

20 years of excellence

20 LESSONS LEARNED

about resilience and health supply chain excellence



PFSCM's Quality Management System has been certified to ISO 9001:2015 Quality Management System Standard by DQS Inc. Ref Registration # 10012936 QM15

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A MESSAGE FROM PFSCM LEADERSHIP

The Partnership for Supply Chain Management (PFSCM) celebrates 20 years of service in global health supply chains.

Characterized by constant change attributable to social and political unrest, natural disasters, pandemics, and logistical and infrastructure challenges, the environment in which we operate demands a combination of partnerships, passion, and perseverance.

Through all the noise, we have remained focused on one simple, powerful mission: to help get lifesaving health products to the people who need them most.

We have learned that delivering impact is not just about moving health products, but rather it is about moving forward together. Supply chains are built on relationships, trust, and shared purpose. We have seen firsthand that resilience comes not from standing alone, but from standing together.

Whether it is a supplier navigating their first shipment to Africa, a logistics partner learning the ropes of humanitarian delivery, or a government agency responding to urgent public health needs, none of us can do this alone.

In this document, we share 20 of the most important lessons we have learned in our journey.

Those working to strengthen, smarten, and make global health supply chains more compassionate and resilient, you may find these lessons and observations relatable.

We warmly invite you to connect with us in writing, whether to share your ideas and comments with us or simply to learn more about our work and how we help improve access to health products.

Write to us at pfscm@pfscm.org using the subject line Lessons Learned, and we will respond.

Thank you for being part of this journey.

Here's to the next 20 years of learning, growing, and serving—together.

—The PFSCM Leadership Team

Delivering impact is not just about moving health products, but rather it is about moving forward together."



PFSCM leadership team from left to right. Back: Ard Van Dongen, Strategic Supply Chain Director; Edward Wilson, Director; Ishmael Muchemenyi, 4PL Services Director; Erin Seidner Chief Operating Officer & Chief Financial Officer; Suzanne Veit, PPM Project Director; Perry van Dam, Chief Information Officer; and Mike Harrigan, Chief Quality & Risk Officer.

OUR STORY

Established in 2005, PFSCM is a nonprofit provider of supply chain solutions and a procurement services agent (PSA). Our mission is to help our clients achieve their public health goals by providing strategic supply chain solutions that ensure quality health products reach clients and caregivers where and when they need them.

We solve complex procurement and distribution challenges, enabling donors, foundations, nonprofit organizations, humanitarian agencies, and health product and technology manufacturers to safely and cost-effectively improve access to high-quality health products in low and middle-income countries (LMICs).

As a PSA, we specialize in the procurement and delivery of prevention, testing, and treatment products for the following disease groups and health areas: COVID-19, HIV/AIDS, malaria, tuberculosis, mpox, Ebola, reproductive health, family planning, maternal and child health, antimicrobial resistance, harm reduction, human papillomavirus and cervical cancer screening, and opportunistic infection medicines.

We offer a comprehensive range of services, from category and channel management to strategic sourcing, supply chain management, and fourth-party logistics (4PL) solutions, including forecasting and demand planning. Additionally, we provide product quality assurance (QA) and quality control testing, as well as upstream and last-mile logistics, end-to-end shipment tracking, and storage and warehousing services. Further, we use a secure digital catalog, access program, and ordering platform for streamlined procurement.

Since our inception, we have procured more than \$8.3 billion worth of orders for pharmaceuticals, medical devices, and other products across all our clients. We have served 132 countries, including nearly every country on the African continent, and delivered more than 54,000 shipments.

We are well-known for our uncompromising quality standards, from the products we source and procure to the systems and processes we deploy to meet our clients' requirements. All our services comply with our ISO 9001:2015 certified Quality Management System (QMS), and our procurement processes align with the ISO 20400 guideline for Sustainable Procurement.

PFSCM is headquartered in Washington, D.C., in the US, with its primary operational facility in Woerden, the Netherlands. We have about 136 full-time staff members, representing more than 55 nationalities.



BALANCING STANDARDIZATION AND TAILORING TO BUILD RESILIENT SUPPLY CHAINS

While standardization and harmonization are powerful tools that bring efficiency, consistency, and scalability to global health supply chains, our experience has shown that they are not universally applicable. Many country programs operate in environments that are too complex, too dynamic, or too unique for a one-size-fits-all approach.

At PFSCM, we've learned to navigate this complexity by knowing when to drive standardization and when to tailor solutions to the specific needs of clients, patients, and programs. This balance is made possible through strong, trust-based relationships with our partners, allowing us to co-create solutions that are both technically sound and contextually appropriate."

— Amanda MacDonald, PFSCM Director, Business Development

How we have tailored solutions:

- ▶ In the Dominican Republic, we supported the Ministry of Health with technical assistance and innovative financial arrangements to strengthen procurement and delivery of ARVs—tailored to their national systems and funding flows.
- ▶ When unexpected events jeopardized the mass drug administration of Azithromycin, we worked with a major foundation and other partners to rapidly secure procurement and avoid delays—demonstrating the need for agility over standard process.
- ▶ As pediatric HIV programming transitioned to national ownership, we partnered with Johnson & Johnson and Ministries of Health in 10 countries to ensure uninterrupted access to second- and third-line treatments—coordinating directly with local stakeholders to meet country-specific delivery and regulatory requirements.

What we have learned about customization through strong client relationships:

Resilient supply chains are built on the ability to adapt and respond effectively. Some programs require scale and efficiency through harmonized processes; others demand precision, timing, and local nuance. The strength lies in knowing the difference and in building the relationships that allow us to make those decisions together with our clients.

This approach has enabled us to deliver not just products, but solutions that endure. These solutions can flex under pressure, align with diverse needs, and continue to serve communities even in the face of disruption.



LESSON **2**

SUSTAINABLE PROCUREMENT REQUIRES STRUCTURE FOR MAXIMUM IMPACT

We learned that to truly embed sustainability in our procurement cycle, we needed a structured process that is adapted to the realities of executing supply chain solutions in complex, resource-constrained environments.

We systematically aligned our procurement processes with the ISO 20400: Sustainable Procurement standard. This standard provides an internationally recognized framework to achieve a better balance between delivering value for money and respecting environmental, social, and ethical considerations.

To align with ISO 20400, we began by mapping our existing procurement practices against ISO 20400 principles, which helped us identify both strengths to build on and areas requiring improvement.

Based on this assessment, we developed a realistic implementation plan or roadmap that balanced sustainability objectives with the operational demands and constraints of our supply chains.

Finally, we established mechanisms for review and adaptation, ensuring sustainable procurement became embedded in our systems and continued to evolve alongside organizational priorities and global standards.

Through our alignment with ISO 20400, several lessons have emerged:

- ▶ **Integration matters:** Embedding sustainability criteria from the planning and sourcing stages is key to cascading good practices throughout the procurement cycle.
- ▶ **Stakeholder alignment is critical:** Engaging suppliers, clients, and end users ensures shared accountability and uptake of sustainable practices.
- ▶ **Practical tools drive change:** Checklists, scorecards, and supplier assessments make sustainability actionable, rather than aspirational.
- ▶ **Sustainability enhances credibility:** ISO 20400 alignment not only strengthens procurement outcomes but also builds client confidence and reinforces funding eligibility.

ISO 20400 certification has enabled us to move beyond compliance to leadership in responsible procurement, building resilient supply chains that deliver both immediate impact and long-term sustainability."

— Gurmeet Philora, Sustainability Advisor to PFSCM



LESSON
3

CATEGORY MANAGEMENT AS A STRATEGIC LEVER FOR SUPPLY CHAIN RESILIENCE

Centralizing procurement by product category has reshaped how we build and sustain resilient supply chains. This approach has allowed us to elevate transactional procurement and adopt a strategic, cyclical model that continuously evolves in response to shifting global health priorities, market dynamics, and client needs.

By treating category strategies as living frameworks, regularly reviewed, refined, and re-aligned, we have created a structure that supports stability and adaptability in our supply systems."

— Marcel Hendriks, PFSCM Deputy Director Sourcing.

Through this approach, we have learned that:

- ▶ **Strategy must stay in motion:** Category strategies are most effective when they remain responsive. Markets shift, client expectations evolve, and health technologies advance. Regular reviews ensure our strategies stay relevant and aligned with both internal objectives and external realities.
- ▶ **Consistency enables clarity:** A standardized methodology across categories brings structure to complexity. It ensures that each category is assessed and managed using the same principles, which improves communication, simplifies onboarding, and strengthens risk management across the board.
- ▶ **Collaboration drives relevance:** Category strategies gain traction when they are developed in partnership with stakeholders. This collaboration ensures that strategies reflect operational realities and surface risks or opportunities that may not be visible from a procurement-only lens.

- ▶ **Market engagement builds resilience:** Centralized category management allows us to engage more strategically with suppliers and shape markets in ways that support long-term availability, affordability, and innovation. This has been especially important in fragile or rapidly evolving product categories, where proactive engagement can prevent disruptions before they occur.

By embedding category management into our organizational DNA, we have created a platform for resilient, sustainable, and client-focused supply chains. The combination of structured processes, strategic foresight, and collaborative execution ensures that our procurement strategies are not only effective today but also ready for whatever comes next.



LESSON 4

REGIONALIZED PROCUREMENT SUPPORT AS A DRIVER OF RESILIENT SERVICE DELIVERY

Through our experience implementing large-scale, global supply chain solutions, we have learned how to translate upstream efficiencies—such as pooled procurement, category management, and standardized processes—into approaches that work effectively at regional and country levels. By combining our global and regional expertise, we have strengthened the bridge between strategic, high-volume procurement models and the practical realities that shape downstream implementation.

To enhance the quality and efficiency of transactional procurement, we have adopted a model that integrates product category management and global best practices with regionally grounded specialization. This approach recognizes that while we manage technically complex, large-volume health product orders, success ultimately depends on a deep understanding of the local environments in which our clients operate.

Each client operates in a unique national context, and by assigning dedicated regional teams, we strengthen day-to-day transaction management while delivering tailored, context-aware support aligned with country realities."

— Vesna Petrakovic, PFSCM Senior Procurement and Client Services Manager

Through our regionalized procurement approach, we have learned that:

- ▶ **Contextualized support improves transactional efficiency:** Regional teams developed deep familiarity with local procurement cycles, import regulations, and logistical constraints. This knowledge has reduced delays, improved order accuracy, and enabled more responsive support to country programs.
- ▶ **Stronger relationships lead to better outcomes:** Assigning Client Service Specialists by region has fostered continuity and trust. Clients benefit from consistent points of contact who understand their specific challenges, enabling faster issue resolution and more effective communication.

- ▶ **Bridging funder and country priorities:** Regional teams play a critical role in aligning funder policies with operational realities on the ground. Their insight helps manage expectations, mitigate risks, and ensure smoother implementation of procurement activities across diverse stakeholders.
- ▶ **Institutional knowledge builds continuity and resilience:** The regional model has helped capture and retain valuable institutional knowledge, ranging from customs procedures to stakeholder preferences. This continuity reduces dependency on individuals and strengthens the resilience of our service delivery model.

By embedding regional expertise into our procurement operations, we have created a more agile, responsive, and resilient supply chain support system. This model ensures that we process transactions efficiently and in a way that is informed, adaptive, and aligned with the realities of the countries we serve.



LESSON
5

DEDICATED TEAMS DRIVE PRECISION AND RESILIENCE FOR DIVERSE CLIENTS

One of our key takeaways has been the importance of assigning dedicated project teams to serve the unique needs of our diverse client base—especially clients who require tailored support. While standardization offers efficiency, it’s clear that a one-size-fits-all approach doesn’t work across the board. Precision, not scale, is what drives success for these clients.

We leverage our shared procurement and logistics expertise as a foundation, but we take it a step further by allocating specialized resources to address distinct client needs. Larger clients often operate through pooled procurement mechanisms, requiring high-volume, steady supply chains for items like diagnostic kits, consumables, and capital equipment. For these, we structure teams to manage scale and consistency.

In contrast, our other clients, often working in donation programs, research, or academic initiatives, have very different requirements. Their orders are typically low-volume, highly specialized, and time-sensitive. These projects demand more than supply chain know-how; they require close collaboration, proactive risk management, and creative problem-solving.

This is where our Client Account Managers (CAMs) play a pivotal role. From initial engagement to project close-out, CAMs work closely with clients to understand their goals, constraints, and regulatory environments. They craft tailored solutions that reflect funding structures, procurement timelines, and the urgency often tied to these projects. For clients who lack the economies of scale, we focus on strategic sourcing to ensure affordability and value. Sometimes, we offer modular services, supporting specific parts of the supply chain while empowering clients to manage others, creating flexible and scalable solutions.

Ultimately, dedicated teams, client-centric service, and flexible engagement models are essential to meeting the precise needs of diverse clients in an unpredictable world.

Success hinges on our ability to coordinate internally across procurement, logistics, QA, and finance, while externally managing suppliers, funders, and implementing partners. CAMs ensure alignment across all stakeholders, treating even the smallest projects with the same rigor and responsiveness as large-scale programs.”

— Simona Enache, PFSCM Senior Client Account Manager



MANAGING WAIVER PROCESSES TO PREVENT BOTTLENECKS IN HEALTH SUPPLY CHAINS

In global health supply chains, waivers for duties and taxes play a critical role in facilitating the importation of donated health products. These waivers recognize the nature of the goods, often procured with donated funds and provided free of charge to recipient countries. However, despite their importance, waiver processes are often a source of delay and disruption, especially in complex or unstable environments.

Helping to oversee waiver processes is a unique function for a PSA, and we have learned several key lessons on this theme over the years:

- ▶ **Waivers are essential, but can become bottlenecks:** While waivers serve a vital function in exempting donated goods from duties, the process to obtain them is often slow, bureaucratic, and poorly aligned with the urgency of supply chain timelines. This mismatch can put shipments at risk, leading to delays, demurrage, or even loss of product viability.
- ▶ **Early coordination is critical:** Proactive engagement with suppliers and recipient country stakeholders is essential. Aligning expectations early, especially regarding documentation timelines and regulatory requirements, helps avoid last-minute complications and ensures a smoother importation process.
- ▶ **Flexibility in logistics planning helps mitigate risk:** Building flexibility into pickup and delivery schedules allows for adjustments when waiver approvals are delayed. This can reduce exposure to storage fees and logistical penalties, while maintaining the integrity of the supply chain.
- ▶ **Context matters, especially in fragile settings:** In countries experiencing government transitions, conflict, or natural disasters, administrative processes are often disrupted. In these cases, leveraging humanitarian channels, diplomatic relationships, and local expertise can help navigate waiver approvals more effectively.
- ▶ **Buffer time should be a standard practice:** In high-risk environments, incorporating buffer time into importation planning is a proven strategy. It provides breathing room for waiver processing and reduces the likelihood of cascading delays across the supply chain.

Waiver processes are necessary in global health logistics, but they must be managed with foresight and flexibility. By aligning stakeholders early, understanding country-specific complexities, and building contingency into planning, we can prevent waivers from becoming a weak link and instead make them part of a resilient, responsive supply chain."

— Elena Feldsherova, PFSCM Logistics Manager



LESSON
7**COLD CHAIN MANAGEMENT REQUIRES CONTROL**

Shipping temperature-sensitive health products, such as reagents, presents unique challenges. Climate extremes, limited infrastructure, and complex importation procedures can compromise product integrity and lead to delayed delivery. We have learned that the complexity of cold chain logistics requires control and a combination of data-driven decision-making, strong partnerships, efficient customs clearance, and proactive incident management.

One of the most important lessons has been around the use of data loggers for enhanced visibility into shipment conditions, which allows us to detect temperature excursions early, reduce unnecessary rejections, and lower insurance claims.

Ensuring that all cold chain shipments have a prequalified data logger placed correctly is a task that requires control and accountability. Several stakeholders are responsible for successful outcomes, including the bodies that prequalify the data loggers, the suppliers and/or shippers who place the data logger, the personnel handling the goods, and the recipients and others at the end of the chain who are responsible for returning timely readings or feedback, depending on the scenario at hand.

With our partners, we have been able to overcome teething problems with the use of data loggers and have quickly excelled to a point where we were able to use our data logger readings as leverage to reduce our insurance premiums. On the topic of insurance, in 2023, we had zero cold chain insurance claims—a feat among logistics professionals."

— Ishmael Muchemenyi, PFSCM, 4PL Services Director

Further, choosing the right third-party logistics providers (3PLs) is an equally critical lesson in cold chain management. We partner with specialized freight forwarders who understand the nuances of

cold chain transport, including re-icing protocols, cold chain packaging, and route optimization. These partnerships help ensure that products arrive safely, even in high-risk or remote settings.

Another key lesson is the importance of streamlining waiver and customs clearing processes. We have found that pre-clearance and direct exit strategies at airports, combined with early coordination between suppliers and recipient countries, significantly reduce lead times and avoid costly storage fees.

Meanwhile, incident management is also central to our cold chain management approach. We have developed robust procedures for identifying, investigating, and resolving cold chain incidents. By integrating data logger feedback into our incident response systems, we can act quickly to protect product integrity and patient safety. This continuous feedback loop also informs preventive actions and improves future shipments.



LESSON
8**CO-CREATING TRANSPORT AND PACKAGING SOLUTIONS DRIVES EFFICIENCY AND MEASURABLE VALUE**

By leveraging our unique bird's-eye perspective as a PSA and 4PL, we bring together suppliers, freight partners, and country stakeholders who often see only one segment of the supply chain.

Acting as a bridge between upstream and downstream actors, we translate needs, identify hidden inefficiencies, and co-create practical, data-driven solutions that improve performance end to end. This collaborative approach has produced significant gains in transport, loading, and packaging efficiency.

Using load-optimization tools and freight-costing expertise, we analyze high-volume and high-value shipments to identify opportunities for space optimization, reduced handling, and cost savings. This process often uncovers packaging formats that can be redesigned to better utilize paid-for capacity or to align with recipient storage and handling requirements.

These insights initiate a co-creation process in which PFSCM, suppliers, and freight partners jointly adjust packaging or transport configurations to deliver both short-term efficiencies and long-term structural improvements.

An example involves aligning pallet formats. Many clients require Euro pallets to fit local racking systems; when suppliers ship on standard pallets, recipients must repalletize in-country—adding cost and operational burden. By proactively engaging with suppliers, we have shifted packaging practices upstream, streamlining warehousing and reducing work for country teams.

In Malawi, we collaborated with partners to introduce double-stacking of rapid diagnostic tests (RDTs). Through testing and analysis, we confirmed product integrity while reducing freight costs by approximately 10%, accelerating receipt and distribution for already overstretched health teams.

We have also partnered with major pharmaceutical suppliers to implement cartonless packing and multi-month dispensing (MMD) for antiretrovirals. These changes significantly reduce shipment volume, lower freight

and total landed costs, and improve patient outcomes. For a large Zambian order, cartonless packaging cut pallet and container counts and freight costs all by more than 50%. In the Dominican Republic, shifting to 3- to 6-month dispensing reduced patient visits, improved adherence, and delivered 10% savings on product value, while cartonless packing reduced shipment volume by 35% to 45%, cutting both costs and emissions.

In partnership with supply chain stakeholders, we have co-created additional efficiencies, including:

- ▶ Consolidating and cross-docking small orders to achieve economies of scale and avoid minimum freight charges.
- ▶ Intentionally breaking down pallets to optimize loading on charter flights, where risk is minimal and control is high.
- ▶ Repalletizing or reconfiguring loads upstream to maximize international transport efficiency, then adapting pallets for local delivery to ease handovers and reduce downstream burden.

Ultimately, resilient supply chains depend on collaboration, relevance, and adaptability. By co-creating transport and packaging solutions tailored to the realities of LMICs, we ensure that health products arrive intact, on time, and in the right format—ready to reach the people who need them most.



THE COMPLEXITY OF DIAGNOSTICS PROCUREMENT REQUIRES MORE THAN TRADITIONAL PSA SERVICES

Procuring and delivering health products—especially diagnostics and medical equipment—for HIV, TB, malaria, and other disease programs is complex and high-stakes. We have firsthand experience with the intricacies of managing thousands of products from a vast and global supplier base. From RDTs to high-end laboratory equipment and their associated consumables, each category presents distinct challenges and opportunities for better health outcomes.

These are some of the lessons we have learned in procuring and shipping a diverse and complex range of health products:

- ▶ **Cross-functional expertise is essential:** Combining procurement professionals with technical experts, laboratory scientists, biomedical engineers, and product specialists improves product selection, ensures fit-for-purpose sourcing, and prevents costly errors. Investing in internal training helps build institutional knowledge and agility across teams.
- ▶ **Product Information Management tools add value:** Maintaining an up-to-date, centralized repository of product specifications, shelf life, regulatory approvals, and compatibility data enables faster, smarter procurement decisions. These systems also support proactive supplier engagement and lifecycle management of equipment and consumables.
- ▶ **Supplier relationships are strategic, not transactional:** Close collaboration with suppliers allows better demand planning, improves visibility into lead times, and fosters early awareness of product changes or discontinuations. It also facilitates access to the best prices, as well as bundled services such as installation, training, and warranty management.
- ▶ **Category management simplifies complexity:** By grouping similar products and managing them as a strategic category, we can offer our clients more value, balancing price, quality, and availability. For example, bundling diagnostics with associated consumables and training ensures seamless implementation.

- ▶ **Strategic market intelligence is crucial:** Regular analysis of supplier capacity, regulatory trends, new product entries, and price movements helps anticipate disruptions and optimize procurement timing. This also supports fair access by identifying alternative sources and new market entrants.

In short, diagnostics and medical equipment procurement require transactional efficiency and demand strategic, patient-centric planning. By leveraging deep product knowledge, investing in tools and talent, and forging long-term partnerships, we help health programs scale effectively while delivering the right product, at the right place, at the right time.



LESSON
10**WHEN DONE RIGHT, CAPITAL EQUIPMENT PROCUREMENT AND PROJECT ROLLOUTS HAVE A LASTING IMPACT**

Procuring and deploying capital equipment in LMICs is far more complex than simply placing a purchase order. Whether it's high-value diagnostic machines, such as X-rays, or smaller devices for regional laboratory networks, each rollout demands meticulous planning, technical precision, and seamless coordination across multiple teams.

One of the most important lessons we have learned is that specifications must be precise and validated. Even minor misalignments, such as incompatible power requirements or missing certifications, can result in costly delays or unusable equipment. It is essential that all stakeholders, from clients to end users and technical experts, review and agree on specifications before procurement begins.

Planning must also start early and be fully integrated across operational dimensions. Lead times, customs clearance, site readiness, and client timelines all need to be considered upfront. Without this foresight, even well-funded projects can stall.

A common challenge is equipment arriving before the site is truly ready. That is why we have developed a proactive site readiness checklist that covers everything from power and connectivity needs to offloading logistics and environmental controls. Even for tabletop machines, confirming power quality, bench space, and waste management in advance is critical.

Coordination is another cornerstone of success. Procurement, logistics, finance, QA, and customer service teams must work in sync, with regular check-ins and stakeholder alignment calls to track progress and resolve any issues that may arise.

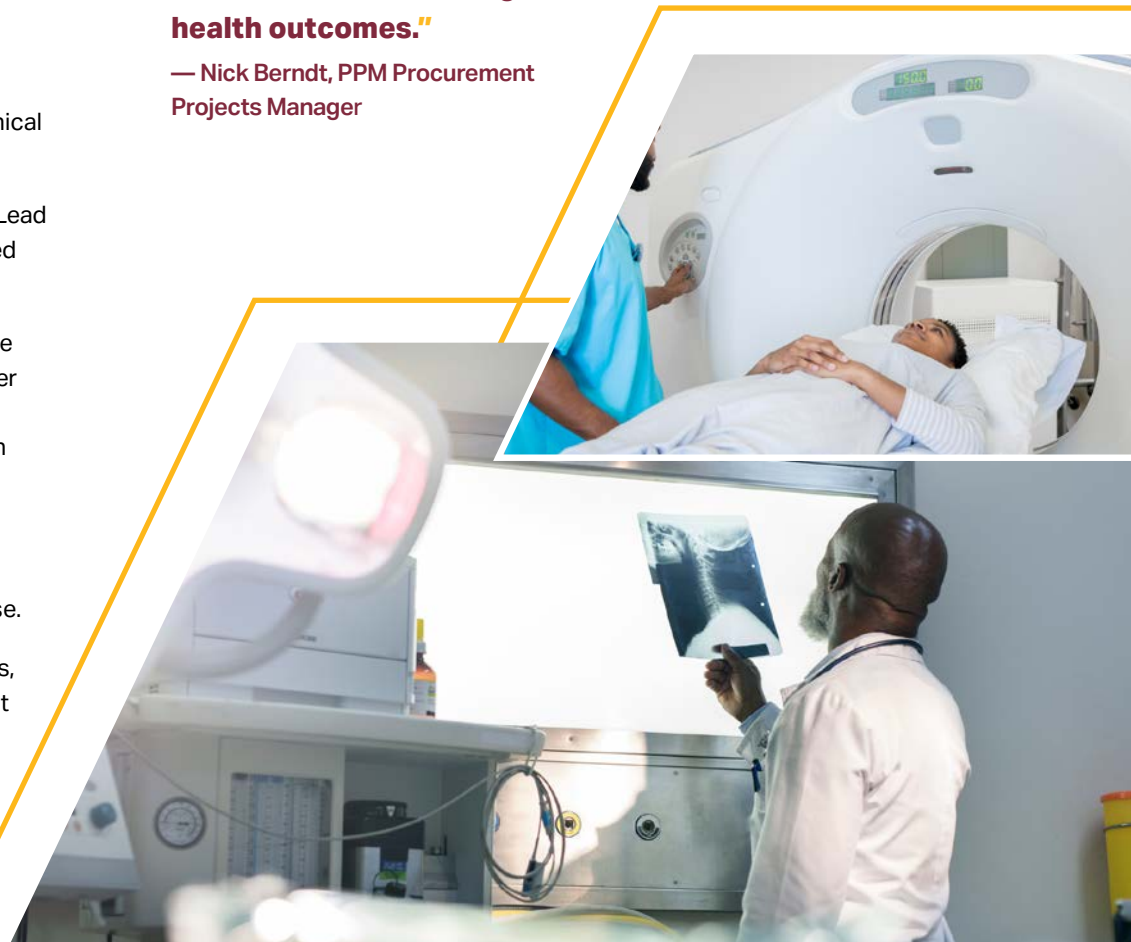
Engaging stakeholders from start to finish is equally vital. When funders, end users, suppliers, and technical experts are involved early and consistently, the equipment is more likely to be suitable, sustainable, and impactful. This co-ownership model ensures that decisions are informed and that long-term program goals are supported.

We have also found that using a category management approach, bundling equipment with related consumables, installation services, spare parts, and training, helps protect total value and simplifies procurement for clients.

Finally, leveraging market intelligence on supplier capacity, pricing trends, and emerging technologies enables us to make more agile and informed decisions.

In short, capital equipment procurement is never just procurement. It is a high-touch, technically demanding process that, when done right, delivers not just machines—but meaningful health outcomes."

— Nick Berndt, PPM Procurement Projects Manager



MISSION-DRIVEN ORGANIZATIONS MUST BE DIGITALLY ADEPT TO IMPROVE IMPACT

We recognize that digital transformation is not a luxury, but a necessity to staying relevant in an increasingly complex and rapidly changing world. Supply chain and procurement organizations, including those in the nonprofit and public health sectors, must evolve into IT- and data-driven entities to remain resilient, responsive, and relevant.

We have invested in integrated digital systems that have fundamentally reshaped how we operate. These platforms have enabled us to maintain continuity in health product delivery, even amid global disruptions. Tools like our HealthSupply Portal streamline procurement and catalog management workflows, while our ERP system ensures real-time coordination across logistics and inventory. Our Enterprise Data Warehouse, combined with Power BI, provides actionable insights that enable faster, evidence-based decision-making. These systems have helped us to transition from reactive to proactive operations, anticipating challenges, optimizing resources, and enhancing service delivery.

This transformation has also redefined the role of IT within our organization. What was once considered a support function is now a strategic enabler. Data and digital capabilities are embedded into our core operations, and digital literacy is cultivated across all teams—not just within IT. We treat data as a strategic asset, essential for planning, monitoring, and continuous improvement. This shift has required not only investment in technology but also a cultural mindset change.

With increased digital capabilities come increased responsibilities. We have prioritized strong governance and security practices to build trust and ensure stability. We have implemented robust data governance, systematic change control, and cybersecurity protocols to protect sensitive health and operational data. These measures have strengthened stakeholder confidence and ensured that innovation does not come at the expense of reliability.

PFSCM's journey demonstrates that digital tools, when combined with mission-driven values and a resilient culture, are essential to maintaining reliable health supply chains worldwide.

Our organizational culture, collaborative spirit, commitment to continuous learning, and a shared purpose focused on improving health outcomes have helped us become digitally fluent. By aligning digital innovation with our mission, we've created a sustainable impact model."

— Perry Van Dam, PFSCM Chief Information Officer



LESSON
12**STRUCTURED PRODUCT DATA ENABLES EFFICIENCY AND SCALABILITY, BUT ONLY WHEN SUPPORTED BY STRONG DATA GOVERNANCE**

Managing product data for diagnostic supplies across thousands of suppliers and tens of thousands of items is a highly complex endeavor. Each product, whether an individual test kit, reagent, instrument, or bundled diagnostic solution, comes with a unique set of attributes, including technical specifications, regulatory classifications, shelf life, storage conditions, and compatibility requirements. These attributes often vary not only by manufacturer but also by region, program, and use case.

“In such a dynamic environment, master data systems and governance processes are crucial for consistency across the product lifecycle, from sourcing to delivery. However, simply having a database is not enough; continuous data validation, cross-unit collaboration, and compliance tracking are essential to ensure resilience.”

— Aditya Perdana, PFSCM Product Information Management Manager

We have learned that to maintain data integrity and operational efficiency, we must:

- ▶ Undertake continuous data validation to detect and correct discrepancies in real time.
- ▶ Drive cross-functional collaboration between procurement, QA, regulatory, and IT teams.
- ▶ Maintain compliance tracking to align with evolving donor, country, and global health regulations.

To make the above actionable, we introduced a data quality scorecard and strengthened collaboration between Product Information Management and

QA teams. This reduced product onboarding time to under one week and minimized data inaccuracies that often cause order rejections or regulatory compliance issues in fragile settings.

PFSCM also implemented a HealthSupply Portal that digitized over 6,200 health products, enabling intuitive search and program-specific catalogs. This helps procurement officers access critical technical specs, QA details, and regulatory status, reducing incorrect product selections and speeding up procurement during critical program scale-up.

Reliable product data is the backbone of effective procurement and resilient supply chains, but only when it is accessible, validated, and actionable at the point of decision-making. True resilience requires continuous data validation, seamless integration across platforms, and strong governance processes that ensure consistency from sourcing to delivery.

When product data flows reliably through ERP systems, procurement portals, inventory tools, and analytics dashboards, it empowers procurement officers and program managers to act with confidence and speed. In this context, master data is not just a technical asset; it is a strategic enabler of timely and accurate decisions.



BUILDING RESILIENCE THROUGH A FLEXIBLE AND EMBEDDED QUALITY APPROACH

PFSCM's QMS, certified to ISO 9001 since 2014, has evolved into more than just a compliance framework. It has become a foundational element of how we operate, enabling us to deliver consistent, high-quality services while navigating the complexities and disruptions that define global health supply chains.

In today's dynamic environment—marked by pandemics, geopolitical shifts, and climate-related disruptions—resilience in health supply chains is of utmost importance. Our QMS has proven to be a critical enabler of that resilience. It provides a structured yet adaptable framework that supports operational continuity, regulatory compliance, and client satisfaction, even under pressure.

In health and humanitarian supply chains, a QMS must be both rigorous and responsive, able to uphold standards while adapting to rapid changes in technology, product innovation, and client needs."

— Mike Harrigan, PFSCM Chief Quality and Risk Officer

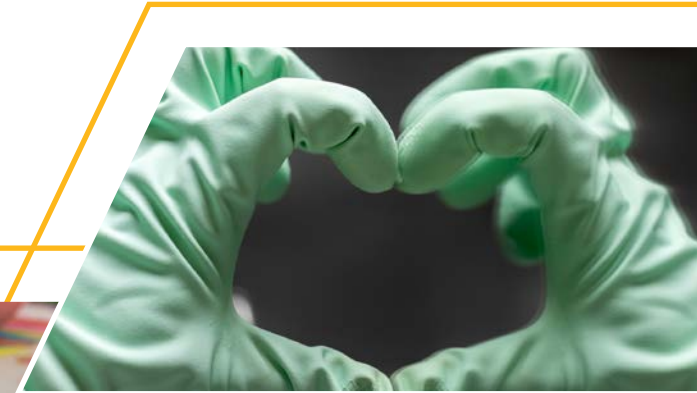
From its early days, our QMS helped us align with global quality and client requirements. Today, it is deeply embedded in our culture and operations. It shapes how we onboard staff and suppliers, manage compliance, and continuously improve our systems and services. This culture of quality, championed by leadership and embraced across teams, ensures that resilience is not reactive, but proactive and built-in.

Key components of our QMS that contribute to supply chain resilience include:

- ▶ Competency development through structured training and knowledge-sharing.
- ▶ Process standardization that ensures consistency while allowing for local adaptation.

- ▶ Supplier and product compliance mechanisms that safeguard quality and mitigate risk.
- ▶ Sustainability and procurement compliance, which not only align with global goals but also generate valuable data for decision-making and risk management.

As we look ahead, we remain committed to evolving our culture of quality. Our QMS will continue to serve as both a compass and a stabilizer, guiding us through uncertainty and enabling us to deliver on our mission, regardless of the challenge.



LESSON **14**

INCIDENT MANAGEMENT AS A CATALYST FOR RESILIENCE AND CONTINUOUS IMPROVEMENT

Our Incident Management System (IMS) was intentionally designed to be open and accessible, empowering anyone in the organization to raise an incident, flag a vulnerability, or suggest an improvement. This approach ensures that insights from subject matter experts across our complex, end-to-end supply chain can trigger meaningful action.

By enabling early detection and collaborative problem-solving, the IMS activates the Plan-Do-Check-Act cycle, setting in motion a structured response that not only addresses the immediate issue but also strengthens our systems against future disruptions.

Some types of incidents will always be there – as long as there are forklifts, there will be forklift accidents – but others disappear when the right incremental change takes hold. Resilience in supply chains is about creating an environment where issues are surfaced early, investigated thoroughly, and resolved sustainably."

— Andrew Schmidt, PFSCM Quality Systems Manager

Over the course of more than a decade of incident investigations, we've observed that while some challenges, such as equipment-related accidents, may persist, others can be permanently resolved through targeted, incremental improvements. For example, a single corrective action report helped us prevent future exposure to global credit holds. Similarly, repeated investigations into delivery discrepancies led to a structural change: separating Proofs of Delivery from Confirmations of Receipt to reflect the differing needs of clients better. This adjustment improved visibility and simplified the resolution of delivery shortfalls.

Our experience shows that continuous improvement is not always a linear process. While the Kaizen model emphasizes small, steady changes, we've seen that some improvements emerge in stepwise leaps, often sparked by a single well-documented incident.

Ultimately, resilience is built through a combination of systems and processes, as well as a culture that values transparency, learning, and shared responsibility. We maintain an environment where every incident is an opportunity to identify and resolve a problem, thereby preventing its recurrence.

In doing so, we move closer to a supply chain that is efficient and resilient.



LESSON **15**

RISK MANAGEMENT AS A FOUNDATION FOR SUPPLY CHAIN RESILIENCE

A resilient supply chain is the result of deliberate systems that anticipate, assess, and respond to uncertainty. At PFSCM, risk management is a core component of our QMS, guided by the principles of ISO 9001 and ISO 31000.

By embedding a structured approach to identifying, evaluating, and treating risks and opportunities, we have strengthened our ability to meet objectives even in the face of disruption. This has been essential in navigating the complex and often volatile landscape of global health supply chains.

Risk management is both a compliance exercise and a mindset that empowers teams to make informed decisions, mitigate vulnerabilities, and seize opportunities for improvement."

— Mike Harrigan, PFSCM Chief Quality and Risk Officer

Over time, this approach has fostered a culture of risk awareness across our organization. Staff and stakeholders are not only aware of the importance of risk management, but they are also equipped and encouraged to participate actively in it. This has led to smarter, data-driven decisions and improved regulatory alignment.

Key risk management takeaways:

- ▶ **Integration over imposition:** Risk management must be woven into daily operations, not forced. Awareness, training, and leadership support are critical to building a culture where risk is everyone's responsibility.
- ▶ **Accessibility and adaptability:** Our system is designed to be live, configurable, and accessible online, ensuring that risk data is current, actionable, and relevant across functions.

- ▶ **Resilience through insight:** By proactively managing risk, we have been able to anticipate disruptions, respond with agility, and continuously improve our processes, enhancing both operational stability and client confidence.

As we continue to evolve, our commitment to risk-informed decision-making remains central to our resilience strategy, ensuring a supply chain that can adapt, recover, and thrive in the face of change.



LESSON **16**

MODERNIZING QA&R SYSTEMS AND PROCESSES WHILE REMAINING FLEXIBLE TO THE CONTEXTUAL NEEDS OF OTHERS

The complexity of medical products is increasing at a rapid pace. From AI-enabled diagnostics to software-integrated devices, the need for robust, agile, and scalable Quality Assurance and Regulatory (QA&R) systems has become critical. We have come to realize that legacy systems and manual processes cannot keep up with the demands of modern supply chains, and digital, automated processes are needed to drive efficiencies and accountability.

We set out on a journey to digitally transform our QA&R systems while still ensuring that quality remained a shared responsibility among our teams and network. We knew we had to move beyond traditional audits and paper-based reviews to something more dynamic, more inclusive, and more efficient. We invested in digital tools, including Supplier Relationship Management (SRM), Product Information Management (PIM), and AI-powered platforms to streamline our workflows and enhance data quality.

This shift improved internal efficiency and also made the prequalification process more accessible and transparent for suppliers. Suppliers are guided through the process to help them understand the application requirements and procedures. In parallel, our QA&R Unit has developed a comprehensive guide outlining the documentation required for product prequalification. Once suppliers submit their documents, our team thoroughly reviews them and reaches out directly if clarification is needed. If everything checks out, the product is created in the PIM system and synchronized with our ERP platform, making it available for procurement. This streamlined approach has made onboarding smoother and more predictable for suppliers.

"We used to spend over a week manually reviewing product dossiers. Now, with our digital product model and cloud-based repository, we're procurement-ready in just four days."

— Dr. Maité Barthel, PFSCM Quality Assurance and Regulatory Responsible Pharmacist/ Person.

Further, internally, the digital transformation has fostered a stronger culture of quality. Training modules, refresher courses, and documentation are now shared digitally, helping staff stay aligned and proactive. Real-time updates and analytics enable us to identify and address issues before they escalate, resulting in a more engaged organization that consistently maintains high standards.

Lastly, another important lesson learned is that adaptability is key. Digital tools are powerful, but they must be implemented with empathy and flexibility. Success for some will depend on local readiness, including digital literacy, infrastructure, and the regulatory context. It is essential to work closely with regional partners to bridge capability gaps and avoid one-size-fits-all solutions.



OPERATIONAL EXCELLENCE ENABLES EFFICIENCY AND SUSTAINABLE PERFORMANCE

Our long-standing investment in Operational Excellence (OpEx) has strengthened our ability to do more with less by streamlining processes, introducing automation where it delivers the greatest value, and applying structured change-management practices that make improvements stick. As our maturity has grown, supported by trained OpEx experts, we have become increasingly effective at aligning improvement initiatives with both strategic goals and day-to-day operational realities. These efforts have not only enhanced efficiency but also created the foundation for thoughtful innovation across our supply chain services.

Through our OpEx journey, we have learned that:

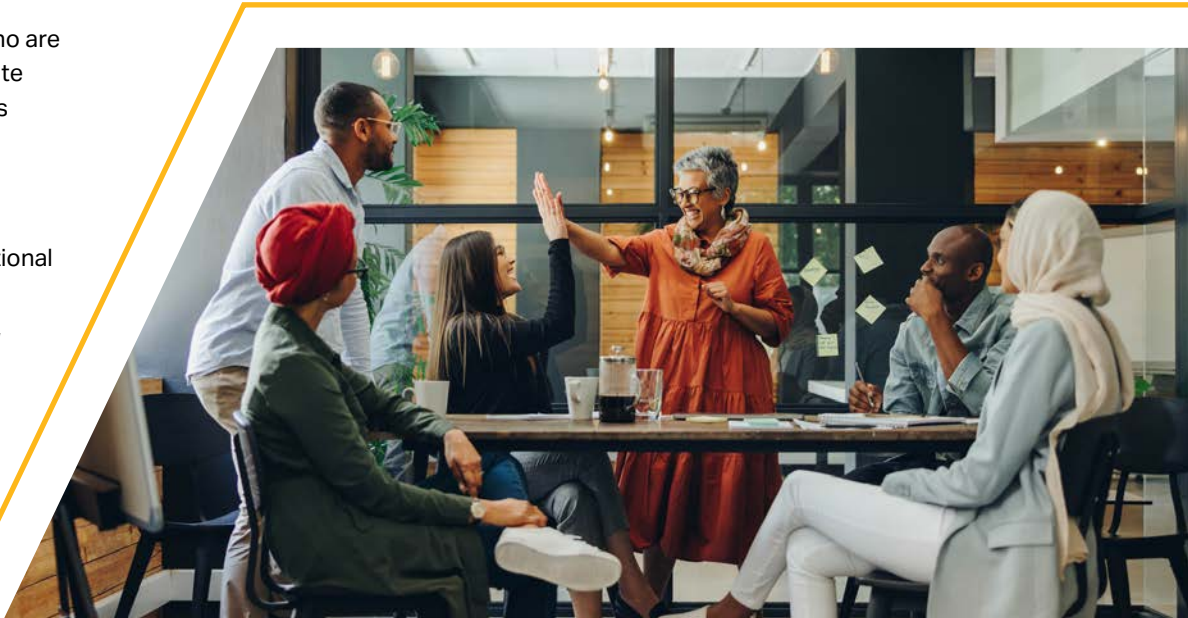
- ▶ Initiatives must be scoped realistically, with clear objectives, measurable outcomes, and timelines that reflect the complexity of our supply chain environment. When initiatives are too broad or lack defined success criteria, momentum is lost and impact diluted.
- ▶ Dedicated ownership is another critical factor. Assigning initiative leads who are empowered to drive progress, coordinate across departments, and escalate challenges ensures accountability and effective management. These leads act as champions, keeping teams focused and engaged while navigating competing priorities.
- ▶ We have also found that cross-functional collaboration is essential. OpEx initiatives often span procurement, logistics, finance, QA, and other operational areas, requiring input from diverse stakeholders. Early engagement and transparent communication help build buy-in, support efficient handovers, and prevent process bottlenecks.
- ▶ Importantly, we have learned to balance ambition with practicality. Not every initiative needs to be transformative; incremental improvements can yield significant value over time. By celebrating small wins and learning from setbacks, we foster a culture of continuous improvement that supports sustained efficiency.

- ▶ Finally, tracking and visibility are key. Regular reviews, dashboards, and feedback loops enable us to monitor progress, course-correct when necessary, and ensure that lessons learned are captured and shared. This discipline transforms OpEx from a theoretical framework into a tangible driver of improved performance and smarter resource use.

Managing OpEx initiatives effectively means being strategic, structured, and people-focused. When done well, these efforts strengthen our ability to create resilient supply chain solutions."

— Simos Xypolytos, PFSCM Operational Excellence Program Manager

By integrating OpEx principles into our everyday work, we have accelerated automation efforts, simplified and standardized processes, and strengthened our ability to manage organizational change. These combined gains have enabled us to operate more efficiently, innovate responsibly, and deliver greater impact with the resources we have—ultimately reinforcing a more resilient and future-ready supply chain.



LESSON **18**

USING PROVEN METHODOLOGIES TO ELIMINATE WASTE PAYS OFF

We are experienced in implementing a QMS and even OpEx, but quite recently, we also embraced Lean Six Sigma methodology to drive efficiencies further and reduce waste.

Over the last few years, we have had several staff members undergo formal training for Yellow, Green, and Black Belts, and these professionals have strengthened our ability to identify, analyze, and resolve operational inefficiencies in a structured, data-driven manner.

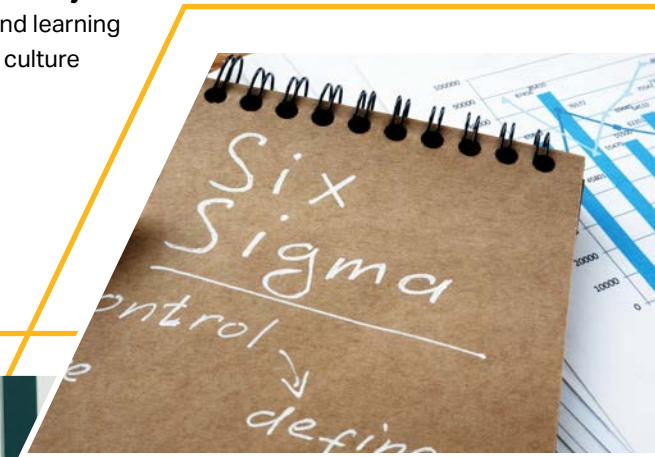
Through the Lean Six Sigma methodology, we transitioned from reactive problem-solving to proactive approaches, resulting in projects that drive lasting change. Each project begins with a clear project charter, outlining the problem, objectives, scope, and stakeholders, and ensuring alignment from the start. Tools like the 5 Whys help us uncover root causes of recurring issues, such as process delays or communication gaps, rather than treating surface-level symptoms. At the same time, Failure Mode and Effects Analysis allows us to assess risks in key process steps, like supplier onboarding or shipment preparation, by scoring potential failures based on severity, frequency, and detectability.

Together, these tools help us focus resources where they have the most impact, leading to fewer errors, faster cycle times, and more consistent service delivery. The result is improved performance, stronger stakeholder trust, and a culture of continuous improvement.

What we have learned by adopting Lean Six Sigma:

- ▶ **Begin with manageable projects that deliver visible results:** Use these as learning opportunities and success stories to build confidence and organizational buy-in.
- ▶ **Listen to and understand the needs of our clients:** Understanding what matters most to clients helps prioritize improvements that deliver real value.

- ▶ **Be serious about data-driven decisions:** Building substantial data collection and analysis capabilities early on helps teams identify root causes and measure impact accurately.
- ▶ **Continuous improvement is a journey:** Recognizing incremental gains and learning from setbacks fosters a positive culture and keeps teams motivated.



LESSON
19**DIGITAL LEARNING AND AI-POWERED UPSKILLING
FORTIFY RESILIENCE IN OUR PEOPLE**

We have come to understand that investing in continuous learning is not only about building technical skills — it's about creating a workforce that is adaptable, future-ready, and resilient. In complex, high-pressure supply chain environments, this means more than traditional training. It means fostering systems thinking, cross-functional collaboration, and digital literacy.

A pivotal lesson we learned was the need to better balance conventional instructor-led training with digital learning. To transform our learning paradigm in line with the evolving demands of modern supply chain management, we adopted a next-generation, AI-native learning platform.

Through our Learning Lab, we leveraged an AI-enabled platform that delivers personalized learning pathways, accelerates content creation, and automates routine administration, allowing teams to focus on strategic development. Its multimodal, engaging formats and just-in-time support give staff immediate access to relevant guidance, while AI-driven analytics provide real-time insights to strengthen skills development.

The platform houses an ever-growing collection of curated courses, ranging from procurement and logistics courses to leadership modules and quality, risk, and regulatory orientations, that enable supply chain professionals to learn more effectively, collaborate more openly, and confidently perform cross-functional tasks.

As a result of these investments, our staff are not only more technically proficient — they are more agile, better connected, and capable of stepping into new roles when needed, especially during emergencies. The AI-powered, digital learning ecosystem we built has embedded a culture of continuous learning: knowledge is retained, shared, and applied, strengthening the resilience of both our people and our supply chain.



UPLIFTING OUR NETWORK MEANS BIGGER AND BETTER GLOBAL HEALTH IMPACT

One of our most valuable lessons in supply chain is that none of us can do it alone.

Suppliers new to public health, unfamiliar with ocean freight, or inexperienced in navigating complex waiver processes often face steep learning curves. As a PSA and 4PL, we have embraced the role of educator, collaborator, and problem-solver. We help suppliers understand local context, regulatory bottlenecks, and operational challenges. Together, we co-create solutions, correct inefficiencies, and build capabilities that allow them to thrive—whether within our programs and projects or beyond. When a supplier becomes better equipped to serve public health needs anywhere in the world, we consider that part of our success.

The same principle applies to our logistics partners. Many 3PLs enter our ecosystem with limited exposure to humanitarian supply chains. By working alongside PFSCM, they gain firsthand experience in navigating the urgency, complexity, and compliance requirements unique to public health. Through structured onboarding, shared tools, and continuous feedback, these partners quickly adapt and grow. They become not just service providers, but contributors to a global mission.

This collaborative approach is rooted in a simple but powerful belief: we rise by lifting others. Every supplier, logistics partner, and stakeholder we support becomes part of a stronger, more resilient network. And in times of disruption, whether due to pandemics, geopolitical shifts, or natural disasters, that network becomes a lifeline.

Ultimately, our mission is to ensure that lifesaving health products reach those who need them most; however, along the way, we also deliver knowledge, build capacity, and strengthen relationships. We solve complex problems through partnerships grounded in shared purpose. In doing so, we help create a supply chain ecosystem that is not only resilient but also empowered to serve humanity better.






20 years of excellence

20 LESSONS LEARNED

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