

Healthcare/Pharmaceutical Optimization

COVID-19 INITIATIVES

DR. JAMES BENNEYAN has developed a modeling tool, in partnership with the Lahey Hospital and Medical Center, to help hospitals produce their own projections and consider possible shortage scenarios up to 30 days in advance, as they prepare for potential waves of patients that could strain their facilities. Hospitals can run the tool with data specific to their facilities to project when the demand for hospital equipment is going to exceed the supply. It can also model the availability of hospital staff. This tool has been used by approximately 3,000 healthcare systems so far to date.

DR. JACQUELINE GRIFFIN has multiple projects focused on the response to COVID-19. First, in partnership with Massachusetts General Hospital, she is developing data-driven strategies to mitigate the effects of short-term drug shortages, while also researching strategies to increase long-term resiliency in the pharmaceutical supply chain. This work is in collaboration with OrbitalRx, the first software specifically designed to assist pharmacy managers with managing drug shortages.

Second, Dr. Griffin is researching new strategies for blood management in extreme shortage situations, as is currently occurring. Unlike other work in this area, her models integrate the consideration



of blood type compatibility for assigning available blood units. Third, Dr. Griffin is analyzing how to manage limited bed capacity in hospitals and how different policies and protocols will impact health center operations and the patient safety/outcomes. She is proposing to build on her existing collaboration with local health systems and expand on the library of simulation models of outpatient facilities that she has created to develop a tool that can be deployed in assisting in identifying appropriate policies.

Finally, Dr. Griffin is investigating with colleagues how “crisis technologies” (software designed to support the public during emergencies) can better support vulnerable popu-

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PHOTO: JESSICA GRIFFIN/THE PHILADELPHIA INQUIRER VIA AP

lations such as older adults and low-income households who are more likely to suffer poor health and economic challenges during emergencies. These technologies will also help racial and ethnic groups, such as individuals of Chinese descent, who face racism and xenophobia associated with COVID-19.

[DR. OZLEM ERGUN](#) has been asked by the Massachusetts Health Emergency Response Team to provide logistical planning to determine the location and support needs of 1,000 emergency hospital beds in the Commonwealth. She is now part of the Governor's Emergency Response Team and participates in daily calls. She and her team have shifted their work to near full-time on this project, which not only includes site recommendations based on population and spread projections, but also staffing projections and supplies for as many as 1,500 doctors and nurses.

These projections need to be updated and revised daily based on new information from her task force calls. She is the lead scientific author of "Strengthening Supply Chain Resilience," commissioned and published in March by the National Academies of Science, Engineering, and Medicine. The U.S. Senate Committee on Commerce, Science, and Transportation has recently sought her advice and guidance on the current national emergency.

[DR. WEI XIE](#) is developing an interpretable artificial intelligence and risk-based process analytics and decision support platform that addresses critical needs in end-to-end biomanufacturing development and automation, especially monoclonal antibodies (including the bio-drugs for COVID-19). This platform can speed up the time to market and reduce the drug shortage.

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