, Wohlheiter K, Horn SB. (2010). Videogame Distraction using Virtual Reality Technology for Children Experiencing Cold Pressor Pain: The Role of Cognitive Processing. *Journal of Pediatric Psychology*, 36(1), 84-94.

How is AppliedVR content different from other VR games or content?

1

Continuous play for the clinical environment

Most VR games are live-die-repeat in nature leading to interruptions in gameplay, which is not suitable for continuous distraction and effective therapeutic aid. Our content offers continuous engagement and is optimally timed for clinical effectiveness.

3

Pre-clinical and clinical testing to ensure quality and optimal user experience

New content is evaluated through several rounds of player and patient testing prior to launch. Pre-clinical testing of our Bear Blast experience vs. Smash Hit (a polished VR app on the market with similar gameplay) showed Bear Blast increases pain tolerance by 20% more than Smash Hit on average.

5

Considers the age range of patients from pediatric to geriatric

Our experiences are extremely intuitive and easy to play while still being engaging for a diverse population.

2

Prioritizes the needs of its users—hospital and clinic patients

Many patients have physical constraints or must remain relatively stationary. Our content is engaging within an approximately 50 degree range of motion, does not require the use of hands, and takes into account the physical position of a patient (in a bed or chair).

4

Minimizes the potential for nausea or motion sickness

As many patients are on medication or in conditions susceptible to nausea, our content is created to minimize nausea and motion sickness. Pink noise is used to alleviate any conflict between actual and perceived motion users may experience.

6

Prioritizes workflow integration to ensure VR is a value-add to a provider's current practice

In collaboration with medical experts, we have developed workflow integration guidelines for a variety of hospitals and specialty clinics. We use these guidelines when training providers on the optimal use of VR in each setting.

Bear Blast PAIN MANAGEMENT



Feeding Frenzy PAIN MANAGEMENT



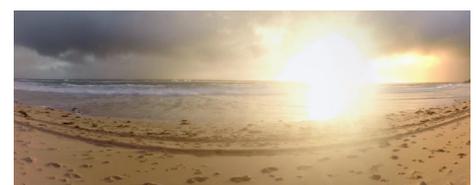
Shape Your Path PAIN MANAGEMENT



Guided Relaxation ANXIETY REDUCTION



Dream Beach ANXIETY REDUCTION



Iceland ANXIETY REDUCTION

