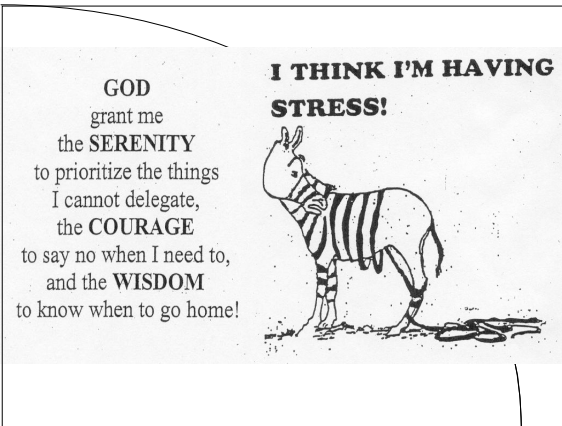


Purchasing of Laboratory Supplies and Capital Equipment

Inventory Management Cost Analysis

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Objectives

1. To describe the purchasing process in the public and private sector.
2. To describe the advantages of negotiating contracts and ordering processes with suppliers.
3. To describe the process for purchasing capital equipment.
4. To describe the guidelines for developing specifications used for equipment purchase.

Objectives

5. To state the advantages and disadvantages for purchasing capital equipment.
6. To state the theory of reagent lease/rental and describe the advantages and disadvantages for the laboratory.
7. To list the costs associated with the purchasing process.
8. To summarize methods to control costs associated with purchasing supplies.
9. Discuss briefly the concept of cost analysis.

CAPITAL EQUIPMENT

Consists of larger and more expensive items that cost in excess of \$2500.00

Examples:

- Microscopes
- Centrifuges
- Automated Analyzers
- Refrigerators/Freezers/Incubators

Equipment is considered to be a capital item and the value contributes to the value of the hospital's assets.

Future replacement of equipment is considered an operating expense.

SUPPLIES

Two main categories:

1. Consumables/expendables
 - Slides/Coverslips
 - Needles/Syringes
 - Test Tubes/Vacutainer Tubes
 - Reagents/Test Kits
2. Reusable Items
 - Flasks/Beakers/ Volumetric Pipets
 - Metal forceps/scissors
 - Safety Goggles

Supplies are considered to be non-capital items and do not contribute to the assets of the hospital.

FACTORS AFFECTING LABORATORY PURCHASING COST

- Inflation
- Oil Prices
- Increased Demand
- Manufacturer's Philosophy
- Government

PURCHASING SYSTEMS

Public Systems

Examples: County, State, Universities,
Health Departments

1. Bid format is limited to specific dollar amount.
2. Open bids.
3. Preference to local vendors, minorities and women.
4. Results are in the public record.
5. Regulated systems.

PURCHASING SYSTEMS

Private Systems

Example: University of Minnesota Medical
Center, Fairview

1. They determine their own purchasing policies.
2. Often have purchasing group affiliations.
3. More freedom, less rigid rules.

PURCHASING SYSTEMS

Federal Medical Centers

Example: VA, Military Institutions

1. Very structured with lots of red tape.
2. Large general services administration contracts.
3. Large volume discounts.

ORGANIZATION/DEPARTMENTAL INTERACTIONS

University of Minnesota Medical Center

- Clinical Laboratory Departments
- Materials Management Department
- Purchasing/Accounts Payable/Finance

The role of Finance is to ensure and optimize the financial viability of Fairview Health Services so that it can fulfill its mission to provide high-quality health care services at an acceptable level of cost to the communities it serves.

MATERIALS MANAGEMENT ACCOUNTS PAYABLE

Contracts at Fairview

Group Purchasing Organizations

- Fairview has an agreement with an organization named "Premier Purchasing Partners" for the purpose of controlling and reducing supply costs.
- Fairview is one of the top twelve owners of Premier (out of over 200 members).
- All Fairview-owned organizations and those affiliated with Fairview are obligated to use the Premier program for their purchasing needs and to utilize all group contracts to the extent possible.

LABORATORY PURCHASING OF INSTRUMENTATION

The laboratory needs to do its homework and be specific about the instrumentation they want.

Requirements To Consider

1. Reliability
 - Will it work?
 - Is the technology proven?
 - What is the service record on instruments already in the field?

Requirements To Consider

2. Ease of Use
 - What is the impact on current workflow?
 - Does it utilize state of the art technology such as barcoding, lab information system interface, primary tube sampling, etc.?
3. Throughput
 - How many actual patient tests can be performed?
 - Is it random access or batch testing?

Requirements To Consider

4. Maintenance
 - What is required at startup, daily, monthly, etc?
 - What is the downtime associated with this instrument?
 - What is the skill level required to perform maintenance?
5. Company Track Record?
 - Talk to current and past users of the company's products.

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"Please listen carefully as some of our menu options have changed. For customer service, go fly a kite. For technical support, whistle in the wind until the cows come home. For repair service, wait for you-know-what to freeze over..."

FACTORS INFLUENCING PURCHASE DECISION

Advantages to Purchasing:

- Instrument Ownership
- Avoid Interest Payments
- Return on Investment
- Choice of consumables (maybe)
- Salvage/Trade-In Value
- Warranty and Training

FACTORS INFLUENCING PURCHASE DECISION

Disadvantages to Purchasing:

- Requires Up-Front Cash Outlay
- Locked into current Technology
- Time Required for Acquisition

REAGENT RENTAL/LEASE OPTION

The theory is that a company will place an instrument in the laboratory with the understanding that the laboratory will purchase the manufacturer's reagents. Payment of the instrument is through the purchase of the reagents which have an added cost for the instrument factored in.

ADVANTAGES

1. Demands No Capital Investment.
2. More Likely to Win Approval.
3. Personnel Training Provided.
4. Service, Technical Support Provided.
5. Flexible – Short-term Contract.
6. System Updates/Software Usually Provided.
7. One Supplier for Reagents and Instrument.

DISADVANTAGES

1. Legal Obligation with Penalties for Violation.
2. Commitment to a specific Reagent Volume.
3. Restricted to a Vendor's Reagents and Consumables.

CAPITAL BUDGET

- Prepared annually. Departments project their capital needs for the coming year. Often a long range forecast, 3-5 years, is also requested. Items are normally divided into cost categories and then prioritized.
- Prioritization may be within each individual laboratory budget and again within the laboratory department as a whole.

COST CATEGORIES

1. Low Cost Items, Usually under \$10,000
 - These require a minimal amount of justification.
2. Items Over \$10,000
 - These require more detailed and specific documentation before being approved by the hospital finance committee.
3. Items Over \$250,000 Require a Proforma
 - A proforma is a formal document which is provided to senior administration detailing the need, financial costs, regulatory requirements, cost recovery time, etc. of the requested equipment.

INFORMATION REQUIRED

Providing the following information will help improve your chance of obtaining administrative approval:

1. Cost data – usually the bottom line.
2. Promise of providing improved service to your customers.
3. Presentation of positive revenue impact.
4. Scheduled/overdue instrument replacement.
5. Medical Staff demand.

Capital Equipment list for fiscal year 2002

- | | |
|------------------------------|-----------|
| 1. High priority items | \$640,000 |
| 2. Low/Medium priority items | \$418,000 |
| Total = \$1,058,000 | |
| 3. Remodeling | \$915,000 |

Approved for 2002 was <\$500,000 for equipment

Capital Equipment list for fiscal year 2003

1. Total equipment = \$1,655,638
2. Total remodeling = \$ 565,000
Total = \$2,220,638

- We were originally approved for \$900,00 for equipment to be distributed as follows:
\$450,000 Jan-June, \$450,000 July-Dec.

- Do not know about remodeling.

Remodeling includes

\$550,000 for projects in the Acute Care Laboratories on the Riverside and University campuses.

Capital Equipment list for fiscal year 2003

Examples of Projected Cost for Various Instruments:

- \$1,800 for a Computer Label Printer
- \$60,000 for a COBE Spectra Instrument (used for plasmapheresis) in the Apheresis/Blood Donor Center
- \$120,000 for a Flow Cytometer to be used in the Immunology Laboratory.

What happened???

- Remodeling was held over to 2004.
- Actual equipment purchases of approximately \$850,000 was approved.
- Ordering freeze went into effect on 12-1-03.

Capital Equipment/Remodeling list for fiscal year 2004

Capital Equipment	=	\$2,931,590
New Remodeling	=	665,000
Carryover Remodeling	=	450,000

Total = \$4,046,590

Total for all UMMC Departments = \$28,714,814

As of March 1, 2004 our allocation is at \$1,820,965.
We are busy prioritizing and trying once again to make old equipment last.

In August, another freeze was instituted. Only essential items may be ordered.

Capital Equipment/Remodeling list for fiscal year 2005, 2006

2005 Request: \$1.16 Million for <\$100,000 items
\$5.8 Million for >\$100,000 items
Examples: Hitachi Analyzer @ \$120K
6 Color IFC Cytometer @ \$160K
Patient Barcoding Safety Initiative @ \$400K

Approved: \$1.1 Million for <\$100,000 items
\$2.2 Million for >\$100,000 items

2006 Request: \$1.7 Million for <\$100,000 items
\$2.5 Million for >\$100,000 items

Approved: Total of \$2.4 Million but as the year went on, we were not allowed to spend even this because total revenue was lower than projected and all capital equipment spending except for emergency replacement was frozen.

Capital Equipment/Remodeling list for fiscal year 2007

Now we are trying to play catch up again.

2007 Request: \$1.812 Million for <\$100,000 items
\$4.129 Million for >\$100,000 items

Approved: \$888K for <\$100K items (49%)
\$1.6 Million for >\$100K items (39%)

The rush is on for labs to prioritize. At least fiscal year to date, Fairview is exceeding revenue projections but they are ever cautious!!

We Know What We Want, Now, How do We Order?

Fairview has gone to an electronic ordering process. The Capital Equipment Request Form and Questionnaire is on-line.

- Corporate Materials Management Buyers may be consulted for information on existing contracts (Premier or Fairview) and what the appropriate standards are.
- Buyers may obtain pricing, negotiate with vendors or know of other similar purchases that can be bundled together for better discounts.
- Buyers may review warranty and maintenance issues (along with the laboratory) and work with Biomedical Engineering or others if appropriate.

CAPITAL EQUIPMENT FORM

The following information must be included:

1. Quantity
2. Unit
3. Description of Instrument
4. Manufacturer and Model Number
5. Unit Price
6. Attached Quote from Manufacturer
7. Comments, as appropriate

CAPITAL EQUIPMENT CRITERIA

The following criteria must be considered:

1. Equipment is broken and needs replacement with no other options.
2. Equipment won't be supported by vendor with no other options.
3. Equipment/facility upgrade is required because patient care/employee is at risk.
4. Maintenance costs are prohibitive.
5. Operational efficiencies/margins will be significantly impacted.
6. If equipment is not acquired or replaced, profitable business is at risk of being lost.
7. Payback period is less than 24 months with low risk, high probability.
8. JCAHO or other regulatory body required this capital investment.

APPROVAL PROCESS

Once entered on-line, the form is sent electronically to the following for approval:

1. Department Head
2. Site Biomedical Engineer (recommended)
3. Site Materials Manager (recommended)
4. Entity VP or Senior VP
5. Entity Accounting Manager
6. Capital Equipment Committee
7. Corporate Finance

After all approvals are complete, the information is forwarded to Materials Management for them to place the actual order.

COSTS ASSOCIATED WITH ORDERING SUPPLIES

The cost of an average purchase order in a health care facility can range from \$25-\$100 and up. The **actual** costs may range from \$100 and up per order. **Why??? Personnel Costs!**

Personnel Involved with Purchasing

- | | |
|--------------------------------|------------------------------|
| 1. Technical Staff | 7. Buyer |
| 2. Supply Technologist | 8. Purchasing Director |
| 3. Department Supervisor | 9. Manufacturer/Distributor |
| 4. Lab Purchasing Coordinator | 10. Receiving Dock Personnel |
| 5. Laboratory Manager | 11. Accounts Payable |
| 6. Purchasing Department Clerk | 12. Delivery Personnel |

INVENTORY MANAGEMENT

1. What are the Hidden Costs?

- Supply ordering & handling done by others.
- Time spent on supply emergencies.
- Double checking & follow up inquiries.
- Cancellations & rescheduling due to supply stock outs.
- Inventory hoarding.

Cost Analysis

Objective: To be able to perform cost analysis to ascertain whether a specific laboratory procedure should be offered, discontinued, or referred to another laboratory.

Why do we need Financial Management?

- a. Managed Care
- b. Labor Considerations
- c. Technology Trends
- d. Financial Pressures – “do more with less”

Cost Analysis Topics

1. Cost Accounting Fundamentals
2. Cost Per Test and Per Patient
3. Cost of Production

1. Cost Accounting Fundamentals

A. Operating versus Capital Expenses

- Operating Expenses: Annual costs required to perform the daily operation of the laboratories, i.e., payroll, reagents, consumables. (See previous General Ledger report)

- Capital Expenses: Costs related to the purchase of instruments and equipment that will be used for an extended period and will most likely be depreciated, i.e., computers, analyzers, refrigerators, microscopes, etc.

1. Cost Accounting Fundamentals can't

B. Fixed versus Variable Costs

- Fixed Costs: Those costs remaining constant, in total, regardless of changes in the level of activity, i.e., LIS (Laboratory Information Systems), administrator's salaries, utilities, laboratory space, instrument depreciation.)

- Variable Costs: Those costs changing indirect proportion to the level of activity, i.e., number of slides/pipets used in a procedure, reagents, occasionally staffing.

1. Cost Accounting Fundamentals can't

C. Direct versus Indirect Costs

- Direct Cost: A cost that can be traced to a unit of product or an organizational segment, i.e., a reagent of a Clinical Laboratory Scientist.

- Indirect Cost: A cost that is related to but cannot be easily attributed to a unit of product or organizational segment, i.e., a Laboratory Manager.

D. Cost Allocation

- The purpose of cost allocation is to allocate costs for service departments in producing (result generating) departments.

Examples of Producing Dept: Acute Care, Microbiology Lab, etc.

Examples of Service Departments will include areas like Laboratory Administration, Phlebotomy, Couriers, etc.

2. Cost per Test & per Patient

A. Cost per What?

- The cost per test refers to the supply cost of one unit.
- The Cost per patient refers to the supply cost including both billables and nonbillables.
- The cost per patient with labor refers to the supply cost including both billables and nonbillable plus the labor component (a.k.a. Cost per result)

Again see examples on previous General Ledger

B. When do we use these costs?

- A cost per patient may be used when considering different test methodologies, negotiating prices with vendors, for evaluating whether to bring a test in-house when labor is not a concern.
- A cost per patient with labor is used when considering bringing a test in-house when labor will be an incremental cost and it is also used in pricing.

2. Cost per Test & per Patient can't

- C. What Methodologies are used?
- Must determine the labor involved in producing the result (time in motion, CAP workload unit, institution's own methodology, etc.
 - Determine supply cost of reagent, consumables, controls.
 - Determine instrumentation component (service cost, lease, depreciation).
 - Administration (management and service, allocated).
- Many institutions don't add this because they typically don't have good detail.
- D. In-House versus Send-Out
- Use incremental costs in making a decision.
 - Already own equipment, could do with current staff, supply costs, handling, etc.

3. Cost of Production

A. Objective and Purpose

- What is the total cost to produce a reportable result?
- Provide a tool to review cost and productivity issues.
- Understand key drivers in cost and productivity.

B. Methodology/Components

- Total all expenses by sub-category, i.e., labor, supplies, instrumentation, misc costs.
- Know number of billable tests and/or work units

3. Cost of Production

C. Benchmarking

- Way to compare one institution with another and look for similarities and/or difference. Important to be consistent and try to choose institutions that have a comparable makeup to yours.

- Benchmarking Indicators
 - Reportable test per technical FTE
 - Tests per FTE by shift
 - Workload versus staffing
 - Margin per procedure
 - Average send-out cost

TEST	SERVICE CODE	CPT CODE	WORK UNITS = Time	LABOR WU x 1.285	SUPPLY COST	EQUIP COST	MISC SUPPLY COST	MISC COST WU x 1.159	MICRO DIRECT COST
GRAM STAIN	7030042	87205	5.3	6.81	0.32	0.05	0.30	0.84	8.32
WET PREP	7030067	87210	9.6	12.34	0.65	0.05	0.30	1.53	14.86
BLOOD CULT	7030091	87040	3.83	4.92	5.11	0.05	0.30	0.61	10.99
NOSE	7030117	87070	7.08	9.10	0.25	0.05	0.30	1.13	10.82
THROAT	7030125	87070	4.33	5.56	0.25	0.05	0.30	0.69	6.85
CSF CULT	7030133	87070	8.15	10.47	1.15	0.05	0.30	1.30	13.27
SPUTUM	7030141	87070	6.75	8.67	1.45	0.05	0.30	1.07	11.55
STOOL SSC CULT	7030166	87045	6.93	8.91	1.02	0.05	0.30	1.10	11.38
URINE CULT	7030174	87088	4.47	5.74	0.60	0.05	0.30	0.71	7.40
WOUND CULT	7030208	87070	7.65	9.83	1.35	0.05	0.30	1.22	12.75

Cost Accounting

- One work unit (wu) = 1 minute of technologist time
- Each procedure/test we perform is "timed" to see how long it takes. This then is transformed into work units or personnel cost. Microbiology Lab example follows:

$$\frac{2004 \text{ total salary} + \text{benefits}}{2004 \text{ total work units}} = \frac{\$1,781,362}{1,386,212} = \$1.285/\text{min}$$

$$\frac{2004 \text{ miscellaneous costs}}{2004 \text{ total work units}} = \frac{\$221,053}{1,386,212} = \$0.159/\text{wu}$$

(Miscellaneous costs include telephone, equipment repair & service contracts, insurance, lease, freight, etc.)

