CASE STUDY: UNITED KINGDOM

Introduction

The DuraGraft® model estimates the potential clinical and economic value of using the product to treat Coronary Artery Bypass Graft (CABG) patients, considering the cost and number of avoided post-surgical complications in comparison to results from patients not treated with DuraGraft®.

Around 22,500 CABG operations are performed in the United Kingdom each year and any potential improvement in outcomes offers significant cost savings to the National Health Service (NHS).

To support its strategy goals, the NHS has used the Payment by Results (PbR) methodology since 2003 to reward efficiency and quality by allowing providers to retain higher margins from the reimbursement tariffs if they could provide the required standard of care at a lower cost than the national price. PbR represents over 60% of acute hospital income, creating a strong incentive for hospitals to reduce treatment costs as much as possible.

This case study evaluates the potential clinical and economic value for hospitals/providers when using DuraGraft® to treat CABG vein grafts, considering two patient populations and their characteristics. In both analyses, the cost of DuraGraft® treatment per patient is estimated at £ 544.

General CABG population

The analysis represents results of treating an average CABG patient population with DuraGraft®, comparing results of two hypothetical and identical patient groups in terms of patient profile with the only difference being the DuraGraft® treatment.

- No treatment group: 100 average CABG patients not treated with DuraGraft®
- DuraGraft® group: 100 average CABG patients, all treated with DuraGraft®

Incidence rates of complications Repeat Revascularization, Myocardial Infarction and Hospital Readmission for 30 days after surgery and 1 year after surgery were obtained from published data, official databases and a systematic literature review.

The cost of these complications are based on official databases and the reimbursement methodology. Typically, patients experiencing complications occurring within 30 days after surgery will generate an extra cost for hospitals, which will not receive any additional reimbursement. On the other hand, complications occurring after this period will trigger new reimbursement codes and tariffs and a complicated patient will demand more resources than what is expected to be covered by the reimbursement. Therefore, considering the hospital's perspective for reimbursement, a complicated patient will generate lower or even negative margins when compared to a patient being hospitalized for the first time.

The model, therefore, considers a higher additional cost for hospitals in complication occurring within the 30-day period, since they will be typically not covered by the reimbursement.

Clinical value

The model analysis indicates the DuraGraft® group experiences 9 fewer complication cases within the 30 days following surgery when compared to the No treatment group. When analyzing results for one year after surgery, 30 cases of complications are avoided.

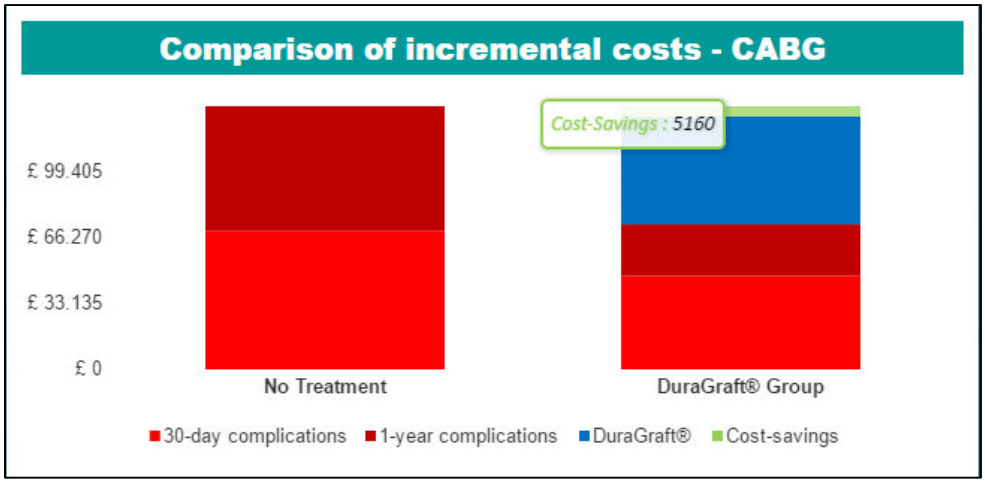
Economic value

The 9 avoided complications in the 30-day period represent a cost of £ 22,472. The 30 complication cases avoided within the period of 1 year represent costs of £ 37,088. Considering its fiscal period, a hospital in the United Kingdom will avoid costs of £ 59,560 when using DuraGraft® in this scenario.

Treating 100 patients with DuraGraft® generates additional costs of £ 54,400. Considering the cost-savings with avoided complications, the hospital experiences total savings of £ 5,160 or about £ 5.16 saved per patient even with an additional medical innovation.

Relevance to Hospitals

Cost-neutral results with significant improvement in clinical outcomes. Since the model underestimates complication costs (i.e. personnel cost is not included into the analysis), a hospital in the UK will have strong clinical and good economic incentives to use DuraGraft® based on the value of the product.



Aggravated CABG population

The analysis represents results of treating an aggravated CABG patient population with DuraGraft®, such as Diabetic CABG patients, comparing results of two hypothetical and identical groups in terms of patient profile with the only difference being the DuraGraft® treatment.

- No treatment group: 40 aggravated CABG patients not treated with DuraGraft®
- DuraGraft® group: 40 aggravated CABG patients, all treated with DuraGraft®

To represent the higher risk for post-surgical CABG complications for Diabetic patients, this analysis considers twice the incidence of the average group in the first analysis. This is consistent with current literature that demonstrates higher risk of complications for Diabetic CABG patients[1].

The cost figures and methodology are the same as in the initial analysis.

[1] Zhongmin L, et al. Contemporary Outcomes of Coronary Artery Bypass Grafting Among Patients With Insulin-Treated and Non–Insulin-Treated Diabetes. The Annals of Thoracic Surgery. Volume 100, Issue 6, December 2015, Pages 2262–2269

Clinical value

The model analysis indicates the DuraGraft® group experiences 7 fewer complication cases within the 30 days following surgery when compared to the No treatment group. When analyzing results for one year after surgery, 24 cases of complications are avoided.

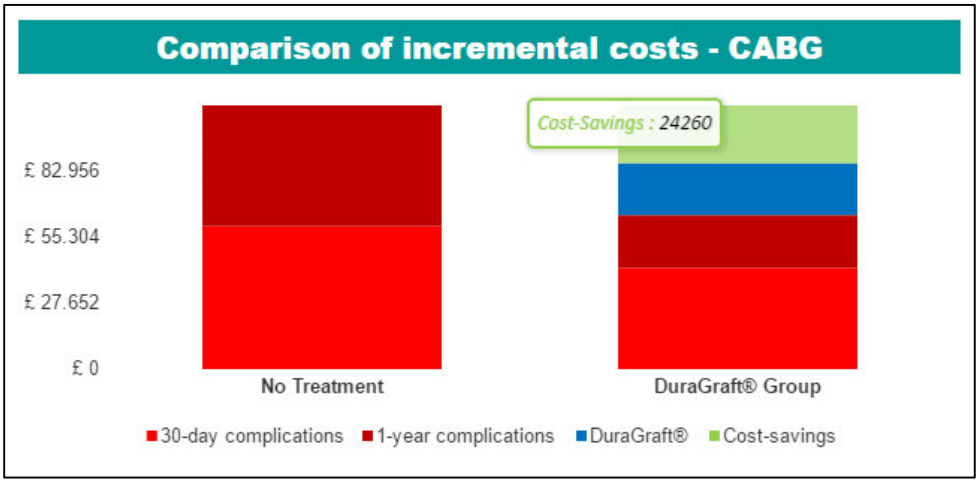
Economic value

The 7 avoided complications in the 30-day period represent a cost of £ 17,428. The 24 complication cases avoided within the period of 1 year represent costs of £ 28,592. Considering its fiscal period, a hospital in the United Kingdom will avoid costs of £ 46,020 when using DuraGraft® in this scenario.

Treating 40 patients with DuraGraft® generates additional costs of £ 21,760. Considering the cost-savings with avoided complications, the hospital experiences total savings of £ 24,260 or about £ 606.50 saved per patient even with an additional medical innovation.

Relevance to Hospitals

Significant cost-savings and improvement in clinical outcomes. Since the model underestimates complication costs (i.e. personnel cost is not included into the analysis), a hospital in the UK will have strong clinical and economic incentives to use DuraGraft® based on the value of the product.



Conclusion

In either situation, treating all CABG patients or targeting a higher risk population, hospitals in the United Kingdom will likely experience significant value based on the treatment with DuraGraft®. Considering the current NHS pressure to save costs, the introduction of DuraGraft® provides hospitals improvements in clinical and economic outcomes, generating benefits for both patients and providers.