University of Michigan Health System

Program and Operations Analysis

Emergency Department: Medical/Surgical Supply Cost Analysis

Final Report

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Executive Summary

According to University of HealthSystem Consortium (UHC) reports for the third quarter of 2003, the University of Michigan Emergency Department’s (ED) medical/surgical supply cost per patient visit of $28.60 ranks sixtyieth out of sixty-four hospitals in its compare group.

This project refines the above mentioned benchmarked data to give a more accurate representation of the current medical supply expense situation. This project also analyzes the usage and billing of medical/surgical supplies to help identify the keys areas where improvements could be made to help save money.

Interviews, data analysis, and surveys were the main methods used. Weekly interviews were conducted with staff involved in the operations of the ED and Materiel Services. Usage reports from Materiel Services were combined with data from the ED to produce the reports that are discussed in the paragraphs below. Surveys were distributed to nurses and technicians to gain their perspective about possible improvements and cost reductions that could be made.

It was found that not all sixty-four ED’s within the UHC compare group provided similar comparisons to the University of Michigan’s ED. Standards for reporting data for each hospital are different and ED’s as a whole are not all structured the same. Using a characteristic survey, the compare group of sixty-four was narrowed down to nine. These nine ED’s are level one trauma centers and have a visit rate of 15,000-20,000 patients per quarter. Appendix A shows the expense per patient visit data of these hospitals in bar graph form. The University of Michigan ED has the highest cost per case within the group. Further inquiries revealed that other hospitals are not billing pharmacy costs directly to the ED like the University of Michigan ED does. Emails from Washington Health Center, Vanderbilt University, and University of Virginia were received indicating their pharmacy cost was billed to the patient and not the ED. Of the total supply cost of $515,409 for the third quarter of 2003 for the University of Michigan, pharmacy cost represented $190,474 of this. Factoring this cost out would bring the medical/surgical supply cost per case expense down from $28.60 to $18.03. This statistic would rank the ED seventh out of nine as opposed to last.

Appendix B shows the sum of total charges for July-December 2003 according to the Cart Template which it was billed to. The highlighted Cart Templates were incorrectly billed to the ED. The total cost of these incorrect billings was $25,568.

Currently 73% of ED medical/surgical supplies ordered by Materiel Services from vendors are bought under contract, while 27% are under a list price. Materiel Services has indicated that paying list price can cost up to four times more than a negotiated contract price. Contract items represented $662,273 of the total cost for July-December 2003, while non-contract items account for $99,029. Appendix C shows all items ranked by total cost that are not under contract. Of the 247 items not under contract, the top 50 represents 93.1% of the total cost of non-contract items. Appendix D shows all contract...
priced items ranked by total cost. Of the 719 items under contract, the top 50 represent 67.2% of the total cost of contract items.

Appendix E breaks down the total charges for July-December 2003 sorted by item type. Since there are almost 2000 items used by the ED, this breakdown into 30 main categories is helpful in seeing where the most money is being spent. The top five categories in terms of total charges are IV’s and infusions, laboratory, orthopedics, pulse ox, and equipment.

David Navyac, Emergency Department Safety and Facilities Coordinator, recommended that photos be added to the Materiel Services online catalog. His belief was that item descriptions were often confusing, which lead to the possible incorrect ordering of items. Based on the nurse and technician survey results, the staff agreed with this assessment. All staff members surveyed thought that pictures in the catalog would help reduce incorrect orders.

The above findings have resulted in following recommendations. Pharmacy costs should be listed separate from medical/surgical supply costs to create a better comparison against other hospitals in the UHC compare group. It is recommended the ED presents and further investigates the list of incorrect Cart Template orders (Appendix B) to Materiel Services, so that the ED is no longer billed for non-ED room orders. If any orders in the future don’t match the list of acceptable Cart Template ID’s, those orders should be red flagged and looked into further. The negotiation of even a few non-contract items into contracts could significantly reduce supply cost in the ED. It is recommended that the ED requests a buyer in purchasing to start at the top of the cost drivers list (appendix C) for non-contracts items and start negotiating contracts. Similarly, the re-negotiation of several of the high profile contract items could lead to valuable cost-reductions.
Introduction

The Emergency Department (ED) is integral part of the University of Michigan Hospital System (UMHS). The UMHS ED benchmarked their medical/surgical cost per case expenses, over the past two years, in the 95th percentile within the University HealthSystem Consortium (UHC) comparison group. The UHC is a collection of over 60 similar hospitals throughout the country. The purpose of this project is to analyze the usage of medical and surgical supplies in the ED. Recommendations will be made to the process of ordering and stocking of materials that would help reduce supply cost and increase effective utilization.

Approach and Methodology

The approach of the project will contain 4 steps:

Interviews
We conducted interviews with staff involved in the operations of the ED. David Navyac, Safety and Facilities Coordinator, raised the idea of an online ordering system including pictures to try and reduce ordering errors and aided in the design of the survey. Janet Sopp, Materiel Services Coordinator, assisted in gathering contract vs non-contract pricing, utilizations reports, and explained the ordering process from Materiel Services perspective. Sandra Regiani, Financial Consultant assisted with targeting a comparable benchmark group. A staff survey was also distributed to gain perspectives from nurses, doctors, and technicians.

Data analysis
Utilization reports and the ED expense reports were combined to use as a foundation for the project’s recommendations. Based on this information, total charge reports were assembled for cart template ID’s (Appendix), contract priced items (Appendix), list priced items (Appendix), and by usage category (Appendix). Benchmarked data was refined using a characteristic survey of level one trauma centers and hospitals with patient visits of 15,000 to 20,000, to create a more similar comparison.

Flow charting
A flowchart was made of the utilization and ordering of supplies.

Recommendations
With the help our project coordinator, Sam Clark, and our client, Jennifer Holmes, recommendations for the project were made based off financial reports included in the appendices.

Description of Current System

The Emergency Department has a medical/surgical supply cost of $28.60 per patient for the third quarter of 2003. This cost placed them at the 95th percentile compared to hospitals in the UHC compare group. The medical/surgical expense begins with the
ordering of supplies by the ED stock keeper. Each morning he enters the ED stockroom and compares the current stock to the par level. The par level is a quota determined by Materiel Services. He orders the difference and the items are delivered that afternoon. A bill is sent from Materiel Services to the ED for everything ordered.

In addition to the stock keeper, staff members are able to order supplies when stock gets low by accessing the Materiel Service online catalog and placing an order by phone. These are called supplemental orders and are billed separately than the order done by the stock keeper.

Currently, approximately 73% of supplies are under a negotiated contract. The remaining 27% is bought at a list price which can be four times more.

David Navyac, Safety and Facilities Coordinator, is concerned that the lack of pictures on the Materiel Service online catalog may result in an incorrect order.

The ED has been billed for supplies delivered to non-ED room cart template IDs shown in Appendix B.

Currently, the ED Director of Operations and staff are not informed by Materiel Services when the price of an item changes.

**Findings and Conclusions**

Analysis of the inventory data and usage reports from July through December 2003, benchmark data, and survey results, has resulted in the findings stated below:

- Locations unrelated to the ED have shown up in the list of charges to the ED. The amount charged by ED locations was $774,931.73, and the amount charged by non-ED locations was $7,379.17. This is illustrated in Figure 1 below.

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Not Indicated, $28,100.91
Non-ED, $7,379.17
ED, $774,931.73
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![Figure 1. Total Charges by ED and Non-ED Locations](chart.png)
• 73% of the medical-surgical supplies in the ED that have a contract/list status are under contract. This represents 86% of the total cost or $662,273. The remaining 27% of supplies are under list price, resulting in 13% or $99,029. The 1% of dollars associated with N/A represents items at the time of this report that did not have a contract/list status. This is illustrated in Figure 2 below.

Figure 2. Total charges by status of contract

• The full list of contract items is located in Appendix D. The top 30 cost drivers for the contract items are shown in Figure 3 below.

Figure 3. Top 30 cost drivers for items under contract.
The full list of contract items is located in Appendix D. The top 30 cost drivers for the contract items are shown in Figure 4 below.

- Sorting the items and calculating the total charges according to the type of usage showed that IV and infusions account for $272,386 of expenses. The breakdown of charges by type of usage is shown in Figure 5 on the next page.
Materiel Services uses utilization types to prioritize items by their level of usage. Items are assigned an A, B, C, or NS (non-stock), with A being high priority and C being low priority.

86% of the ED staff surveyed claimed at least once receiving the wrong item after ordering an item via phone from Materiel Services. 100% of ED staff surveyed felt that pictures for each item in the Materiel Services online catalog would help the ordering process.

Of the eight hospitals contacted, three responded. All three of these ED’s confirmed they did not include pharmacy costs with their medical/surgical costs in their financial reports. The University of Michigan ED has been including these costs. This accounts for a difference of approximately $190,000.
Recommendations

Recommended changes to the current system are stated below:

- Contracts for the leading cost drivers among the list priced items should be investigated. Some of these items would include the urinary catheter tray (Item 4652), the blood pressure cuff (Item 1172), and the yellow identification band (Item 1263), in addition to others in Appendix C. A contract on the urinary catheter tray, Item 4652, would potentially reduce the $11,000 in charges for this item from July to December. Already existing contracts for the leading cost drivers among contract items should be investigated for further negotiations. These items would include the pink IV catheter (Item 1995), the pre-filled normal saline syringe (Item 2986), and the adult oximax disposable probe (Item 2216), in addition to others in Appendix D.

- The UMED should separate pharmacy costs in their medical-surgical supply costs when reporting benchmark data.

- The ED Director of Operations should be notified when the price of an item changes. This can be done by email or office mail.

- ED presents and further investigates the list of incorrect Cart Template orders to Materiel Services, so that the ED is no longer billed for non-ED room orders.

Implementation or Action Plan

Materiel Services should be contacted to discuss the delivery and billing of items to non-ED cart template ID’s. Buyers in purchasing should be contacted to negotiate contracts for list priced items and renegotiate contracts for high total cost contract items where possible. Sandy Regiani, the benchmark coordinator, should be contacted and informed about the recommendation to separate pharmacy costs. This will impact future reports and should place the University of Michigan Health System higher in the rankings among the hospitals with regards to low medical-surgical supply costs.
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: Medical Supply