



THE COST OF REUSABLE VS. SINGLE-USE LARYNGOSCOPES

SOUTHEAST HEALTH

August 8, 2012 – Dewayne Whitener, Performance Improvement Specialist, Southeast Health

Southeast Health, a 265 bed hospital in Cape Girardeau, Missouri, began an investigation of our hospital's process for cleaning re-usable laryngoscope blades and handles in December 2011. At the time, Southeast was sterilizing the re-usable laryngoscope blades, but not the re-usable laryngoscope handles.

After reviewing recent articles regarding the risk of cross-contamination posed by laryngoscope handles the Joint Commission's guidelines on reprocessing of laryngoscope blades, Southeast Health determined the best and safest practice would be to sterilize both laryngoscope blades and handles to limit the risk for cross-contamination. In evaluating the ability to sterilize reusable handles, we realized the following challenges:

- Our inventory of handles would need to increase 200-300% to accommodate sterilization cycles.
- The cost of sterilizing both handles & blades was determined to be costly and time consuming.
- Improper cleaning and reassembly would result in significant risks if not done properly
- Cleaning laryngoscope blades and handles diminished the light quality and reliability over time, reducing first time intubation success rates.

Southeast Health became aware of a single-use blade and handle combination product from Flexicare. After evaluating the product quality and financial impact, the following recommendation was made.

Evaluation of Re-useable Laryngoscopes & Single-Use Laryngoscopes

RECOMMENDATION 12/2011: After meeting with the OR, Anesthesia, Anesthesia Supply, and Central Sterile, the decision was made to switch to Single-Use Laryngoscopes Blades and Handles in December 2011. Below are some of the issues that helped drive this conversion.

1. **Patient Safety** – Reprocessing fiber optic laryngoscope handles resulted in high failure rates with reusable product. Device failure rates approached 50% in December because of reprocessing. Anesthesiologists and CRNA's insisted patient safety be a top consideration in moving to a disposable laryngoscope system.. The single-use laryngoscope blade and handle are individually packaged and new every time, basically eliminated concerns of cross-contamination and product reliability.
2. **Costs** – After a one week exhaustive study, surprisingly reprocessing cost were found to be much higher than the cost of a single-use laryngoscope blade and handle combination (\$17.12 per intubation). On the following page is detailed breakdown of the costs associated with reprocessing re-useable laryngoscopes blades and handles, which is higher than the cost of the disposable system. In addition, using reusables would require we double or triple our number of laryngoscope handles in inventory.
3. **Cleaning & Sterilization** – We were NOT cleaning the handles according to required procedures. Per the instructions I received from the manufacturer, we have to clean the handles either by Autoclave or Cold Soak Solutions. This requires batteries to be removed before cleaning then reinserted after a long drying period. Additional handles will need to be purchased to support the OR's requirements.
4. **Clinical Acceptance:** – The Single-Use laryngoscope blades and handles from Flexicare offer an LED light that is brighter than what we had been using, resulting in better first attempt intubation success rates. After cleaning and drying, our current re-useable laryngoscopes have started to fail. (corrosion on contacts, etc.). Our Respiratory Therapy Department, having only 6% of the volume of the OR, recently had to replace all of the laryngoscope handles in their inventory.
5. **Risk of Hospital Acquired Infection** – The estimated cost of 1 Hospital Acquired Infection (HAI) is estimated at \$40,000 in unreimbursed hospital expense. With reusable laryngoscopes, there is a risk of cross-contamination if products are not cleaned properly. If the hospital incurs just one HAI per year, the cost of utilizing reusable laryngoscopes rises to \$106,548 or \$27.40 average cost per intubation.

SouthEast Health Reusable Laryngoscope Cost Calculation

of Laryngoscope Intubations/Year 3,888

Reusable Laryngoscope Blade & Handle Sterilization Costs in Central Supply

of Blades Resterilized in CS per year for OR (6' cycle each for labor)

Cost of Sterile Water (12 cases per week)

Cost of Cleaning Solution

Cost of bags & labels used each year in Central Sterile

Cost to run drying oven for Blades & Handles

of Handles Resterilized in CS per year for OR (8' cycle each for labor)

Autoclave Costs

ACTUAL COSTS
\$11,858
\$12,736
\$140
\$100
\$389
\$15,811
\$3,000
\$44,035

Reusable Laryngoscope Blade & Handle Sterilization Costs in Anesthesia Room

of Blades cleaned in Anesthesia Room (16" each for labor)

of handles cleaned/batteries removed in Anesthesia Room (42" each)

Cost of new Laryngoscope Blade

Cost of new Laryngoscope Handle

Cost of Multi-Encyne in Anesthesia Room

Yearly cost of batteries used in the handles

Time Anesthesia room spends on handle/blade issues (50' per week)

Average time OR staff spends checking blades/handles (1 hour per week)

Cost of walking of blades/handles to CS each day (260 trips/year X 5')

ACTUAL COSTS
\$898
\$2,357
\$2,375
\$5,313
\$105
\$320
\$1,125
\$1,768
\$565
\$14,826

Total Reusable Costs

Yearly costs of sterilization in CS (labor & supplies)

Yearly costs of cleaning in Anesthesia room and OR Checking(labor & supplies)

Purchase cost of new handles and blades

	Re-Usable
Yearly costs of sterilization in CS (labor & supplies)	\$ 44,035
Yearly costs of cleaning in Anesthesia room and OR Checking(labor & supplies)	\$ 14,826
Purchase cost of new handles and blades	\$ 7,688
Total Annual Cost	\$ 66,548
Cost/Intubation	\$ 17.12

Cost of Reusable Laryngoscope System if incurring only 1 Hospital Acquired Infection Per Year

Estimated Cost of One Hospital Acquired Infection \$ 40,000

Total Annual Cost	\$ 106,548
Cost/Intubation	\$ 27.40

CONCLUSION: Offering improved patient care, a reduced risk of cross-contamination, increased intubation success rates, and reduced expenses associated with reprocessing Single-Use laryngoscopes, Southeast Health elected to convert to Flexicare's Single-Use laryngoscope handles and blades in December 2011.