The Pharmaceutical Supply Chain: Closing the Visibility Gap

The State Of Pharmaceutical Supply Chain: Industry Report 2021
Nonstop advancements in science and technology are constantly reshaping the pharmaceutical industry and propelling it forward. While cold chain shipping has always presented a significant challenge, the COVID-19 pandemic highlighted the need for visibility at every node along the chain. In the wake of escalating cold chain and pandemic supply challenges and mounting consumer pressures, a sea change is underway in harnessing greater visibility and smarter paths to patient communities.

The pharmaceutical supply chain is making a sharp pivot out of necessity from a Just-In-Time (JIT) model to a test in agility, resilience, and disruption that goes far beyond vaccinations to navigate fast-growing industry complexities. In this study we explore what’s driving the current trends and the bold, deliberate actions most pharmaceutical and life science supply chain executives are taking now to reduce waste and accelerate patient outcomes.
INTRODUCTION

This FourKites and Accenture report includes survey findings from one hundred supply chain executives across the United States—uncovering the current lack of visibility and accelerated industry need for predictability and control across the supply chain.

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Nearly a third of the executives surveyed identified product protection and the urgency to quarantine as their most demanding storage and transportation challenges. While almost half of the respondents indicated that both security and temperature reporting had the greatest impact in managing both security and performance.

These numbers reflect the ongoing cold chain challenges for the pharmaceutical industry where cold chain failure can be catastrophic. The World Health Organization (WHO) reports that more than half of vaccines are wasted worldwide. According to the United Nations, with smarter cold chain management strategies in place, a billion vaccines could have been saved during the COVID pandemic.
The problem? Our reporting shows that more than half of pharmaceutical giants surveyed still aren’t implementing warehousing visibility solutions. With less than half of enterprise pharmaceutical and healthcare supply chain organizations leveraging visibility solutions, there has never been a greater opportunity to advance the pharmaceutical supply chain. Supply chain leaders are on the edge of mitigating waste that has plagued the industry for decades while taking a more active role in the product-to-patient journey.

Because supply chain interruption is anticipated, it’s important to question if it is avoidable, and how to prevent it from recurring. Unopened vial wastage is generally attributed to cold chain and stock management issues that can be minimized with visibility and the window to intervene when necessary. With deeper warehouse visibility—manufacturers can monitor product temperatures and other conditions like humidity—with the ability to connect with carriers and locations to alert them if conditions are falling outside parameters and compliance.

In a volatile supply chain market with active disruptions and whatever comes next, the JIT model is being replaced with a strategic, decisive, and exacting path to patients.

Pharmaceutical executives have identified up to 20% spoilage rates for non-COVID-19 vaccine wastage due to temperature failures in transport. That’s up from 2.6% across 57 U.S. immunization programs in 1999 despite considerable and readily available technology advancements since then.

Pharmaceutical executives are seeing vaccine waste Up to 20%

Changes are coming—and they are expensive.

Suppliers in the healthcare and life sciences industries today face a monumental challenge. The diversity of medications, treatment options, and access to healthcare facilities, including telemedicine, is great news for patients, but can cause serious challenges for the unprepared pharmaceutical supply chain.

Being able to pinpoint when and where products dip out of recommended temperature ranges is critical since in many cases, the manufacturer owns accountability for the vaccine or therapy until the point of patient vaccination or administration onsite at the healthcare provider. That means healthcare providers have less ownership of the product even after it enters their facilities—officially manufacturer-owned until it’s administered to the patient.

This costly shift in accountability along with the growing cold chain complexities and therapy personalization have not gone unnoticed by pharmaceutical manufacturers either. Bottom-line, high-performance-focused pharma supply chain executives understand the new C-level mandate for the industry—unrelenting visibility and the ability to intervene with immediacy. Most organizations are actively planning or implementing and investing in new visibility technology—leaving only 6% of pharmaceutical and healthcare organizations behind.

Just 6% of organizations surveyed aren’t investing in visibility technology with no plans to do so.
“FourKites empowers us to tear down some of those silos. The platform is a building block for us to support a customer-centric ecosystem of healthcare products, supply chain solutions and adjacent services. We’re pulling together all of the components onto our platform for awareness of what’s happening. And it will unlock our supply chain to perpetually operate at the highest level. It’s allowing us to actually see— it’s really hard to collaborate when you can’t see what’s happening.”

JOSHUA DOLAN
VP OF GLOBAL LOGISTICS,
CARDINAL HEALTH

NOW IS THE TIME TO INNOVATE

IoT is making it more possible

The need for adaptability, precision, and agility has never been more critical to pharmaceutical manufacturers, healthcare providers, and their patients—a robust trifecta only achievable with real-time supply chain visibility and powerful data insights. Manufacturers need the ability to monitor vaccine shipments every step of the way with the ability to connect with vendors to immediately intervene, taking swift action when the product falls outside of recommended temperature ranges.

With the Internet of Things (IoT) becoming pervasive and visibility technologies readily available, manufacturers can follow each shipment from departure to its destination. The number of organizations leveraging IoT in the cold chain is accelerating amid the ongoing COVID healthcare crisis. The cold chain IoT tech market is projected to be worth almost $5B in 2021.

Our pharmaceutical industry report focuses on the urgent demand for uninterrupted visibility with edge technologies across the industry landscape with growing opportunities to circumvent product loss amidst disruption.

The annual cold chain IoT tech market worth has climbed to $4.79 billion

Source: Pharma Manufacturing, “Exploring IoT-powered telemetry in Pharma cold chains”, Emily Newton, July 13, 2021
NOW IS THE TIME TO INNOVATE

Few organizations are ready to risk being left behind.

The majority—a commanding 94% of the executives surveyed—actively leverage visibility technology to track inbound raw materials and plan manufacturing schedules. However, nearly a third of them are not satisfied with their existing platform’s capabilities—leading many of them to implement a modern, digital Supply Chain Visibility (SCV) solution for greater control and more robust capabilities.

The trend is undeniable with 93% of those surveyed implementing SCV in the next year and 63% acting swiftly within the next six months.

Technology is becoming more critical through disruption.

In their Q4, 2020 report, “How to become CEIV Pharma Certified,” the International Air Transportation Association (IATA) explores how the Pharmaceutical logistics market is growing more complicated with 250 COVID-19 vaccines actively in development, and obstacles and product loss increasing with cold-chain requirements. The study navigates mitigating temperature excursions and vaccine loss across the chain. (See graphic.)

Due to temperature excursions, half of vaccines are wasted annually, costing manufacturers billions of dollars. The stakes are rapidly escalating with more healthcare providers taking little to no responsibility for the product until the moment it’s administered directly to patients.
Inventory models are changing.

Vulnerabilities in pharmaceutical supply chains have existed for years. However, the shortfalls have never been more consequential or more pronounced. Throughout the ongoing global epidemic, costly damages—both in monetary value and dire patient need—resulted in devastating product loss. Unfortunately, medical wastage isn’t unique to the urgency of the pandemic.

Other perils have historically challenged pharmaceutical supply chain leaders, including lack of product availability due to either expiration or transportation delays, product recalls, theft, damage, and other types of loss. Tracking product quantities on the move helps organizations avoid overstocking specific time-sensitive drugs to maximize stock, ROI, and availability while minimizing waste. Deeper transparency into the product on the move can also reduce the Bullwhip Effect—overstocking that occurs in Pharmaceutical and other supply chains lacking predictability and a lack of actionable data insights.

First In, First Out (FIFO) management difficulties are more abundant without accessible and current inventory data. Organizations can make agility gains with deeper visibility to fuel smart, swift stock optimization. With the right SVC solution, pharmaceutical and healthcare businesses can build a more resilient and competitive supply chain, optimizing it and enabling stricter compliance mandates.
Almost a third of survey respondents identified product protection as their biggest pain point in transporting and storing pharmaceuticals. 96% of the pharmaceutical supply chain executives pinpointed security reports as their main method to promote product retention—outranking both temperature and regulatory reporting. Their concerns are not unfounded. The United States ranks in the top three countries for Pharmaceutical cargo theft.

Reports helped to manage performance and security

Protecting products from damage and theft is a clear priority for pharmaceutical and healthcare organizations, and the numbers explain why.
The average value of Pharmaceutical theft reaches into the six figures with even the smaller thefts providing a sobering contrast to other industries. When theft does occur, they are generally larger losses—resulting from an entire truckload being stolen or a break-in at a facility.

In 2020, $1.2M in oncology drugs were stolen from cold storage at a warehouse—the largest annual Pharmaceutical theft with the next largest for the year involving $600,000 in pharmaceuticals stolen from a distributor.

In addition, product loss occurs due to a full myriad of factors including expiration and product falling out of compliance or the given temperature parameters. According to Supply Chain Dive, vaccine losses due to temperature excursions cost around $34.1 billion annually in lost product cost, replacement cost, and wasted logistics investments.

**Product loss is a growing concern.**

Pharmaceutical executives are seeing vaccine waste Up to 20%

Healthcare Packaging, “Seven Recent Statistic in Pharma Cargo Theft,” Keren Sookne, October, 29, 2020
Finding assurance in innovation.

Real-time security reporting can help organizations mitigate risk. With countless pharmaceutical products being carried via parcel, courier, air freight, and trucking, it is critical to have a process that enables you to monitor the progress of every package in transit at any given time. Many organizations focus on using physical security practices as guard rails for the supply chain. The methods used can vary—from retaining third-party security services to follow shipment progress to dispatching decoy shipments. More businesses are enforcing driver mandates banning vehicle stops within the first and last 250 miles—where the risk for theft is greatest.

IoT-based sensor tracking augments these procedures with real-time data and alerts, providing greater insight into the security and status of the product. With physical location tracking of each shipment at all times—companies receive alerts when a truck stops or goes off-route. SCV platforms can even provide insights into where a truck went after being diverted. FourKites offers the ability to define “Red Zones,” or spots where issues are most likely to occur. The platform provides alerts when a load is approaching a designated high-risk area—helping organizations mitigate disasters before they can occur.
Quality assurance is the key driver for organizations looking to enhance security and visibility requirements—followed closely by improving customer experience and operational execution respectively.

Quality assurance is driving SCV investments.
QUALITY ASSURANCE IS KEY

The small details make a big impact.

In many other industries, the concept of true quality assurance throughout the end-to-end supply chain doesn’t exist at the transaction level, not the way it does for the healthcare supply chain. Because in Pharmaceuticals, life sciences, and healthcare, businesses with life-saving goods cannot afford to simply hope for the best. To build an agile, adaptable, and resilient pharmaceutical supply chain, organizations need strong, accurate data and real-time insight into what's happening right now—on the ground level.

Eliminating breakpoints across systems can help organizations avoid taking a financial hit while potentially endangering patient lives. Data and visibility can prevent issues from happening before they occur.

Something as simple as a temporary refrigeration failure can have devastating impacts on drug efficacy. Temperature excursions can be minimized with location intelligence and deeper vaccine supply chain visibility—a strategy already supporting other industries in increasing agility while reducing billions of dollars in waste with actionable data and location insights leveraged using IoT sensors every step of the way. End-to-end agility and transparency can prevent costly, ineffective cold chain management while more lives and economies rely on COVID-19 prophylaxis.

While disruption is sometimes inevitable, having critical tools and data points with an unobstructed view can make it much easier to address.

Temperature excursions already cost Healthcare shippers $34B annually

Source: Supply Chain Dive, “Why cold chain tracking and IoT sensors are vital to the success of a COVID-19 vaccine,” Deborah Abrams Kaplan, August 11, 2020
“Over the past few years, shipment tracking has become table stakes across all modes. FourKites technology gives the importing plant extra data, making the process of shipping by air more transparent and efficient.”

JON MOSHER
EXPORT OPERATIONS LEAD, BAYER

MOUNTING INBOUND PRESSURES

Visibility and timing rank high.

While there is a range of inbound supply chain challenges, supplier manufacturing visibility, supplier compliance, and product ETA and visibility in transit topped the list. 39% of respondents identified supplier manufacturing visibility—echoing the concerns of quality assurance as a key driver for innovation. Supplier compliance and product visibility and timing in transit were highlighted as key obstacles by 37% of respondents for each.

Most Pressing Inbound Challenges

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<td>30%</td>
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<td>Scheduling Inbound Appointments</td>
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Timing and location are everything.

The Pharmaceutical supply chain spans multiple touchpoints and transportation modes, sometimes leapfrogging continents from the manufacturers on truck routes to freight forwarders and airplane cargo handlers and airplanes—vulnerable to road conditions and flight delays along the way. Various vaccines, over-the-counter drugs, and gene therapies demand exacting temperature ranges while shipments hop through every layer of the supply chain and across continents until finally reaching healthcare providers—sometimes in communities disconnected from national power grids and lacking basic refrigeration.

So, it comes as no surprise that pharmaceutical supply chain executives see the value in pinpointing the exact location of shipments with predictive ETAs that save vital time and resources without costly expediting. Having an open view into product shipments—any mode, anytime, anywhere—fuels greater efficiency while countering the bullwhip effect. With the ability to calculate accurate cycle timing, organizations can right-size inventory while actively mitigating risk and reducing inventory costs.

The same technology gives organizations a deeper window into supplier manufacturing visibility. In all these areas, smarter SCV innovation is helping pharmaceutical organizations move away from the JIT model to a more strategic, proactive approach.

3M began ramping up production of N95 respirators in January 2020. It dropped non-critical SKUs and refitted production lines for critical supplies, according to Kaitlyn DeSpiegler, global transportation specialist at 3M, speaking at FourKites’ visibility conference in September. 3M put its critical shipments on the FourKites system to get real-time data in one place, which allows 3M to keep less buffer stock on hand, allowing the lean operations and balance sheets many supply chains strive to achieve.”

SUPPLIER OF THE YEAR: 3M, Supply Chain Dive, 9 December 2020
While pharmaceutical organizations are facing a range of outbound challenges, visibility of the product in transit and ETAs again rank in their top-three concerns along with delivery coordination—only possible with end-to-end visibility. More than half of pharmaceutical supply chain executives surveyed identified coordination of delivery windows and security compliance as their most pressing challenge. Meanwhile, just under half, 43% identified visibility of the product in transit and timing as their mounting pressures.

37% identified carrier availability as a critical hurdle, (a basic that any SCV platform should provide). Temperature monitoring was also a significant challenge with 32% identifying it as their most urgent concern. As with inbound challenges, visibility is a significant factor that can empower organizations in addressing challenges in all of these areas.

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Like the inbound concern areas, the outbound challenges come at a time when the COVID pandemic has catapulted pharmaceutical supply chains forward to move faster. Consumers with a growing understanding of supply chain—more visible in their day-to-day lives than ever in 2020—have now seen multiple life-saving vaccines fly through R&D, planning, and approval all in under a year. This unprecedented pace and the evolving pandemic raise the question, “are quicker launches the new supply-chain normal?” Fast vaccine and life-science launches generally mean less stability.

Supply chain speed and flexibility are only possible with the stability data at every point. Visibility solutions must be capable of on-the-fly adjustments to protect demanding and evolving requirements impacted by temperatures, weather, and other outside elements. 68% of pharmaceutical supply chain organizations are already using serialization tracking technology to make agility gains.

Up to 75% EBITDA improvements for pharmaceutical are possible with advanced analytics

NOW IS THE TIME TO INNOVATE

COVID vaccines are a use case in innovation.

The International Air Cargo Association (TIACA) Vice Chairman, Sanjeev Gadhia said “global distribution of COVID-19 vaccines is undeniably on track to be the most demanding logistical challenge in history with an estimated 10 billion doses required for distribution until 2022. That number doesn’t account for the onslaught of boosters to come along with evolving variants.”

According to TIACA, investments in digital and physical infrastructure were trending in direct response to the COVID pandemic. This digital infrastructure has proven to be key in order, PO, and SKU-level tracking of materials and inventory management to maximize vaccine available and prevent expensive penalties and detention costs. With deeper transparency and actionable data analytics, organizations can track multimodal shipments across multiple carriers by order or PO. Real-time product-level visibility on orders in transit and optimized forecasting with on-time delivery monitoring across all suppliers can empower greater precision with an IoT-neutral approach.

16M shipments are needed to vaccinate the entire U.S. population, according to an interview with Operation Warp Speed officials.

Source: The International Air Cargo Association Air Readiness Survey, October 2020
Supply chain organizations are expected to double down on artificial intelligence, advanced analytics and various digital supply chain technologies — and yet the report predicts that “through 2023, less than 5% of control-tower-like deployments will fulfill their end-to-end potential.”

5% is a woeful “success rate”. How can so many companies continue to invest so much in state-of-the-art technologies, and yet fewer than one in 20 control tower deployments are expected to deliver on their potential?

To realize the promise of end-to-end visibility and control over our incredibly complex supply chain networks, we need really big picture thinking—particularly when it comes to the supply chain data networks that serve as the foundation for true digital transformation.

CONCLUSION: RESILIENCE REQUIRES UNCOMPROMISING VISIBILITY

Real-time visibility is the indispensable piece of the puzzle.

“At its core, the control tower concept is about stitching together complex and siloed supply chains so organizations have greater visibility and better insights to help them run more efficient operations.

Real-time visibility platforms are an indispensable piece of the puzzle, and the report predicts that 50% of global product-centric enterprises will have invested in real-time visibility platforms by 2023.”

MATT ELENJICKAL
FOURKITES FOUNDER & CEO
TAKING A BIG PICTURE VIEW OF SUPPLY CHAIN NETWORKS
Collaboration is the next supply chain frontier.

With all but 6% of pharmaceutical and healthcare organizations implementing more modern visibility technologies over the next year—demands on talent are top of mind. As legacy systems are retired and new SCV platforms become the norm, it is important to select a provider that supports your workforce in advancing along with the technology—enabling your existing talent to continually acclimate to cutting-edge updates without the need to retrain or rehire.

FourKites continuing education platform promotes ongoing learning in visibility-related topics for shippers to help their partners and customers maximize the value of supply chain visibility. At FourKites we are investing in the logistics community by doing our part to build technical competencies through a culture of learning.

Continuous learning is a culture.

Based on MIT’s method of modular, active learning, FourKites self-paced courses explore the platform in depth, teaching participants the ins and outs of load tracking, integrations, visibility best practices and tools for success, including notification rules and analytics dashboards. Participants can take only those classes they are interested in, or they can complete four of the six modules to earn FourKites Certification.

The Council of Supply Chain Management Professionals (CSCMP) counts FourKites learning platform classes and certification as part of its continuing education requirements for its own certification process.

“Collaboration is the next frontier in supply chain management, and a robust community is vital to facilitating productive collaboration. This new online certification program is open to anyone in the FourKites community who wants to be on the cutting edge of innovation. By better understanding the FourKites platform and the value of interconnectivity, both within and outside their organization, FourKites-certified logistics professionals can optimize their end-to-end supply chain.”

STEPHANIE KOLACZYNISKI
FOURKITES COO
The FourKites Difference

Optimize Supply Chain Forecasting
Monitor on-time delivery across all suppliers with real-time product-level visibility on orders in transit—even when deliveries are split across multiple carriers.

Dynamically Monitor Temperatures
Increase control and enable a more responsive vaccine supply chain with a powerful view into in-transit temperatures so your team can take immediate action when necessary to preserve life-saving product.

Reduce Transportation Costs
Real-time, in-transit visibility with predictive ETAs enables proactive exception management, saving you costly expediting fees.

Improve Customer Satisfaction
Achieve tighter on-time delivery dates and provide secure, live-tracking dashboards for customers.

Reduce Inventory Costs
Right size your inventory and calculate accurate cycle times with inbound shipment visibility and eliminate the risk of product loss due to damage in transit.
Learn More

For more information, please visit www.fourkites.com
or contact a FourKites representative at 1-888-466-6958
hello@FourKites.com