INTRODUCTION

- Rheumatoid arthritis (RA) is a chronic inflammatory joint disease that involves a distinctive pattern of bone and joint destruction and primarily affects synovial joints, whose causes remain unclear (McInnes and Schett, 2011).
- Chronic plaque psoriasis (PsO) is a chronic immune-mediated inflammatory skin disease characterized by multiple remissions and relapses (Mason et al., 2013).
- National Institute for Care and Health Excellence (NICE), UK recommends etanercept (along with other biological) for RA/PsO patients whose disease has not responded to intensive therapy with a combination of conventional disease-modifying anti-rheumatic drugs (cDMARDs)/to standard systemic therapies (NICE, 2006, NICE, 2016).
- Branded etanercept such as Enbrel® are costly compared to cDMARDs or standard systemic therapies and thus leading to an increased cost to healthcare systems.
- Biosimilars, on the other hand, are marketed at a discount compared to their referenced originator products leading to potential cost savings for healthcare providers.

METHODS

- An Excel-based model was developed to analyse the impact of the launch of Sandoz etanercept biosimilar for the treatment of two indications; rheumatoid arthritis (RA) and moderate to severe chronic plaque psoriasis (PsO), over a period of 1 year in the UK.
- The population of interest comprised both etanercept-naive and patients currently treated with the etanercept originator Enbrel® (substituted patients).
- For the number of patients in the substituted group, authors used data from internal research to estimate that 23,329 RA patients and 2,679 PsO patients are currently treated with Enbrel® in the UK.
- While for the number of patients in the naive, group authors estimated that 66 RA patients and 21 PsO patients are put on Enbrel® each month in the UK.
- It was assumed in the model that all substituted patients are treated with Enbrel® at the beginning of the model and 25% of them would be substituted to Sandoz etanercept biosimilar over a period of 6 months in the 1st year.
- The model further assumed that etanercept-naive patients enter the model on a monthly basis at a constant rate and 50% of these patients are put on Sandoz etanercept biosimilar.
- The following interventions/molecules were included in the model; etanercept (Enbrel®) and Sandoz etanercept biosimilar.
- Dosing for Sandoz etanercept biosimilar was assumed to be the same as Enbrel®'s approved dosing.
- The model considered only the drug costs since all other resource utilization and costs are expected to remain the same irrespective of whether a patient is receiving Enbrel® or Sandoz etanercept biosimilar.
- The UK-specific list price for Enbrel® was obtained from British National Formulary (accessed on 12 September, 2016).
- Sandoz etanercept biosimilar was not launched at the time of model development, and the exact local price of Sandoz etanercept biosimilar was not known.
- In the model, it was assumed that once launched, Sandoz etanercept biosimilar would be available at a price that is between 10-30% less than that of Enbrel®.
- The model was also built to perform sensitivity analysis with different time taken to substitute existing patients to Sandoz etanercept biosimilar.

RESULTS

- Sandoz etanercept biosimilar may offer cost savings of between £4.8 million (10% discount scenario) and £14.3 million (30% discount scenario) (Figure 1).
- If such savings are reinvested to treat additional patients with Sandoz etanercept biosimilar, the number of additional patients that could be treated ranged from 568 (10% discount scenario) to 2,191 (30% discount scenario) (Figure 1).
- Further analysis shows that the saving potential increases significantly if existing patients on Enbrel® are substituted relatively early (Figure 2).

Figure 2: Saving potential across different substituting duration (30% discount scenario)

- Tornado diagram for the one-way sensitivity analysis is presented in the Figure 3 (for 10% discount scenario) and in the Figure 4 (for 30% discount scenario).

Figure 3: Tornado diagram (10% discount) and Figure 4: Tornado diagram (30% discount)

- Of all the model parameters explored in the sensitivity analysis, proportion of patients who are substituted to Sandoz etanercept biosimilar had the biggest impact on the cost saving.
- The sensitivity analysis also suggested that delay in substituting patients to Sandoz etanercept biosimilar may limit the saving potential.

CONCLUSIONS

- This budget impact analysis suggests that Sandoz etanercept biosimilar has significant cost saving potential depending largely on the proportion of patients substituted from Enbrel® to Sandoz etanercept biosimilar in the UK.

REFERENCES

4. NICE 2016. Abatacept, etanercept, infliximab, certolizumab pegol, golimumab, tocilizumab and abatacept for rheumatoid arthritis not previously treated with DMARDs or other conventional DMARDs only have failed. https://www.nice.org.uk/guidance/ta375, Accessed as on September 12, 2016.

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