did not reveal similar reports in the literature. (His mother was a retired nurse). Our own searches entering the terms aspiration online. He had access to hypodermic needles and syringes whilst watching a YouTube video, and had posted a clip of his knee joint during the preceding weeks prior to attending the clinic. He obtained short relief from this, having to aspirate his knee on three occasions. The fluid was blood stained. He also told me about draining my own knee.

Methods:

We suggest such practices may be more common than appreciated.

Esther Chan1, Sian Copley1, Claire Wilson1 and David Coady1

GENERATION

32. SELF-ASPIRATION OF A KNEE JOINT IN THE YOUTUBE CULTURE

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Department of Rheumatology, Sunderland Royal Hospital, Sunderland, UK, 2Department of Obstetrics, Gynaecology and Andrology, Albert Szent-György Medical University, Szeged, Hungary, 3University Division of Geriatric Medicine, Katholieke Universiteit Leuven, Leuven, 4University Centre for Metabolic Bone Diseases, Katholieke Universiteit Leuven, Leuven, Belgium, 5Department of Medicine, Santiago de Compostela University, Complejo Hospitalario Universitario de Santiago, Santiago de Compostela, Spain, 6Department of Clinical Physiotherapy, University of Florence, Florence, Italy, 7Scanian Andrology Centre Malmö University Hospital, University of Lund, Malmö, Sweden, 8Department of Reproductive Biology, Imperial College London, London, UK, 9Department of Andrology and Reproductive Endocrinology, Medical University of Lodz, Lodz, Poland, 10Andrology Unit, United Laboratories of Tartu University Clinics, Tartu, Estonia, 11Department of Andrology and Endocrinology, Katholieke Universiteit Leuven, Leuven, Belgium, 12Department of Endocrinology, Manchester Royal Infirmary, University of Manchester, Manchester, UK.

Background: The association between low vitamin D levels and the occurrence of chronic widespread pain (CWP) remains unclear. The aim of this study was to determine whether low vitamin D levels are associated with the new development of CWP, and if so whether this is due to the presence of other adverse health factors.

Methods: 3369 men aged between 40 and 79 years were recruited from population registers in 8 European centres for participation in a longitudinal study of male ageing, the European Male Ageing Study (EMAS). Subjects were invited to attend by letter. At baseline they were asked about lifestyle, adverse health factors and the presence of comorbidities. They completed the Beck depression inventory, had an assessment of physical characteristics and performance, including walking speed, and had a fasting blood test performed. The occurrence of pain was assessed at baseline and after a mean follow-up of 4.3 years (range 3.0–5.7 years) with subjects asked to mark on a body manikin the sites of their pain. The presence of CWP was defined using the ACR criteria. Serum 25-hydroxyvitamin D (25-(OH)D) was assessed using radioimmunoassay with results expressed as ng/ml. Logistic regression was used to determine, among those who were pain free at baseline, the relationship between baseline vitamin D levels and the new occurrence of CWP, the results being expressed as odds ratio (OR) and 95% CI.

Results: 2313 men, mean age 58.8 years (s.d. 10.8) had complete data on pain at both baseline and follow-up and 25-(OH)D levels at baseline. Mean 25-(OH)D at baseline was 25.9 ng/ml. Of those without CWP at baseline, 151 (6.5%) developed CWP at follow-up. Compared with those (577) who were pain free at both time points, subjects with new onset CWP at follow-up were significantly more likely at baseline, to be depressed (23.5% vs 5.6%), have a higher BMI (28.6 kg/m² vs 27.2 kg/m²), take longer to walk 50 feet (14.2 vs 12.9 s) and to have ≥2 comorbid conditions (58.9% vs 34.1%). After adjusting for age and centre, compared with those in upper quintile of 25-(OH)D (≥36.3 ng/ml), those in the lowest quintile (<15.6 ng/ml) were more likely to develop CWP (OR 2.32; 95% CI 1.3, 4.2). The association was attenuated, however, after adjustment for walking speed and comorbidity (OR 1.93; 95% CI 1.0, 3.6), and became non-significant after further adjustment for BMI and depression (OR 1.6; 95% CI 0.8, 3.1).
Conclusion: Low vitamin D is linked with the new occurrence of CWP. However, this appears related to the presence of adverse health factors.

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Disclosure statement: The authors have declared no conflicts of interest.

34. THE PREVALENCE OF ROSE ANGINA IS INCREASED IN PEOPLE REPORTING CHRONIC PAIN: RESULTS FROM A CROSS-SECTIONAL GENERAL POPULATION STUDY

Luke C. Conway1, Blair H. Smith2, Lynne J. Hocking3, Mark M. Gillan1, Anna F. Dominiczak1,2, Andrew Morris3,4, David J. Porteous1, Andrea Goeble5 and Nicola J. Goodson1

1 Division of Musculoskeletal Biology, Institute of Ageing and Chronic Disease, Faculty of Health and Life Science, University of Liverpool, Liverpool, UK
2 Medical Research Institute, University of Dundee, Dundee, UK
3 Aberdeen Pain Research Collaboration (Musculoskeletal Research), Division of Applied Medicine, University of Aberdeen, Aberdeen, UK
4 Health Informatics Centre, University of Dundee, Dundee, UK
5 MRI Glasgow Cardiovascular Research Centre, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK

Background: Patients who report symptoms of chronic pain have a reduced life expectancy, increased cardiovascular disease (CVD) mortality and higher prevalence of CVD risk factors including smoking and the metabolic syndrome. However, little is known about the prevalence of angina in chronic pain. Chronic pain is associated with autonomic disturbance and impaired mobility and chronic pain may mask symptoms of exertional chest pain. These factors could lead to reduced recognition of angina. The aim of this study was to explore whether exertional chest pain (measured using the Rose angina questionnaire) is identified in people reporting chronic pain.

Methods: Participants in Generation Scotland: The Scottish Family Health Study completed pain questionnaires recording the presence of chronic pain, distribution and intensity of chronic pain. Severity of chronic pain was calculated using von Korff Chronic pain grade (CPG). Severe chronic pain classified as CPG ≥ 3. Angina (exertional chest pain) symptoms were assessed using the Rose angina questionnaire. Self-reported cardiac disease and use of CVD therapy (antidepressant, nitrates and cholesterol lowering therapy) were recorded. Associations between chronic pain and Rose angina were explored using logistic regression (adjusted for age and gender). Association between Rose angina and proxy measure of likely known ischaemic CVD (known CVD) (based on self-reported smoking and the metabolic syndrome). However, little is known about the prevalence of angina in chronic pain. Chronic pain is associated with autonomic disturbance and impaired mobility and chronic pain may mask symptoms of exertional chest pain. These factors could lead to reduced recognition of angina. The aim of this study was to explore whether exertional chest pain (measured using the Rose angina questionnaire) is identified in people reporting chronic pain.

Results: Of 12,881 participants, 36.3% reported chronic pain and 6.1% reported severe chronic pain. The chronic pain subgroup were older [mean age 50.7 years (s.d. 13.6)] than those free from pain [mean age 45 years (s.d. 15.2)]. Prevalence of Rose angina was 14.5% in those reporting chronic pain, 26.5% in severe chronic pain and 4.3% in those free from chronic pain. Chronic pain was associated with Rose angina [OR (95% CI) 2.98, 3.92] and known CVD [OR (95% CI) 1.46 (1.30, 1.64)]. Severe chronic pain was strongly associated with Rose angina [OR (95% CI) 4.4 (3.7, 5.2)]. Increasing CPG was associated with increasing prevalence of Rose angina and known CVD. Rose angina was associated with known CVD in participants reporting chronic pain [OR (95% CI) 3.46 (2.82, 4.24)], but the association was stronger in those free from chronic pain [OR (95% CI) 4.19 (3.13, 5.61)].

Conclusion: This study has highlighted that people reporting chronic pain had a 3.4 fold increase in Rose angina compared with those free from chronic pain and a modest increase in known CVD. The specificity of the Rose angina questionnaire for predicting future cardiovascular events in people with chronic pain is unknown and requires longitudinal study, but this study suggests a reasonable validity for this tool in assessing exertional chest pain in chronic pain patients. Taking a chest pain history from chronic pain patients will facilitate targeted cardiovascular investigation and interventions to reduce CVD events in this high risk group.

Disclosure statement: The authors have declared no conflicts of interest.

35. TEST-RETEST RELIABILITY OF FIVE GLOBAL MEASURES ADDRESSING AT-WORK LIMITATIONS/PRODUCTIVITY LOSS IN PATIENTS WITH RHEUMATOLOGICAL CONDITIONS

Sarah A. Leggett1, Ailsa Bosworth2, Annelies Boonen3, Antje van der Zee-Neuen2, Diane Lacalle1, Dorcas Beattor4, Bruno Fautrel5, Sabrina Dadoun5, Carlo Scire6, Sofia Hagens6, Ingeram Pederson10, Mihai Bojinca11, Carina Mihai11, Catherine Hoffstetter12, Pam Rogers13, Denise Linton14 and Suzanne Verstappen1

1 Arthritis Research UK Epidemiology Unit, University of Manchester, Manchester, UK
2 National Rheumatoid Arthritis Society, Maidenhead, UK
3 Division of Rheumatology, Maastricht University Medical Centre, Maastricht, Netherlands
4 Arthritis Research Centre of Canada, University of British Columbia, Vancouver, BC, Canada
5 Mobility Program Clinical Research Unit, St Michael’s Hospital, Toronto, ON, Canada
6 BHF Glasgow Cardiovascular Research Centre, Mobility Program Clinical Research Unit, St Michael’s Hospital, Toronto, ON, Canada

Background: There are currently a number of single item global measures designed to explore at-work productivity loss (presen-teeism) in patients with rheumatological conditions. However, test-retest data are not available for all these measures and comparison of data between these measures are lacking. The purposes of this study were (i) to test-retest five at-work productivity loss global measures (ii) to explore the correlations between the 5 measures, and (iii) to investigate the association between the 5 scales and disease activity.

Methods: In this international study 70 patients with a diagnosis of inflammatory arthritis or OA in paid employment were recruited from 7 countries (United Kingdom, Sweden, France, The Netherlands, Romania, Italy, and Canada). At baseline and 2 week follow-up, participants completed five global measures, i.e. a 10 point VAS, including: Work Productivity Scale–Rheumatoid Arthritis (WPS-RA; 0 = no interference–10 = complete interference), Work Productivity and Activity Impairment Questionnaire (WPAI; 0 = no effect on work–10 = completely prevented from working), Work Ability Index (WAI; 0 = unable to work–10 = work ability at its best), Quality and Quantity Questionnaire (QQ; 0 = practical nothing–5 = poor, 10 = normal quantity/very good quality), and WHO Health and Performance Questionnaire (HPQ; 0 = worst performance–10 = top performance). VAS general well-being was also recorded at 2 weeks (0 = very well–10 = very poorly). Test-retest reliability was assessed applying intra-class correlation (ICC) statistics. ICCs of 0.75 and 0.85 are generally regarded as good as respective group and individual level. Spearman correlations were calculated to determine the association between the two week global measure scores and between each scale with the VAS general well-being score.

Results: 57% of the study population was female; mean age was 45.6 (s.d. 10.7) years and median symptom duration 13.5 (IQR 5–19) years. Median VAS general well-being was 32 (IQR 11–52). 70% of the study population had a non-manual occupation. ICC correlations were moderate at a group level: WPAI (r = 0.57), WPS-RA (r = 0.62), WAI (r = 0.69), QQ-quantity (r = 0.71), QQ-quality (r = 0.66) and HPQ (r = 0.59). The correlations between the 5 at-work productivity measures ranged from strong (WPS-RA vs WPAI, r = 0.86) to moderate (QQ-quality and QQ-quantity with all 4 other measures) (see Table 1). Correlations between each of the individual measures and VAS general well-being were at most moderate.

35. Table 1. Spearman correlations between five work productivity loss measures and visual analogue scale general wellbeing

| Measure | WPAI | WPS-RA | WAI | QQ-Quantity | QQ-Quality | QQ-Total | HPQ Question C | VAS well-being |
|---------|------|--------|-----|-------------|------------|---------|---------------|---------------|
| WPAI    | 1    | 0.86   | 0.40| 0.58        | 0.57       | 0.61    | 0.53          | 0.40          |
| WPS-RA  | 0.86| 1      | 0.63| 0.58        | 0.57       | 0.61    | 0.53          | 0.40          |
| WAI     | 0.40| 0.63   | 1   | 0.58        | 0.57       | 0.61    | 0.53          | 0.40          |
| QQ-Quantity | 0.57 | 0.58 | 0.63 | 1           | 0.61       | 0.53    | 0.40          | 0.40          |
| QQ-Quality | 0.57 | 0.58 | 0.63 | 0.61        | 1          | 0.53    | 0.40          | 0.40          |
| QQ-Total | 0.61 | 0.61  | 0.58 | 0.57        | 0.61       | 1       | 0.53          | 0.40          |
| HPQ Question C | 0.53 | 0.53 | 0.64 | 0.56        | 0.53       | 0.53    | 1             | 0.44          |
| VAS well-being | 0.40 | 0.43 | 0.43 | 0.40        | 0.40       | 0.40    | 1             | 0.54          |
Conclusion: Overall, test-retest results of the 5 existing at-work productivity loss measures and the correlation between these 5 measures were moderate. The latter probably reflecting differences in concepts, recall periods, and references used in these measures. The moderate association between the global at-work productivity measures and VAS general well-being suggests that the impact of arthritis on work is only partly captured by generic health measures.

Disclosure statement: The authors have declared no conflicts of interest.

36. WHAT FACTORS INCREASE RISK OF ONSET OR PERSISTENT SEVERE FOOT PAIN IN A POPULATION STUDY?

Alyssa B. Dufour1, Hytton B. Menez2, Arunima Awale3, Virginia A. Casey1, Patricia P. Katz1 and Marian T. Hannan1

1Institute for Aging Research, Hebrew SeniorLife & Harvard Medical School, Boston, MA, USA, 2Faculty of Health Sciences, La Trobe University, Bundoora, Australia, 3Institute for Aging Research, Hebrew SeniorLife, Boston, MA, 4Department of Medicine, University of San Francisco, School of Medicine, San Francisco, CA, USA

Background: Few studies have evaluated risk factors for patterns of foot pain in the general population, let alone over time. An understanding of the possible predictors is the first step towards evidence-based interventions. The purpose of this study was to examine risk factors for the onset and persistent of severe foot pain in men and women of the population-based Framingham Foot Study (FFS).

Methods: The longitudinal FFS included 648 participants who attended baseline (BL, 2002–5) and follow-up (FU, 2005–6) exams. The presence of foot pain at both BL and FU was queried using the question: On most days, do you have pain, aching, or stiffness in either of your feet? If participants had foot pain, severity was then queried as mild, moderate or severe. We dichotomized pain severity into 2 pain groups: moderate/severe vs none/mild for each foot. Two separate analyses were done to examine 1) onset of moderate/severe pain vs none/mild pain and 2) persistent severe/moderate pain vs resolving severe/mild pain. Two per-foot analyses using logistic regression and generalized estimating equations were used to examine the association between onset vs no foot pain and persistent vs resolving foot pain with potential risk factors (age, sex, BMI, current smoking, knee pain, hip pain and low back pain). Models were also examined by sex.

Results: At BL, in the 648 participants (1296 feet) average age was 65 years (range 36–86, s.d. = 9). BMI was 29 kg/m² (s.d. = 5), 51% were female and mean follow-up time was 3 years (range 1–6), 85% had no pain, 5% had onset, 7% had resolving, and 3% had persistent pain. Female sex (P = 0.04) and current smoking (P = 0.02) was associated with a 2–3 fold increased odds of onset of pain. Increased BMI (P = 0.01) was associated with a 16–20 fold increased odds of persistent vs resolving pain (Table 1). In the sex-specific models, current smoking maintained its effect with onset pain, but was non-significant (OR 7.0; 95% CI 2.4, P = 0.11). The elevated odds of persistent pain remained for overweight (OR 14, P = 0.20) and obese men (OR 7, P = 0.10) but not for women. These non-significant results are not surprising given the small numbers in individual cells.

Conclusion: A larger study with longer follow-up is needed to identify risk factors and patterns of foot pain over time. Looking at foot disorders, in addition to pain, is also of interest. Nevertheless, in our study current smoking regularly appears to be linked with onset of moderate to severe foot pain, which is in agreement with common clinical observations that smokers develop more foot problems than non-smokers. Additionally, increased BMI was significantly linked to persistent moderate to severe foot pain compared with those whose pain resolved.

37. CHANGING PATTERNS IN RHEUMATOID ARTHRITIS DISEASE ACTIVITY

Aneela Mian1, Jamey Galloway1, Ian Scott1,2, Sophia Steer1, Gabriele Kingsley1,3 and David Scott1

1Department of Rheumatology, King’s College Hospital, London, 2Department of Rheumatology, Guys and St Thomas’ NHS Trust, London, 3Department of Rheumatology, University Hospital Lewisham, London, UK

Background: RA management has changed over the last two decades. DMARDs are started earlier. More DMARD combinations are used. Patients with sustained active disease may receive TNF inhibitors (TNFi) and other biologics. There is a greater emphasis on achieving remission. We have used observational data from a single locality to ask two questions. First what has been the impact of these management changes on patients seen in specialist clinics? Second has changed continued over time or has it stalled?

Methods: Our observational study included 1492 RA patients attending two adjacent rheumatology centres. They comprised four groups of consecutive clinic attenders with RA attending between 1996 and 2013. We collected demographic data (gender, age and disease duration), disease activity (DAS28 scores and the individual components) and the use of DMARDs and biologics. We compared cohorts using descriptive statistics and evaluated the frequencies of remission and active disease by calculating odds ratios (with 95% CI) and using the Mantel-Haenszel test to evaluate trends.

Results: Gender frequencies, mean age and mean disease duration were similar in each patient group. Mean DAS28 scores fell from 5.1 in 1996–97 to 3.7 in 2009–2010; this was an annual fall of 0.1/year. The rate of change declined after 2010 and DAS28 scores stabilized at 3.5 in 2012–13. The proportion of patients in remission (DAS28 < 2.6) increased over time with the Mantel-Haenszel test showing a highly significant trend (P < 0.001); the most marked increase was between 2001–03 and 2009–2010, when rates rose from 9% to 23%. The frequency of active disease reduced over time with the Mantel-Haenszel test showing a highly significant trend (P < 0.001); again the most marked fall was between 2001–03 and 2009–10, when rates fell from 44% to 21%. Throughout the period the frequency of intermediate disease activity (DAS28 3.2–5.1) was static (37–42%) (Table 1).

Conclusion: The disease activity of RA patients attending rheumatology clinics has changed dramatically over time. There has been a marked reduction in the frequency of active disease and an increase in remissions. Further improvement in achieving lower disease activity has now plateaued.

Current treatment pathways for RA were designed when many patients had active RA. This is particularly true for access to biologics. We suggest that additional management changes will be needed to further increase remission rates. Patients with intermediate disease activity RA now form the largest group of clinic attenders and we need to focus upon these patients.

37 Table 1. Temporal changes in disease activity, %

| Variables     | 1996–1997 | 2001–03 | 2009–10 | 2012–2013 |
|---------------|-----------|---------|---------|-----------|
| DAS28 category |           |         |         |           |
| Remission     | 15 (8)    | 29 (9)  | 69 (23) | 162 (24)  |
| Low           | 8 (4)     | 32 (10) | 45 (15) | 91 (13)   |
| Intermediate  | 71 (38)   | 115 (37)| 131 (43)| 258 (41)  |
| Active        | 95 (50)   | 136 (44)| 63 (21) | 150 (22)  |
| Mean DAS28 (SD) | 5.1 (1.6) | 4.7 (1.5)| 3.7 (1.5) | 3.5 (0.6) |

Disclosure statement: The authors have declared no conflicts of interest.

38. DOES TREATING EARLY RHEUMATOID ARTHRITIS WITHIN THE WINDOW OF OPPORTUNITY IMPROVE OUTCOMES AT 1 YEAR?

Christopher R. Sparks1, Stephanie F. Ling1, David Sharpeley1, Sarang Chitale2, Cristiana Estrach3 and Nicole J. Goodson1

1Department of Musculoskeletal Biology, University of Liverpool, 2Liverpool, 1The Centre for Musculoskeletal Research, University of Manchester, Manchester, 3Peter Maddison Rheumatology Centre, Betsi Cadwaladr University Health Board, North Wales, 4Department of Rheumatology, University Hospital Aintree NHS Foundation Trust, Liverpool, UK

Background: The window of opportunity, where DMARD treatment may be more effective in early RA (ERA), has been defined as 12 weeks from symptom onset. Delay in RA presentation and treatment initiation is common in routine clinical practice. Patients presenting early may
different from those with later presentation, with smoking (a poor prognostic marker in RA) associated with very early RA (veRA) presentation (verA, ≤ 12 weeks). It is not known whether veRA presentation influences outcome at 1-year. In an eRA cohort, we aimed to explore: (i) baseline disease associations with veRA and (ii) veRA as predictor of 1-year outcomes.

Methods: An inception cohort of eRA patients with a clinical diagnosis of RA (of symptom duration ≤ 12 months) had BMI, smoking, symptom duration, DAS28, RF and anti-citrullinated protein antibody (ACPA) statuses, and HAQ scores recorded at baseline. All received DMARDs following a treat-to-target protocol. 1-year outcomes were: DAS28 remission DAS28 ≤ 2.6, good EULAR response and improvement in disability (any reduction in HAQ score). Associations with veRA DAS28 remission DAS28 ≤ 2.6, good EULAR response and improvement in disability (any reduction in HAQ score). Associations with veRA were explored using logistic regression, adjusting for age and gender.

Results: 243 eRA patients with 1-year follow-up data were identified. Baseline mean age was 58.3 years (IQR, 15.1). 65.8% were female and 67.1% ACPA positive. History of ever-smoking was reported by 43.2%, and 28.8% were obese. VeRA presentation was observed in 100 patients (41.2%). At baseline, veRA was associated with smoking, ACPA and RF seronegativity and high DAS28 (Table 1). After 1-year of treatment, 121 patients (49.8%) achieved DAS28 remission, 142 (58%) had good EULAR response and 154 (63%) demonstrated HAQ improvement. VeRA was not predictive of these outcomes in the overall cohort; however, ACPA-stratified analyses revealed an association between veRA and HAQ improvement in ACPA-negative patients, adjusting for age, gender, DAS28, smoking and obesity (OR = 3.3 95% CI 1.1, 10.1).

Conclusion: eRA patients presenting within the window of opportunity have increased disease activity, smoking and lower rates of seropositive disease, but have similar 1-year outcomes to eRA patients presenting outside this period. In ACPA-negative patients, veRA presentation is associated with improved disability at 1-year, compared with those with delayed presentation.

Disclosure statement: The authors have declared no conflicts of interest.

38 Table 1. Baseline associations with very early RA presentation, adjusted for age and gender

| Presentation with veRA | Odds ratio | 95% CI |
|------------------------|------------|--------|
| Ever smoker            | 1.73       | 1.01   | 2.05 |
| DAS28 (< 5)            | 1.85       | 1.09   | 3.13 |
| RF positive            | 0.56       | 0.32   | 0.96 |
| ACPA positivity        | 0.41       | 0.24   | 0.72 |
| Obese (BMI ≥ 30 kg/m²) | 0.84       | 0.48   | 1.50 |
| HAQ score (< 1)        | 1.31       | 0.78   | 2.19 |

39. NON-DIFFERENTIAL REPORTING OF MYOCARDIAL INFARCTION TO A NATIONAL OBSERVATIONAL DRUG SAFETY STUDY USING LINKED DATA: LINKAGE OF THE BRITISH SOCIETY FOR RHEUMATOLOGY BIOLOGICS REGISTRY FOR RHEUMATOID ARTHRITIS AND THE MYOCARDIAL ISCHAEMIA NATIONAL AUDIT PROJECT

Ayd insertion

Audrey Low, Deborah Symonds, Mark Lunt, Louise Mercer, Christopher Gale, Kath Watson, BSRBR Control Centre, York Teaching Hospital NHS Foundation Trust, York, UK

Background: The BSRBR was established to compare the long term safety of anti-tumour necrosis factor drugs (TNFi) with non-biologic drugs (nbDMARDs) in subjects with RA. Serious adverse events (SAEs) are identified by clinician and patient reporting as well as linkage to the national death register. We used myocardial infarction (MI) as an example to explore whether differential under-reporting of SAEs to BSRBR exists between treatment groups by linking BSRBR to the Myocardial Ischaemia National Audit Project (MINAP), a registry of all hospitalizations with MI in England and Wales (E&W).

Methods: This analysis was limited to subjects living in E&W. BSRBR and MINAP were linked using deterministic matching with combinations of first and last names, birthdate, postcode, National Health Service number, sex. Events from both datasets were matched by subject using a 30-day window. Matched and unmatched events were verified using the American Heart Association/European Society of Cardiology criteria for MI. Deaths from MI (reported as the underlying cause of death using ICD-10 via death register linkage) were also included as verified MIs. Age, sex, treatment group, MI phenotype, whether subjects received cardiology care at the same hospital as rheumatology care, location of MI deaths were explored as possible reasons for non-overlap between datasets using descriptive statistics.

Results: The risk of MI was compared between subjects receiving nbDMARDs and ever-exposed to TNFi using a Cox regression model, adjusted for deciles of propensity scores (PD) (Table 1) using (i) MIs verified from BSRBR-only, (ii) all MIs verified from BSRBR or MINAP. Subjects were censored at first MI, death, last clinician follow-up or 20/4/2010, whichever came first.

Conclusion: A degree of under-reporting of MIs exists in BSRBR but is non-differential between treatment groups. The additional MIs from MINAP did not alter the risk estimate but increased its precision. Future studies suggest linkage with other datasets is an important method of increasing event capture and enriching data for analysis.

Disclosure statement: The authors have declared no conflicts of interest.

40. THE INCREASED RISK OF SELF-REPORTED PRIMARY CARE CONSULTATIONS ATTRIBUTABLE TO MULTISITE PERIPHERAL JOINT PAIN

Andrew Finney, Emma L. Healey, Martyn Lewis, Sarah Ryan and Krysa S. Dziędzic

1Arthritis Research UK Primary Care Centre, Research Institute for Primary Care and Health Sciences, Keele University, Staffordshire, 2The Haywood Rheumatology Centre, The Haywood Hospital, Burton, Stoke-on-Trent, UK

Background: The National Institute for Health and Care Excellence OA guidelines (2008) recommend that future research should address multisite joint pain as it is more severe and disabling than single site joint pain. The aim of this study was to describe the prevalence and risk of self-reported consultation with a General Practitioner (GP) or Practice Nurse (PN) for joint pain in the North West Midlands as part of the MOSAICS study. Participants provided information on the presence of joint pain in the hands, hips, knees and feet and recorded whether they had consulted a GP or PN for their joint pain in the last 12 months. Consultations for either single site or multisite joint pain (pain in two or more sites) were noted. The relative risk (RR) and attributable risk (AR) of consulting a
GP or PN were calculated for those with multisite joint pain compared with those with single site joint pain. Cox-regression was used to obtain RR adjusting for age, gender, BMI and social deprivation.

**Results:** Of 15 083 (53%) respondents, average age was 63.9 years (17.2% male) and 54% were female. There were 11 928 participants with joint pain, of which 4677 (39%) reported consulting a GP and 888 (7.4%) a PN. The crude RR (95% CI) for consulting with multisite vs single site joint pain was 1.89 (1.77, 2.00) and 2.61 (2.19, 3.17) for GP and PN consultations respectively. When adjusted for potential confounders the RR reduced to 1.76 (1.63, 1.89) and 2.45 (2.01, 2.97). The AR of consulting with multisite compared with single site joint pain was also found to be low, particularly within NHS, despite NICE recommending PA approaches for joint pain and OA.

**Disclosure statement:** The authors have declared no conflicts of interest.

### 41. LEVELS OF PHYSICAL ACTIVITY IN OLDER ADULTS WITH OR WITHOUT SELF-REPORTED JOINT PAIN: A CROSS-SECTIONAL SURVEY

Robert Smith1, Emma Healey1, Gretl McHugh1, Ebenezer Afolabi1 and Kryisia Dziedzic1

1Research Institute for Primary Care & Health Sciences, Keele University, Staffordshire, 2School of Nursing, Midwifery & Social Work, The University of Manchester, Manchester, UK

**Background:** The National Institute for Health and Care Excellence (NICE) recommend that physical activity (PA) should be a core treatment for all adults with OA. Joint pain is one of the main symptoms experienced by individuals with OA and yet in the UK the levels of PA in adults with joint pain are unknown. The objective was to: (i) describe the levels of PA in older adults with and without joint pain, and (ii) describe the uptake of NICE recommended PA for joint pain and OA.

**Methods:** Cross-sectional analyses of a population survey mailed to 28,443 community dwelling older adults aged 45 years and over were conducted as part of the MOSAICS study. Participants were asked to report if they had joint pain in four specific sites (foot, knee, hip or hand) over the last 12 months. Levels of PA were collected using the Short Telephone Activity Rating (STAR) questionnaire. Participants were categorized as physically inactive, somewhat active or regularly active. Participants were divided into two mutually exclusive groups:

| Level of physical activity | No self-reported joint pain, n (%) | Self-reported joint pain, n (%) |
|----------------------------|-----------------------------------|---------------------------------|
| Inactive                   | 233 (8.1)                         | 1329 (11.8)                     |
| Somewhat active            | 1076 (37.0)                       | 9011 (44.3)                     |
| Regularly active           | 1694 (54.9)                       | 4970 (43.9)                     |

**Results:** Of 14 212 responders to the STAR questionnaire, the mean age was 63.6 (11.1 s.d.) years, mean BMI was 28.9 (4.7 s.d.) kg/m², 54.2% were female and 11 310 (79.6%) participants reported joint pain. Table 1 displays the levels of PA. Participants with self-reported joint pain were less likely to be physically active compared with participants with no joint pain (OR –0.75, 95% CI 0.68, 0.87). In participants with joint pain, only 3667 (32.4%) reported trying PA approaches as a treatment for their joint pain in the last 12 months. However, only 368 (7.7%) participants reported having received a prescription of PA, in line with NICE guidelines, from the NHS.

**Conclusion:** Levels of PA appear lower in older adults with joint pain compared with those without. Use of PA as a treatment for joint pain was also found to be low, particularly within NHS, despite NICE recommending PA approaches for joint pain and OA.

**Disclosure statement:** The authors have declared no conflicts of interest.

### 42. PREDICTION OF FUTURE PAIN BY DAS28-P IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS: THE ERAN COHORT

Luke Harries1, Daniel F. McWilliams1, Adam Young2, Patrick D. W. Kiley1 and David A. Walsh1

1Arthritis UK Pain Centre, Academic Rheumatology, University of Nottingham, Nottingham, 2Department of Rheumatology, West Hertfordshire Hospitals NHS Trust, St Albans, 3Department of Rheumatology, St George’s Healthcare NHS Trust, London, UK

**Background:** Pain in RA remains a problem and priority for patients and physicians alike. Pain may be associated with different factors, such as mood, co-morbidities, gender and inflammation. However, despite many people with RA fulfilling FM criteria, the role of augmented pain processing is poorly understood and infrequently measured. DAS28-P is a derived index which represents the patient-reported proportion of disease activity and may reflect central pain processing in RA. This project examined characteristics associated with pain progression during early RA. We examined characteristics changing during the 3 year follow-up and their associations with pain.

**Methods:** Data were drawn from the Early Rheumatoid Arthritis Network (ERAN), an inception cohort of 1236 early RA patients from UK and Eire. Pain levels (SF36-Bodily Pain) were examined over the first 3 years after diagnosis. Generalized Estimating Equation (GEE) analyses, adjusting for confounders, were used to examine the associations of pain with demographic and clinical characteristics at baseline and each follow-up visit.

**Results:** Pain improved from baseline to 1 year (median (IQR) 41(22–62) and 51 (31–72) respectively) and then remained constant afterwards. DAS28-P at baseline had median (IQR) of 0.42 (0.35–0.51) and did not change substantially during the 3 year follow-up. Initial GEE analysis showed that high DAS28-P was consistently associated with worse pain throughout the follow-up (Table 1). Additional GEE analysis found that high DAS28-P significantly predicted the next year’s pain (Table 1).

**Conclusion:** DAS28-P is associated with RA pain at presentation and throughout follow-up; and it also predicts pain for the next 1 year. Disability, fatigue, current pain may also predict future pain better than some well-established measures of RA severity/prognosis.

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#### Table 1

| Measure | B (95% CI) | p  |
|---------|------------|----|
| Current pain | | |
| Age | 0.17 (0.09, 0.26) | <0.001 |
| Gender (male) | -0.64 (-4.18, -3.10) | <0.001 |
| Smoking status | 0.246 (0.16, 0.46) | 0.036 |
| CRP classification | 0.156 (-0.80, 3.52) | 0.196 |
| DAS28 | -3.41 (-4.29, -2.52) | <0.001 |
| HAQ | -13.30 (-14.93, -11.68) | <0.001 |
| SF36- Mental Health | 0.852 (-0.07, 0.906) | 0.824 |
| SF36- Vitality | 0.03 (-0.03, 0.09) | 0.284 |
| DAS28-P | -0.20 (-0.39, -0.09) | <0.001 |
| Current pain (SF36-Bodily Pain) | Not applicable | 0.11 (-0.19, -0.02) |

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43. BASELINE INFLAMMATORY MARKERS DO NOT INFLUENCE RATE OF PROGRESSION OF KNEE OSTEOARTHRITIS OVER 10 YEARS: RESULTS FROM THE HERTFORDSHIRE COHORT STUDY
Anna E. Litvic1, Mark Edwards2, Camille Parsons3, Dahai Yu1, Jahangir Afzal4, Janina B. Dennis5, 1Department of Rheumatology, MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton, 2Department of Rheumatology, Southampton General Hospital, Southampton, UK

Background: OA is now well recognized to involve an inflammatory component. Inflammatory cytokines produced by the synovium and chondrocytes appear to play pivotal roles in cartilage destruction. Some studies suggest that this local inflammation may be reflected systemically, and might be associated with the development or rate of progression of OA. We investigated whether baseline inflammatory markers predicted the rate of structural progression of OA in a cohort of healthy older adults unselected for joint disease.

Methods: 396 men and women (60–70 years) from the Hertfordshire Cohort Study underwent knee radiographs in 1998–2003 and again a mean of 10.3 years later. Tibiofemoral joint Kellgren and Lawrence (K&L) score was assessed by an experienced reader at both time points in both the left and right knee. Blood samples taken at baseline were available for measurement of a high-sensitivity C-reactive protein (hsCRP) and IL-6; anthropometric and lifestyle information was also available from baseline questionnaires.

Results: The mean (±SD) age of participants was 65.7 (2.6) years. hsCRP concentrations were normally distributed and fell in the normal range in over 99% of subjects; 75% subjects had an IL-6 concentration <1.5 pg/l at baseline. OA progression (an increase in K&L score of ≥1) occurred in 51.4% of knees (395 of 768). In 276 knees, the K&L grade increased by 1, in 109 it increased by 2, and in 10 by 3. While there was a trend toward higher hsCRP and IL-6 concentrations in those participants with progressive radiological OA, this was not significant in this cohort; there were no clear relationships between baseline IL-6 level and OA progression.

Conclusion: Baseline inflammatory markers were not shown to be associated with rate of OA progression in older men and women. Larger prospective studies are required to confirm these findings.

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44. A HISTORY OF FRACTURE IS ASSOCIATED WITH CHRONIC WHOLE BODY PAIN: FINDINGS FROM UK BIOBANK
Georgi Ntan1, Karen Walker-Bone1, Gareth T. Jones2, Blair Smith3, Gary J. Macfarlane4, Cyrus Cooper1 and Nicholas C. Harvey1, 1MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, 2Institute of Applied Health Sciences, School of Medicine and Dentistry, University of Aberdeen, Aberdeen, 3Ninewells Hospital and Medical School, University of Dundee, Dundee, UK

Background: Pain all over the body is a key component of chronic widespread pain (CWP), a common condition which often results in high levels of disability. Underlying mechanisms are complex and may involve neural systems, the hypothalamic-pituitary-adrenal (HPA) axis, and psychological indices. Although there is some evidence that CWP may follow a traumatic event, there are scant data relating to the occurrence of CWP following a history of bone fracture. Whilst the case definition of CWP requires use of pain in multiple sites, which may not be feasible in a large population cohort, the presence of chronic pain all over the body, readily obtainable by self-report, affords a practicable surrogate marker. The aim of this study was therefore to explore the association between presence of pain all over the body and previous fracture in a large population-based cohort, UK Biobank.

Methods: UK Biobank is a large prospective cohort comprising 500,000 men and women aged 40–69 years. Baseline assessment included detailed information covering health, medications, lifestyle, diet, physical activity and body build. Specifically data relating to past fracture over the last 5 years, and the presence of pain all over the body >3-months duration (PATB) were obtained. Poisson regression models with robust CIs were used to explore associations between presence of PATB and any fracture in the past 5 years, with adjustment for confounding factors, initially in the whole cohort and then separately for males and females. Results are presented as risk ratio (RR).

Results: The mean (±SD) age of participants was 57 (8.1) years and just over half were female (54%). The overall prevalence of PATB was 1.4%, as it was in those without previous fracture, while it was somewhat higher among those with a previous fracture (2.1%). A previous fracture was associated with a 51% increased risk of PATB (RR: 1.51; 95% CI: 1.41, 1.62). The association was somewhat attenuated after adjustment for demographic characteristics (sex, age, BMI), lifestyle (alcohol consumption, smoking, physical activity) and socio-economic factors (deprivation index, household income) (RR: 1.37; 95% CI: 1.28, 1.47) and after further adjustments for psychological risk factors (RR: 1.20; 95% CI: 1.05, 1.37), but in each case the association remained statistically significant. After stratification by sex, relationships between previous fracture and PATB appeared somewhat stronger in men than in women (fully adjusted RR men: 1.32; 95% CI: 1.05, 1.66; and RR women: 1.15; 95% CI: 0.98, 1.35).

Conclusion: In this large population-based cohort, previous fracture was associated with an increased risk of chronic pain all over the body, particularly in men, even after a range of confounding factors. These results require replication in other settings, but raise the possibility that fracture may predispose to chronic widespread pain, perhaps through perturbation of the HPA axis, or psychological stressors.

Disclosure statement: The authors have declared no conflicts of interest.

45. ANNUAL CONSULTATION INCIDENCE OF OSTEOARTHRITIS USING POPULATION-BASED HEALTHCARE DATA IN ENGLAND
Dahai Yu1, George Peat1 and Kelvin Jordan1
1Research Institute for Primary Care & Health Sciences, Keele University, Staffordshire, UK

Background: OA poses a major challenge to population health and healthcare services. Unlike several other countries, there are no published estimates of the consultation incidence of OA based on population-based healthcare data.

Methods: We used the Consultations in Primary Care Archive (CIPCA), a database of recorded primary care consultation data and information from secondary care from general practices in North Staffordshire. We used data from 11 general practices who contributed data continuously between 2000 and 2010 (total registered population = 94 565 in 2010). Case definitions for OA (any joint site, and hip, knee, hand separately) were used previously validated algorithm based on first primary care or recorded secondary care contact with an OA diagnosis Read (morbidty) code. Consultation incidence estimates were derived by a novel method utilizing age-stratified run-in periods (number of prior years without a record of OA). These estimates were then compared with those published from 10 population-based healthcare databases in Canada, United States, and Spain.

Results: The annual consultation incidence of OA (any joint) was 8.9/1000 aged ≥15 years (95% CI: 8.2, 9.7; 6.5/1000 in men and 11.2/1000 in women). Consultation incidence increased with age, peaking at 75–84 years as 24.7/1000 (20.6, 29.3). Consultation incidence estimates for hip, knee and hand OA were 1.4 (1.2, 1.8), 4.3 (3.8, 4.8), and 1.5 (1.2, 1.8) respectively. Compared with hip or knee OA, the consultation incidence for hand OA peaked earlier (55–64 vs 75–84 years) and had a markedly higher male: female incidence rate ratio [3.2 vs 1.6 (hip) or 1.0 (knee)]. The overall annual incidence from CIPCA was in the middle of the range (5.4/1000 to 10.4/1000) of previously published estimates. CIPCA and most previous estimates suggested incidence rates increased with age and peaked at elderly age (≥75 years). Women from CIPCA and previous studies all similarly had 1.2- to 2-fold excess incidence than men for all types of OA (but markedly greater for hand OA). The highest joint-specific incidence was consistently estimated in knee OA by CIPCA and previous studies.

Conclusion: These are the first estimates of consultation incidence for OA using population-based healthcare data in England. The pattern of estimated consultation incidence in England is comparable to published estimates from other countries.

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