

MHS OPTIC CASE STUDY
December 2009

Large Hospital in the Northeast

MHS Generates an ROI in Excess of 7 to 1
with its OPTICSM Solution

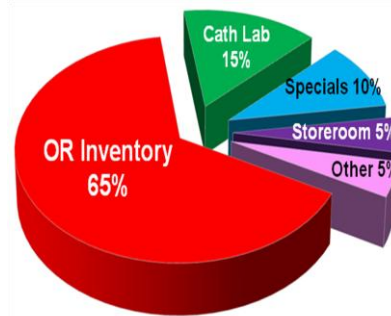
Executive Summary

A majority of hospital executives tell Management Health Solutions (MHS) that they believe the inventories maintained in the clinical areas in their hospitals are inordinately high. Yet, they struggle to implement the programmatic changes needed to reduce their inventories and allow them to take the money off the shelves and reallocate it for capital purchases, to buy down debt or to develop other clinical programs that will improve the bottom line.

A survey conducted by the Healthcare Financial Management Association (HFMA) indicates that medical-surgical supply expense can be as high as 17 percent of the operating budget for a 350 bed institution.* That same survey revealed that this proportion is increasing when compared to 2005 statistics and as this percentage increases there is greater pressure than ever to reduce supply costs while maintaining adequate inventories to insure patient safety.

In many organizations resources have been expended to manage the inventories exclusively in the central storerooms and warehouses - implementing MMIS systems and using hand-held technology to automate the supply chain process. But the hard truth is the majority of medical supply dollars is tied up in the clinical procedure areas, areas that are all too often run by clinicians whose primary patient care responsibilities leave an inadequate amount of time to effectively manage the specialty supplies. An inventory reduction in the average warehouse may net \$15K to \$60K while an equal percentage reduction in a twenty room OR inventory could result in a \$1M to \$5M overall savings.

Clinical Inventories Represent the Majority of Inventory Dollars



* HFMA 2008 Supply Chain Study, sponsored by Amerinet

Management Health Solutions was engaged by a large hospital in the northeast to review their current clinical supply chain processes in order to identify potential opportunities for significant inventory reductions, cost reductions and potential operational enhancements. The MHS approach to conducting an evaluation encompasses the entire supply chain function including the following core areas essential in developing a strategy for redesigning the supply chain function:

- Perform baseline inventory to identify starting
- Analyze and clean data to identify opportunities for savings
- Develop the Supply Chain Process Maps and Transaction Sets including an “as-is” state, ideal “to-be” flows and a critical “gap” analysis to identify key initiatives
- Prepare an Information Technology Capabilities Summary
- Review and Critique of Related Clinical Support Areas
- Conduct a Process and Design Diagnostic Analysis
- Develop High Level Implementation Strategy and Plan for Operational Enhancements
- Development of a General Implementation Timeline

Based on our systematic review Management Health Solutions (MHS) identified eight key areas that represented opportunities to realize significant savings and enhance operational productivity. The projects identified (listed below) represent reductions and cost savings in excess of \$2.1 million dollars on a base clinical inventory of \$6.4M --- a 26.5% reduction.

- The Implementation of AtPar bar code hand-held technology into the OR
- The Identification and Removal of Excess or Obsolete Inventory
- The Development of Item Par Levels throughout the OR
- Reconfiguration of Supply and Tray Storage Locations
- Complete Review and Update of the Preference/Procedure Cards
- Expansion of the OR Inventory Consignment Program

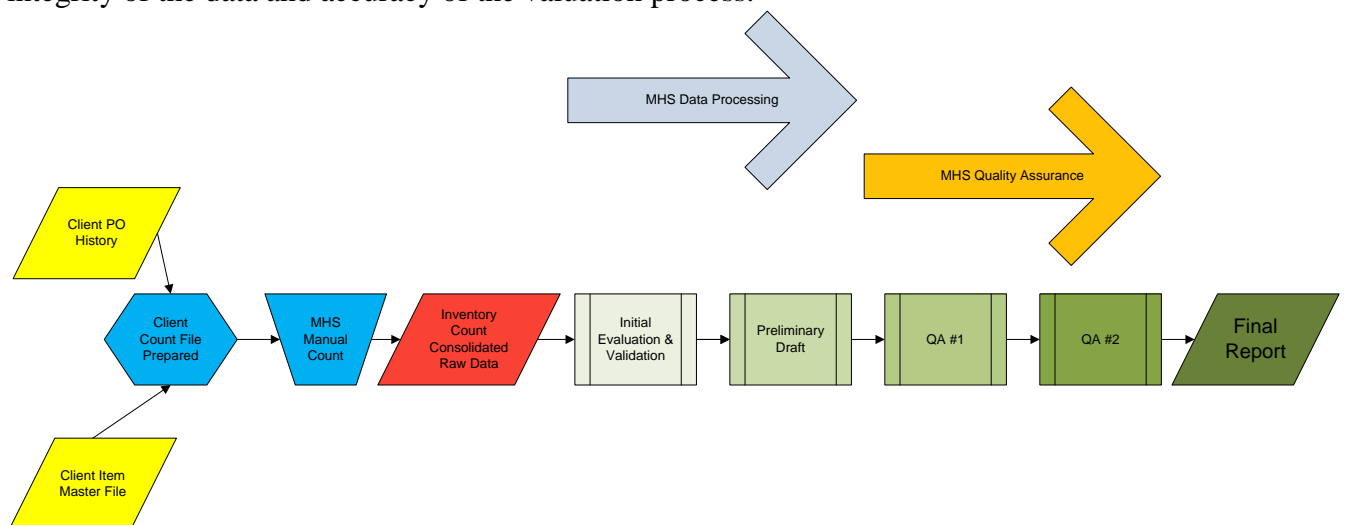
- Implementation of a Vendor Relationship Management Program
- Organizational Redesign Reassignment of Supply chain Functions to Materials Management

<u>Opportunity Description</u>	<u>Savings</u>	<u>Savings Type</u>
Excess Clinical Inventory Reduction	\$ 655,588	One-Time
OR Par Management I	\$ 280,446	One-Time
OR Par Management II	\$ 133,000	One-Time
Reduction of Bulk Storage	\$ 553,772	One-Time
Reduction of Carts Storage	\$ 69,000	One-Time
Reduction of Synthes Inventory	\$ 155,000	One-Time
Reduction of In-bound Freight (\$40k/yr)	\$ 120,000	On-Going*
Areas of Responsibility (\$250k/yr)	\$ 750,000	On-Going*
Endo-mechanical Storage Consolidation	\$ 50,000	One-Time
Hybrid Case Cart System		
Consignment Expansion (\$100k/yr)	\$ 300,000	On-Going*
Total Savings	\$ 3,045,515	

* The on-going savings are a result of changing scope / area of responsibilities from clinical staff to Materials Management; this will help alleviate the on-going OR nursing shortage while delivering on-going annual compensation reductions of 25% - 30%.

OPTIC Implementation

The first step in reducing inventory through item management is to conduct a thorough inventory to establish a baseline valuation and to determine the storage location for all items. A properly prepared count file should contain the data elements from two years of purchase history and the master item file. The MHS methodology (below) insures the integrity of the data and accuracy of the valuation process.



Once the baseline data was established the data analytics were conducted to determine the number of storage locations, reorder parameters, utilization, and the average balance-on-hand (BOH) for each item. Obsolete and excess items were quickly identified by comparing the purchase history with the BOH. This is the initial step in making recommendations for inventory reductions to the clinical staff. Items deemed to be “slow movers” or obsolete were returned for credit or redistributed to other hospitals within the organization. An ABC analysis was conducted to establish the items in the 80% of the supply spend to focus attention on. An inventory turns baseline for each clinical area was established as well as attainable goals for the future.

Critical to the success of any program instituted to reduce inventory is the validity of the item file and the accessibility of accurate item utilization information. Frequently the use of an AtPar hand-held (bar code reader) application interfaced to the MMIS is limited to a central stores area and used for replenishment of nursing units and the warehouse. Expanding the use of this technology to reorder supplies stocked in ORs and procedure rooms will enable point-of-use utilization data to be generated so that true SKU velocity reports can be developed. That SKU velocity data, coupled with the inventory, storage location and purchase history data gives the materials management and clinical staff the tools they need to make informed decisions regarding item quantity and overall inventory reductions.

Below are actual savings opportunities identified during the OptIC assessment:

Excess Clinical Inventory Reduction

The identification and reduction of excess and obsolete items in the clinical inventory maintained in the OR was based on purchase history and the statistics from a late fall inventory in 2008. Items were grouped into two segments, items purchased in 2007 with no purchase activity in 2008 and items with no purchase history in 2007 and 2008. Items with no purchase history for the past twenty-four months totaled \$751,725 and those with only a 2007 purchase activity and no 2008 history totaled \$532,967 with a combined total of \$1,284,692. MHS considers the majority of these items obsolete or overstocked and should be either:

- Returned to the vendor/manufacturer for credit
- Redistributed within the network
- Offered to a medical-surgical reseller
- Donated to charity

Reductions will be realized in three ways; a) inventory value reductions; b) items that are returned for credit; c) items that can be redistributed or resold.

OR Par Level Management – I Enhancement of the OR Suite Par Level Replenishment

An analysis of the inventory levels in many of the OR suites revealed a significant amount of overstock in the audited rooms. This overstocking trend where calculated resulted in an average of 56% more inventory than the established par levels for these areas. This translates into excess inventory that will eventually expire or become obsolete. The ability to identify the overstocked supplies in the suites and reallocate these items to a central storage area or return to the vendor will provide direct bottom line savings as the need to reorder these supplies will be minimized in the short term.

MHS recommendations included: placing the OR materials management team under the direction of the Materials Management department because their expertise in the areas of par level management would improve the overall performance of the materials staff in the OR; automating the replenishment process using the AtPar hand-held application; completing the daily processing on the evening shift using surgical assistants dedicated to the resupply task; and the development of new par level sheets for each area.

During the most recent inventory, the value of inventory in the OR rooms was \$1,055,707. An audit of three rooms showed a significant difference between the actual versus par level values. By using the variances found during the audit and extrapolating the data to all of the suites the estimated savings from implementing hand-held and restructuring the process should generate net inventory reductions approaching 25 to 50% overall. The combined savings opportunities after implementation costs are estimated to be \$280,446.

OR PAR Level Review			
Location	Target Value	Actual Value	Variance
OR-1		\$15,108	
OR-2		\$50,329	
OR-3		\$14,327	
OR-4	\$43,204	\$85,107	\$41,903 97%
OR-5		\$94,715	
OR-6		\$80,613	
OR-7		\$24,955	
OR-8		\$18,871	
OR-9		\$35,908	
OR-10	\$94,130	\$180,157	\$86,027 91%
OR-11		\$34,033	
OR-12		\$14,589	
OR-14		\$13,820	
OR-15		\$25,124	
OR-16		\$41,759	
OR-17		\$48,621	
OR-18		\$16,151	
OR-19		\$28,684	
OR-20		\$47,880	
OR-21		\$15,697	
OR-22	\$72,929	\$63,083	(\$9,846) -14%
C-1		\$61,005	
C-2		\$45,171	
Sub-Total	\$210,263	\$328,347	\$118,084 56%
Total		\$1,055,707	\$592,887 56%

Area	Current Inventory Levels	Revised Inventory Levels	Inventory Reductions
OR ROOM 10	\$180,157	\$90,078	\$90,078 50%
OR ROOM 05	\$94,715	\$47,358	\$47,358 50%
OR ROOM 04	\$85,107	\$63,830	\$21,277 25%
OR ROOM 06	\$80,613	\$60,460	\$20,153 25%
CYSTO ROOM 01	\$61,005	\$45,754	\$15,251 25%
NEURO OR ROOM 22	\$63,083	\$47,312	\$15,771 25%
OR ROOM 02	\$50,329	\$37,747	\$12,582 25%
OR ROOM 17	\$48,622	\$36,466	\$12,155 25%
NEURO OR ROOM 20	\$47,880	\$35,910	\$11,970 25%
CYSTO ROOM 02	\$45,171	\$33,878	\$11,293 25%
OR ROOM 16	\$41,759	\$31,319	\$10,440 25%
OR ROOM 09	\$35,908	\$26,931	\$8,977 25%
OR ROOM 11	\$34,034	\$25,525	\$8,508 25%
NEURO OR ROOM 19	\$28,684	\$21,513	\$7,171 25%
OR ROOM 15	\$25,124	\$18,843	\$6,281 25%
OR ROOM 07	\$24,955	\$18,716	\$6,239 25%
OR ROOM 08	\$18,871	\$14,153	\$4,718 25%
NEURO OR ROOM 18	\$16,151	\$12,114	\$4,038 25%
NEURO OR ROOM 21	\$15,698	\$11,773	\$3,924 25%
OR ROOM 01	\$15,109	\$11,332	\$3,777 25%
OR ROOM 12	\$14,589	\$10,942	\$3,647 25%
OR ROOM 03	\$14,328	\$10,746	\$3,582 25%
OR ROOM 14	\$13,820	\$10,365	\$3,455 25%
	\$1,055,712	\$723,066	\$332,646 32%

OR Par Level Management – II Refining the OR Par Level Process

The benefits of implementing the AtPar hand-held application would not be completely realized until the point-of-use data could be compiled and used to analyze the par levels for each OR. The difference between the pars currently in use and what was found in the rooms during the inventory were very significant. More importantly, the current par levels are based not on actual utilization data developed over time but on the intuition of the clinical staff, which must be considered but should never be the sole source for determining inventory levels. This second phase revolves around conducting a SKU by SKU velocity analysis to develop data driven par levels and using this information to conduct an ongoing review and adjustment of the individual item inventory par levels which will lead to inventory reductions. MHS believes that the use of sku velocity analysis will support and incremental inventory reduction of 15% to 20% of the adjusted base of \$725,000 resulting in an incremental savings of \$133,000.

Bulk Storage Process Enhancement - Process Redesign and Reorganization of OR SCM

During the inventory it was clear that the bulk storage areas were overstocked with ten locations containing over seventy-five percent (\$4,828,755) of the total inventory value. An analysis of the work flows, process maps, organizational charts and the inventory data revealed inefficiencies in both design and process. The existing physical layout at this institution hampered the effective movement of supplies and equipment as well. The combination of these deficiencies caused excess inventory to be stored in all areas of the OR. Effectively managing the materials process with these limitations required a commitment to change. The MHS recommendations of shifting Supply Chain responsibility to the Materials Management department, the implementation of AtPar hand-held technology and the reconfiguration of the storage locations would promote more efficient processing.

MHS also suggested that some of the OR materials staff should be redeployed to off-shifts to consolidate receiving and restocking functions. We also felt that assigning the purchasing functions to one individual would free up the remaining staff to focus on managing supplies for multiple cores. The use of the AtPar hand-held application will automate the requisitioning process and will provide similar benefits for managing bulk supplies as it will in the OR suites. The proposed storage configuration initiatives already planned for this hospital would provide a centralized location for managing inventory and improve the case picking process going forward. The combined savings opportunities after implementation costs are estimated to be \$628,772.

Top 10 Storeroom Locations					
Area	Current Inventory Levels	Revised Inventory Levels	Inventory Reductions		Comments
MABLES ROOM	\$1,370,664	\$1,096,531	\$274,133	20%	Par Level Development Based On Usage
CARDIAC CLEAN STORAGE	\$1,040,696	\$884,591	\$156,104	15%	High Par Levels of Endomechanicals - Opportunity for Consignment
NEURO STERILE STORAGE	\$720,573	\$612,487	\$108,086	15%	Opportunity for Consignment - Medtronic
PLAYHOUSE	\$229,029	\$206,126	\$22,903	10%	Expand Consignment Opportunities
STERILE LINEN RM SUTURES	\$189,563	\$142,172	\$47,391	25%	Minimum Cost Savings Based on Stock Levels at Inventory
STERILE LINEN ROOM 01	\$121,318	\$97,055	\$24,264	20%	Par Level Development Based on Usage - Lower Inventory Value
ANES MABLES ROOM	\$62,392	\$53,033	\$9,359	15%	Par Level Development Based On Usage
MABLES HALL RACKS	\$31,391	\$26,682	\$4,709	15%	Par Level Development Based On Usage
BREAKDOWN ROOM	\$21,004	\$17,853	\$3,151	15%	Par Level Development Based On Usage
STERILE LINEN ROOM 02	\$15,673	\$13,322	\$2,351	15%	Par Level Development Based On Usage
BALANCE of SKUs	\$1,026,453	\$975,130	\$51,323	5%	Par Level Development Based On Usage
	\$4,828,755	\$4,124,983	\$703,772	15%	

Reduction in Specialty Cart Storage - Par Level Development/Maintenance of Specialty Carts

The supplies counted on the specialty carts during the physical inventory were valued at \$460,000. The process for maintaining the carts, evaluating the contents and completing an on-going review is not well documented and given the overall value of the carts, it should be. The opportunity for a regular review of the contents by the responsible core

area requires developing and maintaining par levels which will eliminate waste, overstocking and decrease the risk of using an expired item in a clinical setting.

MHS felt that this project required an initial review of the contents of each cart by the core clinical staff to evaluate need and to decide on a par level for each item. Creating and using par levels to check the carts regularly will ensure adequate supplies are available and help to keep the contents better organized and easier to count. The AtPar bar code hand-held application would automate the replenishment process and make it easier to update pars but it is not required. Implementing this opportunity will net immediate benefits and could be the start of focusing the awareness of the clinical staff on the importance of managing inventory. The combined savings opportunities after implementation costs are estimated to be \$69,000.

Reduction of Synthes Inventory - Removal of Excess/Obsolete Synthes Items

An evaluation of the Synthes inventory maintained for the OR in the hospital's central processing area showed that over forty percent of the items had no purchase history in 2007 or 2008 and an additional \$120,000 of the \$937,000 total had no purchase history in the preceding twelve months. Inactive, excess or obsolete items should be identified and returned to the vendor for credit and par levels should be developed for the remaining items based on actual utilization history.

MHS provided a twenty-four month purchase history analysis to the materials management and OR for a clinical review of the data which should assist them in identifying items that are overstocked or obsolete. The process for returning the items is the same as that outlined in earlier opportunities. We also recommended that the purchase order history detail including the number of orders, average order quantity and maximum order quantity provided should be used to create par levels for maintaining the Synthes inventory. Here again the AtPar hand-held application would automate the restocking process and make it easier to update pars. The combined savings opportunities after implementation costs are estimated to be \$180,000.

Reduction of In-Bound Freight Expense

Emergent freight costs were estimated to be roughly \$100,000 annually by materials management during an early interview at the start of the engagement. Determining the root cause of the circumstances that dictate an emergency delivery and the efficient management of the non-stock inventory can ameliorate in-bound freight expenses incurred by the OR.

Developing and maintaining accurate par levels is one of primary methods of decreasing the number of not-in-stock events that result in overnight shipments. A concerted effort to identify items that just seem to be routinely ordered emergently (because of usage spikes or manufacturers' backorders) must be undertaken so the materials team can focus their attention on those items and so the purchasing department team can source an acceptable substitute item listing proactively. Identifying "problem" items in SIS with an asterisk or

other character and running the expected demand report will provide advanced notification to the staff to order “problem” items ahead of time. Utilizing the detailed usage data driven from the AtPar solution, MHS can provide SKU velocity analysis that will help in determining par levels for items to improve management of the problem non-stock items. The combined savings opportunities after implementation costs are estimated to be \$40,000.

Consignment Expansion Program

Expanding the current consignment inventory should include developing a set of criteria and an associated policy that enables the procurement staff to identify manufacturers and items for inclusion in the consignment program.

The consignment inventory at this facility is \$4M with the vast majority of the items owned and managed by ten manufacturers. Those manufacturers are a subset of the twenty manufacturers MHS has identified with slow moving/expensive products in the inventory that are not consigned (\$772K). Expanding the program entails creating a set of criteria and defining the circumstances that would qualify a manufacturer or item for addition to the program. The set of criteria should include:

- Items projected to be slow movers
- Items that require maintaining a wide range of sizes
- Items that are cost prohibitive to maintain in inventory
- Items that are part of the introduction of a new clinical program
- Manufacturers that have “like” items already consigned
- Clinical programs that have multiple product lines that evolve regularly requiring frequent product switch outs

Efforts should be made to identify and convert as much of the owned product already in inventory to consigned status or at a minimum, negotiate the future conversion to consignment after the owned item is used and replaced. Given the total supply spend for the entire organization; the manufacturers MHS identified should be willing participants in expanding the consignment program.

Once written, the criteria and policy should be included as part of the Vendor Relationship Management program information packet. This opportunity has the potential to net significant savings and cost avoidance once items and manufacturers identified are contacted and programs are implemented. The management of the consigned inventory should also be performed using AtPar handheld technology in order to track actual usage. The combined savings opportunities after implementation costs are estimated to be \$250,000.

Summary

Opportunities to significantly reduce clinical inventories exist in even the best managed institutions. Literally millions of dollars are on the table available to be redirected toward more productive alternative endeavors. As diminishing reimbursement and increasing operating expenses squeeze margins, reducing unnecessary clinical stock is the opportunity that will pay for itself many times over. The chart below shows the potential savings, cost and associated return for this project.

<u>Opportunity Description</u>	<u>Savings</u>	<u>Implementation Cost</u>	<u>Net Savings</u>	<u>Return</u>	<u>Comments</u>
Excess Clinical Inventory Reduction	\$775,588.00	\$120,000.00	\$655,588.00	5.5	MHS can currently implement
OR Par Management I	\$332,646.00	\$ 52,200.00	\$280,446.00	5.4	Need AtPar to implement & maintain
OR Par Management II	\$145,500.00	\$ 12,500.00	\$133,000.00	10.6	Need AtPar to implement & maintain
Reduction of Bulk Storage	\$703,772.00	\$ 75,000.00	\$628,772.00	8.4	Need AtPar to implement & maintain
Reduction of Carts Storage	\$ 69,000.00	\$ -	\$ 69,000.00		Need AtPar to implement & maintain
Reduction of Synthes Inventory	\$200,000.00	\$ 20,000.00	\$180,000.00	9.0	MHS can currently implement
Reduction of In-bound Freight	\$ 40,000.00	\$ -	\$ 40,000.00		Need AtPar to implement & maintain
Endomechanical Storage Consolidation	\$ 50,000.00	\$ -	\$ 50,000.00		Need AtPar to implement & maintain
Consignment Expansion Program	\$250,000.00	\$ -	\$250,000.00		MHS can currently implement
Total	\$2,165,495.00	\$279,700.00	\$1,885,795.00	6.7	