INTRODUCTION
Psoriasis is a chronic, inflammatory disorder with a predisposing genetic component, predominantly affecting the skin. Psoriasis is estimated to affect around 1-2.2% of the UK population and the most common type is plaque psoriasis, affecting 80-90% of psoriasis patients. As psoriasis treatment options have recently expanded to include biologics ixekizumab and secukinumab, as well as apremilast (a novel small molecule), there is a need to model sequential treatment to reflect clinical practice of cycling through different treatment modalities.

A de novo Markov model was constructed using monthly cycles and four health states: trial (tunnel state), maintenance, best supportive care (BSC) and death.

Comparison of an ixekizumab sequence (ixekizumab 80mg – ustekinumab 90mg – infliximab 5mg/kg – BSC) against a secukinumab sequence (secukinumab 300mg – ustekinumab 90mg – infliximab 5mg/kg – BSC), following ERA labeling dosing regimens for all drugs, and using list price as both ixekizumab and secukinumab had a confidential PAS approved price.

Mortality: Gender-specific mortality rates obtained from the Human Mortality Database for the UK and weighted according to the proportion of males (68%) in the UNCOVER-1, 2 and 3 trials.

Quality of life: Utility gains from baseline to week 12 for each PASI response state (PASI<50, PASI 50-74, PASI ≥75, PASI 90-99 and PASI 100) were estimated from baseline to week 12 using a regression model of EQ-5D-5L data from the DLQI>10 population of the ixekizumab studies, using the England value set and adjusted for baseline EQ-5D-5L.

Costs and resource use: Drug list prices were obtained from MIMS9; resource use associated with biologic treatment was obtained from NICE clinical guidelines10. The cost of BSC was taken from a published UK study11 and inflated to 2015.

Non-responders: An additional cost for non-responders, calculated from the costs incurred 12 months prior to biologic initiation minus outpatient visits reported by Fornia et al.12, was applied to the trial period following a treatment failure, based on the recommendations from the ERG in the final appraisal determination for apremilast.

RESULTS

Target population: NICE biologic eligible population for moderate-to-severe plaque psoriasis defined as PASI10 and DLQI>15.

Time horizon: Lifetime time horizon.

Modeling efficacy: PASI response rates informing the transition from trial to maintenance period were derived from a network meta-analysis using a random effects Bayesian model for multi-arm trials with a multinomial likelihood and probit link.

Discounting: 3.5% for costs and effects in line with the NICE reference case.

Over a lifetime time horizon, the ixekizumab sequence resulted in cost-savings of £943 and gained 0.03 more QALYs in comparison to the secukinumab sequence.

OVERVIEW OF THE METHODS

CONCLUSIONS

The model demonstrated that, while using list prices, ixekizumab as a first-line treatment in a biologic sequence dominates secukinumab, providing higher QALYs at lower cost.

Sequential modelling approach was chosen to reflect clinical practice of treatment in psoriasis.

Limitations of this study include: treatment responders are assumed to maintain response until discontinuation, all-cause discontinuation rate is assumed to be equal for all comparators and constant throughout the maintenance period, no effect modification is applied for patients with prior biologic use, and the use of list prices rather than confidential UK P&R prices.

REFERENCES

9. Mapi Group, Stockholm, Sweden, 2 EI Lilly, Basingstoke, UK, 3 EI Lilly, Surrey, UK.