



# Behavioral Health Topic 03

# Isolation in a Behavioral Health Setting During a Pandemic

United Medical Center, Airborne Infectious Isolation Room Expansion & Upgrades, Washington, DC

## Problem: Increasing Demand

Even before the COVID-19 pandemic, hospital systems were working to expand their ability to take in more patients. In particular, behavioral health facilities have seen an influx in patients seeking care due to increased daily pressures and stresses on the brain in today's world.

Many healthcare professionals see the brain as the new frontier in medical advancement and discovery. The current state of medicine has made many advancements in the study of the human body, but so far, the brain has been the least explored and understood. As a result of increased research and treatment and the increase in stress resulting from pandemic conditions, there's been more of a need for hospitals and medical centers to expand behavioral health departments.

It is the intersection of the rise in demand for behavioral health facilities that may need to isolate patients as well as the need to treat and isolate an influx of COVID-19 patients displaying behavioral disorders, that draws these problems together. Vanderweil knows that healthcare facilities need a solution to both problems, requiring adaptive and effective engineering that can be implemented immediately.

## Challenge: Infrastructure That Safely Meets Isolation Room Standards for All Patients

Prior to the pandemic, Vanderweil was proactively developing engineering solutions to convert existing patient rooms into isolation rooms to satisfy increasing demand. The challenge we currently face is how to upgrade and/or retrofit infrastructure, such as HVAC systems, within an existing facility to meet isolation room standards including for COVID-19 patients that are also safe for behavioral health patients.

At one major healthcare facility in the Mid-Atlantic, Vanderweil was tasked with retrofitting existing isolation rooms in a Behavioral Health suite. The existing rooms were ventilated and conditioned via in-room induction units. Typical isolation rooms are designed for 100% exhaust which in this case, and most all other cases, would have required the installation of new HVAC equipment and the need for additional shaft space on multiple floors to support the vertical distribution of new ductwork. These new systems come with a substantial cost as well as an increase in overall energy consumption. In addition, since these rooms were to be used for behavioral health patients, any and all exposed equipment would need to be anti-ligature. Our team knew there was a better solution.



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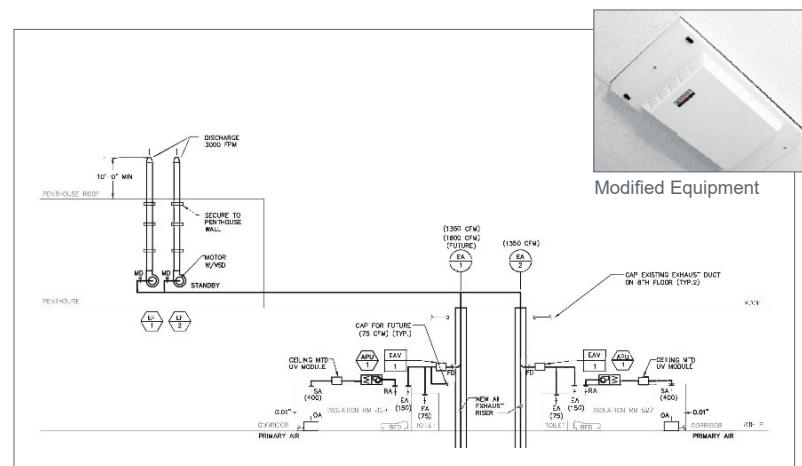
## Solution

The Vanderweil team developed an approach to meet the need, working as much as possible, within the constraints of the existing system, capabilities, and architectural layout. The solution included the installation of individual room Air Purification Systems and ultra-violet air modules that allowed for the recirculation of air within the individual Isolation Unit. The exhaust system was upgraded to include new redundant fans on the roof with constant volume exhaust boxes dedicated for each Isolation Unit. This approach reduced the need of new HVAC infrastructure and disruption to the existing floor layouts.

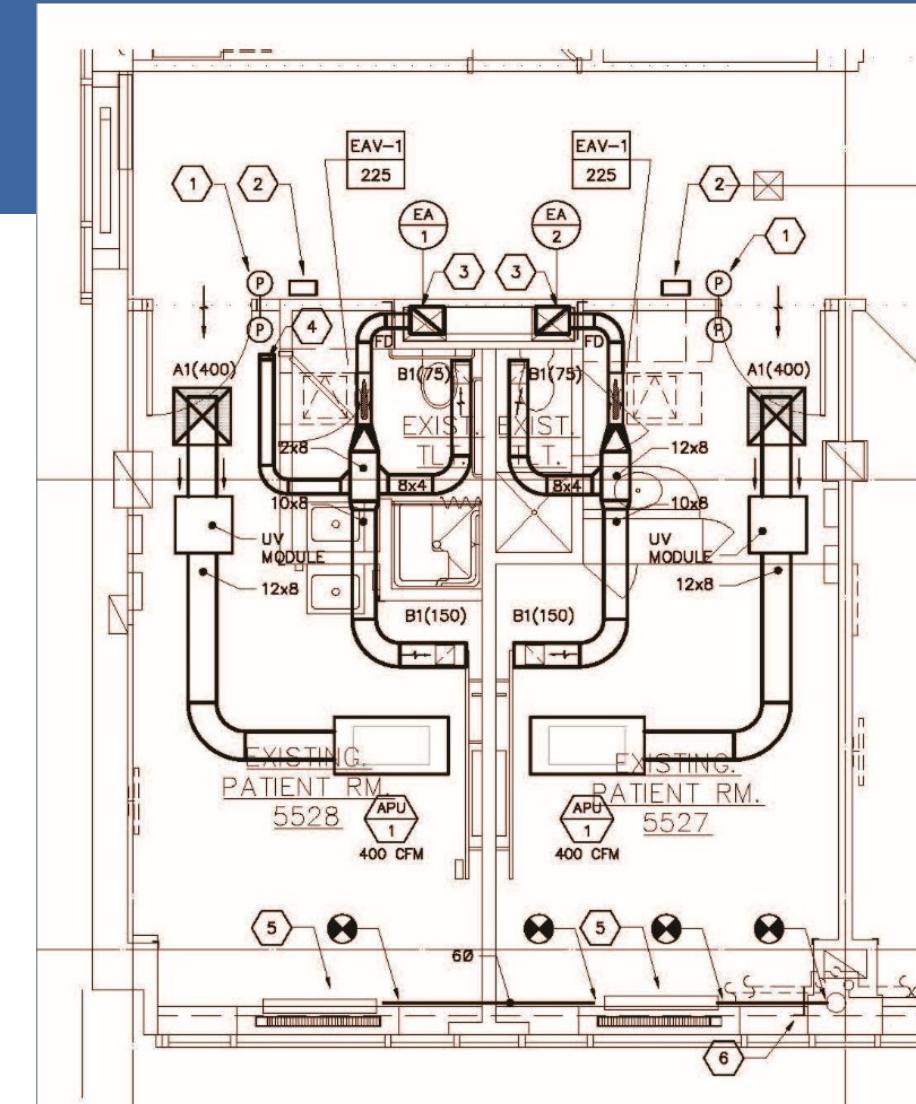
**Floor Plan Layout:** To address the potential hazard to patients, Vanderweil contacted the manufacturer of the supplemental units to work out a solution, focused on reducing the potential risk to the patients. As a result, the manufacturer devised a retrofit kit for field modification of the units to make them safer for use in a behavioral health setting.

## Outcome

Vanderweil's expertise with the design of systems for isolation rooms, the design and documentation of the systems for behavioral healthcare settings combined with our creative problem-solving approach provided this healthcare client with a unique way to safely meet the increased demand for isolation rooms including for COVID-19 in their behavioral health unit.



## Exhaust System Diagram



## Floor Plan Layout



Mount Sinai Medical Center, Ebola Virus Disease, Critical Care Unit, New York, NY



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