A Novel Method for Proning Patients with Acute Respiratory Distress Syndrome

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Introduction

Acute respiratory distress syndrome (ARDS) is a lethal disease effecting around a quarter of a million patients a year in the U.S. and costs the U.S. healthcare system $9-16 billion/year. Severe cases have a greater than 50% mortality.

Proning therapy (face down ventilation) has been shown to decrease mortality by half, improve oxygenation, decrease the number of days on the ventilator, and has been strongly recommended by all major critical care societies. Despite this, only 10-33% of candidates receive this life saving therapy with the current barriers being awareness, safety concerns, and expense of the current solutions (Image 1).

Here we present a novel, patent pending medical device (Image 2) designed to address safety and cost concerns to ensure patients with severe ARDS receive appropriate therapy.

Material and Methods

Testing was performed on an existing intensive care bed at the Earl E. Bakken Medical Devices Center. Two flat, deflated layers were placed underneath a person and the upper layer was wrapped around the patient and inflated. The base was then inflated providing a cradle for the inner cylinder. Directional fabric was present on both the exterior of the inflatable shell and base reducing force required to prone the subject (Image 3).

Discussion

Our novel device is single-use, disposable solution that is compatible with existing beds and has been showing to reduce the effort required to prone patients. It has a low regulatory risk as a class I FDA device. It is safe, easy, and cost-effective solution designed to increase adoption of a proving, live saving therapy.

References:

2. Cost and Healthcare Utilization in ARDS. Semin Respir Crit Care Med. 2013;834(40).