case of relapse of arthritis, enthesitis or dactylitis under methotrexate monotherapy, golimumab was restarted.

Results: Currently, twenty three of the original 60 pSpA patients included in the CRESPA-trial, completed the 2 year CRESPA-Extension protocol; of these, 21 (91%) were in clinical remission at week 104 when methotrexate was added. The mean follow-up period after completion of the extension part, was 80±28 w. 5 patients (24%) are still in sustained remission (n=5) under methotrexate monotherapy whereas in 16 patients (76%), golimumab needed to be re-installed because of relapse of disease activity (n=14) or development of adverse events related to methotrexate (n=2). Recurrence of disease was characterised by development of arthritis in all patients with a median of 4 tender and 3 swollen joints. In 50% (n=7) of the cases, concomitant dactylitis was present. 64% (9/14) were having concomitant psoriasis which was mild since all had a BSA <5%. The mean time for recurrence was 28.6 weeks. Restarting golimumab treatment promptly restored clinical remission in all patients within 12 weeks.

Conclusions: In patients with pSpA in clinical remission after 2 years of golimumab monotherapy, concomitant administration of methotrexate before discontinuation of the TNFi, did not significantly raise the percentage of patients in biological-free remission. In 76% of patients, golimumab had to be restarted, underscoring the overall weak efficacy of methotrexate in pSpA.

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FRIDAY, 15 JUNE 2018: Prevention of OA: Yes we can!

OP0336 THE EFFECT OF TIMING AND DURATION OF STATIN EXPOSURE ON THE RISK OF REVISION FOLLOWING TOTAL HIP OR KNEE ARTHROPLASTY: A POPULATION-BASED COHORT STUDY

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Background: Total hip/knee replacement (THR/TKR) are safe and effective interventions for the treatment of osteoarthritis. However, around 2.5% of patients who undergo a THR/TKR in the UK require revision surgery within 5 years. Experimental studies have suggested that statins may have a beneficial effect on bone by promoting osteoblast formation and reducing osteoclastic bone resorption. Statins have been linked to improved strength of the bone-implant interface and may also attenuate the inflammatory response to particulate wear debris and subsequent periprosthetic osteolysis. Observational data suggest that postoperative exposure to statins may reduce the risk of revision arthroplasty. However, the influence of timing of statin exposure on revision risk has not previously been investigated. This may be significant since statins may affect biological processes occurring at different postoperative periods.

Objectives: To determine whether the timing of statin exposure relative to the primary arthroplasty influences the risk of revision arthroplasty. Also to determine whether the duration of exposure is associated with the risk of revision arthroplasty.

Methods: Subjects from the Clinical Practice Research Datalink, a population-based clinical database, who had THA/TKA from 1988–2016 were included. Cox regression models were used to determine the association between statin exposure and the risk of revision THA/TKA, i) at any time and ii) if first exposed 0–1, 1–5, or >5 years following THA/TKA. Cox regression was also used to determine the association between total duration of statin exposure (<1, 1–2, 2–3, 3–4, 4–5, >5 years) and revision risk. The Cox regression models were adjusted for the propensity score for statin exposure in each period, which was calculated using a logistic regression model including demographic factors, selected comorbidities and selected medication. Missing data for covariates were imputed using multiple imputation by chained equations with 10 iterations.

Results: 1 51 305 participants were included. 57 003 (37.7%) were exposed to statins during follow up and 3500 (2.3%) had revision arthroplasty. In a propensity score adjusted model, exposure to statins was associated with a reduced risk of revision arthroplasty (HR (95% CI) 0.82 (0.75, 0.90)). Participants first exposed within 1 year and between 1 and 5 years following THA/TKA (vs unexposed) had a reduced risk of revision arthroplasty (HR (95% CI) 0.82 (0.74, 0.91) and 0.76 (0.65, 0.90), respectively), while first exposure >5 years following THA/TKA was not associated with revision risk. In relation to duration of statin therapy, participants exposed for more than 5 years in total (vs <1 year) had a reduced risk of revision (HR (95% CI) 0.74 (0.62, 0.88)).

Conclusions: Statin therapy initiated up to 5 years following THA/TKA may reduce the risk of revision arthroplasty. The mechanisms by which statin therapy is linked with a reduced risk of revision surgery are not completely understood, though does not appear to be related solely to an effect on osseointegration of the primary prosthesis, which occurs primarily in the early (<1 year) postoperative period.

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OP0337 ASSOCIATION BETWEEN METABOLIC SYNDROME AND TRAJECTORIES OF KNEE PAIN: A 10.7-YEAR FOLLOW-UP STUDY

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Background: Metabolic syndrome (MetS) has been suggested as having a role in the pathogenesis of osteoarthritis (OA). However, no study has assessed whether MetS and its components are associated with knee pain and its change over time.

Objectives: To identify distinct trajectories of MSP over 10.7 years in an older population, and to examine risk factors for identified trajectories.

Methods: 1099 participants (mean age 63 years) from the population-based Tasmanian Older Adult Cohort study were recruited at baseline. 875, 768 and 563 participants attended years 2.6, 5.1 and 10.7 follow-up, respectively. Demographic, psychological, lifestyle and comorbidities data were obtained at baseline. Knee radiographic OA was assessed by X-ray at baseline. Group-based trajectory modelling was applied to identify distinct trajectories of MSP. Multi-nominal logistic regression was used for the analyses with adjustment for potential confounders.

Results: 985 participants were included for the analyses, three pain trajectories were identified: 'Mild pain' (52%), 'Moderate pain' (33%) and 'Severe pain' (15%) with 32% of participants having MetS. MetS was significantly associated with increased risk of both 'Moderate pain' (relative risk [RR]: 1.47, 95% confidence interval [CI]: 1.10 to 1.96) and 'Severe pain' (2.22, 1.54 to 3.20) relative to 'Mild pain' in univariate analysis. After adjustment for age, sex, smoking, physical activity, emotional problems, comorbidities and radiographic OA, central obesity was associated with increased risk of both 'Moderate pain' (1.70, 1.17 to 2.49) and 'Severe pain' (3.28, 2.16 to 4.98), and MetS and its components (hypertriglyceridemia and low HDL) were only associated with increased risk of 'Severe pain' (p<0.05). However, these associations became weak and non-significant after further adjustment for body mass index (BMI), but hypertension became significantly protective with 'Moderate pain' (0.70, 0.50 to 0.99). Similar associations were found in those with knee OA (RR: 1.70 to 2.75, all p<0.05).

Conclusions: The MetS is predominantly associated with knee pain trajectories through central obesity, and hypertriglyceridemia and low HDL can predict 'Severe pain' trajectory in those with MetS. An unexpected inverse association between hypertension and moderate pain trajectory needs a further investigation, which may reflect an interaction between blood pressure and pain sensitivity in 'Moderate pain' trajectory.

Disclosure of Interest: None declared

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Big data for musculoskeletal research

OP0338 RELATIONSHIP OF PROVIDER DENSITY ON TOTAL JOINT REPLACEMENT OUTCOMES

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Background: The proportion of providers in a geographical location (provider density) has been associated with improved surgical outcomes in hand and wrist surgery, appendicitis and other high-volume procedures, demonstrating the importance of access to care.

Objectives: The purpose of this study is to assess the association of provider density with Total Knee Replacement (TKR) and Total Hip Replacement (THR) outcomes.

Methods: Individual patient-level variables were obtained from a single institution TKR and THR registry between 5/1/07 and 2/1/11. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) pain and function scores at baseline and 2 years after elective TKR and THR were collected and retrospectively analysed. We included patients living in New York, Connecticut and New Jersey which is the catchment area for the hospital. Individuals' geocodable addresses were used to obtain the number of primary care physicians (PCPs) and specialists in each census tract using the ArcGIS software. Provider density was calculated and broken down into percentage quartiles. Comparisons were made using Kruskal-Wallis tests.

Results: A total of 3606 TKR, and 4295 THR patients were included. (figure 1) Mean number of PCPs were 5.4(SD 9.5) and specialists were 15.8(SD 41.1) per census tract. The median number of PCPs were 2 (IQR 1, 6) and specialists were 3 (IQR 1, 13). Neighbourhood poverty or education correlated poorly with the number of PCPs and specialists. Baseline WOMAC pain and function scores (table 1) are statistically significantly better in neighbourhoods with a higher proportion of specialists, but not PCPs. These differences were no longer present 2 years after surgery.

Abstract OP0338 – Table 1 Association of specialist proportions in neighbourhoods with WOMAC* scores

	Proportion of Specialists per census tract	Baseline WOMAC* median [IQR]	p-value	2-year WOMAC* median [IQR]	p-value	Baseline WOMAC* median [IQR]	p-value	2-year WOMAC* median [IQR]	p-value
Pain									
	Total Hip Replacement					Total Knee Replacement			
Quartile 1 (Lowest)	50 [40,65]		<0.001	100 [90,100]	0.59	50 [40,65]		95 [80,100]	0.76
Quartile 2	50 [40,65]			100 [90,100]		55 [40,65]		95 [80,100]	
Quartile 3	55 [45,65]			100 [90,100]		55 [45,65]		95 [85,100]	
Quartile 4 (Highest)	55 [45,65]			100 [90,100]		56.3 [45,70]		95 [80,100]	
Function									
	Total Hip Replacement					Total Knee Replacement			
Quartile 1 (Lowest)	46.9 [35.3,58.8]		<0.001	95.6 [86.8,100.0]	0.49	50.0 [39.7,61.8]		91.2 [75.0,98.4]	0.37
Quartile 2	48.3 [36.8,61.8]			95.6 [86.8,100.0]		52.9 [42.7,66.2]		90.6 [76.5,97.1]	
Quartile 3	50.0 [39.7,64.7]			96.9 [88.2,100.0]		52.9 [42.7,66.2]		89.9 [77.9,97.1]	
Quartile 4 (Highest)	50.0 [39.4,63.3]			96.9 [88.2,100.0]		55.9 [44.1,69.1]		91.2 [78.3,98.5]	

*WOMAC - Western Ontario and McMaster Universities Osteoarthritis Index

Abstract OP0338 – Figure 1 Map of New York, New Jersey and Connecticut with census tract specialist provider density and baseline WOMAC pain scores of individual patients.

Conclusions: Patients from neighbourhoods with fewer specialists seek arthroplasty with worse baseline pain and function than those from neighbourhoods with more specialists. However, once these patients receive arthroplasty (i.e. specialty care), these differences resolve by 2 years. These data suggest that once a patient can access specialty care in the health care system, their outcomes improve despite worse baseline pain and function.

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OP0339

DEVELOPMENT OF A PREDICTIVE MODEL OF RADIOLOGICAL DAMAGE IN PATIENTS WITH RHEUMATOID ARTHRITIS BASED ON ARTIFICIAL INTELLIGENCE

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Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease associated with increased mortality and disability. Although different factors associated with prognosis have been identified, it is still difficult to predict the evolution of a specific patient.

Objectives: Our objective is to train and validate a predictive model of disease severity using radiological damage as a surrogate marker, based on Artificial Intelligence techniques, and using clinical and genetic data.

Methods: Four independent cohorts were included (892 patients with 1667 hand X-rays). Radiological damage was measured with the Sharp/van-der-Heijde score (SvdH). The variables to be predicted [total value of SvdH, erosion component (ES) and joint narrowing (NS)] were logarithmically transformed. As clinical predictors, age at onset of symptoms, sex, duration of the disease at the time of each radiograph, year of onset of symptoms and presence of rheumatoid factor were used. As genetic variables, the single nucleotide polymorphism data obtained from the Immunochip genotyping platform (Illumina) were used. In addition, an interaction between each polymorphism and the duration of the disease was introduced. Three cohorts were used for the selection of variables, generation of predictive models and internal validation. The fourth cohort was used to perform the external validation of the models. Regression trees with random effects were generated using the R package 'REEMtree'. The goodness of fit of the models was measured using the root mean squared error (RMSE) and the intraclass correlation coefficient (ICC).

Results: In the cohorts where the predictive models were developed, the RMSEs for total SvdH, ES and NS were 3.16, 1.02 and 2.29 units of the Sharp/van-der-Heijde score, respectively. The ICCs were 0.96, 0.87 and 0.95, respectively. In the external validation cohort, the RMSEs were 7.13, 3.53 and 4.81 units of the Sharp/van-der-Heijde score, respectively. The ICCs were 0.90, 0.78 and 0.88.

For the total SvdH, the best fit model contained the variables 'age of onset of the symptoms of RA' and the interaction between duration of the disease and 3 polymorphisms: rs10752907, rs4405161 and rs2501617. For the ES, it contained the variables 'age of onset of AR symptoms', the polymorphism rs7769752 and the interaction between disease duration and 6 polymorphisms: rs12410412, rs117029499, rs72925969, rs869186, rs11258464, rs4781952. For the NS, it contained the variables 'age of onset of AR symptoms', 'gender', and the interaction between disease duration and 9 polymorphisms: rs3814055, rs1020822, rs13157991, rs152294, rs2914190, rs10824537, rs2637229, rs114136906 and rs4958241.

Conclusions: It is possible to generate predictive models of radiological damage of great precision using Artificial Intelligence techniques. This could allow early stratification of patients according to prognosis.

It is necessary to validate these models in other populations.

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From big data to personalised medicine in paediatric rheumatic diseases

OP0340

EVIDENCE BASED RECOMMENDATIONS FOR CORTICOSTEROID TAPERING/DISCONTINUATION IN NEW ONSET JUVENILE DERMATOMYOSITIS PATIENTS FROM THE PRINTO TRIAL

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Background: At present no clear evidence based guidelines exist to standardise the tapering and discontinuation of corticosteroids (CS) in juvenile dermatomyositis (JDM).

Objectives: To provide evidence-based recommendations for CS tapering/discontinuation through the analysis of the patients in the PRINTO new onset JDM trial. Secondary objective of the study was to identify predictors of clinical remission and CS discontinuation.