

Rapid Response & Innovation COVID Crisis

The National Academies of
Science • Engineering • Medicine

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NEVER WASTE A CRISIS ?

"If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;"

“ If ”

Rudyard Kipling

UM HIGHLIGHTS

Organization

- Michigan Medicine / Engineering Task Force
- Procurement Support Team



Key Projects

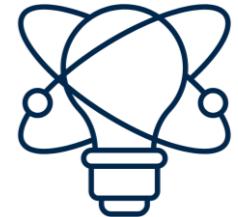
- PPE Acquisition
- PPE Alternatives Sourcing
- PPE Sterilization, Reuse and Validation
- Aerosolization Containment
- Vent Splitter



STRUCTURE: BUILD VS. BUY

Innovate:

- No known/effective solution
- Clinical, Design and Materials Engineering



Michigan Medicine & College of Engineering (COE)

- Command Center and COE Point Team
- Key Issues & Priority

Acquire:

- Scale Outreach
- Creative Alternatives
- Vetting and Analysis



Michigan Medicine Procurement & Support Resources

- Procurement Lead & Team Leads

PPE: ACQUISITION & ALTERNATIVES

NEAR TERM:

- Face Shields
- Masks
- Gowns



MID-TERM:

- State Incentives
- New Manufacturing Capacity



LONG-TERM:

- Near-Sourcing



PPE:ACQUISITION & ALTERNATIVES

NEAR TERM:

- Specifications
- Community Volunteer Engagement

MICHIGAN ENGINEERING COVID-19 PPE SPECIFICATIONS

HOME U-M FACE SHIELD U-M FACE MASK ADJUSTERS

COVID-19 PPE Speci

Overview:

Due to shortages of PPE and other materials the University of Michigan and Michigan Engineering have accepted donations of PPE and other materials. We would like to thank the donors for their generosity. The goal of this site is to provide a common resource of Michigan PPE donation site. This site is updated frequently. Currently we have published guidance for a PPE face mask adjuster. Go Blue!

Specifications:

- U-M Face Shield
- U-M Face Mask Adjusters

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• Terms and Conditions
• Use of MICHIGAN name

MICHIGAN ENGINEERING COVID-19 PPE SPECIFICATIONS

HOME U-M FACE SHIELD U-M FACE MASK ADJUSTERS

U-M Face Shield

Last Update: 9:23am (ET) on April 7, 2020

Specifications

There are three primary components to the U-M Face Shield design and materials for the DIY community are:

Headband	Design Files:	Current Status:
		See

Materials Preference:	1	2	3

* If using these materials ensure that you are following the manufacturer's instructions.

Shield Foil

Design Files:	8" file (PDF) 9.5" file (PDF) Both 8" and 9.5" on one bed file (PDF)

Elastic Strap

Thickness:	Minimum of 4 mil (for Polyester) – 5 mil (for Mylar)

Materials Preference:	1. Mylar film 2. Polyester film 3. PVC film (cannot be laser cut) 4. TPU

Protect MI.org

DONATE

Your donation will help us provide PPE to those in need.

Mission Statement

Protect MI Health is a registered Michigan non-profit corporation with 501(c)(3) fiscal sponsorship by the Appropriate Technology Collaborative, devoted to developing and promoting new methods for protecting health care workers and the public from communicable diseases such as COVID-19. We seek to improve health outcomes, advance science, and lift burdens off the government associated with disease and mortality. We will also educate the public (including children) about science, technology, and health.

Team

Board of Directors

PPE:ACQUISITION & ALTERNATIVES

NEAR and LONG TERM:

- Corporate Partners
- Community Partners



Steelcase

 **MAGNA**



 **DiDi**



Association of
Chinese Professors



 **BASF**
We create chemistry

MAKER WORKS


 **TECH TRANSFER**
UNIVERSITY OF MICHIGAN

MEDC
MICHIGAN ECONOMIC
DEVELOPMENT CORPORATION

NFI National Filters, Inc.[®]
 *Experts in Filtration*

PPE REUSE: STERILIZATION

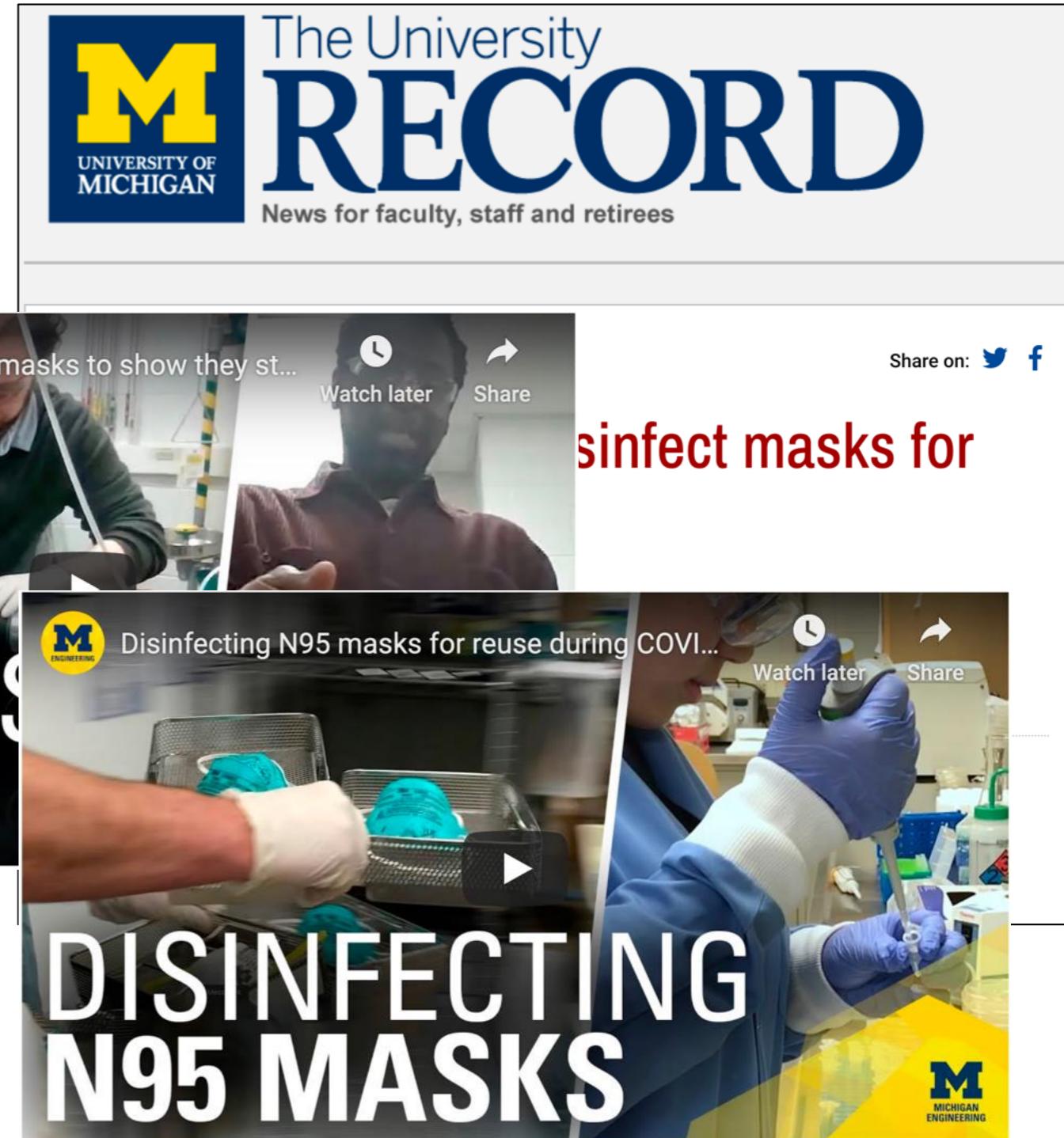
Internal team to validate multiple sterilization options

Types:

- UV
- Heat
- Ozone

Impacts:

- Sterilization
- Filtration Capability
- Fit



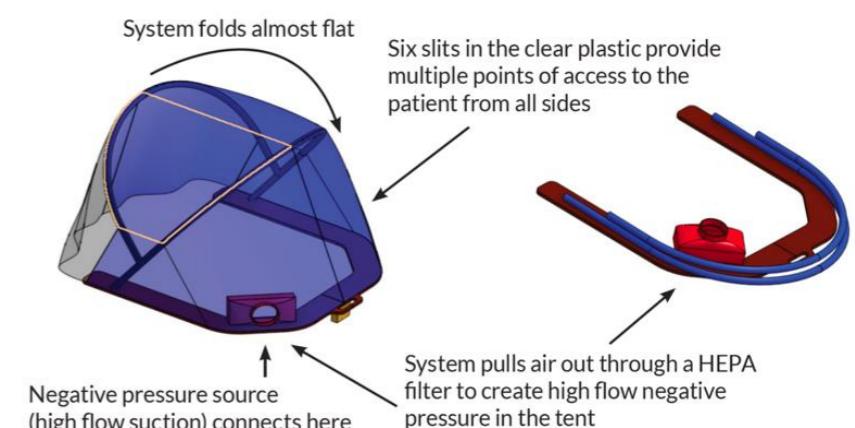
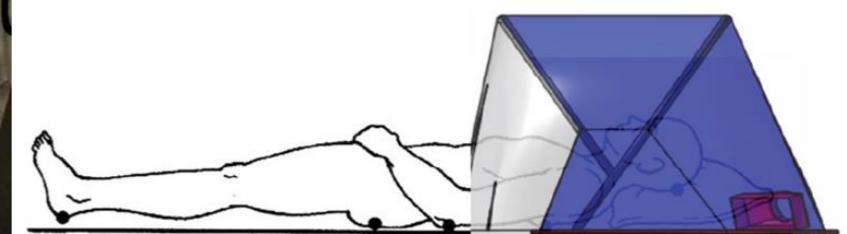
INNOVATION: AEROSOLIZATION

Multiple Solutions

- Negative Pressure Helmet
- Negative Pressure Tent

Cross Functional Team:

- Engineering
- Emergency Medicine
- Outside Design Manufacturing
- Tech. Transfer
- Business Engagement
- Legal



Kevin Ward, MD



Ben Bassin, MD



Sridhar Kota, PhD



Nathan Haas, MD



David Hornick



Shalini Kota



Henrique Puls, MD

INNOVATION: VENT CAPACITY

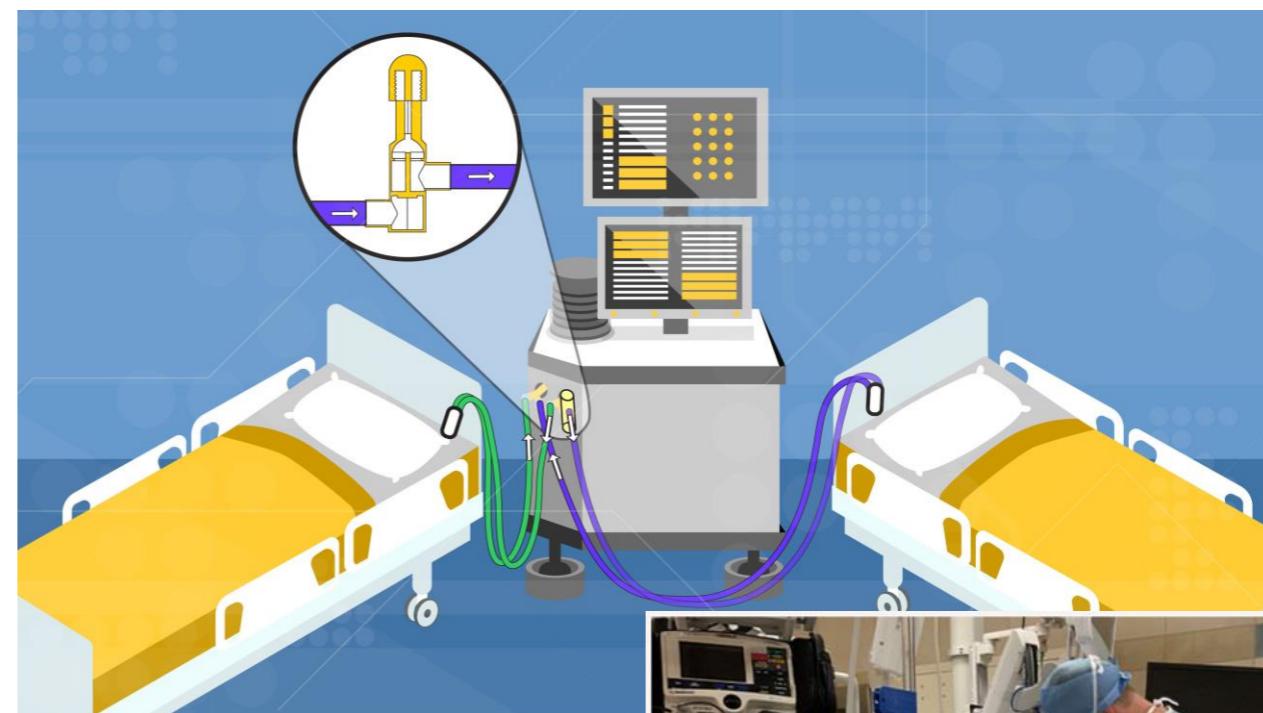
Pressure Managed Vent Sharing Capability - “VentMI”

Cross Functional Team:

- Engineering
- Pediatric Medicine
- Otolaryngology
- External 3-D Prototype

Manufacturing Partner

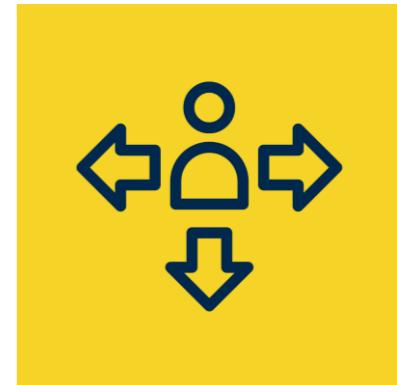
- Local Start-Up Manufacturer
- Tech. Transfer
- Business Engagement
- Legal
- FDA - Emergency Use Authorization



SUMMARY: LEARNINGS

Communications:

- Consistent, Frequent and Brief



Coordination:

- Divide and Conquer



Resource Identification:

- Early and Frequent

Leadership Support

- Culture



Team

- The Team, The Team, The Team!