

Out of Control

How clinical asset proliferation and low utilization are draining healthcare budgets

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What do infusion pumps and taxicabs have in common?

There are hundreds in circulation, but you can never find one when you need one.

Unfortunately, it's no joke. Hospitals today are glutted with underutilized clinical devices. Equipment like ventilators, infusion pumps, and telemetry units typically make up more than 95% of a hospital's clinical asset inventory, representing thousands of devices and an investment worth tens of millions of dollars.

Yet, according to data gathered by GE Healthcare, the average utilization of mobile devices is an anemic 42%, meaning that over half of the fleet is idle (but still accruing expenses) at any given time. And despite the seeming oversupply, availability is inconsistent at best; for example, nurses spend an average of 21 minutes per shift searching for lost equipment.

Now for the bad news: The situation is getting worse.

The costs associated with mobile clinical assets are rising. This will not be news to most healthcare managers, but many may not realize how sharply the cost per bed has increased over the past decade—and the reasons why. Most healthcare institutions do not have a clear picture of the scope of the problem and how much money is being spent on assets that are adding little or no value to patient care. As a result, there may be insufficient attention paid to examining and improving how these devices are managed and utilized.

In this white paper, we hope to shed light on the problem by providing data that chart the stratospheric increase in the costs associated with mobile devices. Several key findings emerged from our evaluation that may have implications for your situation. Between 1995 and 2010, we found that hospitals experienced a dramatic shift in their mobile asset profile, with, on average:

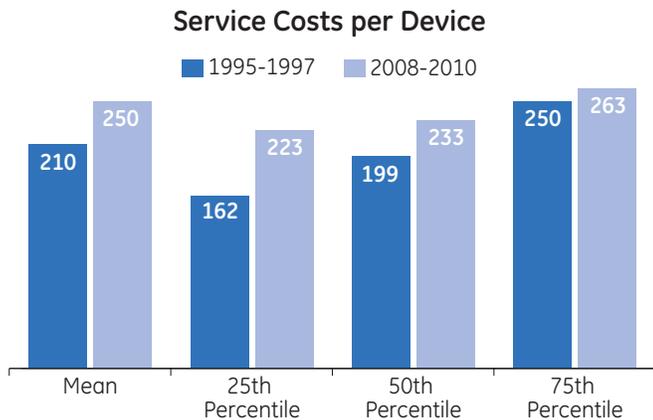
- A 62% increase in the number of clinical devices per bed
- A 90% increase in the service and maintenance costs per bed, despite the fact that the cost of service provision has exhibited only a small inflationary rise

This white paper identifies the key factors driving this increase, discusses the implications for healthcare facilities, and suggests actions that healthcare managers can take now to rein in costs. We believe that hospitals have the opportunity to save hundreds of thousands of dollars currently being misspent on underutilized assets and redirect this money toward critical hospital initiatives that may benefit from a cash infusion—such as staffing, infrastructure improvements, and service expansion.

Methodology

To investigate the changes in mobile device inventory and associated costs, data collected by the GE Healthcare Asset Management team from 45 hospitals across the U.S. were analyzed. The data were collected from 1995 to 1997 ("1995") and from 2008 to 2010 ("2010"), and included number of staffed beds and mobile device inventory count. Data on service and maintenance costs associated with the mobile devices were available for 1995 only. Using cost data for a sample of 29 institutions with demographic characteristics that were not statistically significantly different from the original sample, 2010 costs were projected for the 45 hospitals using regression techniques. To evaluate the changes in service costs per device, number of devices per bed, and service costs per bed from 1995 to 2010, regression models were developed to adjust for hospital characteristics, including case mix index, bed size, location, and other variables.

Service Costs: Only a modest rise

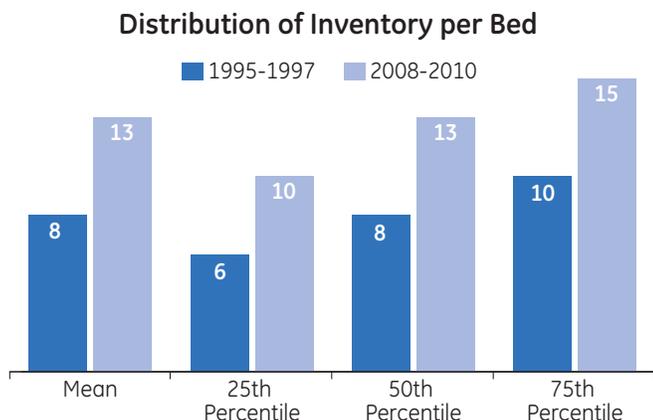


According to our cost analysis of mobile clinical assets over the past 15 years, service and maintenance costs per mobile clinical device (including labor and parts) rose 19% between 1995 and 2010. The average (mean) cost to maintain a mobile device increased by \$40, from \$210 to \$250 per year.

Over 15 years, the cost to serve inflation is up only 1.3% compounded annually, which is modest compared with increases posted by other indices during approximately the same time frame. For example, between 1989 and 2009, the average annual rate of increase in the consumer price index (CPI) was 2.8%; the Medical Care CPI, 4.7%; and the Medical Care Services CPI, 5%.

The takeaway is that service costs per device remain a relative bargain, having remained at or below inflation. This is due to many factors, including the rigorous efforts of hospitals to hold the line on service costs by freezing biomedical staff counts and paring service coverage to the bare necessities. As you will see in subsequent analysis, we believe the primary driver of rising asset maintenance costs is not the cost to service each individual asset but rather the overall number of devices being managed.

Number of Devices: Skyrocketing increase



According to the GE Healthcare analysis, the average number of mobile devices per staffed bed increased 62% on average between 1995 and 2010:

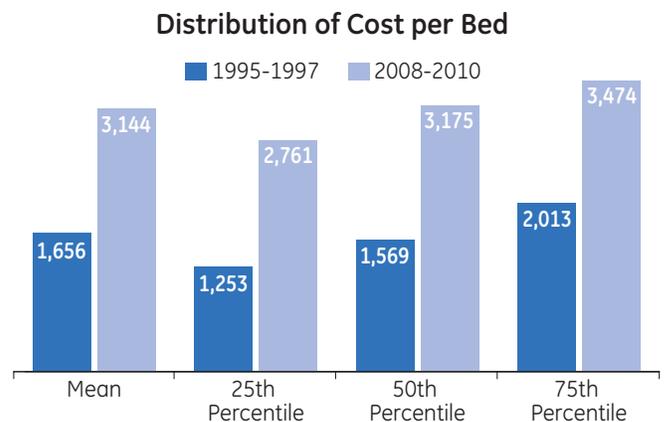
- In the mid- to late 90s, the typical staffed bed had eight devices. Today, there are 13 devices per bed.
- Hospitals with the leanest asset inventories still increased from six to 10 devices per bed. Those with the highest counts increased from 10 to 15 devices.

This finding, coupled with the fact that asset utilization remains low in most hospitals, indicates a serious problem. To be sure, there are more types of devices available today than there were in 1995. At the same time, advances in technology are leading to more functionality being combined in a single device. Portable monitors used to only measure blood pressure, and there were just a few on each nursing unit. Today, monitors handle blood pressure, pulse oximetry, temperature, EKG, and other vital signs—and there is one at every bedside.

The reduced cost of clinical devices and changing accounting practices may play a role in the burgeoning supply. In the past, any asset over \$500 would be capitalized; today, many hospitals have raised the bar to the \$1,000 to \$5,000 range and treat devices that cost less as a consumable supply, leading to a “throw-away” mentality.

Many hospitals also believe, in error, that it is less costly to address equipment availability issues by leasing, renting, or buying more units—rather than optimizing how existing devices are managed and distributed. This “redundancy” strategy backfires as the additional equipment simply gets swallowed up in the system, further driving up costs.

Cost per Bed: Out of control



As this graph indicates, the service and maintenance costs associated with mobile devices has nearly doubled in the past 15 years, demonstrating a rise of 90%. On average, the cost per bed rose from \$1,656 to \$3,144 per year—an increase of \$1,488.

Hospitals with lower costs in the earlier time period experienced the steepest rise (120%) while those at the other end of the cost spectrum saw their expenses jump by 72%.

For a 200-bed hospital, on average, the service and maintenance costs associated with mobile clinical devices have increased from \$331,200 to \$628,800 per year. A 400-bed hospital now expends \$1,257,600 each year, compared with \$662,400.

Considering that the cost-of-service provision has remained essentially flat, this increase relates directly to the bloated device inventories in most hospitals. An additional sobering fact is that our analysis focuses solely on the costs associated with asset service and maintenance (labor and parts). It does not take into account the many other significant costs associated with new devices, including the cost of acquisition (lease, rent, purchase), supplies, consumables, software agreements, staging and installation, and user training. With nearly twice the number of devices flowing into hospitals, those costs have significant impact on the capital and operating budgets.

Balancing the asset-to-patient ratio

The number of mobile clinical assets is skyrocketing, along with associated service costs, while utilization remains below 50%. It is clear that the majority of healthcare organizations are not linking device acquisition to usage patterns or clinical need. While 100% utilization is impossible, we believe 70 to 80% is a realistic, achievable target.

In our work, we find that hospitals generally have about 25% more mobile devices than they can actually use based on patient volume and case mix. By understanding how this equipment is managed and deployed in patient care and then developing more effective policies and processes to govern its utilization, we believe that healthcare organizations can:

- Make significant inventory reductions
- Reduce capital and operating expenditures
- Improve care efficiency and patient safety
- Increase staff productivity and satisfaction

How can hospitals achieve a more cost-effective asset-to-patient ratio in order to realize these goals? Among the key steps that should be taken:

Conduct a physical inventory. You can manage only what you know. In our experience, mobile clinical asset inventory counts at most hospitals are off by at least 60%. Even though nine out

of 10 devices in a hospital fall into this equipment class and represent an investment in the tens of millions of dollars, most hospitals lack an accurate accounting of these assets.

Optimize workflow processes, then stocking levels. Inventory reduction alone will not improve utilization or drive down costs. A hospital with 350 beds and 700 infusion pumps will not achieve efficient utilization simply by cutting inventory in half. It has to optimize management and distribution to meet patient care needs and staff workflow realities—and then establish stocking levels consistent with the new workflow. It is worth the time to consult with and observe clinical and biomedical staff to understand utilization patterns, identify wasted steps and roadblocks, and develop better methods for asset distribution. The key is to develop a process that leans out inefficiencies while aligning with the organization's culture and workflow preferences.

Develop a replacement strategy. One reason for the burgeoning inventories of mobile clinical assets is that subjective input often drives acquisition decisions. A nurse manager reports difficulty locating telemetry monitors on his or her unit and 10 more are leased, rather than investigating why the ones that should be available are missing. These requests are made in good faith and with the best of intentions for patient care. The trouble is, they often obscure a systematic workflow problem rather than dealing with it. What's needed is an objective counterbalance to ad hoc decision-making that enables the hospital to weigh individual requests against an overall strategic plan for equipment replacement. With such a plan in place, leaders will be better able to prioritize competing demands for limited capital and ensure that the organization has the proper type and number of mobile assets on hand to meet patient needs in all care areas.

While all healthcare organizations are different, virtually every one can benefit from rethinking the way that mobile clinical assets are acquired, managed, and distributed. Consider, for example, six recent engagements in which GE Healthcare Asset Management experts worked with healthcare organizations to improve their clinical asset management. In aggregate, these organizations—which ranged from a community hospital to multi-site health systems—were able to save more than \$6 million, remove more than 600 pumps from circulation, reduce asset acquisitions by 85%, and realize a 62% improvement in cleaning effectiveness. The experience of these organizations and others suggest that the key to controlling service costs lies in examining your entire clinical asset “ecosystem.” Get your inventory and utilization under control and the cost reductions will follow.

Action delayed, opportunity lost*			
	Service cost per device	Inventory per bed	Cost per bed
1995	\$210	8	1,656
2010	\$250	13	3,144
% change	19%	62%	90%

*All numbers using mean. After adjusting for hospital characteristics, the changes between 1995 and 2010 in all three measured parameters—service cost per device, the number of mobile devices per staffed bed, and cost per staffed bed—were statistically significant ($p < 0.05$).

Healthcare managers know that their organizations are spending more on mobile clinical devices—but the percent of increase may be surprising. According to data collected from more than 70 hospitals nationwide, your hospital's mobile asset inventory probably has increased by more than 50% in the past 15 years. The cost of maintaining those assets now totals around \$3,144 per bed per year—a 90% increase.

What makes this “asset explosion” truly concerning is that your hospital is spending all this money on devices that are probably utilized only half the time—or less—for patient care and may not be needed at all.

Healthcare organizations can no longer delay in addressing the issue of clinical asset utilization. In this era of belt-tightening and to-the-bone reductions in staffing and services, the money saved by right-sizing your clinical asset inventory and optimizing your asset management processes can be redirected to other critical areas in the organization.

According to our calculations, the average 200-bed hospital could avoid \$1.3 million in capital expenditures and reduce annual service costs by \$160,000 simply by reducing its mobile devices by 25%—a reasonable and achievable goal in our experience. Imagine if it were your hospital realizing those savings. How could that money be applied toward achieving your organizational goals?

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¹Hospitals (n=45) included in the analysis were mostly urban (87%) and had a teaching designation (73%). Over half (58%) had more than 200 staffed beds. Hospitals were located primarily in the South (76%) and West (20%) regions of the US.

²Donahoe G. and King R. "Estimates of Medical Device Spending in the U.S." May 2009. Available at: http://www.amsa.org/AMSA/libraries/committee_docs/king_paper_medical_device_spending.sflb.ashx

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