# Which Technology is more effective for Your OR / Procedure Room?

Fixed Mount Fixtures: Blue Light (405nm) or UVC (254nm)

## A comparison of pathogen inactivation over time:

With the surge in awareness of pathogens and associated infections in healthcare environments, due in part to the COVID-19 Pandemic, there is a significant need for improved disinfection of procedure and treatment rooms including; operating rooms, endoscopy rooms, radiology, and dental procedure rooms after each procedure and/or continuously. There are two very different modes of commercially available fixed-mount fixtures that rely on light to provide advanced disinfection. One mode utilizes 405nm Blue Light and the other utilizes 254nm UVC light.

The Blue Light may be operated with people in the room. The UVC light may not be operated with people in the room.

SUMMARY: The RD-Fx™ System eradicates pathogens in under 2 minutes, while the Blue Light cannot do this within 24 hours.



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#### **BLUE LIGHT:**

Figure 1 shown here is from a poster presented at ID Week 2016 and is available <u>here</u>. It is unclear how long it would take to reduce C.diff to acceptable levels for room use. Room recontamination of these pathogens may occur at rates greater than the Blue Light eradicates, thereby increasing pathogen count over time.



Figure 1. Survival in MDR-Acinetobacter (A), MRSA (B), VRE (C), and C. difficile (D) with Blue Light

The following image is from an Indigo Clean brochure found <u>here</u>.

The chart on the right is somewhat misleading because it shows the episodic system room being recontaminated over and over, but doesn't show the same recontamination for the continuous system room. What one would expect is that the continuous system contamination levels would continue to climb, not go down, with recontamination similar to the amounts shown for the episodic system. Of course this is time-dependent.

### Continuously Reduce Harmful Bacteria by 70%+ with Indigo-Clean



Clinical testing has shown Indigo-Clean can achieve a continuous 70%+ reduction of harmful bacteria<sup>2</sup> in the environment. At the same time, recently published studies show that improved cleaning can reduce HAI rates for certain organisms.<sup>3</sup>

These results, combined with the additional cost per patient due to HAI, suggest that preventing even a single infection would create a positive ROI and drive down costs for healthcare providers.

Infection Prevention specialists cannot achieve the Targeting Zero goal if 70% reduction is the best a disinfection system can offer!



Milford Regional Medical Center's Goal Targeting Zero for Nosocomial Clostridium Difficile Infection Rates Kim Knox, RN Infection Control Practicioner

#### **UVC LIGHT**:

The UVC light system is installed with fixtures placed in optimal locations to flood the room with enough UVC energy to provide the dose necessary to achieve a 3+ log<sub>10</sub> reduction of the targeted pathogen - each and every disinfection cycle. The system may be programmed to have as many different doses you may require. When a disinfection is desired, a PIN number is entered on a touchscreen controller located outside the room. The operator then selects the desired pre-programmed target pathogen and confirms that the room is empty and ready for disinfection, then the cycle begins. For SARS-CoV-2, the dose setting is 10,000µW-sec/cm^2, which is typically delivered in about 45 seconds. For C.diff, 46,000µW-sec/cm^2, which is typically delivered in about 2 minutes for a 20 x 20 room and about 3 minutes for a 30 x 30 room.

The short treatment time is achieved because the fixtures feature very high output lamps with precision-tuned mirror finish reflectors focusing the light at the point of interest. Also, since the fixtures are placed on all walls in the room, shadowed areas are greatly reduced, yielding higher efficacy in less time than point-source portable systems.

Once installed, the system is calibrated by a patent-pending process which records the received UVC intensity at the point of interest, over time. This screenshot shows the actual recorded dose profile for 3 different systems installed in three different rooms at the Asheville VAMC.



RD-Fx Location FX-101 Dental::Operatory 2A236 COVID-19 10000 FX-102 Dental::Surgical Suite 1 2A253 Spore 46000 FX-103 Dental::Surgical Suite 2 2A252

Since the profile is stored, the addition of a new dose setting is immediately available for use.

The UVC Light System addresses aerosolization of very small, fine droplets and particles - containing infectious viruses that are released into the air as a result of medical procedures. Used between each patient case, the UVC light eradicates airborne and surface pathogens.

Value

Below are photographs of one of the systems at the Asheville VAMC.



#### **CONCLUSION:**

The systems are very different in the way they perform disinfection. If fast and thorough disinfection is needed, then the UVC system is the clear choice.

	RD-Fx UVC LIGHT SYSTEM	BLUE LICHT SYSTEM
Calibrated Dose Delivery	$\bigcirc$	$\overline{\mathbf{x}}$
Rapid 3+ Log <sub>10</sub> Reduction in 2 Minutes or Less	$\odot$	$\overline{\mathbf{x}}$
Sufficient Disinfection Between Patient Cases	$\odot$	$\mathbf{x}$
Real-time, Online Data Capture and Reporting	$\odot$	×

#### **Data Distributing**

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