

RESEARCH SUMMARY

Realizing the Potential of Medical Drones: Regulatory Requirements and Barriers to Overcome

In the United States, lifesaving blood transfusions, vaccines, and transplantable organs could someday be delivered routinely by drone. In “[Overcoming Technological and Policy Challenges to Medical Uses of Unmanned Aerial Vehicles](#),” Robert F. Graboyes, Darcy Nikol Bryan, and John Coglianese examine the need for improved regulation as well as the financial and technological barriers that must be overcome to make medical drones a reality.

DRONES ARE ALREADY SAVING LIVES OUTSIDE THE UNITED STATES

In nations such as Ghana, Rwanda, and the Philippines, drones are already transporting blood, drugs, and other critical medical supplies on a daily basis. Lack of infrastructure and light air traffic make the developing world especially suited to unmanned aerial vehicle (UAV) technology, while poor healthcare options and financial constraints create an openness to experimenting with new technologies. UAVs can also be helpful in disaster areas where established transportation routes are not accessible.

Certain parts of rural America face conditions similar to those in the developing world. In some communities, emergency medical response times can average more than 60 minutes. Drone delivery of defibrillators, for example, could be a way to save American lives.

BRINGING UAV MEDICAL TRANSPORT TO THE UNITED STATES WILL BE COSTLY AND COMPLICATED

Current UAV technology is not advanced enough to navigate America’s heavy air traffic and established infrastructure. Current challenges include the following:

- 1) Developing “intelligent” devices able to avoid buildings, aircraft, and other obstacles
- 2) Increasing the reliability and durability of UAVs so they can make longer trips and securely carry more goods
- 3) Securing UAV technology against foreign adversaries or other malicious actors
- 4) Creating a delicate regulatory balance that doesn’t suffocate innovation

UAV MEDICAL TECHNOLOGY NEEDS STRONG SUPPORT ACROSS LEVELS OF GOVERNMENT

Developing the technology will also require the partnership of multiple government entities:

- The Federal Aviation Administration, to define quality standards and revamp the antiquated rules that govern the nation’s airspace system to accommodate UAV technology

- The Federal Communications Commission, to establish parameters for safe and reliable communications with UAVs
- The Department of Homeland Security, and possibly the Departments of Defense and State, to ensure security against adversaries
- The Department of Health and Human Services, the Food and Drug Administration, and the National Institutes of Health, to facilitate the health-related cargoes
- State and local lawmakers and regulators

All of these entities must work together to ensure that the technology is secure and effective, but without stifling the innovation that will make it financially and practically viable.

KEY TAKEAWAY

Transporting lifesaving medical materials via UAV could bring great benefits to the United States. Increasing the technology's safety and reliability will be costly, however, and will require technological innovation, deft regulation, and the committed involvement of many government entities.