

Cost Accounting in the Operating Room

By: Anne Farmer, Ken Merbler
TriNet Healthcare Consultants, Inc.

A group of Orthopedic surgeons is threatening to leave the hospital and take their business to another organization. What will be the financial impact of their departure? In order to answer this question, the organization needs to determine the contribution margin of their cases. This, however, can be problematic.

One of the problems in dealing with the above scenario is the lack of timely, accurate cost data upon which to base any decisions. Cost information is inadequate in many hospital departments, but the place where the lack of accurate cost data is most evident is often the Operating Room. The Surgery department is the leader in medical supply usage for the entire hospital. Decisions are made here which have a significant impact on costs. The choices made by the physicians and clinical staff drive those costs. All need access to the data. Lack of information at this level leads to choices which can be very costly. For example, the decision to carry dozens of different types of surgical implants can result in tens of thousands of dollars wasted on obsolete inventory. Access to this cost information is needed in other areas of the hospital as well, to make decisions at a higher level. Failure here can be even more costly. How? A healthcare organization entering into fixed rate contracts without understanding its costs for specific procedures can experience financial disaster.

Accurate cost data for the O.R. does exist. The problem is transforming it into useful, accessible information. But this process is not simple. Why? Software has been created to help provide this data, but these systems rarely live up to their potential. Many times the software is too complex for the clinical staff to use. There are several reasons for this. It is easier to spend money on software than to justify adding an FTE to run the system. When software packages are installed there is often inadequate consideration given as to who is going to maintain them. A poorly maintained patient charging system adds to the problem of capturing cost data. But there are steps that can be taken to make sure that this valuable information is gathered.

In recent years, there have been some excellent software packages developed for the O.R. Examples of these systems include ESI (now McKesson HBOC), Lawson, Array, MSM, DEROYAL and ORSOS. The best of these address the operational needs of the O.R. in an integrated fashion. They include O.R. scheduling, patient billing, purchasing and inventory control modules. A key component of these systems is the physician preference card. A preference card is a detailed list of resources (labor, supplies and equipment) used by a particular physician performing a specific procedure. When one considers the number of physicians practicing surgery and the number of procedures performed by each, one can see that the number of necessary preference cards is quite large. Because of their detailed nature, there is a great amount of work needed to

create and maintain them. Fortunately, most hospitals already have these cards. They have been using them for years to run the O.R. in an efficient manner. Now this data must be entered into the O.R. system in order to take advantage of the available system capabilities. This can appear to be a monumental task for the O.R. to complete in addition to everyday duties. However it is well worth the effort, and solves the cost accounting problem in the Operating Room.

Costing Approaches

The availability of detailed case information from O.R. systems such as those mentioned above enables the organization to use an *actual* costing approach, as opposed to the *standard* costing approach that might be employed in other departments such as Lab and Radiology. The advantage of an *actual* costing approach is that it captures the variability in costs across patients, and hence across physicians. Under a standard costing approach a cost standard would be developed for a procedure based on estimates of staff time as well as supplies used. Under an actual costing approach costs are determined on a patient-by-patient basis, based on the data from the O.R. system. Two patients undergoing knee replacements end up with differing costs, based on the staffing for the case, the duration of the case, and the supplies actually used. Now the cost accounting information can be used to examine variances in costs and hopefully to reduce costs. The diagram in Exhibit 1 outlines the advantages and disadvantages of various costing approaches in the O.R.

**Exhibit 1
Surgery Costing Approaches
Salary**

Approach	Example	Advantages	Disadvantages
Time/Team Category ACTUAL	Team A (2RN, 1 Tech) 1 min.	- Detail by team - Patient/MD variability	Assumes entire team is on the case for the same duration
By Time by Jobcode ACTUAL (Recommended)	Scrub Nurse 1 min. Tech 1 min.	- Detail by team - Patient/MD variability - Specific times by position	(None)
By Procedure PROSPECTIVE	Lap Chole.	- Address differences in teams - Built from preference card	Lose patient/MD variation. Requires staff time estimates for all procedures

Supplies

Approach	Example	Advantages	Disadvantages
Actual supply usage ACTUAL (Recommended)	catheter type XYZ	- Accuracy - Patient/MD variability	Significant expansion of charge master.
Total supply costs by patient ACTUAL	Supplies: \$537.40	- Accuracy - Patient/MD variability	Lose detail on specific supplies used.
By Procedure PROSPECTIVE	Lap Chole.	- Detail by type of procedure - Built from preference card	Lose patient/MD variation. Moderate expansion of charge master.

Integrating O.R. Data Into DSS

In order to use the O.R. system data for assigning patient costs, it must be brought into the cost accounting or Decision Support system. (Although many O.R. systems include cost accounting functionality, it is advisable to keep cost accounting in the organization's Decision Support/Cost Accounting system, so that patient cost data will include all departments.) This can happen in one of two ways: the data can be interfaced directly in to the Decision Support/Cost Accounting system or into the billing system, which in turn interfaces in to the DSS. The latter approach is recommended, since this interface can often be automated (most O.R. systems have the capability of linking directly to a patient accounting system).

It is important to note that the interface of detailed O.R. data in to the billing system does not imply that the hospital will begin to charge patients at this detailed level. As new charge codes are set up in billing to capture the detail from the O.R. system, they can be set up with a price of zero. Most likely these and other statistical (i.e. zero-price) charge codes can be suppressed from the printed patient bills. In the costing process, it is important to discuss patient charging and patient costing as two separate issues. Some organization have adopted the terminology of charge codes and cost codes to the patient level.

Labor Costs

Although the O.R. system data can be used in several ways to assign labor costs to each case (see Exhibit 1), the recommended methodology, and the one that is the closest to actual costs, is one in which staff times by position or labor category are used. The advantage of this approach over a time/team approach is that it can reflect staff members moving in and out of the case (a laser tech, for example, may float in for a portion of the case). Each member on the team must clock their time in and out of the case. Although the O.R. system is capable of tracking each individual team member's time on the case (by employee name), the detail by labor category (Scrub Nurse, Tech, etc.) is sufficient for costing purposes. Based on each staff member's labor category, his/her time on the case is represented by the number of units on the patient bill, as in the following example (in the example a circulating nurse clocked 150 minutes on the case, and a scrub tech clocked 175 minutes):

Patient:	Jane Doe	
Date of Surgery:	12/1/98	
O.R. system data:		
<u>Position</u>	<u>Minutes</u>	
Circulating Nurse	150	
Surgical Scrub Tech	175	
Billing data:		
<u>Charge Code Number</u>	<u>Units</u>	<u>Charges</u>
101 Circ RN Minutes	150	0.00
102 Scrub Tech Minutes	175	0.00
Cost Accounting/DSS data:		
<u>Charge Code Number</u>	<u>Units</u>	<u>Costs</u>
101 Circ RN Minutes	150	60.00
102 Scrub Tech Minutes	175	50.00

Several steps are necessary to enable this approach to assigning labor costs. Use the checklist below as an outline of these steps, and to determine the organization's readiness for using this approach.

Checklist: Labor Costing

- a. *Confirm the availability of staff times by labor category, by case. (Surgery/I.S.)*
- b. *Identify the labor categories defined in the O.R. system. (Surgery)*
- c. *Determine the charge code scheme to be used. One charge code would be set up for each labor category. (Finance/Patient Accounting)*
- d. *Develop and test the interface of items from O.R. system into billing or DSS. (Cost Accountant/I.S.)*
- e. *Calculate average rates for each labor category and load into cost accounting system. (Cost Accountant)*

Supply Costs

The ideal approach for assigning costs of surgical supplies to the patient level is one in which actual supply usage, by item, is interfaced from the O.R. system into billing or into the Cost Accounting/Decision Support system. A well-implemented O.R. system will track *all* supply items used, so this usage data will include both chargeable supplies as well as non-chargeable supplies. The source of this information is the preference card within the O.R. system edited to reflect the actual supplies used for each patient. In other words, two steps are necessary to collect this data: a). Preference cards must be implemented for all case-types, and b). An O.R. staff member tracks the actual supplies used on the case, including any times used in addition to those on the preference card, as well as deletions of items on the preference card but not actually used. Below is an example of a patient's record:

Patient:	Jane Doe	
Date of Surgery:	12/1/98	
O.R. system data:		
<u>Item Number</u>	<u>Quantity</u>	
10001 Sponge 4x4 Sterile	1	
10002 Knee Femoral	1	
Billing data:		
<u>Charge Code Number</u>	<u>Units</u>	<u>Charges</u>
90001 Sponge 4x4 Sterile	1	0.00
90002 Knee Femoral	1	2,000.00
Cost Accounting/DSS data:		
<u>Charge Code Number</u>	<u>Units</u>	<u>Costs</u>
90001 Sponge 4x4 Sterile	1	0.62
90002 Knee Femoral	1	1,400.00

Use the checklist below as an outline of the steps necessary to accomplish accurate costing of supplies using O.R. system data.

Checklist: Supply Costing

- a. *Clean up the Item File as necessary, to ensure that all items ordered by Surgery are in the Materials Management system, with an accurate cost per unit. (Surgery/Purchasing)*
- b. *As necessary, revise the preference cards in the O.R. system, in order to minimize the number of exceptions to be documented for each case. (Surgery)*
- c. *Accurately document the supplies used on each case, by adding or deleting items on the preference list. The tighter the preference list, the easier the task is for the O.R. staff. (Surgery)*
- d. *Add charge codes to billing as necessary, for non-chargeable supplies as well as for additional chargeable items. (Patient Accounting)*
- e. *Develop the interface from the O.R. system into either the billing system or DSS. (Cost Accounting/I.S.)*
- f. *Interface supply cost by item (i.e. the item file itself from the Materials Management system into DSS/cost accounting. (Cost Accounting/I.S.)*

Resource Considerations

In order to maintain the system after implementation, staffing resources must be carefully considered. This is a critical decision that must be made up-front, prior to the implementation of an O.R. system. Maintaining the system will require at least one full-time, dedicated position. One point to emphasize when requesting an FTE is the fact that there will be labor savings resulting from the automation of the patient charging process. With full implementation of the system comes the ability to do away with hand-written charge forms. In addition to automating the patient charging process, the system will greatly reduce lost charges and the number of clerical errors. While these savings may be difficult to quantify, they are real significant. Additional savings will come from improved inventory control provided by the system, along with the cost data it provides. These benefits can

easily outweigh the costs of the necessary incremental staffing. Further labor efficiencies come from the improvement in staff and room utilization made possible by the computerization of case and block scheduling in the O.R. These benefits should be discussed with senior management prior to implementation so that buy-in is achieved, and the necessary resources obtained.

Uses of Cost Accounting Information

Using the approach described above, the O.R. system can provide accurate and meaningful cost information for use both by the Surgery department and by the organization as a whole. The external uses (outside the O.R.) come through the organization's Decision Support system, which combines demographic data with clinical and financial information at the patient and product line level.

Within the Surgery department, this information is an integral part of the physician education process, by enabling utilization reporting and identification of cost variances. Likewise, this data supports the education of the Surgery nursing and technical staff. Accurate O.R. costing data will also allow the department to benchmark their costs against costs of other physicians and other organizations on a procedure basis. Critical pathway development is also supported by the cost as well as utilization data provided by such a system.

Outside of the Surgery department, there are numerous uses of this information that benefit the organization. Accurate patient cost information is, of course, critical for managed care evaluation and monitoring. Any analysis of costs and profitability by product line requires accurate cost data as well. Without an accurate costing approach for the O.R., the breakout of costs among the surgical product lines represents nothing more than a best guess. Accurate cost data is key to the planning process, and supports the business decisions made by the organization.

In the scenario described at the outset of this article, accurate cost data enabled the hospital to identify the contribution margin provided by the group of orthopedic surgeons (see Exhibit 2). Although this particular group of surgeons make up 21% of orthopedic surgery cases, their cases make up 30% of the contribution margin. It is in the best interest of the organization to prevent their departure, or to bring in other orthopedic surgeons to offset the loss.

Exhibit 2 Orthopedic Surgeons

<u>Surgeon</u>	<u>Cases</u>	<u>Costs Surgery</u>	<u>Variable Costs Other Depts.</u>	<u>Variable Costs Total</u>	<u>Variable Net Revenue</u>	<u>Contribution Margin</u>
<i>Selected Group:</i>						
Dr. A.	85	89,000	23,000	112,000	323,000	211,000
Dr. B	25	73,000	28,000	101,000	293,000	192,000
Dr. C	50	38,000	20,000	58,000	168,000	110,000
Dr. D	45	145,000	33,000	178,000	516,000	338,000
<i>Total for Group</i>	205 21%	\$345,000	\$104,000	\$449,000	\$1,300,000	\$851,000 30%
<i>Other Orthopedic Surgeons</i>	760 79%	\$745,000	\$308,000	\$1,053,000	\$3,048,000	\$1,995,000 70%
<i>Total Orthopedic Surgeons</i>	965	\$1,090,000	\$412,000	\$1,502,000	\$4,348,000	\$2,846,000

Payback

Developing accurate and timely cost information in the O.R. will more than pay for the systems and personnel required to provide it. Cost savings come from many sources. By providing cost data to physicians the hospital can demonstrate the need to reduce variation in resource usage patterns across physicians. Physicians realize that they work in an environment increasingly driven by the constraints of managed care and capitation, and they are hungry for this data. All it takes are some informed decisions by the physicians and staff to reduce the costs of joint implants or IOL's and the system has paid for itself. Decisions such as these are not a one-time cost reduction, but rather, yield ongoing cost reductions, year after year.

Other cost savings will come from improved inventory control, automation of patient charging, and a significant reduction in lost charges, as noted above. Lost charges are often due to poor maintenance of the patient charge master file. With a fully integrated system in place to charge the patient, the system essentially becomes the charge master file. Some might say, why charge the patient at all if we are no longer reimbursed based on charges? There is one significant reason: cost data. Healthcare has moved from an environment of cost-led pricing to price-led costing. The patient charging mechanism is the method for capturing detailed resource utilization by patient. If organizations do away with certain levels of detail in their charging systems, they lose the ability to identify costs.

Additional savings occur when the organization as a whole has the ability to accurately identify costs. Integrating accurate cost data into the Decision Support system gives that organization the ability to make informed financial decisions. A complete financial picture by patient allows the hospital to track performance at numerous levels, including physician, product line, payer, and

plan. In an environment of capitation and managed care, the ability of the organization to track performance at these levels is critical. With this type of data, the system can pay for itself by giving management the accurate information necessary for making critical business decisions.

As demonstrated above, the Surgery department can greatly benefit from having a system in place to identify costs. Many hospitals have stopped short of full system implementation for a variety of reasons. However, it is well worth the time and effort to fully implement and maintain a costing system for Surgery. Once the weakest link in the organization's cost accounting system, the Operating Room can become the strongest.

Anne Farmer, Vice President
TriNet Healthcare Consultants, Inc.
annef@trinethealth.com
978-692-1009

Ken Merbler, Consultant
TriNet Healthcare Consultants, Inc.
kenm@trinethealth.com
978-692-1009

www.trinethealth.com