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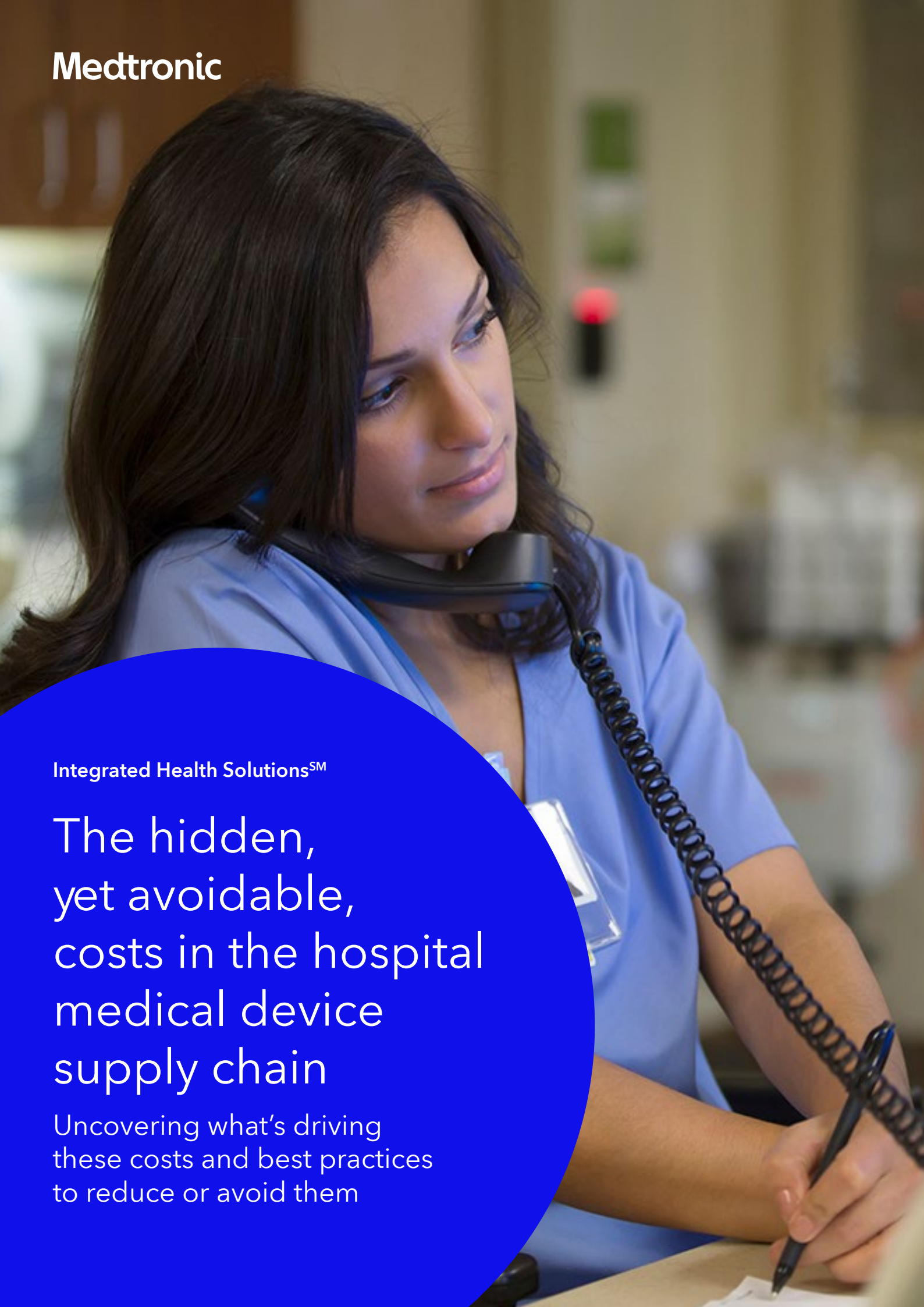

Integrated Health Solutions℠

The hidden, yet avoidable, costs in the hospital medical device supply chain

Uncovering what's driving these costs and best practices to reduce or avoid them

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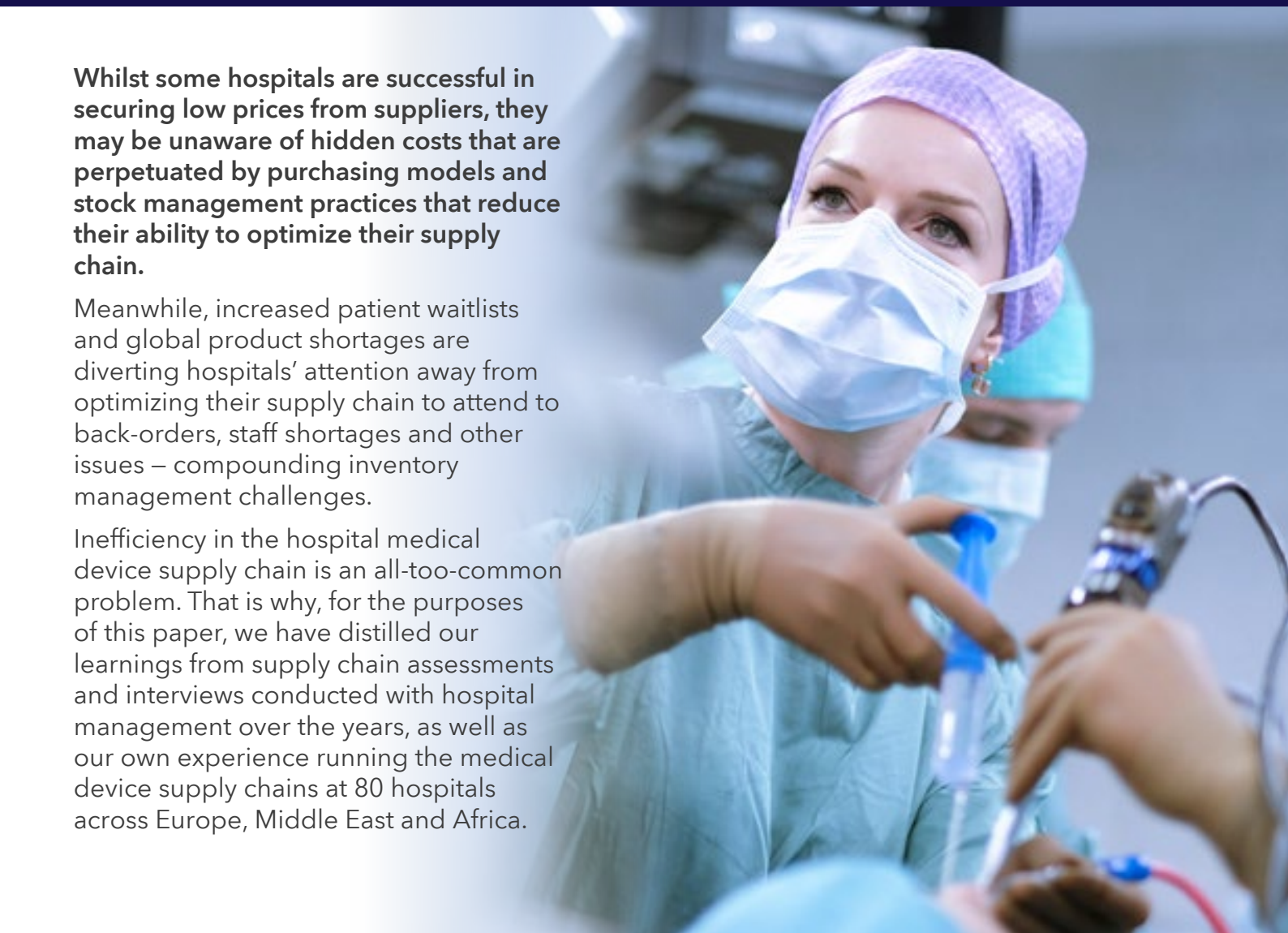

Whilst some hospitals are successful in securing low prices from suppliers, they may be unaware of hidden costs that are perpetuated by purchasing models and stock management practices that reduce their ability to optimize their supply chain.

Meanwhile, increased patient waitlists and global product shortages are diverting hospitals' attention away from optimizing their supply chain to attend to back-orders, staff shortages and other issues – compounding inventory management challenges.

Inefficiency in the hospital medical device supply chain is an all-too-common problem. That is why, for the purposes of this paper, we have distilled our learnings from supply chain assessments and interviews conducted with hospital management over the years, as well as our own experience running the medical device supply chains at 80 hospitals across Europe, Middle East and Africa.

Supply chain's hidden, yet avoidable, costs

Hidden cost #1: stock expiration

Hospitals purchase stock anticipating they will use it all before it expires. In reality, the average hospital that relies on nurses to manage stock and has only basic inventory management IT systems, we found evidence of wastage to be around 6% per year. And for hospitals without proper inventory management controls, this number rose to 13% of their annual materials spend[1].

If a hospital's main controls to prevent waste are simply an occasional inventory count and a heavy reliance on busy nurses to manage stock levels, waste is to be expected.

However, even at hospitals that have made investments to improve inventory management, we still find evidence of up 3% of expired stock on the shelf. This is usually driven by changes in clinical preference, and by products not being phased out optimally. For example, for a private Nordic hospital with 3 cath labs and 1 operating theatre, this wastage meant €82,000 of expired inventory on the shelf[2]. That is why, to reduce these costs, the hospital turned to an outsourcing partner to take responsibility for stock management to drive down expiries.

Hidden cost #2: nurse time wasted on non-core activities

Our data show that nurse availability is impacted by stock management: For the hospitals in our assessment, we found 15-20% of nurse capacity is spent managing inventory instead of focusing on core clinical duties[3].

During a time when nurses are in high demand, it makes sense to find ways to reallocate nurse time to focusing solely on clinical activities and moving stock management duties elsewhere.

15-20%

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Another reason for taking this responsibility off nurses' plates is to acknowledge a simple fact: Most nurses don't have time for stock management, and inventory optimization is not a key performance metric for them. Separating stock management from nursing duties may also make hospitals more appealing when hiring in-demand nurses because they will no longer face the stress of having to manage inventory on top of their clinical duties.

[1] Wastage as % of annual consumption based on expiries and obsolescence over 12-month period at 11 hospitals where scans were performed, located in UK, Italy, Denmark, Norway, Netherlands, 2017-18

[2] Wall-to-wall cycle count performed in February 2018

[3] Data based on surveys conducted at 11 hospitals where scans were performed, located in UK, Italy, Denmark, Norway, Netherlands, 2017-18, looking at time spent by clinical staff on medical device ordering, picking, restocking, returning stock to shelf and managing exceptions in supply chain. Excludes time spent on stock optimisation and improvement initiatives.

Hidden cost #3: With consignment comes more administration

Consignment stock, whereby the hospital owns and pays for the devices only after consumption, is popular with hospital procurement teams as it removes carrying costs and expiry risks from the hospital. These benefits can be quickly eroded, however, by the incremental administration burden resulting from the consignment model. In one of the hospitals we assessed, we found the following administrative challenges linked to supporting consignment stock over the course of a year:

Consignment stock administrative issues by reason code (2018)[4]	Count of occurrences	As %
Cycle count disputes	90	22%
Product used not set up in hospital system (sales rep trunk stock)	78	19%
Vendor invoice not matched to usage	65	16%
Consumption reporting corrections (serial number not matching)	53	13%
Replenishment order rejected (max level exceeded on system)	29	7%
Other administrative issues	94	23%
TOTAL	**408**	**100%**

If we consider each of these issues taking around 45 minutes to resolve, the loss to the hospital is equivalent to around 20% of 1 full time member of staff[5].

More ambitious hospitals are moving to a "fee per procedure" model, where they move responsibility for procurement and supply chain to an outsourcing partner. The hospital does not buy or manage stock, but instead pays a single, inclusive fee for each procedure they conduct. This model is becoming increasingly popular, with hospitals adopting this concept across Western Europe and Middle East.

Other hidden costs

For a medium-sized hospital, the ecosystem required to source and supply medical devices has several other components which can amount to 20–30% of costs on top of the product it purchases[6]. These costs include, but are not limited to:

- Sourcing and Procurement professionals for contract negotiation and vendor management
- IT licenses and support costs for inventory management systems
- Purchase order and invoice payment administration
- Product data management to enable procurement, logistics, finance and clinical systems to recognize the product
- Quality and regulatory administration to ensure compliance

This is why it is not surprising that hospital management is looking at ways to optimize their supply chain to address these hidden costs. The next section looks at how hospitals are addressing some of these costs to drive improvements.

[4] Based on 12 months ordering and invoicing data for consigned products at cardiology centre in Germany with two Cath Labs and one hybrid lab. Total 5100 order lines, of which 8%, or 408 lines, experienced administrative issues (2018)
[5] Based on 1976 working hours per year
[6] https://www.certitrek.com/nlpa/blog/cost-of-a-purchase-order-the-great-mystery-of-procurement/

Six initiatives high-performing hospitals are taking to address the hidden costs in their supply chain

Whilst outsourcing parts of the supply chain management process is a popular way for hospitals to reduce costs, many hospitals are choosing to instead invest in IT and establish dedicated logistics professionals in-house. Either way, a professionally run Operating Room or Cardiology department supply chain should aim to develop the following capabilities if it is to make meaningful impact on its running costs:

Master the Surgical Preference Cards (SPC)

Surgical preference cards (SPC) itemize the instruments and materials needed during a clinical case, in line with an individual surgeon's preferences. Building and maintaining the SPC requires periodic review with clinical, logistics and procurement staff to ensure the SPC is up to date.

Outdated or inaccurate preference cards cause 23 percent of the OR door openings during a procedure[7] when nurses must leave the room to find missing supplies. Each time OR doors open during a procedure to fetch supplies, procedures take longer, nurse time is wasted, and infection control is compromised.

To truly master the SPC, analytical capabilities are needed to understand where to improve efficiency, such as:

- Removing product duplication, redundancy or out-of-date materials
- Identifying lower-cost, clinically equivalent substitutes
- Aligning procedure or product nomenclature

Organizations like Medtronic's Integrated Health Solutions (IHS) have invested heavily in analytical platforms to build SPCs and identify opportunities for process optimization and cost reduction. They do this by combining clinical insight with a comparison of actual versus planned usage and enabling discussions with clinical teams.

In terms of best practices, Jytte Kristoffersen, a former OR manager with more than 20 years' experience and now a Clinical Excellence director for Medtronic IHS says, *"We like to review SPCs periodically with clinical teams. We look at the analytical assessments to see which cards need updating, refreshing or even removing. By keeping them in good shape, nurses save time, and the materials management staff know what stock to pick before a procedure."*

[7] Panahi P et al, Clinical Orthopaedics and Related Research (2012) 470, 2690-2694.

Track consumption and exploit data

Scanning devices used during a procedure tells the supply chain what needs to be replenished. However, the usage data can do a lot more if used in conjunction with the right analytics. It can also help with:

Predicting stock at risk

Leading hospitals are able to analyze the likelihood of a unit of stock expiring based on rate of usage and remaining shelf life. In fact, one hospital in our assessment avoided €121k of stock expiry in a 6-month period by proactively addressing the overstock. This was only made possible because of how usage data was exploited to identify stock risks[8].

Ordering optimally

With the right systems in place, a surgical department can function with an average across the hospital of 4–6 weeks of supply, if the supply chain has immediate visibility into what is being used, current stock levels, and vendor lead times.

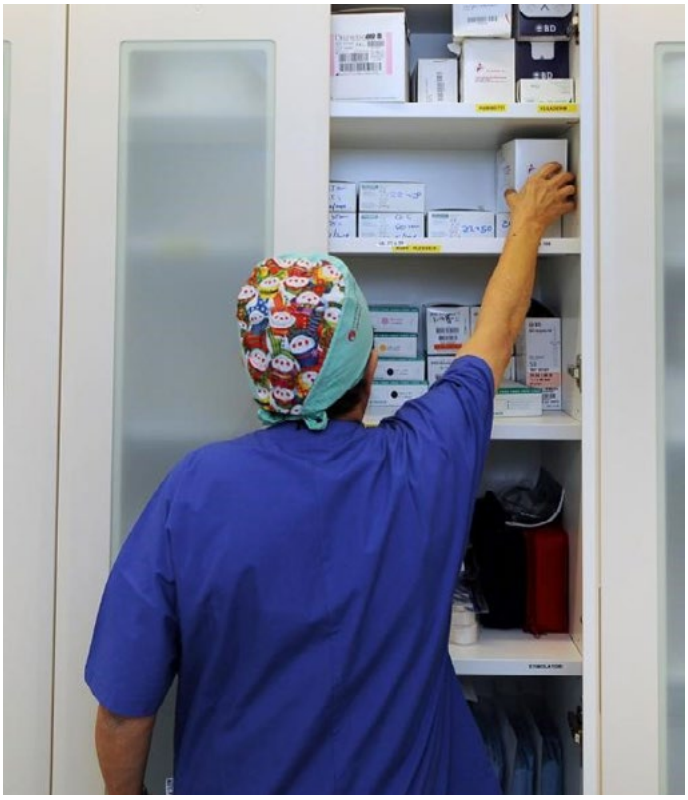
Managing stock smartly

Automated, intelligent stock management enables hospitals to frequently review their stock ordering policy and help them effectively manage delivery exceptions (returns and replacements or credits).

Treat the returns process as importantly as the initial pick

Returning stock to the right location takes time and discipline. Like a library book, if you put it back on the wrong shelf, it's as good as lost. Our study showed that hospitals that did not have a rigorous process for re-stocking unused items back to the right location had higher wastage during the year compared to those that did.

High-performing hospitals typically use an IT system that allows users to track consumption (either by scanning a barcode or using RFID) and, based on the SPC, this automatically informs the IT system of what was used. The unused stock is placed in a central location for the materials management staff to return to shelf, making life easy for the nurses and simultaneously keeping the stock levels accurate in the inventory management system.



[8] Data on file

Master the master data

Master data, in particular, item master data, relates to the data about a product that is relevant to supply and management of that product. It includes pack size, economic ordering quantities, barcode information, and also enriched data such as product category and sub-category.

High quality, well-maintained item master data allows purchasing teams to better analyze hospital spend and usage trends, helping to deliver savings for the organization. In our observation, the hospitals with best understanding of their spend and usage profiles were using support from external companies to clean and enrich their product data. One such example in Italy secured 7% saving in materials cost by reviewing their mix of product categories and driving savings through consolidation of certain categories. For this hospital, managing spend at brand level alone was not enough to drive the savings.

To improve master data, a typical Cardiology department should expect to segment its product portfolio (usually around 1,000 - 1,500 active products) into 20-30 product categories, with around 3-4 sub-categories in each category. With this level of granularity, a hospital can truly start to properly segment and understand its usage and spend trends.

Manage the back-orders so the nurses don't have to

Covid has impacted the availability of many products used in the medical device industry, especially plastics and semi-conductors. This has created back-orders, and hospitals need a good strategy to manage them. Nurses who have to chase late deliveries find it to be an unwelcome distraction from patient care. It also adds stress to their daily duties and often delays procedure start times.[9]

Rather than relying on nurses, high-performing hospitals use dedicated supply chain logistics staff, which not only is responsible for ordering, receiving and putting away deliveries, but also for continually reviewing the impact of back-orders. The best supply chain logisticians will not only chase back-orders but also inform nurses of stock-out risks and proactively find clinically equivalent substitutes. This can only be done efficiently with an inventory system that has sight of forecast demand, open orders and a surgical preference card system.

Measure the right metrics

Addressing the hidden costs in the supply chain requires hospital management to have metrics linked to the desired goals: right stock levels, in the right place, at the right time.

However, many hospitals suffer from bad or poor data availability. Bad data, as is widely reported, is worse than no data[10]. Here's an example: After a data cleaning exercise at a large public hospital, our study showed only 64% of spend data was accurate, stock levels were 82% accurate, and there was no data at all on supplier performance. This led a hospital manager to observe: *"It is no surprise that we have inefficiency in our supply chain if we cannot see a clear picture of our situation. You can only improve what you can measure."*

As a service provider of supply chain management to hospitals, we recommend these six key metrics to measure the health of the supply chain and its ability to address these hidden costs.

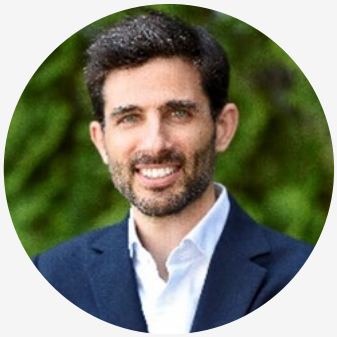
[9] https://hbr.org/2020/04/how-hospitals-can-manage-supply-shortages-as-demand-surges, April 2020
[10] https://www.gartner.com/smarterwithgartner/how-to-create-a-business-case-for-data-quality-improvement, 2017

Metrics of a Healthy Medical Device Supply Chain

Measure	Subsequent Analysis/Actions	Target
	STOCK AVAILABILITY	
Procedures cancelled or rescheduled as a result of material non availability	**Reordering strategy:** PAR level review **Product mix:** Review Product substitution options **Vendor performance:** Back-order tracking processes	>99% attainment
	STOCK HOLDING	
Total stock on hand in equivalent and weeks of supply	**Free cash-flow:** Review total stock as % of consumed materials and procured materials in relation to **Product mix:** Review opportunity for range rationalization	4-6 weeks of supply
	STOCK AT RISK	
Likelihood of expiry based on historical usage and Use By Date	**Proactive stock waste avoidance:** Explore options to return to vendor or swap stock between other hospital sites **Good Picking Practice:** Ensure "First Expire, First Out" display of stock	<2% of total stock on hand by value at risk 0-90 days
	WASTE/ OBSOLETE STOCK	
Value x volume of expired or non-moving stock	**Proactive waste management:** Define improvement initiatives (e.g., inventory optimization, handling assessments) as necessary. **Transparency:** Report losses to Finance	<0.8% of total stock purchased per year
	CYCLE COUNT ACCURACY	
Match between actual and system stock level	**Transparency:** Report gains/ losses to Finance	<1% adjustment in of total stock value
	SUPPLIER PERFORMANCE	
On Time, In Full (OTIF)	**Supplier Management:** Conduct quarterly performance reviews with key vendors	>98% OTIF

In conclusion

Given today's challenges with product shortages and tightening budgets, the business case for driving improvement in the supply chain is stronger than ever. Clinical teams tend to suffer the most from staff and product shortages. By investing in supply chain improvements, hospitals will not only save operating costs (reduced expiries, lower administration burden, etc) and ensure proper stock levels, but also improve the working environment, thereby helping retain valuable nursing staff.



About the author

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