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The Renaissance of Healthcare Logistics Part 2: Market Dynamics

Healthcare logistics market dynamics

Healthcare logistics, a market valued at roughly $140 billion in 2026 and expected to surpass $200 billion by 2030,[1] has long been one of the most demanding and high-stakes environments across all supply chain verticals. What has changed is not the underlying criticality of healthcare supply chains, but rather the convergence of structural pressures that are pushing logistics performance from a back-office consideration to a strategic priority.

Supply chain disruptions during COVID-19 exposed fragilities across global pharma, medtech and diagnostics networks, while ongoing geopolitical tensions and capacity volatility have further increased the cost and risk of moving regulated healthcare products across borders. At the same time, sustained pricing and margin pressure on manufacturers and providers has elevated supply chain optimization from an efficiency lever to a source of competitive advantage. Together, these forces have created an inflection point for healthcare logistics companies able to deliver resilience, transparency and cost discipline at scale.

Compared with other logistics verticals such as consumer goods or industrials, the items being transported carry consequences that go far beyond financial loss (which can still be significant for some products). A delay in shipment or a temperature deviation can directly affect patient outcomes, clinical integrity and even survival rates.

Consequently, healthcare logistics companies operate under stringent service-level agreements, which are only intensifying as healthcare providers consolidate into larger, more sophisticated organizations with centralized procurement, standardized operating models, and heightened

expectations for performance and transparency. Especially after the COVID-19 pandemic, providers are less tolerant of delivery uncertainty, inventory disruption and service variability from their logistics partners, and they increasingly view logistics as integral to their clinical and financial performance.

Furthermore, specialized handling — including cold-chain management and chain-of-custody control — is becoming more critical with growth in biologics, cell and gene therapies, radiopharmaceuticals, and other products with greater logistical complexity (and per-unit cost). For example, vaccines, cell and gene therapies, and tissue samples must be maintained within narrow temperature ranges, and radiopharmaceuticals require delivery within specified time horizons. Even minor deviations can render a product unusable and create liability. The pharma sector is estimated to lose around $35 billion annually due to temperature-controlled logistics failures, and up to 50% of vaccines globally are discarded because of temperature faults.[2,3] These losses underscore not only the operational risk embedded in healthcare logistics, but also the growing economic incentive to deploy AI, sensor technology, and predictive analytics to anticipate disruptions, prevent excursions and reduce waste.

While the combination of rising operational complexity, external shocks and economic pressure is exposing inefficiencies across the healthcare logistics ecosystem, advances in AI, sensors and data infrastructure are making it increasingly feasible to address them. This backdrop is unlocking opportunity for specialized, high-reliability service providers and technology-enabled platforms to capture share, deepen customer integration and, ultimately, create defensible niches at the intersection of logistics and healthcare.

AI disruption and opportunity

AI offers a rare opportunity to leapfrog into a new era of operational maturity for a market segment historically characterized by paper trails, manual interventions and opaque vendor relationships. Beyond efficiency gains, AI has the potential to transform the structure of healthcare logistics itself, redefining how products are sourced, monitored and delivered, and how logistics providers interact with manufacturers, distributors and providers. Early adopters are already demonstrating that the integration of AI into logistics management can yield measurable improvements in performance, resilience and profitability. For investors, this evolution marks a shift from logistics as an asset- and labor-intensive service to a data- and insight-driven platform play. For strategics, this is both a threat and an opportunity.

Below are several case studies bringing to life real-world application of AI in healthcare logistics.

Rewiring logistics operations: AI-driven freight brokerage and automation

Freight brokerage has traditionally been a high-friction domain marked by manual documentation, opaque pricing and inconsistent communication.

Flexport is demonstrating how AI can rewire this operating model. In its 2025 product release, Flexport unveiled AI-driven automation across customs automation, document management and predictive routing.[4] The company's platform now uses natural-language interfaces to allow shippers to query shipment data in real time (e.g., "show me delays in Asia-to-U.S. ocean freight this week") and allow machine-learning algorithms to match carriers to loads based on performance history, cost and compliance.

The impact is tangible. Flexport's AI-based customs and duty-drawback tools have delivered up to 40% higher refund recoveries than manual methods, while automated freight optimization has been shown to reduce shipping costs by around 10% in early pilot programs. These capabilities have helped Flexport grow beyond the bounds of a traditional broker into a partner that sits at the intersection of logistics execution and data analytics.

For healthcare logistics, the implications are significant. AI-driven brokerage could dynamically allocate time-sensitive shipments such as temperature-controlled biologics or surgical equipment, ensuring optimal routing across carriers while maintaining compliance with chain-of-custody standards. Smaller healthcare-focused freight brokers that have long been constrained by scale and manual processes could leverage similar technology to operate as AI-first digital platforms, enhancing both reliability and margin performance.

Predicting and preventing failures: AI in cold-chain monitoring

Cold-chain logistics is among the most complex and unforgiving segments of the healthcare supply chain. Even a brief temperature excursion can render a shipment of biologics unusable, resulting in financial loss and clinical disruption. Logistics leaders are applying AI to anticipate and prevent these failures.

Large global logistics providers such as DHL are increasingly applying AI to healthcare-relevant challenges within cold-chain logistics. Rather than focusing solely on labor productivity, these efforts center on predictive analytics platforms that fuse sensor telemetry, weather data and vehicle diagnostics to identify emerging risks in temperature-controlled transport.[5] In practice, these systems enable proactive interventions, such as rerouting shipments, recalibrating equipment or dispatching technicians, before a temperature excursion compromises product integrity.

Similar approaches are being adopted across the sector. UPS Healthcare has expanded its Global Control Tower capabilities to provide real-time visibility, risk scoring and exception management across temperature-controlled pharmaceutical shipments,[6] while Kuehne+Nagel, through its PharmaChain platform, is applying advanced analytics to lane qualification, temperature monitoring, and deviation management across air and ocean.[7] This momentum suggests that the combination of AI with sensors and large datasets is transforming what can be expected from cold-chain partners.

Competitive dynamics and investments in healthcare logistics

The convergence of structural market changes and AI enablement is driving rapid consolidation, strategic expansion and the emergence of technology-driven, high-value operators. M&A activity is accelerating as buyers compete to secure high-quality, specialized operators capable of delivering reliability, compliance, and technology-enabled performance that translates into predictable cash-flow generation while supporting the build-out of end-to-end service capabilities.

Private equity driving consolidation

Private equity has increasingly targeted specialized pharma and healthcare logistics providers, recognizing the combination of recurring revenue, regulatory barriers to entry and attractive margin profiles. Sponsors are focusing on operators with deep domain expertise in temperature-controlled logistics, clinical trial services and time-critical transportation. The industry's continued high level of fragmentation enhances its appeal to private equity, as investors can deploy proven buy-and-build strategies, with global 3PLs and larger funds well positioned to scale and support these platforms. Recent transactions illustrate this trend:

- Quality Life Science/Bluejay Capital (2025)
- Denali Growth/Tobin Scientific (2025)
- Argosy/Western Peak Logistics (2024)
- AUCTUS Capital/Life Courier (2023)
- SYZ/SK Pharma (2022)
- Atlantic Street Capital/Linden Capital/BioTouch (2022/2018)
- Blackstone/LifeScience Logistics (2021)
- Swiss Life Asset Managers/Infrareal GmbH (2021)
- NB Aurora/PHSE (2020)

These investments reflect a broader strategy of building scaled, compliance-oriented platforms capable of serving pharmaceutical manufacturers, laboratories, hospitals and medtech providers with increasingly complex service requirements.

In parallel, healthcare-focused private equity funds are increasingly moving downstream into logistics to control product delivery, integrity and patient access within the value chains they already invest in. Examples include:

- Water Street/GlobalMed Logistix (2026)
- Water Street/MedSpeed (2024)
- Assured Healthcare Partners/Pharma Logistics (2024)
- Archimed/Bomi (2019)

This strategy reflects a recognition that logistics performance directly impacts clinical outcomes, regulatory risk and brand reputation. Controlling or influencing the logistics layer enhances value creation across broader healthcare portfolios.

Global strategics expanding healthcare logistics footprints

Large global integrators and strategics are aggressively expanding their healthcare verticals, viewing the sector as structurally higher margin and less exposed to the cyclical volatility of traditional freight markets. Healthcare volumes, driven by biologics, diagnostics and chronic disease demand, provide defensible growth relative to industrial and consumer goods logistics.

Notable examples include:

- DHL/SDS Rx (2025)
- Cencora/NextPharma Logistics (2025)
- Nippon Express/Simon Hegele (2025)
- UPS/Andlauer (2025)
- Yusen/Walden (2025)
- UPS/Frigo Trans + BPL (2025)
- DHL/CRYOPDP (2025)
- UPS/MNX (2023)
- UPS/Bomi (2022)
- Geodis/Trans-o-Flex (2022)

These transactions demonstrate a strategic push to acquire specialized capabilities in cold chain, final-mile healthcare delivery and regulatory compliance rather than building them organically over extended timelines.

Emergence of bootstrapped technology-driven operators

Alongside sponsor-backed consolidation, a new class of attractive, founder-led assets is emerging. These companies differentiate themselves through deep healthcare domain

expertise, operational discipline and, increasingly, proprietary technology platforms that enable visibility, compliance and AI-driven supply chain orchestration. Examples include:

- DeSpir Logistics
- Langham Logistics
- BioRelo
- Alom/Yourway

Often built organically, these businesses combine strong customer relationships with institutional-quality operations, making them highly attractive acquisition or partnership targets.

For more information, please contact us.

Endnotes

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About the Authors

L.E.K. Consulting

Ilya Trakhtenberg
Ilya Trakhtenberg is a Managing Director in L.E.K. Consulting's Chicago office and leader of the firm's Healthcare Supply Chain practice. Ilya is a senior member of the MedTech practice and founded L.E.K.'s MedTech Launch Center of Excellence. He serves as a pragmatic, strategic adviser to corporate and private equity clients on accelerating business growth, developing and launching new products, and enabling growth execution (e.g., commercial excellence, supply chain optimization).

Jock Fullmer
Jock Fullmer is an Engagement Manager in L.E.K. Consulting's Chicago office and is aligned with the firm's MedTech & Healthcare Supply Chain practice. Jock's experience covers a range of mission-critical topics for players in the healthcare ecosystem including commercial/GTM strategy, growth strategy and M&A.

About the Authors

Lincoln International

Ryan McDermott
Ryan McDermott is a senior officer in Lincoln International's Transportation & Logistics Group. He has extensive experience advising private equity firms, as well as public and privately held companies, on mergers and acquisitions. He specializes in healthcare and pharmaceutical logistics, specialty transportation, white-glove logistics, specialized freight forwarding & brokerage, and transportation and logistics infrastructure. He brings deep sector insight and transaction expertise to sharpen strategic positioning, clearly articulate differentiated value, and proactively address key diligence considerations to deliver strong outcomes for clients.

Dirk Engelmann
Dirk Engelmann is a Managing Director in Lincoln International's Frankfurt office and serves as Europe and ROW Head of the firm's Transportation & Logistics sector. He advises corporate clients and private equity investors on domestic and cross-border mergers and acquisitions. He specializes in transportation and logistics transactions, with additional experience across the healthcare, engineering, consumer goods, and aviation sectors, much of which has been gained through executing complex international deals. Dirk oversees the full transaction lifecycle, from origination through execution, leveraging best practices and current market insights across valuation, due diligence, and process management.

Gaurang Shastri
Gaurang Shastri is a Managing Director in Lincoln International's Chicago office and serves as Head of North America for the firm's Transportation & Logistics sector. He brings over 20 years of experience advising leading private equity firms, Fortune 500 companies, entrepreneurs, and private business owners on mergers and acquisitions. His experience spans a broad range of sub-sectors, including 3PL and 4PL services, aftermarket services, aviation services, e-commerce fulfillment, freight forwarding, intermodal and drayage, last mile logistics, marine services, pallet management, rail services, reverse logistics, and warehousing and distribution. Gaurang is also a frequent contributor to leading media outlets, including Bloomberg Radio, Inbound Logistics, and Transport Topics.

Justin Berkson
Justin Berkson is an Associate in Lincoln International's Transportation & Logistics Group. He focuses on advising private equity firms, as well as public and privately held companies, on mergers and acquisitions. He has experience across a range of transportation and logistics subsectors and brings strong analytical rigor, sector insight and transaction experience to support clients in evaluating strategic alternatives, positioning assets effectively and navigating complex processes.

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