



Peritoneal Oxygenation System and Method

Key Investigator

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Field

Respiratory Medicine
Emergency Medicine
Intensive Care Units
Surgical Procedures

Technology

Peritoneal Oxygenation
Respiratory Illnesses
Oxygenation Perfusion

Advantages

Pulmonary-Independent
Oxygenation
Controlled Gas Exchange
Versatile Application

Status

Available for licensing

Patent Status

US20210346582A1

UMB Docket Reference

JF-2020-108

External Reference

[Extracorporeal Membrane
Oxygenation Machine
Market Size | FMI
\(futuremarketinsights.com
\)](#)
[Acute Respiratory Distress
Syndrome: Diagnosis and
Management | AAFP](#)

Summary

The disclosed invention describes a system and method that enables gas exchange in a patient's body cavity, such as the abdomen, independent of the lungs. This system uses an inert chemical, perfluorocarbon (PFC), to facilitate oxygenation perfusion, controlled by a healthcare worker.

Market

With the increasing prevalence of respiratory illnesses and the need for effective treatments, technologies that can augment gas exchange independent of pulmonary function are in high demand. The system's ability to perfuse oxygenated PFC in the abdomen provides an effective pulmonary-independent system for gas exchange.

There is no direct measure for the market size for this technology. However, the global extracorporeal membrane oxygenation (ECMO) machine market, which is a technology used to provide both cardiac and respiratory support to patients whose heart and lungs are unable to provide an adequate amount of gas exchange to sustain life, was valued at USD 281.1 million in 2021. It is expected to expand at a compound annual growth rate (CAGR) of 5.3%. Similarly, Acute Respiratory Distress Syndrome (ARDS) is responsible for one in 10 admissions to intensive care units and one in four mechanical ventilations. In-hospital mortality for patients with severe ARDS ranges from 46% to 60%. Chronic lower respiratory diseases, including asthma, caused 142,342 deaths. Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide, and a substantial number of patients suffer from exacerbations.

While these figures don't provide a direct number of patients requiring augmented gas exchange independent of pulmonary function, they do indicate a substantial and growing need for innovative respiratory therapies.

Technology

The Peritoneal Oxygenation System and Method is a system and methods for gas exchange in a patient. This system uses an external circuit to cause oxygenation perfusion in a patient's body cavity, such as the abdomen, using an inert chemical, specifically perfluorocarbon (PFC), independent of the lungs.

The external circuit includes components configured to control properties of the chemical, including temperature, flow rate, pressure, oxygenation percentage, and carbon dioxide percentage. The system also includes safety features to reduce the likelihood of injury to the patient. Each of the safety features and chemical properties can be controlled by a healthcare worker, such as a physician, nurse, or emergency operator, for a particular patient.

The system is configured to supplement gas exchange in a patient and uses a fluid circuit to cause oxygenation perfusion in a patient's body cavity using an inert chemical fluid (e.g., PFC) independent of a patient's lungs. The fluid circuit includes many components configured to control properties of the fluid, including temperature, flow rate, pressure, oxygenation percentage, carbon dioxide percentage, and such other properties as may occur to those skilled in the art. The system causes oxygenation perfusion in the abdomen with oxygenated PFC as an effective pulmonary-independent system for augmenting gas exchange.