

# Activity-based costing: selecting the right equipment for POC

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As point-of-care testing (POCT) becomes more popular in healthcare institutions because of its ability to deliver high-quality results at the bedside, point-of-care coordinators (POCCs) are becoming increasingly tasked with controlling costs.

To deal with this responsibility, POCCs often turn to equipment to solve their problems, without necessarily knowing if equipment is the solution.

One tool that can help POCCs make the right decision is activity-based costing (ABC).

Activity-based costing methodology can be used to determine if problems are process- or equipment-related.

After this analysis, if a decision has been made to purchase new POCT equipment, ABC methodology can

aid in the selection of the most appropriate equipment by calculating the full costs associated with the equipment.

Most costing systems focus on direct costs, whereas ABC also examines activity-related costs, which can account for a significant portion of the total costs.

Thus, ABC brings to light hidden costs that are often ignored in the equipment selection process.

## Introduction

In today's challenging healthcare environment, administrators are continually asked to do more with ever-shrinking operating budgets.

This has led to a change in attitude regarding what is expected from hospitals.

Shortened patient stays and a shift from inpatient to outpatient/ambulatory settings are becoming more commonplace.

As hospitals move from diagnostic centers toward treatment centers, demands are being placed on hospital laboratories to provide results in an expeditious manner to allow rapid diagnosis and treatment.

The result is a need for shorter turnaround times and increased demand for STAT testing [1].

To deal with this shift in expectations, point-of-care testing (POCT) is becoming more popular. The increased popularity of POCT is due in part to advances in technology that have allowed the development of portable analytical equipment that can be stationed at the bedside, rather than in the central laboratory.

Point-of-care testing equipment can now provide high-quality tests using whole-blood methodologies for a range of analytes, resulting in shorter turnaround times, thereby lowering costs through shorter patient stays.

Since CLIA certification for POCT is usually held by the laboratory in most hospital settings, POCT falls under the purview of the laboratory [2].

Point-of-care testing is typically supervised by a point-of-care coordinator (POCC). As such, laboratory managers look toward the POCC to help find ways to control costs. In turn, POCCs feel the pressure of finding ways to run their departments in the most efficient and cost-effective manner possible.

The first instinct of many POCCs to help them solve their problems is to turn to equipment. Newer, more efficient point-of-care testing (POCT) equipment or POCT equipment with more comprehensive test menus are attractive with promises of higher throughput and fewer labor requirements.

How can POCCs determine if new equipment will actually solve their problems rather than create new ones?

One tool that can help POCCs answer this question is activity-based costing, a costing system that was originally developed for the manufacturing sector, and which is now being adopted by the healthcare sector.

## Activity-based costing

According to the Harvard economists who developed activity-based costing (ABC), costs are not driven by the product itself, but through the activities needed to receive, manufacture and deliver it [3].

ABC looks at total cost in terms of three different components:

- **Value Adding Activities (VAA)** – activities that add value in the eyes of the customer
- **Non-Value Adding Activities (NVAA)** – activities that are deemed to add no value in the eyes of the customer and
- **Non-Value Added Waste (NVAW)** – anything other than the very minimum requirement in resources consumed to generate value

ABC uses activities to allocate indirect expenses to cost objects such as tests and samples.

The method is based on the logic that not all tests or samples require an average use of laboratory resources. Under ABC, only those tests or samples that require a particular activity will have the expense allocated to it.

ABC measures cost and performance by costing the activities generated to perform the work, thereby avoiding the cost distortion problems that are inherent in traditional costing systems such as full-absorption costing or marginal costing.

A POCC can benefit from using ABC because it provides a full understanding of one's costs – both what the costs are and how they are being generated. An understanding of what is driving their costs allows POCCs to streamline, standardize and improve their processes.

Once processes have been optimized, the POCC can then turn to equipment to help with any remaining issues.

## Equipment selection

Equipment selection should be viewed as a three-stage process: Stage 1 – Self-Assessment, Stage 2 – Request for Proposal (RFP) Process and Stage 3 – Post-Purchase Assessment.

### Stage 1 – Self-Assessment

What is the driver for change that is causing you to consider new equipment?

- Client dissatisfaction (e.g. complaints of slow turnaround times)
- Competition
- Vendor pressure
- Resource scarcity
- Aging technology
- Need for higher utility testing
- Because you want to
- Because you are being told to

The primary question a POCC should ask when considering equipment purchase is *“Do I really need new equipment?”*. The POCC must determine if new equipment will respond to the driver for change or if modifications to existing workflows and processes are required instead.

ABC can help you determine where the source of your problem lies and whether new POCT will actually solve your problem. To ensure that ABC can answer this question, the POCC must have an open dialogue with the current operators to determine the following:

- The activities that they perform
- The length of time it takes to perform them
- If there are certain aspects of the existing instrumentation the operators would like improved

Connectivity is a critical issue in POCT. With unconnected equipment, the operator must manually

enter data into the hospital information system. Therefore the connectivity, or lack thereof, of any new POCT equipment is a serious consideration in the above analysis because of its workload implications.

Cost of error is another important factor that needs to be calculated during this phase of the process.

Cost of error includes events such as mislabeled tubes, multiple attempts at venipuncture or improper specimen processing, what are referred to as internal and external failures in ABC analysis.

Internal failures refer to events that happen which are under the control of the laboratory (e.g., not centrifuging a sample that should have been sufficiently centrifuged prior to analysis).

External failures refer to events that are outside the control of the laboratory (e.g., mislabeling a specimen tube during blood collection).

Historically, laboratories are not good at capturing the cost of error and this can be a significant factor in terms of cost savings because the cost of error should be significantly reduced with POCT.

Another key aspect of the self-assessment phase is determining the baseline to which you can compare pre- and postimplementation performance. To determine the baseline for your operations, you should:

- Determine what areas are problematic
- Decide in which areas you want to improve
- Agree in which areas you can compromise
- Measure the activities that you perform

### Stage 2 – RFP Process

Once the decision has been made that new equipment is indeed required, a Request for Proposal (RFP) will be issued to solicit proposals from equipment manufacturers.

Traditional measures when assessing vendor proposals include:

- What test menu does the system provide?
- Can I speak to someone who is using the current system?
- Are there products (consumables, reagents, etc.) required and what do they cost?
- Are there any interface/integration costs?
- How fast is the system and will it meet our current and future needs?
- Has the vendor provided a project plan with dates and milestones for implementation?

ABC can help determine which equipment is the most appropriate for your particular situation. By using information provided by the vendor, your own operational information (e.g., test volumes, wages, etc.) and the following ABC measures, ABC software can be used to perform "What if" scenario analyses:

- What is the ratio of value adding activities, non-value adding activities and non-value added waste?
- Are there significant differences in certain activity groups between the current equipment and the new equipment?
- How do the activities for the new equipment compare to what we are doing today?
- Do we have the skill and resources to manage these activities?
- Would any of the changes being considered diminish the value we currently deliver?

Plugging all of this information into the software will allow you to calculate the total costs associated with one proposal and compare it to the total costs associated with another proposal. In this way, the POCC can determine which proposal actually provides the best overall value to the organization.

### Stage 3 – Post-Purchase Assessment

Following equipment purchase, ABC software can be used to hold vendors accountable for the promises made at the time of sale.

After purchase, all of the specifications provided by the vendor around setup time, reagent consumption,

calibration requirements, etc. can be entered into the software.

In addition to this information, the following questions should be answered:

#### Before the instrument is up and running

- Does our current resource skill meet the instrument requirements?
- How much training did we do versus the company?
- What resources did we expend that were not anticipated?
- Did we incur any unanticipated integration/interfacing costs?

#### After the instrument is up and running

- Do the activities match what the vendor claimed?
- Are there disproportionate increases in areas we did not anticipate?
- Are material use and cost tracking based on what was claimed?
- Are we expending more resources than anticipated?

The answers to all of these questions should be tracked and allocated to doing business with that vendor.

If the vendor's promises regarding a specific aspect of the equipment's operation turn out not to be true, an ABC costing system will allow the POCC to determine exactly where the problem lies.

The POCC can then go to the vendor and show them the promised outcome and the effect that the problem is having on costs.

### Summary

While POCT is usually considered more expensive than traditional laboratory testing, this may actually be a misperception when taking total cost into consideration.

Although the cost of analysis may increase, reductions in other areas such as cost of error and analytical time

may actually lead to a drop in overall cost. Point-of-care testing can be relatively expensive in terms of disposables, but in the long term, it can mean better patient care and shorter stays, which lead to orders-of-magnitude and more savings.

The decision to move toward POCT or to expand upon an existing POCT program should be based on a number of factors, including cost implications, need, resources and the potential for improved patient care.

Although relatively new to the healthcare sector, ABC is proving extremely useful in identifying, tracking and controlling costs. One of the more useful applications of ABC in POCT environments is to aid in the selection of new equipment. ABC can be used to determine if new equipment is actually required, and if so, what instrumentation is the most appropriate for your institution.

Remember, when applying ABC to equipment selection in the POCT setting:

- Assess yourself first to determine your own organizational needs and how you and your instrumentation deliver that value
- Determine if new equipment is actually required to deliver that value or if you simply require a change in workflow or process
- Do not rely on the vendor for system performance – you know more about your lab than they do
- Seek external assessments of vendors that provide unbiased opinions and measures
- Ensure that you can properly allocate costs to analyzers and vendors that create those costs
- Develop accountability measures to continuously measure yourself and your vendor partners

## References

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