

# Introducing a budget impact analysis comparing reusable to single-use bronchoscopes within a large UK university hospital

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## BUDGET IMPACT ANALYSIS AT 500 BRONCHOSCOPY PROCEDURES PER YEAR

### OBJECTIVE

Investing in disruptive medical devices is often associated with significant economic uncertainties. Budget impact analyses (BIA) are suitable to inform decision-makers when published health economic evidence is limited and/or unrepresentative for the specific setting introducing the new technology. This is the first example of a budget impact analysis comparing conventional reusable bronchoscopes to single-use bronchoscopes

### METHOD

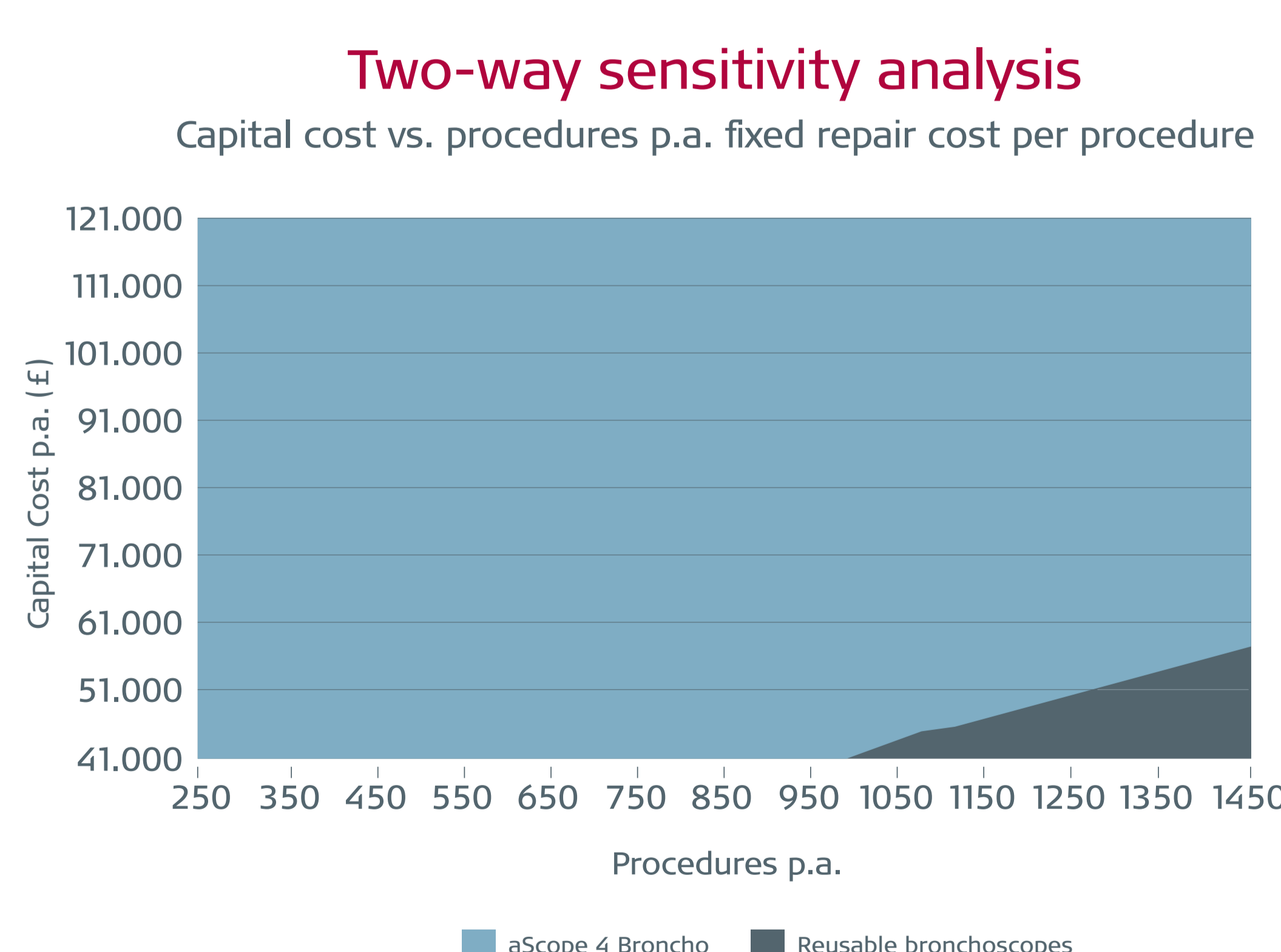
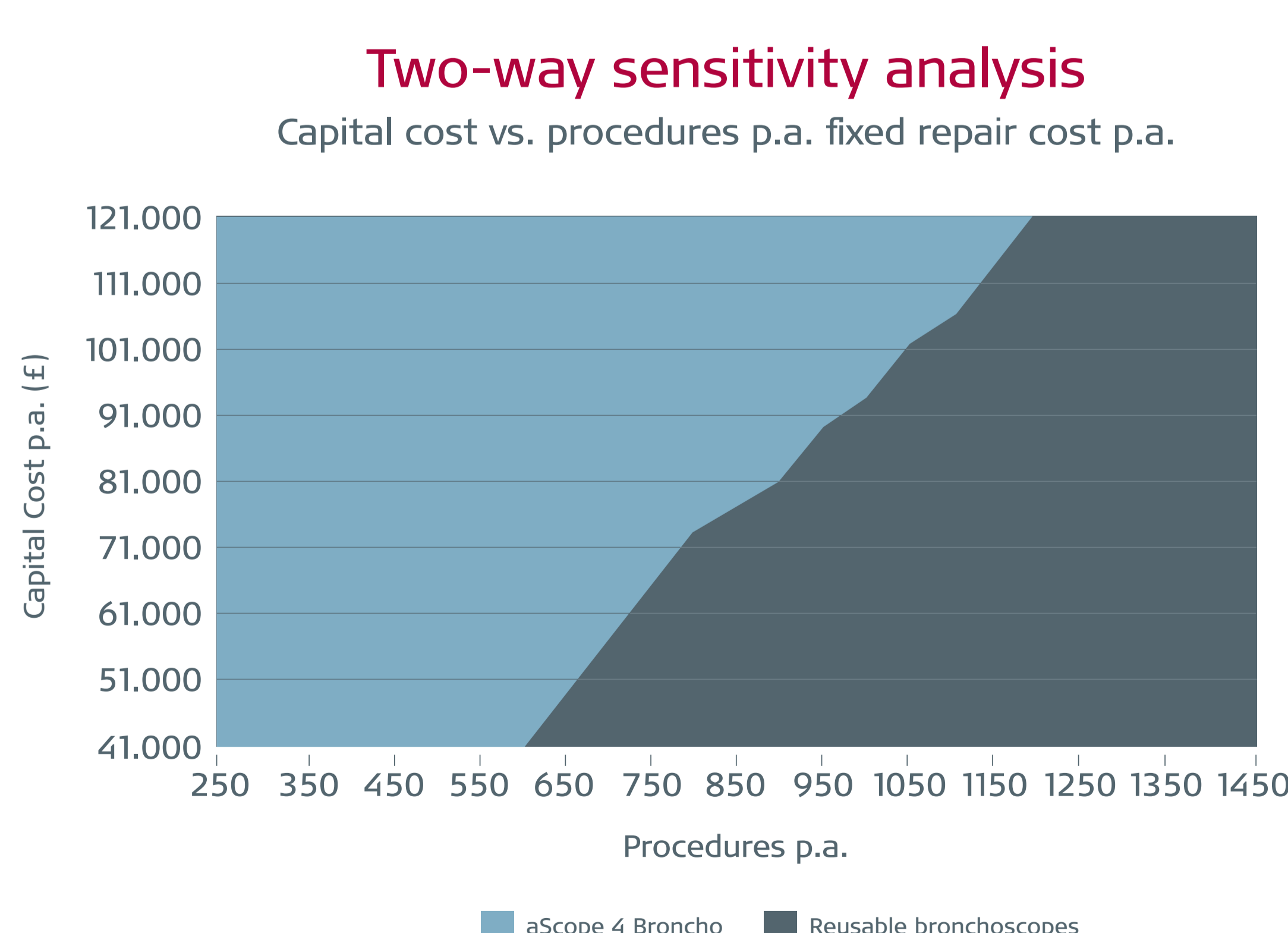
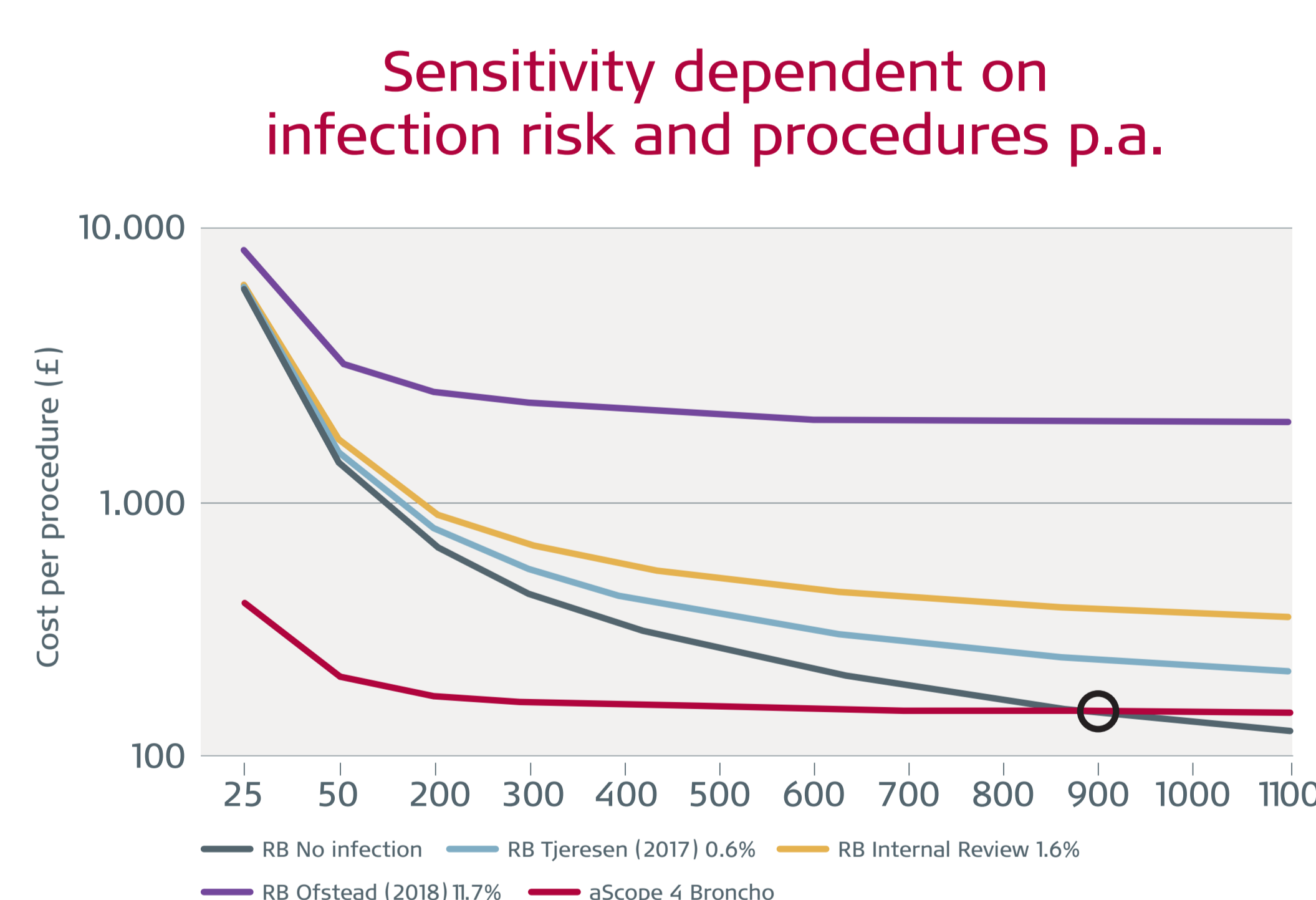
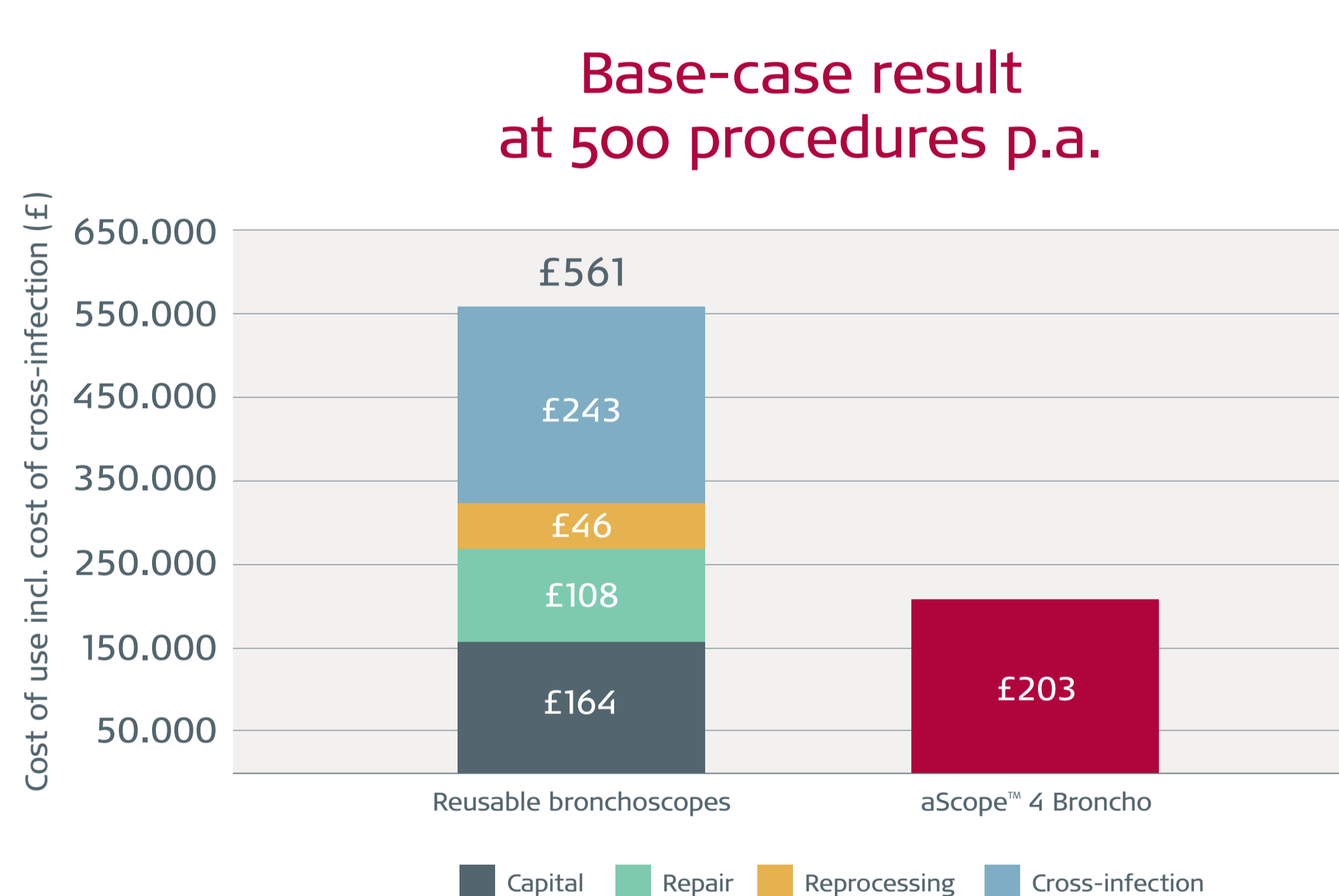
A BIA was conducted to estimate the incremental cost of a current setup with reusable bronchoscopes vs. Ambu® aScope™ 4 Broncho. The efficacy of the two technologies was assumed to be equal based on published literature. The most central data in the model was sampled from King's College Hospital. This included procedures p.a., number of reusable bronchoscopes (RB), cost of RB, repair costs p.a., number of rack systems, cost of replacement lamps and light guide cables, and number of Ambu® aView™ monitors in a new aScope 4 Broncho setup. Missing data points were based on assumptions from other UK hospitals. A 3.5% discount rate and 5-8 years annuitizing periods were used. Capital costs were not projected, and overhead costs were not added. Robustness of the base-case results were tested via a two-way sensitivity analysis. Furthermore, isopleths were identified based on varying procedures p.a. and infection rates.

### RESULTS

At 500 procedures p.a., the aScope 4 Broncho minimizes costs of £115 per procedure on direct cost of use and £358 when including the cost associated with a 1.6% risk of cross-infection. Cost-isopleths were identified at 903 procedures and 3,175 procedures at 0 and 0.6% infection-risk, respectively.

### CONCLUSION

The BIA finds that aScope 4 Broncho minimizes costs in the scenario modelled. The base-case result is sensitive to the volume of procedures p.a., infection rate, and capital costs. Furthermore, ascribing a repair cost correlated to the procedure volume increased the RB dominance at a low procedure volume and increased aScope 4 Broncho dominance at a high procedure volume.



### Capital costs

| Item               | Cost     |
|--------------------|----------|
| Bronchoscopes      | £203,636 |
| Rack Systems       | £247,971 |
| Replacement Lamps  | £450     |
| Light Guide Cables | £4,500   |

### Repair and reprocessing costs

| Item                                   | Repair Cost p.a.              |
|--|-------------------------------|
| Bronchoscopes                          | £48,244                       |
| Rack Systems <sup>1</sup>              | £5,978                        |
| <b>Reprocessing cost per procedure</b> |                               |
|  | £46 (assumption) <sup>1</sup> |

### Cost Ambu aScope technology

| Item             | Cost    |
|------------------|---------|
| aView            | £47,572 |
| aScope 4 Broncho | £189    |

### Risk and cost of clinical outcome

|   |                                |                                 |                               |
|---|--------------------------------|---------------------------------|-------------------------------|
| Cross-infection - Ventilator Associated Pneumonia | £15,000                        |                                 |                               |
| Low risk of cross-infection                       | 0.6% (assumption) <sup>2</sup> |                                 |                               |
| Medium risk of cross-infection                    | Cross-contamination            | Subsequent cross-infection      | Total risk of cross-infection |
|   | 8% (assumption) <sup>3</sup>   | 20.2% (assumption) <sup>5</sup> |                               |
| High risk of cross-infection                      | 58% (assumption) <sup>4</sup>  | 20.2% (assumption) <sup>5</sup> | 11.7%                         |

### References:

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