



Portable aerosol hood to reduce spread of pathogens during medical procedures

A portable, transparent isolation box that facilitates safe practice of medical procedures on patients with infectious pathogens.

IP Status: Provisional Patent Application Filed; **Application #:** 63/010,880

Applications

- Protection equipment for care providers while performing aerosol generating medical procedures
- Isolation chamber for patients carrying infectious diseases

Problem Addressed

Healthcare personnel who perform aerosol generating medical procedures such as endotracheal intubation & extubation are at acute risk of exposure to pathogens such as SARS-CoV-2. In addition, 20-30 minute mandatory waiting period between two patients significantly delays procedures and adds to the cost.

Solution

Researchers at the University of Minnesota have designed a portable isolation system for facilitating safe delivery of respiratory treatments to patients with highly infectious diseases. This system includes a transparent isolation box consisting of glove ports, a suction port fitted with HEPA filter to create negative pressure, and a partial open front through which the patient's upper body and medical equipment are introduced. The negative pressure created within the box is shown to ensure air flow can only exit through the HEPA filter, collecting infectious aerosolized particles and droplets, while leaving the air outside free of viral particles.

This isolation system has been demonstrated in hospitals to be suitable for performing aerosol generating procedures. Designed by anesthesiologists and engineers, this isolation system represents a realistic, cost-effective approach to rapidly build protection equipment for healthcare providers in direct contact with patients with infectious respiratory pathogens.

Key Benefits & Differentiators

- Mitigate risk: reduces exposure of infectious aerosols, droplets and splashes from patients to care providers
- Reduces waiting time between patients
- Easy cleaning procedure
- Can be used in ICUs or make-shift beds; portable
- Easy to manufacture with commercially available parts

Phase of Development

[FDA Emergency Use Authorization](#)

received on April 13, 2020.

Technology ID

2020-302

Category

Engineering & Physical Sciences/Design Specifications
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Life Sciences/Human Health
Life Sciences/Medical Devices
COVID-19

Learn more



Researchers

Christopher Hogan, PhD

Professor and Director of Graduate Studies, Mechanical Engineering

[External Link](http://cse.umn.edu) (cse.umn.edu)

Hai-Thien Phu, MD

Asish Abraham, MD

Kumar Belani, MD

Professor of Medicine, Department of Anesthesiology

[External Link](http://med.umn.edu) (med.umn.edu)

Thomas Dufresne

Yensil Park, PhD

Ian Marabella

Austin Andrews

Bernard Olson, PhD

Desired Partnerships

Licensee/Manufacturer to support FDA Emergency Use Authorization application.

Please contact us to share your business' needs and learn more.