

# Evidence-Based Processes Incorporated in The Sanctuary

The Sanctuary leads patients through **cognitive-behavioral strategies**, **mindful practices**, and brief **informational talks** in a pleasant and supportive virtual reality environment that incorporates immersive and interactive elements. This document outlines foundational science-based concepts used to inform the design of The Sanctuary.

## *Ketamine: A Breakthrough Antidepressant*

A single ketamine treatment reliably provides same-day relief from symptoms of depression, with results often lasting a week or longer—even in treatment-resistant patients.<sup>1,2</sup> Ketamine impacts the brain effects of depression at the neurotransmitter level, normalizes network connectivity, enhances brain plasticity, reduces depression-related inflammation, and interrupts constricted patterns of brain activity and thought.<sup>3</sup>

## *Cognitive-Behavioral Strategies Enhance Antidepressant Outcomes*

Drug therapy alone typically provides only short-term benefits. Adding therapeutic cognitive and behavioral interventions to antidepressant treatments extends treatment effects<sup>4</sup> and reduces relapse rates.<sup>5</sup> Effective preparation of patient’s mindset (often referred to as “set”) —information, intention and expectation— has a positive impact on the efficacy of psychedelics and other drugs that impact patient experience.<sup>6</sup> The Sanctuary leads each patient through a variety of cognitive-behavioral exercises that provide information about ketamine’s effects, support the formulation of the patient’s intention, and add clarity to desired changes in behavior and belief. The Sanctuary also facilitates patient use of imagery in visualizing future processes and outcomes, processes shown to enhance both confidence and performance.<sup>7</sup>

## *Mindful and Self-Reflective Exercises Promote Integrated Self-Knowledge*

Mindful attention to present moment experience supports well-being beneficial stress reduction<sup>8</sup> as well as self-regulation and executive functioning.<sup>9</sup> Exercises that cultivate gentle mindful states and encourage self-reflection aid in the development of integrated self-knowledge so past experience can be utilized for reaching desired goals and outcomes.<sup>10</sup>

## *Virtual Reality and Game Elements Improve Outcomes and Patient Adherence*

Treatment can only be effective when patients participate—incorporation of virtual reality and game elements ensure an immersive experience that can increase adherence to treatment practices.<sup>11,12,13</sup> Virtual reality is as effective as in-person delivery of cognitive-behavioral treatments,<sup>14,15</sup> is effective in delivering mindful stress management exercises,<sup>16</sup> and improves outcomes in some types of treatment.<sup>17,18</sup>

## *Positive Treatment Context Boosts Therapeutic Effects*

The physical and social setting of treatment is known to have an impact on treatment efficacy with drugs that have an effect on patient experience given that context shapes the perception of the drug’s impact.<sup>19</sup> The Sanctuary provides a safe, welcoming and inspiring virtual environment that recreates a familiar and supportive treatment context anywhere the patient chooses to access the modules.



## The Sanctuary's Future Potential

The Early Access version of The Sanctuary is focused on use with ketamine in higher sub-anesthetic doses, it can easily be adjusted for use with low sub-anesthetic ketamine dosage, or other psychedelics such as psilocybin. Similarly, the format can also be employed to deliver mindfulness exercises and other mind-body practices as a standalone experience.

Additional applications may include preparing patients for use of conventional medications such as tranquilizers, sedatives, stimulants, and antipsychotics.

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