Cost-effectiveness of flexible bronchoscopes

Summary of "A systematic review and cost-effectiveness analysis of reusable vs. single-use flexible bronchoscopes"

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Declaration of interests
IA and KE have received honoraria for consulting for Ambu. This study was unfunded and independent of any honoraria.

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Why was this analysis conducted?

Routine bronchoscopies are generally regarded as safe procedures. They help patients and even save lives. However, questions have been raised about the risk of cross-infection associated with reusable flexible bronchoscopes and how this could affect costs.

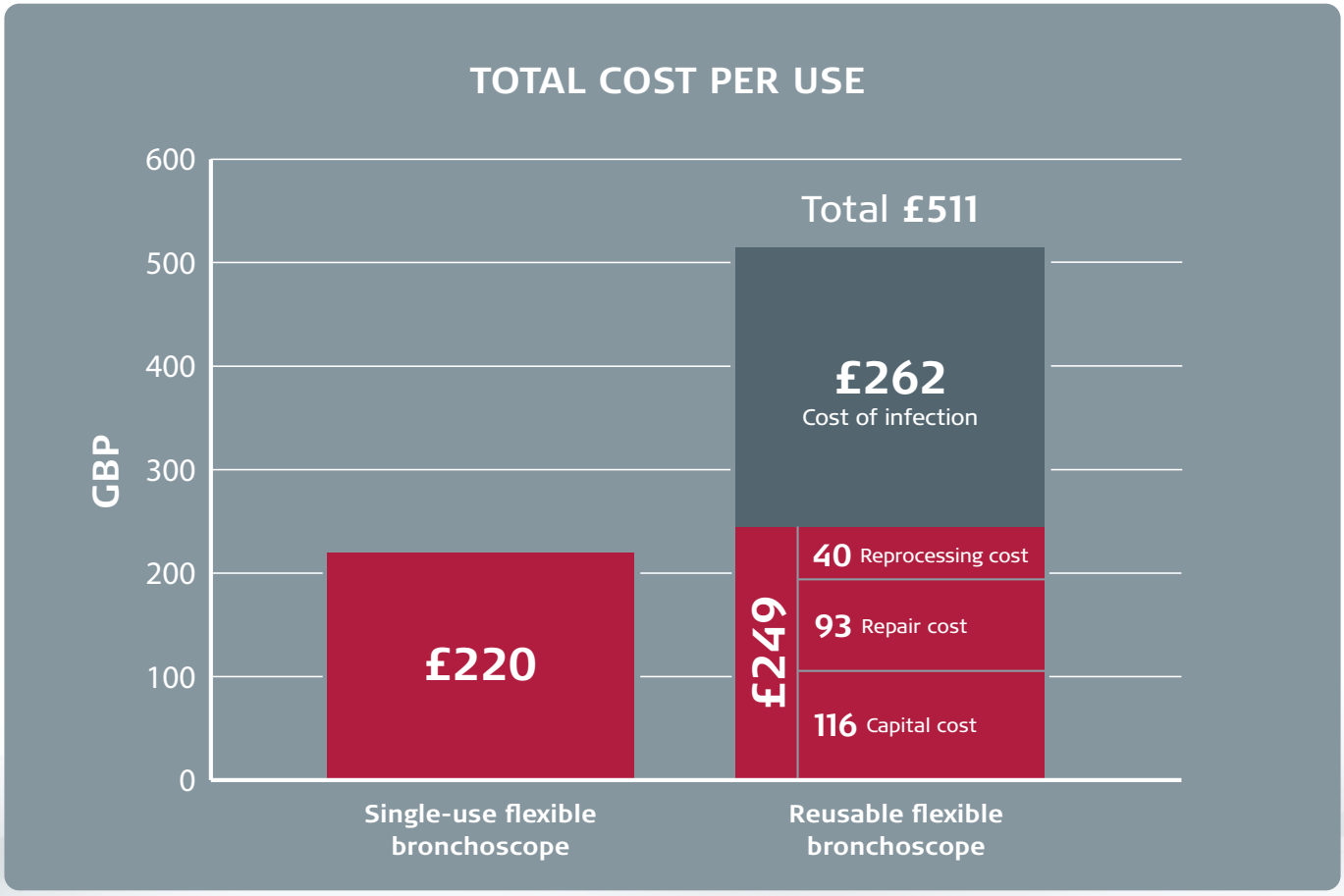
At the same time, though, the current literature around possible cross-infection and cost-effectiveness do leave some open questions. First, reports of cross-contamination of reusable scopes have not provided a quantifiable risk for cross-contamination and subsequent infection. Second, micro-costing studies on reusable flexible bronchoscopes have lacked important cost-drivers, including the cost of infection.

New study fills a gap in current literature

A new study conducted at Guy's and St Thomas' NHS Foundation Trust Department of Anaesthesia[1] offers some clarity. The study is the first to combine a systematic literature review with a micro-costing analysis in order to calculate the risks and costs linked to bronchoscope vectored cross-infection. The table below shows the results.

RESULTS

The results of the study found that when direct costs of use alone are considered, the cost per procedure with a reusable flexible bronchoscope is £249, compared to £220 with an Ambu® aScope™ 4 Broncho single-use bronchoscope. However, when the costs of treatment of infection (£262) are included, the total cost per patient use with a reusable flexible bronchoscope rises to £511. Thus, the aScope 4 broncho generates a cost saving of £291 per procedure.



[1] The cost per use of a single-use flexible aScope™ 4 Broncho device used in the study were provided by Ambu®.

Methodology

1 A systematic review of the relevant literature

16 studies for quantitative analysis of the cross-contamination and infection risk narrowed down from an original 878 publications.

Studies were identified based on these search keywords: 'bronchoscopy', 'bronchoscope', 'infection', 'cross-infection', 'pseudo-outbreak', 'outbreak', 'device contamination', and 'hospital infection' including word variations and assorted permutations.

This is the first study to identify risk of patient contamination and infection from the literature. It has a high level of accuracy because patient contamination and infection were linked to bronchoscopes. The data was sourced from international, multi-centre settings with more than 2,300 patients undergoing approximately 3,100 various procedures.

2 A comparative micro-costing analysis

The analysis was conducted at Guy's and St Thomas' NHS Foundation Trust Department of Anaesthesia.

An analysis of reusable flexible bronchoscopes in the perioperative setting of a high-throughput tertiary centre was conducted to quantify the economics of using reusable flexible bronchoscopes.

3 A cost-effectiveness analysis

The data obtained from the systematic literature review was combined with the micro-costing analysis to calculate the clinical cost-effectiveness gained from reducing the incidence of cross-contamination or infection.

Single-use flexible bronchoscopes are delivered sterile and thus minimise the risk of infection transmission and cross-contamination as compared to reusable flexible bronchoscopes. The cost-effectiveness analysis challenged this hypothesis.

Conclusion

This systematic review and cost-effectiveness analysis found that single-use flexible bronchoscopes are more cost-effective and associated with a lower risk of infection compared to reusable flexible bronchoscopes. Sensitivity analyses support these findings.

The direct cost of use of a reusable flexible bronchoscope was calculated to be £249. However, when the cost of treating infections was included, the cost per procedure was £511. In comparison, the cost per use of a single-use Ambu® aScope™ 4 Broncho bronchoscope was calculated to be £220. All in all, this means that there is a total cost savings of £291 per procedure to be gained by using the Ambu® aScope™ 4 Broncho single-use solution.

In summary, the findings from this study suggest that single-use flexible bronchoscopes offer benefits in terms of cost-effectiveness, cross-contamination and resource utilisation.

Link to the article

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