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Optimising Supply Chain Logistics in Pharmaceutical & Healthcare Sector

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As the pharmaceutical industry becomes more interconnected and data-driven, it is poised for transformation



The pharmaceutical industry in India is rapidly expanding, with an ambitious goal of becoming a global hub for low-cost manufacturing and research and development (R&D). While this growth is promising, it also presents unique challenges at both local and global levels, demanding an overhaul of the entire supply chain. This transformation is vital for ensuring the efficient and effective delivery of healthcare products, an industry where quality is paramount. The article will explore the evolving landscape of pharmaceutical logistics and the critical role it plays in ensuring the health and well-being of the nation's citizens.

Meeting the growing demands of the pharma industry

As the pharmaceutical industry continues to evolve, ensuring the supply chain's integrity and efficiency is of utmost importance. The promise of delivering quality products to patients consistently remains steadfast. However, various local and global challenges have necessitated significant improvements across the supply chain.

The Indian pharmaceutical sector accounts for a substantial share of the global pharmaceutical industry, both in terms of value and volume. It is poised to reach an estimated $100 billion by 2025, with pharmaceutical exports projected to reach $30 billion in the same period. Amid this growth, a key challenge arises from the shifting industry differentiators. Quality and operational performance parameters, such as service levels and cost efficiency, now take precedence over traditional competencies like reverse engineering expertise.

As the Indian healthcare sector rapidly expands and is expected to surpass $500 billion by 2025, the pharmaceutical industry must focus on several key areas for continued growth. These include expanding physical and manufacturing capacity, enhancing cold chain and packaging capabilities, strengthening workforce and organizational capacity, investing in quality, skills, and training, improving process capabilities, and increasing R&D investments.

Challenges in healthcare logistics

While the potential for growth in healthcare logistics is evident, some challenges need to be addressed to drive progress. Some of the major challenges in the healthcare logistics sector include:

Transporting temperature-sensitive drugs: Many healthcare products, including dermatological therapies, birth control pills, and neurostimulation drugs, are heat-sensitive by nature. Transporting these drugs within the required temperature range (2°C to 8°C) is challenging and crucial for maintaining their efficacy.

Long lead times and procurement delays: The procurement of second-line drugs often involves long lead times, with some manufacturers only procuring the active pharmaceutical ingredient after receiving a purchase order. This can result in significant delays in drug availability.

Weak distribution infrastructure: The healthcare distribution network is often unorganized, lacking the necessary facilities for timely and efficient storage and distribution of drugs.

Lack of inventory management: Some healthcare centers lack integrated supply chain management systems, leading to inefficient inventory management and delayed deliveries.

The way forward requires investing in modern, technology-enabled logistics facilities and ensuring the highest standards of quality in drug storage and handling. Temperature-controlled warehouses, equipped with data loggers and rigorous monitoring procedures, are essential to maintain the required storage conditions. Quality control experts, technology, and record-keeping processes must be incorporated into storage and handling practices to eliminate contamination risks.

To reduce supply chain complexity and drive cost savings, pharmaceutical companies need to adopt technology, enhance their regulatory expertise, and collaborate with external experts. Partnerships and information technology play a pivotal role in managing costs effectively. The ability to personalize interactions with stakeholders through digital technology, including sensors and digital services, is becoming increasingly important.

The importance of cold chain logistics

Cold chain logistics is a critical component of the pharmaceutical industry, especially for the transport of temperature-sensitive products. These products, which include vaccines, blood, and allergens, require precise temperature control to maintain their effectiveness.

In 2022, cold chain logistics accounted for more than 30% of the pharmaceutical industry's total value, and this share is expected to increase. The demand for temperature-controlled products is rising, particularly for biologics derived from human cells, which are highly sensitive to temperature changes.

Challenges in transporting temperature-sensitive pharmaceuticals

The pharmaceutical industry in India faces various warehouse management challenges related to temperature control, compliance, accuracy, security, space constraints, supply chain complexity, data management, handling hazardous materials, quality control, and last-mile distribution. Implementing advanced technology, regulatory compliance, and quality management systems, along with optimized storage solutions, can address these challenges effectively while ensuring the safety and availability of pharmaceutical products.

Invest in advanced temperature control systems and monitoring technology to ensure that the temperature remains within the acceptable range throughout the storage period. Regular maintenance and calibration of these systems are also essential.

The safe transportation of temperature-sensitive pharmaceuticals is of utmost importance. Deviations from the required temperature range can lead to a loss of potency or, in some cases, render the product toxic, posing a risk to patients' health. A significant portion of pharmaceuticals is transported under controlled conditions, with some requiring chilled (+2°C to +8°C) or frozen storage.

Advanced analytics, data integration, and automation will play a crucial role in enhancing pharmaceutical supply chains. These technologies enable real-time monitoring and temperature control, leading to more reliable and efficient logistics processes.

Managing a complex supply chain with multiple suppliers and distribution channels can be a challenge, leading to coordination and communication issues.

Pharmaceutical companies need to invest in robust supply chain planning that accounts for various lead times in the supply chain. Employ robust supply chain management software that offers visibility and control over the entire supply chain. Collaborate closely with suppliers and distributors to streamline processes.

In comparison to developed countries, logistics for pharmaceutical products in India still face several challenges, including quality compliance, delivery efficiency, connectivity, and simplified paperwork. Emphasizing good manufacturing practices, good storage practices, and good distribution practices is essential, along with training a professional workforce to ensure the pharmaceutical sector's continued success.

As the pharmaceutical industry becomes more interconnected and data-driven, it is poised for transformation. By addressing the challenges in healthcare logistics, investing in technology, and adhering to quality standards, India's pharmaceutical sector can meet the growing demands of the industry and enhance its position on the global stage. The future of the country's standing in the pharma sector will depend on its ability to ensure supply chain integrity, provide effective delivery systems, and meet international compliance standards.

V. Raju, Business Head - Contract Logistics, Allcargo Supply Chain