HeCOS

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Technology description

Background
Current home-based RAD devices work by administering air or a mixture of air and oxygen under high pressure. These Conventional positive-airway pressure therapies administered in the home setting are poorly tolerated in patients requiring respiratory assist devices. The reasons for such poor tolerance are the high airway pressure administration which, In turn, causes noxious sensation to the nose, mouth, sinuses and upper airways as well as dryness of the respiratory airways. Such poor tolerance leads to treatment non-adherence, and ineffective therapeutic benefits. Up to 50% of patients prescribed home-based RAD devices are non-adherent to therapy for these very reasons.
Invention
This invention remedies these non-adherence problems by disclosing a home-based Heliox with C02 removal system which is a self-monitoring respiratory assist device that delivers a low pressure, low viscosity (Heliox) gas to alleviate work of breathing in the home setting while monitoring and removing C02 and delivering humidification and de-humidifying gas during C02 removal.

Application area

This invention can be used to replace all home based RAD devices for use by those with respiratory ailments which are commonly treated via positive-airway pressure therapy.

Advantages

This invention has been demonstrated to be superior to the state-of-the-art in (a) theory, (b) simulations, and (c) using real data. Our simulation results show orders of magnitude in improvement, as compared to traditional methods. Real results from data closely replicate the performance of our simulations.
•Built-in safety mechanisms to sense and avoid C02 rebreathing
•Built-in dehumidification and humidification that enables adequate C02 removal while preventing dryness of mucous membranes lining the respiratory tract.
•Self-monitoring with built-in humidity, C02, and 02 sensors

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