The Essential Guide to Implementing Drone Delivery in Healthcare

The drones themselves barely make a sound, but the growing buzz around instant delivery can be deafening.

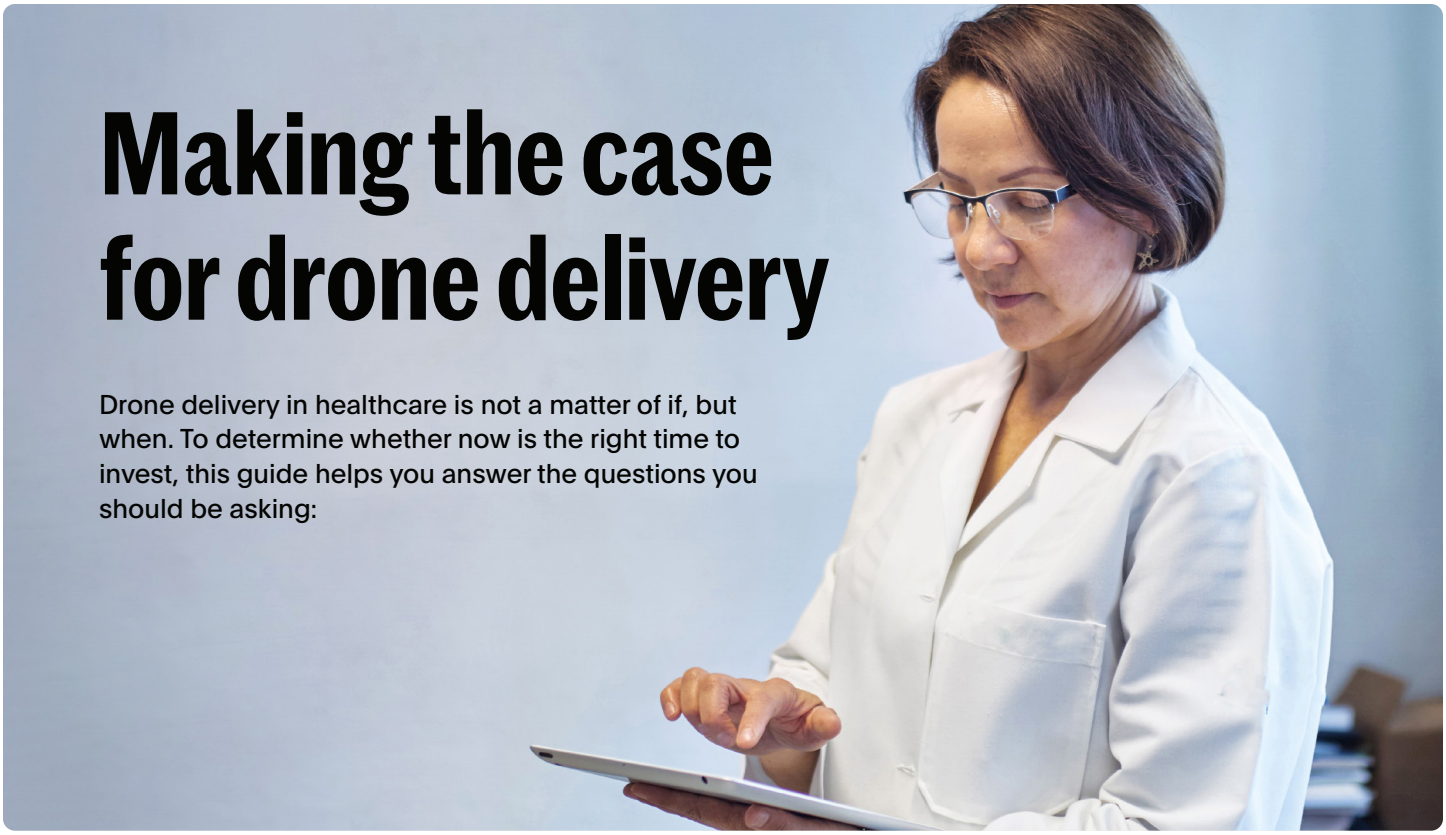
Health systems stand to gain from ultra-fast, low-cost deliveries. However, as with any new, transformative technology, it's hard to tell what's just hype, what's a real business opportunity, and when to invest.

At Zipline, we've spent 8 years on the front lines, pioneering instant delivery in healthcare. We've guided health systems in 7 countries through uncharted territory, supporting 45 million people at more than 4,000 health centers with almost 1 million autonomous drone deliveries to date. While the results have been impressive, there's no fool-proof formula or one-size-fits-all solution.

In the U.S., leading healthcare providers like Cleveland Clinic and Michigan Medicine already recognize the potential of drone delivery and have integrated it into their plans. In fact, starting in 2024 Zipline will be bringing drone delivery services to patients across 10 states in the U.S. However, it's important to understand that this technology isn't the right fit for everyone—yet. At Zipline, our extensive experience allows us to confidently guide you through the possibilities (and pitfalls) of drone delivery within your specific system.

Amid challenges like rising costs, labor shortages, limited healthcare access, and falling patient trust, recent research from The Advisory Board[1] highlights the urgent need for strategic shifts by industry leaders. This guide aims to cut through the noise and help you evaluate whether drone delivery can support your healthcare system's priorities in improving operational efficiency and patient care.

Making the case for drone delivery



Drone delivery in healthcare is not a matter of if, but when. To determine whether now is the right time to invest, this guide helps you answer the questions you should be asking:

01

Can drone delivery directly support my core goals?

02

How can drones most effectively enhance my health system?

03

Is my organization well suited for drone delivery, given our scale and service area?

04

What are the key challenges and considerations a health system needs to address for successful drone adoption?

01

Can drone delivery directly support your core goals?

Revamping healthcare is all about finding the right balance. Industry leaders strive to improve services without raising costs, while keeping patients and staff happy.

When evaluating drone delivery, you'll want to ensure it supports your broader strategic vision. The key is to focus on clear, attainable goals:

Logistics cost savings

Research from the American Hospital Association[2] (AHA) highlights that rising labor costs and fluctuations in fuel prices are major financial challenges for health systems—both of which are directly mitigated by drone delivery.

Inventory-related activities, including handling, storage, transport, and restocking, consume over one-third of hospital budgets,[3] contributing to approximately **$25.4 billion spent annually[4] by U.S. hospitals on supply chain inefficiencies**.

Labor efficiency

Automating transport processes can mitigate courier delays that interrupt the workflow of clinicians and staff.

71% of nurses[5] report that courier issues impact patient care monthly.

Enhanced patient experience and increased market share

Convenience and accessibility are key factors in patient satisfaction, loyalty, and retention.

Patients who find healthcare providers easy to work with are **9× more likely[6] to stay**.

> **"We are constantly looking at how to optimize the logistics of OhioHealth's network of acute and non-acute points of care and, with our initial Zipline deployment focused on the laboratory operations, we will significantly cut the time it takes to process lab samples and diagnostics, giving our physicians the information they need to make informed decisions faster."**
>
> **Joshua Dritz**
> Senior Director of Logistics/Sterile Processing at OhioHealth

Improved patient care and outcomes

Delivering medication quickly prevents treatment delays and has been shown to improve adherence.

Patients who receive maintenance medications through home delivery are up to **40% more likely[7] to take them** as prescribed for conditions like diabetes, high blood pressure, and high cholesterol. **65% of patients[8] state transportation barriers impact their medication adherence**.

Achieving ESG goals

Per trip, drones emit significantly less carbon compared to fossil fuel-powered and electric vehicles, helping health systems achieve their increasingly demanding ESG commitments.

The U.S. healthcare industry, accounting for 8.5% of the nation's carbon emissions,[9] has seen **66% of its executives[10] formalize ESG initiative plans**, with 61 major healthcare organizations committing to the Administration's Health Sector Climate Pledge to **reduce their greenhouse gas emissions 50% by 2030**.

02

How can drones most effectively enhance your health system?

Drones deliver ROI by providing speed and cost savings in both patient-facing services and back-end logistics.

While not designed to entirely replace existing transportation networks, drones are highly effective in extending service range, improving access, and increasing operational efficiency in a variety of key areas:

Pharmacy

Distributing on demand with expedited home deliveries, overcoming pickup and adherence barriers.

Specialty pharmacy

Maintaining cold chain integrity when drones are equipped with specialized containers for safe medication transport.

Lab and diagnostics

Quickly transporting samples and sensitive equipment streamlines operations by promoting load leveling and continuous sample processing.

Home care

Reducing the need for frequent patient visits and maintaining consistent care in new venues—including hospital-at-home programs—with convenient medication and supply deliveries.

Virtual care

Ensuring seamless service by delivering medications and devices directly to patients after online consultations, which is especially crucial for patients with reduced mobility and chronic conditions.

Time-sensitive intra-facility logistics

Providing fast transport of high-value items between health system departments to streamline critical healthcare operations and move from a just-in-case to a just-in-time inventory model.

Drone ROI projections

Partners of Zipline in the U.S. have made their own ROI projections for drone delivery. Operational and financial benefits our partners have identified include:

50%↓

reduction in delivery costs

10%↑

increase in pharmacy market share

20%↑

increase in home healthcare productivity

2-5x↑

increase in the speed of diagnostic results

18.2% improvement in drug adherence, leading to $5,226 in savings per patient

03

Is your organization well suited for drone delivery, considering your scale and service area?

Understanding your organization's capacity and geographical reach will determine if your health system is ready for drone delivery.

Scale

Investing in automation makes financial sense not for tasks done once or twice a day but for operations at scale, such as at-home prescription deliveries and lab transports. By simplifying, automating, and accelerating these processes, healthcare professionals can allocate their time, energy, and resources more efficiently—and affordably.

At a threshold of 200 deliveries per day across all use cases, drone delivery reaches an economy of scale, offering an efficient, mainstream delivery solution. Larger health systems that already exceed this delivery volume can see immediate ROI from drones, while smaller systems may achieve this over time as they scale up.

To make drone delivery profitable, a smaller health system may focus on ramping up its instant deliveries. This requires detailed risk assessments and working closely with your drone delivery provider to pinpoint use cases that will enhance your services and streamline operations.

> **“By deploying Zipline, we are able to make deliveries faster than ever before, saving time for both patients and our medical workers, enabling faster, affordable pharmacy care that leads to better patient outcomes.”**

Marschall S. Runge
M.D., Ph.D., CEO of Michigan Medicine

Location and geography

Drones are unencumbered by traffic and courier delays, which means they can be faster, more predictable, and more reliable than ground-based delivery—which is even more valuable when temperature control is needed. Labs and prescriptions get where they need to go as fast as the crow flies. Delivery windows can be narrowed to the minute, minimizing uncertainty and wait times.

This speed and precision make drone delivery a great fit for urban and suburban areas where health systems seek to provide more convenience to patients and faster lab turnarounds between facilities. At the same time, drone networks complement the shipping and courier services already in use for longer distances.

Ready to assess drone delivery’s impact on your healthcare logistics?

Zipline’s team offers deep insights into risk assessment and financial planning.

Get in touch at **healthcare@flyzipline.com**

04

What are the key challenges and considerations a health system needs to address for successful drone adoption?

As drone delivery moves toward widespread use, a thorough and informed understanding of the operational, regulatory, and technological landscape is essential.

The drone service checklist: 10 must-have qualities

01 A commitment to safety and compliance

Drones share airspace with small, private aircraft. Unlike commercial jets, these planes aren't all required to transmit their location—and about 15% don't.[11] To safely avoid them, a drone must detect and avoid obstacles even in low-visibility conditions—ensuring reliable service day and night.

Drone delivery providers must also work closely with the FAA to ensure safety as this new technology is introduced into the air space. A provider's ability to meet various regulations determines how, when, and where it can operate. Your provider should actively seek opportunities to enhance public safety while expanding its capabilities.

02 Easy adoption for patients

Patient satisfaction is crucial. The goal should be for patients to be able to pick precise, down-to-the-minute delivery windows to avoid waiting. Delivery location should be easy to set precisely, even on a backyard patio table, for security and convenience. A user-friendly and engaging app interface for both phones and tablets is key, enabling patients to easily place and manage orders, track them in real time, and confirm delivery.

03 Quiet operations

Community acceptance is vital. Drones must operate quietly and safely to avoid disturbances, providing a gentle, barely noticeable, low-impact experience.

04 Resource-saving automation

With the healthcare industry projected to face a shortage of 3.2 million healthcare workers[12] by 2026 according to the AHA, new capabilities like drone delivery shouldn't require additional resources. Instead, they should easily integrate with existing workflows and reduce human reliance, enabling your staff to focus on what they do best: delivering the best possible care for patients. To facilitate automation, a well-designed system emphasizes efficiency and ease of use. For example, drones should be able to be loaded as quickly as one per minute, with an ergonomically designed loading portal situated inside the care facility.

05 Ready for anything—even bad weather

Drones must be ready to go exactly when you need them without having to worry about weather or their contents' safety. They should withstand 35 mph wind gusts, extreme temperatures, icing, and heavy precipitation. An all-purpose design accommodates cold-chain delivery, variable payload capacity, and stability for fragile contents without needing adjustments or special equipment for different types of cargo.

06 Sustainable operations

Low emissions are crucial for long-term sustainability. Carbon emission reduction thanks to drone delivery should be easy to measure and a significant contributor to reaching your ESG goals.

Zipline drones offer 97% reduction in CO_2 emissions compared to traditional cars.

07 Ability to cover your service area—and expand it

Consumer expectations for fast deliveries, shaped by retail and food services, also apply to healthcare. A drone delivery system should offer rapid service within a nearby radius, such as delivering within 10 miles in 10 minutes—up to 7 times faster than traditional automobile delivery. It should also have the capability to extend your reach by as much as 30 miles. This dual capability ensures both immediate local needs and broader regional requirements are met efficiently.

08 Minimal downtime and full-service maintenance

Drone delivery systems should be built with redundancies to handle malfunctions effectively. Your provider should be responsible for any necessary repairs and replacements, ideally offering modular repairs that minimize disruption times.

09 More cost-effective than traditional delivery

The economic viability of drone delivery in healthcare is significantly influenced by volume. For instance, the cost per delivery can decrease by over 70% when scaling up from 25 to 200 deliveries per day. Importantly, drones are not just faster, but should also be more cost-effective than traditional ground couriers.

10 Proven track record

Case studies in healthcare are essential, providing insights into a provider's expertise, reliability, and performance in this high-stakes industry. The unique challenges and stringent regulatory demands of healthcare make proven track records and dependability crucial.

Your next step toward healthcare innovation

Drone delivery is not just a futuristic concept; it's a practical solution that is already transforming healthcare logistics. By implementing drone delivery, healthcare systems can achieve significant cost savings, enhance patient care, and stay ahead in a competitive market.

Zipline's innovative approach to drone delivery offers a seamless, efficient, and scalable solution that can meet the diverse needs of modern healthcare systems.

To explore how drone delivery can revolutionize your health system's logistics and patient care, contact Zipline's healthcare experts. They can help you understand the specific benefits for your organization and guide you through the process of integrating this cutting-edge technology into your operations.

Ready to explore instant delivery for your health system? Get in touch.

healthcare@flyzipline.com

flyzipline.com

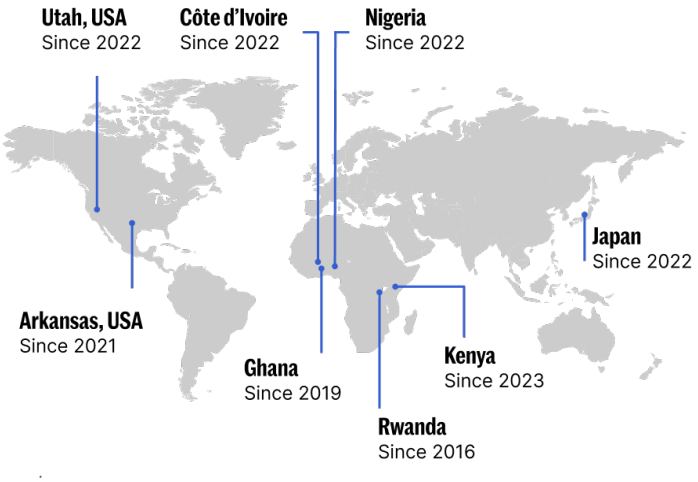
About Zipline

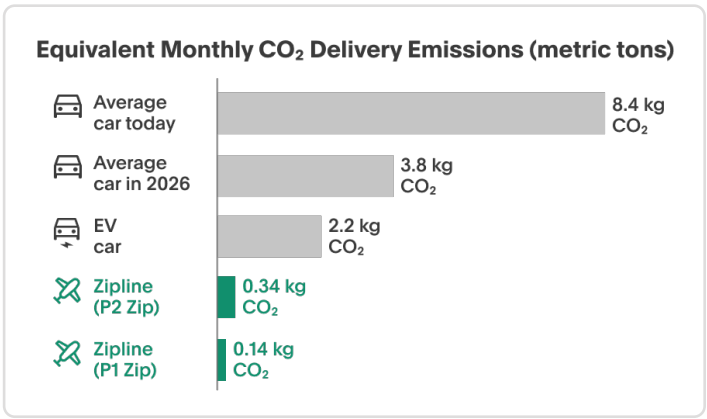
Zipline helps innovative health systems like Michigan Medicine and Cleveland Clinic reimagine how they offer care, with fast drone delivery. By providing fast, reliable, and precise deliveries, Zipline makes healthcare more effective, accessible, and efficient for everyone—from providers and payers to patients and caregivers.

With Zipline's autonomous drone delivery network, health systems can safely deliver prescriptions and over-the-counter medications, turn around lab tests faster for quicker diagnoses, bridge the gap in telehealth and home healthcare, and distribute inventory across their facilities. Learn more at www.flyzipline.com/healthcare.

The global leader in instant logistics

Zipline was founded to create the first logistics system that serves all humans equally. **We design, manufacture, and operate the world's largest instant logistics and delivery system**. Zipline is a trusted partner for businesses, governments, and consumers and currently supports the healthcare, public health, restaurant, retail, e-commerce, and animal health sectors. Zipline currently operates on three continents: North America, Africa, and Asia.





Environmental sustainability

Zips are small, electric, and fit-for-size for the goods they carry—no need for 4,000-pound vehicles to drive 5 pounds across town. Zipline's autonomous drone fleet is fully electric and zero-emission.

Zipline's smart fulfillment service is designed to **minimize waste**, efficiently distributing goods from a single centralized location. This service helps eliminate overstocking and reduce spoilage while increasing product availability.

One unified, end-to-end system

Autonomous drones (Zips)
Zips are lightweight, electric, autonomous delivery drones with unmatched convenience, market coverage, and speed. They are equipped with sensors and safety systems to operate in a variety of conditions and environments.

Fleet management
Zipline's fleet software autonomously manages Zip traffic and availability, reducing congestion and optimizing throughput. The system integrates with the national airspace and autonomously deconflicts with other air traffic.

Apps and software
Zipline offers an API integration and dashboard that empower partners to manage deliveries and see important insights and metrics. Customers have an easy-to-use app that helps them order, manage, and track deliveries in real time.

Endnotes

[1] The Advisory Board. "What CEOs Need to Know in 2024," https://www.advisory.com/content/dam/advisory/en/public/success-pages/what-ceos-need-to-know-in-2024-executive-briefing.pdf

[2] American Hospital Association, "Massive Growth in Expenses and Rising Inflation Fuel Continued Financial Challenges for America's Hospitals and Health Systems," April 2022, https://www.aha.org/guidesreports/2023-04-20-2022-costs-caring

[3] Bandar Balkhi, Abdullah Alshahrani, and Anas Khanc, National Library of Medicine, Saudi Pharmaceutical Journal, "Just-in-time approach in healthcare inventory management: Does it really work?" December 2022, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9805965/

[4] Business Wire, Navigant, "Hospitals' Supply Chain Savings Opportunity Increases 10% to $25.4 Billion in 2018, Navigant Analysis Shows," October 2018, https://www.businesswire.com/news/home/20181018005110/en/Hospitals%E2%80%99-Supply-Chain-Savings-Opportunity-Increases-10-to-25.4-Billion-in-2018-Navigant-Analysis-Shows

[5] Business Wire, MedSpeed, "New Survey of 350+ Nurses from American Nurse Reveals Medical Courier Errors Have Significant Impact on Patient Care," May 2022, https://www.businesswire.com/news/home/20220503005860/en/New-Survey-of-350-Nurses-from-American-Nurse-Reveals-Medical-Courier-Errors-Have-Significant-Impact-on-Patient-Care

[6] Sarah Sinha and Loren McCaghy, Accenture, "Health experience: The key to improving patient loyalty," https://www.accenture.com/us-en/insights/health/difference-between-loyalty-leaving

[7] Susan Peppers, Express Scripts, "5 Reasons to Switch to Home Delivery," October 2020, https://www.express-scripts.com/corporate/articles/5-reasons-switch-home-delivery

[8] Sunil Kripalani MD, MSc, Laura E. Henderson MS, Terry A. Jacobson MD, and Viola Vaccarino MD, PhD, ScienceDirect, Mayo Clinic Proceedings, "Medication Use Among Inner-City Patients After Hospital Discharge: Patient-Reported Barriers and Solutions," May 2008, https://www.sciencedirect.com/science/article/abs/pii/S0025619611607246

[9] The White House, "FACT SHEET: Health Sector Leaders Join Biden Administration's Pledge to Reduce Greenhouse Gas Emissions 50% by 2030," June 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/30/fact-sheet-health-sector-leaders-join-biden-administrations-pledge-to-reduce-greenhouse-gas-emissions-50-by-2030/

[10] Rick Kes, The Real Economy Blog, "ESG's growing impact on the health care industry: Spring 2022 outlook," February 2022, https://realeconomy.rsmus.com/esgs-growing-impact-on-the-health-care-industry-spring-2022-outlook/

[11] M. Gilbert Wu, Seungman Lee, Christine C. Serres, Bilal Gill, Matthew W. M. Edwards, Samantha Smearcheck, Tony Adami and Sean Calhoun, "Detect-and-Avoid Closed-Loop Evaluation of Noncooperative Well Clear Definitions," July 2020, https://aviationsystems.arc.nasa.gov/publications/2020/2020-76649_Wu_JAT.pdf

[12] American Hospital Association, "Data Brief: Health Care Workforce Challenges Threaten Hospitals' Ability to Care for Patients," October 2021, https://www.aha.org/system/files/media/file/2021/11/data-brief-health-care-workforce-challenges-threaten-hospitals-ability-to-care-for-patients.pdf

Transform patient care with advanced drone delivery.

Contact us at **healthcare@flyzipline.com** or **flyzipline.com** and start building a custom logistics solution for your organization.

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