Five Costs You Don’t Typically Associate with Clinical Engineering

Understanding the role CE plays in preserving the bottom-line

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It’s easy to pinpoint certain areas of the hospital where spending habits could be improved. Maybe there’s a different brand of consumables that could save you money, or perhaps you’re overstaffed in a department that isn’t generating enough revenue. There are other areas, however, that require a closer look. One of those is clinical engineering – sometimes called biomedical engineering, or even healthcare technology management. Unbeknownst to you, this department may be operating inefficiently, which can cost your hospital significantly, in terms of equipment downtime, preventative maintenance and repair costs, and even making equipment-purchasing decisions that don’t align with hospital goals.

It doesn’t have to be this way – in fact, it should be quite the opposite. An effective clinical engineering department should be one area in which your hospital is consistently saving money. But in order to have a department like this, there must first be a clear understanding of what clinical engineering is and is not. We’ll examine that topic first, and then take a close look at five “hidden costs” – items you may not typically associate with clinical engineering, but those that can provide the most cost savings to a hospital with an effective clinical engineering department.
What Clinical Engineering Is Not

Let’s begin with some common misperceptions about clinical engineering. As we previously mentioned, the department can go by several names, and that in itself can be confusing. There is a “break-fix” mentality among many hospital employees – “aren’t those the guys that fix something once it breaks?” Well, yes, but that just scratches the surface. Are those the guys that change light bulbs? No. Do they fix our elevators? No. Do they manage our service contracts? Yes.

The major misperception of clinical engineering is that they’re not strategic. This couldn’t be further from the truth. One of the greatest mistakes a hospital can make when making capital equipment planning decisions is not inviting a voice from clinical engineering to the decision-making table, which we’ll discuss in more detail later.

The department operates independently of vendor services, and relies solely on its own technicians who’ve been thoroughly and routinely trained to provide solutions and support round the clock. The hospital as a whole will experience increased equipment uptime, decreased costs and an improved revenue stream when the clinical engineering team implements a comprehensive medical equipment lifecycle plan.

A best-in-class clinical engineering team takes control of medical equipment capital equipment planning, purchasing, implementation, service and repair, and end-of-life management. The department knows which service contracts to retain (there are certain instances where it does make sense to keep a service contract), what to bring in-house, what to fix, when to fix it and when to replace equipment without relying on outside service providers or OEMs, which can drive up costs. They should train staff on how to prevent user error, damage, and abuse through proper equipment use.

What a Best-in-Class Clinical Engineering Department Looks Like

A well-functioning clinical engineering department is more than just purchasing and managing medical equipment – it should be viewed as comprehensive medical equipment management. Clinical engineering should be driving total cost of ownership analysis and delivering high utilization of equipment and financial goals. They should be data driven, and be able to provide valuable information regarding inventory, downtime, productivity needs and regulatory issues – all which help the management team make informed decisions and accurately forecast equipment needs. A best-in-class team is strategic, and can illustrate the “bigger picture” when it comes to equipment within your hospital today, and what’s coming in the future.

A best-in-class department manages all medical equipment across all modalities/departments with little-to-no reliance on OEM service contracts.
A Seat at the Decision-Making Table

Today, a small percent of integrated delivery networks (IDN) or large hospitals are truly operating best-in-class clinical engineering departments, thus giving up millions of dollars in costs and lost revenue each year. One simple way to begin realizing cost savings from your clinical engineering team is to give them a seat at the capital equipment planning decision-making table in your organization.

The hospital should look to clinical engineering for recommendations based on what will save the hospital the most money in the long run – not bells and whistles or extra features, or even what certain doctors claim they “need.” As we’ll discuss later in more detail, clinical engineering can help a hospital avoid bad short-term decisions, or decisions that make sense in the moment, but don’t align with the hospital’s long-term goals. Short-term decisions can cost a hospital thousands – maybe even millions – of dollars.

The Hidden Clinical Engineering Costs Lurking in Your Hospital

In a time where every dollar counts, now more than ever, uncovering hidden costs can potentially save a hospital millions annually and the first place to look is the clinical engineering or biomedical department. Let’s first make a significant distinction – one between looking at equipment versus staff for hidden costs. Many hospitals immediately look to human capital when cutting costs believing they may be over-staffed. However, the reality is most hospitals are adequately staffed with talented engineers that are more than capable of helping the organization save time and money but are extremely over-equipped putting additional strain on the department and costing thousands of dollars annually.

A good exercise to begin to uncover hidden costs in clinical engineering is to conduct a current state assessment of 10 departments in the hospital. Find out what it costs to operate each department and what areas could be streamlined to gain efficiencies. For example, there may be ways to leverage economies of scale with OEMs/vendors throughout the organization and centralize processing (invoicing, purchase orders, etc.) which inevitably reduces the burden to staff freeing up clinical engineers to focus on cost saving and best practices rather than additional paperwork and maintenance on under-utilized equipment. Here are the top five hidden costs you’ll likely uncover in this exercise.

1. **Service and OEM Contracts**

   Service contracts are usually put in place by OEMs at the time of equipment purchase. They are, as their name suggests, contracts for ongoing service and repairs, and come at a high cost to the hospital. If a piece of equipment breaks outside of business hours? It’s going to cost you even more. If your facility’s clinical engineering department is not yet to the “best-in-class” level, your best bet is to engage in upfront negotiations with manufacturers in an effort to save money. Hospitals should opt for short-term maintenance and warranty programs of less than two years. If there is a constant flow of repair work (which there typically is on a high-volume piece of equipment), it makes the most financial sense to invest in training your in-house staff to make repairs versus relying on the OEM. This approach can significantly improve response time, reduce downtime and eliminate exorbitant costs by leveraging on-site expertise of individuals who are
more familiar with the device and its business purpose for the hospital. Moreover, in-house technicians and engineers who work flexible shifts often can conduct performance assurance and repairs after-hours to avoid interrupting patient care.

If your hospital has already committed to a long-term service contract, it should weigh the financial impact of breaking that contract (possibly through an out-clause) and paying a penalty to save money in the long run by using in-house clinical engineers for maintenance and upkeep.

Of course, the biggest hurdle to training your own staff is finding the time to dedicate and money to invest. The reality is the money saved on expensive service contracts and long repair times can be saved to invest in training onsite staff to service, maintenance and repair devices as well as anticipate the life cycle of equipment. It’s likely the staff is more than qualified and capable of carrying out the job; it’s just very unlikely they’ve received the proper training needed. By increasing the skill level of staff onsite, the overall cost of service contracts and related repair and downtime are decreased significantly saving thousands of dollars a year.

2 Mismanaging Equipment throughout the Lifecycle

Equipment lifecycle can be broken down into two phases: 1) Acquisition cost and 2) Maintenance cost. Both are important and must be considered equally when determining overall lifecycle costs. Capital isn’t as easy to come by as it once was, so breaking down costs over the lifecycle is vital to keeping spending minimal. Consider the following:

> Capital sourcing: Use an unbiased third-party or internal employee, if possible. Develop a RFP template and common criteria with which to judge each OEM consistently. Your clinical engineering department should be able to provide you with a service history for that piece of equipment, as well as the response times of OEMs vying for your purchase. It is also helpful to know your history of negotiation with various OEMs to determine who’s going to give you the best deal for the long-term.
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Site preparation/installation: Can your physical space handle the equipment you’re considering? How will you get it in the door? Have you considered floor loading, lighting, electrical and water access? You must carefully prepare the physical site to ensure your new equipment will be installed properly and serve its given purpose.

Incoming inspection/acceptance testing: How will you make sure the equipment is functioning as it was sold to you? Ask an independent agency to test it.

Warranty: Typically OEMs sell a one-year warranty, but it’s possible to shorten or even eliminate the warranty if you have a skilled CE staff who can manage repair and maintenance. Or, you can extend the warranty but forgo service contracts.

Preventative maintenance (PM): A CE team can schedule preventative maintenance after hours to ensure minimal equipment downtime (and maximize patient throughput).

Repair: How will you handle repairs? As we previously discussed, an in-house individual or team is a smarter (and many times smaller) investment than an OEM service contract.

Replacement criteria: How will you decide when it’s time to replace a piece of equipment? Decide now what quantitative measures you’ll use to ensure consistency. Consider factors such as age, physical condition, whether it’s living up to expectations, whether it’s become obsolete and whether other equipment will better meet your needs.

Disposal: When the equipment has completed its lifecycle, how will you dispose of it? We recommend donating. It’s a tax write-off, and there’s an immense need for medical equipment in hospitals in third-world countries. A great resource on this topic is the TriMedx Foundation – www.trimedxfoundation.org.

Short-term Decisions during Capital Planning Process

As previously mentioned, short-term decisions based on emotion, or the “latest, greatest” product that doesn’t align with long-term hospital goals, can cost a hospital big in wasted equipment purchases. If clinical engineering isn’t seated at the decision-making table, you run a great risk of making ill-fated, short-term decisions that could have a lasting negative impact on business.

During the capital-planning process, be sure you’re aligning department spending with overall hospital growth goals. When planning for a particular department’s equipment needs, department managers should consider the larger organization’s overall goals. For example, is it positioning itself to become the area’s number one bariatric services provider in the next five years? Is it adding a children’s hospital or a diabetes care center? Department managers should facilitate communication with the hospital’s administration, and make sure their equipment purchases match up with the hospital’s strategic goals to avoid overspending later.

It’s also crucial to the success of your capital-planning process to build in metrics and benchmarks. These allow you to understand where you are today versus where you want to be, or what you’re trying to accomplish, and how you’ll measure success. To piggyback on the example above, if a hospital’s goal is to become the number one bariatric services provider, examine what equipment you have today, and what you still need. Identify your equipment gaps, which could also include what you currently have that’s old and what needs replaced (and when does it need to be replaced?). How will you go about purchasing new products – who from the hospital will you engage? Remember that it’s not just operations and finance that need to be included in capital planning. From the beginning of your planning process, involve information technology, telecommunications, physics, construction/real estate, clinical engineering, supply chain, materials, legal and
A Real-Life Best-in-Class Clinical Engineering Department

The St. Mary’s of Michigan clinical engineering department, a long-time TriMedx partner, first implemented a sterilizer support program, in which they teach fellow technicians how to repair sterilizers and related components like pumps and injectors. Part of this program is a resource-sharing process, which means the St. Mary’s clinical engineers are notified when other TriMedx-employed technicians need help troubleshooting their sterilizers. The team also refurbishes sterilizer parts, in an effort to keep costs down. A rebuilt part, for example, saves approximately $7,000-$10,000 per unit versus buying new.

Some St. Mary’s service technicians travel across the country to provide help and training so hospitals can rely less on help from a vendor, which can be costly. One clinical engineer illustrated his dedication by traveling from Michigan to a hospital in California during the week of Christmas to handle a repair that needed immediate attention. After 30 straight hours of work, the repair was done at a fraction of the cost that an outside vendor would have charged (typically $600/hr. for vendor overtime) – and the tech arrived home just before Christmas. The total cost savings for the trip was $19,765.

Most recently, St. Mary’s implemented an on-site training program at their facility where technicians come to St. Mary’s to receive in-depth, hands-on sterilizer training in a classroom setting complete with sterilizer unit. To date, 18 technicians have participated in the on-site training, which also includes information on part sourcing, and how to work with OEMs on cost containment, if needed. The training center, in addition to all of St. Mary’s work in sterilizer support throughout all TriMedx customer hospitals, helped save approximately $300,000 just within Michigan sites last year.

The St. Mary’s team didn’t stop with sterilizers, though they continue to expand their offerings there, including a preventative maintenance (PM) kit, which saves approximately $2,000 per kit versus purchasing through an OEM. They now do surgical microscope repairs, and also centralized test equipment. They’ve also brought 70 percent of St. Mary’s lab services in house. Last but not least, they help TriMedx customers throughout Michigan source used equipment that can be redeployed. Recently, they found two Sequoia ultrasound machines sitting in a hospital’s storage warehouse, and the hospital purchased them both for $8,000. Purchased new, these units would run $60,000 each.

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the end-users – doctors, nurses and other clinicians. Ensuring that the typically “last to know” people are part of the planning process means you’ll make smarter decisions that will benefit the entire hospital. It will also save you valuable time and money, making the right decision up front.

4 Equipment downtime

Equipment downtime, failure, and disasters can set off a chain of events that can lead to a patient transferring to a different hospital for care – and a transferred patient means transferred revenue. As we previously touched on, oftentimes having an in-house employee trained to make repairs should a piece of equipment go down means a quick repair, savings on repair costs (over having an OEM or outside service provider repair) and decreased revenue loss. In addition to equipment break-down, there are many other situations that could lead to equipment downtime. For disaster recovery plans, the hospital should consider the types of adverse events that may happen in the local area (e.g., bomb-ings, oil spills and natural disasters such as hurricanes, earthquakes, floods, forest fires, landslides and tornadoes) and determine what and how much equipment and personnel would be needed to respond. The clinical engineering department should be included in the planning process so they can provide input and recommendations. Other, more common situations, would include downtime due to de-installation, room preparation and new equipment reinstallation. Considering all of these situations and having a plan in place ensures the patient – and the revenue stream – stays in your hospital.

5 Failure to Invest in Team and Training

One area that often gets overlooked is human capital. It’s vitally important to align and re-engage staff so that you are fully utilizing your talent assets. A typical clinical engineering staff consists of highly qualified professionals who may potentially lose interest and become disconnected because they are working with older, lower-end equipment and are not receiving the training they need to perform the tasks they want to do (and are capable of doing). Training, by far, is the biggest barrier that technicians face and the root cause of disengagement.

As we previously touched on, budgets are usually not in place to appropriately train staff. Hospitals instead invest in OEM contracts that end up costing more than training their own employees. Although some hospitals have a strong, functioning clinical engineering department in place and talented staff, the facility may still be very contract-dependent.

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The quickest way to move toward independence from OEM contracts is to invest in training and staff. It is proven that effective and appropriate training can save time and money as well as possibly extend the life of the devices; not to mention a trained staff is one that is engaged and feels like he/she is able to use their talents to contribute to the continuum of care.

When you think of training, you must think beyond modality training and start to think about all the ways you can use your technology to pull in operations metrics to help build the training program. Modality training is necessary and needs to happen frequently, but how are you engaging your staff to be more efficient? How are you encouraging them to participate in a culture of knowledge sharing? How are you creating opportunities for employees to take ownership of his/her roles and responsibilities?

In a successfully trained department you should have associate engagement where employees are sharing knowledge with other facilities. The department has
developed a service center for one modality and is staffed with trained technicians in each center. All of the training is coordinated through a single process and data analysis is in place to identify and justify additional training opportunities.

There is planning for internal promotions with successors already trained. Opportunities to be trained and to advance a career go a long way to engage staff and eliminate costly attrition from a less motivated department.

All of these training attributes lend to fully engaged employees, increased uptime, decreased costs on service and repairs, and remote support available 24/7 for speedy repairs saving the system thousands of dollars a year in costly service contracts.

Conclusion

By now, it should be clear that a best-in-class clinical engineering department, which is fully integrated into the capital decision-making plans of a hospital, is a vital asset to a hospital’s comprehensive equipment management and purchasing program. This same clinical engineering team, in partnership with the hospital, can avoid the “hidden costs” we just outlined, and ensure a hospital is acting as cost-effectively as possible.

But how do you get there? Independent third-party companies, like TriMedx, can walk you through the process of transforming your current clinical engineering practices to best-in-class. A unique “in-sourcing” program means that TriMedx “lives” within your hospital, trains (and oftentimes hires more) staff to reduce service contracts. This model also makes it easier on the finance department – instead of generating 5,000 POs for 10 departments, we offer one invoice for a myriad of services: clinical engineering staff, training, negotiating service contracts, preventative maintenance, access to a local call center, procurement, end-of-life equipment management and much more. Your existing program fits into ours – thus creating a strong partnership designed to save your facility thousands, even millions of dollars, immediately.

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