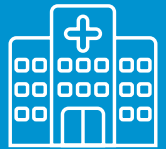# Real-Time Visibility for Humanitarian Supply Chain Management

Helping Direct Relief improve its ability to provide essential medical aid to people in need

SENSITECH

A Carrier Company

Case Study Highlights

DirectRelief

Company Overview

COMPANY

Direct Relief

INDUSTRY

Global, non-profit humanitarian aid organization with a mission to improve the health and lives of people affected by poverty or emergencies

EMPLOYEES

150

HEADQUARTERS

Santa Barbara, California, USA

Challenges

- A need for global supply chain visibility, especially in remote and war-affected areas
- Inconsistent cold storage performance at certain airports
- Minimize product loss for vital, high-value medicinal shipments

Solution

Sensitech TempTale® GEO Ultra and SensiWatch® Platform to provide global, actionable cold chain visibility supporting global humanitarian efforts

Benefits and Outcomes

- Improved distribution success rates, ensuring reliable service to vulnerable populations around the globe
- Active, in-transit event mitigation to prevent product loss due to temperature damage, providing medicinal support even in challenging conditions
- Real-time supply chain visibility, ensuring transparent collaboration with partners
- Shipping lane performance analyses, improving distribution performance and efficiencies to provide better care per dollar spent
- Increased profitability

"We have shipped all over Ukraine with really great connectivity throughout the country. We were unsure what to expect, but we can get a signal all the way through. Everyone loves being able to check and see exactly where our truck is."

— **Jenifer Smith**
Senior Logistics Specialist at Direct Relief

Introduction

Direct Relief works to expand access to lifesaving medicine and healthcare resources when and where it's needed urgently. This non-profit humanitarian organization assists with disaster relief, replenishment programs, and medical support in more than 100 countries. Operating in areas where governments are either unable or unwilling to engage in improving the health of people who are sick or hurt, Direct Relief has provided more than $11.4 billion in medical aid—3.38 billion daily doses of medicine—since 2008. Ensuring these lifesaving medications arrive safely and in good condition is essential to achieving the organization's mission of serving the world's most medically underserved communities. Achieving this goal requires transparent, reliable and cost-effective distribution.

With the outbreak of war in Ukraine in March 2022, Direct Relief began deploying urgently needed medical aid to the country's Ministry of Health and other organizations on the ground. In the months since the war began, Direct Relief has deployed more than 100 shipments totaling 850 tons of medical supplies, including trauma kits, cancer drugs, insulin, antidotes used in chemical attacks and other medicines.

The Challenge

Avoiding Product Loss in the World's Most Challenging Shipping Lanes

Direct Relief ships cold chain products to more than 70 countries, with multiple recipients and logistics partners in each country. This often means dealing with shipping lanes affected by war, disease, disaster or economic crises that impact deliveries of essential pharmaceuticals.

Despite achieving an impressive 84% distribution success rate, some shipments were going above their prescribed temperature limits. To improve that success rate, meet ever-changing shipment challenges and improve global partner collaboration, Direct Relief needed greater visibility than its existing temperature monitoring program was providing.

"When it comes to the cold chain, we get creative in the way that we meet shipping requirements to places like Tajikistan or Eritrea, or some of the more difficult places to ship to," said Jenifer Smith, Senior Logistics Specialist for Direct Relief. "We always need more eyes on a product, to know it's moving the way and speed that we scheduled."

The complexities of globally shipping to underserved or disrupted regions are magnified by the urgency of the supplies in transit and the high monetary value of the products. Product loss or late arrival is not an option.

"Almost all of what we ship is very high value. Insulin-based drugs and cancer medications make up a large part of our cold chain inventory, though we ship a variety of medicines including those for rare diseases. "We needed a real-time visibility solution to maintain and improve upon the cold chain standards required to ensure a safe and efficacious drug supply" said Brent O'Donnell, Cold Chain Lead at Direct Relief.

To address the challenge, Direct Relief turned in 2022 to Sensitech, on whom it had relied for global temperature monitoring since 2019.

The Solution

Reliable Real-Time Visibility with Near-Global Coverage

To ensure the quality and safety of Direct Relief's global pharmaceutical supply, Sensitech delivered a monitoring solution that provides time, temperature and location data in real time, enabling intervention to prevent product loss.

Sensitech's real-time solution combines hardware and software—TempTale® Ultra and TempTale® GEO Ultra devices together with the SensiWatch® Platform—to provide reliable, end-to-end visibility that meets the requirements for regulated pharmaceutical products. Designed for simplicity, the solution features pushbutton start, automatic airplane mode and no complex reverse logistics for used devices that have been shipped to remote locations.

"We like that the device is single-use, especially with the places we ship to, so we're not trying to manage an inventory pool or worrying about trying to get devices back to our distribution centers," said O'Donnell, adding that used devices can be returned to regional centers to be sustainably renewed when convenient, with no time limits or quantity limitations.

Advanced Technology for the Most Challenging Routes

Direct Relief strategically used TempTale® GEO Ultra monitoring devices on their most challenging lanes— such as Ukraine during the Russian invasion—to provide live tracking of product locations and conditions while in transit.

Reporting temperature and location data to the cloud using CAT-M1 LTE connectivity with 2G fallback, the TempTale GEO® Ultra devices provide global visibility covering most of Direct Relief's lanes from origin to destination. Team members and partners have login-free access to follow shipment progress via a web browser or the SensiWatch® Platform app. Notifications ensure that partners, such as the freight forwarder, are aware of important events including delays, flight connection changes, arrival confirmations and temperatures exceeding limits.

External Temperature Monitoring for Lane Qualification

When internal temperature monitoring identified that shipments were getting too cold on certain lanes, Direct Relief added real-time monitors to the outside of its product packaging to better analyze ambient temperature fluctuations.

"Internal monitoring is essential for understanding product condition. But external data can help give you the 'why' of product-level temperature changes," Smith says. "If you can't explain why a temperature is changing, then how can you prevent it in the future?"

Capturing data using the TempTale® GEO Ultra and analyzing it in SensiWatch Platform provided crucial insights for improving the organization's shipment performance. The data has been so eye-opening that Direct Relief now plans to place external, real-time monitors on all international temperature-controlled shipments.

The Results

Cold Chain Excellence with End-to-End Visibility

Since adopting Sensitech's real-time visibility solutions, Direct Relief has realized significant benefits, including:

Improved distribution success rates. Direct Relief now boasts near-perfect distribution success rates, ensuring minimal losses of vital medicinal products despite operating in challenging environments and difficult shipping lanes. With TempTale® Ultra and TempTale® GEO Ultra devices deployed to monitor temperatures and analyze lanes, success rates have risen above 95%. "We have seen a clear improvement since moving to Sensitech," said O'Donnell.

Shipping lane performance analyses. As part of its shipping process, Direct Relief maps historical lane performance by reviewing data from previous shipments to each country. This has proven informative, particularly in highlighting the destination airports where the cold storage is kept at the extremes of the refrigerated range.

"We discovered that in certain countries the cold storage at destination airports is kept either really warm or really cold," said Smith. "For example, we found in Kigali, Rwanda, that their cold room is always set around +2°C. In contrast, the Entebbe, Uganda, airport's cold room is set around +8°C, the upper range of 'cold'."

This analysis also improved pack-out qualification processes. "Now, if we analyze a lane and it has different challenges, we can adjust our pack-out accordingly," said O'Donnell.

Event mitigation to prevent product loss. Using Sensitech's visibility solution to monitor and analyze external temperature

data has informed preventative measures that have improved success rates. "When we're shipping to a partner in Rwanda, for example, we'll advise them that the shipment must be cleared within 24 hours of arriving because the airport's cold storage is very cold," said Smith.

The organization has also been able to make direct interventions while a shipment is still in-transit, preventing potential product loss. "There have been times when our real-time monitor has notified us that shipments have not gone into cold storage at the airport," Smith explained. "We alerted the forwarder, who reached out to the airline to get the product into cold storage. These interventions have been incredibly valuable."

Full global visibility. Global visibility is essential for an organization providing urgent international humanitarian aid, and the TempTale® GEO Ultra has proven invaluable by successfully maintaining cellular connection and visibility across every lane.

"We sent a shipment to Iraq a couple of weeks ago. It had a handover point in Azerbaijan. We were able to see it land at the airport and follow it all the way until I got the notification saying it had arrived in Erbil, Iraq, four days ahead of schedule," said Smith. "Having the data always available at a glance made it easy to track from end-to-end and, ultimately, to communicate effectively about the shipment with the partner.

"We can see where a product is trucking, we can see when a product has left the airport. And we also add the partner's address to the TempTale® GEO Ultra when we send it out. I'll get the notification that product has arrived because the shipment has gone within the geofence at the partner's location. It has been transformative," Smith added.

About Sensitech

Sensitech Inc. is a global leader in delivering supply chain visibility solutions. Our innovative monitoring products and services help to maintain the quality, integrity, and security of our customers' valuable products at every step in their journey, all around the world. For more than 30 years, leading companies in the food, pharmaceutical, industrial, consumer goods and other industries have relied on Sensitech to help protect their products—and their bottom lines.

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