Pine Street Inn Case Study (1985-Current), Boston, MA

In 1985, the U.S. experienced a resurgence of tuberculosis (TB), and Dr. Ed Nardell MD, Equity Air member, Harvard Medical School professor and at that point the TB control officer for the Massachusetts Department of Public Health, led the response to an outbreak at the Pine Street Inn homeless shelter in Boston. TB experts largely assumed transmission between individuals at the shelter was unlikely because many guests had previously been exposed to TB, and reinfection was thought to be impossible. Nardell, however, discovered that reinfection was occurring at the shelter, and his findings were published in *the New England Journal of Medicine.* In pondering how to stop TB transmission at a communal center like a shelter, Nardell remembered a lecture by famed pulmonologist and TB expert Richard Riley, MD, describing ultraviolet (UV) germicidal irradiation, a method of killing airborne bacteria and viruses. Unlike UV light from the sun, which penetrates the skin and can cause cataracts or cancer, properly installed UV germicidal irradiation has no long-term or severe side effects. Nardell contacted Riley, and together they installed upper room (UR) UV air disinfection throughout the homeless shelter.

In 2021, as it became clearer that COVID-19 was also transmitted through airborne pathogens, the Pine Street Inn moved again to protect their guests and staff. This time they chose the newer Far UV (222nm) systems from Far UV Technologies, that are often referred to as whole room (WR) UV as that shorter wavelength spectrum has been proven to be safer for direct extended exposure on the skin and eyes when properly installed and as such can be directed down into the whole room to immediately treat the air and surfaces all around people without requiring air mixing into the upper room. While rigorous scientific studies did not accompany either of these installations given the inherent difficulties in gathering reliable data in a more transient environment, the more recent anecdotal case numbers at the Pine Street Inn fell to lower than 1% while the greater Boston metropolitan area encountered 7-11% infection rates. The Far UV fixtures had a higher upfront cost but comparable lifetime costs when compared to the upper room GUV systems due to lower energy and maintenance costs.

"The individuals we work with rely on us to help them move out of homelessness and into homes, and the last two years dealing with Covid have created many challenges," said Andy Zozom, SVP of Operations, Pine Street Inn. *"The pandemic has certainly made our work more complicated, and this will help us better support our guests,"* Zozom said.

Figure 1 Pine Street Inn WR UVGI fixtures on the ceilings and walls in dormitories, bathrooms, dining and communal spaces. (Source: Equity Air member PJ Piper, Far UV Technologies)