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Neonatal Thoracotomy/ Thoracostomy Skills Trainer

A cost effective & anatomically realistic model for neonatal chest tube insertion and pericardiocentesis

Background

Chest tube insertion is a vital life saving procedure in many neonates. If performed incorrectly, the procedure could result in serious complications such as hemorrhage, perforation of lung and other serious internal injuries. Despite being critical and technically challenging, many practitioners do not receive adequate training due to unavailability of an affordable anatomically realistic model for chest tube insertion.

Figure shows pericardiocentesis using a prototype of the model

Technology

Inventors at Stony Brook University (SBU) have developed a neonatal chest tube trainer that would enable clinicians to practice needle aspiration for pneumothorax & pleural effusion, pericardiocentesis, actual test tube placement and many other procedures, to develop competencies prior to performing them on patients. Presence of trachea, bronchi, inflatable lungs, pleural chambers for air or fluid and a pericardial sac in our model enable training on several life saving interventions and procedures. The Neonatal Skills Trainer has recently been incorporated in the Neonatology curriculum at SBU and is currently being used in training Neonatal Fellows and Nurse Practitioners at SBU's School of Medicine and Nursing. The model can also be used for competence maintenance.

Patent

US Provisional Patent Filed

Advantages

- **Provides realistic simulation of several critical invasive procedures in newborns.**
- **The model was developed using actual clinical measurements of 1.0-1.5 kg and 3.0-3.5 kg infants.**
- **Artificial skin and muscle layer allows for trans illumination, visualization, palpitation of ribs and subcutaneous tunneling.**
- **Model has chambers for air or fluid as well as a pericardium**

Applications

- **Health Care**
- **Diagnostics**
- **Emergency Medicine**
- **Simulation Technology**

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