Connecting the Healthcare Value Chain
University of Pittsburgh Medical Center
UPMC/IBM Center for Connected Medicine

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<th>About the Conference</th>
<th>This conference took place in December, 2013. It was sponsored by Oracle Corp. and IBM and was hosted by the University of Pittsburgh Medical Center at the UPMC/IBM Center for Connected Medicine.</th>
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<td>About the Center for Connected Medicine</td>
<td>The Center for Connected Medicine is the world’s first collaborative health care executive briefing center, supporting stakeholders in defining the transformation of health care. It serves as a resource for innovative patient-centered and population health models, showcasing strategically integrated health information technology. By facilitating connections among those who deliver, receive and support health care, the Center helps promote cultural change, coordinated care delivery and greater patient engagement.</td>
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INTRODUCTION

The Connecting the Healthcare Value Chain conference brought together healthcare providers and manufacturers to hear presentations and to discuss the prospects of transforming the healthcare supply chain to become demand driven. There were presentations from providers, manufacturers and academia all drawing similar conclusions: demand management is a cornerstone capability that the industry must adopt to lower overall supply chain costs.

In the roundtable discussions, both providers and manufacturers shared ideas on how to drive cost out of the supply chain. From GTIN product labeling and standardized product usage, to big data being leveraged to match the right material supplies with the best clinical outcomes, there were expansive ideas shared about how the demand-driven supply chain would not only reduce costs, but should also improve care delivery.

The presentations from UPMC and Medtronic laid the groundwork for the conference calling for a new collaborative approach to sharing demand information across the supply chain. The strategic framework of smart technology (big data), good science (big science) and new models of care (improved outcomes with cost effective delivery) are shared across the supply chain so that suppliers can partner with providers to improve availability, leveraging visibility to the same data.

University of Arkansas’s Center for Innovation in Healthcare Logistics showed the disparity between retail and healthcare supply chain performance. They examined the best practices that return exceptional value for the retail supply chain and how methodologies, such as collaborative planning, forecasting and replenishment (CPFR), would benefit the healthcare supply chain.

Kaiser Permanente shared the story of their journey to becoming demand-driven and the benefits they have already started to realize by deploying demand management capabilities in their organization.

Finally, the conference provided the opportunity for providers and manufacturers to breakout into roundtable discussions that were then shared with all participants. These discussions included questions about data and how the healthcare supply chain looks different than other industries from a demand data perspective; deep questions about where is the value of the demand-driven approach, and how will that value be shared across the extended supply chain; and how do we find and secure the right supply chain talent to support this move to advanced planning and analytic tools and business processes.
CONNECTING THE HEALTHCARE VALUE CHAIN SURVEY

The 23 participating providers at the Connecting the Healthcare Value Chain conference were given a survey to help determine the topics for the roundtables. When looking at the results one can see the consistency with which the respondents have identified the issues – and the solutions to address them. For example 100% of the respondents see the Affordable Care Act forcing changes on their supply chain. While this in and of itself may not be surprising, the target objective that these organizations are striving to achieve was surprising. Fully two thirds have an objective of between $100 million and $400 million that they are looking to drive out of their value chain. Many of the strategies outlined, while broad in nature due to the survey form, focused on collaboration with their vendors. Many of the respondents were looking at their supply chain operations as a true value chain, rather than more of a simplistic sourcing function.

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Two thirds have an objective of between $100 million and $400 million that they are looking to drive out of their value chain

When asked about the importance of certain industry practices to achieve these objectives, the respondent’s most frequent reply was focused on demand management. Having an ability to understand demand that will allow us to ensure adequate supply of product garnered over 50% of the replies and was chosen as the top strategy. The second strategy among the respondents, with approximately 45% response, was being able to optimize and dynamically change my stocking locations, including PARs, through logic-based replenishment and forward looking intelligence.

Not surprisingly, most respondents used a generous amount of Excel to help with everything from dashboards to analytics, but just about everyone shared what one respondent wrote, “Too many! Most of our modeling, metric tracking and reporting are done in Excel.” Everyone shared the hope that a solution utilizing a single source of truth could help drive the ambitious results that they outlined to us above.
CONFERENCE INTRODUCTION

The conference was introduced by Michael Deluca, Senior Director for Supply Chain Solutions and Consulting Services at UPM; and Vice President of Technology and Client Services for Prodigo. Setting the tone for the event, Mr. Deluca said that today is all about vision and a call for collaboration. While providers and manufacturers have been collaborating for years – in the back office, for finance, for the execution of purchase orders – the call for collaboration has advanced.

“How do we connect the supply chain as a value chain where we can attack the total cost of ownership together?”

McKinsey&Company

“Let’s look at the supply chain as a value chain where we can lower costs together.”

Mr. Deluca said, “It’s time for “Something More Ambitious.” We dabble in collaboration, whether content related or consignment inventory related. We’re going to escalate that to concepts like demand planning.” Being able to push a forecast to a supplier to help them with inventory investment, to plan and smooth production, has been a mainstay in other industries for years. This conference will focus on how we can leverage tools like this to optimize the supplier’s own inventory investment, while also leveraging the solution across the extended supply chain to drive down overall cost in the healthcare supply chain. Where big data platforms are being utilized for clinical outcomes, we need to take that same data and leverage it for supply chain.
Session: UPMC and Medtronic

Mary Beth Lang, Vice President of HC Pharmacy at UPMC, presented Impact of Accountable Care and Practice Changes. New payment models require that we balance cost containment with quality. We cannot make decisions based on cost that will impact quality. Changes in practice are being driven by the Affordable Care Act. If we are to compete on cost and quality we need to root out over treatment and over diagnosis.

With copays getting bigger, or turning more often to Health Savings Accounts, consumers are choosing their hospital based on cost. With consumers making cost conscious decisions, we need to be able to share our cost and quality positions with our customers.

The delivery model is changing: Improved outcomes with cost effective care delivery. While today more resources are being placed in acute care, in the future these resources need to shift to primary or preventive care. UPMC is developing a strategic framework bringing together smart technology (Big Data) and good science (Big Science) with new models of care (improved outcomes with cost effective care delivery). There will be a call for personalized medicine to tailor care for the patient and reduce the overall amount of care needed.

Patrick Flaherty, Director, Procure to Pay at UPMC presented The Critical Need for Collaboration. Patrick described the increased pressures on provider revenue and margins. With new payment models and the shift to measuring value delivered, providers are experiencing unprecedented margin compression. GPO’s failed to deliver the price-point improvements that were expected. Government has created bastions of inefficiency. For example, GHX succeeded in connecting only 200 suppliers; UPMC uses 9000. Traditional supply chain models are becoming obsolete. Spend classification, consolidation of suppliers and traditional contracting practices are not returning the savings needed from the level of investment in current collaboration models.
Examine Spinal Implants, Issues and Opportunities

With a commercial focus, using traditional contracting practices, there is tremendous cost of sales pressure. There are expectations by the provider for 100% component availability with limited notification and specificity; the manufacturer is maintaining a high mix/low volume supply in the most inefficient means possible – carrying inventory just in case. The result: 96% of items go unused; there are redundant sterilization costs for all materials not used in the procedure; with lower supplier net margin and less flexible cost structures.

The future must target a demand-planning model where procedures resulting in better outcomes are tied to the correct supplies cited most frequently with those outcomes, and flexibility and demand sensitivity are built into the collaborative framework. Outcomes analysis linked to supply chain materials actually used on the procedure will contribute qualitative analysis to the demand projection, providing both provider and manufacturer with a robust demand picture.

Shannon Crespin, Vice President of Global Supply Chain and Distribution for Medtronic, presented Early Adopters Critical to Driving Change. Shannon pointed out that margin pressure for the provider equals margin pressure for the manufacturer. Healthcare requirements: No stock-outs, zero product defects and configure to order. What are the healthcare supply chain capabilities to support these requirements? There is no point of use data available to communicate actual demand; demand signal latency can be from 1 day to 1 month to know when a product was actually used; procedure schedules are not shared; there is a lack of IT integration or clearly defined business processes between the provider and manufacturer. From one of the providers in the room, Medtronic gets 50% of their orders via fax or phone calls.

Overall, healthcare supply chain performance problems are numerous but the inefficiency can be seen clearly in these manufacturer metrics: Medtronic has a $1.8B inventory, turning it about once per year; $1.2B in finished goods, with better performance (7 to 8 turns) in raw material. Finished goods are in 3 main distribution centers in North America; with 9000 other locations being managed from trunk stock to hospital consigned locations.
Early adopters will be critical to driving change. Visionaries in the industry can see the tremendous opportunity and value sitting (in the form of inventory) in the supply chain. While there have been deep investments in technology solutions for care delivery, healthcare supply chain has passed through decades with minimal supply chain evolution.

Suppliers are still operating in silos with no real time connection to the provider. The providers are still operating in their own silos in terms of inventory in the facility and with no information being shared about what’s happening in the operating theater. We need to make this transition away from the labor intensive supply chain management processes as was done in the device space over the past few decades.

Professor Hau Lee, at Stanford University, speaks of Data, Analysis, Decision, Action and Usage. Demand latency in healthcare can take weeks to months as compared with high-tech/CPG where it takes hours. It’s going to take visionaries and early adopters to help overcome these limitations.
University of Arkansas – Center for Innovation in Healthcare Logistics

Dr. Edward Pohl is Professor and Department Director for the Center for Innovation in Healthcare Logistics (CIHL) at the University of Arkansas. Dr. Pohl was joined by Professor Manuel Rossetti to present Healthcare Vs. Retail – Supply Chain Gap Analysis.

Motivation for the study: 40% of healthcare supply chain cost is spent on distribution – 5 times what is spent by retail; 5 to 15% supply chain cost improvement will increase margins by 1 to 3%. The goal of the study was to examine best practices in retail that translate to opportunities in healthcare supply chains. The CIHL seeks healthcare supply chain and logistic innovations that put the right materials in the hands of caregivers when and where they are needed. When visiting with healthcare providers and performing site visits, professors Pohl and Rossetti kept hearing two conflicting thoughts:

• Healthcare logistics should be more like retail
• Healthcare logistics is unique

How it was done: Dr. Pohl’s team examined the best practices in retail and healthcare through the top performers in each industry; there were 22 best practices identified, and 10 were selected as the focus of the study:

1. Commodity Centralized Purchasing
2. Supply Chain Services Reorg
3. E-Commerce
4. Scanning Technology
5. Data Standardization
6. Performance Management
7. Regular Cycle Counting and Stock Rotation (Inventory Management Practices)
8. Enhanced Training
9. Collaborative Planning, Forecasting and Replenishment (CPFR)
10. Actual Usage Inventory Management

The team measured the gaps in performance to identify opportunities for healthcare. They examined the barriers to implementing the practice in healthcare and what is the potential impact if the practice was utilized to a higher degree.

They dug deepest into three best practices with the greatest performance gaps: Inventory Management Practices, CPFR and Enhanced Training.
Inventory management practices in healthcare are outdated as compared to the Point-of-Sale driven replenishment models prevalent in retail. Healthcare has little in the way of actual usage data and does not incorporate it into any automated replenishment control strategies. There is little in the way of A-B-C analysis to help prioritize focus on improving supply chain business processes. The gap with retail is significant in that retail has well defined procedures to analyze performance across the extended supply chain. Retail leverages scientific inventory management practices for determining stocking levels and order point data. Retail uses forecast data to drive the algorithms that plan and replenish their inventories. The healthcare best practices of frequent cycle counting could be replaced with better real-time inventory management practices and a commitment to generating a forecast of all demand in all locations.

CPFR – collaboration with real time information sharing requires incentive realignment. In retail, CPFR is a performance-driven planning model that sets availability and on-time performance targets that require information sharing in order to achieve. Certainly for the manufacturer, the real benefits of demand data sharing occur when more of its retailer customers are participating. But the expectations placed on the manufacturer from its largest customers encourage them to expand the CPFR model to more of its customers.

Enhanced training for materials management personnel shows another significant gap between retail and healthcare. Many healthcare respondents believed that deploying enhanced training would be relatively easy to accomplish, though retailers were well aware this requires a significant investment. Likewise, healthcare respondents believed that most of the best practices were easy to implement and would yield significant benefits, while retailers had much higher expectations for the effort required and lower expectations for the benefits. These beliefs further point to the education gap between the industries.
Kaiser Permanente

Laurel Junk is Vice President Supply Chain for Kaiser Permanente. Ms. Junk was joined by Joe Fleming, the OneLink Project Manager at Kaiser Permanente responsible for deploying Demantra Demand Management, in presenting Supporting Kaiser Permanente’s Supply Chain Transformation with Enabling Technology. Kaiser Permanente’s supply chain strategy is one of six profiled in the book Strategic Supply Chain Management – The Five Disciplines for Top Performance, Shoshanah Cohen and Joseph Roussel.

Supply chain is about integrating functions and integrating processes. The integration begins internally and then extends to a collaborative model with your suppliers. Ms. Junk shared Kaiser Permanente’s strategy for an integrated, collaborative supply chain, which is three years in to a five-year vision.

OneLink is Kaiser Permanente’s internal moniker for the enterprise-wide deployment of PeopleSoft, where they achieved standardized business processes and financial accountability, a consistent item master bringing together 8 disparate item masters building to nearly 400,000 items. With all regions of their provider network on a single platform as of Q1 2013, Kaiser Permanente was able to begin to rationalize the item master, but needed a true characterization of demand across the network to help with that effort.

Kaiser Permanente operates in California and 6 regions outside California, supporting over 9 million members across all of their regions with 37 hospitals and over 600 medical offices. Though large, Kaiser Permanente struggles with the same problems as all other providers, maybe with a few more digits to the left of the decimal.

Operating in very much a “push” system to get supplies to the point of care, much of the supply chain was managed by clinicians. Without an analytic approach to setting stock and par levels, hunting and gathering of supplies was the norm. If a par went empty, increase the minimum; run out again? Bump it up again. The bullwhip effect is alive and well at Kaiser Permanente, and this program set out to change that.

Managing stock was cumbersome. Kaiser Permanente experienced over 1500 recalls last year alone, and all of this activity was managed manually, with clinicians involved in too much of this activity. Clinicians are here to focus on patients, not to manage the supply chain. They need to be able to expect to have the right material in the right place at the right time, with little to no risk of expired, obsolete or recalled product. The supply chain’s ultimate mission is to provide standardized, high quality product to support the provider’s overall mission to deliver high quality, affordable care to its members.
Kaiser Permanente’s supply chain vision starts with Point of Use capture. Capturing usage at the point of care is critical, which is why GS1 is critical, especially in the unit of use. This data can better feed a demand planning and forecasting system, ensuring an in-stock condition (a term borrowed from CPG and Retail). Deploying these tools requires standardized business processes for capturing the data and consistently using that data to balance supply with demand. For providers without point of use (or for items too low in value for point of use capture), usage can be derived by interpolating count data and receipt data.

There is a longer term vision for leveraging the Point of Use data with clinical systems. This provides the opportunity to tie usage to outcomes, which is of deep interest to the clinicians. This visibility, combined with better demand visibility shifts the focus from price-only to one of total value. In the future, they may pay more for an item, but they will know better what the outcome is: that it shortens surgery time; that it shortens patient stay; that it causes fewer infections; that it produces better outcomes.

This data will be interesting to manufacturers, as well. Providing the right product quality with timely information about the product’s effectiveness, preventing negative outcomes represents hundreds of millions of dollars in opportunity in addition to the 2% to 3% price-point improvements being sought through better demand management.

Finally, as part of Kaiser Permanente’s overall supply chain vision, Point of Use data will help them understand what procedures cost. There is currently no Cost-of-Goods-Sold mentality in healthcare delivery. This data will help benchmark care delivery costs and can be leveraged to ensure they are managing costs in the new reimbursement model.

For now, the focus is on demand management: getting the right supplies in the right place to support care delivery. While supply chain will never tell a clinician what to use, Kaiser Permanente’s supply chain team has convinced the clinicians to allow them to manage the Physician Preference Card (now called the Procedure Card at KP). This will enable better the long term vision to blend supply chain data with clinical systems and drive a comprehensive value proposition for Point of Use data.

The demand management system has been piloted in several facilities. Par levels are being statistically set and the returns have included increased productivity by 60% (including inventory optimization), and in-stock condition improvement of over 90%. The supply chain group is already using the term CPFR and has brought in talent from outside industry – retail, grocery chains – that have deep experience with demand management systems.

Recent focus on attracting the right talent has highlighted compensation challenges between healthcare supply chain and supply chains in other industries (as also discussed in the presentation from Dr. Pohl). Next steps are to get integrated with suppliers around the forecasting business processes to help improve in-stock condition and beginning to focus on the price-point improvements anticipated with the model.
ROUNDTABLE DISCUSSIONS

The participants broke into separate groups to review specific topics. Each group was a mix of different providers and manufacturers. Following are the five discussion topics with the group responses.

Data Points – how are we going to collect the data needed to feed a demand management system?

- Standards are the issue. Ability to scan, integrate data with clinical systems and partner with manufacturers to define the right processes
- GTIN/GS1 – Case and Box are being barcoded, but LUM (low unit of measure) is not. How do we get the manufacturer or distributor to affect this change?
- We need full use of the data systems we have to do predictive population management in a space known for off-label use. Should we be looking at Big Data to extend to ICD-10 (International Classification of Diseases, 10th Edition)? How do we create relationships between diagnosis code and procedural code? Response: We get basic tools completed first – get point of use data in place and then mine it to assess against clinical outcomes.

Consignment – much of the value in the supply chain is material on consignment. How can demand management practices help us around the consigned inventory model?

- We need to realign incentives. The provider doesn’t pay attention to how many are on the shelf, only to potential stock outs. Org structures at the manufacturer put boundaries on how normalized these processes can become.
- What is the true value of the consignment model? Managing lot expiry? The savings in inventory carrying cost is not really there if it is simply buried in the price of the item.
- We need to engage the physicians in decisions in this area. Gaining consensus on optimizing this inventory is essential.

Where’s the value? How do we convert this to real business value for all parties involved?

- Having trusted relationships with our suppliers. We need to model a new contract with incentives to reduce total supply chain costs, improve item availability and trust that those improvements (realized through the supplier’s efficiency gains) are realized in price-point improvements to the provider.
• A manufacturer responded: Value is in how well you treat the population. Reps are to make sure products get to those who will benefit. Agree on populations to be vaccinated and make sure everyone gets the doses they are supposed to get. Data needs to show how well products used.
• And from another manufacturer: Better demand management means cost improvement opportunities up the supply chain. Better data standards include alignment of incentives. If we can eliminate high-paid positions (125 Reps) that coordinate so much of the supply chain, those cost reductions should be passed to the provider in terms of better pricing. Do better forecasting and there is opportunity for better pricing.

Talent – How do we bring talent into healthcare supply chain from other industries?

Tips from the room:
• Hire from outside of industry if you want to change the status quo
• Higher turnover in healthcare industry makes it harder to assimilate – ones that stay do well
• Hybrid: hire from suppliers and channel partners
• Start programs with local universities
• Have a performance ranking and constantly revise their work, pushing the tactical work to the lowest level possible
• Salaries need to be competitive – it is tough to get top talent among the new graduates
• Training – Supply Chain Management is not part of industry core competency
• To attract top supply chain professionals, you need to have better tools in place for them to use

One supply chain professional commented that bringing in talent from other industries is critical to supporting the transformation to becoming demand-driven. One approach is to find the individuals who are moved and motivated by the lifesaving results of delivering a more effective healthcare supply chain.

CPFR – it will be different in healthcare. How different will it be?
1. CPFR drives savings to the supplier. How will theses savings be translated into savings for the provider? Is there trickle down? What’s in it for us, especially since it is the provider who must invest in systems to enable this change?
2. Next time this group meets on this topic, we need to devote some time to ROI for the provider to show how we can fund this transformation.
3. With CPFR, contracts must be written with language to incent the provider to use what they forecast, and for the supplier to meet all forecast demands. Professor Rossetti described incentive-based contracts that are needed to identify and deliver the value of improved supply chain performance.
Providers understand how collaborative planning can improve their supplier’s efficiency but ask “What’s in it for us?”

“The collaborative planning model will require early adopters, visionaries who are willing to take the first steps. It will take large manufacturers like Medtronic, large providers like UPMC, like Kaiser, to build a value chain that seeks to take cost out of the end-to-end supply chain and return these savings through the supply chain to ultimately lower the cost of healthcare” said one of the speakers. Participants called for a model that can deliver value to both the healthcare provider and the manufacturer, but without the provider shoudering all of the cost of the transformation.

We heard from several providers in the roundtables that trusted supplier-provider relationships, where we are sharing cost reduction potential savings, will help motivate the provider to make the investment in collaborative demand and supply management. And we heard from manufacturers in the roundtables that it will take more than just one or two large providers to enable the smoothing of their production and distribution supply chains to lower costs.

University of Arkansas’ presentation clearly spells out that the CPFR model will require incentive alignment between provider and manufacturer. Getting there means that the foundational aspects of capability and business process needs to be in place to begin. Cost savings to the provider needs to be available by laying this foundation – managing demand and optimizing inventory investment should fund basic elements of the advanced planning model. Extending those savings to price-point improvements through lower cost of supply chain execution for the supplier will require early adopters to build the incentive alignment.

Listening to the front-runner and first early adopter of the demand forecasting model, there are multiple supply chain focus areas in addition to demand planning, and each requires attention, but the savings potential is real. Not yet having the perfect systems to achieve all of their vision did not stop them from taking crucial first steps in connecting the healthcare value chain.