Case Studies
Title: Cost Benefit Analysis: Re-Usable Surgical Linen Packs
   Pack Closure with Rubber Bands
Author: Jim Sprout, Manager, PrePaK Surgical Systems

Objectives:

To convert a surgical pack operation from the use of autoclave tape for sealing linen-wrapped surgical packs to the use of rubber bands with preprinted pack labels. To monitor costs and benefits of such a conversion.

Site:

This analysis was conducted at St. Mary's Medical Center in Evansville, Indiana. The facility has an in-house laundry and surgical pack operation.

Pack Sealing Procedures:

The previous method was to use long pieces of autoclave tape to seal the packs, and to hand-write the name of the pack onto the tape.

The new method uses preprinted pack labels. The pack is sealed with one rubber band. The preprinted label is slid beneath the rubber band, and a one inch piece of autoclave tape is used to secure the rubber band to the label.

Analysis Methodology

A review of direct costs is provided which compares the two systems’ impact on direct supply and labor costs. Supply costs were provided by St. Mary’s Medical Center and labor costs were calculated using St. Mary’s labor rates and time study results from St. Mary’s packroom. Secondly, and most importantly, a review of additional benefits of the conversion is provided.

Factors Used In The Analysis:
• Autoclave Tape Cost - Autoclave tape by 3M, in 0.5 inch width, is sold in small quantities through distributors. Prices vary significantly. Most prices are between $0.0009 to $0.0013 per inch. St. Mary’s cost is $0.0010 per inch.
• Autoclave Tape Use - In the previous sealing method, small packs were sealed using an average of 12” of tape. Large packs were sealed using an average of 40” of tape (in two pieces). The rubber band method requires only a one inch piece of tape.
• Rubber Bands - The large packs use rubber bands that are 8.5”x1/8”, and cost $0.0455 per band. The small packs use rubber bands that are 5”x1/16”, and cost $0.0037 per band. (St. Mary’s actual costs, typical of rubber band prices nationally.)
• Labor times are based on actual time studies, and are as follows:
  • Write pack name on tape: 5 seconds
  • Apply tape to small pack: 4 seconds
  • Apply tape to large pack: 8 seconds
  • Apply rubber band and label to small pack: 4 seconds
  • Apply rubber band and label to large pack: 5 seconds

• The labor cost per hour was estimated at $9.09 per hour plus 32% fringe benefit cost, for a total labor cost of $12.00 per hour.

The Analysis

<table>
<thead>
<tr>
<th>Direct Costs of Pack Sealing</th>
<th>SMALL PACKS</th>
<th>LARGE PACKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rubber Band</td>
<td>Steam Tape</td>
</tr>
<tr>
<td>Rubber band cost</td>
<td>$0.0037</td>
<td>$0.0000</td>
</tr>
<tr>
<td>Steam autoclave tape</td>
<td>$0.0010</td>
<td>$0.0120</td>
</tr>
<tr>
<td>Preprinted label cost</td>
<td>$0.0200</td>
<td>$0.0000</td>
</tr>
<tr>
<td>Labor to write pack name on tape</td>
<td>$0.0000</td>
<td>$0.0160</td>
</tr>
<tr>
<td>Labor to seal pack</td>
<td>$0.0120</td>
<td>$0.0120</td>
</tr>
<tr>
<td><strong>Total cost per pack</strong></td>
<td><strong>$0.0367</strong></td>
<td><strong>$0.0400</strong></td>
</tr>
</tbody>
</table>
The mix of packs at St. Mary’s is 65% small packs, and 35% large packs. This mix yields the following total sealing cost per pack.

Average Cost to Seal with Rubber Band: $0.0527  
Average Cost to Seal with Tape: $0.0540

This indicates that hard costs are essentially equal in the two systems. There are, however, additional benefits which are obvious, but cannot be accurately measured. Following is a review of those additional benefits.

**Additional Benefits**

- In the O.R., it is easier and faster to open packs. The label, rubber band, and one inch of steam tape all are removed simultaneously, and are discarded together.

- Preprinted pack labels provide better information about the pack to the user. They are easier to read, contain pack contents, and are consistent.

- Workers in the O.R. and Soil Sort do not need to remove tape from wrappers. This saves time, and also improves the safety of workers in the soil sort due to minimal handling of wrappers.

- Eliminating tape adhesive residue from wrappers provides several benefits including reduced rewash, reduced wrapper discards, reduced wrapper purchases, and improved packroom productivity (no need to sort out the wrappers with residue). These factors will all impact laundry cost, linen cost, and packroom cost favorably.

**Conclusion**

A hospital packroom can convert to rubber bands with no increase in direct costs for supplies and labor, while realizing significant improvements in quality and convenience for the laundry, the packroom, and the O.R.

**Departmental Benefits**

**LAUNDRY**

**PACKROOM**

- Improved productivity due to reduced rejects.

- Improved productivity due to faster sealing method.

**O.R.**

- Improved convenience of pack opening.

- Improved information on pack labels.