Cost comparison of reusable and single-use fibrescopes in a large English teaching hospital

A single-use fibrescope appeared to be better value than a reusable fibrescope in the setting of a teaching hospital in the United Kingdom.

Cost savings of more than one-third per fibre-optic intubation could be achieved by using a single-use versus a reusable fibrescope.

Objective
• To perform a cost assessment of fibre-optic intubation using reusable and single-use fibrescopes

Methods
• This was a retrospective analysis of cost and utilization data related to fibre-optic intubations conducted in the operating theaters and emergency department of a single teaching hospital in the United Kingdom
• The cost of using a reusable fibrescope was calculated over a period of 5.3 years and was based on three categories of expenditure
  - Purchase of capital equipment
  - Maintenance and repair
  - Sterilization and storage
• The cost calculation was conducted in tandem with an audit of fibre-optic intubation practices to determine the annual rate of fibre-optic intubations (relative to all general anesthetic procedures)
• For comparative purposes, cost data for use of a single-use fibrescope (Ambu® aScope™) was modelled over the same time period for an equal number of fibre-optic intubations per annum

Results
• The annual cost (overall and per use) of using a reusable fibrescope is shown in Table 1

<table>
<thead>
<tr>
<th>TYPE OF EXPENDITURE</th>
<th>ANNUAL COST (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital consumption†</td>
<td>19,292</td>
</tr>
<tr>
<td>Storage</td>
<td>3,480</td>
</tr>
<tr>
<td>Maintenance and repair</td>
<td>19,927</td>
</tr>
<tr>
<td>Sterilizing</td>
<td>3,687</td>
</tr>
<tr>
<td>Total</td>
<td>46,386§</td>
</tr>
<tr>
<td>Cost per intubation†</td>
<td>329</td>
</tr>
</tbody>
</table>

† Gross cost to acquire the instruments (including any ancillary equipment) divided by their useful life
§ The value shown is the sum of the individual costs reported for capital consumption, storage, maintenance/repair and sterilization; the value reported in the published paper is £46,385
‡ Based on an estimated annual throughput of 141 fibre-optic intubations per annum (1.2% of general anesthetic procedures)

• Cost isopleths were identified for the relationship between total cost of use versus number of uses for a fibrescope
  - Below a value of ~200 uses per year (i.e., a range commensurate with normal practice), a single-use fibrescope was found to be generally cheaper
  - This was true even when the repair costs for reusable fibrescopes were negligible

Conclusions
• In the setting of a teaching hospital in the United Kingdom, a single-use fibrescope appeared to be better value than a reusable fibrescope
  - The use of single-use versus reusable fibrescopes could result in cost savings of more than one-third per fibre-optic intubation

* A line that joined all the points where the cost of a reusable versus a single-use fibrescope was equal

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