

What's the Problem?

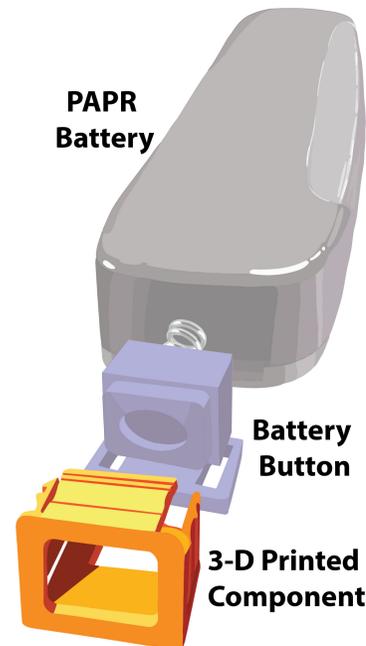
- The COVID-19 pandemic has led to increased use and turnover of personal protective equipment (PPE)
- There were equipment failures with PAPR units (3M Air-Mate and 3M Versaflo) due to a faulty component which normally allows the battery to be detached from the PAPR unit
- This single broken component renders an entire PAPR unit unusable
- With a national shortage of replacement parts, other solutions are needed to repair existing units

Our Solution

- A team from the Thomas Jefferson University Health Design Lab worked with local engineers at FKB to create a 3-D replacement model for the faulty component
- A new component (shown below in orange) was designed to function with existing battery components



HMW rapidly repair damaged PPE within the limited time frame of the COVID-19 pandemic?



- The new component was created using a desktop fused deposition modeling (FDM) 3-D printer with polylactic acid (PLA) filament
- While the new 3-D printed component seems to fit appropriately, we have not conducted robust testing
- Further study is needed to test long term durability and safety of the 3-D printed component



Our solution is inexpensive and available to other hospitals experiencing the same equipment failures via open source Standard Template Library (STL) files found here:
<https://sites.google.com/view/projectpapr/project-papr>

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