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Title: *Highly efficacious interleukin (IL) inhibitors are scarcely prescribed for spondyloarthritides compared to tumor necrosis factor-alpha inhibitors (anti-TNF)*

Purpose: Interleukin (IL) inhibitors are a newer drug class with increasing use for the treatment of spondyloarthritides (SpA), targeting inflammatory pathways further downstream than tumor necrosis factor-alpha inhibitors (anti-TNF). Recent evidence suggests that anti-TNF therapy has less efficacy and may increase incidence of adverse events when compared to IL inhibitors. Due to significant rebates and pricing contracts, payers are influenced to tier anti-TNF therapy with priority (first-line use), regardless of inferior efficacy and higher adverse event risk. Here we report claims data of anti-TNF and IL therapy to further understand the prescribing and utilization patterns in a multi-state health system.

Methods: In a retrospective historical cohort claims-based study, patients over the age of 18 with continuous enrollment of at least 6 months before and 12 months after the index date. During the study period (2010-2017) patients had a diagnosis of SpA, and used at least one anti-TNF on or after initial diagnosis. Patients that used anti-TNF before SpA diagnosis or an IL inhibitor before index date were excluded. Index date is defined as the date of the first prescription fill of the switched to biologic. 22,258 patients had a diagnosis of SpA, consisting of ICD-9 codes 720.0, 720.9, 721.9, 713.1, and 696.0 and ICD-10 codes of M45*, M47*, M07*, and L40.53. First-line and second-line treatments included monotherapy (NSAID, anti-TNF, or IL inhibitor), or a combination of the monotherapy agents. This study assumed that any therapy not included in first or second-line group would be considered third or fourth-line. Analysis was performed in SAS 9.4 (SAS Institute Inc., Cary, NC, USA). Data are expressed as descriptive statistics.

Results: This study included spondyloarthritis (39.4 percent), psoriatic arthritis (2.4 percent), and other spondyloarthritides (58.3 percent). Of 22,258 patients who had a diagnosis of SpA, 15,839 received non-steroidal anti-inflammatory drugs (NSAIDs), anti-TNF, or IL inhibitor as a first-line treatment. 6,419 SpA patients were not treated with any therapy. Patients progressing to second-line therapy changed from NSAIDs to the following: 35.5 percent adalimumab (28.4 percent monotherapy, remaining 7.1 percent combination therapy), 52.5 percent etanercept (44 percent monotherapy, 8.5 percent combination), and 7.8 percent infliximab (7.1 percent monotherapy, 0.7 percent NSAID plus infliximab). 5.7 percent of patients received IL inhibitor monotherapy (ustekinumab or secukinumab). Ixekizumab had zero utilization at the time of data collection and was unable to be included in this analysis.

Conclusion: The current study shows that within a large Midwest health system, the majority of SpA patients received NSAIDs (99.6 percent) and anti-TNF (94.3 percent) as first and second-line therapy, respectively. Only 5.7 percent of patients received IL monotherapy. SpA is a homogeneous group of chronic inflammatory diseases with heterogeneous response to therapy, thus making it difficult to determine class efficacy. This may justify increased clinician awareness to IL efficacy and safety, open formulary status, and improved patient access to IL inhibitor drugs based on disease severity, specific SpA diagnosis, and individualized therapeutic response.