Supply chain

Optimizing clinical trial logistics for success

A comprehensive guide with the goal of ensuring the timely and secure delivery of clinical trial materials worldwide

The new reality of clinical logistics

Biotech innovation is accelerating—and logistics demands are evolving just as quickly. Global trials now span more regions, regulatory environments, and temperature-sensitive therapies than ever before. At the same time, sponsors are operating under compressed timelines and lean internal teams, increasing the need for logistics models that deliver consistent and reliable performance at scale.

Even small disruptions can have significant downstream impacts. A single day of delay can exceed $50,000 in costs. Cold chain failures contribute to billions in annual industry losses, while regulatory missteps can stall enrollment and disrupt study continuity.

For biotech organizations, logistics is no longer simply operational—it is a critical driver of performance, cost efficiency, and program success. The question is no longer whether shipments arrive, but whether the logistics model behind them is built to scale, adapt, and perform under pressure.

What a modern logistics strategy must deliver

Meeting these demands requires more than coordination. It calls for an integrated, quality-driven model that simplifies execution while maintaining control.

Flexible, scalable delivery

Clinical programs are inherently dynamic—with evolving protocols, expanding geographies, and shifting supply needs. A modern logistics model must adapt to these changes while maintaining consistency and control.

This requires a globally integrated network, strategically positioned infrastructure, and coordinated transportation strategies. When executed effectively, delivery becomes both flexible and streamlined—enabling scale without added complexity.

Streamlined, efficient execution

Fragmented logistics models create friction—increasing variability, extending timelines, and driving unnecessary cost.

A more effective approach unifies transportation planning, courier management, customs facilitation, cold chain oversight, and monitoring into a single framework. With real-time visibility and proactive management, sponsors gain greater control, enabling faster decisions and more predictable outcomes.

Efficiency is the result of simplified, well-orchestrated execution.

Built-in compliance and control

Global clinical programs require consistent alignment with evolving regulatory requirements.

By integrating Importer of Record (IOR) and Qualified Person (QP) services, along with in-country expertise and global quality systems, compliance becomes embedded throughout the logistics process. This ensures documentation, temperature management, and shipment handling meet regulatory expectations at every stage—without delays or uncertainty.

When compliance is built in, execution becomes more reliable and easier to manage.

Finding the right balance: Scale with biotech agility

The ideal logistics partner must balance global scale with the agility to adapt to evolving study demands.

This is achieved through a unified model that reduces handoffs, connects data and visibility across the supply chain, and applies governance without slowing execution. The result is a logistics approach that supports both early-phase flexibility and late-stage consistency—without added complexity.

When scale and agility operate within a coordinated framework, logistics becomes simpler to manage, more predictable to execute, and more efficient to scale.

Together, these capabilities create a more integrated, streamlined approach to clinical logistics—improving efficiency, strengthening control, and supporting consistent performance across every stage of development.

Integrated logistics, designed for performance

Thermo Fisher Scientific's Total Transportation Management (TTM) delivers this value through a coordinated set of capabilities that operate within a single, quality-governed framework.

TTM provides this level of service by offering several key features:

Courier selection and management

TTM leverages a global network of vetted carriers across more than 150 countries, selecting the optimal shipment mode and provider based on study-specific requirements. Continuous performance monitoring ensures consistent service quality while enabling cost-efficient routing decisions.

Customs and regulatory guidance and facilitation

Navigating global regulatory requirements requires both expertise and coordination. TTM integrates Importer of Record (IOR) and Qualified Person (QP) services to ensure compliance with local regulations, accurate documentation, and efficient customs clearance. This helps reduce delays and simplifies cross-border logistics, even in complex environments.

Cold chain supplies management

Temperature-sensitive therapies require precise handling. TTM provides controlled ambient, refrigerated, frozen, dry ice, and ultracold solutions, supported by continuous monitoring and validated packaging strategies. This ensures product integrity while maintaining compliance across all shipment conditions.

Global quality management systems

All logistics activities operate under Thermo Fisher's global quality framework, supported by standardized procedures and in-country expertise. This ensures consistency, regulatory alignment, and reliable execution across regions.

Data monitoring and real-time visibility

Real-Time Track and Trace (RTTT) and the Global Gateway platform provide end-to-end visibility across shipments, inventory, and milestones. Continuous monitoring enables proactive issue resolution, reducing risk and improving overall supply chain performance.

Together, these capabilities create a streamlined logistics model that enhances efficiency, strengthens compliance, and delivers reliable outcomes across every phase of development.

How TTM enhances clinical trial logistics

Clinical logistics is inherently complex—but managing that complexity should not fall on the sponsor.

For biotech companies, the challenge extends beyond moving materials globally to doing so with precision, consistency, and control. Each shipment must meet regulatory requirements, maintain product integrity, and arrive on time to support patients and trial timelines.

TTM provides a unified, quality-driven approach to clinical and commercial logistics. By bringing together every critical component—from intelligent courier selection and performance oversight to Importer of Record (IOR) and Qualified Person (QP) services—TTM embeds compliance, visibility, and control at every step.

Comprehensive cold chain management, spanning controlled ambient to ultracold and LN2, operates seamlessly alongside Real-Time Track and Trace monitoring, in-country regulatory expertise, customs facilitation, and global quality governance. Together, these capabilities work with the goal of ensuring shipments arrive on time, in full, and at temperature.

TTM enhances clinical trial logistics by integrating all transportation elements into a single, coordinated system, reducing variability while improving flexibility, efficiency, and reliability.

Integrated services

By consolidating transportation planning, customs facilitation, courier management, and monitoring into one framework, TTM reduces handoffs and simplifies oversight. A more integrated model enables smoother coordination across stakeholders, improving both efficiency and control.

Strategic infrastructure and global reach

A network of strategically located facilities across the globe, supported by global carrier partnerships, helps ensure timely delivery across regions. This infrastructure enables flexible routing and consistent execution, regardless of study scale or geographic complexity.

Process efficiency and streamlined execution

TTM optimizes logistics workflows through data-driven decision-making and continuous performance monitoring. By selecting the most effective shipment modes and coordinating closely with customs authorities and local stakeholders, TTM reduces transit times, minimizes delays, and improves cost efficiency.

Risk reduction and proactive management

Continuous monitoring through RTTT, combined with expert oversight, allows for early identification and resolution of potential issues. This proactive approach strengthens reliability and protects study timelines.

Expertise and quality assurance

All logistics providers within the TTM network are vetted against strict quality standards. Combined with global quality systems and in-country expertise, this ensures consistent, compliant execution across every shipment.

By simplifying logistics while embedding quality at every step, TTM enables sponsors to reduce complexity, maintain compliance, and deliver clinical materials with confidence

Proven performance at global scale

Clinical supply packaging and distribution: ambient to –80°C

Advanced therapies with –80°C, LN2 storage, and shipping service

Specialty distribution (finished goods; CAM)

Total Transportation Management by the numbers

35+ years
of global clinical logistics expertise

Importer of record capability in
25+ countries

500,000+
clinical supply shipments annually

150+ countries
supported

98%
on-time delivery performance

Case study 1:
Optimizing global distribution

A leading pharmaceutical company with an extensive clinical trial pipeline struggled with frequent supply shortages and needed a comprehensive distribution strategy.

The customer needed support to manage global distribution and to overcome regulatory hurdles. They expected a solution that would reduce cycle time from order to delivery, reduce end-to-end logistics costs, and de-risk the supply chain. They also wanted to maximize visibility, control, and quality while reducing the burden on the sponsor's internal study management group.

The customer partnered with Thermo Fisher's TTM services who analyzed the company's study portfolio, transportation spend, required service levels, and delivery performance. TTM services helped the customer identify and contract with a strategic selection of couriers in optimal locations for their distribution facilities, ensuring the global reach required by the project. They also ensured oversight for third-party depot shipments and provided customs and regulatory guidance. TTM services also provided data-driven and objective monitoring that enabled proactive risk mitigation.

Because of their collaboration with Thermo Fisher, the customer increased their on-time in-full shipments by 4%, reducing overall costs by nearly 30% within the first 6 months of implementation. Partnering with Thermo Fisher's TTM services ultimately facilitated an estimated $10.2M in annual savings for the customer.

Case study 2:
Streamlining cold chain logistics

A medium-sized biotech company with a long-standing partnership with Thermo Fisher needed support with a new study involving temperature-sensitive materials shipped to multiple countries in the EMEA region.

The study materials required strict temperature control at ultracold temperatures. Any temperature excursions would alter the nature of the materials and make them unusable in the trial, posing a substantial threat to the project budget. In addition, the materials needed to be distributed to multiple countries in and outside the EU, and the customer was worried about how customs delays might affect at-temperature delivery.

TTM provided this customer with a solution, including comprehensive cold chain management with zero time out of environment, pack and ship services, and couriers with demonstrated expertise in ultracold transport. Thermo Fisher provided QPs where needed and served as the IOR in multiple countries to ensure that all applicable customs and regulatory requirements were planned for and met. Finally, the customer used the Global Gateway customer portal to track the location and temperature of their shipments, thus alleviating stress and concern.

As a result of their partnership with Thermo Fisher, the customer was able to make all of their study deliveries with zero temperature excursions and an improvement in time to market.

Case study 3:

Regulatory compliance in remote locations

A small pharmaceutical company planned a clinical trial program involving several sites in remote regions within the EMEA.

In planning their program, the company realized that navigating the complex import and export regulations as well as the languages spoken in these regions was beyond their in-house expertise and capability.

Because of its vast network of global partners and IOR capabilities in over 25 countries, Thermo Fisher was able to create a customized solution that included expert regulatory guidance for each involved region. TTM leveraged local partnerships with in-country language-proficient experts to ensure that shipments of clinical trials materials could take place efficiently and without delay.

The solution bolstered the capacity of the customer to conduct the research and manage the supply chain effectively. The materials received successful regulatory clearance without any delays to the trial timeline.

Conclusion: Simplifying complexity through quality-driven logistics

As clinical trials become more complex and timelines more critical, the role of logistics continues to evolve.

For biotech sponsors, success depends on the ability to deliver clinical and commercial supplies with precision, consistency, and control—across regions, regulatory environments, and increasingly sophisticated therapeutic areas.

A fragmented logistics model introduces unnecessary risk, cost, and operational burden. In contrast, an integrated approach enables greater flexibility, improved efficiency, and stronger compliance while simplifying execution for internal teams.

Thermo Fisher Scientific's TTM provides this integrated, quality-driven model.

By combining global infrastructure, regulatory expertise, real-time visibility, and coordinated oversight, TTM streamlines logistics while strengthening reliability and performance. Sponsors benefit from a simplified, end-to-end solution that reduces complexity, protects timelines, and supports cost control.

Ultimately, a logistics strategy built on quality enables more than operational success—it supports faster, more confident progress from development to delivery, helping bring therapies to patients without unnecessary delay.

To learn how a unified, quality-driven logistics strategy can simplify operations, reduce risk, and improve performance across your clinical trial program, connect with our team.

Learn more at **thermofisher.com/patheon**
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