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Revamping and Enhancing Pharma Logistics

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Logistics, once considered the final step in delivering medicines, has become one of the most critical pillars of the biopharmaceutical value chain. As biologics, cell and gene therapies, mRNA vaccines and other temperature-sensitive medicines become more prevalent, ensuring product integrity from manufacturing to the patient has become as important as the science itself. The year 2026 has already witnessed a wave of investments and strategic partnerships across Asia Pacific. Companies are expanding cold-chain capacity, building automated distribution hubs, investing in specialised packaging and forging new collaborations to support the next generation of therapies. In this story, we explore the biggest logistics and cold-chain challenges facing the region, how the industry is building smarter and more resilient supply chains, and the APAC markets emerging as leading healthcare logistics hubs.



The rapid growth of biologics and advanced therapies is placing new demands on supply chains, exposing infrastructure gaps and requiring logistics providers to rethink how temperature-sensitive medicines are stored, transported and delivered.

“A non-negotiable in the biopharma sector is the need to maintain temperature integrity across the entire supply chain. While biologics and vaccines require strict temperature-controlled handling, cell and gene therapies demand an ultra-cold ‘cryochain’ environment of –150°C or lower, strict chain-of-custody tracking, and near-zero tolerance for delays. As these therapies become more widely used across Asia Pacific, logistics providers are under increasing pressure to ensure product integrity from manufacturing to the patient,” said **Matthias Meyer, Vice President for Life Sciences and Healthcare – Asia Pacific at DHL Customer Solutions & Innovation.**

Over the past year, DHL has opened new pharmaceutical hubs in Singapore and South Korea. In Japan, DHL partnered with Toho Holdings, one of the country's leading pharmaceutical wholesalers, to develop an advanced healthcare logistics platform. In Thailand, it formed a joint venture with Berli Jucker Logistics, part of the BJC Big C Group, to strengthen the country's healthcare supply chains.

The region presents a diverse logistics landscape. Markets such as Singapore, Japan and South Korea have established cold-chain ecosystems, while emerging economies including Indonesia, Vietnam and India continue to face limitations in cold storage capacity and last-mile connectivity, particularly in rural and geographically dispersed areas.

"This challenge is compounded by heightened temperature control risks and regulatory fragmentation in Asia Pacific, where hot and humid climates, long transit times, and inconsistent power supply are present. These increase the likelihood of temperature excursions, which can compromise sensitive biologics and vaccines. At the same time, differing Good Distribution Practice (GDP) frameworks across countries create a patchwork of compliance requirements, adding cost and slowing cross-border flows," said Meyer.

Beyond infrastructure and regulation, changing healthcare delivery models are adding another layer of complexity.

The shift towards patient-centric care, home healthcare and decentralised clinical trials is changing how medicines are distributed. Instead of large bulk shipments to hospitals and healthcare facilities, there is growing demand for smaller, more frequent shipments and direct-to-patient delivery. In many parts of the region, existing logistics networks are still adapting to these requirements.

"The biopharma sector in Asia Pacific faces a unique combination of infrastructure gaps, regulatory fragmentation, and geographic complexity that makes logistics and cold-chain management particularly challenging. While there is a rapid growth in demand for biologics, vaccines, and advanced therapies in the region, disjointed systems, individualised processes and uneven cold-chain maturity remain core issues that limit accessibility to these critical therapies," said Meyer.

As companies invest in expanding cold-chain infrastructure, experts point out that facilities alone are not enough. "With regard to SOPs, the key is continuous review and refinement. The movement of sensitive pharma shipments needs to be scrutinised at every stage, with teams constantly assessing touchpoints, identifying potential risks and making even small adjustments where needed to strengthen product protection across the journey," said **Sam Gould, Head of Cargo Services, dnata Singapore.**

Building a Smarter and More Resilient Supply Chain

Beyond the inherent complexity of biologics and advanced therapies, geopolitical tensions and growing global uncertainty have added a new layer of risk to pharmaceutical supply chains, accelerating the need for smarter and more resilient logistics networks across Asia Pacific.

"Asia Pacific is moving from a 'capacity gap' to a 'capability gap.' The focus is no longer just on adding cold-chain capacity, but on building smart, compliant, and patient-centric ecosystems. Infrastructure investments and digitalisation must also go in tandem. Specialised cold storage, ultra-low temperature facilities, and GDP-compliant warehouses as well as IoT sensors, real-time monitoring, and control tower models are critical to improving visibility and the entire cold chain supply resilience. The expansion of advanced therapies is also driving the development of cryogenic logistics, 'vein-to-vein' ecosystems, and regional hubs to shorten transit times and manage risk more effectively," said Meyer.

Technology is playing an increasingly important role in strengthening pharmaceutical distribution, improving visibility and enhancing supply-chain resilience. Customers now expect real-time visibility of temperature-sensitive shipments, driving the adoption of digital monitoring platforms that combine IoT sensors, control towers and data analytics to track temperature, humidity and shipment location throughout the journey.

"The technologies having the greatest impact are those that improve shipment visibility, temperature monitoring and exception management. This includes real-time or near real-time tracking, digital shipment monitoring, data sharing between supply-chain partners, and performance dashboards that help teams identify and address issues quickly," said Gould.

Beyond shipment monitoring, companies are also investing in advanced packaging and warehouse automation. Active and passive packaging solutions such as smart containers, phase-change materials and cryoshippers, together with cryogenic logistics systems, are supporting the safe movement of increasingly temperature-sensitive therapies.

"Automated storage or retrieval systems, smart warehousing with robotics can improve efficiency and efficacy in cold warehouses. Increasingly, AI, predictive analytics, and digital twins are being deployed to optimise routes, forecast demand, and proactively manage disruptions," said Meyer.

Healthcare Logistics Hubs in APAC

Healthcare logistics development across Asia Pacific is being shaped by a mix of established regional hubs and fast-growing emerging markets. While countries are investing in cold-chain infrastructure to support biologics and advanced therapies, the pace and maturity of development vary across the region.

"Healthcare logistics development in Asia Pacific is led by a group of advanced 'anchor markets' and supported by fast-rising secondary hubs. Singapore, China, Japan, and South Korea stand out as market leaders, with Singapore serving as the region's premier pharma logistics gateway. China is rapidly scaling its end-to-end biopharma ecosystem with heavy investment in cold-chain infrastructure and domestic distribution. Japan remains a benchmark for quality and precision in temperature-controlled logistics, while South Korea is emerging as a key biologics manufacturing and export hub, driving demand for specialised cold-chain and air freight integration," said Meyer.

Alongside these leaders, high-growth markets such as India and Australia are attracting significant investment. "India is expanding cold-chain hubs and vaccine distribution networks, driven by strong domestic demand and supply chain diversification strategies. Australia, with its mature regulatory environment, is seeing growth in pharma-grade storage and export-oriented logistics. Meanwhile, emerging ASEAN markets including Indonesia, Vietnam, Thailand and the Philippines are also ones to watch. While they represent some of the fastest-growing opportunities, they also continue to face infrastructure gaps that will require sustained investment," said Meyer.

As pharmaceutical innovation accelerates, the ability to move medicines safely, efficiently and reliably will become just as important as the breakthroughs themselves.

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