



UNIVERSITY HOSPITAL

Newark, New Jersey

PRESS RELEASE

FOR IMMEDIATE RELEASE

July 16, 2020

MEDIA CONTACT

media@uhnj.org

(973) 634-8298

UNIVERSITY HOSPITAL PART OF NEW JERSEY R&D CONSORTIUM THAT UNVEILS MOBILE MEDICAL CARE UNIT TO PROVIDE RAPIDLY DEPLOYED HEALTHCARE INFRASTRUCTURE

NEWARK, N.J. -- In response to the extreme challenges to clinical capacity posed by the COVID-19 pandemic, three New Jersey institutions – New Jersey Institute of Technology (NJIT), University Hospital in Newark and The Tuchman Foundation – are collaborating in a unique partnership on the development of modular, mobile medical care facilities to be deployed to areas of surging disease outbreaks and other disasters, as well as to regions that lack health care infrastructure.

The modules, constructed in Woodbridge, N.J., are fabricated from 40-foot-long repurposed shipping containers. They have been tested this week for their effectiveness as triage centers in a series of staged patient-care simulations conducted by medical personnel at University Hospital.

The units include customizable internal environments that can be configured for various medical applications, including clinical point-of-care services and the testing and treatment of communicable and non-communicable diseases. They are easily transportable for rapid deployment and can be staged horizontally to create larger clinical field operations sites with effective patient separation and management.

“This pandemic has challenged emergency healthcare systems and patient management capacity globally. But it has also emphasized the critical importance of distributed health care facilities in resource-constrained environments in both urban and rural areas,” said Atam Dhawan, senior vice provost for research at NJIT. “The mobile medical care units we are designing can be reconfigured and adapted to deliver a variety of medical needs to augment facilities at hospitals and nursing homes. They can also function independently in communities lacking these facilities.”

As shipping containers, the modules can be deployed rapidly and re-deployed regionally, nationally and internationally within existing commercial intermodal networks.

“All of these units are standard and can be moved to a particular area when there is an urgent need. They can be sent to any place in the United States, Canada and Mexico in a matter of days,” noted Martin Tuchman, CEO of the Tuchman Group and chairman of The Tuchman Foundation. “For example, in areas where the hospital system is overwhelmed, rather than shipping patients out of the affected area, we can ship containers into the area to meet the needs of the patient population.”

The partners are contributing their respective expertise in these areas:

- NJIT provides architectural design, management and technological know-how. Julio Garcia Figueroa, an architect and university lecturer in the NJIT Hillier College of Architecture and Design, is the principal designer. Officials at NJIT's Martin Tuchman School of Management are overseeing project management.
- University Hospital, the state's only public hospital and Northern New Jersey's only Level-1 trauma center, is the consortium's medical partner. The hospital is responsible, among other aspects, for input and feedback on the units' internal configurations, clinical use and regulatory requirements. The clinical team running the simulations – physicians, nurses, technicians and infrastructure support personnel – will assess the efficacy and efficiency of workflows in the modules in order to continuously refine them.
- The Kingston, N.J.-based Tuchman Foundation, established by Tuchman Group CEO Martin Tuchman, supplies his company's deep experience in shipping and logistics. The foundation, a nonprofit corporation that supports research on health care, including diseases and cures, provided initial funding to develop the prototype.

“The COVID-19 public health emergency has impacted every facet of our lives. But one of the bright spots has been the innovation it has sparked between the hospital and partners like NJIT,” said **Shereef Elnahal, MD, MBA, President & CEO of University Hospital**. “The work between University Hospital and NJIT and The Tuchman Foundation exemplifies a new era for the hospital, which now promises to be a bright spot for innovation in New Jersey. Together, we will help everyone be better prepared for whatever challenges come next.”

NJIT President Joel Bloom commended the partners for bringing the prototype to fruition so quickly. “This public health crisis has tested our ability to innovate purposefully, swiftly and successfully, and I'm proud to say we have risen to the challenge,” Bloom remarked. “I look forward to seeing the impact our work can have in extending health care capacity to those in need during this pandemic and in future situations where the ability to rapidly scale up capacity is needed.”

“As one of the states hit hardest by this public health crisis, we must ensure we are doing all we can to protect the health and safety of each and every New Jerseyan,” said U.S. Senator Cory Booker.

“Tackling this pandemic demands an all-hands-on-deck approach, and innovative projects through strategic partnerships like this one are key to providing our health care professionals with the resources and capacity they need while better preparing us for the future.”

The prototype is being constructed by Woodbridge, N.J.-based Integrated Industries Corp, a company that provides intermodal services including container and chassis modification, fabrication and storage services. The two demonstration units at University Hospital this week are staged one in front of the other with a central corridor connecting them, and include a registration/triage area, a patient waiting room and two testing and examination rooms.

The group's phase-1 prototype will focus on simple health care provisioning, including initial COVID-19 point-of-care examination and testing. A potential phase-2 model would address increased healthcare complexity with an airborne infection isolation room required to treat and manage critical patients.

"If we're able to scale up our model – that is, quickly transforming the same containers for use from testing centers to mobile field units capable of housing critically ill patients who have contracted infectious diseases – we will need to develop something highly adaptable and flexible. Some areas may lack ICU beds, others testing and triage centers," said Steven Rubin, the project manager and an adviser to The Tuchman Foundation who has worked in the intermodal and container shipping logistics sectors for three decades and is a member of the board of advisers of the Martin Tuchman School of Management at NJIT.

Garcia Figueroa designed the initial units to create a workflow around patients who had potentially been exposed, but displayed no symptoms, by creating enough space throughout them to safely admit, test and examine patients.

"We'll test the value of the box's modularity, with the idea of potentially scaling it up vertically or horizontally, to accommodate dozens of beds if needed," he said.

"New Jersey knows first-hand how important it is to be prepared to move swiftly in a crisis to protect the health and safety of our residents and communities," said U.S. Senator Bob Menendez. "The pandemic has put enormous strains on our hospitals and healthcare systems and has taught us that we need to have greater capacity and be better prepared to handle the next outbreak. The ingenuity we see here today shows just how adept New Jersey institutions are at addressing public health challenges with the kind of outside-the-box thinking and pioneering spirit that has long made this state the leader on innovation."

The prototype's designers worked closely with **Tomas Gregorio, chief innovation and technology officer at University Hospital**, as well as with a group of emergency physicians, nurses and hospital operations experts. The team members contributed their experience in managing COVID-19 patients at the hospital and in additional tented structures set up on the facility's grounds to manage patient overflow during the height of the pandemic surge in the New York-New Jersey region.

"Managing the COVID pandemic was challenging because of the clinical needs of these patients and the unique infection control requirements that posed. We had to isolate patients on a greater scale than ever before. At the peak of the surge, almost every patient in the emergency department needed to be distanced from other patients or placed in a negative pressure isolation room," said **Jonathan Green, executive director of University Hospital's emergency department**.

"By rapidly expanding our space with the tents, we were able to take patients who were not very sick out of the hospital, including lower-severity COVID patients, and keep them away from the flow inside the ED," said **Lewis Nelson, chief of service of University Hospital's emergency department and chair of emergency medicine at Rutgers New Jersey Medical School**. "By expanding our capacity to rapidly and safely manage the very ill patients in the main ED, we surely saved lives." In light of these experiences, the University Hospital team said they viewed the mobile units as potentially useful screening rooms to fast-track care for patients needing moderate levels of medical

attention. Their ability to withstand extreme weather, such as high winds, and to control the temperature inside them, would also be an advantage, they said.

“COVID-19 has created unprecedented challenges to our medical infrastructure. The clinical needs of COVID-19 patients, and the isolation requirements necessary to protect our staff and other patients, required a brand new approach,” said **Maureen Gang, MD, Vice Chair of Quality & Patient Safety for University Hospital’s Emergency Department, and Professor of Emergency Medicine for Rutgers New Jersey Medical School**. “This spring, we were able to rapidly expand our Emergency Department testing capacity for patients with possible COVID-19 by using tents adjacent to our ED. This project will provide an even better solution, with built-in medical capabilities and the ability to withstand inclement weather and storm conditions, that can be quickly deployed to COVID-19 hotspots or used for other emergencies.”

###

About University Hospital

University Hospital is part of one of the nation’s leading academic medical centers and is the Level 1 Trauma Center for Northern New Jersey. Located at University Heights in Newark, University Hospital is a principal teaching hospital of Rutgers Biomedical and Health Sciences and a regional resource for advanced services across many medical specialties. For more information about University Hospital, please visit www.uhnj.org.