Healthcare Cost Containment

Reducing Emergency Department Volume—and Costs

One health network’s solution to reducing non-emergency cases in the emergency department requires a change in culture—for patients and physicians.

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Mobile clinical assets are indispensable in healthcare delivery. Whether the asset is an IV pump, a bedside telemetry unit, or a wheelchair transport at discharge, virtually every patient depends on such mobile clinical equipment during a hospital stay.

Unfortunately, many hospitals lack effective management and distribution processes for mobile equipment. Nationwide, hospitals are overspending billions each year—usually unknowingly—on mobile assets that are not utilized effectively. Despite more than adequate inventories, equipment often is not available when needed. As a result, more units are bought, leased, or rented. And those, in turn, get lost in the system and underutilized.

On average, healthcare organizations spend 50 percent of their clinical asset management dollars on biomedical equipment. Although most are careful to maintain comprehensive usage logs on high-end medical equipment, such as radiology devices, they often lack similar data on biomedical equipment, such as pumps and scopes.

By turning their attention to how these mobile clinical assets are managed and used in their organizations, then developing effective policies and processes to optimize their utilization, we believe that healthcare organizations can:

- Achieve inventory reductions of up to 25 percent, with a corresponding decrease in capital and operating expenditures
- Improve care efficiency, patient safety, and staff productivity by ensuring the right equipment—clean and in working order—is available at the right time in the right place

Asset Utilization: The Missing Consideration

Because mobile clinical assets are considered a fixed-cost item, healthcare organizations tend to focus on two controllable factors in managing their costs related to these assets: the direct costs related to mobile equipment acquisition and the maintenance expense. But a third variable—asset utilization—is equally critical. Determining how effectively an organization’s mobile clinical assets are actually being used is seldom evaluated as rigorously, if at all.

Consider the typical acquisition process for new mobile clinical equipment. The CFO/COO will base the volume of purchased units on a multiple of the census or simply ask nursing what’s needed. Nurses who are tired of searching for equipment may ask for a 20 percent increase in mobile clinical equipment. Without data that reflect actual utilization of existing mobile equipment, hospital administrators will have a critical knowledge gap.

When managers do examine utilization patterns, it can become painfully clear that asset distribution is ineffective to the point that timeliness of care is jeopardized, staff productivity is suffering, and capital and operating budgets are negatively impacted.

Looking at the costs associated with IV pump mismanagement provides a snapshot of the savings possible by optimizing asset utilization. If a 200-bed hospital can reduce its inventory of 400 or more infusion pumps by 100 through more effective management and distribution—a realistic goal in our experience—it can achieve $300,000 to $500,000 in savings by reducing rentals, terminating leases, and avoiding unnecessary capital expenditures during the next pump purchase. In addition, decreasing a pump fleet by 25 percent can yield immediate savings on maintenance costs.

Achieving 100 percent utilization of IV pumps is impossible due to pharmaceutical cycles, maintenance requirements, and labor/workflow considerations. However, we have seen hospitals boost their utilization rates to the 80 percent range by rethinking pump distribution, management, and tracking. Even a more modest improvement—say from 40 to
60 percent utilization—can yield significant gains in staff productivity, care efficiency, and cost control.

**A Framework for Asset Optimization**

In our experience, enabling hospitals to achieve a more cost-effective asset-to-patient ratio is a multistep process. Although the following steps detail how an asset optimization framework can help to improve infusion pump utilization, this process can be applied to other mobile assets as well.

**Step No. 1: Assessment.** Gathering data regarding current pump workflow is necessary to establish the program’s baseline and determine appropriate targets. Critical metrics include:
- Number of pumps (owned, leased, and rented)
- Pump-to-census ratio (matching assets to demand)
- Pump utilization (how often the pumps are on)
- Equipment turns (inventory turnover percentages and cycle time between process checkpoints)
- Par levels (the number of pumps stored in care areas and ready for use)
- Total time to repair pumps in Biomed
- Pump delivery time
- Financial data (including lease and rental rates, biomedical costs, and rate of inventory refresh)

As part of the data-gathering process, administrators also should walk through the hospital and talk with staff members. The results can be eye-opening for executives. For example, when a CFO learns that 30 pumps are sitting in Biomed waiting for repair, the connection between ineffective processes and higher costs (the 30 pumps recently rented to meet demand) becomes clear.

**Step No. 2. Workflow redesign.** After gaining a firsthand view of the current state of operations, it’s helpful for hospital managers and front-line staff to conduct value-stream mapping sessions in which every step of the pump circulation process is identified and discussed. The team then should develop a process that reduces steps, eliminates wasted motion, and solves other problems that prevent efficient pump distribution.

A phased implementation is often advisable to control the changes and allow for process adjustments. After the initial phase, the pumps considered “excess inventory” in the redesigned distribution system should be locked away, available only to the staff in an emergency—similar to an in-house rental. Staff should be encouraged to follow the new process to determine whether doing so improves pump availability to the point where inventory levels can be permanently reduced.

**Step No. 3: Change management.** Changing a dysfunctional asset workflow will require staff to do their jobs differently. Even if the new process requires only minimal adjustments and delivers...
positive outcomes (e.g., less frustration, greater productivity), there is still likely to be resistance to change. Nurses, for example, may need assurance that the new system will work before they give up the workarounds (such as equipment hoarding) that have been necessary to care for patients in the past.

To help employees understand and use the new system, change management tools like the change acceleration process model can be effective. CAP combines communications tools, proven methods of employee engagement, and a measurement-reward system to provide the accountability and structure necessary for continuous and lasting change.

**Step No. 4: Addition of real-time location technology.** Once an optimal pump circulation process is successfully designed, piloted, and implemented housewide, many hospitals choose to take the next step in asset optimization: adding a real-time location system to monitor pump usage, status, and location.

Each pump is fitted with a real-time location system tag that communicates with a central visualization system, enabling the staff to see data on pump location and status in real time by using a Web browser. Many managers liken the use of this technology to turning on a light switch: One day they have no idea where their pumps are, and the next day, they know exactly where each one is.

### By improving the utilization of mobile clinical assets, many hospitals are able to reduce inventory, lower or eliminate rental and lease expenditures, and decrease maintenance and service costs.

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>370-bed not-for-profit teaching hospital</td>
<td>&gt; Saved $76,000 in annual operating expenses by eliminating rented and leased units</td>
</tr>
<tr>
<td>290-bed for-profit acute care facility</td>
<td>&gt; Avoided $500,000 in capital expenditures during its last equipment refresh</td>
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<tr>
<td>400-bed, two-hospital health system</td>
<td>&gt; Saved $151,000 in annual operating expenditures by reducing inventory and eliminating pump rentals</td>
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<tr>
<td>Four-hospital health system</td>
<td>&gt; Saved $2 million in annual operating expenses due to reductions in equipment rentals and lost/stolen equipment</td>
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<tr>
<td>570-bed regional hospital and teaching facility</td>
<td>&gt; Avoided $110,000 in capital expenditures by canceling a planned pump purchase</td>
</tr>
<tr>
<td>700-bed for-profit acute care facility</td>
<td>&gt; Realized $1.9 million in capital savings by reducing inventory and transferring equipment to other facilities</td>
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In our experience, combining Lean process design with real-time location system technology enables healthcare organizations to dramatically improve workflow and asset utilization—and, most important, to sustain that positive change over time. Managers will make better decisions regarding workflow issues, including par level optimization, utilization, and rental management. Loss prevention alerts will help reduce declines in inventory. Real-time monitoring and system alerts, in combination with utilization reports, will assist in enforcing the new processes so that they become part of the daily routine.

### Optimizing Mobile Asset Utilization

By improving the utilization of mobile clinical assets, many hospitals—large and small—are finding they can make significant gains in controlling capital and operating expenditures. They are able to reduce inventory, lower or eliminate rental and lease expenditures, and decrease maintenance and service costs—all of which can amount to hundreds of thousands of dollars in savings each year.

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