patients in Japan were analyzed. Data were collected from Jun-Aug 2018 via physician-completed patient record forms and patient self-completed forms. Patients who had physician confirmed diagnoses of AS and nr-axSpA were eligible to participate. Demographics, disease status (improving, stable, unstable, deteriorating), symptoms, and medication use were reported by the physician, while work disability and QoL measures were reported by the patient using validated questionnaires. QoL and treatment patterns of nr-axSpA and AS patients were compared using parametric tests and non-parametric tests where appropriate.

Results: Data from 41 physician, 72 AS patients, and 91 nr-axSpA patients were included in this analysis. A higher proportion of AS patients were male (70.8% vs. 58.2%; $p=0.1040$), yet this was not statistically significant. AS patients had a similar mean age (55.0 vs. 55.1; $p=0.9762$) compared to nr-axSpA patients. The majority of AS and nr-axSpA patients (61.1% vs. 62.9%; $p=0.872$) were not receiving a biologic. On average, AS and nr-axSpA patients reported similar rates of symptoms (Table 1). Patient reported outcomes such as the Assessment of SpondyloArthritis international Society Health Index (ASAS HI; 6.0 vs. 6.4; $p=0.6103$), Patient Global Assessment (18.7 vs 22.7; $p=0.4239$), and the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI; 3.1 vs. 3.4; $p=0.3453$) were similar between AS and nr-axSpA patients. AS patients reported a lower EQ-5D VAS (62.6 vs. 71.3; $p=0.0237$) when compared to nr-axSpA patients.

Table 1. Characteristics of AS and nr-axSpA Patients in Japan

	AS N=72	Nr-axSpA N=91	p-value
Mean age, (SD)	55.0 (17.5)	55.1 (16.5)	0.9762
Gender, males; n (%)	51 (70.8%)	53 (58.2%)	0.1040
BMI, mean (SD)	23.4 (3.5)	22.7 (3.1)	0.1890
Joint Inflammation or Stiffness; n (%)	25 (34.7%)	32 (35.2%)	1.0000
Inflammatory Back Pain; n(%)	25 (34.7%)	34 (37.4%)	0.7456
HLA-B27 positive; n (%)	7 (9.7%)	4 (4.4%)	0.2169
Alternating Buttock Pain; n (%)	6 (8.3%)	5 (5.5%)	0.5390
Dactylitis; n (%)	5 (6.9%)	6 (6.6%)	1.0000
Enthesitis; n (%)	5 (6.9%)	9 (9.9%)	0.5825
Tendonitis; n (%)	0 (0.0%)	2 (2.2%)	0.5037
Synovitis; n (%)	3 (4.2%)	4 (4.4%)	1.0000
Arthritis; n (%)	15 (20.8%)	26 (28.6%)	0.2806
Osteoporosis; n (%)	8 (11.1%)	13 (14.3%)	0.6412
Physician's Global VAS, mean (SD)	12.1 (11.2)	22.6 (11.0)	0.0100
Patient Global VAS, mean (SD)	18.7 (18.5)	22.7 (11.7)	0.4239
EQ-5D VAS, mean (SD)	62.6 (25.0)	71.3 (20.2)	0.0237
BASDAI, mean (SD)	3.1 (1.8)	3.4 (2.6)	0.3453
ASAS HI, mean (SD)	6.0 (4.3)	6.4 (5.1)	0.6103

Conclusion: Nr-axSpA and AS being part of the same disease spectrum (i.e. axial spondyloarthritis) share the same clinical features. The burden of the disease, as assessed by QoL measurements, is also similar in AS and nr-axSpA patients.

Figure 1. Medication Use among AS and nr-axSpA Patients in Japan

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AB0649

REAL WORLD EFFICACY OF SECUKINUMAB: A SINGLE CENTRE EXPERIENCE

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Background: Secukinumab was approved by NICE for patients with active Ankylosing Spondylitis and Psoriatic Arthritis in 2017. Clinical trial data suggests secukinumab is a useful treatment option in both conditions, but often real world experience differs greatly from clinical trial results. In addition, patients with more refractory disease are often excluded from clinical trials.

Objectives: To assess the response to secukinumab in patients with seronegative spondyloarthropathy receiving treatment at University Hospital Coventry and Warwickshire

Methods: Patients starting secukinumab at UHCW were identified from the Blueteq funding database. Medical notes were reviewed retrospectively to assess response rates using BASDAI responses in Ankylosing spondylitis and PsARC responses in PsA. Patients who had previously had inadequate response to TNF inhibitors (PsA only) and severe psoriasis received 300mg secukinumab monthly; the remainder were prescribed 150mg monthly.

Results: 146 patients commenced secukinumab between June 2017 and January 2020 and had outcome data recorded. 73 patients (50%) had received previous biologic agents prior to secukinumab exposure. Patients with Ankylosing spondylitis had high BASDAI (6.8±1.4) and spinal pain (7.5±1.4). 48 patients had an initial response to treatment as per outcome measures done before and after Secukinumab inception. Secukinumab was effective in 89 patients (94%), and 87 (91%) continued treatment.

In psoriatic arthritis, despite high levels of activity at baseline (mean tender joint count 10±8; swollen joint count 6±3) and 65% prior biologic exposure; high rates of response were seen. The majority of patients have continued treatment. Secukinumab was well tolerated in both patient groups with low rates of discontinuation due to adverse events (8 patients, 5%). Adverse events included recurrent infection (3), rash (1), mouth ulcers (1), vertigo (1), new onset cancer (1) and new onset Crohn's (1) although rates were low overall. Patients with pre-existing uveitis did not develop exacerbations but low numbers of patients with prior uveitis were treated.

	PsA (n=51)	AS (n=95)
Age in years, mean (SD)	53 (13)	49(12)
Male sex, n (%)	21 (41)	62 (65)
Disease duration in years, mean (SD)	8 (8)	10.9 (9.2)
Previous biologic exposure, n (%)	30 (65)	43 (48)
Number of prior biologics, median (range)	1 (1-4)	1 (1-4)
Responder, n (%)	37 (72)*	89 (93)
Discontinuation, n(%)	12 (24)	8 (8.5)
Adverse events	6	2
Lack of efficacy	6	4
Other	0	2

*Response could not be assessed in 3/51 PsA patients due to insufficient clinical data; these patients have been recorded as non responders

Conclusion: Secukinumab demonstrates high levels of efficacy even in a cohort of patients with longstanding PSA and AS with high rates of inadequate responses to other biologics.

Secukinumab is well tolerated with low rates of discontinuation due to adverse events.

References: Certolizumab pegol and secukinumab for treating active psoriatic arthritis after inadequate response to DMARDs Technology appraisal guidance [TA445]

Secukinumab for active ankylosing spondylitis after treatment with non-steroidal anti-inflammatory drugs or TNF-alpha inhibitors Technology appraisal guidance [TA407]

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AB0650

BIOSIMILAR INFliximab EXPERIENCE IN SPONDYLOARTHRITIS PATIENTS: TREASURE REAL LIFE RESULTS

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Background: Biosimilar infliximab (bio-INF) was approved for all indications of the reference product in several countries. It has been marketed since 2014 in Turkey and used in the same indications with its bio-originator.

Objectives: Herein, we aimed to analyse clinical features and the drug survival rates of spondyloarthritis patients who have received bio-INF.

Methods: This multicenter, prospective observational cohort study used the Treasure database in which web-based registration of rheumatoid arthritis and SpA patients are being performed in 13 centers across different regions of Turkey. Age, gender, and acute phase responses (erythrocyte sedimentation rate and C-reactive protein), HAQ scores, VAS patient global, VAS fatigue, VAS pain, VAS physician global, BASDAI, BASFI, ASDAS ESH and ASDAS CRP values, clinical findings of SpA patients, number of patients who has received bio-INF as first line therapy or after switch, treatments which are used before bio-INF, the reasons for switching bio-INF to another biologic DMARD and drug survival rates were retrospectively evaluated.

Results: A total number of 231 SpA (94 (40.7 %) female, 137 (59.3%) male, mean age 43±11 yrs) patients have received biosimilar infliximab in the database. Of the 231 patients 127 (55%) had received bio-INF as first line therapy, whereas 104 (46 (19.9%) 2nd choice, 58 (25.1%) 3rd choice) patients used switching after another biologic DMARD. Previously used biologic and synthetic DMARDs were adalimumab (28.6%), etanercept (22.5%), golimumab (9.1%), original infliximab (8.2%), secukinumab (13.4%), methotrexate (23.8%), leflunomid (10.4%), sulphasalazine (60.6%). The baseline and first visit (3. Months) diseases activity scores were shown in Table 1. Drug survival rates were 79.1 in 12. months, 65.5 in 24. months and 54.6 in 60. months. (Figure 1). The most common reasons for switching from biosimilar infliximab to another biologic DMARD is secondary (25(10.8%)), and primary ineffectiveness (22(9.5%)). Other reasons to discontinuation of treatment are psoriasis (5 (2.1%)), infusion reaction (3(1.2%)), allergic reaction (22(8.8 %)), chest pain (3(1.2%)), dyspnea (1 (0.4%)), vasculitis (1 (0.4%)) and patient or doctor wish (7 (3.4%)).

Conclusion: The results of this real life data provides evidence that biosimilar infliximab is an effective and safe treatment option with long term use in SpA patients. Drug survival rates of bio-INF is similar to its bio-originator.

Table 1. Disease activity scores

	Baseline visit	3.month	p
	median (Q1-Q3)	median (Q1-Q3)	
HAQ score	0,63 (0,4-1)	0,25 (0-1)	<0,001
BASDAI	6,2 (4,8-7)	2,8 (1-5)	<0,001
BASFI	5,05 (3,3-6)	2,1 (0,45-4)	<0,001
VAS Patient Global	70 (50-80)	30 (10-50)	<0,001
VAS Doctor Global	60 (40-70)	30 (20-40)	<0,001
VAS Pain	50 (3-80)	30 (10-50)	0,572
VAS fatigue	70 (50-80)	40 (10-65)	<0,001
ESR	24 (11-45)	11 (6-23)	<0,001
CRP	12,1 (4,4-30)	3,91 (2,19-9)	<0,001
ASDAS ESR	3,12 (2,51-4)	2,05 (1,39-3)	<0,001
ASDAS CRP	3,53 (2,86-4)	2,21 (1,5-3)	<0,001

*Wilcoxon Signed Rank Test

Figure 1. Drug survival rates

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AB0652

MACHINE LEARNING TO PREDICT EARLY TNF INHIBITOR USERS IN PATIENTS WITH ANKYLOSING SPONDYLITIS

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Background: Tumor necrosis factor (TNF) inhibitors are important drugs in treating patients with ankylosing spondylitis (AS). However, they are not used as a first-line treatment for AS. There is an insufficient treatment response to the first-line treatment, non-steroidal anti-inflammatory drugs (NSAIDs), in over 40% of patients. If we can predict who will need TNF inhibitors at an earlier phase, adequate treatment can be provided at an appropriate time and potential damages can be avoided. There is no precise predictive model at present. Recently, various machine learning methods show great performances in predictions using clinical data.

Objectives: We aim to generate an artificial neural network (ANN) model to predict early TNF inhibitor users in patients with ankylosing spondylitis.

Methods: The baseline demographic and laboratory data of patients who visited Samsung Medical Center rheumatology clinic from Dec. 2003 to Sep. 2018 were analyzed. Patients were divided into two groups: early TNF inhibitor users treated by TNF inhibitors within six months of their follow-up (early-TNF users), and the others (non-early-TNF users). Machine learning models were formulated to predict the early-TNF users using the baseline data. Additionally, feature importance analysis was performed to delineate significant baseline characteristics.

Results: The numbers of early-TNF and non-early-TNF users were 90 and 509, respectively. The best performing ANN model utilized 3 hidden layers with 50 hidden nodes each; its performance (area under curve (AUC) = 0.75) was superior to logistic regression model, support vector machine, and random forest model (AUC = 0.72, 0.65, and 0.71, respectively) in predicting early-TNF users. Feature importance analysis revealed erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and height as the top significant baseline characteristics for predicting early-TNF users. Among these characteristics, height was revealed by machine learning models but not by conventional statistical techniques.

Conclusion: Our model displayed superior performance in predicting early TNF users compared with logistic regression and other machine learning models. Machine learning can be a vital tool in predicting treatment response in various rheumatologic diseases.