

# How to Optimize Clinical Inventory Management with Proven Metrics and Data Analytics

## SUMMARY

Typically, medical supplies and devices represent the second largest line item in the budget of most hospitals' specialty procedure or interventional areas. Yet management of these pricey supplies is usually the responsibility of each individual clinical department, which too often has inadequate inventory management expertise, resources, and tools to enable it to perform well and get measurable results. Additionally, hospital supply chain organizations usually don't have the necessary visibility into inventory management matters inside the clinical areas and tend to focus on metrics that fail to show the data necessary to effect improvements. Also, in many hospitals, there is too often a real misalignment between what is being measured and what would actually have a positive impact on their bottom line. For example, most metrics in use are not geared towards reporting connections between supplies and performance, thereby preventing them from quantifying opportunities for supply optimization and consolidation. This White Paper illustrates how a set of meaningful and actionable metrics, together with effective inventory management solutions and data collection tools, can guide specialty departments to achieving their inventory optimization, supply spend, and cost savings objectives.

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## The Problem: Supply Management Challenges Affecting the Bottom Line

Specialty departments of hospitals today have many pressing supply management objectives as they face certain high stakes challenges, such as how to:

- Reduce their supply operational expenses;
- Increase their supply billed revenue;
- Raise profitability;
- Augment staff productivity;
- Reduce variation in clinical utilization;
- Minimize the risk or liability associated with supply due to expirations and incorrect billing;
- Mitigate patient risk; and
- Improve patient safety and quality of care delivery.

While it may not be immediately apparent to clinical departments, poor inventory management directly affects their ability to achieve these objectives and successfully implement the changes they need. As a result, a clear priority for specialty departments must be to improve inventory alignment, reduce inventory expenses, and uncover savings opportunities.

Some of the most important sources of bottom line improvements include the following:

**1) Expiration control:** When products expire on the shelves, especially pricey ones, it is a complete loss for either the department or the vendor, and not an insignificant portion of the on-going waste that exists in hospitals. Despite intentions to eliminate waste on a continuous basis, most departments don't have the controls in place – nor the data – to effectively reduce waste to the lowest minimal level acceptable. One key way that they can achieve this is through the proactive monitoring of soon-to-expire items at 90 days, 60 days, and 30 days. Bringing waste reduction to around 1% of the total inventory value reflects an efficiently run inventory. Typically, departments can save 8-12% of their total inventory value through effective expiration management and waste reduction.

**2) Inventory size reduction:** Location-based and continuous lean PAR levels are essential for keeping supplies available at each

location and in sync with actual usage, thus helping control costs and reduce the overall size of the stock. Departments must find ways to support a higher volume of patient cases with the same or lower inventory levels. They can attain this by closely aligning on-hand stock to product utilization, or by resorting to other creative practices such as reducing their unused owned inventory by exchanging or getting financial credit for them, or sharing a pool of supplies between several departments. Typically, departments can save 5-15% of the total inventory value through the maintenance of a leaner inventory.

**3) Reduction in product purchases:** Departments must ensure that product purchases are closely aligned with actual consumption needs. On-going measures as well as data on consumption history can help guide the alignment of purchases to the usage levels. Typically, departments can save 5-10% of total supply purchases by aligning purchases with consumption.

**4) Optimization of clinical utilization:** Standardization of clinical operations and supply documentation protocols is a consistent tool of such optimization. For example, when items are opened but not used, this creates tremendous waste. Consistently measuring the rate of occurrence, and identifying the type of item and the responsible users, allow the department to be equipped with the information to effect change and reduce this type of waste. Typically, departments can save up to 5% of total supplies used through effective clinical utilization management.

**5) Billing accuracy and accountability:** While over-billing creates financial and legal liabilities, under-billing – which is typically due to omission and/or inaccurate clinical documentation – can result, even in the current reimbursement framework, in substantial amounts of lost revenue, and as much as 10-15% of the total medical devices and supplies cost of procedures. Other advantages of accurate and comprehensive documentation of all supplies used during each case are to gain a thorough understanding of the actual cost of delivering care per procedure type/code and to be able to establish a baseline and monitor changes over time.

## How Can Specialty Departments Achieve Their Supply Management Objectives?

It is critical that departments utilize and apply the right metrics for evaluating their supply management performance if they wish to reduce expenses and save money; however, not all methods of measuring progress are equally useful in showing the data needed to implement changes.

How quickly are unused or obsolete items being identified and substituted? How effectively are expiring items being identified and removed? How well-aligned are purchases with the actual clinical need? To optimize their inventory and supply spend, specialty departments must apply metrics that answer these questions.

We suggest the following metrics in order for departments to be able to support their improvement objectives:

#### EXPIRATION CONTROL

- Expiring and expired inventory as a percentage of total on-hand inventory value.
- Value and percentage of owned inventory items that are at risk of expiring 90 days out, 60 days out, 30 days out, and removed due to past expiration date.

#### INVENTORY SIZE REDUCTION

- On-hand inventory compared to case volume.
- Difference in the cumulative \$ value and unit quantity of received vs. used inventory in the context of procedural volume.
- Total value of unused or infrequently used items as a percentage of total on-hand inventory value.

#### REDUCTION IN PRODUCT PURCHASES

- Monthly and annual total value of purchased inventory versus consumed inventory.
- Impact of price discounts applied to the top 20 most frequently utilized SKUs by value.
- Cost benefit of consolidation of most used type of item vs. consignment program.

#### BILLING ACCURACY AND ACCOUNTABILITY

- Financial credit received/applied as a result of supplies exchange or credit toward a future purchase.
- Variance in \$ billed per same case code.
- Value of supplies purchases as a percentage of the value of supplies billed.
- Supplies purchases as a percentage of the total operational budget.
- Supplies purchases as a percentage of overall departmental revenue.

#### CLINICAL UTILIZATION EFFICIENCY

- Cost per case per physician.
- Opened but unused items as a percentage of total inventory value.

### Effective Data Analytics Tools Are A Key Part Of The Puzzle: Case Studies From The Field

Even the best metrics are only effective, however, when the data they produce is accurate, reliable, and complete. Hence, they must be used in conjunction with automated inventory management and data collection tools or systems that are proven to consistently capture accurately all relevant information about products (product ID, lot/serial number, and expiration dates), as well as their deliveries, availability on the shelves, and exact usage for patient care, down to each item.

Both RFID and barcode scanning systems can produce the data needed to turn these metrics into information that can ensure positive

change. When innovative inventory management technologies are used in combination with effective metrics, the results are significant.

The following case studies from VUEMED's customers show the results achieved from running and analyzing reports that identify and monitor slow-moving and obsolete inventory. These reports utilized the metric of expiring or expired inventory as a percentage of total on-hand inventory value.

VUEMED was able to decrease the expiring inventory at an Interventional Radiology (IR) department at a large teaching hospital in Washington, D.C. by 95%, from about 10% of its on-hand inventory value in 2013 to a consistent level below 0.5% by 2016.

At a large teaching hospital in New York State, VUEMED reduced the waste significantly for both the Interventional Radiology (IR) and the Cath Lab departments: the IR department maintained its expiring owned inventory at below 1% of its total inventory value over an 18-month period, and the Cath Lab reduced its expiring owned inventory to below 0.5% of its total inventory value, as measured over a 6-month period.

Another key goal for specialty procedure and interventional departments is the reduction of supply costs, measured as a reduction in purchases, and then the subsequent maintenance of a lean inventory that is in line with consumption needs. Supply purchases typically tend to be higher than supply utilization by anywhere between 20% and 40% (in \$ value) over a given period of time, without any changes in case volumes or mix – thereby leading to overstocking, accumulation of excess, and waste.

When departments systematically collect data to measure purchased versus utilized value, as well as unused inventory as a percentage

of on-hand inventory value, they can identify specific purchasing behaviors and usage patterns that lead to bloated inventory levels. It is essential that departments use these kinds of metrics in order to guide the decision-making process for streamlining their inventory and establishing correct par levels for each SKU that correspond to actual documented usage patterns. This process identifies the opportunities to correct outdated or flawed buying patterns, and adjusts purchasing contracts and/or consignment programs to the actual reality and needs of the clinical departments to serve them better.

**The following case studies from VUEMED’s customers involve metrics, such as comparing on-hand inventory to case volume, that measure and enable sustainable inventory size reduction:**

At the IR department in Washington, D.C. (see p.3), VUEMED helped it decrease its value of on-hand owned inventory by nearly 50% from 2013-2016.

At a GI department in a large urban teaching hospital in New England there was a 15% decrease in on-hand inventory value in less than 6 months.

The New York State IR department (see p.3) saw a 17% decrease in on-hand inventory value over the 18-month case study period. The Cath Lab at this hospital showed consistently higher consumed vs. purchased inventory value each month, while supporting a 4% increase in case volume, resulting in an 11% decrease in on-hand inventory value within 8 months.

## Conclusion

These metrics are just some of the many that establish baselines and benchmarks to help hospitals better meet their supply chain objectives. This actionable information, together with effective RFID and barcode scanning inventory management and data collection

tools, is critical for guiding specialty departments towards optimization of their inventory, rationalization of their stock purchases, and other cost savings related to shrinkage management, as well as process and staff efficiency gains.

## About VUEMED

VUEMED is a SaaS and Cloud-based healthcare IT company working to transform the healthcare supply chain through the most innovative RFID and barcode scanning technologies available today. VUEMED’s mission is to solve acute inventory management, supply chain, and

product usage documentation problems at hospitals with tools that promote transparency and provide comprehensive and accurate data. Our goals are to improve the quality and delivery of patient care, achieve efficiency and savings, and increase revenue capture.