PMU26: Budget Impact Analysis of Intravenous Biosimilars Compared with Intravenous Originators and Subcutaneous Products

YunJeung Jang[1], Aidan Byrne[2], Farah Toron[2], Sangwook Yoon[1]

1. Celltrion Healthcare Co. Ltd, Incheon, Republic of Korea, 2. IQVIA, London, United Kingdom.

BACKGROUND

- In the UK, biosimilar rituximab and trastuzumab have lower prices than originators but are available only in intravenous (IV) formulations.
- Subcutaneous (SC) formulations of the originators rituximab and trastuzumab are both available in the UK.
- The market displacement involves direct switches between products with equivalent clinical but different resource use profiles. IV products have been associated with higher administration costs for payers. The trade-off between lower biosimilar drug costs and increased IV administration costs will determine the budget impact of their adoption.

OBJECTIVES

This study aimed to assess the budget impact of adopting IV biosimilar rituximab (Truxima®) and IV biosimilar trastuzumab (Herzuma®) compared with subcutaneous and IV originators from the perspective of the UK National Health Service (NHS) by evaluating:

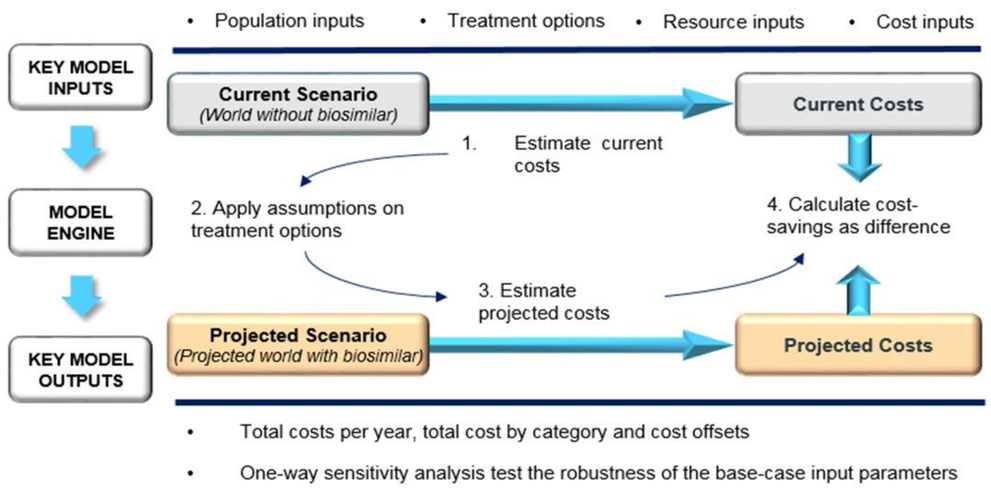
- The impact of a switch to the biosimilar on per-patient total spend
- The offset between drug and administration costs that occurs with the adoption of the new formulation and the magnitude of cost saving (if applicable)
- The additional patients that could be treated with any savings realised.

METHODS

A budget impact model was developed using Microsoft Excel 2013® to estimate the per-patient cost of adopting Truxima® and Herzuma® biosimilars in the UK market.

The base case analysis modelled a scenario where Truxima® and Herzuma® are funded for the treatment of the indicated populations (World With), compared with a scenario where Truxima® and Herzuma® are not funded (World Without) *(Figure 1)*.

Figure 1: Model schematic.



Comparators and indications

- The IV originators and subcutaneous products were considered as comparators.
- The model included the cost of Truxima®, Mabthera® IV and Mabthera® SC for the treatment of their shared indications and the cost of Herzuma®, Herceptin® IV and Herceptin® SC for the corresponding indication profile *(Table 1)*.

Table 1: Relevant comparators and indications for Truxima® and Herzuma®

Intervention	Truxima®	Herzuma®
Comparator(s)	MabThera® IV, MabThera® SC	Herceptin® IV, Herceptin® SC
Indication scope	• Non-Hodgkin lymphoma (NHL) (follicular, diffuse large B cell) • Chronic lymphocytic leukaemia (CLL) • Rheumatoid arthritis (RA) • Granulomatosis with polyangiitis (GPA) • Microscopic polyangiitis (MPA)	• Metastatic breast cancer (MBC) • Early breast cancer (EBC) • Metastatic gastric cancer (GBC)

Population

- Population data was obtained at the national level using the Office for National Statistics databases, and for each indication using estimates from a pragmatic literature review.

Market share

- Market share data used in this model were provided by Celltrion Healthcare based on market research. Biosimilar projected market share ranged from 19% to 90% over 5 years.

Costs

- Payer costs comprised drug acquisition costs and the costs of administering the treatments (informed by NHS staff unit costs)
- Drug cost data for biosimilars and all comparators were obtained from the British National Formulary (BNF).
- The resource use activities associated with each treatment were based on micro-costing approaches employed by previous publications[1,2].

Sensitivity and scenario analyses

- One-way sensitivity analysis was conducted on the base case findings
- A scenario analysis adopted the hospital provider perspective and assessed both the financial and resource utilisation impact.

RESULTS

- Per-patient savings ranged from £2,344 (MPA) to £5,438 (NHL) with biosimilar Truxima® *(Figure 2)* and from £7,837 (MGC) to £12,502 (BC) with biosimilar Herzuma® *(Figure 6)*.
- At maximum uptake, 76% of SC patients switched to biosimilar Truxima®, resulting in annual savings of £9.9m. If 67% of SC patients switched to biosimilar Herzuma®, the annual saving was £13.5m.
- Compared with SC originators, administration costs for IV biosimilars were higher but drug costs were reduced, leading to a lower total cost for IV *(Figures 4, 8)*.
- These cost savings could be used to expand access to 3,594 additional rituximab patients and 2,161 additional trastuzumab patients, with a neutral budget impact *(Figures 5, 9)*.
- Scenario analysis estimated a positive income impact for a hospital provider, with increased reimbursement revenue outweighing additional IV administration costs. This has implications for expanding access and hospital resource budgets.

Rituximab market

Figure 2: Per-patient net budget impact

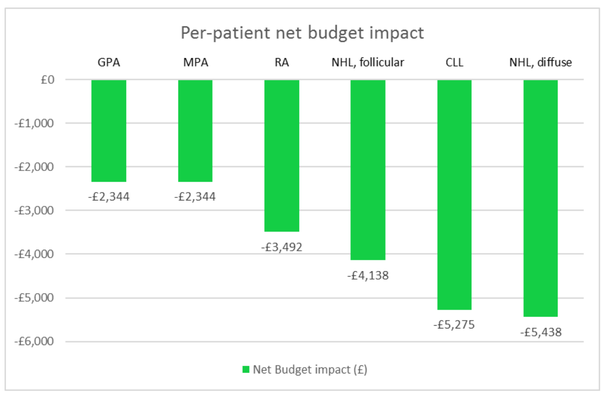


Figure 3: Per-patient total costs

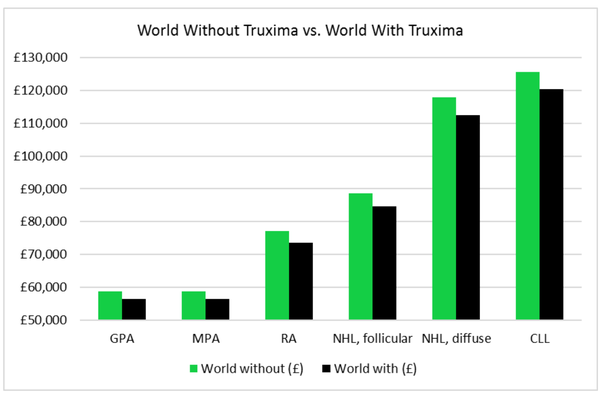


Figure 4: Per-patient cost offset

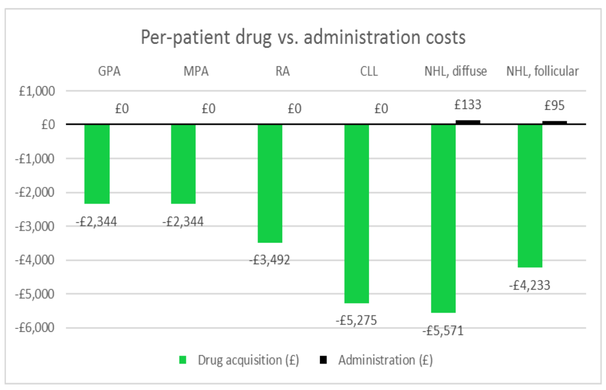
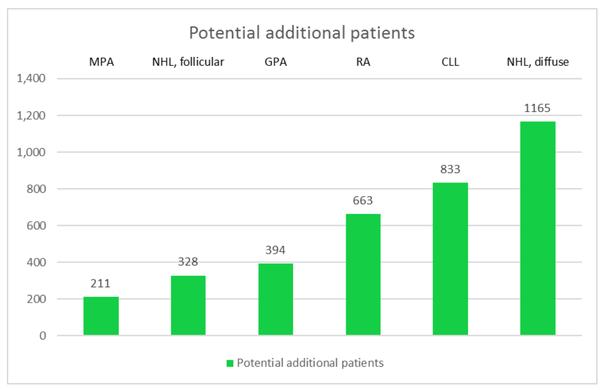


Figure 5: Potential to treat additional patients using savings



Trastuzumab market

Figure 6: Per-patient net budget impact

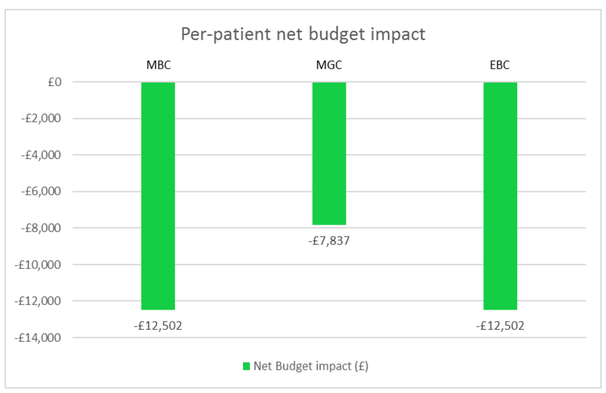


Figure 7: Per-patient total costs

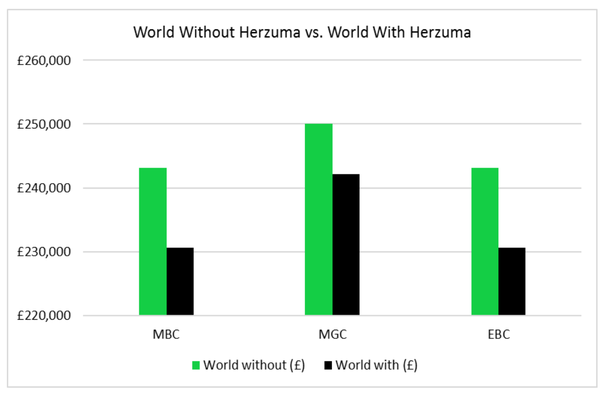


Figure 8: Per-patient cost offset

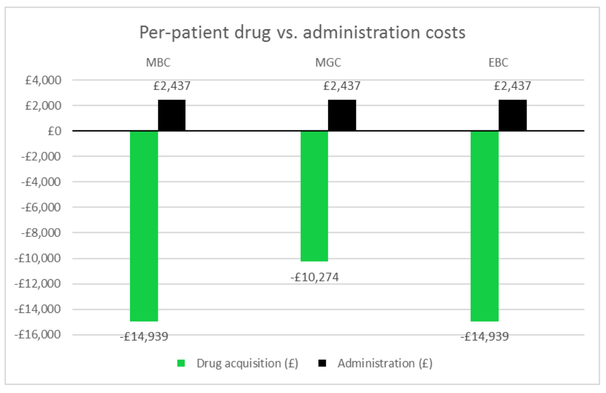
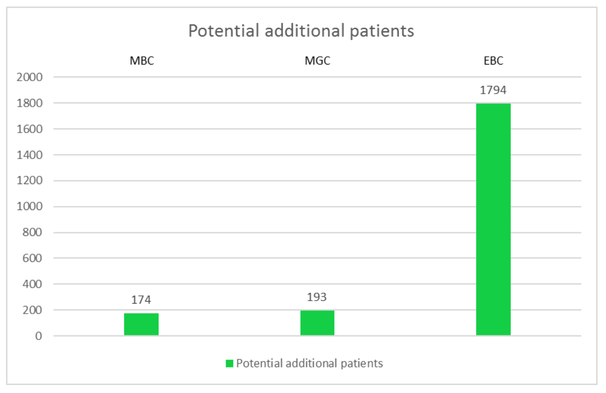


Figure 9: Potential to treat additional patients using savings



DISCUSSION & CONCLUSIONS

- Increasing biosimilar rituximab and trastuzumab uptake can deliver substantial cost savings for the NHS.
- Increased administration costs should not act as a barrier to IV biosimilar uptake as scenario analysis found cost savings to be sensitive to IV biosimilar price but not sensitive to plausible variation in administration costs.
- The ability to realise these benefits will depend on price agreed and capacity to deliver larger number of IV infusions.

REFERENCES

1. Rule S, Collins GP, Samanta K. Subcutaneous vs intravenous rituximab in patients with non-Hodgkin lymphoma: a time and motion study in the United Kingdom. Journal of medical economics. 2014;17(7):459-68.
2. Burcombe R, Chan S, Simcock R, Samanta K, Percival F, Barrett-Lee P. Subcutaneous Trastuzumab: A UK Time and Motion Study in Comparison with Intravenous Formulation for the Treatment of Patients with HER2-Positive Early Breast Cancer. Advances in Breast Cancer Research. 2013;Vol.02No.04:8 Public Health England. Hepatitis C genotypes reported to the sentinel surveillance of blood-borne virus testing. 2014 Jan.

Study funded by Celltrion Healthcare Co. Ltd
FOR FURTHER INFORMATION PLEASE CONTACT: YunJeung.Jang@celltrion.com

International Society for Pharmacoeconomics and Outcomes Research Europe conference, Barcelona, November 2018