



**House Environmental Resources and Energy Committee
& House Health Committee Public Hearing
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Good morning Chairs Metcalfe, Rapp, Vitali, Frankel and members of the House Environmental Resources and Energy and Health committees. My name is Melanie Ricci and I am a Registered Nurse and Healthcare Supply Chain leader at Penn State Health. Thank you for the opportunity to speak with you about the current state of healthcare supply chain as it relates to the global energy supply.

I come to you today with 24 years of experience in healthcare at the bedside and as a leader. My family has been part of the central Pennsylvania community for decades and I have three sisters; all nurses; all who work in Pennsylvania and share the same concerns in healthcare. It may not seem intuitive to some that a nurse like myself lead supply chain for healthcare organizations, but I feel that bedside experience provides great value in understanding the impact global supply markets have in placing products into the hands of our caregivers and health care professionals.

The importance of healthcare delivery and supply chain operations is not lost on me. I am humbled to know that the source of my wages comes at the cost of someone, and their families, undergoing life changing events in our hospitals; which is why it has become my personal mission to be a good steward of sick people's money. The pandemic, current economic challenges and future predictions have put that mission to the test.

Nationally, hospitals and health systems have experienced increases in hospital expenses due to several factors including labor, drug expenses, medical supplies and personal protective equipment (PPE). Hospital expenses in this area have grown significantly since before the pandemic and continue to rise in this current economic climate. A recent report issued by the American Hospital Association highlights the "massive growth" in expenses that are presenting financial challenges for hospitals across the nation. Overall, hospitals have experienced an increase of 20.6 percent in medical supply expenses through the end of 2021. According to the report, costs associated with energy, resins, metals, and other goods and services have increased by 30 percent between 2020 and 2022 compared to pre-pandemic levels from 2020 through 2021. Medical supply transportation times have increased dramatically, and supply expenses overall for hospitals increased 15.9 percent through 2021. These increases in materials and the overall supply chain have created significant challenges as costs continue to rise, impacting the overall supply chain process due to global events.

Overview of Healthcare Supply Chain:

First, to understand the challenges a health care facility or system faces, it may be helpful to understand the healthcare supply chain process and considerations our team encounters on any given day.

A healthcare system requires a broad array of supplies to assess, diagnose and treat a diverse medical population. Products range from commodity (masks, gloves, gauze, etc.) to human organs, artificial heart valves and major joint implants. In speaking of “healthcare supply chain”, I am referencing the stakeholders, systems and processes that are required for the flow of products from the manufacturer to the use at the patient’s bedside.

The process begins with the sourcing of the product, where a team of professionals engage with suppliers to assess availability, reliability, and appropriate substitutions. Supply chain teams are frequently challenged with finding suppliers who have the capacity to take on new business due to a lack of accessibility to raw materials. Without these raw materials and an established utilization with a supplier, healthcare facilities must continue to search for that product or equivalent. An example of this is IV catheters. The sourcing team worked to find a supplier with a healthy supply of IV catheters, but it required a practice change for our nurses which was a huge dissatisfier and a disrupter to clinical practice. This is represented in multiple needle sticks for patients because any change in IV catheter is a change in the feel of placement.

Next, a healthcare facility contracts with the supplier to ensure the facility is receiving the best price on the product and establishing quality metrics, if applicable, as well as legal terms and conditions to protect the organization. At this phase, the organization will engage the Group Purchasing Organization (GPO) which houses the majority of our commodity product contracts. It is at this point that our healthcare supply chain becomes challenged with cost.

The final part of our process is what we refer to as “The Last Mile”. This portion of the process is getting the material into the facilities and through the hospital into specific locations to be placed in the hands of the caregivers. It is at this point that we are challenged with labor. This team of individuals have an incredibly difficult but invaluable job. When products cannot be sourced because of raw materials, and therefore cannot be contracted and finally supplied, it is the supply chain team that faces the clinician with empty hands. The fatigue from COVID and the stress of relationships secondary to the challenges of having product available to them has led our employees to resign these positions. The cost of turnover is significant because of the learning curve of process and technology which further compounds the cost concerns.

Supply Chain Challenges and Impacts in Healthcare:

In the early part of my career, not much consideration was given to the sourcing and procuring of products. For clinicians, there was an opportunity to have “preference” supplies, in abundance, on the shelf. The “preference” in nursing is to be able to respond to any healthcare need immediately and with competence. This requires a level of dependency on safe, reliable, consistent and sustainable product. Sadly, the latest generation of providers is not afforded the luxury of consistent and sustainable, and perhaps at times even the safe and reliable.

During the early stages of the pandemic, the scramble to procure PPE to keep our practitioners safe forced healthcare organizations to engage with suppliers who were unknown to these organizations and made the healthcare organization vulnerable to fraudulent practices and products. Local use of innovative technologies like 3D printing of masks were beneficial in the short term and representative of using creative solutions to address supply chain constraints.

Healthcare supply chains course-corrected to resolve PPE supply needs only to be met with a looming raw materials shortage. This shortage impacted every product category needed for patient care. Raw materials for resin were especially impactful as we had seen shortages in life-sustaining products like dialysis supplies, cardiovascular implants and neurosurgical implants. Other impactful product interruptions were not of critical supplies, but high velocity commodity items like lab collection supplies, intravenous catheters, urinary catheters, gloves, gowns, masks, etc. We are still experiencing back orders for all categories which makes it difficult to place product into a caregiver's hands; which further impacts the patient in the bed.

Our partner GPOs provide insights into the raw material concerns that our facilities both currently and will continue to face. As reported in May 2022:

- High Density polyethylene (HDPE) experienced a one month increase of 2.4% and three-year increase by 72%. This increase is impactful in manufacturing our syringes, lab specimen tubes, prescription bottles and other plastic containers.
- Polypropylene experienced a one month increase of 1.0% and a three-year increase of 80.7%. Polypropylene is commonly used to manufacture disposable syringes, membranes for membrane oxygenators, connectors, finger-joint prostheses, non-absorbable sutures, reusable plastic containers, pharmacy prescription bottles and clear bags.
- Other raw materials that impact the cost of finished goods and experienced increases over the last three years include: cotton (82%) steel (82.9%); aluminum (52.9%); general freight trucking (49.6%); diesel (cost per gallon, 75.6%).

Having examined the raw material impact on products is only one part of the equation. Healthcare organizations are then faced with getting the product to their facilities. This has proven to be of equal concern to the raw material shortage. The lack of availability of cargo containers, the delay in getting inventory off of the boats sitting in port, lack of tractor trailer drivers and increasing fuel costs have heavily impacted healthcare. Compounding the increased costs of raw materials, suppliers are now levying fuel surcharges on our deliveries to meet the needs of their businesses.

Healthcare supply chain represents 40% of an organization's budget. On a daily basis, current supply partners are providing notices that they will be increasing their costs to the Penn State Health organization at rates that are 3 to 16% higher than this time last year citing the cost of raw materials, labor and fuel. With the current rate of inflation and transportation costs, we have seen that suppliers who previously would negotiate on terms such as CPI and fuel surcharges walk away from the table when asked for concessions. As a result, this has strained our organization's cost structure, challenges our financial performance, and impacts patient care.

The lack of resources and supplies are likely contributors to provider fatigue and frustration. In the current environment, it has become increasingly difficult for supply chain teams who cannot provide the needed and preferred resources to those who require them.

The healthcare community is looking for advances in medicine, many of which are related to superconductors and their application in medical imaging and diagnostics. Superconductors are substances that are capable of becoming superconductive at low temperature. These substances such as aluminum, niobium, magnesium diboride, and cuprates are crucial for manufacturing semiconductor chips for technology and are expected to be constrained into 2024. As advances are being made in these diagnostic studies, Healthcare Supply Chain is anticipating another cost impact as we expect demand to outpace supply.

Finally, caring for the community during these unprecedented times presents extreme challenges for direct care staff and those who support them such as supply chain personnel. Our dependencies on energy are countless, deeply embedded and costly. This impacts our community directly as evidenced by an inability to supply our providers with consistent and sustainable product, the steeply escalating cost of products and thereby cost of healthcare, and the inability to engage local businesses due to availability of labor and transportation. All of these factors compounded will place healthcare organizations in a difficult position that will necessitate evaluation of facilities and services offered ultimately causing access to care challenges for our patients.

Moving forward, healthcare organizations will need to establish or promote clinical integration into their supply chains. Having clinical participants in the sourcing of product will ensure that appropriate choices are made in a constrained environment, work in concert with supply chain teams on conservation, and engage their colleagues in practice adjustments, if warranted.

Thank you for the opportunity to share with you the far-reaching impacts of the global energy and supply shortages on healthcare delivery and the communities we serve.