TISSI®
Medical Dental Systems

Scientific Summary

Potential Effectiveness of STERYBOX Against Hantavirus Airborne Transmission

Hantaviruses are enveloped RNA viruses primarily transmitted to humans through inhalation of aerosolized particles originating from infected rodent urine, saliva, or feces. Airborne exposure is considered the principal route of transmission in enclosed or contaminated environments, making environmental air-control measures an important complementary strategy for risk reduction.
According to international infection-control literature, ultraviolet germicidal irradiation (UVGI) at approximately 254 nm is recognized as an effective supplemental environmental control technology for airborne viral contamination in healthcare and indoor environments. CDC/HICPAC environmental infection-control guidelines specifically identify UVGI as effective in reducing the transmission of airborne bacterial and viral infections when properly designed and maintained .

STERYBOX utilizes a patented UV-CHRIS (Ultraviolet High Reflecting Irradiation Coil System) technology based on high-intensity UV-C irradiation at 254 nm within a mirrored stainless-steel labyrinth designed to maximize irradiation exposure of recirculated air .
The scientific testing performed on STERYBOX demonstrated:

- Up to 99.99% reduction of airborne bacterial and spore contamination within 30 minutes under controlled laboratory conditions .
- Complete inactivation (100%) of multiple microorganisms, including highly resistant spores and fungi, during functional laboratory tests .
- Significant airborne microbial reduction in real clinical hospital environments (>95%) .

Because enveloped RNA viruses such as Hantavirus are generally more susceptible to UV-C irradiation than bacterial spores, the demonstrated sporicidal and germicidal performance of STERYBOX strongly supports its potential effectiveness in reducing airborne Hantavirus contamination when aerosolized particles are present.
Importantly, STERYBOX should be considered a **complementary environmental infection-control measure**, not a substitute for standard preventive protocols. International guidelines for Hantavirus prevention continue to emphasize:

- environmental sanitation,

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- rodent control,
- safe cleaning procedures,
- personal protective equipment (PPE),
- ventilation management,
- and avoidance of aerosol generation during contaminated material handling.

Within this framework, continuous UV-C air disinfection systems such as STERYBOX may contribute to:

- reduction of airborne viral load,
- mitigation of aerosol persistence in enclosed environments,
- improved environmental biosafety,
- and support of infection-control strategies in healthcare, laboratory, emergency, veterinary, storage, and high-risk occupational settings.

Additional advantages of STERYBOX relevant to Hantavirus-related environmental control include:

- continuous operation in occupied rooms,
- fully enclosed UV-C irradiation chamber,
- absence of ozone generation,
- no HEPA filter contamination risk,
- low maintenance requirements,
- and suitability for continuous air recirculation in high-risk environments .

In conclusion, based on:

1. the established sensitivity of enveloped viruses to UV-C irradiation,
2. CDC-recognized UVGI principles for airborne viral infection control,
3. and the independent microbiological performance demonstrated by STERYBOX,

the STERYBOX system represents a scientifically credible complementary technology for reducing airborne environmental contamination potentially associated with Hantavirus aerosol transmission.