



WHITEPAPER

Changing lives around the world

How the cold chain can provide true global and local access to vital medicine

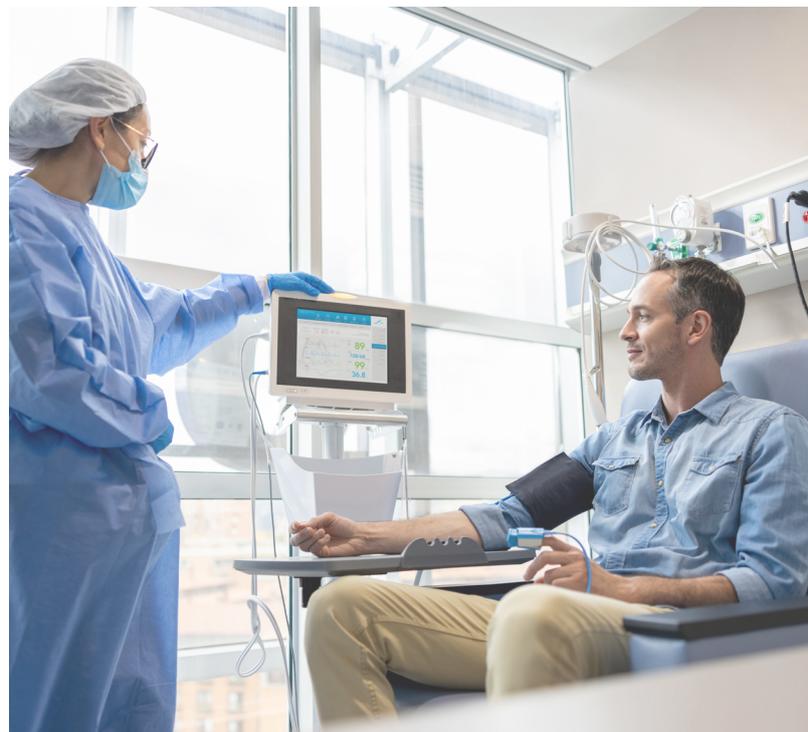
In recent years the cold chain industry has faced the difficulties and costs caused by a global pandemic as well as supply chain disruption from the war in Ukraine.

These difficulties on top of the long-term challenge of providing safe, high-quality yet cost-effective transportation to an expanding global market with new routes and new partners to deal with. Not to mention new and more complex products and advanced therapies that place stricter demands on the entire supply chain.

It's not been an easy time for the cold chain. But it has shown the vital importance of the industry and the temperature-sensitive pharmaceuticals we transport — now and in the future. And, by putting all of us to the test, it's been an opportunity to learn, adapt and get better.

So what does all this tell us about the future of the cold chain and especially the areas where we can improve and even find new value? We'll discuss this in this article, where we identify the 4 key areas for improvement to take the cold chain to the next level.

When we address these areas we make life better for ourselves as individual actors and the industry as a whole. And, even more importantly, we make life better for patients around the world as we get closer to our vision of providing true global and local access to life-changing medicine.





4 key areas: From challenge to opportunity

In this article, we introduce the 4 focus areas for improvement and give a taste of what's to come in future articles where we'll be taking a deeper dive into each one. But if you find an area interesting and want to get started then don't wait to read more – contact us to discuss your needs and how we can help.

For each of these areas, we will discuss the latest advances, technology and best practices in cold chain and how they address the challenges of transporting temperature-sensitive pharmaceuticals globally. Of course, there is some overlap between the different areas but it's easier to break down the challenges and opportunities into individual areas of focus.





4 Key Areas: From Challenge to Opportunity

Sustainability

- Reducing the environmental impact of pharmaceutical cold chain distribution is an issue increasingly putting pressure on the industry.
- A growing focus on cutting emissions and lowering CO₂ footprint, as well as reducing energy consumption, waste, and pollution means that the pharmaceutical industry finds itself facing new challenges while ensuring strict safety standards.
- Higher energy costs also demand more efficient energy use

Solutions include:

- Switching to renewable energy sources where possible
- Energy-efficient cold storage
- Low-emission packaging with lower weight, higher volume efficiency and/or reusable
- Temperature monitoring during the shipment to reduce risk of product waste
- Eco-friendly transport through Sustainable Aviation Fuel, electric trucking etc.
- Life Cycle Assessments (LCAs) provide valuable insights and targeted strategies for further emission-cutting improvements throughout entire supply chain





4 Key Areas: From Challenge to Opportunity

Data and Digitalization

- Maintaining cold chain integrity is crucial for preserving the efficacy of vaccines, biologics, and other temperature-sensitive medications.
- Regulatory authorities have strict guidelines in place to ensure the safety and efficacy of pharmaceutical products. Manufacturers must demonstrate compliance with these regulations throughout the cold chain.
- Protect products with real-time location, temperature and other data
- Use data to enhance supply chain visibility, improve risk management and optimize overall cold chain operations

Solutions include:

- Smart sensors as part of the packaging solution to constantly monitor crucial parameters like temperature, humidity, light exposure and shock during transportation and storage
- Real-time monitoring helps you move from scheduled manual checks and the risk of human error to live status and a rapid, proactive and efficient response if and when something goes wrong
- Data analytics helps you identify patterns, trends and inefficiencies after shipment allowing you to implement the most important preventive and/or value-adding measures





4 Key Areas: From Challenge to Opportunity

Collaboration and Transparency

- Transporting pharma is complex so deeper partner collaboration and data transparency is needed
- Processes can be made simpler and smoother by sharing information between all stakeholders
- Collaboration and transparency help maintain product integrity, reduce risk and assist compliance with different regulatory standards

How to work better together:

- Establish clear responsibilities for accountability and to avoid misunderstandings
- Share information and data to identify potential risks and allow informed decision-making
- Conduct joint risk assessments to identify vulnerabilities and develop risk mitigation strategies
- Choose advanced packaging solutions together to ensure a safe, secure journey and preserve product integrity
- Share monitoring and tracking of real-time location and temperature to allow stakeholders to respond quickly to any changes of plan
- Share knowledge and training to develop awareness and a culture of continuous improvement among stakeholders





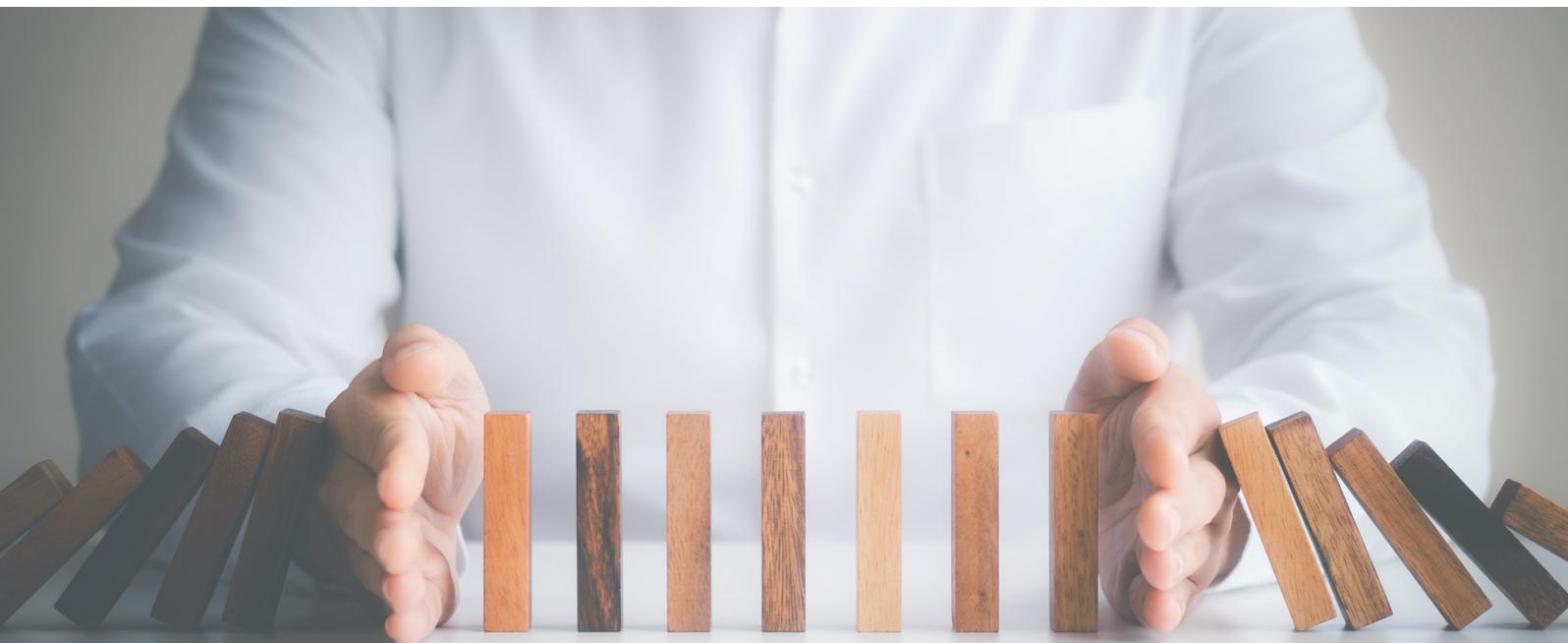
4 Key Areas: From Challenge to Opportunity

Risk Management

- More complex products such as advanced therapies/biopharma are being shipped with stricter temperature requirements
- Supply chains need to cope with — and quickly adapt to — unexpected demand and disruption from events like pandemics and wars
- Supply chain delays, temperature excursions, shipping and handling errors, and inadequate monitoring all add costs and jeopardize safe, timely delivery of vital patient treatments

How to mitigate risks:

- Active temperature-controlled packaging to maintain the desired temperature range throughout the cold chain journey
- Real-time monitoring and data logging to keep an eye on live status as well as provide valuable risk-mitigating insights
- Risk assessment and contingency planning identifies current and potential weak points and gives a plan of action if and when the “unexpected” happens
- Collaborative partnerships with reliable cold chain logistics providers, freight forwarders and carriers is vital to ensure quality, reliability and safety
- Stakeholder training and awareness for all personnel in the cold chain process — including handlers, drivers and warehouse staff — ensures proper handling and transportation of pharmaceutical products





True global and local access to life-changing medicine

That's the big opportunity for all of us within cold chain and the result of working together to address these four areas. So while we look to solve each smaller challenge and make our industry more resilient, efficient, sustainable and yes, more profitable, let's always keep our eyes on the big prize.

Together, we really can make the world a better place and help transform millions of lives around the world. That's not a little thing — and it makes all of our efforts worthwhile.

