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| **Overview Statement** | **Name** | **Managed By** |
| Open Lung | OS Ventilator Ireland Community |
| **Problem / Opportunity** | | |
| COVID19 is currently spreading exponentially, in a mostly unchecked fashion, throughout the world. Infection doubling rates are as high as 2-3 days. Under simplistic models, such unchecked growth means the disease infects most of the world in months. Current statistics indicate that 15-20% of people who get it require hospitalization for respiratory failure for multiple weeks, and often need intense healthcare from medical professionals who are at severe risk treating these highly infectious patients. If infections proceed at their current pace across the globe, we will not have enough supplies like ventilators, respirators, PPE, etc. to meet demand.  There is an opportunity to evaluate, design, validate, and source the fabrication of different open source emergency medical supplies around the world, given a variety of local supply conditions. This project relates to an Open Source Ventilator called OpenLung. | | |
| **Goals** | | |
| Simplify the design and improve on component reliability for a low-cost Bag Valve Mask (BVM or AmbuBag) based emergency respirator. Allow the device to be constructed mostly of 3d printed parts. Use MIT research group and Rice University Mechanical Engineering student group designs as a starting point. | | |
| **Objectives** | | |
| 1. Design a more integral 3D printed actuation mechanism 2. Spec a good low amperage, high torque DC motor 3. Design or find and H Bridge rectifier circuit 4. Spec an interface (LCD and Buttons) 5. Spec feedback sensors for PEEP, low voltage, high- and low-pressure events 6. Outline interface visually | | |
| **Success Criteria** | | |
| * Device must be easy to mass produced * Components must be certified * Mechanical design must be small and simple * Previous research and testing in Ambu-Bag must be used * Must be adaptable to both invasive tubing and masks | | |
| **Assumptions, Risks, Obstacles** | | |
| * Assume core team is Trevor Smale, David Graham and Colin Keogh * Assume just improving on MIT research group and Rice University Mechanical Engineering student group AmbuBag based emergency respirator. * Assume facebook page is replaced by slack channel. Communication is an obstacle due to volume of messages. * Assume gitlab page is primary source of documents and information. | | |