

ARTICLE 08

THE FUTURE IS HERE: How Drones Are Modernizing the Healthcare Industry

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The Future Is Here: How Drones Are Modernizing the Healthcare Industry

As use cases for drones continue to expand, industries whose connections to this technology were not obvious are now capturing headlines on a routine basis. The health and life sciences industry is an example of an emerging major player in the field. Delivering everything from blood and plasma to medication, defibrillators and condoms, drones are revolutionizing the health care industry by modernizing how medical care is administered.

In January, the Federal Aviation Administration (FAA) announced that they had received more than one million unmanned aircraft systems (UAS), commonly referred to as drones, registrations.¹ To put this number into perspective, in the 115 years since the Wright brother's first flight of Kitty Hawk in 1903, there have been only 350,000 manned aircraft registered with the FAA. In contrast,

in just the 18 months since the FAA's issuance of the first regulations specifically tailored for the operation of UAS, drones have literally taken off as hobbyists, commercial operators and public use operators (i.e., first responders, police/fire rescue, border patrol) flock to the skies.



From Blood and Medical Supplies to Organ Transplants, Drones Are Helping to Save Lives

Demonstrating that this new technology can have a far-reaching impact on the future of medical services, the health and life sciences industry is employing everything from basic to highly sophisticated UAS platforms in the following areas:

- + In Rwanda, the Health Ministry has partnered with private industry to deliver via drones more than 5,500 units of blood, platelets and plasma to 12 hospitals in the eastern part of the country. The drones, which travel at speeds up to 60 mph on preprogrammed paths, text the doctors when they are within range and then drop the packages using a paper parachute. Drone deliveries now account for 20% of the blood supply deliveries outside of the capital of Kigali, resulting in less stored, wasted and spoiled blood.
- + The Dutch government and the United Nations Population Fund have successfully implemented a pilot program called “Dr. One” that flies birth

control, condoms and other medical supplies to rural Ghana in an effort to revolutionize women’s health and family planning across the African continent. The governments of Tanzania, Rwanda, Zambia, Ethiopia and Mozambique have all expressed interest in sponsoring the drone program for family planning. In Malawi, where one person in ten is HIV-positive, drones are used to deliver HIV test kits.

- + Hoping to revolutionize the way human transplant organs (including stem cells) are transported in the U.S., the world’s first organ transplant drone is in production. The goal is to automate the transportation of donated organs to people all over the country, in emergency

situations, by placing drones outside of organ procurement facilities. It is anticipated that the service will deliver hundreds of organs a day.

- + Relying on simulated studies that have found that drones on average arrive 16 minutes quicker than other emergency services, drone companies around the world are partnering with emergency service providers to launch rescue/ambulance drones. These drones, equipped with Automated External Defibrillator (AED), Cardiopulmonary Resuscitation (CPR) aids and telemedicine kits, can be dispatched via a 911 call at the same time as an ambulance. Upon arriving at the site of the emergency, the medical equipment

can be operated by members of the public utilizing audio or visual pre-recorded or live instructions by medical personnel.

- + This past September, Johns Hopkins researchers broke the distance record for the transport of biological samples when they successfully used a drone to fly 84 samples of chilled human blood across 160 miles of Arizona desert. Throughout the three-hour flight, the payload maintained temperature control so that the samples would be viable for laboratory analysis. To compare the effectiveness of the flight, the team originally collected 84 pairs of blood samples and divided the pairs between those that were flown via drone and those that were transported the same distance by car with active cooling to maintain a target temperature. The drone samples maintained an average temperature of 76.6 degrees as compared to the sample in the car that averaged 81.1 degrees. The subsequent studies performed on the samples showed statistically significant but slight differences in glucose and potassium levels associated with chemical degradation from the slightly warmer samples that were transported by car.



■ Faster, More Efficient Care

Drones are safer, available on shorter notice and potentially less expensive than using manned aircraft. The speed and versatility of UAS technology also offers virtually unlimited opportunities to not only deliver needed medical supplies and assistance to individuals in remote or dangerous areas but also to connect doctors to patients in a more expeditious manner. Victims of natural disasters or emergency situations could be administered life-saving care by good-Samaritan bystanders that are provided remote instruction on how to administer the treatment and services delivered by drones.

■ Key FAA Regulation

Currently, the single most controversial regulation governing the operation of a commercial drone is the requirement that the UAS must at all times remain within the visual line of sight of the remote pilot. This means that in the absence of authorization from the FAA, a rescue/ambulance drone is very restricted on the distance and topography it can fly. It is expected

that as the FAA collects more data and becomes comfortable with the safeguards and redundant capabilities included in the UAS technology, this regulation and others will become more user friendly.

In the meantime, in the absence of a waiver, all drone programs must comply with the FAA's Part 107 regulatory requirements and limitations. Decisions to establish a drone program typically involve a business case evaluation that takes into consideration the interests and objectives of the users of the drones as well as the views of other functional team members (i.e., technology, legal, insurance and risk departments).

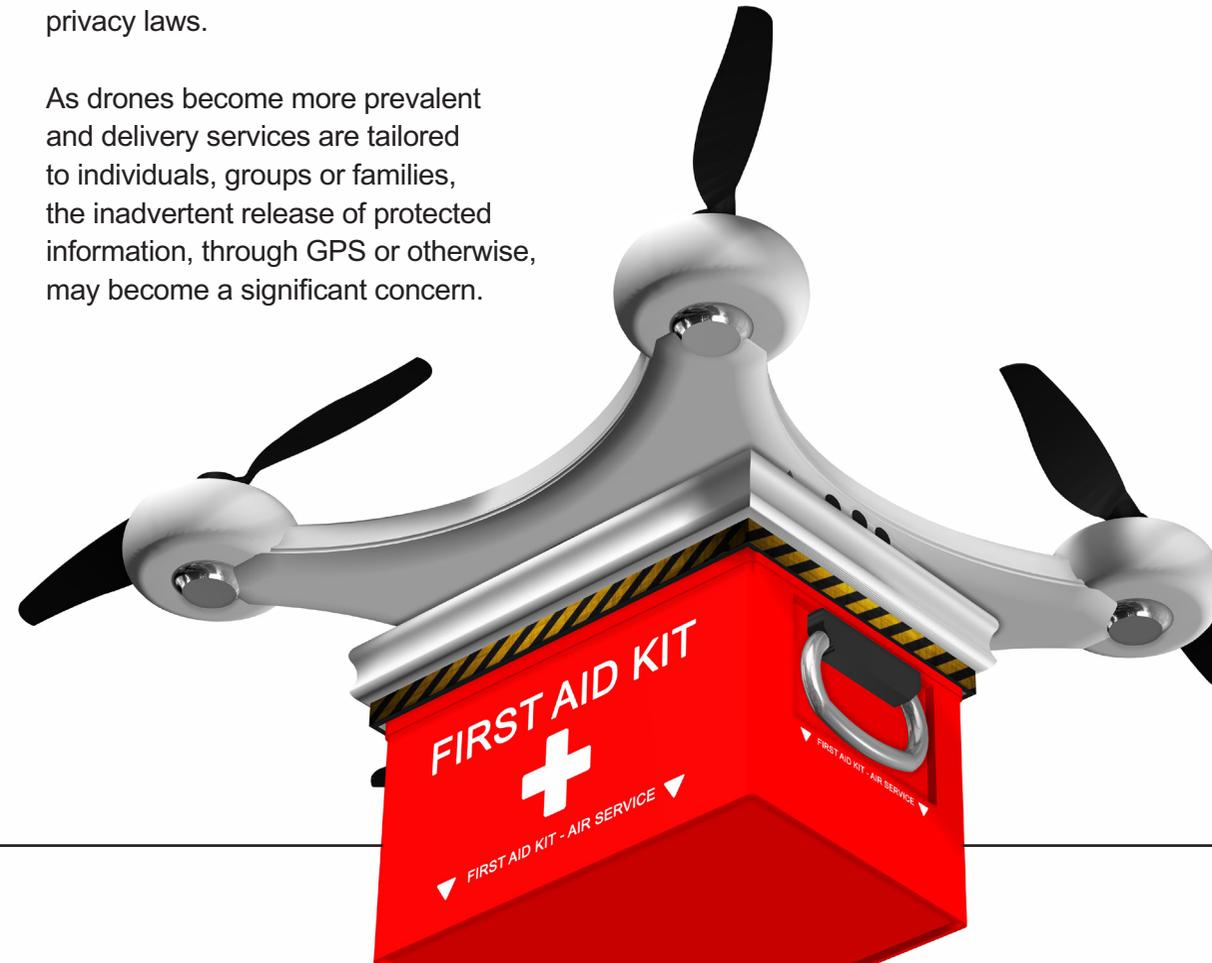
■ Privacy and Other Challenges

Before the health and life sciences industry incorporates drones into its arsenal of services, serious consideration must be given to additional regulatory requirements common to the medical industry. For example, the healthcare industry's

use of drones will likely require the establishment and implementation of policies, practices and procedures to ensure that information contained in the UAS payload, built into the program or recorded by the UAS does not directly or inadvertently result in the release of protected health information that violates HIPAA or state medical privacy laws.

As drones become more prevalent and delivery services are tailored to individuals, groups or families, the inadvertent release of protected information, through GPS or otherwise, may become a significant concern.

Other regulatory challenges have to do with the potential for diversion and assuring the maintenance of an appropriate environment so that products don't degrade.



Prepare for a Smooth Takeoff

New technology provides both new opportunities and new risks that require thoughtful planning in order to maintain a culture of safety and regulatory compliance.

To learn more about drone technology in the health and life sciences industry and how it can be adapted to your needs, contact one of the attorneys noted on the right.

Supply Chain Series Contributors



Kelly Daly, an attorney at Stinson Leonard Street, represents clients, including privately and publically held companies and governmental agencies, with interests in unmanned aircraft systems and autonomous vehicles before local, state and federal legislative bodies and advises these clients on matters before the Federal Aviation Administration and the National Highway Traffic Safety Administration.



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