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Using Laboratory Metrics To Achieve Optimal Efficiency

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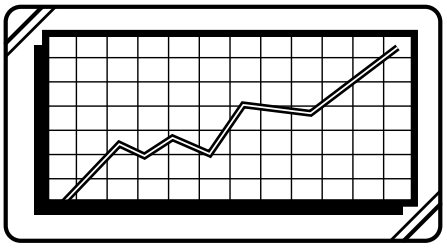
IN THE PAST, laboratory professionals were called upon as experts to maintain exacting operating conditions in the laboratory and to ensure accurate test results. To aid in this process, we used quality control charts and other graphical data posted around our laboratories or offices to remind everyone of our goals of technical excellence.

However, in today's managed care arena we are called upon to do more than just technical management. Today we must be financial managers as well, a responsibility that requires new analysis tools that we did not learn in our technical training. These new tools are called metrics. Metrics are important performance indicators such as cost per reportable test result and the percentage of reportable test results per total tests run. Tables and charts of financial and efficiency metrics will be the instruments that guide the laboratory of the future to more efficient and accurate testing.

The most important metrics are those I like to call "big picture metrics." These are where the biggest savings will come from, since they audit test utilization. Yes, we can save a penny here and a penny there by concentrating on equipment or other physical aspects of the laboratory, but the real savings are not just in optimal utilization of labor, supplies, and financial resources. Decreasing test utilization is the key factor in the future health care system.

This article reviews concepts and terms that can be used by laboratorians to track financial performance and provide a picture of a laboratory's cost efficiency.

Financial Metrics



Average labor cost/reportable result and *reportable results/FTE.* These metrics help us understand the labor costs involved in generating our product: a reportable test result. By tracking average labor cost per reportable result and reportable results per full-time equivalent (FTE), we are able to keep labor costs from soaring out of control. We can also use this information to compare our labs to others. By doing so, we can determine if we are competitive in the amount we spend on labor per reportable result.

Controls/reportable result and *control cost/reportable result*. These control metrics provide an evaluation of the cost associated with quality control procedures. For example, CLIA '88 allows us to run controls every 24 hours, yet many labs still run controls during each eight-hour shift. In a chemistry/immunology lab serving a 400-bed hospital, the dollar difference between running controls at eight-hour intervals and 24-hour intervals can be $50,000 or greater per year. This is based upon both the cost of the reagents used to run the controls and the control material, without accounting for the labor saved.

Total cost/reportable result, micro-cost per specific procedure (test)[1], and *percent cost items/total cost*[2]. These cost metrics let us evaluate total dollars being spent per reportable result. Total cost per reportable result is obtained by dividing your total operating costs (comparison data usually includes phlebotomists and secretaries salaries, but excludes pathologists' salaries) by your total reportable volume of testing. For most labs, this figure is between six and 12 dollars, although that is an average dollar amount based on all lab procedures. A more critical value is the micro-costing of a specific procedure such as a glucose or TSH, which determines the actual cost to produce a glucose or a TSH result. This number can be used for specific pricing of laboratory tests and can also be displayed in a pie chart showing the percentage of total cost for each contributing cost item.

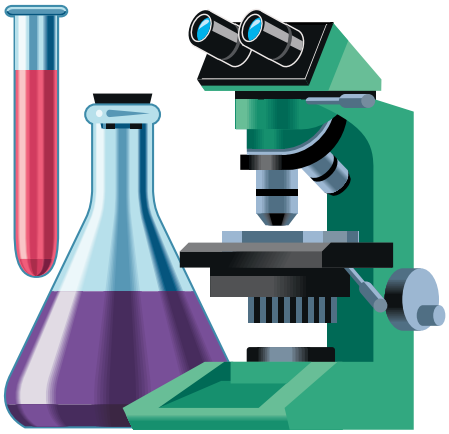
Production cost/reportable result[3]. The production cost per reportable result is essentially the micro-costed number minus the blood-drawing component. It is the cost associated with producing the result from the time the specimen hits the laboratory until it is reported. This is the number used in making decisions on whether to run a test in-house or send it to a reference lab.

Margin per specific procedure (test). Margin per specific test is an extremely important metric. It relates the difference between your reimbursement, such as that from Medicare, to the micro-cost of producing a specific test result. If this metric is negative, you will soon be out of business.

Average sendout cost. By tracking your average sendout cost monthly, you

can get a feel for changes in this activity, such as those that are caused by price discrepancies or changes in types of sendout tests.

Efficiency Metrics



Capacity. Capacity is defined as the theoretical maximum number of reportable tests per production unit. This metric allows us to gauge an essential component of labor costs: efficiency. To understand this indicator, we must first define a production unit as a work day. In a hospital lab this is usually 24 hours. However, in a doctor's office, a production unit may only be four hours. With this in mind, our theoretical capacity becomes the maximum number of reportable tests that our equipment would allow us to turn out during a production period. We can also calculate this number on an hourly, daily, or monthly basis for comparison to other laboratories.

Throughput and *available capacity*. The actual number of reportable tests per production unit is our throughput. If we subtract the throughput from the theoretical capacity, the difference will be the available capacity. This metric indicates the increase in volume that a lab will be capable of handling. It is important to track this number since it lets us know how much new testing the laboratory system is capable of absorbing without incurring major changes.

Process efficiency. Efficiency is defined as throughput divided by theoretical capacity. This number can vary greatly from lab to lab, even in those containing identical instrumentation, and it reflects how well the lab director is utilizing his/her department's resources. The less efficient we are, the more costly our operation is to run. In general, it is important to function at 80% or higher efficiency in order to survive financially.

Processing and *production*. Knowing what percentage of the production unit is actual processing time allows a fine tuning of other items related to efficiency. The work day (production unit) can be 24 hours, but if your testing personnel have responsibilities other than producing results (such as maintaining computers), processing time per production unit decreases. This in turn affects both capacity and throughput. Also, knowing the number of production units per month lets us calculate yearly capacity and throughput. This metric can also identify a situation where there is the possibility of increasing throughput by adding production units.

Reportables. The percentage of reportable tests per total tests performed gives an indication of efficiency as it relates to running repeat tests, controls, and calibrations. By tracking this number, we can identify any changes in our operation relating to wasteful repeating of tests, controls, or calibrations. An increase in any of these lowers efficiency and adds cost to the operation.

Big Picture Metrics

Average cost per day of a hospital stay, laboratory share of total cost of stay, and *number of tests performed per inpatient discharge*. Reducing the average cost of a hospital stay is what survival is all about under managed care. We should be tracking this number, even in the laboratory, to understand the overall status of our institution. More importantly, we should know what percentage of the total cost can be attributed to laboratory charges and the number of lab tests performed per inpatient discharge.

These indicators relate directly to utilization, and keeping them under control should be a primary goal for lab directors. If these numbers are high, they should only be allowed to remain so because we are using technology that reduces the overall length of stay and affects patient outcomes in a positive way. This latter effect is, at times, very difficult to prove or quantify.

Capitated outpatient test cost/month and *number of tests per capitated outpatient/year*. Knowing our capitated outpatient costs per month and the number of tests per capitated outpatient per year lets us calculate our profitability or lack of profitability on managed care contracts. This data also gives us information necessary for bidding on future contracts.

Summary

All of these metric tools aid in making our operation efficient and cost effective. Remember, today we are in the production business. We produce clinical laboratory test results. This is a hard concept for some of us to accept, but we must run our operation not just as a business but as a production business. The age of talking and planning is over—this is the age of action.

[1]Can be calculated using Excel, Lotus, or Sum*It* cost-accounting software.
[2]Usually expressed as a pie chart.
[3]Production costs refer to all costs incurred from the time the specimen hits the production floor (not collection, etc.).

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