CASE STUDY: BELGIUM

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 10,600 CABG operations are performed in Belgium each year, a number that is significant for the local healthcare system and constantly drives attention from the Belgian Health Care Knowledge Center (KCE).

In Belgium, both the hospital budget and physician fees make up about 80% of total hospital revenue. Physicians cede on average 42% of their fees to the hospital to help financing the costs related to their medical activities, although large differences exist between hospitals and between medical disciplines. Therefore, physicians in Belgium are both providers and payers of healthcare.

Before the reform of 1 July 2002 hospitals were paid a per diem price for each patient day. Since then, the hospital budget is divided into a fixed and a variable part. The fixed and largest part is paid by the sickness funds on the basis of monthly advances calculated on the expected admissions of "average patients". The remaining variable part is paid according to the number of admissions, for which hospitals must submit an invoice to the sickness funds. In addition, there are mechanisms from the Federal Government that penalize hospitals that spend more than expected on any patient.

Therefore, to protect its largest budget part and avoid penalties from the Government, Belgian hospitals focus on keeping each patient's treatment costs below or at the average based on similar diagnostics.

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 € 700.

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 and will have to manage costs using the fixed part of their budgets. Complications occurring after this period may trigger new reimbursement codes, although in Belgium this may not even occur depending on the complication and whether negligence by the hospital is demonstrated. As a conservative approach, the model considers that such condition will trigger a new reimbursement, although patients with complications will actually demand more resources than what is covered and paid for. 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.

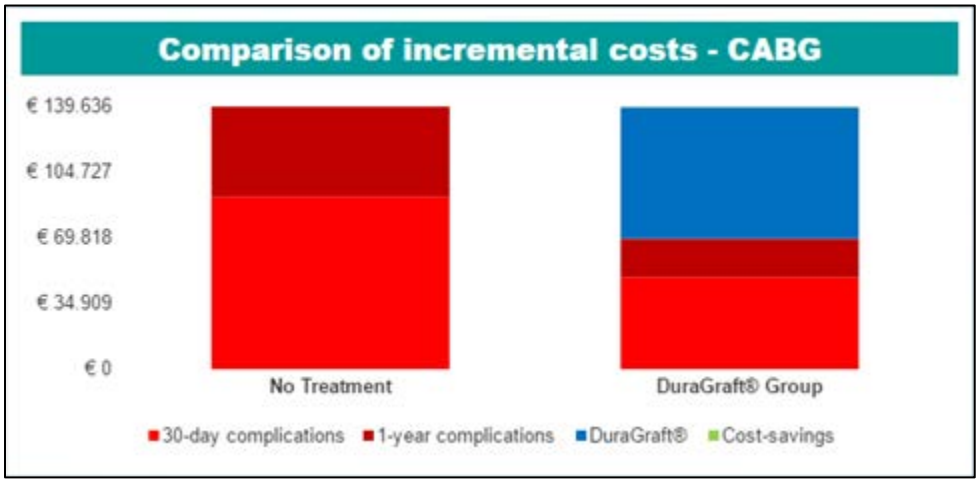
Economic value

The 9 avoided complications in the 30-day period represent a cost of € 43,113. The 30 complication cases avoided within the period of 1 year represent costs of € 27,157. Considering its fiscal period, a hospital in the Belgium will avoid costs of € 70,270 when using DuraGraft® in this scenario.

Treating 100 patients with DuraGraft® generates additional costs of € 70,000. Considering the cost-savings with avoided complications, the hospital experiences total savings of € 270 or about € 2.70 saved per patient even with an additional medical innovation. This creates a cost-neutral situation with improved clinical benefits.

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 Belgium will have strong clinical and good economic incentives to use DuraGraft® based on the value of the product. DuraGraft® can help hospitals protecting margins and avoiding penalties from excessive treatment costs as previously explained.



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]. Same cost figures and methodology as in the initial analysis.

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.

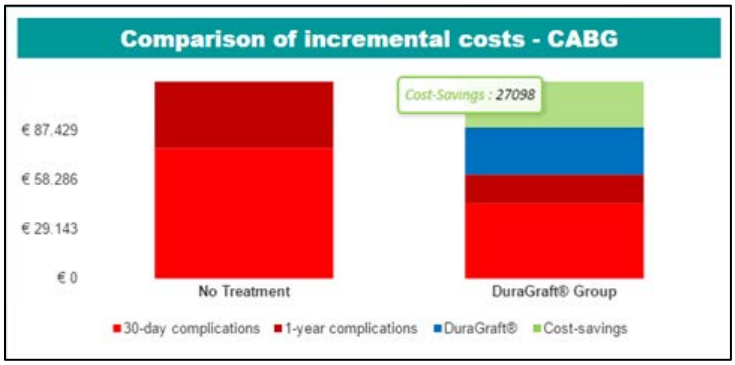
Economic value

The 7 avoided complications in the 30-day period represent a cost of € 32,868. The 24 complication cases avoided within the period of 1 year represent costs of € 22,230. Considering its fiscal period, a hospital in the Belgium will avoid costs of € 55,098 when using DuraGraft® in this scenario.

Treating 40 patients with DuraGraft® generates additional costs of € 28,000. Considering the cost-savings with avoided complications, the hospital experiences total savings of € 27,098 or about € 677.45 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 Belgium will have strong clinical and economic incentives to use DuraGraft® based on the value of the product; also because physicians will likely to use less of their budget to support hospital finances. In that sense, DuraGraft® has a clear economic benefit for physicians as well.



Conclusion

In either situation, treating all CABG patients or targeting a higher risk population, hospitals and physicians in Belgium will likely experience significant value based on the treatment with DuraGraft®. Considering the Belgian Government goal to maintain average treatment cost under average, the introduction of DuraGraft® provides hospitals a mechanism to protect their budget and improve clinical outcomes on each CABG patient.

[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