A Systematic Literature Review and Meta-Analysis of Work Productivity According to the Work Productivity and Activity Impairment Questionnaire in Patients With Axial Spondyloarthritis Treated With Biologic or Targeted Synthetic Disease-Modifying Antirheumatic Drugs

Presented at ISPOR 2023 | May 7–10 | Boston, MA

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Objectives
To quantify short-term changes in health-related productivity impairment as measured by the Work Productivity and Activity Impairment (WPAI) questionnaire in patients with axial spondyloarthritis (axSpA) treated with biologic or targeted synthetic disease-modifying antirheumatic drugs (b/tsDMARDs).

Background
- axSpA is a chronic inflammatory disease primarily affecting the axial skeleton, namely the sacroiliac joints and spine. Patients with axSpA are predominantly of active working age where disease onset, and the disease-related symptoms and limitations may impact daily activities and work participation leading to productivity losses and reduced work ability.
- Treatment with b/tsDMARDs is aimed at decreasing disease activity, relieving symptoms, improving function, and preventing disability, which may support patients’ ability to work.
- The WPAI questionnaire is a validated outcome measure commonly used to assess the short-term impact of axSpA on daily activities and workplace productivity in clinical studies.1

Methods
- A systematic literature review (SLR) was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify randomized and non-randomized studies published between January 2010 and October 2021 that reported productivity endpoints of b/tsDMARDs used in axSpA starting a b/tsDMARD.
- A random-effects meta-analysis of all data of the identified SLR was conducted. Results of randomized and non-randomized studies were included to identify the mean change in scores from the baseline. WPAI outcomes reported at follow-up were retrieved from randomized and non-randomized studies.
- Percentage of total work impairment was converted into hours of productivity loss per week, assuming a 40-hour work week (European Union) or and 37-hour work week (US) as the product of total lost work hours and the average hourly labor costs reported instead of lost labor productivity. Data were then converted to indirect costs associated with loss of productivity.

Results
- The SLR identified 15 publications, of which 14 were studies, including unblinded data from 3 Phase 3, 1 Phase 4 and 1 real-world study. Published WPAI outcomes were extracted for a total of 2366 patients treated with b/tsDMARDs.
- At baseline, the overall mean total work impairment score in patients (n=1766) with axSpA was 53.3% (95% confidence interval [CI] 50.9, 55.7), equating to 21.3 hours per week of productivity loss.
- A mean change of −20.4 ± 5.5 hours per week was observed at Week 12 to 16, patients treated with b/tsDMARDs had a greater reduction in total work impairment, with a mean change from baseline WPAI total work impairment domain score of −23.3 ± 5.5 hours per week in randomized intervention arms compared with placebo (−19.3 ± 5.5 hours per week; p=0.002).
- The overall pooled random effect model for total work impairment indicates there may be substantial heterogeneity ($I^2 = 71\%$, p=0.07).

Conclusions
- Patients with axSpA experience substantial productivity impairment with a total work impairment of 53.3% at baseline, casting $44,615 or $43,320 per patient per year accruing a 40-hour work week for each patient to productivity loss associated with axSpA.
- Consistent with this literature, presentation in the main contributor to total work impairment in patients with axSpA.
- Compared with baseline, patients treated with b/tsDMARDs reported a mean change of −14.7% (interquartile range: −16.1, −13.2) in total work impairment at Weeks 12 to 16 from baseline compared with placebo.
- Based on the mean total work impairment at each b/tsDMARD treatment compared with placebo.

References
1. Available at: https://www.bls.gov/eci/;