

FROM VISIBILITY TO INTELLIGENCE:

Shaping the Future of Pharmaceutical Logistics

An interview with Bill McGillian, Associate Director of Supply Chain Management, Merck

Harnessing the Potential of Real-Time Monitoring for Enhanced Logistics Intelligence and Reduced Product Loss

Navigating the complex landscape of pharmaceutical logistics, where superior visibility, increased intelligence, and guaranteed product integrity are critical for success, is no easy feat. The adoption of real-time monitoring technologies is increasingly becoming an integral part of the strategy to attain these goals. Yet, along with the undeniable benefits, the implementation of such innovative solutions brings about its own set of challenges, from system integration to cost considerations.



For an in-depth exploration of this topic, we had the opportunity to speak with Bill McGillian, Associate Director of Supply Chain Management at Merck, and a seasoned professional in the realm of pharmaceutical logistics. Bill earned his B.S.E. in Mechanical Engineering from the University of Pennsylvania and has since devoted 30 years of his career to Merck, working in various roles within manufacturing, technology, and logistics.

Throughout his tenure at Merck, Bill has gained extensive experience across numerous API and Vaccine/Biological sites, has led successful technology transfers, and has pioneered the launch of new bulk vaccine facilities. Currently, his role within the Center of Excellence revolves around tackling global product handling issues, with a particular emphasis on cold chain logistics. He played a key role in the successful implementation of ocean shipping on a global scale for cold chain products.

In our exclusive interview, Bill shares his personal perspective on the potential, as well as the challenges, of deploying intelligent logistics technologies and real-time monitoring in the pharmaceutical sector. It is important to note that

the views expressed in this interview are personal to Bill and do not necessarily reflect the official strategy enacted by his employer, Merck.

Based on your extensive experience in the pharma industry, particularly in global logistics and cold chain management, how have you seen the importance of real-time monitoring and end-to-end supply chain visibility evolve over the years?

My first role in Logistics involved reviewing investigations and as we weren't utilizing alarms for deviations or problems that arose during shipping, I was making educated guesses about what may have transpired when a box, or Thermal Protection System (TPS), was out of sight and our control, possibly sitting on the tarmac somewhere. Without visibility, I was left trying to piece together information from external temperature data. That meant that as soon as I encountered real-time monitors, I came to understand their numerous benefits. It's not just about knowing where your package is; it's about immediate alarm notification, not learning about it a week or two later. This quick feedback helps tremendously in determining the true root cause when conducting an investigation. Additionally, it provides us the potential to intervene proactively and prevent a minor issue from escalating into a significant problem. The evolution of supply chain visibility has truly transformed our ability to manage and control our logistics.

Can you share any personal insights or observations about how the implementation of real-time monitoring and supply chain visibility technologies have led to improvements in operational efficiency and cost reduction in the industry?

There are two substantial benefits: cost reduction and enhanced efficiency. The cost-saving aspect is two-pronged. Firstly, immediate intervention can often salvage a batch, reducing loss and thereby providing considerable cost reduction.

The efficiency is increased due to the immediate awareness of any issues with our batch. Instead

of identifying a problem 10 days later upon arrival, immediate notification is provided, allowing swift action. We can swiftly intervene and ideally reduce the severity of the issue. This allows us to promptly initiate a thorough investigation, as we're already aware of the problem and have begun implementing corrective actions.

If we can't salvage the batch, our immediate awareness of the shipment's issues allows us to start replacing those doses right away, rather than waiting for 10 days, or in the case of ocean shipping, 50 to 60 days later.

In short, we're not only improving efficiency by knowing when to replace doses but also significantly reducing costs by preventing unnecessary discards. This understanding of the root cause, facilitated by real-time monitors, allows us to develop more effective corrective actions and continually improve. This is how real-time monitoring and supply chain visibility technologies have revolutionized operational efficiency and cost reduction in the industry.

In your upcoming keynote presentation at TCL North America, you'll be discussing the benefits of supply chain intelligence and end-to-end visibility, as well as some of the challenges. Can you provide some insights into the key challenges that organizations generally face when implementing these technologies and how they can overcome them?

Certainly, I think there are generally two significant challenges when implementing these technologies.

The first one relates to the additional workload. We're talking about creating new systems and tasks to implement these shippers or devices. Many companies already use passive devices that record data for later download and analysis. Replacing these established quality systems and switching to new ones isn't a simple task. Companies are either making a significant change across their entire supply chain and

modifying existing systems, or they are adding a new device that creates additional work on the shop floor. When the products are being packaged, someone needs to attach the monitors, someone else must monitor the system, and someone has to respond to the alarms. This isn't a straightforward process.

The second challenge is often seen from a warehouse perspective. While these improvements might be beneficial for the company as a whole, it can seem like it's just adding more work for the warehouse. Moreover, warehouses—or those of third-party contract manufacturing organizations (CMOs)—often aren't directly benefiting from these changes. This can make it difficult to convince these parties to adapt their processes to benefit a company like Merck, especially if such changes aren't stipulated in existing contracts.

In my upcoming keynote presentation at TCL North America, I'll delve deeper into these challenges and discuss strategies to overcome them, ensuring that the implementation of supply chain intelligence and end-to-end visibility technologies is as seamless and beneficial as possible.

Do you find that the business case varies with different product types, for example high volume, lower value vs. low volume, higher value?

Yes, the business case indeed varies with different product types. The level of risk often dictates the benefit derived from these devices. For example, implementing these technologies is typically easier and more justifiable for supply chain lanes with high-value products. However, the suitability of these devices also depends on the nature of the products, such as cold chain products that require temperature control.

Cold chain products generally allow more time for intervention and batch salvage due to the gradual temperature changes that occur when something goes wrong. On the other hand, for basic pharmaceuticals or products that are transported at ambient temperatures, exposure to extreme temperatures (like being left on a tarmac) can lead to rapid temperature changes, leaving less time for intervention. Thus, the benefit is generally more pronounced for cold chain products than ambient ones, although there can be advantages for ambient products as well.



As for the previous point, the level of effort and financial investment required for implementation must be weighed against the reduction in risk. These devices are not cheap, and the cost and effort must be justified. For critical shipments or high-volume products, the case is clear: monitoring is essential. However, for smaller shipments with fewer doses or lower value, the investment in time and resources may not be worth it.

In summary, the business case for real-time monitoring and supply chain visibility technologies varies depending on factors such as product type, risk levels, and shipment size. Companies must consider these factors when deciding on the most suitable approach for their specific needs.

Integration seems to be a major challenge for companies looking to adopt intelligent supply chain technologies. In your opinion, what are some strategies or best practices that can help organizations harmonize their systems to achieve functional supply chain intelligence?

Absolutely, integration is often a significant challenge for companies looking to adopt intelligent supply chain technologies due to the multitude of disparate systems in use. This could be an ERP system or a TMS (Transport Monitoring System), or any number of other systems, but the point is that they're all separate systems that the company is already operating.

The key to achieving functional supply chain intelligence is to link these systems through a single, unified platform. Essentially, what you want is a control tower that collects data from all your systems and oversees your shipments. This approach provides the flexibility to switch between devices from different companies without tying everything to a single platform, which might limit your options in the future.

True integration means that regardless of which supplier's products you're using, or whether you're shipping by ocean or air, your system can pull

data from various sources. The goal is to have a system that notifies you if there's a problem with a shipment, regardless of the mode of transport, the freight forwarder, or the device used. This is where a control tower type system comes into play.

However, achieving this level of integration isn't easy. It requires cross-functional support—from your IT and supply chain groups to your warehouse teams. It's crucial to have sponsorship from senior management to ensure that such a project is realized. Ideally, you should aim to create a more global project for the company that bridges the gap between different divisions and functionalities. This holistic approach is, in my opinion, the best strategy to achieve functional supply chain intelligence.

When making the business case for an intelligent supply chain, how would you recommend communicating the value of these technologies to stakeholders and decision-makers within an organization?

When building the business case for an intelligent supply chain, it's crucial to communicate the value of these technologies to stakeholders and decision-makers within the organization. In order to make this case, it's beneficial to start by analyzing current challenges.

Consider the number of doses or batches that are lost each year, the problems faced, and the investigations that have to be written due to these issues. Once you've established these facts, you can highlight the potential improvements that supply chain intelligence could bring. For instance, reducing discards.

The cost savings from preventing just a single batch from being discarded could potentially cover the expenses of establishing an intelligent supply chain control tower for an entire year. Besides the immediate cost savings, this technology can also significantly enhance supply chain efficiency. With fewer incidents, there's less need for quarantining products, which translates into smoother operations and further savings.



There are multiple ways to present the case for supply chain intelligence, but the most compelling argument often lies in its ability to reduce waste and enhance efficiency.

In your experience, what are some of the key performance indicators (KPIs) that logistics and supply chain professionals should be tracking to measure the success and impact of real-time monitoring and supply chain visibility initiatives?

To communicate the value of intelligent supply chain technologies to stakeholders and decision-makers, it's crucial to focus on the current challenges and how these technologies can address them.

Start by reviewing the existing issues such as the quantity of doses or batches we lose annually, the number of problems encountered, and the volume of investigations that must be written. These points can be leveraged to demonstrate the potential improvements offered by implementing these technologies.

In terms of Key Performance Indicators (KPIs), discards—or product losses—are often the most impactful metric to improve. In many cases, saving just one batch can offset the cost of the entire program for a year. This makes a compelling argument for the cost-effectiveness

of implementing a control tower system and dedicating resources to manage this project.

Besides cost savings, the improvements in supply chain efficiency are another selling point. With fewer events and reduced product quarantining, operations become smoother, leading to more reliable delivery and improved customer satisfaction.

However, the most straightforward and compelling argument often comes down to reducing discards. By minimizing product loss, companies can realize substantial savings and enhance supply chain efficiency, making a strong business case for the adoption of intelligent supply chain technologies.

Looking ahead, what do you think will be the next major technological advancements in the pharma supply chain, and how can companies prepare themselves to adopt these innovations?

As we look to the future of the pharma supply chain, I believe the focus will be on enhancing existing technologies rather than introducing entirely new ones. Much like how cell phones have become more powerful, smaller, and cheaper over time, we need our supply chain devices to follow the same trajectory—becoming better, smaller, and more cost-effective.

The more affordable these devices become, the more ubiquitous their use will be. This could mean, in time, we won't just be deploying them for large shipments, or using just one or two devices per shipment. If manufacturers can make significant strides in improving their devices—imagine them slimmed down to a thin label—then we could start to see them on every carton or every shipper, rather than one or two for every 40 pallets.

The market currently has several companies producing these devices. Consolidation in this sector has its advantages and disadvantages. While too much consolidation might stifle innovation and keep prices high, a healthy level of competition can drive down costs and spur performance improvements.

In my view, the current state of the market, with numerous companies vying to develop new devices and features, is beneficial. This competitive environment is what will likely lead to the advancement of more efficient and affordable supply chain technologies. To prepare for these innovations, companies should stay abreast of these developments and be ready to adopt improved technologies as they become available.

To bring us to a close, is there anything else that you would like to add that we haven't touched upon?

Absolutely. I'd add that whilst it's impossible to predict exactly what technological advancements might be around the corner, one hope that I have is that we reach a stage where we can track every single dose throughout the entire supply chain.

Imagine if we could monitor the time out of refrigeration for every dose and send a signal to the final customer indicating whether the product is in good condition or not. Today, we're monitoring temperatures with devices per pallet, shipment, or shipper. Unfortunately, we often discard doses that are likely still good because we make assumptions about the uniformity of the temperature within a shipment.

The ultimate goal would be a future where we're equipping every box or carton with a monitoring device. This would give us precise data on the actual temperature of the product, reducing discards and waste even further. It's an ambitious vision, but it's the kind of innovation that could revolutionize our industry.

The logo features a circular emblem on the left containing a stylized 'TCL' monogram. To the right of the emblem, the text 'TEMPERATURE CONTROL & LOGISTICS' is written in a large, bold, blue sans-serif font. Below this, 'NORTH AMERICAN SUMMIT' is written in a smaller, white sans-serif font on a red horizontal bar.

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For a deeper dive into these topics and to gain further insights from Bill and other industry experts, consider attending the upcoming Temperature Control & Logistics North America conference. This premier event, taking place September 19 - 21, 2023 in Falls Church, VA, provides an unparalleled opportunity

to network with counterparts, exchange ideas, and learn about the latest advancements in the field of logistics and supply chain management. Don't miss this chance to engage in meaningful discussions and gain actionable strategies to enhance your organization's supply chain operations.

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