



Data Management in the Supply Chain

A BEST PRACTICE GUIDE

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Most hospital departments collect vast amounts of data. For example, supply chain tracks items that are ordered and used; quality management and infection control monitor the incidence of hospital-acquired infections, readmissions, and adverse events; perioperative units note surgery start times and lengths; and clinicians record procedures, medications ordered, and other patient interventions—data that is then used to generate an accurate bill for every episode of care. When properly harvested, comprehensive data has tremendous potential. Not only can it tell the story of how an individual patient was cared for but also how much that care cost, the quality of that care, and how care varies from one clinician to another.

A strategic supply chain must be able to tie its data to clinical product use as the basis for making informed purchasing decisions that facilitate positive clinical outcomes and a high ROI based on current reimbursement models. When integrated with financial and clinical systems, supply chain data can provide the information necessary to run this value-based cost analysis. But to get reliable results, the data must be accurate and organized.

Robust supply chain data—which requires building and sustaining a data foundation that feeds all supply chain decision-making—sets the groundwork for achieving best practices in other functional areas of supply chain. Clean data enables more efficient procurement because it reduces confusion and unnecessary back-and-forth communication between the staff requesting an item and the supply chain staff. Carefully managing this data

facilitates all analysis efforts, from tracking organizational processes to more strategic deep dives into product and protocol efficacy and financial outcomes. Obtaining precise data, however, requires an effective technology infrastructure to support it.

While providers have traditionally used different systems for human resources, accounting, and materials management, hospitals and health systems have increasingly moved to enterprise resource planning (ERP) systems, a technology that integrates these disparate programs under one umbrella to streamline processes and better support cost management. However, while ERPs are best practice, they aren't the only solution. A well-maintained standalone materials management information system (MMIS) should be able to provide the relevant data to support cost management initiatives. Having all of a health system's key

functions under one platform promotes efficiency and other benefits, but the goal is to be able to extract and analyze accurate data to drive decision-making and monitoring. When used properly, MMIS data can play an enormous role in helping hospital leaders determine the cost per case. When an MMIS is linked to clinical and financial data, a report documenting a supply's impact on a patient outcome (e.g., average length of stay and readmission rate) can be analyzed down to the physician level to help hospitals make more educated purchasing decisions.

There's a strong case to be made for investing in supply chain infrastructure. When trying to convince decision-makers, supply chain leaders should first research the benefit to the hospital's bottom line. Technology is a strategic asset that can help the supply chain department manage expenses effectively. Such an investment, however, must be about more than technology. A corresponding investment in human capital is essential.

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Create and maintain a clean, robust item master

In the supply chain, the first area of data management focus should be the hospital's item master, which is ideally a single repository of nearly every product a hospital buys and uses. Essentially, it is the supply chain's source of truth. The data stored in the item master is the foundation for everything involved in supply chain management. From placing and managing orders to compiling reports and analytics to pricing, contracting, inventory, and controlling spend, the accuracy of the data within the item master determines the effectiveness of the supply chain.

Create a process for entering additions to the item master

The way in which the item master is amended is vitally important for controlling expenses. Limit the number of staff members who have the authority to modify the item master, and ensure that those who have authority are continuously trained and cognizant of the organization's nomenclature for product fields. Create an approval hierarchy for all item master changes. This policy should be communicated to medical staff and C-suite executives to make certain that all requests for supplies go through purchasing.

Include key data fields for each entry in the item master. This will help identify the item so that the correct one is ordered.

Primary Fields

- Item master number
- Vendor part number
- Vendor name
- Vendor ID
- Manufacturer part number
- Manufacturer name
- Manufacturer ID
- Item description
- Item price
- Unit of measure (UOM)
- UOM conversion factor (quantity of each)

To further enhance reporting, additional recommended fields include

- HCPCS (Health Care Procedure Coding System) number
- GTIN (Global Trade Item Number)
- UNSPSC® (United Nations Standard Products and Services Code)
- CDM code (chargemaster code)
- Expense code

If latex-free gloves need to be ordered, for example, consider the nomenclature under which they are listed in the item master (“glove, latex-free,” “latex-free glove,” both, neither). Without a clear process for entering item master information, hospitals run the risk of accumulating duplicates or obsolete products, entering inaccurate information, and creating muddled hospital records of department-wide or organization-wide use and spend.

An example of standard nomenclature is as follows:

NOUN	ADJECTIVE	VERB	SIZE	SHAPE*	COLOR
Glove	Nitrile	Exam	Large		Blue
<i>*if applicable</i>					

Using this nomenclature, when someone searches for “glove,” a more comprehensive list of items will appear.

Some supply chain professionals advocate loading every contracted product into the item master, regardless of whether the product is actually being used by the facility or not. However, one contract can contain hundreds—even thousands—of individual products. Correctly adding each of those products (and all of their required data points) to the item master can require enormous resources and be a significant administrative burden to maintain. Facilities should weigh the utility gained from loading a complete product catalog into their item master (on the assumption that they may order a product sometime in the future) versus loading only the products that are used most often.

Limit the use of non-catalog items and special requests

A hospital’s data is composed of two primary data sets: the item master (items approved for purchase and assigned an MMIS number) and PO history (all items that a hospital has ordered, regardless of whether they are in the item master). Within the item master, items can further be classified as stock (held in inventory) or non-stock (items that are ordered periodically but not frequently enough to be held in inventory). Purchases that are not included in the item master are typically one-time purchases and called non-catalog items or special orders/requests. Examples include purchased services, capital equipment, maintenance, and some physician preference items. As these items are not in the item master, this often creates an inability to aggregate the data necessary to gain maximum benefit from supply chain analytics. When looking at cost-saving opportunities, these items can skew or impact a hospital’s decisions, as the information needed is not always available to prepare accurate analyses. Supply chain departments must rely on manual data manipulation in order to compile the item master data with the non-catalog items in order to fully understand their purchasing power and physician use patterns. It is best practice to limit non-catalog items and special requests.

Always check item master information before entering

Though time-consuming at the front end, checking the information that is entered into the item master helps to ensure that you are working with accurate data. Ask vendors and manufacturers to send a current item file based on their hospital’s use that includes full item detail (such as UOM, pricing, etc.). Keep in mind, however, that neither vendors nor manufacturers always provide the

right information. Similarly, a contract may list a product using a series of numbers separated by dashes. But when the same item number is entered into the vendor's electronic data interchange (EDI) system, the dashes are not recognized and the order is rejected. Validating this information as part of the entry process can prevent delays down the line. Ideally, this process is automated.

Create a process for maintaining a normalized (clean) item master

Supply chain should assign someone (or several people) with extensive product knowledge to review and update the item master on a regular basis using the defined entry procedures. This individual can also review the item master against the hospital's PO history to remove items that are not used by the hospital for a specific, agreed upon time frame (e.g., 24 months) to keep it organized and up-to-date. These responsibilities can also be outsourced. After making any mass update, run an item master extract to confirm that changes have been completed correctly.

To maintain a useful, accurate item master, supply chain staff must also create a process for monitoring contract expirations. An established procedure helps ensure that the contract for a heavily used item is renewed ahead of time. Conversely, it can help catch an order being placed for an item whose contract has recently expired.

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Standardize data using unique identifiers

The supply chain should consider methods for standardizing data collected from different sources. It is best practice to use the American National Standards Institute's (ANSI) system for UOMs (e.g., CA instead of CS for case).

One complication that hospitals face is the lack of an industry-wide standard for product numbers. Distributors use vendor part numbers, and manufacturers use their own numbers. Consequently, hospitals must maintain both numbers in the item master, as it's sometimes necessary to order from both the manufacturer and the distributor.

Besides manufacturer and distributor product numbers, there are other unique identifiers that can help analyze data. The HCPCS, GTIN, UNSPSC as well as the UDI (Unique Device Identification) and GLN (Global Location Number) can be used to help internal data reconciliation decisions, such as charge coding, expense coding, and ship-to or deliver-to creation.

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Build interfaces between the hospital's systems

Item master data can be combined with other sources to provide a comprehensive review of information, including the following:

- PO history, which provides insight into contracting opportunities as well as cases of rogue spending
- Accounts payable history, which provides insight into non-PO activity, such as purchased services
- Inventory reports, which provide insight into product use and ordering patterns, and help identify slow-moving or obsolete products

Hospital supply chain teams should work with their information technology colleagues and other key stakeholders to build links between the ERP, the chargemaster, the electronic health record (EHR), and any additional clinical information systems. The goal is to generate reports that illustrate the true cost of care and the

relationship between supplies and clinical and financial outcomes. Remember, the item master should serve as the source of truth for supply information for all downstream systems.

Explore the functionality of existing systems

Taking the time to explore your hospital's existing MMIS or ERP functionality can be time well spent. Instead of investing in human capital to build interfaces, it is possible that your system can be upgraded to achieve the same goal.

In addition, hospitals may not be using the information in their existing systems to its full potential. Providers should explore whether their systems have the functionality to compare related supply costs and charges against reimbursement on an enterprise level in order to ensure that costs are adequately covered. Using pacemakers as an example, the questions below are the types of inquiries that should be made:

- How many different types of dual-chamber pacemakers are in the item master?
- What is the price for each type?
- Does the hospital's chargemaster reflect an appropriate charge for these pacemakers relative to their cost?
- Is there a significant price differential between vendors and types of devices? Are there separate chargemaster codes to reflect this?
- What is the expected reimbursement for these devices from each of the hospital's three largest payers?

An accurate item master generates more complete PO and expense information. In order to undertake any value-based initiative—looking at the cost per case and analyzing the connection between supply costs, use, and budget variances—organizations will need to link supply chain data with the general ledger; clinical information, operating room (OR), and procedural systems; and various other data sources. This integration will shine a light on the quality and accuracy of supply chain data. Maintaining a clean item master should be treated with the same level of importance as the maintenance of the organization's chargemaster.



KEY DATA MANAGEMENT PERFORMANCE INDICATORS

The following can be used to measure supply chain performance in data management:

- Item master duplicates (number)
- Average missing fields per item (%)
- PO items managed by item master (%)

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