StarTribune

# A Gown for U: University of Minnesota students saved local hospitals from running out of PPE

A small group of students from the University of Minnesota just invented a new Class 1 medical device and got it into production. It took them two weeks.

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STEVEN S. SALITERMAN – STAR TRIBUNE

Nick Houkom and Teresa Cahill, nurse managers at the University of Minnesota Masonic Children's Hospital, modeled two of the new protective gowns designed and put into production in the space of two weeks by a team of U students, working with local businesses.

The next time it feels like the world will never get better and there's nothing anyone can do to make it better, remember this.
A small group of students from the University of Minnesota just invented a new Class 1 medical device and got it into production in time to save the university medical center and a children's hospital from running out of personal protective equipment. It took them two weeks.

**Jennifer Brooks** @STRIBROOKS

The University of Minnesota Medical Center and the University of Minnesota Masonic Children's Hospital were running through thousands and thousands of protective gowns each day. They tried to buy more, but the supply chain from China was broken and every other hospital was competing for the gowns that were left.

The solution was waiting in the last place they looked - the Department of Biomedical Engineering and 18 student volunteers from Prof. Steven Saliterman's biomedical engineering classes.


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*A Gown for U*. When local hospitals were at risk of running out of protective gowns, University of Minnesota Professor Steven Saliterman turned to his biomedical engineering students.

The M Health Fairview hospital system needed gowns that were affordable, disposable, one-size-fits all, and safer than the garbage bags doctors and nurses have been forced to wear elsewhere.

Every manufacturer, medical supplier and PPE broker they approached told them no, or didn't return the call, or put them on a waiting list.

On April 17, the hospital reached out to Saliterman, who reached out to his students, who hopped on a Zoom call.

"If you can help at times like these, take the initiative," said Malcolm Pithawalla, who led the team of students that searched for an affordable source of raw material for the gowns. "People are in it together, and everybody wants to help each other out. What better way than to collaborate and solve a problem one step at a time?"

The students broke the big problem into small parts. During the first group call, Anna Karos started sketching and cutting out gown prototypes on Post-it notes. She led the design team.

“We prototyped with trash bags, with tablecloths, we picked up whatever plastic sheeting we could find at the stores,” she said.

With each new design, they consulted with doctors and nurses, who offered suggestions or pointed out flaws but ended each meeting on the same note: “Whatever you have, it’s OK. It’s OK. We just need something.” Instead of a trash bag with armholes, the students designed a gown with sleeves, wraparound ties at the waist and thumb holes, so the sleeves tuck neatly into gloves. The students gave up nights, weekends, free time and class time to work on the project. Nels Shafer divided his time between design work and his terminally ill grandmother, who was fascinated by the project. “She told me how happy and proud she was of this effort,” said Shafer, who lost his grandmother to cancer shortly after the first gowns went into production. “I’m always going to remember that. My effort is dedicated to my grandmother.”

Fixing America’s broken PPE supply chain wasn’t a lesson students could learn from a textbook.

“Something like this, it’s almost like a crash course,” said Logan Remington. “I find it so much more useful than anything else that I’ve learned in college.” Saliterman teaches classes on medical device prototyping, but his students have their entire senior year to come up with a medical device. Now deadlines were tighter and the stakes here were much higher. “We’ll take it,” Saliterman told Dr. Kevin Wang, the anesthesiologist who first reached out to him. “Give it to my students and we’ll solve it.”

While the design team worked on the gowns, the materials team, led by Sam Newell and John Liu, figured out what they should be made from and how. After dozens of calls and few takers, they found Polar Plastics in Oakdale. Not only did the company take the job, some of its clients offered to delay standing orders to give the hospital gowns priority. By the end of the next week, high-quality antistatic polyethylene film was rolling off the assembly line, ready to be fabricated into gowns. Ten thousand gowns a day for the next six to eight weeks.

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University of Minnesota student Anna Karos modeled one of the protective gowns she helped design. Students managed to get the gowns designed, approved by the FDA, and into production locally in the space of two weeks. Photo credit: Professor Steven Saliterman

Waiting to fabricate those gowns was Red Fox Innovations in Arden Hills, which took the job even though barely half its workforce has returned to work. “They told us, ‘We need 350,000 gowns. Can you help?’” said Red Fox President Jon Boor Boor, who gets a lot of calls like that these days. This time, he said, his company could help. One team of students sought regulations and guidance from the Food and Drug Administration to make sure the federal government had no objection to the gown project. Another team kept track of records, including the 700 e-mails exchanged during those two weeks. Production of the new “Gowns for U” began in earnest on May 1. Thanks poured in from the hospitals, from pediatric nurses who got to test the first prototypes, from administrators who will sleep a little easier at night. For team members like Peter Linden, the gown project brought a sense of purpose and comfort after weeks of dislocation and isolation. On campus, just seeing other students studying at the library or working in the labs made him feel “like you’re part of a collective effort,” he said.

“Being pulled out of that leaves a gap. This has helped fill it,” Linden said. “Just to feel like you’re on a team with people, trying to solve a legitimate problem in your community. It’s been neat.”

**Jennifer Brooks** is a local columnist for the Star Tribune. She travels across Minnesota, writing thoughtful and surprising stories about residents and issues.

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COMMENTS

**bradhal**
**MAY 10**
Wonderful article demonstrating creativity  and resourcefulness...well done!!

**kirstenurvis**
**MAY 10**
Awesome ingenuity!

**pastrysnob**
**MAY 10**
It is nice that the football team is now attracting four-star talent to the U, albeit from out of state.  But it is even nicer to see there already is four and five-star talent in the U's biomedical engineering program, wherever they may be from, to compliment that chemical engineering student who just won big on Student Jeopardy.

The disposition of a few old maroons like myself is affected by the ebbs and flows of the football team, but the economic and social wellbeing of our entire state hinges on our ability to attract and retain this sort of engineering and scientific talent.  Keep up the outstanding work, young people.  And let's see more reporting of this nature from the Strib.

**PardonMe**
**MAY 10**
It's too bad we have to solve these at the local university level when it could be the Feds ordering big industry to crank out professional PPE.

**bacabu**
**MAY 10**
Outstanding work, students and Dr. Saliterman!  Any chance you can produce and work with MDH to deliver as many of these as are necessary to long-term care and assisted living facilities in the state?  Thank you again for your creativity and can-do attitude!

**JMEvans**
**MAY 10**
Amazing story. Thanks, students. Thanks, Star Trib.

**bandgeek**
**MAY 10**
It is so good to see a story like this one during these crazy times. Those students rock!

**macrosteles**
**MAY 10**

Next time the anti-higher education mob starts bad mouthing the University of Minnesota they should be sent this article!

**NRussH**
**MAY 10**
This is wonderful. Much props to these students for taking initiative!

**Alsdaughter**
**MAY 10**
Thank you to each one who used their time, talents and hard work toward this critical contribution!!!

**senjh23**
**MAY 10**
Real life Every Day Heroes helping our Healthcare Every Day Heroes!  Congratulations to all.

**KitJohnson**
**MAY 10**
The U's  "Row The Boat " mentality took over by 18 Biomedical Engineering students, who hopped into the boat and proved anything can be done if you set your mind to it and put in the effort.  Kuddos to the U and to our future generation.

**CheckIt Out**
**MAY 10**
Um, they didn't take over the mentality, though I get your point.  The excellence of higher education is not teaching skills; higher education opens minds and teaches us to think creatively, which then allows us to use skills (which we also learn) creatively.

The had the mentality.  They are primed to use it.  They are learning to enhance their minds and their futures and ours.

Hat's off to using the best of what we have to make life what it is supposed to be.

**Ed49567**
**MAY 10**
Whenever we're tempted to think of college students as uninvolved, self-absorbed "snowflakes" (as I've heard others refer to students in college), my heart and mind will forever reflect back to these amazing students whose education, ingenuity, persistence and drive took them to this point of being to answer the call and fulfill the need. Well-done! So proud of all of you and the institution that facilitated your efforts!

**chris37**
**MAY 10**
These students, teachers as well as everyone else involved, just earned an A+ 100% in the class we call life. So uplifting to hear about the ingenuity and the speed in which they accomplished their goals. Great story!

**AndreaDee**
**MAY 10**

Very well done! As a U grad myself ('72, followed by decades of engineering-oriented entrepreneurship), I deeply admire your productive hotspot within the vast U universe. Never lose your fire!

**BillLake**
**MAY 10**

The students provide a great example of what can be done with creativity, plus cooperation from local manufacturers. And let's not forget those customers who agreed to delay their own deliveries.

If we could harness this at the federal level...no politics, just dedication to assisting in a vital project!

**gcatdl**
**MAY 10**

Kudos!!!

**JSHolmes**
**MAY 10**

This is an amazing story that should be circulated nationwide! Congratulations to a great group of students and their teacher.

**jcox321**
**MAY 10**

Fantastic news, maybe the MOST uplifting C19 news yet! And right here at OUR U of MN. I hope this is getting widespread publication in all media. Our country can benefit from this in unlimited ways.

**Beatgirl**
**MAY 10**

Thanks for this amazing and uplifting story. So proud to be a Gopher Mom!