



Need to purchase imaging equipment? Consider all costs of ownership



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As hospitals and clinics become more analytical about their purchasing decisions, they are starting to evaluate the total cost of ownership (TCO) of capital equipment, including portable capital equipment, rather than the initial outlay alone. Hospitals and clinics are recognizing that if they want to control and contain their costs, they must first understand what they're actually spending over the lifetime of their equipment.

New resources are emerging to support these calculations. At a recent Radiological Society of North America (RSNA) meeting, for instance, a forum was held where industry experts discussed critically important components of TCO for the purchase of imaging equipment specifically. These components included the financial, quality, and technical aspects of the equipment's future maintenance and repair. Similar resources include a recent retrospective study reported in *Imaging Technology News* and conducted by Alpha Source that calculated TCO in part by tracking the service history of a large, nationwide installed base of a specific type of ultrasound equipment over a three-year period (2010 to 2014). The evidence-based report considered the economic benefits and risks of comprehensive service contracts versus service and repairs billed hourly versus in-house biomed resources, and ultimately found a wide range of expenditures by type of ultrasound machine. Although the average total annual spend across all units was \$9,800 per year, the high end of the range was over 5 times (5X) that. Furthermore, about one quarter of the hospitals were found to have spent 50 percent more than the average cost of a contract, and 10 percent of hospitals spent twice the average annual price of a service contract by purchasing hourly billable service (T&M) and parts.

Such analysis is insightful and gets to the specifics needed for a TCO calculation. However, service and repairs are only part of the story regarding the total cost of owning imaging equipment— other categories of costs, discussed below, also need to be taken into account.

□ **Understanding Soft Costs**

While customers focus primarily on purchase price and secondarily on future costs, they often overlook what are known as "soft costs." These costs include those necessary to upgrade equipment as well as to train and educate users. Other "soft costs" that tend to be overlooked include how the vendor's maintenance track record and reputation may affect the equipment's trade-in value. Service rates and warranty specifics also vary by vendor. The following is a soft cost checklist of some of these components, and reasons why they need to be considered up front in the decision-making process:

Upgradability

It used to be that equipment was so hard coded that there was no such thing as a software upgrade. Today, customers can acquire systems with increasingly flexible platforms and software feature sets, many of which are updated remotely. When evaluating these options, purchasers must take into consideration the cyber security angle: can hospitals and clinics update or upgrade their equipment without exposing their data? Hospitals need to find vendor partners who have invested in an architecture that delivers those upgrades while also protecting customers from cyber security risks.

Training and Education

When thinking about total cost of ownership, hospitals need to make sure the technology vendor behaves more like a partner by educating its users into expertise. For instance, the vendor should provide a robust training program that can give users a high level of confidence to operate, and to a certain extent troubleshoot, the equipment they will be working with. That training must necessarily comprise both onsite and online modules to satisfy the need for in-person communication as well as access on demand, any time. Forward-thinking OEMs are today providing training portals that include a rich array of technical how-to content; application/use case advice and techniques; and workshops, seminars, and other formats that feature increasingly sophisticated multimedia. If the OEM is offering all of these resources as a value-add benefit, it represents a major cost saving for a healthcare institution because training and education can be an expensive proposition.

Track Record

In the automotive business, there is a great deal of data regarding the average cost of repair across brands at 150,000 miles. Unfortunately, much less data is available on a side-by-side basis with medical equipment. However, most manufacturers can glean that data through their warranty service contract records. Smart buyers are now asking for that information, as they should, when entering into a competitive bid for new equipment. It might be helpful for those who use third-party service providers to ask for those organizations' data on the cost to service equipment by manufacturer.

Downtime and Redundancy: Importance of Rapid Replacement Loaners

Some unseen, underestimated, and hard-to-capture costs revolve around equipment failure and downtime. A cascade of problems and related costs occur when this happens, including the disruption of patient care, lost revenue, and the need to buy additional equipment as a backup. Resulting delays in care can also increase a patient's length of stay (LOS), or the LOS for an entire cohort of patients, for that matter. That metric is of course an important factor on the hospital's quality scorecard; poor performance in terms of LOS can lead to financial penalties as well as threaten patient satisfaction scores (to say nothing of staff dissatisfaction). Equipment failures also hinder patient flow, causing problems with scheduling and other areas of workflow. And while scheduling problems can be a headache, the more dire threat is to patient care. Delays can pose a critical threat to patient health under certain clinical circumstances; in these circumstances, too, the added stress on staff can be severe.

When an ultrasound system fails, especially if it is being used at the point of care, the substitution of other imaging modalities can be expensive (think patient transportation costs and delays due to unavailability or other bottlenecks). The risks multiply and become more acute if the patients being transported are critically ill. Finally, the likely substitute when an ultrasound machine is down is a CT scan—a much costlier alternative that also increases patient exposure to radiation. In the absence of a loaner program or rapid equipment replacement, these and other dislocation-related costs must become part of the overall TCO calculation. Choosing a vendor with a track record and infrastructure to provide 24-hour loaner turnaround would eliminate most of these costs and concerns.

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Warrantees and Service Rates

An OEM's warranty is a good barometer of their confidence in the quality and durability of their equipment. Customers with longer warranties often have a lower TCO as those policies cut service costs significantly. Robust, longer warranties can help keep annual service costs in check—as low as 2% of the purchase price versus the high end, which can range from 10-14%.

Aside from warranty duration, providers should study the contract for details about coverage before a purchase decision. Some of the strongest warranties cover user-driven failures, for instance. Warranties that cover expensive ultrasound transducers from user-driven perils like damage from drops can save the purchaser considerable money. In many ways, warranties are the real linchpin of a TCO calculation. Organizations such as KLAS rate who has best-in-class user experience; these evaluations are worth referencing when considering a medical equipment purchase. An in-depth examination of warranties with advice will follow in a second article in this publication.

Service Rates

Not all OEMs charge the same service rates. Hospitals and clinics considering a technology purchase need to understand not only the duration and coverage of its warranty but also the rates that the OEM will charge for service after the equipment is out of warranty. Customers should reference OEM published rates when considering a purchase, and add these costs into the TCO calculation. Like many of these other soft costs, these rates can vary greatly and are usually realized when it's too late. Proactive and customer-centric OEMs can do their part here by helping customers better understand their overall service contract options, including whether they can dispose of a service contract altogether if they meet these needs with a solid, comprehensive warranty, at least until the warranty expires. While system durability should be the key driver lowering the TCO, there are other contributing factors. One includes robust OEM training to in-house biomedical departments, at no cost, to troubleshoot on first-level issues. OEMs can save hospitals and clinics significant expense by ensuring that in-house biomed departments are trained to deal with the simple issues that don't necessarily require the involvement of the company or third-party service. A large Southwest medical complex successfully lowered their ultrasound system TCO in part by working down their service rates. With an installed base of 391 systems, they were able to achieve annual service costs of .10% and a TCO 1.60*

Trade-in Value

A TCO discussion is incomplete without looking at the future trade-in value of a system. If the value of the equipment declines because of a poor reputation for longevity, high repair costs, or upgradability limitations, the cost of ownership is higher due to a presumed lack of trade-in value. When purchasing a brand and system, reputation and resulting resale value matters. Equipment owners should look at longitudinal data that points to resale value in the purchase decision, and check in along the way as a system ages.

Component Interchangeability

Most readers are familiar with the need to purchase a new array of accessories and components every time they upgrade to a new smartphone (think chargers or cases). Purchasers of ultrasound systems can help bring down the TCO of their equipment when important components are designed to work across systems of that generation, and even across subsequent upgraded models. In the case of ultrasound, when expensive components like probes are made to be interchangeable, that can save owners significant money and reduce the TCO.

Conclusion

A better understanding of true TCO will enable providers to make smarter decisions about durable imaging equipment, and ultrasound in particular. An article to follow will focus on one of the consequential and complex aspects of TCO, the warranty.

*Installed base of SonoSite Point-of-Care Ultrasound Systems. Annual service cost based upon percent of equipment purchase cost, and TCO cost based upon combination of extended warranty and annual service cost as a percentage of equipment purchase since 2000/2001

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