AHRMM Advancing Health Care through Supply Chain Excellence

CQO: The Health Care Supply Chain

Supply Accounts Payable (AP) Days

Purpose:
Measures how effectively the health care organization is managing its payables.

Value:
May be utilized to ensure discounts are optimized, as well as provide greater insight into payment trends and cash flow fluctuations.

Equation:
Firstly, add the opening AP dollars at the beginning of the month and closing AP dollars at the end of the month, and divide the sum by two (2) – this will provide the '**AP average**'. Next, divide the '**Total supply expense**' by the 'AP average' to calculate the '**AP turns**'. Lastly, divide 30.4 days (average day count for a month) by the 'AP turns' to calculate the **AP Days**

(Opening AP dollars at month start + closing AP dollars at month end) ÷ 2 = **AP average**
Total supply expense ÷ AP average = **AP turns**
30.4 ÷ AP turns = **AP Days**

Note: it is favorable to have a lower value for this Key. The lower the value the better. An increase in AP days over time may indicate a worsening financial condition.

Example:
The system controller for Sergeant's Health would like to determine the AP days for the last month. The opening AP balance was $700,000 and the closing balance was $774,000. Total supply expense for the past month was $550,000. The AP days are calculated as:

Opening AP dollars $700,000 + closing AP dollars $774,000 = $1,474,000 ÷ 2 = **$737,000** AP average
Total supply expense $550,000 ÷ $737,000 = **0.75** AP turns
30.4 (days) ÷ 0.75 AP turns = **41** AP Days

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Opening AP dollars	The opening value for your Accounts Payable (AP) dollars at the start of a given month.	
Closing AP dollars	The closing value for your Accounts Payable (AP) dollars at the end of a given month.	

Points of Clarification:

- An organization's stance on making partial payments will influence this metric.

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Supply Expense Per Case Mix Index (CMI) Adjusted Discharge

CMI-AD

Purpose:
May be used to measure supply expense on a volume basis. Case mix index (CMI) adjusts to account for patient acuity.

Value:
Enables the organization to measure and trend supply expense that is adjusted for volume and patient acuity.

Equation:
Use if you **<u>have</u>** the Number of CMI Adjusted Discharges available:

Total supply expense ÷ Number of CMI Adjusted Discharges = **Supply expense per CMI adjusted discharge**

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

Source data, a hospital that has:

- Total supply expense: $1,000,000
- Number of CMI Adjusted Discharges: 96,000

$1,000,000 Total Supply Expense
÷
96,000 Number of CMI Adjusted Discharges
=
$10.42 Supply expense per CMI adjusted discharge

Equation:
Use if you **<u>don't have</u>** the Number of CMI Adjusted Discharges available:

See the previous equation on how to obtain the '**Total supply expense'**. Next, divide your Gross outpatient revenue by your Gross inpatient revenue to derive your '**Adjustment'**. Next, multiply this 'Adjustment' by the Number of inpatient discharges to derive your '**Adjusted discharges'**. Then, multiply the 'Adjusted discharges' by the Case Mix Index (CMI) to derive '**Number of CMI Adjusted Discharges'**. Lastly, simply divide the total supply expense by the Number of CMI Adjusted Discharges to calculate the Key.

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Gross outpatient revenue / Gross inpatient revenue = **Adjustment**
Adjustment x Number of inpatient discharges = **Adjusted discharges**
Adjusted discharges x CMI = **Number of CMI Adjusted Discharges**
Total supply expense ÷ Number of CMI Adjusted Discharges = **Supply expense per CMI adjusted discharge**

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

Source data, a hospital that has:

- Total supply expense: $1,000,000
- Gross inpatient revenue: $10,000,000
- Gross outpatient revenue: $8,000,000
- Inpatient discharges: 60,000
- CMI: 2.0

Gross outpatient revenue $8,000,000 / Gross inpatient revenue $10,000,000 = **0.8** Adjustment
0.8 x Number of inpatient discharges 60,000= **48,000** adjusted discharges
48,000 x CMI of 2.0 = **96,000** CMI Adjusted Discharges
Total supply expense $1,000,000 ÷ 96,000 = **$10.42** supply expense per CMI adjusted discharge

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.

Gross outpatient revenue	All gross outpatient Revenue such as Medicare, Commercial Insurance or self-pay that includes all deductibles such as Adjustments, Reimbursements, Rebates, etc. Refer to AHRMM/HFMA supply categories for further details.	Contractual allowances, Charity care, Bad debt, Labor-related expenses and services, Some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a copier contract), Purchased services
Gross inpatient revenue	All gross inpatient Revenue such as Medicare, Commercial Insurance or self-pay that includes all deductibles such as Adjustments, Reimbursements, Rebates, etc. Refer to AHRMM/HFMA supply categories for further details.	
Number of inpatient discharges	This is the total inpatient discharges for the month.	
Case Mix Index (CMI)	Case Mix Index (CMI) is a standardized formula that is driven by diagnostic related group (DRG) mix of inpatients. Input the index here.	
Number of Case Mix Index (CMI) adjusted discharges	The total inpatient discharges for the month, adjusted with the Case Mix Index (CMI).	

Points of Clarification:

- The adjusted equivalent discharge calculation takes into account net inpatient revenue (which is measured as gross patient service revenue minus contractual allowances, charity care and bad debt) and outpatient revenue. The result of this formula allows outpatient activity to be factored into the volume statistic.
- CMI adjustment gives additional weight to the volume statistics for high acuity patients. CMI is a standardized formula that is driven by diagnostic related group (DRG) mix of inpatients.
- CMI index is not always reflective of the supply utilization patterns for hospitals with a high volume of complex, technology heavy surgical or interventional cases. They would benefit by calculating supply cost per surgical case or procedure in addition to supply cost per adjusted equivalent discharge.

References:

- Adjusted Discharges Supported

Supply Expense as Percent of Net Patient Revenue

Purpose:
This Key is a high-level metric that monitors the relationship between supply expense and net patient revenue.

Value:
Changes to this metric may indicate a shift in the relationship between supply expense and the associated net patient revenue. If the change is a trend (versus single point of variation), it should trigger an evaluation of the root cause and the development of an action plan. Causes can range from increased supply cost or increased supply utilization, to changes in the patient and/or payor mix that effect net revenue.

Equation:

Total Supply Expense ÷ Net Patient Revenue = **Supply Expense as % of Net Patient Revenue**

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:
Source data, a hospital that has:

- Total supply expense: $1,000,000
- Net inpatient revenue: $3,800,000
- Net outpatient revenue: $2,200,000

Net inpatient revenue $3,800,000 + Net outpatient revenue $2,200,000 = **Net patient revenue of $6,000,000**

$1,000,000 Total Supply Expense
÷
$6,000,000 Net Patient Revenue
=
16.67% Supply Expense as % of Net Patient Revenue

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Net patient revenue	All inpatient and outpatient revenue such as Medicare, Commercial Insurance or self-pay.	All deductibles such as Adjustments, Reimbursements, Rebates, etc.
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.

Points of Clarification:

- Changes to this metric may be caused by both supply expense and net revenue shifts. Therefore, a root cause analysis must be completed prior to developing action plans. For example, if revenue reporting is favorable, this KPI may cause the health system to underestimate the potential of supply expense savings opportunities. The opposite is also true, if revenue reporting is unfavorable, supply expense saving opportunities may be overestimated.
- Should there be a fluctuation in supply expense as a percentage of net patient revenue, it may indicate a change in supply consumption or utilization behavior (e.g. adoption of new supplies, emerging or disrupting technologies, change in practice variation, pricing, etc.) with no corresponding increase in patient revenue.
- If using this metric for benchmarking keep in mind it does not take into account regional and national differences in reimbursement rates.

Spend Under Management (SUM)

Purpose:

To provide leadership with a measure of the amount of total spend that is being effectively managed by the organization’s supply chain team.

Value:

As the organization’s spend under management increases, the ability to optimize costs and forecast expenses increases. Effectively managed spend gives the organization greater control over the risk of using inappropriate products/services. It prevents the risk of having contracts in place that are in legal conflict with each other. SUM also identifies “maverick” spend in the organization.

Equation:

Firstly, sum Total Supply Expense and Total purchased services expense to arrive at your ‘**Total supply and purchased services expense’**. To calculate SUM, divide **spend actively sourced/managed by supply chain** by this ‘Total supply and purchased services expense’, and multiple the result by 100.

(Spend actively sourced/managed by supply chain ÷ Total supply and purchased services expense) × 100 = SUM percentage

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- Total spend actively sourced/managed by supply chain: $600,000,000
- Total supply expense: $750,000,000
- Total purchased services expense: $250,000,000

$600,000,000 ÷ $1,000,000,000 = 0.60 × 100 = **60% SUM percentage**

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Total purchased services expense	All Purchased Services expenses (clinical and non-clinical) such as Facilities, Information Technology, Maintenance, etc.	Taxes, Salaries and bonuses, Charitable contributions, Dividends, securities, interest payments, Stock repurchases, Organizational memberships.
Spend actively sourced/managed by supply chain	Spend actively sourced/managed by supply chain professionals refers to spend that the supply chain organization led and/or was involved in the process of supplier selection, product evaluations, pricing, etc.	Everything not actively sourced/managed by supply chain.

Points of Clarification:

Data usually comes from multiple sources. It is extremely important to ensure that all sources are included. The main sources of data are the organization's accounts payable (AP) system, which may be a module within an enterprise resource planning (ERP) system, and a purchasing card (p-card) system. If payments are made to third parties other than through the AP or p-card systems (e.g. voucher system, direct pay system, or travel and expense system), they should also be included.

If available, a health care organization may find the following systems useful in determining its overall, non-payroll, influenceable and managed spend because they include additional information about the organization's financial transactions:

- E-procurement systems: For many organizations, spend managed by an e-procurement system has gone through an approval process and/or through a catalog (whether hosted or punch-out) and is more likely to be managed spend than other methods of buying.
- Contract management systems: These systems can provide information on which vendors and goods have a contract in place and are therefore likely to be influenceable or managed spend.
- Vendor management systems: They contain additional information about the vendors to help determine which transactions are influenceable and which are not.
- The intent is "sourceable" spend not just "sourced" spend by supply chain professionals. Expenditures on taxes, employee base salaries and bonuses, charitable contributions, organizational memberships,

dividends, securities, interest payments and stock repurchases should be excluded from the spend amount.
- Spend actively sourced/managed by procurement professionals refers to spend that the supply chain organization led and/or was involved in the process of supplier selection and pricing.
- Spend under management is not equal to identified or realized savings.
- Spend management of 100 percent is not necessarily attainable or desirable.

Generally accepted accounting principles (GAAP) for health care providers calls for supplies and purchased services as separate expense lines on the income statement. While much of this expense may not be the spend sourced by procurement, it should be the goal of the professional to capture this spend and include it in the denominator of this KPI.

References:

Some content adapted from the following:

- Analyze This: Procurement Metrics That Matter, SIG Global Executive Summit, 2014
- Spend Under Management, Institute for Supply Management (ISM)
- What Is ‘Spend’?—Defining Spend in the Procurement Process, American City & County, July 2013
- Your Definition of Spend Under Management Is Wrong
- “Spend Under Management?” Odds Are You’re Doing It Wrong

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Inventory Turns

Purpose:

Measures the hospital or health system's ability to manage its inventory of products to support the delivery of care.

Value:

Allows hospital executives and supply chain leaders to understand the organization's ability to order, store and deliver its products required for the delivery of care.

Equation:

Firstly, add the opening inventory dollars at the beginning of the month and closing inventory dollars at the end of the month, and divide this sum by two (2) – this will provide the '**Average inventory'**. To calculate the key, simply divide the **Total Inventory Supply Expense** by the average inventory.

(Opening inventory dollars at month start + closing inventory dollars at month end) ÷ 2 = **Average inventory**

Total inventory supply expense ÷ Average inventory = **Inventory turns**

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- Total inventory supply expense = $550,000
- Opening inventory dollars balance = $600,000
- Closing inventory dollars balance = $400,000

$600,000 Opening inventory dollars balance + $400,000 Closing inventory dollars balance = $1,000,000

$1,000,000 ÷ 2 = **$500,000** Average inventory

$550,000 Total inventory supply expense ÷ $500,000 Average inventory = **1.1** monthly inventory turns

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total inventory supply expense	All medical and non-medical inventory supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc.	All direct-ship/on-consignment expenses, purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Opening inventory dollars	If your opening balances are recorded across multiple cost centers, sum all Opening Inventory Dollar amounts to arrive at this value. This value is for the month you are submitting data for, not a rolling 12 months period.	
Closing inventory dollars	If your closing balances are recorded across multiple cost centers, sum all Closing Inventory Dollar amounts to arrive at this value.	

Points of Clarification:

- This metric can be utilized to understand trends and performance over time to determine if the hospital or health system's strategies to increase or decrease turnover are yielding results.
- Typically, health care organizations calculate inventory turns by category or procedural areas to further target and identify areas of improvement. (e.g. the operating room or cardiac cath lab).
- Reporting by area provides a more advanced calculation of the hospital or health system's ability to manage its inventory of products.
- The audience should recognize that a lower metric may be justified in some instances; for example, lower turnover may be needed to ensure that sufficient clinical supplies and products are available to support delivery of patient care.
- Labor costs to support inventory management should be factored when determining value delivered through higher inventory turns metrics. For example, a hospital that is relying on additional staff to increase inventory turns may not be as efficient as one that is leveraging technology and automation to increase efficiency levels.
- In general, a higher metric suggests that the hospital is effectively managing its inventory by ordering and delivering the right amount of products to support patient care. Furthermore, a higher metric indicates that the hospital is ordering and turning over supplies at an optimal level, reducing unnecessary inventory and holding costs and improving overall profitability of the organization.
- However, hospital executives and supply chain leaders must also understand that maximizing inventory turns is not the desired outcome. Higher inventory turns must be balanced with the need to have enough products on hand to support patient care.

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Supply Chain Labor Expense Per Case Mix Index (CMI) Adjusted Discharge

CMI-AD

Purpose:

This KPI defines the labor cost per discharge for in-house supply chain functions. This unit cost informs the sustainability of supply chain's cost structure within an organization.

Value:

Tracking this labor cost per discharge informs if changes in patient activity are impacting supply chain labor costs.

Equation:

Use if you <u>have</u> the Number of CMI Adjusted Discharges available:

Simply divide your **Total labor expense** by **Number of CMI Adjusted Discharges**.

Total labor expense ÷ Number of CMI Adjusted Discharges = **Supply chain labor expense per CMI adjusted discharge**

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

Source data, a hospital that has:

- Total labor expense: $500,000
- Number of CMI Adjusted Discharges: 96,000

$500,000 Total Labor Expense
÷
96,000 Number of CMI Adjusted Discharges
=
$5.21 Supply chain labor expense per CMI adjusted discharge

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Equation:

Use if you <u>don't have</u> the Number of CMI Adjusted Discharges available:

Firstly, divide your Gross outpatient revenue by your Gross inpatient revenue to derive your '**Adjustment'**. Next, multiply this 'Adjustment' by the Number of inpatient discharges to derive your '**Adjusted discharges'**. Then, multiply the 'Adjusted discharges' by the Case Mix Index (CMI) to derive '**Number of CMI Adjusted Discharges'**. Lastly, simply divide the total labor expense by the Number of CMI Adjusted Discharges to calculate the Key.

Gross outpatient revenue / Gross inpatient revenue = **Adjustment**
Adjustment x Number of inpatient discharges = **Adjusted discharges**
Adjusted discharges x CMI = **Number of CMI Adjusted Discharges**
Total labor expense ÷ Number of CMI Adjusted Discharges = **Supply chain labor expense per CMI adjusted discharge**

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

Source data, a hospital that has:

- Total labor expense: $500,000
- Gross inpatient revenue: $10,000,000
- Gross outpatient revenue: $8,000,000
- Inpatient discharges: 60,000
- CMI: 2.0

Gross outpatient revenue $8,000,000 / Gross inpatient revenue $10,000,000 = **0.8** Adjustment
0.8 x Number of inpatient discharges 60,000= **48,000** adjusted discharges
48,000 x CMI of 2.0 = **96,000** CMI Adjusted Discharges
Total labor expense $500,000 ÷ 96,000 = **$5.21** Supply chain labor expense per CMI adjusted discharge

Input Descriptions and Sources:

Input Name	Includes	Excludes
Gross outpatient revenue	All gross outpatient Revenue such as Medicare, Commercial Insurance or self-pay that includes all deductibles such as Adjustments, Reimbursements, Rebates, etc. Refer to AHRMM/HFMA supply categories for further details.	Contractual allowances, Charity care, Bad debt, Labor-related expenses and services, Some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a copier contract), Purchased services
Gross inpatient revenue	All gross inpatient Revenue such as Medicare, Commercial Insurance or self-pay that includes all deductibles such as Adjustments, Reimbursements, Rebates, etc. Refer to AHRMM/HFMA supply categories for further details.	

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Number of inpatient discharges	This is the total inpatient discharges for the month.	
Case Mix Index (CMI)	Case Mix Index (CMI) is a standardized formula that is driven by diagnostic related group (DRG) mix of inpatients. Input the index here.	
Number of Case Mix Index (CMI) adjusted discharges	The total inpatient discharges for the month, adjusted with the Case Mix Index (CMI).	
Total labor expense	Total salary expense and benefits cost for all personnel in departments or cost centers that roll up or report to the supply chain function at a hospital or health care system.	Non-labor operational costs driven by supply chain management functions.

Points of Clarification:

- If the health care organization's supply chain organization utilizes full time equivalents (FTE) that perform supply chain related tasks and functions but report to other, non-supply chain cost centers, it should consider capturing and including the cost of these "shadow FTEs" in the Total labor expense part of this metric's equation.

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Perfect Order

★★★★★

Purpose:

Perfect order is a composite metric that serves to measure the process by which a purchase order (PO) electronically - from order to payment – occurs without human intervention to ensure it is delivered to the correct location, on time, undamaged, at the correct price with the desired quantity, all on the first attempt.

Value:

Perfect order enables performance measurement to cut across functional silos, while also allowing a multi-level view of results; facilitates analysis of performance failures to provide insight into failure patterns and trends, which can then be targeted as part of continuous improvement efforts; and helps galvanize collaboration across the internal/external organizations collectively responsible for supply chain performance.

Equation:

To calculate the percentage of perfect orders, multiply the following four sub-metrics:

Percentage of Purchase Orders delivered on time:
Number of Purchase Orders delivered on time / Total number of Purchase Orders sent out to all distributors and suppliers

Percentage of Purchase Orders shipped complete
Number of Purchase Orders shipped complete / Total number of Purchase Orders sent out to all distributors and suppliers

Percentage of Purchase Orders shipped damage free
Number of Purchase Orders shipped damage free / Total number of Purchase Orders sent out to all distributors and suppliers

Percentage of Purchase Orders successfully Three-Way Matched against the Receiver and Invoice
Number of Purchase Orders successfully Three-Way Matched against the Receiver and Invoice / Total number of Purchase Orders sent out to all distributors and suppliers

Percentage of Purchase Orders delivered on time × Percentage of Purchase Orders shipped complete × Percentage of Purchase Orders shipped damage free × Percentage of Purchase Orders successfully Three-Way Matched against the Receiver and Invoice
= **Perfect Order Percentage**

Note: it is favorable to have a higher value for this Key. The higher the value the better.

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Example:

It is difficult to achieve a very high perfect order value because the final formula is based on multiplying the sub-metrics together. So if the orders delivered in a time period averaged 95 percent on time, 95 percent complete, 95 percent damage free, and had 95 percent documentation (0.95 × 0.95 × 0.95 × 0.95), the final perfect order number for that period would be only 81 percent.

And the lower the initial percentages in the formula, the lower the resulting perfect order percentage. So if only 80 percent of shipments were on time and 80 percent were shipped complete, even if the health care organization was perfect in the other areas, the total perfect order value would only be 64 percent!

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of Purchase Orders sent out to all distributors and suppliers	The total number of Purchase Orders sent via EDI, Fax, phone or other method that were sent out by your organization this month to the various distributors and suppliers.	See points of clarification below.
Number of Purchase Orders delivered on time	Out of the total number of Purchase Orders sent out during the month, how many were delivered on time (arrive at their final destination at the agreed upon time between the customer and the shipper)?	
Number of Purchase Orders shipped complete	Out of the total number of Purchase Orders sent out during the month, how many were shipped complete (arrive with all lines and units)?	
Number of Purchase Orders shipped damage free	Out of the total number of Purchase Orders sent out during the month, how many were shipped damage free (arrive in good and usable condition)?	
Number of Purchase Orders successfully Three-Way Matched against the Receiver and Invoice.	Out of the total number of Purchase Orders sent out during the month, how many were successfully Three-Way Matched against the Receiver and Invoice (for which the customer received an accurate invoice and other required documents)?	

Points of Clarification:

- Organizations that measure perfect order typically include additional metrics to build up a comprehensive picture of cross-functional performance.
- In some cases these extra metrics are added to the above formula, but in others they may make up a further level of detail, below the on-time, in-full, and correct invoice metrics.
- In making the decision to include additional metrics, it is important to remember that the more metrics used to make up the perfect order result, the harder it will be to achieve a high perfect order percentage.
- Taking a simple yet consistent approach is recommended.

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Total Suppliers Per $1M Non-Labor Supply Expense

Purpose:
Measures the hospital or health system's effectiveness in managing its total supplier base.

Value:
Allows both hospital executives and supply chain leaders to understand their organization's ability to reduce fragmentation of its supplier base.

Equation:
Firstly, sum Total Supply Expense and Total purchased services expense to arrive at your '**Total supply and purchased services expense**'. Divide this value by 1 million to arrive at '**Total supply and purchased services expense in millions**'. To calculate the Key, divide **Total number of suppliers** by this '**Total supply and purchased services expense in millions**'.

Total supply and purchased services expense / 1,000,000 = **Total supply and purchased services expense in millions**
Total number of suppliers ÷
Total supply and purchased services expense in millions =
Total Suppliers Per $1M Non-Labor Supply Expense

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:
A health system has $50,000,000 in total monthly non-labor supply expense and utilizes 5,000 suppliers.

$50,000,000 ÷ 1,000,000 = **50** Total supply and purchased services expense in millions
5,000 suppliers ÷ 50 = **100** Suppliers Per $1M Non-Labor Supply Expense

Input Descriptions and Sources:

Input Name	Includes	Excludes

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Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Total purchased services expense	All Purchased Services expenses (clinical and non-clinical) such as Facilities, Information Technology, Maintenance, etc.	Taxes, Salaries and bonuses, Charitable contributions, Dividends, securities, interest payments, Stock repurchases, Organizational memberships.
Total number of suppliers	Total number of active vendors utilized by the organization (derived from the AP Master Vendor File).	

Points of Clarification:

- While differences may exist in each organization's monthly operational and capital expenses, the metric will normalize the differences between organizations.
- If possible, organizations should clean and standardize supplier names when deriving supplier counts. For example, there may be instances when the same supplier shows up multiple times with different identification numbers in the materials management information system (MMIS). Cleaning and standardizing supplier data will ensure that a more accurate count is derived.
- Output should clearly indicate key components of the equation, including monthly supplier count and total non-labor supply expense.
- The audience should not seek a "target" when viewing this metric, as each organization may have differing needs. Instead, this metric should be used directionally to determine how the organization compares with its peers. Furthermore, this metric can be more effective when leaders track progress and improvements made over time.
- The audience should also recognize that a higher metric may be justified in some instances; for example, multiple suppliers may be needed to fulfill demand or inject healthy competition to achieve the best value within a category.
- Organizations should include both operational and capital expenses when deriving total annual non-labor supply expense. Supply chain expends significant resources managing suppliers that deliver capital goods and services.
- A lower metric will typically indicate the organization's ability to consolidate its supplier base, leading to more effective control of quality, and cost of products and services. For example, a health system may be utilizing multiple suppliers to deliver the exact same products and services with varying levels of quality and cost. If the health system can standardize to fewer suppliers, it can not only control the quality of products and services, but also leverage spend to negotiate more competitive agreements.

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Percentage of Purchase Order Lines with Expedited Shipping Costs

Purpose:

Monitor use and identify the source of expedited shipping orders.

Value:

Identify opportunities for improved inventory management and operational cost reduction, and avoid disruption in the buying process.

Equation:

To calculate the percent of Purchase Order (PO) lines with expedited shipping costs, first query your Enterprise Resource Planning (ERP) or Materials Management Information System (MMIS) to determine the total number of PO lines sent out to all distributors and suppliers, as well as, the number of PO lines with expedited items for the same month. Next, divide the expedited number by the total to work out the Key.

Number of PO lines with expedited items ÷ Total number of PO lines sent out to all distributors and suppliers = Percentage of Purchase Order Lines with Expedited Shipping Costs

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

According to Healthy Hospital's ERP system, they issued a total of 500 PO lines during the month of January. The system also indicated 10 POs had one line item that was expedited and incurred expedited shipping charges. The calculation would be:

- **500** PO lines sent out to all distributors and suppliers
- **10** PO lines with expedited items
- 10 ÷ 500 = **2%** of Purchase Order Lines with Expedited Shipping Costs

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of PO lines sent out to all distributors and suppliers	The total number of PO lines sent via EDI, Fax, phone or other method that were sent out by your organization this month to the various distributors and suppliers.	
Number of PO lines with expedited items	Out of the total number of PO lines submitted during the month, how many were shipped in an expedited manner?	

Points of Clarification:

- In order to perform this calculation, a facility must include expedited shipping costs as a separate line item in the PO.
- The basic analysis excludes capital equipment. However, a separate analysis of the percent of capital equipment purchase orders with expedited shipping may reveal additional savings opportunities.

Supply Chain FTEs Per $1M in Total Non-Labor Supply Expense

Purpose:

Assess how many full-time equivalents (FTE) are needed to cover supply chain purchasing and contracting operations. FTE represents the number of working hours that one full-time employee completes during a fixed time period, such as one month or one year.

Value:

FTE converts workload hours into the number of people required to complete that work, which helps simplify scheduling. More importantly, it helps budget analysts and project managers estimate the cost of labor. Managers may also benefit from looking at FTE to determine if overtime costs are making it worthwhile to open up a new full-time or part-time position (Newman, par. 1).

Additionally, this KPI is helpful in budgeting FTEs and assessing supply chain labor costs related to non-labor supply expense. This, coupled with other supply chain KPIs, can help supply chain executives understand the efficiency of their purchasing and contract operations in relation to other hospital supply chain groups. It can also help executives broaden their perspective on the impact and influence of supply chain; by pegging FTEs to total non-labor supply expense, it enables executives to understand that supply chain has a role beyond traditional areas.

Equation:

Firstly, sum Total Supply Expense and Total Purchased Services Expense to arrive at your '**Total non-labor supply expense'**. Divide this value by 1 million to arrive at '**Total non-labor supply expense in millions'**. To calculate the Key, divide **Total number of supply chain FTEs** by this '**Total non-labor supply expense in millions'**.

Total supply and purchased services expense / 1,000,000 = **Total non-labor supply expense in millions**

Total number of supply chain FTEs ÷
Total non-labor supply expense in millions =
Supply Chain FTEs Per $1M in Total Non-Labor Supply Expense

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

A health system has $25,000,000 in total monthly non-labor supply expense and has 273 supply chain FTEs.

$25,000,000 ÷ 1,000,000 = **25** Total non-labor supply expense in millions
273 supply chain FTEs ÷ 25 = **10.92** Supply Chain FTEs Per $1M in Total Non-Labor Supply Expense

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Total purchased services expense	All Purchased Services expenses (clinical and non-clinical) such as Facilities, Information Technology, Maintenance, etc.	Taxes, Salaries and bonuses, Charitable contributions, Dividends, securities, interest payments, Stock repurchases, Organizational memberships.
Total number of supply chain Full Time Equivalents (FTEs)	List total number of FTE's in the supply chain department, whether employed full-time or part-time, with 1 "standard" FTE being based on a 40 hour working week. E.g. Someone working a 50 hour working week is 1.25 FTEs.	Anyone who is not employed by your organisation (e.g. the staff of vendors providing "purchased services")

Points of Clarification:

- Regarding calculating non-labor supply costs: Hospital finance departments have their total non-labor supply expense number readily available. These costs typically exclude insurance, bad debt and depreciation. Pharmaceuticals may or may not be included.
- Holiday hours and other paid leave (sick leave, maternity/paternity leave, etc.) are already accounted for as part of the hours worked, so special calculations for these hours are required.

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Expired Products as a Percentage of Total Number of On-Hand Products in Inventory

Purpose:

Establish improvement targets or measure target achievement of the percentage of expired products within a health care organization's inventory.

Value:

Minimize the loss of product through expiration date monitoring, which Supply Chain can control, and avoid using product that is no longer appropriate for patient use, thereby improving patient safety.[1]

Equation:

Number of expired products

÷

Total number of products on-hand

=

Expired Products as a Percentage of Total Number of On-Hand Products in Inventory

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

- A hospital has 500 expired products for a specific month.
- The hospital's total number of products on-hand for that specific month is 50,000.

500 ÷ 50,000 = **1%** Expired Products as a Percentage of Total Number of On-Hand Products in Inventory

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of products on-hand	Any medical/surgical supplies and medical devices within Supply Chain control with an expiration date.	Products with no expiration date indicated, Pharmaceuticals, Office supplies and Services.
Number of expired products	All expired medical/surgical supplies and medical devices.	

Sources of Data for KPI Calculation:

- Actual expired product recorded during periodic Supply Chain review of inventory
- Health Care Supply Chain Key Performance Indicator (KPI): Number of Expired/Obsolete/Wasted Product(s) as a Percentage of Total Purchases[2]
- Inventory Management, Managing Outdates, Policies & Procedures Manual for the Health Care Supply Chain, 2nd Edition[3]

Points of Clarification:

- Does not include obsolete and wasted products. However, organizations may want to group expired/obsolete/wasted together as an overall loss.[4]
- Appropriate removal of a product based on its expiration date may vary by department based on historical usage.
- Expiration dates that appear as month and year (e.g. 11/20) are considered safe to use through the last day of the month.[5]
- "Total on-hand inventory" is the price determined by the organization.
- It is helpful to report the location or category of expired products to monitor for any trending.
- This Key should be tracked monthly and by department.
- Products for patient care are labeled with an expiration date after which the product is no longer considered appropriate for use. The loss through expiration can be avoided by keeping the next expired product in position to be used with the first expired first out (FEFO) and first in first out (FIFO) methods.
- Monitoring the historical usage rate of the product should be considered when determining the appropriate time to remove the product. Items that are not used daily should be organized and monitored to be redeployed within 90 days of expiration so the likelihood that they will be used next is greater.
- Supply Chain should remove items that are set to expire within 30 days of expiration and attempt to return them to the supplier for exchange or partial credit before accepting total loss.
- Consignment agreements should be used, when applicable.

References:

1. Inventory Management, Managing Outdates. Policies & Procedures Manual for the Health Care Supply Chain, 2nd Edition
2. Health Care Supply Chain Key Performance Indicator (KPI): Number of Expired/Obsolete/Wasted Product(s) as a Percentage of Total Purchases.
3. Inventory Management, Managing Outdates. Policies & Procedures Manual for the Health Care Supply Chain, 2nd Edition
4. Health Care Supply Chain Key Performance Indicator (KPI): Number of Expired/Obsolete/Wasted Product(s) as a Percentage of Total Purchases.
5. Inventory Management, Managing Outdates. Policies & Procedures Manual for the Health Care Supply Chain, 2nd Edition

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Recall Management – Closed Volume Percentage Rate

Purpose:
Measure the rate (as a percentage) at which a hospital/system has closed recalls received from the manufacturer and the U.S. Food and Drug Administration (FDA).

Value:
Allows hospitals/systems to assess their effectiveness in acknowledging and responding to recall product notifications. The implementation of such effective processes affects patient safety and care, and liability (both financial and risk) to the health care organization.

Equation:

Number of product recall alerts closed
÷
Total number of product recall alerts received
=
Closed Volume Percentage Rate

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital's number of product recall alerts closed is 9.
- The hospital's total number of product recall alerts received is 10.

9 ÷ 10 = 90% Closed Volume Percentage Rate

Example Response Rates:
Percent of closed volume: Target 75 percent for Class III recalls, 90 percent for Class II recalls, 100 percent for Class I recalls.

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of product recall alerts received	The number of active recalls received for the month for products the facility has purchased, or currently has in-stock. These recalls could be notified by a third-party recall management system, or, mailed into the facility from sources including the FDA and manufacturers (Field notices, etc). Include recalls that are notified, and closed immediately because an item was not purchased, and if consignment or vendor "trunk stock", the product must be tracked through facility tracking processes. Only include the volume found within the facility, as well as implants that will have a record on the patient chart.	Product recalls received for products the facility does not have in stock.
Number of product recall alerts closed	The number of active recalls for the month for products the facility has purchased, or currently has in-stock that have been closed.	Recalls received for commodity products that may have been utilized before notification due to a lack of usage tracking.

Sources of Data for KPI Calculation:

- Third part recall management sources
- FDA class ranking
- MedWatch reporting site
- Internal hospital data sources, including but not limited to, materials management information system (MMIS), electronic medical record (EMR), point of use (POU) systems, and others that would serve as references against recall notifications

Points of Clarification:

- This Key assumes that an automated alert system and/or a centralized process exists within the health care organization. If your organization does not have either you should first establish a third-party alert/internal organizational process for recall management.
- This Key uses the FDA classification rankings for recall management (as follows); however, there are no federal mandates for recalls. AHRMM proposes these recommendations as guidelines for practice.
- Class I recall: A situation in which there is a reasonable probability that the use of or exposure to a violative product will cause serious adverse health consequences or death.
    - Example: A situation in which a catheter may kink or rupture during use leaving remnants behind in the patient that will cause serious injuries or death.

- Class II recall: A situation in which use of or exposure to a violative product may cause temporary or medically reversible adverse health consequences or where the probability of serious adverse health consequences is remote.
    - Example: A package defect in which sterility has been compromised and could lead to contamination of the medical device and result in patient complications.
- Class III recall: A situation in which use of or exposure to a violative product is not likely to cause adverse health consequences.
    - Example: Labeling defect where the expiration date does not appear on the product label. A mislabeled package that contains one size of a particular medical device but is labeled as another size.
- By tracking the compliance rate, health care organizations can determine the effectiveness of their recall management processes and how to set best practices/notable practices towards better management.

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Recall Management – Delayed Recalls Percentage Rate

Purpose:

Measure the percentage rate of open recalls received from the manufacturer and the U.S. Food and Drug Administration (FDA) that are at least 7 days past the notice date.

Value:

Allows hospitals/systems to assess their effectiveness in acknowledging and responding to recall product notifications. The implementation of such effective processes affects patient safety and care, and liability (both financial and risk) to the health care organization.

Equation:

Number of product recall alerts remaining open after 7 days

÷

Total number of product recall alerts received

=

Delayed Recalls Percentage Rate

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

- A hospital's number of product recall alerts remaining open after 7 days is 5.
- The hospital's total number of product recall alerts received is 10

5 ÷ 10 = **50% Delayed Recalls Percentage Rate**

Example Response Rates:

- Closure of Class III recalls within 21 days
- Class II recalls within 14 days
- Class I recalls within 7 days

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of product recall alerts received	The number of active recalls received for the month for products the facility has purchased, or currently has in-stock. These recalls could be notified by a third-party recall management system, or, mailed into the facility from sources including the FDA and manufacturers (Field notices, etc). Include recalls that are notified, and closed immediately because an item was not purchased, and if consignment or vendor "trunk stock", the product must be tracked through facility tracking processes. Only include the volume found within the facility, as well as implants that will have a record on the patient chart.	Product recalls received for products the facility does not have in stock.
Number of product recall alerts remaining open after 7 days	The number of active recalls, remaining open for more than 7 days after the recall notice was received, for products the facility has purchased, or currently has in-stock.	Recalls received for commodity products that may have been utilized before notification due to a lack of usage tracking.

Points of Clarification:

- This KPI assumes that an automated alert system and/or a centralized process exists within the health care organization. If your organization does not have either you should first establish a third-party alert/internal organizational process for recall management.
- This KPI uses the FDA classification rankings for recall management (as follows); however, there are no federal mandates for recalls. AHRMM proposes these recommendations as guidelines for practice.
- Class I recall: A situation in which there is a reasonable probability that the use of or exposure to a violative product will cause serious adverse health consequences or death.
    - Example: A situation in which a catheter may kink or rupture during use leaving remnants behind in the patient that will cause serious injuries or death.
- Class II recall: A situation in which use of or exposure to a violative product may cause temporary or medically reversible adverse health consequences or where the probability of serious adverse health consequences is remote.
    - Example: A package defect in which sterility has been compromised and could lead to contamination of the medical device and result in patient complications.

- Class III recall: A situation in which use of or exposure to a violative product is not likely to cause adverse health consequences.
    - Example: Labeling defect where the expiration date does not appear on the product label. A mislabeled package that contains one size of a particular medical device but is labeled as another size.
- By tracking the delayed recall rate, health care organizations can determine the effectiveness of their recall management processes and how to set best practices/notable practices towards better management.

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Internal Requisition and Order Fill Percentage Rate

Purpose:
Measures the warehouse performance of order lines filled.

Value:
Enables a health care organization to monitor order fulfilment and identify opportunities to improve Inventory Management and build trust between the Supply Chain department and end users/clinical staff.

Equation:

Number of internal requisition order lines filled in full
÷
Total number of internal requisition lines ordered
=
Internal Requisition and Order Fill Percentage Rate

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:
- A hospital warehouse received a total of 2,000 order lines from all departments during the month.
- The warehouse was able to fill in full 1,850 of these order lines.

1,850 ÷ 2,000 = **92.5% Internal Requisition and Order Fill Percentage Rate**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of internal requisition lines ordered	All orders placed by a department via different methods to the warehouse (e.g. ParEx, Pyxis).	All orders placed by a department which are sent directly to the supplier
Number of internal requisition order lines filled in full	The number (count) of internal requisition order lines filled in full by the warehouse during the month.	Lines that are partially filled.

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Points of Clarification:

- Internal requisition and order fill percentage rate has a significant impact on Supply Chain's relationship with end users/clinical staff.
- This calculation is intended as a measure to monitor internal back order rates: Supply Chain's ability to fill internal requisitions/orders. In order to successfully calculate internal requisition and order fill percentage rate, the formula requires the number of orders that departments have placed and the number of orders that the warehouse could fill at first attempt. If the number of orders filled is not available, use the total order lines minus the total orders not filled.
- Supply Chain should aim for a fill rate between 93-98 percent. For order lines not filled three days in a row on a three-day inventory on-hand PAR, stockout will be inevitable.

Primary Distributor Backorder Percentage Rate

Purpose:
Measure the percentage rate of backorders for your primary distributor.

Value:
Enables supply chain to have collaborative and meaningful discussions with suppliers to aid in collaborative goal setting and potential diversification of suppliers and products.

Equation:

Number of PO lines on back order with your primary distributor
÷
Total number of PO lines submitted to your primary distributor
=
Primary Distributor Backorder Percentage Rate

Example:

- A hospital's total PO lines for the primary distributor is 1,000.
- Of those lines, the number of backorder is 100.

100 ÷ 1,000 = **10% Primary Distributor Backorder Percentage Rate**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of PO lines submitted to your primary distributor	If you have a "Fill or Kill" program set up with your primary distributor, please tabulate total PO Lines submitted to them this month. If you DO NOT have a "Fill or Kill" program set up, please tabulate total PO lines submitted to your primary distributor as required (e.g. daily, weekly basis).	POs to all suppliers which are not EDI capable.
Number of PO lines on back order with your primary distributor	The total PO lines on backorder, consisting of: PO lines not shipped at all, PO lines not arriving at expected arrive date and PO lines not shipped in full.	PO lines received in full, or, received at or prior to estimated arrival date.

Points of Clarification:

- Any order that does not ship in full should be considered a backorder.
- This calculation is not intended as a measure for Supply Chain to monitor internal backorder rates (i.e., their ability to fill internal requisitions).
- This calculation includes only your primary distributor, but can be repeated as a separate exercise for other distributors and/or suppliers.
- The calculation can be used at the individual stock-keeping unit (SKU) level, category level or individual supplier level.
- Equation includes all back-ordered lines and does not specifically call out exceptions, such as wrong item ordered, rejection or deleted or allocation changes. In order to reduce backorder rates by these items, remove these lines under the “back-ordered line category.”
- PO lines ordered is inclusive of inventory and non-stock items.
- The percentage of purchase order (PO) lines that cannot be delivered at the scheduled time but will be delivered at a later date.

References:

- KPI Library, percent of backorders

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Percentage of Items Stored in the Item Master with Identified Substitutes

Purpose:

Measure the number of active items that have readily identified substitutes.

Value:

Enables the supply chain team to quickly and effectively identify what percentage of the organization's critical supply can be substituted with items that have already been vetted by stakeholders as clinically equivalent and meeting safety measures.

Equation:

Number of active items in the item master with identified substitutes
÷
Total number of active items in the item master
=
Percentage of Items Stored in the Item Master with Identified Substitutes

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's total number of active items in the item master is 7,500.
- The hospital's number of active items in the item master with identified substitutes is 100.

100 ÷ 7,500 = **1.3% Percentage of Items Stored in the Item Master with Identified Substitutes**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of active items in the item master	Total number of active items ONLY in the hospital's item master.	Inactive records contained within the item master; use your hospital or health system's definition of inactive records/items in your item master.
Number of active items in the item master with identified substitutes	Total number of active items ONLY in the hospital's item master with identified substitute products.	Proprietary items with no known substitutes.

Points of Clarification:

- Readily identified substitutes must meet the clinical efficacy and quality levels of an original or preferred product.
- The data may be difficult to obtain depending on the health care organization's enterprise resource planning (ERP) system or materials management information system (MMIS), but it can be tailored to the capabilities or available data to meet the organization's needs.
- This equation is developed around items stored in general stores or the warehouse but can also be used for fast moving or items with a high focus, including such categories as personal protective equipment (PPE).
- The substitute product can be identical, slightly different but similar in use, or even an item that uses different methodologies at implementation. The identified substitute is defined as an item that meets the same intended purpose and goal as the original product.
    - **Example:** Custom kit. The identified substitute will most likely not be the identical kit as the original item but has been clinically approved to use if the original item cannot be obtained; or individual components that can meet the clinical need.
- Supplies can become backordered, discontinued or recalled at any time for a number of reasons: Low inventory levels, natural disasters, damage or an unprecedented increase in demand due to a pandemic. The true resiliency of a supply chain can be demonstrated by the ability of its team to plan, react and recover when these events occur.
- Understanding the items in the item master that have readily identified substitutes will enable that supply chain team to quickly and effectively procure items that have already been vetted by all stakeholders as clinically equivalent, meet the set safety measures and contractually build them in the system without further delays around committee/team approval, clinical trials and provider reviews.

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Primary Distributor Fill Percentage Rate

Purpose:
Measure primary distributor fill rate, represented as a percentage of packages or stock-keeping units (SKU) successfully shipped on the first attempt.

Value:
Enables a health care organization to identity the effectiveness of order fulfilment by the primary distributor and set targets/goals with them.

Equation:

Number of PO lines filled on first attempt by your primary distributor
÷
Total number of PO lines submitted to your primary distributor
=
Primary Distributor Fill Percentage Rate

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's total PO lines for the primary distributor is 10,000.
- The number of PO lines the primary distributor is able to fill is 9,500.

9,500 ÷ 10,000 = **95% Primary Distributor Fill Percentage Rate**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of PO lines submitted to your primary distributor	If you have a "Fill or Kill" program set up with your primary distributor, please tabulate total PO Lines submitted to them this month. If you DO NOT have a "Fill or Kill" program set up, please tabulate total PO lines submitted to your primary distributor as required (e.g. daily, weekly basis).	POs to all suppliers which are not EDI capable.
Number of PO lines filled on first attempt by your primary distributor	If you have a "Fill or Kill" program set up with your primary distributor, how many PO lines were filled on first attempt this month? If you DO NOT have a "Fill or Kill" program set up, please tabulate total PO Lines filled on first attempt by your primary distributor as required (e.g. daily, weekly basis).	

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Non-Labor Supply Expense Per Case Mix Index (CMI) Adjusted Patient Days (APD)

CMI-APD

Purpose:
Measure a hospital/system's total non-labor supply expense including supplies, pharma, freight management and purchased services, per case mix index (CMI) adjusted patient days (APD).

Value:
Enables supply chain teams and user departments to measure trends and identify opportunities for quality improvement and cost reduction at the organization or department level.

Equation:

Firstly, sum Total Supply Expense and Total Purchased Services Expense to arrive at your '**Total non-labor supply expense'**. To calculate this Key, divide this Total non-labor supply expense by the **Number of Case Mix Index Adjusted Patient Days (CMI APD).**

Total non-labor supply expense
÷
Number of Case Mix Index Adjusted Patient Days (CMI APD)
=
Non-Labor Supply Expense Per Case Mix Index (CMI) Adjusted Patient Days (APD)

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:

- A hospital's total supply expense is $15,000,000
- The hospital's total pharma expense is $20,000,000
- Its total purchased services expense is $30,000,000
- Its Case Mix Index (CMI) Adjusted Patient Days (APD) is 150,000

($15,000,000 + $20,000,000 + $30,000,000) = **$65,000,000** Total non-labor supply expense

$65,000,000 ÷ **150,000** CMI APD = **$433.33** Non-Labor Supply Expense Per Case Mix Index (CMI) Adjusted Patient Days (APD)

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total supply expense	All medical, non-medical, inventory and direct-ship/on-consignment supply expense. For medical, include expenses for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments. For non-medical, include Office Supplies, Purchased Services, Facilities, Information Technology, Maintenance, etc. For consignment expenses, include freight, standard distribution costs and sales-and-use tax (minus rebates). Refer to AHRMM/HFMA supply categories for further details.	Purchased services, labor and labor-related expenses and services (salaries, bonuses), real estate, physician payments, capital, utilities, some tangible items that are frequently provided as part of service costs (e.g. toner that is part of a print contract), taxes, reimbursements to individuals or contractors, insurance, bad debt, depreciation.
Total purchased services expense	All Purchased Services expenses (clinical and non-clinical) such as Facilities, Information Technology, Maintenance, etc.	Taxes, Salaries and bonuses, Charitable contributions, Dividends, securities, interest payments, Stock repurchases, Organizational memberships.
Number of Case Mix Index Adjusted Patient Days (CMI APD)	The Case Mix Index (CMI) per Adjusted Patient Days (APD) can be obtained from your Finance department.	

Points of Clarification:

- This indicator includes the net cost of all tangible items that are expensed, including freight, standard distribution cost, and sales and use tax, minus rebates
- In comparing with previous calculations or with others, ensure total spend is included and not just supply expense
- The total non-labor spend can be shown per: CMI APD, CMI adjusted discharge and as a percent of net patient revenue
- Comparing supply expense per CMI and APD allows for a more accurate measure of specific service lines, surgical case spend and differences in patient volumes

References:

- Hospitals Could Save $23 Billion Annually by Streamlining Supply Chain Operations Product Use. Navigant Analysis – Business Wire. September 13, 2017.

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Percentage of Invoice Lines Received with a Global Trade Identification Number (GTIN)

GTIN

Purpose:

Measure the percentage of invoice lines received from suppliers via an enterprise resource planning (ERP) system or e-commerce solution provider that contain a GTIN.

Value:

Enables the measurement of performance against preset GTIN adoption goals.

Equation:

Number of invoice lines received via an ERP/e-com. provider (or OCR'd) with a GTIN
÷
Total number of invoice lines received via an ERP/e-com. provider (or OCR'd)
=
Percentage of Invoice Lines Received with a Global Trade Identification Number (GTIN)

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's invoice lines received via an ERP system or e-commerce solution provider with a GTIN is 600,000.
- The hospital's total invoice lines received via an ERP or e-commerce solution provider is 1,000,000.

600,000 ÷ 1,000,000 = **60% Percentage of Invoice Lines Received with a Global Trade Identification Number (GTIN)**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of invoice lines received via an ERP/e-com. provider (or OCR'd)	The total number of invoice lines received via the ERP system or e-commerce solution provider, or, received manually but scanned in using Optical Character Recognition (OCR) technology and processed electronically.	Invoice lines processed outside of the ERP system or e-commerce portal or received from suppliers manually, unless an organization utilizes OCR technology.
Number of invoice lines received via an ERP/e-com. provider	Number of invoice lines received electronically from all suppliers that reference or use a GTIN to identify line items ordered by the hospital or health system.	Class I items, which do not require a unique device identifier (UDI) until 9/24/2022

(or OCR'd) with a GTIN		

Points of Clarification:

- This metric can be utilized to understand trends and performance over time to determine if the hospital or health system's objectives to increase the use of GTINs are being realized.
- The adoption of data standards provides a method to codify in valid, meaningful, comprehensive and actionable ways, information captured in the course of doing business with all stakeholders within the health care supply chain.
- The GTIN is a globally unique GS1 identification number used to identify trade items, which includes both products and services that are sold, delivered and invoiced at any point in the supply chain. The elimination of customized or proprietary item identifiers can enhance the precision and velocity of supply chain transactions and recalls.

Percentage of Invoice Lines Received with a Global Location Number (GLN)

GLN

Purpose:
Measure the percentage of invoice transactions received from suppliers via an enterprise resource planning (ERP) system or e-commerce solution provider that contain a GLN.

Value:
Enables the measurement of performance against preset GLN adoption goals.

Equation:

Number of invoice lines received via an ERP/e-com. provider (or OCR'd) with a GLN
÷
Total number of invoice lines received via an ERP/e-com. provider (or OCR'd)
=
Percentage of Invoice Lines Received with a Global Location Number (GLN)

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital's invoice lines received via an ERP system or e-commerce solution provider with a GLN is 6,000.
- The hospital's total invoice lines received via an ERP or e-commerce solution provider is 10,000.

6,000 ÷ 10,000 = **60% Percentage of Invoice Lines Received with a Global Location Number (GLN)**

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of invoice lines received via an ERP/e-com. provider (or OCR'd)	The total number of invoice lines received via the ERP system or e-commerce solution provider, or, received manually but scanned in using Optical Character Recognition (OCR) technology and processed electronically.	Invoice lines processed outside of the ERP system or e-commerce portal or received from suppliers manually, unless an organization utilizes OCR technology.
Number of invoice lines received via an ERP/e-com. provider (or OCR'd) with a GLN	Number of invoice lines received electronically from all suppliers that reference or use a GLN to identify the hospital or health system.	

Points of Clarification:

- The metric can be utilized to understand trends and performance over time to determine if the hospital or health system's objectives to increase the use of GLNs are being realized.
- The adoption of data standards provides a method to codify in valid, meaningful, comprehensive and actionable ways, information captured in the course of doing business with all stakeholders within the health care supply chain.
- The GLN is a field-wide, standardized location identifier that replaces custom account and location numbers. The GLN provides the opportunity for increased visibility into on-hand inventory levels (e.g. bulk, each) by location, potentially increasing efficiency in pulling expired and recalled products.
- One root cause of pricing inaccuracy and short paid rebates in multi-hospital systems is location inaccuracy. The elimination of customized location identifiers can enhance the accuracy of item price and rebate administration.

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Percentage of Items Stored in the Item Master Populated with a Global Trade Identification Number (GTIN)

GTIN

Purpose:
Measure a hospital or health system's level of adoption in populating active item master items with a Global Trade Identification Number (GTIN) identifier for use in supply chain transactions.

Value:
Enables the measurement of performance against preset GTIN adoption goals.

Equation:

Number of active items in the item master populated with a GTIN
÷
Total number of active items in the item master
=
Percentage of Items Stored in the Item Master Populated

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's number of item master items populated with a GTIN is 10,000.
- The hospital's total number of item master items is 100,000.

10,000 ÷ 100,000 = **10% Percentage of Items Stored in the Item Master Populated with a Global Trade Identification Number (GTIN)**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of active items in the item master	Total number of active items ONLY in the hospital's item master.	Inactive records contained within the item master; use your hospital or health system's definition of inactive records/items in your item master.
Number of active items in the item master populated with a GTIN	Total number of active items ONLY in the hospital's item master that have been populated with a GTIN (UDI-DI).	

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Points of Clarification:

- This metric can be utilized to understand trends and performance over time to determine if the hospital or health system's objectives to increase the use of GTINs are being realized.
- The adoption of data standards provides a method to codify in valid, meaningful, comprehensive and actionable ways, information captured in the course of doing business with all stakeholders within the health care supply chain.
- The GTIN is a globally unique GS1 identification number used to identify trade items, which includes both products and services that are sold, delivered and invoiced at any point in the supply chain. The elimination of customized or proprietary item identifiers can enhance the precision and velocity of supply chain transactions and recalls.

Percentage of Purchase Order Lines Sent Out with a Global Trade Identification Number (GTIN)

Purpose:
Measure a hospital or health system's level of GTIN adoption in purchase order (PO) transactions placed through an enterprise resource planning (ERP) system or e-commerce solution provider.

Value:
Enables the measurement of performance against preset GTIN adoption goals.

Equation:

Number of PO lines sent out via an ERP/e-com. provider (or OCR'd) with a GTIN
÷
Total number of PO lines sent out via an ERP/e-com. provider (or OCR'd)
=
Percentage of Purchase Order Lines Sent Out with a Global Trade Identification Number (GTIN)

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's number of all ERP or e-commerce PO lines sent out using a GTIN is 600,000.
- The hospital's total number of ERP or e-commerce PO lines sent out is 1,000,000.

600,000 ÷ 1,000,000 = **60% Percentage of Purchase Order Lines Sent Out with a Global Trade Identification Number (GTIN)**

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of PO lines sent out via an ERP/e-com. provider (or OCR'd)	The total number of PO lines sent out via an ERP system or e-commerce solution provider, or, generated manually but scanned in using Optical Character Recognition (OCR) technology and sent out electronically.	PO lines processed outside of the ERP system or e-commerce portal or placed with suppliers manually, unless an organization utilizes OCR technology or invoice scanning solutions.
Number of PO lines sent out via an ERP/e-com. provider (or OCR'd) with a GTIN	Number of PO lines sent out electronically to all suppliers that reference or use a GTIN to identify line items ordered by the hospital or health system.	

Points of Clarification:

- This metric can be utilized to understand trends and performance over time to determine if the hospital or health system's objectives to increase the use of GTINs are being realized.
- The adoption of data standards provides a method to codify in valid, meaningful, comprehensive and actionable ways, information captured in the course of doing business with all stakeholders within the health care supply chain.
- The GTIN is a globally unique GS1 identification number used to identify trade items, which includes both products and services that are sold, delivered and invoiced at any point in the supply chain. The elimination of customized or proprietary item identifiers can enhance the precision and velocity of supply chain transactions and recalls.

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Percentage of Purchase Order Lines Sent Out with a Global Location Number (GLN)

GLN

Purpose:
Measure a hospital or health system's level of GLN adoption in purchase order (PO) transactions placed through an enterprise resource planning (ERP) system or e-commerce solution provider.

Value:
Enables the measurement of performance against preset GLN adoption goals.

Equation:

Number of PO lines sent out via an ERP/e-com. provider (or OCR'd) with a GLN
÷
Total number of PO lines sent out via an ERP/e-com. provider (or OCR'd)
=
Percentage of Purchase Order Lines Sent Out with a Global Location Number (GLN)

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's number of all ERP or e-commerce PO lines sent out using a GLN is 6,000.
- The hospital's total number of ERP or e-commerce PO lines sent out is 10,000.

6,000 ÷ 10,000 = **60% Percentage of Purchase Order Lines Sent Out with a Global Location Number (GLN)**

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Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of PO lines sent out via an ERP/e-com. provider (or OCR'd)	The total number of PO lines sent out via an ERP system or e-commerce solution provider, or, generated manually but scanned in using Optical Character Recognition (OCR) technology and sent out electronically.	PO lines processed outside of the ERP system or e-commerce portal or placed with suppliers manually, unless an organization utilizes OCR technology or invoice scanning solutions.
Number of PO lines sent out via an ERP/e-com. provider (or OCR'd) with a GLN	Number of PO lines sent out electronically to all suppliers that reference or use a GLN to identify the hospital or health system.	

Points of Clarification:

- This metric can be utilized to understand trends and performance over time to determine if the hospital or health system’s objectives to increase the use of GLNs are being realized.
- The adoption of data standards provides a method to codify in valid, meaningful, comprehensive and actionable ways, information captured in the course of doing business with all stakeholders within the health care supply chain.
- The GLN is a field-wide, standardized location identifier that replaces custom account and location numbers. The GLN provides the opportunity for increased visibility into on-hand inventory levels (bulk, each) by location, potentially increasing efficiency in pulling expired and recalled products.
- One root cause of pricing inaccuracy and short paid rebates in multi-hospital systems is location inaccuracy. The elimination of customized location identifiers can enhance the accuracy of item price and rebate administration.

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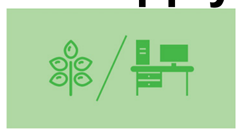
EPP Products as Percentage (%) of Total Office Supply Expense



Purpose:
Measures the level of EPP Office Supply expense.

Value:
Identify opportunities to increase EPP Office Supply spend.

Equation:

EPP office supply expense
÷
Total office supply expense
=
Percentage of Office Supply Expense Comprised of Environmentally Preferable Purchasing (EPP) Products

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital’s total office supply expense is $100,000,000
- The hospital’s total EPP office supply expense is $20,000,000

$20,000,000 ÷ $100,000,000 = **20% Percentage of Office Supply Expense Comprised of Environmentally Preferable Purchasing (EPP) Products**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total office supply expense	Total office supply expense with all office supply vendor(s), including office equipment or furniture that is purchased with operational dollars.	Office equipment or furniture that is purchased with capital dollars.
EPP office supply expense	All purchased office supplies the vendor(s) have designated as “EPP” including office equipment or furniture that is purchased with operational dollars.	Any office equipment or furniture that is purchased with capital dollars.

Points of Clarification:

- The vendor will need to specify which office supplies are designated as EPP and which are not.
- In many cases the cost of EPP office products is competitive with or even lower than non-EPP products. An indirect cost benefit of some EPP products is the reduced total cost of ownership related to excessive packaging that must be handled, removed, recycled or disposed.
- Environmentally preferable means these products contain recycled materials, are recyclable, have less packaging, use non- or less- toxic chemicals, reduce waste or have other environmental and public health benefits.

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Recycled Products as Percentage (%) of Total Printing and Copier Paper Expense

Purpose:
Measure a health care organization’s percentage of spend on Recycled printing and Copier Paper (RCP).

Value:
Identity opportunities to increase organization’s RCP spend.

Equation:

Recycled Copier Paper (RCP) supply expense
÷
Total printing and copier paper expense
=
Percentage of total printing and copier paper expense spend on RCP

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital’s total spend on printing and copier paper is $500,000.
- The hospital’s spend on RCP is $25,000.

$25,000 ÷ $500,000 = **5% Percentage of total printing and copier paper expense spend on RCP**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total printing and copier paper expense	Total printing and copier paper spend with all vendor(s) in dollars.	Other office supplies, print management fees, etc.
Recycled Copier Paper (RCP) supply expense	All printing and copier paper spend the vendor(s) have designated as RCP, in dollars.	

Points of Clarification:
- The vendor will need to specify which paper is designed as RCP and which is not.

Percentage of Medical Supplies That are Reprocessed

Purpose:
Measure percent of reprocessed medical supplies and devices.

Value:
Establish improvement targets of the percentage of reprocessed single use medical supplies and devices.

Equation:

Reprocessed medical devices expense
÷
Total clinical department medical supplies expense
=
Percentage of Medical Supplies That Are Reprocessed

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:

- A hospital's total spend on clinical department medical supplies (Surgery, Cath Lab, EP Lab, Interventional Radiology, Interventional GI) is $100M.
- The hospital's total spend for reprocessed devices is $20M.

$20M ÷ $100M = **20% Percentage of Medical Supplies That Are Reprocessed**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total clinical department medical supplies expense	Total medical supply spend for Surgery, Cath Lab, EP Lab, Interventional Radiology and Interventional GI departments, in dollars.	
Reprocessed medical devices expense	Total spend for reprocessed devices from all vendor(s), in dollars.	

Points of Clarification:

- Health care organizations increasingly recognize that third party reprocessing of medical devices labelled “single use device” or “SUD” is a safe and effective process that can help redirect valuable financial resources back into patient care.
- Most original equipment manufacturer (OEM)-designated single use devices are disposed of as bio-hazardous waste, which further increases the cost of disposal and uses more resources for the environmental processing of this medical waste.

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Linen Pounds Per Adjusted Patient Day (APD)

Purpose:
Measure the quantity of linen cleaned and processed for the health care organization.

Value:
Identify opportunities to reduce linen pounds processed to lower operational costs and improve profitability for the hospital/system.

Equation:

Total linen processed (pounds)
÷
Adjusted Patient Days (APD)
=
Linen Pounds Per Adjusted Patient Day (APD)

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital's total linen pounds processed this month is 100,000 lbs.
- The hospital's total adjusted patient days this month is 6,000.

100,000 ÷ 6,000 = **16.7 Linen Pounds Per Adjusted Patient Day (APD)**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Adjusted Patient Days (APD)	Total number of Adjusted Patient Days (APD) for the month for your organization.	
Total linen processed (pounds)	All hospital purchased or rented linen used and processed by the Environmental Services department and/or outsourced supplier, in pounds.	

Points of Clarification:

- While differences may exist in each health care organization’s total linen pounds processed, the metric will normalize the differences between organizations through adjusted patient days.
- The audience can set monthly metric targets to understand the organization’s achievement towards reduced environmental impact and operational costs.
- This metric can be especially useful in terms of influencing behavior and practices of environmental services, nursing and clinician staff to reduce overall linen used and processed.
- The metric should be used directionally to determine how the organization is performing relative to peers.
- By managing and reducing the quantity of linen cleaned, processed and delivered, the hospital achieves sustainability goals through conserving water and electricity and reducing greenhouse gases.
- In general, a lower metric suggests that the hospital is effectively managing and reducing total linen pounds used and processed internally or by its external partner. The total adjusted patient day metric ensures that the metric is normalized across institutions, as it serves as a key driver for linen volumes.

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Copy/Print Page Volumes Per Employee

Purpose:
Measure the hospital/system's annual copy/print volume per full time employee.

Value:
Enables the hospital/system to identify opportunities to reduce total copy and print volume, use of paper, ink and other consumables.

Equation:

Total copy and print volume (by page)
÷
Total number of supply chain FTEs
=
Copy/Print Page Volumes Per FTE

Note: it is favorable to have a higher value for this Key. The higher the value the better.

Example:
- A hospital's total monthly copy and print volume is 1,000,000 pages.
- The hospital's total employees or full-time equivalents is 1,000.

1,000,000 ÷ 1,000 = **1,000 Total Copy/Print Page Volumes Per FTE**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Total number of supply chain Full Time Equivalents (FTEs)	List total number of FTE's in the supply chain department, whether employed full-time or part-time, with 1 "standard" FTE being based on a 40 hour working week. E.g. Someone working a 50 hour working week is 1.25 FTEs.	Anyone who is not employed by your organisation (e.g. the staff of vendors providing "purchased services")
Total copy and print volume (by page)	The count, by page, of copy and print volume generated through your departmental printers this month. A double-sided print counts as one page.	Print shop volume, and specialty print jobs with limited information on page volumes.

Points of Clarification:

- While differences may exist in each organization's total copy and print page volume, the metric will normalize the differences between organizations through FTEs.
- The metric can be used to influence behavior to leverage digital platforms and implement print policies (e.g. duplex printing) to reduce print volumes.
- Reducing paper and print volume and related consumables can have a significant impact on lowering the hospital/system's environmental footprint.

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Waste Pounds Per Adjusted Patient Day (APD)

Purpose:
Measures the hospital/system's waste generation per APD.

Value:
Identifies opportunities to reduce waste generation to lower operational costs and improve profitability for the hospital/system.

Equation:

Total waste processed (pounds)
÷
Adjusted Patient Days (APD)
=
Waste Pounds Per Adjusted Patient Day (APD)

Note: it is favorable to have a lower value for this Key. The lower the value the better.

Example:
- A hospital's total monthly waste processed is 100,000 lbs.
- Its APD for the same month is 6,000.

100,000 ÷ 6,000 = **16.7 Waste Pounds Per Adjusted Patient Day (APD)**

Input Descriptions and Sources:

Input Name	Includes	Excludes
Adjusted Patient Days (APD)	Total number of Adjusted Patient Days (APD) for the month for your organization.	
Total waste processed (pounds)	Waste including solid waste, regulated medical waste (RMW), recycling, hazardous waste, pharmaceutical waste and food waste for the month, in pounds.	

Points of Clarification:

- While differences may exist in each organization's total waste produced, the metric will normalize the differences between organizations through adjusted patient days.
- The audience can set annual metric targets to understand the organization's achievement towards reducing environmental impact and operational costs.
- This metric can be especially helpful to engage and influence the behaviors of key operational stakeholders, such as Environmental Services, Nursing and Supply Chain staff.