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## **Traits of Excellence within Healthcare Materials Management**

David J. Icenhower

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**GOLDEN GATE UNIVERSITY**

**Traits of Excellence within Healthcare Materials Management**

**David J. Icenhower**

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**EMPA 396**

**Fall 2004**

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## **Traits of Excellence within Healthcare Materials Management**

### INTRODUCTION

A crisis exists in America today in regards to the effectiveness of quality healthcare which everyone can afford. There are now over 43 million people in the United States which are uninsured (Brownstein, 2004). Those who are insured saw their employer-sponsored healthcare insurance premiums increase by 11.2% from the spring of 2003 through the spring of 2004. Average annual healthcare insurance premiums cost families an average of \$ 9,950 and increase of 59% since the year 2000 (HR Focus, 2004).

In 1993, Hillary Clinton attempted to apply CPR to the country's ailing healthcare system. Since then, neither the Clinton nor Bush Administrations have been able to develop any type of effective health-care reform to address the growing issues we face today. Senator John Kerry (D-MA) used health care as a key issue in his run for the Presidency in 2004.

Hospitals are not immune to the financial conditions that plague the nation's healthcare industry. Between 1990 and through the year 2000, the United States has witnessed the closure of 504 hospitals. According to the Office of the Inspector General for the Department of Health and Human Services, this was mostly a result of competition, business related decisions and low patient census (OIG, 2003). In the mid-

eighties, there were 6,800 acute-care hospitals in the country. According to a recent report by Modern Healthcare, there are now 4,895 facilities (Burda, 2004).

Hospitals are faced with mounting challenges such as decreased reimbursement from government programs like Medicare and Medicaid; this along with the increasing presence of managed care contracts has had a significant effect upon hospital revenue streams. Also competition from for-profit and specialty hospitals has taken the private pay and more lucrative patients away from the local community hospitals leaving, for the most part, a impoverished and critically ill patient in which they must care for.

The American Hospital Association reports that hospitals operating margins decreased from 3.7% in 2002 to 3.3% in 2003 (Evans, 2004). Although a number of U.S. hospitals report double-digit margins, nearly a third of all hospitals operate in the red. Many community and government funded facilities rely upon tax or bond funding to keep their doors open.

With all the demand upon the ever-shrinking healthcare dollar within hospitals, where can administrators search to reduce expense? Basically there are two segments of the operating budget where potential cost savings exist. First, and by far the largest being labor costs. By its very nature, healthcare is a people business and requires that qualified, caring and committed professionals are employed within these institutions. Hospitals are finding it to be more difficult to recruit and retain needed staff to meet the requirements to provide quality patient care.

There is an ever-increasing shortage of healthcare workers, especially in nursing as well as for technicians within ancillary departments. Labor unions have been a threat in recent years causing salaries and benefits to increase. Labor expenses can total 60% of an organizations operating budget. With these demands, there is little to no opportunity for cost savings to occur within this portion of the budget.

The other major segment of operations is the cost of supplies, equipment and services to the organization. This is an area that the materials management department within a medical center has direct influence upon. This budget category can represents 40% of a hospitals operating expense (Healthcare Financial Management, 2004). There is no greater opportunity for cost reduction than what exists under the reach of this all important division of any organization.

It becomes imperative that we begin to define the characteristics of an excelling materials management department. In order to do this, we must first define attributes associated with materials management departments within excelling health care organizations. Many attempts are made by numerous entities to describe what traits which make up a world class health care facility.

Areas to be considered in this research will be group purchasing, materials management information infrastructure, distribution methods and performance improvement indicators.

## LITERATURE REVIEW

### **Materials Management**

The composition of a materials management department can vary from facility to facility. For the most part, responsibilities of this department involve the procurement of supplies, services and equipment for the organization. Other functions include receiving, inventory management, supply distribution and sterile processing. Being responsible for procurement of equipment and supplies as well as the final disposition of the surplus, this department does tracking from cradle to grave.

The objective of materials management has often been stated as being able to provide the right items, in the right quantity, to the right place, at the right time for the right cost. It is important to note the interdependence of the different divisions within materials management that must work efficiently together in order to meet this objective.

### **Group Purchasing**

Several key elements have become necessary for the efficient operation of the modern healthcare materials management department. Probably the most influential in recent years has been for an organization to affiliate national with a Group Purchasing Organization (GPO). Group Purchasing Organizations have been around since the Hospital Bureau of New York started the first healthcare purchasing cooperative in 1910. This concept blossomed in the 1980's with hospital consortiums developing across the nation. At that time, it was common place for healthcare organizations to have membership in multiple group purchasing organizations and to "cherry-pick" products

from the best contracts in each portfolio. Today, we see facilities committing their allegiance to a particular group.

The concept behind the group purchasing organization is that a number of institutions can collectively pool their purchasing volumes in order to achieve more competitive priced contracts with manufacturers. The idea being that an organization can not effectively negotiate a large contract as well as a group of facilities is able. Over the years, the number of group purchasing organizations has started to decrease with mergers and acquisitions. Two of the major group purchasing organizations representing not-for-profit health care organizations are Premier and the Voluntary Hospital of America (VHA). Combined they represent 37 billion dollars of purchase volume spread among near 3,000 facilities in 2002 (Werner, 2003).

Group Purchasing Organizations have expanded their scope beyond contracting product and services to include additional value-added services to their member organizations. Additionally they now provide consulting services in all areas of hospital performance. Many quality initiatives are now being driven by group purchasing organizational teams.

In recent years with the advent of e-commerce, the group purchasing organizations have struggled to develop effective means to streamline the electronic procurement process for their members. The use of the internet has increased dramatically for the sourcing of products as well as ordering and confirmations on-line. These e-commerce transactions must then be integrated with the hospitals internal materials management information system (MMIS) for tracking and accounting purposes.



Hospitals pay the group purchasing organization a membership fee that allows them to be a shareholder in that particular group. The various manufacturers pay an administrative fee for a percentage of their revenue derived from the group's member's utilization of each given contract. This in addition to the group charging for consultative services is how revenue is generated within the group. The hospital, as a shareholder receives an annual dividends dependent upon their utilization of the various group contracts. Hospitals also have the opportunity to receive rebates back directly from the manufacturer based upon their purchases.

In 2002, the New York Times ran a series of articles concerning questionable practices of group purchasing organization. The focus on the series was that through the group's exclusive contracts, it restricted smaller companies, with possible superior, life-saving technologies from selling to many hospitals (Bogdanich, 2002). This attracted the attention of the Senate Antitrust Subcommittee, who held a number of hearings over the past couple of years. These hearings led the development of an industry "Code of Ethic" which was proposed by the Health Industry Group Purchasing Association. The subcommittee went on to draft Senate Bill 2880, the Medical Device Competition Act of 2004. This Bill would be an amendment to Title XI of the Social Security Act and would restrict remunerations by vendors for goods and services sold to hospitals. It would also limit the administrative fees charged by group purchasing organizations to 3% of the contracts costs. The law would require that the Secretary of Health and Human Services regulate the contracting of the groups insuring that they are in compliance in federal antitrust laws. This bill has been referred to the Senate Committee on Finance for further review.

It has long been debated whether group purchasing organizations offer competitive contracts compared to what hospitals can negotiate on their own behalf. In today's healthcare environment, there are many large Independent Delivery Networks (IDN's) composed of multiple hospitals. Most of these Independent Delivery Networks participate as members within a group purchasing organization instead of electing to manage contracts internally. This became fairly apparent in the year 2000, when the Mayo Clinic, long the bastion for self-contracting decided no longer to go alone and partnered with VHA to be their group of choice.

To further expand on the need nationally for group purchasing affiliations, in 2003, the Department of Defense sent out a request for information to the group purchasing organizations about providing contract services for the military healthcare systems. This was halted on May 2, 2003, when Senator Mike DeWine (R-Ohio), chairman of the subcommittee on antitrust sent a letter to Secretary of Defense Donald Rumsfeld warning him of debate occurring in the Senate regarding group purchasing practices (Hospital Materials Management, 2003).

### **Materials Management Information Systems**

Just like any other discipline, materials management experiences increasingly greater volumes of data on a daily basis. The average materials management department will have thousands of transactions taking place. Issuing purchase orders, receiving merchandise, distribution of supplies and charging patient are all part of the routine within this department. The information system infrastructure to support these activities

as well as to provide the decision support tools needed to manage and plan activities is vital to successful internal operations.

The information systems investment for any healthcare organization reaches far into the millions of dollars to support a wide range of applications that include financial as well as clinical needs. Many of these programs interface with one another in order to provide management with a true picture of patient information, demographics, financial projections and business opportunities. For the most part, these are being purchased from various software suppliers requiring sophisticated interface programs need to be written to support the data-flow from one program to another.

The materials management information systems usually are interfaced with the general ledger system of the hospital as well as the patient charge system. Other interfaces occur with surgical information systems as well as with decision support for overall management reporting.

Bar-code capabilities are an important function related to tracking of equipment and supplies throughout the organization. Retail and industry has for many years refined this tool for effectively monitoring their supply chain. The bar-coded information on products is crucial for large corporations to effectively deliver goods to their end-users.

We have for years seen FedEx and UPS drivers deliver packages and scan the bar-coded information into their hand-held devices along with our signatures to track shipments around the world. You can go onto their websites at anytime and with a simple

tracking number, pull up detailed information regarding your shipment from its origin to the date, time and who signed for a given package at what address.

The largest retailer in the world utilizes barcode technology to monitor sales volume and project future earnings. This function is available to the clerk in your local store, the supplier of the product and to corporate management in Bentonville, Arkansas in nearly a real-time environment. Many of the products on the shelf at your local Wal-Mart are there on a consignment basis. This means that the supplier places the product on Wal-Mart's shelf until such time as the consumer purchases it. Through tracking the barcode, Wal-Mart pays the supplier and automatically reorders the product to be placed back on the shelf at the moment the clerk scans that bar-code across in the check-out line.

Currently Wal-Mart is trialing the use of radio frequency identification (RFID) through use on their barcodes. This allows the product to be tracked in the store without the use of scanners. The efficiencies gained by Wal-Mart and other retailers through use of this technology are enormous.

Within the world of healthcare information systems development, we have for years lagged far behind that of industry. Systems design within materials management has for the most part been to meet requirements of accountants on the general ledger portion of the organization. Meeting the needs to effectively manage the supply chain within the hospital has never been a priority for software companies or for hospital administrators.

Although companies have supplied materials management information systems to healthcare organizations for years, it has only been in the past few years quality

refinements are being made to enhance the abilities of the materials managers to meet their supply chain needs. Technology improvements such as the ability to work in a windows or web-based environment are just now starting to be deployed within hospitals across the nation.

One major hurdle healthcare materials managers have faced is the reluctance by manufacturers to standardize upon Universal Product Numbers (UPN). These identifiers would specify a specific product such as a bandage or a syringe. Each supplier would apply this universal code to their product by use of a bar-code. This could be imported into any materials management information system and could be used for both procurement as well as distribution of that product. Medical manufacturers have been reluctant to embrace this process because they believe their products to be unique within the industry, even though many are just commodities.

A more recent breeding to the bar-code idea used within hospitals is that of point-of-use technology. This concept has been used for a number of years by pharmacies for the control of medications used throughout the medical center. In recent years it has caught the audience of materials managers for distribution of supplies used across the organization. It is composed of locked cabinets with an associated control panel. When a caregiver approaches the cabinet, they have the ability to input a code, swipe their employee badge or use their fingerprint to identify them self. They then identify the patient they are acquiring product for as well as the item they are procuring. A draw then opens and allows that caregiver to receive it.

When this is accomplished, the patient is charged for the product, the product is decremented from inventory and an order is placed automatically with the vendor to replenish that item. These systems are extremely costly, so software designers have started to make open systems that can also be integrated with the closed cabinets.

Various innovations within healthcare materials management information systems management are giving rise to optimism among materials managers that has long been lacking. Hopefully with the volume of systems being produced, the associated costs will begin to drop to make them affordable to all facilities.

### **Distribution Methods**

The process by which medical supplies are received at a hospital has changed dramatically over the years. Throughout time, hospitals have received supplies from a multitude of suppliers. In the 1990's, the belief to standardize distribution methods started to gain a foothold by organizations. With the cost estimates to process a purchase order ranging from \$ 75.00 to \$ 125.00 a piece, it became apparent that it is more cost-efficient to consolidate your purchases with a select group of distributors. Thus, the prime vendor concept became an integral part of the healthcare supply chain.

Through a contractual agreement with one distributor, an organization can procure the majority of their supply needs by one stop shopping. The majority of manufacturers have distribution agreements with a select group of distributors. A distribution mark-up fee is applied to the product being sold which are customarily negotiated as part of the hospitals group purchasing contract with each distributor.

Most distributors today have value added services that are available to their customers. A facility may choose to have one or two deliveries of bulk supplies to their warehouse or they may choose daily delivery of items that are available in their lowest unit of measure instead of in bulk. Some organizations choose to sign agreements by which the distributor manages their entire supply chain continuum up the patient themselves. It is not uncommon to find materials management departments within large organizations which are composed almost entirely by non-hospital employee's working directly for the distributor.

### **Performance Improvement**

Although Continuous Quality Improvement programs have long been a part of healthcare, moving into the materials management arena has posed a problem for a number of years. The cornerstone of any effective quality improvement initiative has always been the performance indicator. With the use of the performance indicator, an organization can benchmark their internal process against those of the best practice organizations in the world. The theory being that you can't improve it unless you measure it.

During the eighties, everyone within healthcare materials management made a concerted effort to reduce inventories. Official inventories within the hospital had escalated to high dollars being tied up and not being useful to the organization. This resulted in many items becoming either obsolete or their sterilization dates becoming outdated and warranted the products going to waste. Hospitals were only getting four to six turns annually of their inventory. It was felt that if the industry could approach the

level of twelve turns (that being a product would move once a month) annually, facilities would be much more efficient in their operations. Materials Managers concentrated on improvements with this performance indicator and it is not unusual to find facilities that are turning their inventory 20 plus times a year (Ryan, 1986).

In order for healthcare materials management to be able to effectively measure their outcomes, they must search for indicators which cross lines that include financial, clinical, quality and operational. In that search for the ideal indicators, many organizations have identified various performance measurements but vary from organization to organization.

### **Association for Healthcare Resource & Materials Management**

The Association for Healthcare Resource & Materials Management (AHRMM) is the sole national healthcare materials management association. It is a membership group of the American Hospital Association located in Chicago, Illinois. This organizations purpose is educating their members by providing information and resources to help them remain at the top of their field. This professional organization has more than 3,100 members worldwide; AHRMM provides educational opportunities for their membership in order that they may reach their highest potential and network with the best performers within their industry.

### **Measuring the Best Hospitals**

One of the most popular rating systems for hospitals is that of the annual U.S. News and World Report's, Best Hospitals Guide. Every year the U.S. News and World



Report rank the leading medical centers in the nation. These are first identified by the 17 specialties which they serve from which the best are then identified on their honor roll.

Their 2004 list contained 14 honor roll inductee's. They are:

- John Hopkins Hospital, Baltimore
- Mayo Clinic, Rochester
- Massachusetts General Hospital, Boston
- Cleveland Clinic, Cleveland
- UCLA Medical Center, Los Angeles
- Duke University Medical Center, Durham, NC
- University of California, San Francisco Medical Center
- Barnes-Jewish Hospital, Saint Louis
- New York-Presbyterian Hospital, New York
- University of Washington Medical Center, Seattle
- University of Michigan Medical Center, Ann Arbor
- Brigham and Women's Hospital, Boston
- Hospital of the University of Pennsylvania, Philadelphia
- Stanford Hospital and Clinics, Stanford, CA

In order to be considered to a ranking within the U. S. News and World Report "Best Hospitals", three criteria need to be met:

1. Membership in the Council of Teaching Hospitals;
2. A medical school affiliation;
3. Availability of at least 9 out of 17 key technology-related services.

Because of these mandatory stipulations, the “Best Hospitals” are often national referral centers, because the physicians there often see sicker patients and conduct a higher volume of difficult procedures. These facilities often conduct research and assist other corporations with the development of cutting-edge medical technologies.

The U.S. News and World Report annually surveys physicians as to what facilities should be nominated for awards in the given specialties. Once it has been established that a nominated facility has been nominated and met the required criteria, they are then ranked upon three key elements:

1. Reputation;
2. Death Rate;
3. Nursing and Patient Care Related Services.

Reputation is based upon board-certified physicians who are randomly selected to complete a survey. This survey asked these doctors to list five hospitals within their given specialty that they believe to be the best without consideration of cost or location.

The hospitals death rate is based upon mortality rates as reported to Medicare. These rates are weighted upon the patient’s condition and severity of their illness. This adjustment method is derived from the 3M Health Information System utilized within most facilities.

Other factors taken into account come from a survey conducted annually by the American Hospital Association. They include such factors as nurse-to-patient ratio’s, discharge planning and Magnet Hospital status.

Once the ratings are derived for the specialty excelling hospitals, the "Honor Roll" list is developed. To make this list, a hospital must rank two standard deviations above the mean in six of the 17 specialties. Using the standard deviations above the means as criteria for inclusion in the Honor Roll, the list is then developed. This methodology was developed for U. S. News and World Report by the National Opinion Research Center at the University of Chicago in 1993.

Another annual rating is published annually by Modern Healthcare. It is developed by Solucient Institute and is called the "100 Top Hospitals". This list is composed of:

- Major Teaching Hospitals (400 or more acute-care beds);
- Teaching Hospitals (200 or more acute-care beds);
- Large Community Hospitals (250 or more acute-care beds);
- Medium Community Hospitals (100 - 249 acute-care beds);
- Small Community Hospitals (25 – 99 acute-care beds).

For the past ten years, the Solucient Institute has produced a list of best performing hospitals across the nation. This rating system allows all types of acute-care facilities to compete for an annual quality award regardless of size or affiliation. This list is developed based upon financial as well as clinical performance. National performance indicators used in this study include:

- Mortality Rate;
- Complication Index;

- Average Length of Stay;
- Profitability (Operating Margin);
- Out-Patient Revenue Proportion;
- Expense per Discharge;
- Total Asset Turn-Over Ratio.

The recipients of the most recent 2003 Solucient Top 100 Hospitals were:

**Major Teaching Hospitals**

UCI Medical Center, Orange, CA

Saint Francis Hospital and Medical Center, Hartford, CT

Yale-New Haven Hospital, New Haven, CT

Advocate Lutheran General Hospital, Park Ridge, IL

Boston Medical Center, Boston, MA

William Beaumont Hospital-Royal Oak, Royal Oak, MI

Mayo Clinic - Saint Mary's Hospital, Rochester, MN

North Carolina Baptist Hospital, Winston-Salem, NC

University Hospital, Cincinnati, OH

The Western Pennsylvania Hospital, Pittsburgh, PA

UPMC Presbyterian, Pittsburgh, PA

Vanderbilt University Medical Center, Nashville, TN

Scott and White Memorial Hospital, Temple, TX

University Health System, San Antonio, TX

The Methodist Hospital, Houston, TX

**Teaching Hospitals**

John C. Lincoln - North Mountain, Phoenix, AZ

Poudre Valley Hospital Fort Collins, CO

Swedish Medical Center Englewood, CO

Florida Hospital-Ormond Memorial Ormond Beach, FL  
Morton Plant Hospital Clearwater, FL  
Palmetto General Hospital Hialeah, FL  
Mercy Medical Center-North Iowa Mason City, IA  
Franklin Square Hospital Center, Baltimore, MD  
Union Memorial Hospital, Baltimore, MD  
William Beaumont Hospital, Troy, MI  
BryanLGH Medical Center, Lincoln, NE  
Saint Elizabeth Regional Medical Center, Lincoln, NE  
NorthEast Medical Center, Concord, NC  
Mission Hospitals, Asheville, NC  
MeritCare Health System, Fargo, ND  
Riverside Methodist Hospital, Columbus, OH  
Hillcrest Hospital, Mayfield Heights, OH  
Providence St. Vincent Medical Center, Portland, OR  
Lancaster General Hospital, Lancaster, PA  
Sioux Valley Hospital USD Medical Center, Sioux Falls, SD  
Brackenridge Hospital, Austin, TX  
Methodist Hospital, San Antonio, TX  
St. Mark's Hospital, Salt Lake City, UT  
Inova Fairfax Hospital, Falls Church, VA  
Valley Medical Center Renton, WA  
  
*Large Community Hospitals*  
Boswell Memorial Hospital Sun City, AZ  
Northwest Medical Center Tucson, AZ  
Penrose-St. Francis Healthcare Colorado Springs, CO  
Porter Adventist Hospital Denver, CO  
Medical Center of Aurora Aurora, CO

Lee Memorial Health System Fort Myers, FL  
Manatee Memorial Hospital Bradenton, FL  
Munroe Regional Medical Center Ocala, FL  
JFK Medical Center Atlantis, FL  
Sarasota Memorial Hospital Sarasota, FL  
Blake Medical Center Bradenton, FL  
Southwest Florida Regional Medical Center Fort Myers, FL  
Regional Medical Center Bayonet Point Hudson, FL  
Delray Medical Center Delray Beach, FL  
FirstHealth Moore Regional Hospital Pinehurst, NC  
EMH Regional Medical Center Elyria, OH  
St. Mary Medical Center Langhorne, PA  
Parkridge Medical Center Chattanooga, TN  
Seton Medical Center Austin, TX  
East Texas Medical Center Tyler, TX  
Henrico Doctors' Hospital Richmond, VA  
Medium Community Hospitals  
Mayo Clinic Hospital Phoenix, AZ  
Pasco Regional Medical Center Dade City, FL  
Mease Countryside Hospital Safety Harbor, FL  
Wellington Regional Medical Center West Palm Beach, FL  
Fayette Community Hospital Fayetteville, GA  
Minden Medical Center Minden, LA  
Newton-Wellesley Hospital Newton, MA  
St. John's Hospital Maplewood, MN  
Mercy Hospital Anderson Cincinnati, OH  
Adena Regional Medical Center Chillicothe, OH  
Licking Memorial Hospital, Newark, OH

DuBois Regional Medical Center DuBois, PA

UPMC Northwest, Oil City, PA

UPMC St Margaret Pittsburgh, PA

Paoli Hospital Paoli, PA

Butler Memorial Hospital Butler, PA

East Houston Medical Center Houston, TX

St. Francis Hospital Federal Way, WA

Theda Clark Medical Center Neenah, WI

Appleton Medical Center Appleton, WI

**Small Community Hospitals**

J. Paul Jones Hospital Camden, AL

Chambers Memorial Hospital Danville, AR

Mercy Hospital of Folsom Folsom, CA

Desert Valley Hospital Victorville, CA

Sartori Memorial Hospital Cedar Falls, IA

McDowell ARH Hospital McDowell, KY

Lakeview Hospital Stillwater, MN

Perham Memorial Hospital and Home Perham, MN

SSM St. Joseph Hospital West Lake Saint Louis, MO

Speare Memorial Hospital Plymouth, NH

Dunlap Memorial Hospital, Orrville, OH

Providence Newberg Hospital, Newberg, OR

Providence Milwaukie Hospital, Milwaukie, OR

Carthage General Hospital Carthage, TN

Hill Country Memorial Hospital Fredericksburg, TX

Lake Pointe Medical Center Rowlett, TX

San Juan Hospital Monticello, UT

St Clare Hospital Lakewood, WA

Sauk Prairie Memorial Hospital & Clinics Prairie du Sac, WI

St. Mary's Hospital Medical Center Green Bay, WI

The third annual rating system is new to the healthcare industry. The Malcolm Baldrige National Quality Award was created by Public Law 100-107, signed into law on August 20, 1987. It was established to enhance the competitiveness, quality and productivity of U. S. organizations for the benefit of all citizens. It is administered by the National Institute of Standards and Technology.

Each year the President of the United States presents this award to businesses, education and healthcare organizations of any size. Seven categories make up the award criteria and are:

1. Leadership;
2. Strategic Planning;
3. Customer and Market Focus;
4. Measurement, Analysis, and Knowledge Management;
5. Human Resource Focus;
6. Process Management;
7. Business Results.

Many organizations utilize these set of tools as means for self-assessment and training while developing performance standards and improved business processes. Organizations report better employee relations, higher productivity, greater customer satisfaction, increased market share and improved profitability as a result of applying these criteria to their businesses.



1999 saw the acceptance of educational and healthcare organizations into the Baldrige process. Since then there has been a total of 83 applications made from health care institutions across the nation. The Malcolm Baldrige National Quality Award has been given to four of these applicants. They are:

- Robert Wood Johnson University Medical Center, Hamilton, NJ – 2004
- Saint Luke's Hospital of Kansas City, MO – 2003
- Baptist Hospital of Pensacola, Florida – 2003
- SSM Healthcare, Saint Louis, MO – 2002

The fourth national recognition is newly created by the Healthcare Purchasing News and is the Materials Management Department of the Year Award. In 2004, the first award was presented to Terrebonne General Medical Center of Houma, LA. This facility is a 314 bed Premier affiliate with \$ 31 million in purchase volume (Barlow, 2004).

Four other facilities were named to runner-up positions in this award, and they were:

- Charleston Area Medical Center
- Elmhurst Memorial Healthcare
- MedCentral Health System
- West Pen Allegheny Health System

This search for the Materials Management Department of the Year award was conducted through a nomination or self-nomination process. Hospital Purchasing News received nominations from 15 states at which time the editorial staff along with the

President of the Association for Healthcare Resource & Materials Management narrowed the field to five finalists. Of these five, Terrebonne General Medical Center was given the distinction of being the first-ever award recipient.

### **Measuring Quality in Materials Management**

In the 1980's, materials managers measured the performance of their department based upon the number of turns of their official inventories. This number represents how large their inventories are and how many days worth of supplies they had sitting on their shelves. Back then, most hospitals averaged between four to six turns annually or in other words, 120 to 180 days of stock on-hand.

It was felt at that time that in order to be efficient, a hospital should have 12 turns annually or 30 days of on-hand stock. Over the years materials managers concentrated and benchmarked against other facilities. Soon the concept of just-in-time inventories developed within healthcare and managers saw inventories continue to decrease in size. Today it is not at all unusual to have 20 plus turns every year.

Since then, the ability for materials managers to identify a clear and precise quality measurement has become increasing difficult. Dependent upon an organizations affiliation or ownership, the standards for identification of quality performance can be completely different from facility to facility.

Some of these performance indicators are supply cost per patient day, supply cost per adjusted patient day, supply cost per patient discharge, supply cost per adjusted

patient discharge, supply cost per percentage of revenue, supply cost per percentage of operating cost, and of course, inventory turns.

These are just a few of the many measurements used within healthcare supply chain management. Then there are variations to all of these terms. Many providers add the words, "acuity adjusted" to these terms to define how ill their patients are. Concern that a hospital with a sicker patient will require more supplies. Then another term can be added to the equation is "total supply costs." Most material management departments do not have purchasing responsibilities for pharmacy or nutritional services and do not want to be held accountable for cost that they have no control over.

Over the past few years, many organizations have attempted to collect and report on supply cost per patient discharge. Although not widely accepted, it is slowly being defined as the most efficient means by which to identify quality improvement within the healthcare supply chain.

#### METHODOLOGY

In order to initiate any research of this type, it was need to narrow down which group or groups of best performing hospitals was required to investigate in order to arrive at where the best Materials Management Departments might reside. Although the popular U.S. News & World Report's Best Hospital Guide is literally a Who's Who of the cream of the healthcare world, it did not take into account the organizations financial strength as criteria for selection. In that the Materials Management Department is indeed an area that is driven by financial decisions, it was felt that this particular ranking would not be an appropriate healthcare segment in which to study.

In that the Healthcare Purchasing News award process did not disclose their selection criteria in addition to its limited response for nominees, it was found apparent that this group would also not be the best place to search for truly excelling materials management departments. Also of note was the lack of quality performance indicators throughout the Hospital Purchasing News articles.

Both the Solucient Top 100 Hospital award winners as well as the Malcolm Baldrige National Quality Award winning hospitals took into account clinical as well as financial outcomes as part of their criteria for the selection process. In as much, it was determined to research these two groups of winners to arrive at a basic consensus as to what criteria should be looked at when defining excellence within Materials Management.

Two on-line survey tools were developed through SurveyMonkey.com and sent to all of the hospitals in each of the two groups. The 17 questions concentrated upon what group purchasing affiliation each participated in, their materials management information system infrastructures, distribution methods as well as the most recent metrics of their performance measurement. The participants in the survey were asked regarding each area of research on a Likert scale, how they rated the particular function in ability to help them achieve their given award. They were also given the opportunity to express their personal thoughts on how they felt they assisted their organization achieve success.

## FINDINGS

The first group of organization that was studied was the Solucient Top 100 Hospitals. These are the questions and associated responses from that group:

*1. To what group purchasing organization (GPO) does your facility belong?*

Amerinet	12%
Broadlane	10%
Consorta	12%
Cooperative Services	02%
First Choice Purchasing Coop	02%
HPG	13%
MedAssets	04%
VHA/Novation	27%
Premier	18%

*2. Participation in this group extremely assisted our facility achieve recognition as a Solucient Top 100 Hospital.*

Strongly Agree	14%
Somewhat Agree	59%
Neither Agree or Disagree	27%

3. *What Materials Management Information System does your hospital utilize?*

Lawson	17%
McKesson Nova	04%
McKesson Pathways Materials Management	04%
Peoplesoft	09%
Other (please specify)	65%

4. *Does your facility utilize some form of point-of-use technology for medical/surgical supply distribution?*

Yes	73%
No	27%

5. *The use of point-of-use technology systems within our facility had a significant impact toward being selected as a Solucient Top 100 Hospital.*

Strongly Agree	05%
Somewhat Agree	47%
Neither Agree or Disagree	37%
Strongly Disagree	11%

6. *Does your facility have a prime distributor agreement?*

Yes	96%
No	04%

7. *If you have a prime distributor agreement, it is with which company?*

Burrows	18%
Cardinal	27%
McKesson	18%
Owens & Minor	27%
PHS	05%
Other (please specify)	05%

8. *Our prime distributor agreement assisted us greatly in our hospital reaching the Solucient Top 100 status.*

Strongly Agree	10%
Somewhat Agree	52%
Neither Agree or Disagree	38%

9. *Does your facility utilize some form of just-in-time inventory program?*

Yes	61%
No	39%

10. *Our just-in-time program contributed greatly to our facility being selected as a Solucient Top 100 Hospital status.*

Strongly Agree	06%
Somewhat Agree	35%

Neither Agree or Disagree

59%

*11. What are your facility's total supply costs per adjusted patient discharge?*

There were only seven responses of which the lowest was \$ 430 and the highest was \$ 1,615.57. The average being \$ 1,008.22.

*12. What do you believe to be the number one thing that your materials management department was able to do to assist your organization to be named to the Solucient Top 100 list?*

These are a few of the responses to that question:

“Standardization on GPO products and provide them to the departments through an efficient delivery system.”

“Standardization”

“Providing the higher quality supplies at the lowest cost combined with the proper utilization of supplies.”

“Manage supply chain cost effectively.”

“Implementing the use of Pyxis supply distribution in our facility.”

“Cost saving programs in place. Works with nursing to reduce waste.”



“ 1) Being vigilant at providing quality supplies/equipment to our customers while obtaining the best value possible for \$\$ spent. 2) Believing in and living up to our Mission and Core Values.”

“Our process drives cost down within the program. Quality supplies are available when needed. We have limited FTE’s running the process. We are highly automated. We have quality reviews monthly that measures performance. We stress service to our customers. We involve the customer in the product decision.”

“Providing the best product for the best price to our customers for their care and comfort while here at our hospital.”

“Buying from our GPO contracts and controlling inventory.”

“Inventory Control. All floors are set-up on max-min pars for 2 or 3 days. Floors are audited every other day, the storeroom turns at our hospital is 32 times a year.”

“Supply our patients and customers with a quality product in a timely manner.”

“Manage supply cost and conversion to contracts. Strong relationship with clinical staff.”

“Maintain high fill-rates and customer service focus.”

“Maximize cost efficiencies based on standardization, GPO contracts compliance, maximize use of e-commerce.”

“Minimize inventory and increase turns.”

“To assist many departments in their supply needs.”

“Have direct involvement with supply management in the cath lab and surgery areas.”

“Materials Management is very vigilant and aggressive in negotiating supply contracts in order to keep costs low.”

“The culture within the organization....this leads to stability within the organization.”

The same groups of questions were posed to the Malcolm Baldrige National Quality Award winning organizations. These are their responses:

*1. To what group purchasing organization (GPO) does your facility belong?*

Amerinet	12%
VHA/Novation	75%
Premier	25%

*2. Participation in this group extremely assisted our facility achieve recognition as a Malcolm Baldrige National Quality Award winner.*

Somewhat Agree	50%
Neither Agree or Disagree	25%
Somewhat Disagree	25%

*3. What Materials Management Information System does your hospital utilize?*

Lawson	25%
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McKesson Pathways Materials Management 25%

Other (please specify) 50%

*4. Does your facility utilize some form of point-of-use technology for medical/surgical supply distribution?*

No 100%

*5. The use of point-of-use technology systems within our facility had a significant impact toward being selected as a Malcolm Baldrige National Quality Award winner.*

Neither Agree or Disagree 50%

Strongly Disagree 50%

*6. Does your facility have a prime distributor agreement?*

Yes 100%

*7. If you have a prime distributor agreement, it is with which company?*

Burrows 50%

Owens & Minor 50%

*8. Our prime distributor agreement assisted us greatly in our hospital reaching a Malcolm Baldrige National Quality Award winner.*

Somewhat Agree 75%

Somewhat Disagree 25%

9. Does your facility utilize some form of just-in-time inventory program?

Yes 75%

No 25%

10. Our just-in-time program contributed greatly to our facility being selected as a Malcolm Baldrige National Quality Award winner.

Somewhat Agree 25%

Neither Agree or Disagree 25%

Somewhat Disagree 50%

11. What are your facility's total supply costs per adjusted patient discharge?

There were only two responses of which the lowest was \$ 1,225 and the highest was \$ 1,722.

12. What do you believe to be the number one thing that your materials management department was able to do to assist your organization to be selected as a Malcolm Baldrige National Quality Award winner?

These are their responses:

“Development of key metrics that focused the organization on important improvement opportunities, then setting stretch goals to achieve improvements.”

“Identify opportunities to change the business and run the business.”

“Quality custom service and good asset management which includes equipment, supplies and service.”

“Flow-charted our processes, identified our customers, identified our key requirements, identified our key measures, develop our process scorecards for internal services.”

Some of the interesting findings of this study included the differences in the responses from the Solucient group and the Baldrige group. The Solucient group appeared to rely more upon their group purchasing organization than did the Baldrige group. Both groups had a wide variety of Materials Management Information Systems in place. Some of those were DOS based, some were Windows based and yet a few were web based. Many of the Solucient group heavily relied upon point-of-use technology, where none of the Baldrige group had point-of-use installed and did not speak well of that technology at all.

Both groups had very much standardized upon a prime vendor and spoke highly upon the distributor being of valued assistance in their recognition. However, both groups had some type of just-in time inventory program in place but did not place that much value on it.

The most concerning portion of the survey is the lack of response to the question of supply costs. Either these organizations did not wish to share this information or they didn't know. By some of the extremely low figures sited in the Solucient group's

numbers, it was apparent that these organizations were not measuring the same data as other facilities were.

Common threads that ran throughout the responses were the managers desire to supply their customers with quality products and the lowest possible price. This can be accomplished by means of standardization. Winning organizations worked effectively with their clinical staff in product selection. While the core values of the organizations drove an environment for quality improvements.

An assumption being made is that the organizational commitment toward quality improvement is more ingrained within the Baldrige facilities. The requirements involved within the Baldrige process requires a total commitment of the organization and every department within. One common thread in the statements made by the Baldrige participant is improvements made through a continuous process of measurement of their metrics.

#### CONCLUSION AND AREAS OF FUTURE RESEARCH

In conclusion, there is still a great need for materials management departments to utilize the valuable resources available to them from their group purchasing organizations. The United States Senate should seriously weigh the effects upon regulating these groups to the effect such legislation would have upon the healthcare costs of every American.

Information System suppliers need to continue their healthcare supply chain software improvements. There would be much to be gained by implementing systems

that have been successful in other industries. When considering implementation of any point-of-use technology, organizations should prepare a long-range pro-forma and monitor the success of such project once installed.

The materials management department should partner with quality prime distributors which can provide effective supply chain management. Conduct feasibility studies to determine to what extent a just-in-time inventory program will be implemented within any facility.

Probably the most important recommendation of this paper is the need for an effective measurement across all materials management departments throughout the nation. The Association for Healthcare Resource & Materials Management, as the professional organization within this industry, should take the lead in establishing this metrics in all hospitals nationwide.

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