Newsbytes

Drone delivery of lab samples: from progress at WakeMed to interest elsewhere

February 2020—After nearly a year of a drone buzzing through the air to deliver specimens from the Raleigh Medical Park surgery center to the laboratory at the flagship Raleigh campus of WakeMed Health and Hospitals a quarter-mile away, WakeMed is looking to expand its drone program.

WakeMed launched its first drone in March 2019, making it the first U.S. medical center to undertake a revenue-generating drone flight. Since then, drones have been flying between the two facilities eight times a day during normal business hours, weather permitting, through a program driven largely by a surgeon at the hospital who was previously a commercial airline pilot.

All suitable specimens, which are primarily blood and urine samples but may also include throat cultures and other specimens, are transported between the surgery center and hospital lab via drone, says Michael Weinstein, MD, PhD, director of WakeMed Pathology Laboratories. “As part of being safe, we don’t take anything that is an irreplaceable specimen, so a tube of blood or a tube of urine yes, but a biopsy or cerebrospinal fluid, those are things we would not put in there,” he explains.

The success of the program at WakeMed that UPS’ drone airline, UPS Flight Forward, operates with the drone delivery technology provider Matternet, under oversight from the Federal Aviation Administration and North Carolina Department of Transportation, has prompted the hospital to consider expanding the undertaking, says Dr. Weinstein.

The primary concern has been that the program maintain the integrity of the specimens and safety requirements, stresses Dr. Weinstein, who oversaw the laboratory requirements for the drone program. WakeMed ran numerous test flights ahead of its official drone launch to monitor temperatures and ensure that specimens would not get too shaken up during flight. During inclement weather, WakeMed transports the specimens via a courier service running between the surgery center and laboratory.

The quarter-mile route the drone flies was selected because UPS adheres to an FAA line-of-sight rule that requires a drone pilot to be able to see the drone during the entire flight, from liftoff to landing. However, UPS Flight Forward is working to secure FAA Standard Part 135 certification for drone deliveries beyond the line of sight and to be able to scale operations using multiple drones.

“Part 135 FAA certification gives us the ability to grow,” says Mark Taylor, UPS’ director of global health care strategy. The new certification could also allow UPS Flight Forward to conduct night flights and transport cargo exceeding 55 pounds.

The drone used by WakeMed is a Matternet M2 quadcopter, which can carry loads of approximately five pounds over a distance of about 12.5 miles. It lands on a landing platform about four square feet in size. “The drone is really a beautiful, wonderful thing,” says Dr. Weinstein. “It flies at about 400 feet and comes over the platform, hovers for a few seconds to get its bearings, and gently lowers down onto the platform.”

Matternet and UPS provide trained personnel to fly the drones, and the companies work with regulators to obtain the required approvals for flights. “All of these flight paths are pre-approved,” Taylor explains. “This goes back to how important safety is around all of this. They are predetermined and filed with the FAA. There is an operator/pilot on either end making sure that everything happens appropriately.”

Since WakeMed kicked off its program, interest in using drones for laboratory and other medical deliveries has increased. In October, UPS announced that it is collaborating with University of Utah Health on a drone program that is expected to improve lab turnaround times. A separate agreement between UPS and Kaiser Permanente,

also announced in October, will involve drone projects at multiple health systems within the Kaiser Permanente network that too are expected to focus on improving lab turnaround times.

Talyor expects drone deliveries to have the most significant impact in congested areas, where snarled traffic can hinder the timeliness of hospital courier deliveries. The reduction in fuel costs from the drones, which are powered by a rechargeable lithium ion battery, could potentially lead to cost savings as well, according to a statement from UPS.

“For labs, the biggest thing—the key performance indicator—is turnaround time,” says Shannon DeMar, senior manager of specimen logistics in UPS’ global product innovation group. “So we put a lot of emphasis on all the technology enhancements that we bring to the table. Of course, safety is very important because drones are so new, but from there it’s a matter of whether the project benefits can be achieved.”

While medical drone delivery is still in its infancy in the United States, Zipline has been using drones to deliver blood and medical supplies in Rwanda since 2016. Zipline’s drones are small fixed-wing autonomous aircraft with 10-foot wingspans that can carry three-pound loads. Instead of landing at a destination, the small planes drop packages attached to paper parachutes at targeted locations. The company says the fixed-wing design allows the drones to fly much faster and in worse weather conditions than quadcopter drones.

Zipline delivers more than 75 percent of Rwanda’s blood supply outside of the country’s capital of Kigali, according to a press statement from the company. Last year, it expanded into Ghana, and the company has plans to expand into the United States as well.

Back at WakeMed, Dr. Weinstein notes that while the drone program has been successful, it has yet to reach its full potential for benefitting the laboratory. He views replacing quarter-mile courier trips with drone flights as a proof-of-concept for larger projects.

“This isn’t for now,” he says. “It’s for the future.”—*Renee Caruthers*

CompuGroup Medical enhances LIS and lab outreach solution

CompuGroup Medical has added functionality to its CGM LabDaq laboratory information system and cloud-based CGM LabNexus laboratory outreach solution.

New in LabDaq 19.11 is an upgraded workflow-management option for sorting and searching patient and test data. This feature more accurately pinpoints quality controls that have tested out of range, allowing users to identify test plates that should be retested. Standard with the workflow-management option is a location filter that can default to display all of a client’s locations.

CGM LabNexus 19.1 includes updates to the HL7 activity log and improvements to the pending report query, order history, and organization setup that are designed to make the platform more intuitive.

“Pending tests and order history can now be sorted by received date, so users have another way to quickly find the information they’re looking for,” said Carl Smith, general manager of the lab division, CompuGroup Medical US, in a press statement.

CompuGroup Medical, 800-359-0911

ONC revises Interoperability Standards Advisory

The Office of the National Coordinator for Health Information Technology has released the *2020 Interoperability Standards Advisory Reference Edition*, which contains updates across the Interoperability Standards Advisory. The content is offered as a static document and through an interactive website.

Among the most significant updates, which incorporate feedback garnered through the ONC’s public review and comment period last year, are the following:

- a new subsection that provides information about incorporating clinical notes into health care information technology systems.
- a new subsection, called Care Coordination for Referrals, which includes information about initiatives intended to improve the exchange of patient information for follow-up care and other medical needs.
- expansion of the consumer access/exchange of health information area of the ISA to include the collection and exchange of patient-reported outcomes.
- a new subsection that addresses patients' cognitive status.
- the addition of four interoperability needs related to social determinants of health, representing drug use, food insecurity, housing insecurity, and transportation insecurity.
- a more streamlined and navigable home page on the ISA website. Some information available on the home page has been moved to other pages, which are broken down by topic.

"The ISA should be considered an open and transparent resource for industry and reflects the latest thinking around standards use with an eye toward nationwide interoperability," posted ONC's Steven Posnack, deputy national coordinator for health information technology, and Brett Andriesen, standards advisory lead, in a Health IT Buzz blog post last month.

The updates are available at www.j.mp/2020-ISA-updates.

Dr. Aller practices clinical informatics in Southern California. He can be reached at raller@usc.edu.