reader 2 were 12.0 ± 12.5 and 15.8 ± 15.7, respectively. The ICCs for CTSS at baseline and at 2-year follow-up were 0.97 (95% confidence interval [CI] 0.96–0.99) and 0.98 (0.97–0.99), respectively, and that for changes over the 2 years was 0.48 (95% CI 0.23–0.67). For sCTSS, the ICCs were 0.96 (95% CI 0.92–0.97), 0.97 (95% CI 0.94–0.98), and 0.58 (95% CI 0.36–0.74), respectively. Detection rates for syndesmophyte progression were comparable between CTSS and sCTSS. The detection rate for syndesmophytes on only lateral side was 13.2 and 11.4%, and 11.4 and 15.2% at baseline and 2-year follow-up (reader 1 and 2).

**Conclusion:** sCTSS and CTSS showed similar detection rates for syndesmophyte progression. sCTSS may be a reliable method for evaluating spinal structural damage in AS.

**REFERENCES:**

[1] de Bruin, F. et al. Development of the CT Syndesmophyte Score (CTSS) in patients with ankylosing spondylitis: data from the SIAS cohort. Ann Rheum Dis 77, 371-377 (2018).
[2] de Koning, A. et al. Low-dose CT detects more progression of bone formation in comparison to conventional radiography in patients with ankylosing spondylitis: results from the SIAS cohort. Ann Rheum Dis 77, 293-299 (2018).
[3] Tan, S. et al. Spatial distribution of syndesmophytes along the vertebral rim in ankylosing spondylitis: preferential involvement of the posterolateral rim. Ann Rheum Dis 75, 1951-1957 (2016).

**Acknowledgements: NIL.**
**Disclosure of Interests: None Declared.**
**DOI:** 10.1136/annrheumdis-2023-eular.1068

## AB1002 LONGER DIAGNOSTIC DELAY, SEVERE FATIGUE AND LESS USE OF TNF-INHIBITORS ARE ASSOCIATED WITH UNACCEPTABLE AXIAL PAIN IN 354 SWEDISH PATIENTS WITH ANKYLOSING SPONDYLITIS

**Keywords:** Spondyloarthritis, Pain

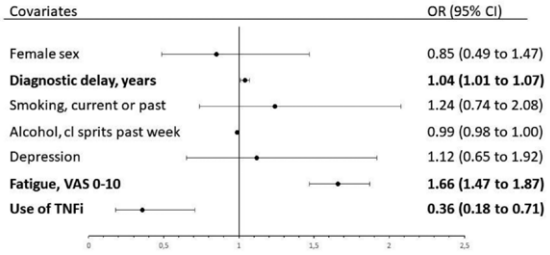
A. Deminger[1,2], Å. Wilde[2], E. Klingberg[1,2], J. Backman Renman[3], H. Forsblad-D'elia[1,2]. [1]*Institute of Medicine, Sahlgrenska Academy at University of Gothenburg, Department of Rheumatology and Inflammation Research, Göteborg, Sweden*; [2]*Region Västra Götaland, Sahlgrenska University Hospital, Department of Rheumatology, Göteborg, Sweden*; [3]*Section of Medicine, Umeå University, Department of Public Health and Clinical Medicine, Umeå, Sweden*

**Background:** Pain has been shown to be the most important consequence of the disease in affecting health in patients with axial spondyloarthritis[1].
**Objectives:** To assess factors associated with unacceptable axial pain in patients with long-standing ankylosing spondylitis (AS) overall and by sex.
**Methods:** Patients with AS (modified NY-criteria) from two geographically separated regions in Sweden were included in this cross-sectional, observational study. Primary outcome was axial pain (question number 2 from Bath Ankylosing Spondylitis Disease Activity Index (BASDAI)) dichotomised in VAS < or ≥ 4 based on patient unacceptable pain[2]. Independent variables were selected based on previous knowledge and hypotheses of factors associated with pain. Information was collected from questionnaires (demographics, lifestyle habits, fatigue (BASDAI question number 1), symptoms of depression (from EQ-5D), medications), calculation of body mass index (BMI), blood sample (C-reactive protein (CRP)), and lateral spinal radiographs (assessment of spinal new bone formation with modified Stoke Ankylosing Spondylitis Spinal Score (mSASSS)). Univariate and multivariable logistic regression analyses (dependent variable VAS axial pain ≥ 4) were used overall and stratified by sex. Variables with univariate *p*-values ≤ 0.1 were included in the multivariable model if not too highly correlated.
**Results:** In total, 354 patients were included, 62 % men, mean (SD) age 52 (13) years, symptom duration 27 (13) years and delay in diagnosis 9 (8) years. Mean (SD) VAS axial pain was 4.2 (2.6) with no significant difference between men and women (p = 0.30). However, in patients with unacceptable axial pain (VAS ≥ 4), n=177 (50%), significantly higher proportion of women reported unacceptable pain compared to men, 57 % vs 46 %, p = 0.049. In univariate analyses, unacceptable axial pain was associated with longer disease duration, longer delay in diagnosis, more severe fatigue, more symptoms of depression, lower alcohol consumption and less treatment with TNF-inhibitors. There was no association between unacceptable axial pain and age, civil state single, educational level, BMI, smoking status, mSASSS, CRP or use of NSAIDs. In the multivariable analysis, unacceptable axial pain was independently associated with longer delay in diagnosis and more severe fatigue, whereas use of TNF-inhibitor reduced the risk of having unacceptable pain (Figure 1). In the multivariable analyses stratified by sex, the same variables were associated with unacceptable pain in men as in the whole group; OR (95 % CI) for delay in diagnosis 1.08 (1.03 to 1.14), fatigue 2.0 (1.65 to 2.41) and use of TNF-inhibitor 0.23 (0.09 to 0.61). In women, fatigue was the only factor independently associated with unacceptable axial pain, OR (95 % CI) 1.32 (1.12 to 1.56).
**Conclusion:** In this cross-sectional study of patients with long-standing AS, 50 % of the patients had unacceptable axial pain. Even though a higher proportion of the women were affected, female sex was not independently associated with unacceptable axial pain. There were some sex-differences. Delay in diagnosis was associated with higher risk, and use of TNF-inhibitor was associated with lower risk of unacceptable axial pain only in men. The sex-difference possibly due to few women using TNF-inhibitors. Fatigue was independently associated with axial pain in both sexes. This study underpins the importance of early diagnosis in AS.

**REFERENCES:**

[1] U. Kiltz et al. *Rheumatology* 2016, 55 (10):1771–1776
[2] F. Tubach et al. *Arthritis Care & Research* 2012, 64 (11):1699-1707

**Figure.** Multivariable logistic regression analysis assessing factors associated with unacceptable axial pain in 354 patiens with ankylosing spondylitis




TNFi, tumor necrosis factor inhibitor; VAS, visual analogue scale

**Acknowledgements: NIL.**
**Disclosure of Interests: None Declared.**
**DOI:** 10.1136/annrheumdis-2023-eular.1093

## AB1003 IMPROVED CLINICAL OUTCOMES AND PATIENT ENGAGEMENT THROUGH AN INTEGRATED ELECTRONIC PATIENT REPORTED OUTCOME WITH THE HOSPITAL ELECTRONIC PATIENT RECORD IN SPONDYLOARTHRITIS

**Keywords:** Spondyloarthritis, Patient reported outcomes, Outcome measures

A. Chan[1], K. Rigler[1], L. Van Rossen[2]. [1]*Royal Berkshire NHS Foundation Trust, Department of Rheumatology, Reading, United Kingdom*; [2]*East Kent Hospitals N H S Trust, Department of Rheumatology, Canterbury, United Kingdom*

**Background:** Patient-reported outcome measures (PROMs) have been at the forefront of the assessment of spondyloarthritis (SpA). With the increasing adoption of electronic health records (EHRs), collecting PROMs electronically (ePROMs) presents an opportunity for advancing patient care in SpA. ePROMs were incorporated into our SpA clinics at the Royal Berkshire Hospital since the start of 2018. Collecting patient data remotely brings the patients' perspective into routine clinical care without delay. Moreover, connection to EHRs have led to a seamless integrated optimised care process.
**Objectives:** The objective of this programme was to evaluate the clinical effectiveness and practicality of implementing a fully integrated ePROMs into the hospital EHR in real world clinic settings. The interoperability across different information technology (IT) modules was assessed. We also evaluated the interaction with the patients through the assessment of satisfaction and completion rates of ePROMs.
**Methods:** AxSpA patients meeting the ASAS criteria completed the outcome measures BASDAI, BASFI, Spinal NPRS, and BASG. PsA patients meeting the CASPAR criteria completed patient assessed tender joint, swollen joint, global assessment and PSAID-12. The period of the data collection for this study was January 2021 to December 2022. Patients were sent reminders to complete ePROMs through email or text messaging before each appointment and every 6 months. Ad-hoc scores went sent out according to clinical need. Appointments were expedited or deferred depending on the values and trends in the ePROMS. Time saved in clinic was measured.
**Results:** There were 1141 patients with AxSpA and PsA who were sent ePROMs over a 2 year period (2021-22). The mean (SD) age for AxSpA patients were 42.7(11.2) and PsA 52 (7.9) years. 536 (47%) patients were on biologics. At baseline, the completion of was 38% (437/1141). At month 12, it was 63% (722/1141) and at month 24, reached 73% (836/1141), Figure 1. Both AxSpA and PsA patients had similar rates of uptake of ePROMs between months 0 and 24 (40% to 72% in AxSpA and 35% to 73% in PsA). At group level, there was a trend to the reduction in mean (SD) ASDAS at months 0, 6, 12, 18 and 24 (3.8±1.2, 3.3±1.1, 3.0±1.5, 2.2±0.9, 1.9±1.0) and BASDAI (4.6±2.7, 4.5±1.9, 3.9±2.4, 3.8.±2.3, 3.6±1.2). In the PsA group, there was also a trend to the reduction in the mean (SD) PSAID-12 level (4.1±1.8, 3.8±0.8, 3.6±1.2, 3.4±1.1, 3.1±1.3). The reduction in ASDAS, BASDAI and PSAID-12 was most evident in patients on biologic treatments. In patients with an ASDAS of < 1.3 or PSAID-12 <2, appointments were moved from 6 to 12 monthly. In this group of

Ann Rheum Dis: first published as 10.1136/annrheumdis-2023-eular.1212 on 30 May 2023. Downloaded from http://ard.bmj.com/ on June 12, 2025 at Department GEZ-LTA Erasmushogeschool
Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

patients, the appointments were also switched from face to face to teleclinics. This resulted in a saving of 280 hours of clinical time. Over 90% of clinician and patient user rated the ePROMs as good to excellent. In patients not completing ePROMS (308/1141, 27%) paper forms were used. Factors for not completing ePROMs include multiple forms, frequency of forms sent, lack of understanding of process, data safety concerns, lack of IT access and patient choice.

**Conclusion:** The development of a clinician dashboard captured a range of multidimensional ePROMs that was used proactively to support patient management and patient-centric appointment scheduling. Using ePROMs increased the uptake and acceptability of completing patient outcomes. A trend based on ePROMs collated over a period of time was more informative, particularly when considered alongside interventions that were introduced into the clinics such as self-referral to physiotherapy, digital psychological therapy and biologic treatments. This enabled the clinical team use ePROMs as part of remote monitoring to implement patient-initiated follow up (PIFU) and schedule teleconsultations when clinically appropriate. The integrated ePROMS system allows clinical encounters where needed and more individualised care.

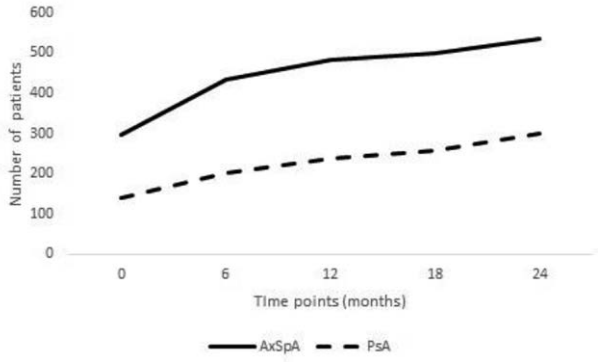



**Figure 1.** Number of AxSpA and PsA patients completing ePROMs at baseline (0), 6, 12, 18 and 24 months

**REFERENCES: NIL.**

**Acknowledgements: NIL.**

**Disclosure of Interests:** Antoni Chan Grant/research support from: A non-promotional grant was received from Novartis for the initial set up of the digital software for this programme, Kathryn Rigler: None declared, Liz Van Rossen: None declare.d.

**DOI:** 10.1136/annrheumdis-2023-eular.1212

AB1004

## ACCURACY OF ICD10-AM M45 CODE FOR ANKYLOSING SPONDYLITIS IN A WESTERN AUSTRALIAN HOSPITAL COHORT

**Keywords:** Descriptive studies, Spondyloarthritis

M. Isbel[1,2], K. Makin[1], J. Nossent[1,2]. [1]*Sir Charles Gairdner Hospital, Rheumatology, Nedlands, Australia*; [2]*University of Western Australia, School of Medicine, Perth, Australia*

**Background:** Administrative linked health data (ALHD) facilitates epidemiological research of Ankylosing Spondylitis (AS) but best practice requires dataset validation[1]. While ICD10-code M45 is used to identify AS populations internationally it is also used to code "Rheumatoid arthritis of the spine"[2]. Neither background AS nor Rheumatoid arthritis (RA) is captured in ICD coding, unless actively flaring whilst the patient is admitted.

**Objectives:** To define the accuracy of ICD 10 Australian Modification (ICD10AM) code M45 in identifying AS patients in a tertiary hospital.

**Methods:** Retrospective audit of patients with an electronic hospital discharge code M45 between 2000 and 2015. Patient records were manually reviewed to confirm presence of AS based on following criteria a) radiological evidence of Grade IV sacroiliitis or "bamboo spine" b) fulfilment of classification criteria (1984 Modified NY, 1991 AMOR, 2002 ESSG and 2009 ASAS criteria)[3] c) letter from treating rheumatologist confirming AS d) Biological DMARD (bDMARD) prescription for treating confirmed AS. Cases that were not able to meet AS criteria and had a likely alternative diagnosis documented by their treating team had this detail noted, but not assessed against formal criteria. All patients were then evaluated to for presence of an RA code ever during that patient's lifetime. Codes used to define RA included by codes M08.0* M8.2*, M8.3*, M8.4*, M8.8*, M8.9*, M05.*, M06.* (ICD10) or 714 (ICD9).

**Results:** Of 155 cases reviewed, eighty-six (55.4%) met audit criteria for AS. Of the 69 cases not meeting audit criteria for AS, 35 (72%) had RA ICD codes applied during their lifetime and a further 15 had background RA recorded in their notes. Five cases met AS audit criteria and had RA code applied. Excluding patients ever tagged with an RA code reduced AS case finding by 6% and raised overall accuracy to 67.5%. If background RA is also excluded, accuracy is 78.9%.

**Conclusion:** Overall raw accuracy of the ICD10AM M45 code in identifying AS patients was low, with RA acting as a significant confounder. This bears significant implications for international ALHD research reliant on this code for case finding. Excluding those ever coded with RA significantly improved accuracy and is recommended for future research. Our data support the call for scrutiny of international variations of ICD taxonomy[4].

**REFERENCES:**

[1] Bernatsky S, Lix L, O'Donnell S, Lacaille D. Consensus statements for the use of administrative health data in rheumatic disease research and surveillance. *Journal of rheumatology*. 2013;40(1):66-73. doi:10.3899/jrheum.120835

[2] ICD-10-CM Code for Ankylosing spondylitis M45. American Hospital Association. URL: Accessed 09/01/2023, 2023. https://www.aapc.com/codes/icd-10-codes/M45

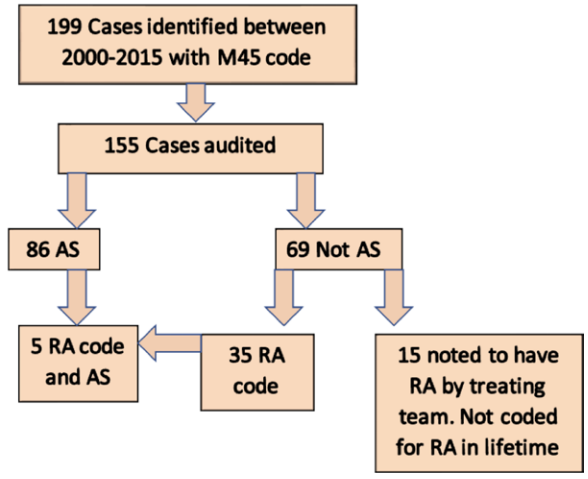
[3] Sieper, J., Rudwaleit, M., Baraliakos, X., Brandt, J., Braun, J., Burgos-Vargas, R., Dougados, M., Hermann, K. G., Landewé, R., Maksymowych, W., & van der Heijde, D. (2009). The Assessment of SpondyloArthritis international Society (ASAS) handbook: a guide to assess spondyloarthritis. *Annals of the rheumatic diseases*, *68 Suppl 2*, ii1–ii44. https://doi.org/10.1136/ard.2008.104018

[4] Jetté N, Quan H, Hemmelgarn B, Drosler S, Maass C, Moskal L, et al. The Development, Evolution, and Modifications of ICD-10: Challenges to the International Comparability of Morbidity Data. Medical Care. 2010;48(12):1105-10.

**Table 1.**

| | AS (%) |
|---|---|
| **TOTALS** | **86 (55)** |
| Male | 56 (65) |
| Female | 30 (35) |
| Mean age at diagnosis (years) | 43 |
| Met clinical criteria | 37 |
| Met Radiological criteria | 31 |
| Specialist diagnosis with or without bDMARD prescription | 80 |

Figure 1. Audit Flowchart




**Acknowledgements: NIL.**

**Disclosure of Interests: None Declared.**

**DOI:** 10.1136/annrheumdis-2023-eular.1352

Ann Rheum Dis: first published as 10.1136/annrheumdis-2023-eular.1212 on 30 May 2023. Downloaded from http://ard.bmj.com/ on June 12, 2025 at Department GEZ-LTA Erasmushogeschool
Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.