

Results: A total of 16 (1 male 15 female) subjects were identified with a first diagnosis of TAK during 2000-2005. The median age at first onset was 43.5 years (Interquartile Range (IQR):30-65). The overall annual incidence of TAK was 0.9/million (95%CI, [0.5-1.5]). The incidence was stable throughout the study period. The point prevalence of TAK in this period was 5.2/million. Diagnosis before the age of 40 is one of the American College of Rheumatology (1990) classification criteria for TAK. There were 8 patients (one male) aged < 40 years diagnosed in 2000-2005 with TAK. The annual incidence in those aged < 40 years was 0.45/million.

Conclusions: This is the first study of the incidence of TAK from a primary care population and also the first data from the UK. Previous studies have been reported from secondary or tertiary care. Our data is consistent with the previous studies and suggests that the incidence of TA is similar in the UK to that observed in other populations.

1. Smeeth et al. *Ann Rheum Dis* 2006;65:1093-8.

Disclosure: The authors have declared no conflicts of interest.

344. ITAS AND DEI.TAK - SCORES FOR CLINICAL DISEASE ACTIVITY AND DAMAGE EXTENT IN TAKAYASU AORTO-ARTERITIS (TA)

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Background: Standardised assessments to quantitate disease severity are widely used in small vessel vasculitis to establish treatment need and long-term outcome. The standard tools, BVAS and VDI, do not perform well for the different disease pattern in TA where there is no simple test for disease activity. MR and PET are costly and their correlation with active inflammation is not established. Takayasu presents commonly to Indian rheumatologists so the IRAVAS group devised and validated clinical indices to capture the severity of acute and chronic TA.

Methods: Consensus on inclusion of relevant items of disease extent frequent in Takayasu was achieved within the IRAVAS group. The face value was enhanced through discussion with cardiology and neurology. Disease extent indices can be used in 2 forms, reflecting acute disease or total disease experience since onset. The new Indian Takayasu Activity Score (ITAS) to score items new or worse in the past 3/12 was validated in a single referral centre where one investigator scored 177 patients and in a group exercise where 10 experienced physicians scored both paper and live cases. For damage, the DEI.Tak has been used to collect all disease items since onset in 141 patients from 2 other centres.

Results:

1. The ITAS score of recent disease, showed a strong correlation with the PGO (physicians' global opinion of disease activity). In the large series, the mean ITAS score in 13 "active" cases was 5.9; in grumbling disease (n = 45) the score was 3.2; in inactive disease (n = 36) the score was 0.9 (p < 0.000 by Anova). In the group exercise, ITAS intra-class correlation coefficient was 0.754 (p < 0.000). ITAS again correlated significantly with PGO scored on a 10 mm analogue scale across the range (r = 0.502, p < 0.000). ITAS also had a strong correlation with BVAS (r = 0.578, p < 0.000) but is a more sensitive assessment tool for TA. An elevated ESR/CRP was associated with systemic disease but did not relate to any other score items.

2. The DEI.Tak used to score relevant items occurring since the onset of disease provides a comprehensive damage index which confirmed the different disease pattern observed in TA in the large cross-sectional study. No further features were recorded in the "others" box. It did not correlate with PGO or ESR. It is now being compared with disease type/extent on arteriogram and with VDI.

Conclusions: Disease extent is an important aspect of severity which is well captured in these comprehensive clinical assessment tools. The ITAS provides an index of activity that correlates with PGO and BVAS. It can be used in therapeutic studies in centres where cost restricts the use of MR and PET scans. The DEI.Tak provides a useful tool for longer term outcome and epidemiological studies.

Disclosure: The authors have declared no conflicts of interest.

345. INTEGRATED CARDIAC AND VASCULAR ASSESSMENT IN TAKAYASU'S ARTERITIS AND SYSTEMIC LUPUS ERYTHEMATOSUS USING CARDIOVASCULAR MAGNETIC RESONANCE

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Background: Takayasu's arteritis (TA) and systemic lupus erythematosus (SLE) are associated with vascular injury, endothelial dysfunction and accelerated atherosclerosis in young women. We explored cardiovascular magnetic resonance (CMR) as a means to provide high quality, non-invasive integrated assessment of vascular and cardiac disease in TA and SLE.

Methods: 16 female patients with TA, 11 with SLE and 2 populations comprising 110 normal volunteers were recruited prospectively. All subjects with TA and SLE underwent a 3 stage CMR protocol: 1. carotid artery study, 2. endothelial function, 3. cardiac study. Multiple slices were acquired perpendicular to the carotid artery, and measures of vessel wall morphology including the wall/outer wall (W/Ow) ratio (a measure of vascular thickening) were derived. Endothelial function was measured by brachial artery reactivity following five minutes distal ischemia. Cardiac study included assessment of left ventricular volumes, mass, systolic function, and imaging in the late phase after gadolinium-DTPA, for myocardial fibrosis and infarction.

Results: Carotid artery wall volume and W/Ow ratio were highest in TA, and higher in SLE compared to normals. (Wall volume: TA = 1030mm³, SLE = 774mm³, Normals = 625mm³, p < 0.05 (right), TA = 1059mm³, SLE = 748mm³, Normals = 655mm³, p < 0.05 (left), W/Ow: TA = 45%, SLE = 36%, Normals = 32%, p < 0.05 (right), TA = 51%, SLE = 35%, Normals = 31%, p < 0.05 (left)). Endothelial function was severely impaired in TA and SLE. Mean flow-mediated dilatation: TA 6.3% (CI 2.4%-10.2%) and SLE 4.0% (CI -3.4% to 11.4%), (SLE p = 0.011, TA p = 0.004 v normals). BSA-indexed LV volumes were lower at end systole in TA and SLE (TA: 19 +/- 4ml/m² p < 0.001, SLE: 20 +/- 4 ml/m², p = 0.02, Normals 25ml/m²). This was reflected in more dynamic left ventricular function in TA (ejection fraction (EF) = 74 +/- 3% vs Normals 67 +/- 1% p < 0.001), and a trend to higher EF in SLE (71 +/- 5% p = 0.09). Late gadolinium enhancement (LGE) was seen in 5 of 15 TA patients (33%), and in 6 of 10 SLE patients (60%). The LGE pattern included midwall fibrosis, subendocardial infarction, and insertion point fibrosis in both groups.

Conclusions: Use of an integrated method of cardiovascular assessment by CMR demonstrated vessel wall thickening, impaired endothelial function, and dynamic ventricular function in patients with TA and SLE. This technique has many benefits compared to other approaches for the assessment and follow-up of these patients, and has the potential to identify those most at risk of complications, allowing early preventative therapy. Moreover, the high prevalence of late gadolinium enhancement suggests this is a sensitive marker of cardiac damage.

Disclosure: The authors have declared no conflicts of interest.

Rheumatoid Arthritis – Clinical Aspects

346. NODULOSIS DURING ETANERCEPT THERAPY IN PATIENT WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid Arthritis is a chronic, multisystemic inflammatory disease characterised by characterised by uncontrolled proliferation of synovial tissue.

In the past decade there has been major advance in the treatment of RA. This includes aggressive use DMARDS and development of immune therapy.

ANTI-TNF agents including infliximab, etanercept and adalimumab have shown major clinical efficacy.

Methods: Observational study of two cases.

Results: First a 57 year lady who had long standing history of seropositive RA with past history of successful treated breast ca of more than ten years. Her past treatment included Methotrexate, sulfasalazine, NSAIDs, leflunomide and prednisolone. Either due to toxicity or lack of efficacy DMARDS could not achieve disease remission. So initiation of Anti-Tnf was considered. In view of her previous breast ca, an oncology opinion was requested. A baseline screen was done. Chest x-ray was normal. Initial etanercept was started together with methotrexate which she was already on. Few months later she developed non productive cough so repeat chest x-ray was done which showed patchy infiltrate. So etanercept was stopped and because of past history of breast ca further investigation was arranged including CT chest and abdomen which showed bilateral lung deposits? Metastasis, largest in the right upper lobe, abdomen was normal. By this time she was reviewed by the chest physician and had screen for TB. A PET Scan was arranged which reported as rt upper lobe PET positive nodule.

Following this she had biopsy which showed necrotic, palisade histocyte, distorted langhan's giant cell- Favours rheumatoid nodule.

Our second case is a middle aged gentleman who is a seropositive erosive RA, failed several DMARDS including methotrexate, sulfasalazine, leflunomide due to lack of efficacy. Few months after initiation of etanercept he developed subcutaneous nodules on both hands despite improved disease activity.

Conclusions: Rheumatoid nodule occur in approximately 25% of RA. Most rheumatoid nodule occurs in the subcutaneous tissue. There have been reports of nodules in the lung, heart and even meninges.

Here in our two case observation, we have seen nodulosis with etanercept. In our first case nodulosis was in the lung while our second case was subcutaneous.

Nodulosis has been reported with methotrexate commonly but few isolated cases with leflunomide, infliximab was also reported.

Histological these nodule is similar to rheumatoid nodule. There is an inner fibrinoid necrosis surrounded by mononuclear cell which in turn encircled by granulomatous inflammation.

Most effective treatment is removing the precipitating drugs, which might not be clinically feasible. However there are reports of penicillamine, hydroxychloroquine or even colchicine effective in controlling the nodules.

Disclosure: The authors have declared no conflicts of interest.

347. RHEUMATOID? MY FOOT - AN ATYPICAL PRESENTATION OF RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) is an autoimmune, inflammatory disease, which usually presents as a symmetrical polyarthritis. We present a case of seropositive rheumatoid arthritis manifesting as a monoarthritis of foot - illustrating an atypical presentation and the value of MRI in early diagnosis

Methods: A 54 year old black, South African woman was referred to the rheumatology clinic, in September 2006, with pain and stiffness of right foot without any history of trauma. Other joints were asymptomatic and there were no constitutional symptoms. Symptoms did not improve with simple analgesics and anti inflammatory drugs prescribed by her general practitioner (GP), but showed good response to a short course of oral steroids. GP referred her as a case of possible gout or seronegative arthritis. There was no history of psoriasis, inflammatory bowel disease, or recent infection. Tuberculosis (TB) screening was negative. Right mid foot was tender, however, had no palpable synovitis or clinical signs of localised sepsis. X-Ray of right foot was also normal. Blood tests showed positive rheumatoid factor (RF) 38 IU/ml (1-14), Erythrocyte sedimentation rate 28 (0-18), ANA positive, ENA Ro and La positive and normal results for full blood count, urea, electrolytes, liver functions and uric acid levels. A diagnosis of atypical seropositive RA was made and patient was treated with intramuscular methylprednisolone and commenced on sulfasalazine.

Results: The right foot became worse after 6-8 weeks once the effect of steroid injection wore off and now also had palpable synovitis. An urgent MRI showed synovitis and soft tissue swelling with erosions and reactive bone marrow oedema involving most of the cuboid, 4th and 5th metatarsals suggesting aggressive disease. Patient was now commenced on Methotrexate and low dose oral prednisolone 7.5- 10mg once daily. Within next two weeks pain and swelling improved and a repeat MRI scan 12 weeks later showed significant improvement. Patient is now on Methotrexate 15mg weekly and gradually starting to reduce oral steroids with no relapse of symptoms. Atypical RA with asymmetrical disease or mono-arthritis has been described in black Africans. Anti-Ro positivity in patients with monoarthritis has been shown to be associated with severe disease. In the non-rheumatoid black African population the prevalence of RF positivity is found to be up to 25% in some studies; high incidence of TB is thought to be one of the possible reasons.

Conclusions: RA can present as a monoarthritis and should be considered in the differential diagnosis. It also highlights limitation of plain X-Ray even in identification of fairly aggressive disease and, usefulness of MRI scan in the assessment of patients with suspected RA.

Disclosure: The authors have declared no conflicts of interest.

348. HOMOCYSTEINE LEVEL IN PATIENTS WITH RHEUMATOID ARTHRITIS TREATED WITH METHOTREXATE

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Background: Cardiovascular diseases (CVD), especially coronary heart disease (CHD), are the most important causes of death in patients with rheumatoid arthritis (RA). Increased concentrations of plasma homocysteine (tHcy) have been associated with an increased risk of CHD. Plasma tHcy levels are frequently elevated in RA patients and low-dose methotrexate (MTX) may increase them further.

The aim of this study was to evaluate the effect of MTX treatment on plasma tHcy levels in patients with RA.

Methods: Plasma tHcy level was evaluated in 52 patients with RA receiving MTX (mean age 48.2 ± 8.7 years) and in 11 MTX naive patients (mean age 46.8 ± 12.3 years). 69 ages and sex-matched controls were examined. Plasma tHcy was measured by ELISA kits.

Results: Plasma tHcy levels were found to be higher in patients with RA than in the controls (15.2 ± 5.53 (SD) vs. 10.9 ± 3.07 micromol/L, p < 0.05). The tHcy levels in the RA patients treated with MTX were higher compared with the patients not receiving MTX (16.0 ± 5.58 (SD) vs. 11.1 ± 2.97 micromol/L, p < 0.001). It was established positive correlation between tHcy and CRP (r = 0,35, p < 0,05) and low density lipoprotein cholesterol (r = 0,41, p < 0,05).

Conclusions: Patients with RA have increased tHcy levels which are associated with disease activity and MTX treatment.

Disclosure: The authors have declared no conflicts of interest.

349. THE USE OF ANTI-CCP IN BART'S AND THE LONDON TRUST

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Background: Antibodies to citrullinated antigens are seen as important surrogate markers for diagnosis and prognosis in rheumatoid arthritis (RA). The performance of anti-CCP antibodies on parameters related to RA allows clinicians to better predict the diagnosis and prognosis of patients with RA.

A trial to evaluate the utility of the anti-CCP test at Bart's and the London Trust was conducted, the results of which, would inform the inclusion of the anti-CCP test into the routine test repertoire. We are using this audit to evaluate the appropriateness of test requests and whether the test was useful clinically. We felt that demonstrating the anti-CCP test was appropriately used would encourage its introduction into the Trust. Where tests were ordered inappropriately we would be

able to recommend changes and criteria that should be applied before requesting the anti-CCP test.

Methods: A retrospective study was performed looking at 83 anti-CCP antibody assays carried out for the Rheumatology clinics in the Bart's and the London Trust, between the period 13/04/2006 to 31/08/2006. Participants were patients seen at the Rheumatology clinic at Mile End Hospital. Anti-CCP antibodies were considered to be positive at a cut off of 6.25 U/ml and were measured using ELISA methodology.

By reviewing notes the relevant data was collected (reflects demographics, clinical and serological measures of current disease activity and radiographic erosions): age, sex, RF, ANA, CCP, radiographic erosions, clinical details, diagnosis, duration of symptoms, and extra-articular features. Based on the data collected we answered three clinical questions to determine whether the test was ordered appropriately or not.

Results: The data from a total of 83 serum samples was obtained from the Immunology Dept at the RLH. Of 83 patients 20 (24%) were male (mean age = 55.2 years, range 21 - 80 years), and 63 (76%) were female (mean age = 49.7 years, range 21 - 84 years). Those with an existing diagnosis of RA (n = 13) had a mean duration of symptoms of 6 months (range 2-12 months). The mean duration symptoms in the sample (n = 83), however was 32.1 months (range 1-240 months).

Of 83 tests ordered, 69 were judged to be appropriate requests (83.1%), 1 test was ordered without the RF and no established diagnosis of RA (1.2%), and for 13 patients (15.7%) relevant data/information was missing so questions on appropriateness could not be answered.

Conclusions: The findings of this audit show the majority of requests for anti-CCP were made appropriately. This is an encouraging result and lends support to the test being introduced as a routine investigation into the Trust. Criteria for requests should be established and adhered to. The test was useful clinically as it allowed diagnoses to be made and was used as a marker for prognosis in erosive disease.

Disclosure: The authors have declared no conflicts of interest.

350. A REGIONAL AUDIT OF CARDIOVASCULAR RISK FACTORS IN RHEUMATOID ARTHRITIS

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Background: The importance of addressing cardiovascular (CVS) risk factors in rheumatoid arthritis (RA) is well established. We aimed to use our regional network to audit CVS risk in a large number of rheumatoid arthritis patients

Methods: The audit was prospective. All hospitals in our network were invited to participate using an agreed proforma. To reduce individual workload each unit was sent 10 proformas. Results were analysed using Formic software

Results: Data on 122 patients (91 F, 31 M) were received. Mean age was 61 yrs (25 - 93). Lipid and blood pressure data are given in the table. 36 (29%) were on 1 or more anti-hypertensive agents; 22 (18%) were smokers; 14 (11%) were diabetic; 13 (11%) had a history of IHD, CVD or PVD; 8 (7%) had a male relative < 55 with IHD; 14 (11%) had a female relative < 65 with IHD. Mean ESR was 27 (3-121); 57 (47%) were taking corticosteroids. 32 (26%) of patients were taking NSAIDs; 27 (22%) COX-1 and 5 (4%) COX-2

Conclusions: Our results shows that we still have work to do in testing and documenting CVS risk factors. The available data suggests we may not be adequately managing CVS risk even in those patients found to be at risk. In retrospect, in view of recent data regarding CVS risk with different NSAIDs, we should have obtained data on individual NSAID types rather than COX-1 and COX-2. Our experience of regional collaboration in audit was positive. The process stimulated some centres to perform further more detailed audit to compare against the rest of the network.

Disclosure: The authors have declared no conflicts of interest.

Cardiovascular Risk Factors

Risk factor	Number available (%)	Mean
Total cholesterol (TC)	75 (61)	4.8 (3.2-6.6)
LDL	72 (59)	2.7 (0.7 - 4.7)
TC/LDL	71 (58)	3.3 (1.1 - 7.5)
Triglyceride	73 (60)	1.5 (0.6 - 7.6)
BP	93 (76)	134/78

351. CONVENTIONAL RISK FACTORS FOR CARDIOVASCULAR DISEASE ARE OFTEN UNDER TREATED AMONG PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis is associated with an increased burden of cardiovascular disease. It is partly explained by the presence of a higher level of conventional risk factors among RA population.

The aim of this study is to examine the treatment of the conventional risk factors offered to RA patients who developed a cardiovascular event.

Methods: Cosecutive patients with RA who were attending a rheumatology clinic over a period of 6 months were recruited. A proforma was completed for each patient.

Results: Data from 49 patients with RA who developed cardiovascular event was analysed. Inadequate therapy for hypercholesterolaemia was identified among 12/34 (35%) patients, Hypertension among 15/28 (54%) and uncontrolled diabetes in 6/14 (43%).

Conclusions: A significant proportion of patients with RA who developed a cardiovascular event continue to carry significant risk for further events. It is quite possible that the treatment of cardiovascular risk factors is undermined by the dominance of the skeletal symptoms in these patients.

Disclosure: The author has declared no conflicts of interest.

352. DO METHOTREXATE LEAFLETS PROVIDED ADEQUATE INFORMATION TO PATIENTS? - THE NATIONAL PATIENT SAFETY AGENCY (NPSA) RECOMMENDATIONS

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Background: Methotrexate (MTx) is one of the most commonly prescribed disease modifying drugs used in Rheumatology. Over the past 10 years, concerns regarding the safety of MTx have arisen following 25 patient deaths & 26 cases of serious harm. As a result, in 2006 the NPSA issued a drug safety alert, & recommended standards to provide better drug knowledge to patients. The Dudley Group of hospitals have incorporated these guidelines into the MTx drug information leaflet, provided to patients prior to commencement on the drug. We aimed to assess whether the revised patient information leaflets contained adequate information, at an appropriate level.

Methods: We 17 identified patients from rheumatology outpatient clinics who were due to be initiated on MTx. A two sided tick box questionnaire was sent out with a SAE. Due to a relatively poor response rate (7/17), a second questionnaire was sent to nonresponders. In total, 10/17 patients responded.

Results: The responders had a female to male ratio of 2:1, and a mean age of 56. 90% responders recalled receiving a leaflet, 100% of these read all pages of the leaflet & kept a copy for their information. On average, patients had received the leaflet 4 months prior to the start of the audit. When asked true/false questions regarding dosing/side effects of MTx, we noted promising results with 90–100% of patients answering questions correctly (summarised in table 1). There were two main areas of inconsistency, these included guidance on alcohol consumption and flu vaccination. When asked "you should not drink any alcohol whilst taking MTx" - 40% responded true and 60% false. This discrepancy may be attributed to varying advice of doctors/nurses. When asked "Is it safe to have the flu jab whilst taking MTx" - 70% true, 10% false and 20% non-responders. The result of this question may be due to the complex wording in the leaflet about vaccination, including terms such as live vaccine etc.

Conclusions: The results were encouraging, indicating the majority thoroughly read & understood the information leaflets. Patients felt the leaflets had adequate information & that no further advice was require after reading the leaflets. Two areas of potential improvement were identified: alcohol consumption & vaccinations, changes will occur by reviewing the wording of these sections & making sure they are consistently reinforced at appointments. We will reaudit in a years time.

Disclosure: The authors have declared no conflicts of interest.

Statement	True	False
You should take MTx every day	0%	100%
MTx is a painkiller	0%	100%
You should have regular blood tests to monitor your liver whilst taking MTx	90%	0%
You should take folic acid the same day as your MTx	0%	100%
Nausea is a common side effect of MTx	90%	0%
You should continue to take MTx if you develop unexplained bleeding/bruising	0%	100%
You should notice an improvement in your arthritis within 2 weeks of starting MTx	0%	100%

353. VACCINATION OF IMMUNOSUPPRESSED PATIENTS WITH RHEUMATIC DISEASES: A SURVEY

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Background: Patients with inflammatory rheumatic diseases treated with immunosuppressive drugs are at increased risk of infection. Immunisation against influenza and pneumococci may reduce this risk and is currently advocated by the UK Department of Health. We investigated the uptake of influenza and pneumococcal vaccine among a sample of patients with inflammatory rheumatic diseases currently taking immunosuppressants.

Methods: 280 patients with inflammatory rheumatic diseases taking DMARDs were randomly selected for inclusion in this survey. All subjects were sent a postal questionnaire enquiring about DMARDs, uptake of influenza and pneumococcal

vaccine, reasons for non-uptake, and sources of information about vaccination (if any) they had consulted.

Results: Responses were received from 135 patients currently taking DMARDs. In total, 103 were taking methotrexate and 33 were taking a combination of at least two drugs. 32 were current users of anti-TNF drugs (alone or combined with MTX). 92 (68%) were offered the influenza vaccine and 80 (59%) received it. 50 (37%) were offered the pneumococcus vaccine and 45 (33%) received it. Reasons for non-uptake of influenza vaccine included that the patient felt it was unnecessary (n=9) or that the GP surgery refused it (n=1). 3 patients refused pneumococcal vaccine as they felt it unnecessary and 1 refused as they thought it offered lifelong protection. 11 patients reported that their surgery had refused them influenza vaccine at least once. 65 people recalled receiving information that they should have the influenza vaccine, mostly from the GP (27%), a poster at the GP surgery or a Community Nurse. Only 14 (10%) recalled being advised about this by their Consultant or Rheumatology specialist nurse. Only 34 recalled being advised to have the pneumococcal vaccine and only 5 of these recalled receiving that advice from their Rheumatology department (Consultant in each case). Sub-analyses showed that patients were more likely to receive vaccines if they were aged >65 years.

Conclusions: The results suggest that uptake of vaccination against influenza and pneumococcus is sub-optimal with considerably poorer uptake of pneumococcus than influenza. The highest rates of vaccination were achieved amongst adults aged >65 years, presumably because they were invited to receive their immunisation because of their demography as much as because of their immunosuppression. Patient recollection of information on this subject from Rheumatology staff is poor. This study suggests that rheumatology staff need to improve their publicisation of the vaccinations to their immunosuppressed patients, particularly those aged < 65 years who are not necessarily invited to receive vaccines by their GP surgery.

Disclosure: The authors have declared no conflicts of interest.

354. THE PATIENT-COMPLETED DISEASE ACTIVITY SCORE (DAS): IS IT A VALID MEASURE IN RHEUMATOID ARTHRITIS?

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Background: A 'just in time' rheumatology clinical service has been developed at the Royal Preston Hospital so that patients with inflammatory arthritis have ready telephone access to a rheumatology nurse specialist (RNS), and can be seen during flares/when unwell or given advice (in some cases without the need to attend the rheumatology department). It was felt that a more accurate telephone assessment could be conducted if patients could provide the RNS with clinically relevant information. We thus hypothesised that a patient-completed disease activity score (DAS) could provide the RNS with similar information to that of a RNS-completed DAS score. To assess the construct validity of a patient-completed DAS score in this setting, rheumatoid arthritis (RA) patients already on anti-tumour necrosis factor alpha therapy were assessed as part of their routine 8-weekly disease monitoring.

Methods: 14 patients with confirmed RA (as per 1987 criteria, 71% female, median age 50 ± 13 years), agreed to participate. Patients were provided with standard DAS-assessment forms, trained by the RNS to assess tender/swollen joints, complete a general health score and convey this by telephone. Within 24 hours of completing this, a repeat DAS assessment was carried out by the RNS and blood checked for erythrocyte sedimentation rate. Comparisons of the tender/swollen joint count, patient-global health (GH) score and DAS were made between the patient- and RNS-assessed scores using linear regression and Pearson's correlation coefficient.

Results: A strong correlation was noted between the patient and RNS DAS scores (r = 0.74, p = 0.003). A linear relationship was confirmed between the two scores using a component-plus-residual plot. Using a Cook's plot, one outlier was detected (patient DAS = 3.0, RNS DAS = 1.6). Examining the individual DAS components, a high correlation was noted between the patient and RNS patient-GH scores (r = 0.98, p < 0.0001). No significant correlation was noted for tender (r = 0.15) or swollen (r = 0.14) joints between the patient/RNS scores (p = 0.6 for both). There was a tendency for patients to over-estimate tender joint scores.

Conclusions: The patient-completed DAS and patient-GH score possess good construct validity with the RNS assessment. Validity is poor for patient-completed swollen and tender joint scores. The patient-completed DAS score may prove useful if further training is provided to future self-assessors.

Disclosure: The authors have declared no conflicts of interest.

355. SLEEP IN RHEUMATOID ARTHRITIS

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Background: Rheumatoid arthritis (RA) patients commonly report poor sleep, particularly during active disease. There are few reports on sleep in RA and little known about the validity of sleep assessment techniques in RA but interest is growing. Therefore we report our initial results of sleep data collection within an intervention study of RA.

Methods: We collected actigraphy and St Mary's Hospital Sleep Questionnaires (SMHSQ) from 9 patients with active RA taking part in a 2-week study of glucocorticoid (GC) therapy. The actigraph is an accelerometer worn like a watch, and was fitted for the study duration. Actigraphy results are expressed as Fragmentation Index (FI; measure of restlessness), Sleep Efficiency (SE); measures amount of time in bed spent asleep) and Actual Sleep Time (AST). The SMHSQs asks patients to report on aspects of sleep and sleep quality from the previous night and was completed at baseline and 2 weeks. With this pilot data our aim was to see how well the data correlated within patients and also to compare with published data for non-arthritis subjects.

Results: Average patient age was 65yrs (range 51-76yrs). All patients tolerated the actigraph, and it was worn for 96% of the time. Patients had different but consistent variations in patterns of sleep and wake time. The mean (SD) values for FI, SE and AST were 36.1 (15.2), 86.1% (6.3%), and 7hrs 10min (38min). We compared these with relevant subjective parameters (see table).

Actigraphy and the SMHSQ seem reasonable measures of sleep quality in RA patients but there appears to be poor concordance in terms of sleep quantity.

We found no correlation between FI and disease activity(DAS) ($r = -0.03$ week 1, $r = 0.45$ week 2), or SE and DAS ($r = -0.41$ week 1 and $r = -0.25$ for week 2). There was also no correlation between pain as measured on visual analogue scale and actigraphy or SMHSQ data.

When comparing the mean values to near age matched healthy controls in the literature, RA patients appear less restless (FI 36.1 v 43.3), have comparable SE (86.1% v 81.1%) and have longer AST (7hr 10min v 6hr 16min).

Conclusions: Patients with RA can wear actigraphs satisfactorily. Correlations suggest subjective perception of sleep in RA is related to quality rather than quantity of sleep, and that this may reflect aspects other than just disease activity. The inclusion of only active disease and small numbers in this study limits firm conclusions, but it will be useful to study this in a larger population with direct comparison to healthy controls.

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Correlation coefficients between measured sleep indices and answers to sleep questions.

	Fragmentation index	Sleep Efficiency	Actual sleep time
Q6 No. of awakenings	0.469	-0.290	-0.141
Q7 How much sleep			-0.177
Q9 How well slept	-0.589	0.451	0.095
Q11 How satisfied with sleep	-0.603	0.705*	0.302

*p < 0.05.

356. ATHEROSCLEROSIS MARKERS IN PATIENTS WITH RHEUMATOID ARTHRITIS: ASSOCIATION WITH DYSLIPIDEMIA

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Background: The mortality of patients with rheumatoid arthritis up to 50% is attributable to cardiovascular events. The main cause of it may be associated with accelerated atherosclerosis and its complications. The aim of this study is to assess the existence of different markers of atherosclerosis in patients with RA and evaluate its relationships with disease manifestations.

Methods: Intima-media thickness (IMT) and the presence of plaque were undertaken by B-mode ultrasound of the common carotid artery (CCA). Disease activity was investigated with the Disease Activity Score (DAS28). Laboratory assessment included erythrocyte sedimentation rate (ESR), C-reactive protein, IL-6, IL-1, TNF- α , rheumatoid factor, total cholesterol (tCS), cholesterol of low-density lipoproteins (LDL), cholesterol of high-density lipoproteins (HDL) and triglycerides (TG). Physical functional disability was measured with use of Health Assessment Questionnaire (HAQ). IMT and presence of plaque were related to DAS, HAQ, tCS, LDL, HDL and TG.

Results: 57 patients (42 women, 15 men) with RA and disease duration more than 5 years were enrolled together with 49 sex and age matched controls. All patients fulfilled the ACR 1987 criteria for RA. All subjects were less than 65 years of age at the time of investigation. It was established that patients with RA had higher IMT compared to healthy individuals. The difference of mean IMT in CCA in patients with RA reached statistical significance and correlated significantly with tCS, LDL, LDL/HDL ratio and TG. IMT did not correlate with HAQ, DAS, CRP, IL-1, IL-6 and TNF- α . The prevalence aortic cusp sclerosis was significantly higher in patients with RA.

Conclusions: Our results suggest that accelerated atherosclerosis in patients with RA is related to lipid levels.

Disclosure: The authors have declared no conflicts of interest.

357. UTILISATION OF ANTI CCP2 ANTIBODIES AT ST HELENS

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Background: The autoantibodies most specific for Rheumatoid Arthritis (RA) is that directed against citrullinated antigens. Second generation Anti-Cyclic Citrullinated Peptide (Anti CCP2) antibody has sensitivity comparable to rheumatoid factor, with >95% specificity. It predicts later definitive diagnosis of RA in patients with Undifferentiated Arthritis (UA). Its prognostic and diagnostic value has been shown.

Anti CCP2 antibody (AntiCCP) testing was introduced from June 2006 at St Helens Hospital. This study looks at its utilisation in the first 6 months of introduction; whether the test was requested appropriately and also to see if it was helpful in establishing diagnosis and/or changing management.

Methods: 94 requests for AntiCCP and Rheumatoid Factor IgM (RFIgM) were identified during this period and notes reviewed. 3 patients had AntiCCP requested twice, 5 patients had insufficient sample and there was insufficient data from 4 patients.

Results: Information obtained from 82 patients; 47 had symptom duration <2 years and 34 for >2 years. 32 patients had both antibodies positive and 33 both negative. 4 patients with negative RFIgM had positive AntiCCP and 13 with positive RFIgM had negative AntiCCP.

Appropriate indications listed in table 1

Inappropriate requests were - 3 duplicate requests, 7 patients had established erosive disease at time of testing, and 8 patients who were clinically felt to have osteoarthritis only, had AntiCCP testing (all 8 AntiCCP negative).

It offered diagnostic help in 4 patients with Polymyalgia Rheumatica (PMR) and peripheral synovitis who were reclassified as myalgic onset RA and appropriate DMARDs initiated (3 with AntiCCP >100, and one >50; 1 patient was RFIgM negative). 2 patients with PMR and peripheral synovitis with negative AntiCCP continued on steroids.

Conclusions: AntiCCP testing is a relatively new test and has cost implications (AntiCCP- £18.30 vs RFIgM- £8.50; combined- £26.80). This was funded by withdrawing GP access to RA latex test and restricting access to Anti-CCP and RFIgM to specialist clinics. In the first 6 months of its availability in our department, majority of requests were appropriate (62%). Action has been taken to reduce inappropriate requests. It was particularly helpful in PMR patients with peripheral synovitis. Though it has been helpful in prognostication in UA/early RA patients, the full implications on the management cannot be assessed in this study due to lack of adequate followup.

Disclosure: The authors have declared no conflicts of interest.

Appropriate indications

	No of patients with <2 years symptom duration	>2 years duration
UA	25 44% AntiCCP positive	11 27% AntiCCP positive
Nonerosive RA for prognostic value	5	6
PMR vs Myalgic onset RA	5	1
RA vs CTD	1	0
Palindromic rheumatism	4 50% AntiCCP positive	0

358. AN AUDIT OF CARDIOVASCULAR (CV) RISK FACTOR MONITORING AND MANAGEMENT IN OUT PATIENTS WITH RHEUMATOID ARTHRITIS (RA) AT A DISTRICT GENERAL HOSPITAL

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Background: RA patients are at a 60% increased risk of CV disease [1]. Part of this increased risk is attributable to modifiable CV risk factors. An audit of CV risk factor monitoring was performed to reveal areas where a change in clinical practice would be beneficial.

AIM

To audit CV risk factor monitoring and management in out-patients with RA at Musgrove Park Hospital, Taunton, against published guidelines [2].

Methods: The Taunton Rheumatology follow-up patient spreadsheet, was used to select 169 RA patient out patient department letters for data collection regarding: current CV risk factors; documentation of risk factor status; routine lipid, glucose and blood pressure screening and management of identified risk factors.

Results: Of the cohort analysed, 12% had a prior history of a CV condition. A family history of CV disease was found in 53%, with 41% having hypertension, and 34% hypercholesterolaemia. Overall, 26% had ≥ 4 , and 80% of had ≥ 2 CV risk factors. Risk factor status recording was generally >90%, with the exception of body mass index (BMI), which was recorded in only 4.1% of letters. Evidence of yearly lipid and glucose profiles was found in 86.4% and 78.1% of cases respectively. In each out-patient letter, blood pressure monitoring was noted in only 2.4%, smoking cessation advice was given in 25.8%, and patients with a BMI > 25 received diet and lifestyle advice in 14.3% of cases. However 95% of patients with established CV conditions were prescribed aspirin or Warfarin.

Conclusions: The audit has revealed that improvements in both baseline detection and monitoring of CV risk factors in RA patients should be instigated, particularly with regard to monitoring of BMI and blood pressure and advice on smoking cessation.

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Disclosure: The authors have declared no conflicts of interest.

359. "ALL SINGING FROM THE SAME HYMN SHEET": HEALTH PROFESSIONALS' PERCEPTIONS OF DEVELOPING PATIENT EDUCATION MATERIAL ABOUT THE CARDIOVASCULAR ASPECTS OF RHEUMATOID ARTHRITIS

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Background: Cardiovascular disease (CVD) is the leading cause of death in the UK and its prevention is a priority. Rheumatoid arthritis (RA) patients have an increased risk of CVD and management of modifiable risk factors requires a cardiovascular screening programme with patient education at its heart. Many education programmes do not make use of the potential benefits of user involvement at inception; it is therefore prudent to explore how health professionals' perceptions of patients' needs and health beliefs may influence the content, timing and delivery of a CVD risk education programme for RA patients.

Methods: Qualitative focus group methodology was adopted involving local health professionals, including doctors and nurses from primary and secondary care, specialising in rheumatology, cardiology and management of cardiovascular risk factors. A semi-structured interview schedule was used. Discussions were audio recorded, transcribed and analysed using Interpretative Phenomenological Analysis.

Results: Three superordinate themes emerged. 'Professional determinations about people with RA' includes their perceptions about RA patients priorities and motivation, namely that CVD risk management would not be high on their agenda as they would be more concerned about their painful joints. 'Communication about CVD risk' addresses the multitude of aspects of an education programme, including the 'what', 'when', 'how' (akin to 'breaking bad news') and 'to whom' (both patients and primary care professionals). The timing of CVD education provoked mixed opinion; some professionals felt it should be included from the moment of diagnosis but others thought it should be later. 'Responsibility for CVD management' refers to discussions around the patients' responsibility for their own actions but also the responsibility of the healthcare community to provide resources to support lifestyle modifications and research to answer clinical questions.

Conclusions: Although health professionals agreed it was important to convey the increased risk of CVD to RA patients, there is concern that they may be less proactive in promoting cardiovascular risk management strategies to such patients if they perceive that patients may not prioritise it or be motivated to modify their lifestyle; instead we should support patients' self-efficacy to change unhealthy behaviours. There was uncertainty about 'when' is the best time to discuss cardiovascular disease with patients. Maintaining a close relationship between primary and secondary care and all professionals 'singing from the same hymn sheet' was thought to be very important.

Disclosure: The authors have declared no conflicts of interest.

360. AN AUDIT OF A RHEUMATOLOGY MULTI DISCIPLINARY TEAM (MDT) ASSESSMENT CLINIC IN EARLY INFLAMMATORY ARTHRITIS

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Background: Current BSR guidelines suggest that all patients with inflammatory arthritis (IA), including rheumatoid arthritis (RA) should have access to MDT assessment and intervention, as necessary, early in the disease process. ARMA standards of care also suggest that people with inflammatory arthritis should have access to a local MDT. In our District General Hospital we conduct monthly MDT clinics to review newly diagnosed inflammatory arthritis (IA) patients. Staff of the MDT include rheumatologists, specialist nurse, physiotherapist, podiatrist and occupational therapist. At this clinic patients occasionally also have the opportunity to meet a volunteer (patient-partner) who has RA. We set out to audit the usefulness to the patient of this MDT clinic experience and to find out whether the patient-partner scheme was appreciated by the patients.

Methods: A postal questionnaire was sent to all 69 patients who attended the MDT clinic between May 2005 to August 2006. The questionnaire included data about how beneficial the MDT clinic was and the usefulness of each member of the team for the patient. We also included a question to assess their experience if they met the patient-partner on their particular clinic day.

Results: Fifty three patients (77%) returned the completed questionnaires. From the respondents 49 (94%) reported that they benefited from attending the MDT clinic. Forty nine (94%) patients found meeting with the doctor useful. Whereas 47 (90%) patients found seeing the specialist nurse helpful. Usefulness of meeting the physiotherapist, podiatrist and occupational therapist were 45(85%), 39(75%) and 40(76%) respectively. Twenty nine (55%) patients met the patient-partner during their visit. Twenty eight (97%) said that they benefited from this experience. Of all the patients who responded to the survey 45(86%) said they gained an improved knowledge about the disease by attending the MDT clinic. Fifty one (97%) patients

recommended continuing on the MDT clinic as well as the patient-partner programme.

Conclusions: This audit reiterates the importance of team approach in the management of early RA. The above results also confirm the appreciation of different elements of MDT clinics by patients. Having patient-partners in an MDT was proven to be beneficial to the patients in coming to term with their disease and its implications. Thus the MDT clinic seem to be effectively achieving the goal of improving the patients' insight into inflammatory arthritis.

Disclosure: The authors have declared no conflicts of interest.

361. FATIGUE AND ANAEMIA IN RHEUMATOID ARTHRITIS MAY BE DUE TO CO EXISTENT HYPOADRENALISM

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Background: Fatigue is a frequent complaint in patients with rheumatoid arthritis. It is often considered to be related to disease activity and sometimes to anaemia or depression. Coexisting thyroid failure is also well recognised. Less often considered is the possibility of hypoadrenalism as a major contributory factor. We report a small series of three patients with RA in whom profound fatigue was associated with anaemia. Both symptoms responded to the institution of regular physiological doses of hydrocortisone once primary hypoadrenalism had been proven.

Methods: Three patients with definite RA presented with persistent fatigue and anaemia (haemoglobin 9–10 gm/dl) in spite of treatment with Methotrexate (and further therapy in two cases). All had hypotension (typically below 110 mm Hg systolic) and two were hyperpigmented. Inflammatory markers were persistently raised in two patients in the absence of any residual synovitis. No evidence of iron, B12 or folate deficiency was found and thyroid function was also normal in all three patients. Hypoadrenalism was suspected and random cortisol measured.

Results: Random cortisol was low in all three (8, 22 and 68 respectively with normal value being 200-700). We proceeded to synacthen testing which was diagnostic of hypoadrenalism in all three (increases in cortisol of 48, 82 and 112 respectively with normal response to ACTH being >250). ACTH was elevated in all three with normal pituitary function. Anti adrenal antibodies were measured in two and positive in one. Steroid replacement with physiological doses of hydrocortisone led to a rapid improvement in fatigue and anaemia, with restoration of Hb to normal within one month. Inflammatory markers also normalised with no other therapeutic adjustment.

Conclusions: Primary hypoadrenalism may contribute to symptoms and signs in patients with rheumatoid arthritis. Given its frequent auto-immune aetiology, hypoadrenalism might be expected to be more common in patients with RA. Clinicians should consider testing adrenal function in RA patients with fatigue who fail to respond to adequate disease modification. Assessment may be complicated by the empiric use of steroids which need to be avoided or discontinued prior to testing. Physiological replacement with hydrocortisone offers dramatic improvement to those with proven hypoadrenalism.

Disclosure: The authors have declared no conflicts of interest.

362. HOW DOES RHEUMATOID ARTHRITIS (RA) CHANGE ASSESSMENT OF CARDIOVASCULAR DISEASE (CVD) RISK IN REAL PRACTICE?

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Background: Patients with RA have a higher Standardised Mortality Rate for CVD. 10 Year CVD risk can be calculated using risk factor analysis and this risk calculation can be further modified to take account of RA. We wished to see how CVD risk assessment was modified by RA in a District General Hospital RA population.

Methods: We used a proforma to collect demographic information, RA disease characteristics, RA activity, CVD risk factors and current treatment for CVD on consecutive RA patients. We calculated the 10 Year CVD risk using the modified Framingham criteria and recalculated risk categories after adjusting for RA. We assessed the impact of RA on allocation to CVD risk categories and whether appropriate therapeutic decisions were made in those at high risk (>20% risk in 10 years).

Results: Of 100 consecutive RA patients 76% were female, 70% rheumatoid factor positive, mean age 59.4 yrs, mean disease duration 10.9 yrs and mean Disease Activity Score (DAS 28) 3.6. Mean BMI was 26.7 kg/m², mean systolic blood pressure was 132.5 mmHg and diastolic 78.5 mmHg, mean total cholesterol was 5.48 mmol/L and HDL 1.15 mmol/L. 18 patients were hypertensive, 8 diabetic and 2 patients had both. 18 patients were current smokers. 10% had already experienced a CVD event. 39% were identified as high risk for CVD according to modified Framingham criteria and required primary prevention, but 38% of these were not receiving any prophylactic CVD therapy. When adjusting for RA 79% of patients were in the high risk group and 49% were not receiving any CVD prophylaxis. Only 12% of patients at high risk were receiving aspirin. In total 24 patients were advised to initiate primary prevention and a further 18 patients were instructed to modify their primary prevention therapy largely by adding aspirin.

Conclusions: Current targets to identify patients at high risk of future CVD are not being met. Even when risk is identified inadequate prophylaxis is instituted and when RA is taken into account even higher numbers of patients are disadvantaged.

Disclosure: The authors have declared no conflicts of interest.

363. THE ASSOCIATION BETWEEN C-REACTIVE PROTEIN AND THE LIKELIHOOD OF PROGRESSION TO JOINT REPLACEMENT IN PEOPLE WITH RHEUMATOID ARTHRITIS

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Background: The association between systemic inflammation and the likelihood of joint replacement is not characterised entirely. To objective of this study was to evaluate the association between systemic inflammation as measured by C-reactive protein and total joint replacement and the association between change in CRP status (sub-acute, $\leq 10\text{mg/L}$ and acute $>10\text{mg/L}$) measured over one year and total joint replacement in patients diagnosed with rheumatoid arthritis.

Methods: A cohort of patients was selected from The Health Improvement Network (THIN) dataset of anonymised patient-level data from UK general practice with a confirmed chronic rheumatic diagnosis. Surgery-free survival was evaluated using Cox proportional hazards regression models (CPHM).

Results: 2,421 cases had at least one CRP measurement, of whom 125 cases (5.2%) had at least one major joint replacement. Analysis grouped by each additional unit increase in log mean CRP (range 1 to 6) was associated with a 36% increase in the hazard ratio (HR) of major orthopaedic surgery, after controlling for age at first rheumatoid presentation and average body mass index over the same observation period ($p < 0.001$). Repeated CRP observations around one year apart were recorded in 1,314 subjects. After controlling for confounding factors, in cases whose CRP remained acute ($> 10\text{ mg/L}$), the HR for joint replacement increased more than two-fold ($p = 0.040$) relative to cases whose CRP remained subacute. In patients whose CRP increased from a subacute to acute level, the HR was 1.86 compared to those who remained in a subacute state ($p = 0.217$). By comparison, among those subjects whose CRP was reduced from an acute to subacute state, the hazard ratio was more than halved (1.46) from to those who remained acute ($p = 0.441$). Although underpowered, the trend evident from CRP change corroborates the association of TJR progression with mean CRP.

Conclusions: CRP level predicts progression to major joint replacement after standardisation for relevant risk factors as did change in CRP status between sub-acute to acute status observed over one year.

Disclosure: C.P. and C.C. have received funds from Wyeth. P.C. is an employee of Wyeth.

364. 'JUST A TOUCH OF ARTHRITIS': A QUALITATIVE STUDY OF DECISION MAKING PROCESSES IN PATIENTS WITH EARLY RHEUMATOID ARTHRITIS

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Background: Effective treatments can be given during the early stages of rheumatoid arthritis (RA) to improve long term outcomes. In order to receive therapy early, patients must be seen early. However, we have shown that many RA patients delay for prolonged periods before seeking medical advice. This study explores factors influencing the decision to seek medical advice in patients who presented early and those who delayed.

Methods: A grounded theory approach was used to explore decision making processes in 24 patients with RA. Patients were chosen to ensure that there were equal numbers who had presented to their GP early (within 3 months of symptom onset) and who had delayed by more than 6 months and that patients across the age spectrum were represented. The median patient age was 61 years (IQR 48 - 69); 14 were male (more females than males declined to participate). In depth semi-structured interviews were carried out. Interview transcripts were coded line-by-line. Similar concepts were organised into categories and key themes were identified using established methods to optimise rigour.

Results: Four main themes were established that influenced the decision as to when medical advice was sought. 1) Symptom experience: the severity of symptoms and their impact on the patient's functional ability. 2) Symptom evaluation: the patient's explanation of their symptoms and understanding of their significance. 3) Existing knowledge of RA and available therapies. 4) Experience of and attitudes towards the patient's GP and the health care system.

A significant and rapid impact of the disease on functional ability was a feature of those who presented to their GP early. Many patients developed their own explanation for their symptoms, often relating them to preceding activities. A recognition that their explanation was inadequate to account for the course of disease progression frequently prompted a consultation. Only one patient, with a family history of RA, sought advice because she linked her symptoms to a diagnosis of RA and wanted appropriate therapy.

Conclusions: The evaluation of symptoms emerges as a key theme in studies of other diseases exploring the factors that influence how quickly medical advice is

sought. In contrast to a disease such as breast cancer where there is widespread association of symptoms and sign (e.g. breast pain and a breast lump) with the potential diagnosis, our study revealed that patients virtually never linked their symptoms and signs of inflammatory arthritis with their eventual diagnosis. Our findings should inform strategies to reduce delays in help-seeking in people with early RA.

Disclosure: The authors have declared no conflicts of interest.

365. RITUXIMAB IN THE TREATMENT OF B CELL LYMPHOMA IN RHEUMATOID ARTHRITIS

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Background: The prevalence of lymphoma is known to be increased two fold in patients with rheumatoid arthritis (RA) and relates in part to the severity of the disease. Recent advances in therapy now mean that a monoclonal antibody to B cells (Rituximab) is available to treat both established lymphoma and aggressive RA. We describe three cases which may point the way to earlier intervention in RA patients at risk of lymphoma

Methods: A 52 year old lady with aggressive RA diagnosed 2 years earlier was admitted from the rheumatology clinic for investigation of weight loss and lymphadenopathy. Treatment with methotrexate and anti-TNF therapy had not produced major benefit in joint symptoms over the preceding 12 months. Axillary lymph node biopsy revealed high grade B cell lymphoma and treatment with R-CHOP was commenced.

A 59 yr. old lady with sero-negative, non-erosive RA was stable on SZP for 6 years. She then developed fatigue and weight loss associated with anaemia and rising ESR. Subsequently she was admitted with an ischaemic bowel requiring emergency laparotomy with no evidence of thrombosis or vasculitis on histology. She then developed a painful skin rash which on biopsy showed B-cell intravascular lymphoma, and has responded well to R-CHOP. Retrospective staining of the bowel segment removed has shown involvement with the lymphoma.

A 73 year old lady with sero-positive RA was well controlled on MTX and SZP. She developed gross swelling of left leg and pelvic USS demonstrated a mass in the pelvis. Subsequent biopsy showed B cell follicular lymphoma, which has responded well to rituximab, cyclophosphamide, vincristine and prednisolone.

Results: All three patients responded with immediate and sustained improvement in lymphadenopathy and synovitis. Disease activity scores fell dramatically (>2 in each case) and no reoccurrence of synovitis or lymphadenopathy was documented over follow up periods of 3,4 and 6 months respectively.

Conclusions: B cell lymphoma is associated with active uncontrolled RA. Rituximab offers a means of controlling both the lymphoma and the underlying rheumatoid disease. Its early introduction in patients with aggressive RA may help to reduce the incidence of subsequent lymphoma.

Disclosure: The authors have declared no conflicts of interest.

366. FATIGUE SCORE IN RHEUMATOID ARTHRITIS PATIENTS TREATED WITH BIOLOGIC THERAPY: IS RELIABLE AND RESPONSIVE TO CHANGE IN DISEASE ACTIVITY

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Background: Fatigue has been recognized as an important domain in rheumatoid arthritis (RA) clinical trials, patient care and outcome. However, lengthy fatigue questionnaires cannot be easily used in standard clinical care. Furthermore, the influence of medications on perceived fatigue remains unclear.

Objective: to assess the importance of fatigue in relation to other measures of clinical status, and response to change in rheumatoid patients treated with anti-TNF therapy.

Methods: 79 patients were included in this work. Each patient completed a copy of the developed multidimensional questionnaire [1], before, 6 and 12 months of anti-TNF therapy during routine clinic visits. One of the items is to rate the fatigue score using VAS. Analysis of fatigue score and other parameters of disease activity, as well as disease activity score (DAS-28), before and after biologic therapy, were performed.

Results: Multivariate studies of clinical change over 6 and 12 months found that changes in fatigue score were significantly associated ($p < 0.01$) with changes in functional ability, results for pain score, patient global assessment, tender joint count as well as DAS-28 score (r -value ranged from 0.806 – 0.901), whereas there was no significant correlation with psychological status, rheumatology attitude index, duration of morning stiffness, ESR and CRP levels. RA patients treated with anti-TNF therapy did have lower fatigue scores compared with their scores prior to therapy.

Conclusions: Among RA patient self-report measures, fatigue score was significantly correlated and performed as well as other parameters of disease activity reported by the patient and DAS score in respect to reliability and sensitivity to change. The VAS fatigue scale is suitable for routine use in standard clinical care. The developed multidimensional health assessment questionnaire offers

a good opportunity to score such parameters that might be lacking in the other scales.

Disclosure: The authors have declared no conflicts of interest.

Reference

1. El Miedany et al. *Rheumatology* (Oxford) 2007; 46(S1): i84.

367. AN AUDIT OF AN EMERGENCY RHEUMATOLOGY CLINIC - HAVE WE IMPROVED OUR SERVICE?

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Background: A rheumatology emergency service, including an emergency clinic, is an important component of any rheumatology department, especially with the impending 18 week pathway of care. We audited the activities of a regular emergency clinic as part of the service over a 2 year period, following a change from a fortnightly to a weekly clinic.

Methods: Referrals were from general practitioners, a nurse-led helpline and other hospital specialities. They were prioritised according to the clinical condition with a maximum wait of 2 weeks. We assessed waiting time; the source and appropriateness of referrals; investigations performed; interventions and outcome. An initial audit took place between October 2005 and August 2006 and was based on a fortnightly emergency clinic. The current weekly service was audited from September 2006 to February 2007. We present data on 63 patients (36 new; 27 follow up) from the second audit.

Results: Using predefined referral priorities, 64% of patients were seen within the time frame according to their needs. The main referral source was from GPs, 84%. 84% of these were appropriate referrals, including flare of RA (45%), newly diagnosed inflammatory arthritis (31%), giant cell arteritis (14%), vasculitis (6%), SLE (2%) and drug reactions (2%). 40% of patients underwent at least one investigation, including blood tests, radiographs, ultrasound, DEXA scan, temporal artery biopsy, CT scan, MRI scan and lung function tests. 70% of all patients seen had at least one intervention carried out, including initiation of DMARDs (41%), IM depomedrone (21%), intraarticular injections, MDT referrals, NSAIDs and other specialist referrals. 25% of the patients seen were discharged after their initial visit, 8% were admitted to hospital. Comparison with the previous audit, when the clinic was held every fortnight, revealed significant differences as shown in table 1.

Conclusions: The Emergency Rheumatology Clinic has improved the number of patients seen within an appropriate time frame according to clinical need, from 25% in the first audit to 64%. The change from a fortnightly to a weekly clinic was a major factor in this improvement. The increased awareness of the weekly emergency clinic by GPs had raised the referrals rate from 62% to 84%. We had shown improvement in our emergency rheumatology clinic and this weekly clinic is essential part of service delivery for a hospital rheumatology department.

Disclosure: The authors have declared no conflicts of interest.

Emergency rheumatology clinic audit

Audit Standard	Nov 05 - Aug 06	Sept 06 - Feb 07	P value
Seen in < 2 weeks	25%	64%	0.000018
Appropriate referral	82%	84%	0.72
Investigations	48%	40%	0.33
Interventions	82%	72%	0.18
Discharges	15%	25%	0.15
Admissions	5%	8%	0.58

368. IMPROVING PATIENT CARE IN PRACTICE: RESULTS FROM THE AINTREE EARLY ARTHRITIS CLINIC

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Background: This preliminary audit looks at the first year data from the Aintree Early Arthritis Clinic (AEAC). The clinic has been set up to improve the provision of care for patients with early inflammatory arthritis. It aims to promote early referral and to achieve early diagnosis integrating musculoskeletal ultrasound (MUS) and anti-CCP antibodies and enables the prompt initiation of treatment based in prognostic factors. Once Rheumatoid Arthritis (RA) is diagnosed, the patients are closely monitored following a drug escalation pathway directed by DAS28 scores until remission is obtained.

Methods: Evaluation of information from 120 unselected patients included in our database from a total of 200 patients referred to AEAC.

Results: Demographics: 71 females and 49 males, mean age 53 years (range 20–87). 65 patients in employment (51 full-time).

Referral details: 49% (59) were referred by primary care within the window of opportunity (less than 12 weeks from onset of symptoms) and 88% (106) were seen within 2 weeks from referral.

Initial diagnosis: RA 53% (64), another inflammatory arthritis 9% (11), undifferentiated arthritis 21% (26) and 'others' 16% (19). RA and Undifferentiated arthritis are follow up in the AEAC, the rest of new referrals (25%) are re-directed or

discharged. In the RA group, 69% (44) had positive antiCCP antibodies, 78% (50) had positive rheumatoid factor and 27% (17) had erosions on MUS evaluation.

Management: Implementing our drug escalation pathway, 66% (42) started Methotrexate (15mg/week), 27% (17) started combination therapy due to poor prognostic factors and 8% (5) had 'other treatments'. Clinical remission was reached in 53% (34) patients but 32% (11) still had MUS synovitis, requiring step-up in medication. AntiTNF therapy was introduced in 5 patients after failing combination therapy.

Conclusions: The AEAC works as a service setting and therefore it is a true real life experience. It has raised awareness among primary care with a high percentage of patients referred within the window of opportunity. MUS allows an immediate evaluation and prognostic categorization with most diagnosis achieved in the first visit to the AEAC. A high percentage of patients initiated a combination regimen with no increase in side effects. Applying our 'drug escalation pathway' we achieve a level of remission higher than most combination trials and better than some anti-TNF trials. It suggests that Disease Modifying Anti Arthritis Drugs (DMARDs) can achieve remission when aggressively stepped-up. Longer follow-up will show if remission is sustained. However, a number of patients in clinical remission have MUS synovitis. That could explain the radiographic progression in some escalation studies despite low DAS28 scores. Radiographic, activity, disability and function outcomes are being analyzed for further study.

Disclosure: The authors have declared no conflicts of interest.

369. ARMA STANDARDS OF CARE FOR INFLAMMATORY ARTHRITIS SURVEY; A LOCAL EXPERIENCE

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Background: In 2004 ARMA proposed Standards of Care for people with inflammatory arthritis. ARMA has produced a clinical audit tool to survey how these standards are being met in routine clinical practice. This survey presents our experience in a District General Hospital in the North-West of England.

Methods: We surveyed the notes of 50 patients with inflammatory arthritis between August and September 2007 using the standard ARMA clinical audit tool. We collected information including diagnosis, NSAID and COX-II inhibitor treatment, prevention of steroid-induced osteoporosis, DMARD therapy and anti-TNF agents.

Results: Mean age of patients was 60, range 29 to 87; 38% male, 62% female. Diagnosis: 70% had rheumatoid arthritis, 6% psoriatic arthritis, 10% seronegative spondyloarthropathy and 8% unclassified inflammatory arthropathy. NSAID use: 32% were using traditional NSAID and 16% COX-II inhibitors, with 52% using neither. Traditional NSAID use was thought appropriate in 12/16 (75%) patients. Reasons for inappropriate NSAID use included 1 patient with a duodenal ulcer, 1 with chronic kidney disease and 3 patients aged over 65. 26% of patients were taking oral steroids, of which 9/13 (69%) were on appropriate osteoporosis preventative therapy. No DEXA had been performed in the four who did not have osteoporosis prevention therapy. 40/50 patients (80%) were on a DMARD, of which methotrexate 38%, sulphasalazine 26%, azathioprine 4%, hydroxychloroquine 4% and combination therapy 8%. 38/40 (95%) on a DMARD were being correctly monitored. No patients were on anti-TNF therapy.

Conclusions: Adherence to ARMA standards was very good for DMARD monitoring, however the tool did not document if monitoring took place in hospital or primary care. Most patients were taking a DMARD and if not the reason why was documented. We encountered several practical problems in using this audit tool. The tool does not indicate which standards are being evaluated; we interpreted it as Standard 6, which relates to evidence-based care and management and arrangements for DMARD monitoring. Also the standards do not indicate which guidelines should be followed, for example for osteoporosis prevention, and the tool is therefore open to individual interpretation. Some information was difficult to obtain from large volume hospital notes and proformas took up to 5 minutes to complete. However the survey did serve to increase awareness of the Standards of Care and highlighted areas for development within the department. Whilst the ARMA Standards of Care are a useful checklist, there were practical difficulties using the clinical tool even for an experienced trainee. The overwhelming conclusion was the need for improved "key facts" clinical documentation. Funding collection of such data and database construction would be an advance, but could this tool be used by non-clinical staff as an NHS quality measure with rewards and penalties?

Disclosure: The authors have declared no conflicts of interest.

370. SENSITIVITY AND SPECIFICITY OF ANTI-CITRULLINE 3 ANTIBODIES IN THE DIAGNOSIS OF SERONEGATIVE RHEUMATOID ARTHRITIS (RA)

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Background: Rheumatoid factor (RF) has been the classic test aiding the diagnosis of RA although its specificity varies between 40 and 90% in different studies. Around 30% of RA patients are persistently negative for RF and in these

patients, an early diagnosis is even more difficult. Antibodies directed against citrullinated peptides (anti CCP) have been shown to improve diagnostic sensitivity and specificity compared with classic RF.

The objective of this study was to determine sensitivity and specificity of anti-CCP 3 antibodies in recent onset, sero negative RA and identify the best cut-off values for the test in our laboratory.

Methods: Consecutive patients seen over a period of 3 months in the Rheumatology Section of our Hospital, with RA of less than 2 years from onset (ACR 1987 criteria) and negative RF were included. The control group was consecutive patients with poly-arthralgias/itis, during the same period, with a diagnosis other than RA. Serum of all patients was studied for RF (latex test) and anti CCP-3 (Inova, last generation). Sensitivity, specificity, positive likelihood ratio (+LR) and negative likelihood ratio (-LR) were calculated for different cut-off values. A ROC (Receiver operation characteristic analysis) curve was performed to determine the best cut-off value and area under the curve.

Results: Seventeen patients with sero negative RA were included (82% female, mean age 56 years, SD 16) with a median disease duration from onset to sample collection of 4 months (2–14). Twenty four controls (83% women, mean age 57 years, SD 17) median disease duration from onset to sample collection of 9 months (5–30) were used for comparison. Diagnoses of controls were: 50% fibromyalgia, 12% osteoarthritis, 13% other connective tissue diseases and 25% sero negative spondyloarthropathies. Table shows sensitivity, specificity, +LR and -LR for different cut-off values.

The ROC curve showed an area under the curve of 0.85 (95% CI: 0.72 – 0.98), and determined the best cut-off value to be that of above 20 units.

Conclusions: Anti CCP-3 antibodies showed a high sensitivity and specificity for the diagnosis of sero negative RA of recent onset. The best cut-off value for our laboratory was 20 units.

It would be important for laboratories to report sensitivity and specificity of their cut-off values for physicians to adequately interpret results in the light of clinical findings.

Disclosure: The authors have declared no conflicts of interest.

Cut-off value	Sensitivity	Specificity	+ LR	- LR
>=10	77.78%	73.91%	2.98	0.30
>=20	72.22%	95.65%	16.61	0.29
>=30	66.67%	100%	-	0.33
>=40	61.11%	100%	-	0.39

371. A PILOT STUDY INVESTIGATING THE EFFECT OF FOOT ORTHOSES ON GAIT, PLANTAR PRESSURES AND FOOT PAIN IN RHEUMATOID ARTHRITIS

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Background: Foot Orthoses are frequently prescribed for patients with RA. Little evidence exists as to the effect of these devices on gait parameters, plantar pressures or foot pain.

This pilot study evaluated the effect of foot Orthoses in patients with RA on foot pain, gait parameters and plantar pressures.

Methods: Subjects attending the physiotherapy department with RA wearing custom made foot Orthoses for more than 3 months were invited to participate. Ethical approval was granted by Beaumont hospital. Subjects were tested walking with and without their orthoses. Disease severity was scored using the health assessment questionnaire (haq) and foot pain using the foot function index (ffi). Gait parameters (velocity (cm/sec), stride length (cm), double support (% gait cycle) and single support (% gait cycle)) were measured using the gaitrite® system. Plantar pressure measurements (peak pressure (kpa) total contact area (cm²)) for the hallux, metatarsal heads, mid-foot and heel were measured using the f-scan®. Paired t tests were used to compare data with and without Orthoses.

Results: Eleven subjects (N=5 Male, N=6 Female) were measured over a 3 month period. Mean HAQ score was 0.85 (SD=0.79) and mean FFI total score was 17.32 (SD=19.21). Mean Pain Scores (VAS) walking barefoot were 3.66 (SD=4.14), with shoes 2.35 (SD=2.47) and with Orthoses 1.4 (SD=1.77). mean% perceived benefit with Orthoses was 78% (SD=21.37%). stride length increased significantly (P=0.0096) WHEN patients wore orthoses (Mean=117.98, SD=17.38) than without (Mean=123.54, SD=15.41). velocity was significantly higher (P=0.0009) when patients walked with Orthoses (Mean=119.26, SD=20.09) than without (Mean=109.92, SD=19.53). There was no significant difference in double support (% Gait Cycle) (P=0.49) or single support (% Gait Cycle) (P=0.989) with and without orthoses. Mean peak plantar pressures in all four regions decreased with orthoses, only the decrease in the heel region was statistically significant (mean difference 61.63, SD 58, P=0.006). Total foot contact area increased in all regions while wearing orthoses. Only the increase in hallux total contact area was statistically significant (mean difference -1.14, SD 1.54, P=0.035).

Conclusions: RA patients who are prescribed orthoses for relief of foot pain show a subjective benefit. Temporal and spatial parameters and plantar pressures

improve with foot orthoses. This suggests that if pain is reduced by wearing orthoses patients walk quicker, take a longer stride and load previously unloaded areas.

Disclosure: The authors have declared no conflicts of interest.

372. RHEUMATOID ARTHRITIS AND PERIPHERAL VASCULAR DISEASE

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Background: It is generally well known to vascular surgeons that results of vascular surgery in patients with rheumatoid arthritis are poor. The literature on this subject is very limited. We therefore analysed our outcomes from vascular interventions in patients with rheumatoid arthritis who presented with critically ischaemic lower limbs with or without tissue loss.

Methods: The vascular unit has a computerised data collection system listing over 2000 reconstructive procedures including over 500 femoro-popliteal bypasses and documenting co-morbidities. The database identified patients with rheumatoid arthritis. We retrospectively collected information on indication for surgery and outcomes.

Results: Between 1984 and 2007, 24 patients were identified who underwent therapeutic radiological and surgical procedures. 11 females, 13 males, age range 42 to 85 years. 13 patients had tissue necrosis, mainly ulceration while 11 patients had critical limb ischaemia. All patients underwent vascular assessment by angiography, CT angiography or MR angiography in addition to non invasive vascular assessment. Angioplasty was performed in suitable patients. All patients underwent Femoro-popliteal, femoro-distal popliteal or femoro-anterior tibial bypass grafting according to results of angiography. At 6 months post-operatively, 9 ulcer group patients had major amputation, with all four superficial femoral angioplasty procedures failing and only three bypasses patent at three months. There were no amputations in the non-ulcer group. The two-year limb salvage rates were 3/13 (23%) vs. 8/11 (72%) respectively, with two of the three remaining limbs in the ulcer group still ulcerated.

Conclusions: Primary amputation may have been a more humane approach in cases of severe ulceration than embarking on prolonged treatment regimens. Such regimens are often distressing for both patient and staff with frequently poor outcomes. If the surgeon attempts to preserve the limb, aggressive treatment of rheumatoid disease and meticulous attention to nutrition and wound dressing may be more beneficial than bypass surgery.

Disclosure: The authors have declared no conflicts of interest.

373. DOES PATIENT CHOICE IMPROVE SATISFACTION WITH CARE?

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Background: Patient choice has become a Department of Health policy. Giving patients more choice about how, when and where they receive treatment is one cornerstone of the Government's health strategy. This interested us in the payment by results era and we wished to see if it had any impact on our patients' opinion of our unit.

Methods: The Arthritis and Musculoskeletal Alliance (ARMA) has produced standards of care for inflammatory arthritis and within the patient referral times questionnaire there are questions about the choice received regarding units and referrals and the opinion of the care that been had received. We used this audit tool on our population of patients with inflammatory arthritis receiving a biologic drug in Durham.

Results: 42 of 71 questionnaires were returned giving a response rate of 59.1%. Of these 11 (26.1%) were male and 31 (73.8%) were female. When asked 'Were you given a choice about where and which doctor you were referred to?' 6 (14.2%) respondents stated that they were given a choice and all stated that this was helpful to them. 34, the vast majority, were not given a choice. Comments given by those that were not given a choice are shown in Table 1. Of these patients 18/34 or 53% were happy with their care. 2 patients stated that they did not know if they had been given a choice or not. Of the 2 that did not know if they were given a choice or not, both commented favourably regarding their care.

'It was quite a long time ago so I could not give you a realistic answer but I was happy with the hospital and staff. I have always been treated with respect and expertise and would not change a thing. The doctors and nurses were always 100% and treated me with the utmost care from the onset of my illness up to the present day.'

Conclusions: Of the 40 patients who answered the question on choice, only 6 were given any regarding Consultant or unit. Nonetheless the majority of this cohort of patients were happy with their care. However these patients were all on biologics, which could bias their view.

Although choice is important, this should not be at the expense of the quality of care given. Like many other units we have had to reduce the services we offer, for example the removal of our telephone helpline, whilst watching central policies such as choice be implemented at great expense. Patients choose

excellence as well as location, therefore quality must be put back at the top of the agenda.

Disclosure: The authors have declared no conflicts of interest.

Comments by people not given a choice in where they were referred for Rheumatology Care

Choice wasn't an option at the time

My GP said which consultant he wanted me to see Dr Y because of good feedback from other patients

25 years ago there were no choices to make - I just did whatever my GP said

I was not happy with the first rheumatologist I was referred to, but my GP moved quickly to find a more suitable doctor for me

This was quite an emergency and was pleased to be seen within hours by Dr X. No-one could have received quicker or better diagnosis and treatment

374. WHAT FACTORS AT DISEASE-ONSET (OY) PREDICT POOR FUNCTIONAL OUTCOME IN THE FIRST 9 YEARS OF RHEUMATOID ARTHRITIS? RESULTS FROM THE ERAS COHORT

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Background: Cluster analysis is a statistical method which divides a large group of observations into distinct groups with small within-group variability and with large between-group variability. Adopting this method, we have shown previously that applying the method to the profile for HAQ over 9y reveals 2 distinct groups with approximately 50% of the ERAS cohort in the higher scoring group. It has always proved difficult to predict functional outcome in RA. Is it possible to predict at baseline whether an individual with early rheumatoid arthritis (RA) will display the worse or better profile for functional outcome according to this method?

Methods: The Early RA Study (ERAS) is an inception cohort of early RA from 9 centres started in 1987, which includes yearly standard clinical, radiological and laboratory measures. Larsen scores of hands and feet were compared to the health assessment questionnaire (HAQ), and disease activity scores (DAS) over 9y follow up from presentation (mean 7 months from disease-onset). Treatment was conventional disease modifying drug (DMARD) therapy (started at median 2 months from presentation). At time of analysis, none had received anti-TNF alpha drugs. Statistics: k-means clustering and logistic regression.

Results: A complete clinical and radiographic data set was available in 602 patients. Graphic displays will show that when the data are presented as change from baseline, the best cluster solution identified 2 distinct HAQ profiles: better (281) & worse (321). At baseline, positive predictive factors for a worse functional outcome were: female gender ($p < 0.001$), DAS ($p < 0.001$), pain VAS ($p < 0.02$), Larsen ($p < 0.02$) & two copies of the HLA related shared epitope ($p < 0.05$).

Conclusions: These data suggest that it is possible to predict at disease-onset who with early RA will have a worse functional outcome. The study strengthens the case for early treatment with biologic drugs in approximately 50% of those with RA.

Disclosure: The authors have declared no conflicts of interest.

375. PREDICTION OF EROSION PROGRESSION USING ULTRASOUND IN RHEUMATOID ARTHRITIS: A TWO YEAR PROSPECTIVE STUDY

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Background: Treatment of rheumatoid arthritis (RA) aims to prevent erosions and subsequent loss of function. Prediction of erosions is difficult in clinical practice, given that some patients erode despite apparent good disease control. This study aimed to determine whether a range of ultrasound (US) measures of synovial disease were able to predict progression of US defined erosive disease over a two year interval in patients with long standing RA treated with disease modifying anti-rheumatic drugs (DMARD).

Methods: 40 patients with established RA (median disease duration 6 years, range 1–29) were studied prospectively. At baseline US measures (Philips HDI 5000) of erosion and synovial disease were obtained from one proximal inter-phalangeal joint (PIPJ) or meta-carpophalangeal joint (MCPJ) per patient. US measures were a subjective erosion score (0–3), Gray scale synovial score (0–3), power doppler (PD) score pre and post Sonovue contrast (0–3), and objective measures of synovial thickness (mm), and the duration of contrast enhancement. Other baseline data included Erythrocyte Sedimentation Rate (ESR), Rheumatoid factor titer, anticyclic citrullinated peptide antibody titer and disease duration. After 2 years (mean 26.8 months, range 24–32) the same PIPJ or MCPJ joint was scanned to obtain a new US erosion score.

Results: Patients with a maximum baseline erosion score of 3 were excluded ($n=9$) as this could not increase. Patients who started anti-tumor necrosis factor treatment ($n=7$) were also excluded as this was likely to retard erosion progression. 2 patients died and 4 declined a 2 year scan. The remaining 18 patients completed the study. Patients were divided into two groups according to whether the 2-year erosion score was higher ($n=8$) than the baseline score or whether it was unchanged or lower ($n=10$). There were no significant differences

between these groups with respect to mean baseline US or clinical scores, with the exception of the erosion score and ESR which were significantly lower ($p=0.001$, and $p=0.05$ respectively, T-test) in those who developed progressive damage.

All 3 patients with a baseline erosion score of 0 had a subsequent increase in erosion score, whereas the 6 patients with a baseline erosion score of 2 did not progress.

Conclusions: In this study a single time point US measure (Gray scale or PD) of synovial disease was not shown to be useful in distinguishing DMARD-treated RA patients destined to develop progressive US-determined synovial damage over 2 years. This may reflect the use of a relatively restricted erosion grading scale (0–3), the long duration of disease and the small numbers in this study.

Disclosure: The authors have declared no conflicts of interest.

376. THREE-YEAR OUTCOME IN A COHORT OF PATIENTS WITH EARLY PERSISTENT INFLAMMATORY ARTHRITIS: HEALTH STATUS AND DISEASE ACTIVITY

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Background: Objective: To assess the outcome as measured by health status, and disease activity, in a cohort of patients with persistent early inflammatory arthritis monitored for 3 years in a specialized early arthritis clinic.

Methods: Patients presenting with early arthritic symptoms, and disease duration <6 months were assessed regularly every 3 months in the first year, then every 6 months at a specialized early arthritis clinic. Patients with persistent early inflammatory arthritis were identified using EPISA prediction model for early persistent inflammatory synovitis assessment [1]. Disease modifying antirheumatic drug (DMARD) therapy was initiated once the diagnosis is established. Biologic therapy was commenced according to NICE guidelines and local approved recommendations. Disease process was assessed by clinical (using the developed multidimensional health assessment questionnaire [2]) and laboratory measures of disease activity. Evaluation of disease course was carried out using ACR-response criteria.

Results: 56 patients with persistent inflammatory arthritis were assessed regularly over 3 years period. Of all 56 patients, 28 (50%) continued Methotrexate monotherapy treatment (dose range 10–25mg weekly), 16 (28.6%) patients failed methotrexate therapy and were treated with combination therapy of methotrexate (10mg/week) and either leflunomide (20mg/day) or salazopyrine (2gm/day), whereas anti-TNF therapy was commenced in 12 (21.4%) patients. After 3-years, the ACR response among the methotrexate patients was as follows: 5/35 (14.3%) achieved ACR-70 response, 7/35 (20%) achieved ACR-50, 12/35 (34%) achieved ACR-20, whereas 13/35 (37%) did not show any improvement in their disease activity. 2/12 of the patients in the combination therapy group achieved ACR-20. The change of the HAQ score during the first three months predicted the persistence of the inflammatory arthritis at 3 years with an odds ratio of 13.4.

Conclusions: Effective treatment of early inflammatory arthritis requires early diagnosis and early treatment to have an impact on long-term morbidity and mortality. Relative clinical benefit was seen for the DMARD-treated group at 3-years in this cohort of patients. Both functional and clinical outcomes significantly favoured early DMARD and biologic therapy treatment. EPISA scoring system was able to identify patients with persistent inflammatory arthritis. Early referral to a rheumatologist for definitive diagnosis and early DMARD treatment should improve the long-term outcome of RA.

Disclosure: The authors have declared no conflicts of interest.

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377. OUTCOME MEASURES IN RHEUMATOID ARTHRITIS IN STANDARD CLINICAL PRACTICE: PATIENT SELF-REPORT JOINT TENDERNESS VS PHYSICIAN PERFORMED JOINT EVALUATION

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Background: Although the physician-performed joint evaluation is regarded as the gold standard in the assessment of patients with RA, there is increasing interest in patient self-reported measures.

Objective: The purpose of this study was to examine whether the patient's self-assessment of tender and swollen joint counts correlates with the physician's evaluation, and whether it correlate with other disease activity parameters.

Methods: One hundred and forty-eight patients with RA were included in this work. Patients completed the developed multidimensional health assessment questionnaire [1], whilst waiting for their assessment in the rheumatology clinic. Self report joint tenderness was carried out using a joint diagram with the joint names written

beside it as a guide and the patient was asked to tick the box matching the painful joint(s). The patients were also given the option to rate the degree of their joint pain. Examination of tender joint count by a rheumatologist was performed at the same time. In addition, a record of the patient's global assessment, pain score, fatigue score, grip strength, physician global assessment and functional disability at each visit were kept. The correlations and verification of agreement of these clinical assessments were analyzed.

Results: TJC assessment by the patient demonstrated a correlation coefficient ($r=0.822$) with TJC assessed by the physician ($p<0.001$). Patients' and physicians' estimations tender joints correlated significantly ($p<0.01$) with other parameters of disease activity as well as DAS score.

Conclusions: Joint tenderness counts were consistent when comparing intra-patient and patient-physician assessments. Self-reported tender joint counts might be a useful tool to evaluate the response to therapy in RA. The developed multidimensional health assessment questionnaire offers a good opportunity to score such parameter in an easy and detailed way that might be lacking in the other scales.

Disclosure: The authors have declared no conflicts of interest.

Reference

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378. FAMILY HISTORY OF RHEUMATOID ARTHRITIS - A NON-PREDICTOR OF INFLAMMATORY DISEASE

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Background: Evidence for the always-assumed inheritable component to rheumatoid arthritis (RA) includes increased concordance in monozygotic twins and a quadrupled risk in siblings. Estimated "heritability" is 60%. HLA associations suggest antigen-presentation to CD4+ cells as a possible mechanism... but what is the significance of all this in the clinical setting? Does a family history (FH) of RA make the patient in front of me more likely to have RA?

Methods: A retrospective case-notes study of one year's new referrals to a single rheumatologist was performed. Demographic details, FH from patient and GP letter plus final diagnosis were noted.

Results: 194 appropriate patients had accessible results. 188 had a final diagnosis recorded (RA 20; other inflammatory arthropathies/enthesiopathies 24; CTD 6; OA 43; "other" 101). FH status was recorded in 112 (81 negative FH; 18 FH [first order] of RA; 13 FH of vague "arthritis"). 108 had both FH status and diagnosis recorded. FH of RA, and of RA-or-"arthritis" were separately tabulated vs. actual diagnosis of RA. An example is tabled below.

FH of RA would never be used as a "test" for RA, but if it were, here it would have:
Sensitivity 6% Specificity 81% Predictive Value 6%
Meantime, FH of RA-or-"arthritis" results showed:
Sensitivity 17% Specificity 70% Predictive Value 10%
Conversely (and mischievously) using FH of RA, and of RA-or-"arthritis" as tests for NOT RA respectively give:

Sensitivity 19% Specificity 94% Predictive Value 94%
Sensitivity 30% Specificity 83% Predictive Value 90%

Whilst FH of RA did not reach a significant association with a diagnosis of NOT RA (Fisher Exact: $p=0.194$), it had a significantly better predictive value for NOT RA than for RA (94% [95%CI 70–99.7%] vs 6% [CI 0.3%–29%]) - though this is influenced by higher prevalence of NOT RA in the population.

Conclusions: Patients attending a rheumatology clinic with a FH of RA may be LESS likely to have RA than those with no such history. An increased tendency to attend medical facilities (or for GPs to refer) with symptoms not suggestive of RA because of a family history may outweigh the actual hereditary component of RA.

Disclosure: The author has declared no conflicts of interest.

TABLE 1. Presence or Absence of FH of RA vs Actual Diagnosis of RA

	FH of RA Yes	FH of RA No
Diagnosis of RA. Yes	1	17
Diagnosis of RA. No	17	73

379. MAGNETIC RESONANCE IMAGING (MRI) OF ARTHRITIC WRISTS - GETTING AROUND THE PAIN BARRIER TOWARDS SUCCESSFUL LONGITUDINAL IMAGING

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Background: In Rheumatoid Arthritic joint imaging, MRI offers sensitivity and anatomical specificity. High resolution, high quality imaging in repeat examinations requires optimal placement of the imaged anatomy in the scanner and comfortable subject positioning. We aimed to develop a support structure for MR imaging of the wrist to allow longer comfortable and reproducible examinations, and facilitate longitudinal studies.

Methods: A positioning device was designed to reproducibly hold the wrist in a comfortable position as close as possible to the magnet's isocentre. It was tested in a high field strength scanner, Philips Intera 3Tesla MRI, with dedicated wrist coil

using T1 weighted volume imaging with 0.5 mm isotropic resolution. Comfort rating from 1 (worst) to 10 (best), and image quality by Signal to Noise Ratio (SNR) and Contrast to Noise Ratio (CNR) were evaluated on separate occasions in 8 healthy volunteers positioned in random order, comparing both routinely used MRI wrist positions versus the developed support structure: (1) prone/hand-above-the-head (swimmer); (2) supine/hand-by-the side; (3) supine/hand in a new support structure. Positional reproducibility of the support structure was assessed in 5 healthy subjects using rigid registration of select individual bones in images from 3 separate examinations.

The support device is being further assessed in a Rheumatoid Arthritis MRI longitudinal study. Questionnaire data for comfort was obtained from a group of 7 subjects (5 Rheumatoid Arthritis (RA) patients and 2 Healthy volunteers) at 1 time point. A single RA patient subject also had completed 2 time points.

Results: The device is a bridge which holds the coil above the subject's abdomen with adjustments to allow angulations of the hand in sagittal and coronal planes. Seven measurements (3 angles, 3 translations of the hand and the elbow position) allowed re-positioning to <1mm and rotations to <2°. The SNR/CNR values were 8.0/4.0, 5.3/2.6 and 6.0/3.2 and the comfort levels (mean ± SD) were 6.2 ± 1.6, 7.6 ± 1.2 and 7.8 ± 0.7 for positions 1, 2 and 3 respectively (n=8 healthy volunteers). The overall comfort level results for the bridge in the Rheumatoid Arthritis ongoing study has shown a high comfort level (8.6 ± 1.8) and patients have shown a willingness to come back for longitudinal scans of long duration (approximately 37 minutes).

Conclusions: Successful examinations require both high SNR/CNR and acceptable comfort, particularly for repeat studies. The developed device greatly improved on the swimmer position for comfort; allowed reproducible positioning, while achieving higher image quality than the hand-by-the-side approach. It is now being tested in a prospective longitudinal study in Rheumatoid Arthritis subjects.

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380. STEROID USE IN A COHORT OF RHEUMATOID ARTHRITIS PATIENTS REFERRED FOR BONE DENSITY ESTIMATION

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Background: Periarticular osteoporosis is recognised as an early radiological feature of rheumatoid arthritis (RA) (1). In RA patients, the frequency of osteoporosis (OP) at the hip and spine is 13–18% (2). This study sought to evaluate further the relationship between disease activity in RA and OP at the spine and hip and determine the relevance of RA as an independent risk factor for OP in a cohort of patients with RA referred for bone mineral density (BMD) estimation using dual x-ray absorptiometry (DXA) scanning.

Setting: A district hospital setting where patients with RA are routinely referred for BMD estimation after three years of disease.

Methods: Data were collected from consecutive patients with RA of three years duration attending Rheumatology out patient clinics at the Royal Lancaster Infirmary. Patients were examined by medical students, who collected information including age, gender, disease duration, tender joint count (TJC), swollen joint count (SJC), erythrocyte sedimentation rate (ESR), disease activity score (DAS28) and fracture history. Patients were also asked about risk factors for OP. DXA results were downloaded from the scanner database. Results were tabulated and analysed using a logistic regression model against an age and sex matched cohort of 135 patients referred for BMD estimation for other reasons.

Results: 135 patients with RA were recruited into the study, 112 (83%) were female. The mean patient age was 64.9 years (SD 11.9). The mean TJC was 6.4 (SD 6.3) and mean SJC was 4.74 (SD 4.3). The mean ESR and DAS28 scores were 35 (SD 24) and 4.4 (SD 1.5) respectively. The mean lowest T score was -1.59 (SD 1.3). The lowest BMD T score was in the femur in 71 patients (53%). Patients referred for a DXA scan had other risk factors for OP. 76 patients (56.3%) had previously been prescribed steroids. 121 patients had a medication history available and of these, 57 (47.1%) were being treated for OP. When compared to the control cohort, the RA cohort were more likely to be current smokers (23% vs 14.4% OR 1.8 95%CI 1.1,2.2) and were not significantly more likely to be osteoporotic (OR 1.1 95%CI 0.7,1.6). RA patients were significantly more likely to be on steroid treatment at the time of scanning (OR 5.1 95%CI 3.6,7.2 $P<0.001$) and have had steroid treatment in the past (OR 4.4 95%CI 3.1,6.2 $P<0.001$).

Conclusions: In this relatively small sample of patients, RA does not seem to increase OP risk despite increased steroid use. Possible confounders include lack of information on duration of steroid use and lack of adjustment for patient weight.

Disclosure: The authors have declared no conflicts of interest.

1. *Rheumatology* 2004;43:1561–1564.
2. *Arthritis & Rheumatism* 2003;49:209–215.

381. DIET AND RHEUMATOID ARTHRITIS (RA) DISEASE ACTIVITY

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Background: Patients with RA often report association between specific foods and disease activity. Indeed, the role of diet in RA is a commonly asked question by patients to their doctors. However, whether there is a link between food and disease activity of RA remains unclear. Furthermore, it is not clear whether such reported associations are based on personal experience or from information they received elsewhere. The aim of this pilot study is to explore the possible link between diet and disease activity as well as patients' perceptions on diet and RA.

Methods: RA patients attending outpatient clinics were asked to complete a 7-day food frequency questionnaire (FFQ) which had to be returned to researchers within 7 days of clinical measurement of disease activity. Disease activity was determined using ESR, DAS-28, CRP, and self reported severity by Visual Analogue Scale (VAS). Nutrient intake was calculated using a food composition database and estimates of portion size. In addition, patients were asked to report food items that they thought had exacerbated or alleviated their symptoms in the past. Frequency of consumption of foods by group, and nutrient intake were assessed for their correlation with RA activity using Pearson correlation tests.

Results: FFQs from 65 RA patients were returned within the required time limit and were therefore eligible for analysis. The highest disease activity was associated with a greater intake of bread and dairy products. In contrast the lowest disease activity was associated with a greater consumption of pre-formed retinols (a form of vitamin A) and vitamin E. Interestingly, recent reports suggest that vitamin A is important in the generation of regulatory T cells, and that anti-oxidants may play a key role in anti-inflammatory responses. It should be emphasized, however, that the observed associations do not necessarily imply causality but may simply reflect different dietary patterns in patients with different disease activities. Finally, 46% of patients avoided foods they thought may exacerbate their arthritis, while only 26% of respondents had personal experience of food types "worsening" their arthritis. This observation indicates that there is a considerable difference in the reported associations of food items and disease activities based on their own experience and those based on their beliefs.

Conclusions: Highest levels of pre-formed retinols and vitamin E consumption were correlated with low disease activity in RA whereas high intakes of bread and dairy products were associated with high disease activity. Further studies with a larger cohort of RA patients will be needed to confirm such associations to provide data which will enable clinicians to better inform patients on the role of diet in RA.

Disclosure: The authors have declared no conflicts of interest.

382. PATTERNS OF EROSION & JOINT SPACE NARROWING DEVELOPMENT IN PATIENTS WITH EARLY RA

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Background: Erosions (ERN) & joint space narrowing (JSN) are components of the total van der Heijde modified Sharp score (SHS) used to evaluate joint damage in RA. The relationship between these two elements is currently unknown. Objective: To determine whether joints that develop erosions (ERN) also develop joint space narrowing (JSN) & vice versa in patients with early rheumatoid arthritis (RA) from the Active-Controlled Study of Patients Receiving Infliximab for the Treatment of Rheumatoid Arthritis of Early Onset (ASPIRE).

Methods: 1,049 pts with active RA of <3 years who were naïve to treatment with MTX or anti-TNF agents were randomly assigned in a 4:5:5 ratio to receive placebo + MTX (MTX+PBO), MTX + 3mg/kg infliximab (IFX), or MTX + 6 mg/kg IFX. Radiographs of the hands & feet were obtained at wks 0, 30, & 54, or upon premature discontinuation, and were scored using SHS. Worsening in ERN or JSN scores was defined as any increase from baseline to wk54 that was >0.

Results: 838 pts had evaluable radiographs of the hands, & 839 had evaluable radiographs of the feet at baseline & wk 54 for a total of 26,068 evaluable joints. The number & percentage of joints with worsening in ERN & JSN are shown (Table). Overall, ERN progressed in 3 times more joints than JSN. This progression was especially pronounced in joints with erosions at baseline. In the MTX monotherapy group, JSN more frequently progressed in joints with JSN at baseline than those with ERN at baseline (9.5% vs. 5.3%, respectively). The addition of IFX reduced the occurrence of progression of both ERN & JSN.

Conclusions: Joints with ERN at baseline showed more worsening of ERN than JSN at wk54. Joints with JSN had higher frequencies of JSN progression than joints with ERN at baseline. These data suggest different patterns of radiographic progression in early RA.

Disclosure: J.S, D.A, D.vdH. and E.StC. are investigators for Centocor. T.G. and S.Y. are employees of Centocor R&D and have stock options in Johnson & Johnson. D.B. is an employee of Centocor and has stock options in Johnson & Johnson.

	MTX+PBO	COMBINED IFX+MTX
Total # evaluable joints	7160	18908
Worsening in, n (%)		
ERN	487 (6.8)	709 (3.8)
JSN	160 (2.2)	249 (1.3)
ERN+JSN	72 (1.0)	63 (0.3)
Joints w/non-zero ERN scores at baseline	875	2368
Worsening in, n(%)		
ERN	139 (15.9)	240 (10.1)
JSN	46 (5.3)	71 (3.0)
ERN+JSN	16 (1.8)	22 (0.9)

Continued.

	MTX+PBO	COMBINED IFX+MTX
Joints w/non-zero JSN scores at baseline	580	1354
ERN	89 (15.3)	119 (8.8)
JSN	55 (9.5)	77 (5.7)
ERN+JSN	22 (3.8)	17 (1.3)
Joints w/non-zero ERN & JSN scores at baseline	265	574
Worsening in, n(%)		
ERN	48 (18.1)	75 (13.1)
JSN	33 (12.5)	40 (7.0)
ERN+JSN	11 (4.2)	13 (2.3)

383. THE INFLUENCE OF MENTAL AND PHYSICAL HEALTH ON THE TENDER AND SWOLLEN JOINT COUNT: RESULTS FROM THE EARLY RHEUMATOID ARTHRITIS NETWORK

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Background: There is some evidence from small studies that disease activity indices can be influenced by psychological variables. The early rheumatoid arthritis network (ERAN) is a study benchmarking the treatment of rheumatoid arthritis. It measures both physical and mental health domains using the SF36 and routinely measures disease activity in patients with early (<3 years) rheumatoid arthritis (RA) using the DAS28 score.

Aim: This study aimed to investigate the influence of both the physical and mental health domains of the SF36 on disease activity in the ERAN observational cohort of patients with early rheumatoid arthritis.

Methods: All patients referred with RA of less than three years duration are enrolled in the ERAN cohort a linear model was fitted examining the influence of each domain of the SF36 on the tender and swollen joint counts. The adjusted R squared (r2) value was used to evaluate the influence of each domain. This value shows the fit of the model and is adjusted for the complexity of the model used.

Results: 409 patients filled in the SF-36 questionnaire at first visit to ERAN and had their data on tender and swollen joints documented. Mean age was 56.9 (SD 13.9), 266 (65%) were female. The mean swollen joint count was 6.3 (SD 5.8) and the mean tender joint count was 7.0 (SD 7.2), the mean DAS28 score was 4.6 (SD 1.5). The Adjusted r2 values of the linear models for all eight domains of the SF36 in swollen and tender joints are shown in table 1 below. All the eight domains correlated significantly with the Tender and swollen joint counts but more so with the tender rather than the swollen joint count. These included the mental health domains.

Conclusions: Both physical and mental health domains of the SF36 affect the SJC and more importantly the TJC, a major contributor to the DAS28 score. Assessment of mood may need to be performed in all RA patients and mental state taken into account when prescribing for patients with high TJC scores. These data from ERAN validate other data hypothesising a link between patient mood and our assessment of disease activity.

Disclosure: The authors have declared no conflicts of interest.

Adjusted R2 values for each regression model by SF-36 domain

Domain	Tender joint count adjusted R2	Swollen joint count adjusted R2
Physical function	0.1498	0.0870
Physical role	0.1405	0.0870
Emotional role	0.1105	0.0107
Body pain	0.1714	0.0821
General health	0.0624	0.0019
vitality	0.0986	0.0244
Social functioning	0.1105	0.0264
Mental health	0.0940	0.0527

384. AUTONOMIC NERVOUS SYSTEM DYSFUNCTION IN RHEUMATOID ARTHRITIS

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Background: Heart rate variability (HRV) and autonomic reactivity tests are useful tools for the detection of sympathetic-parasympathetic balance in the autonomic nervous system. Autonomic nervous system involvement in patients with rheumatoid arthritis (RA) has rarely been studied and has shown conflicting results. We planned to analyse the sympathetic (low frequency) and parasympathetic (high frequency) component of HRV and autonomic reactivity changes in patients with Rheumatoid arthritis.

Methods: Cross sectional case control study. Fifty-two patients with Rheumatoid arthritis fulfilling the ACR criteria were recruited from rheumatology clinic at our institute. Patients having other connective tissue disorders or diabetes were excluded from the study. Their demographic details were noted. Control population comprised of age and sex-matched volunteers amongst doctors, housewives, security guards and lab technicians. Autonomic function tests (activity and reactivity tests) were performed upon both the groups. Basal blood pressure (BP) and heart

rate was recorded. HRV was done in the supine position for 5 minutes using nevrokard software (version 6.4.0).

Results: All 52 patients had autonomic reactivity testing, but data for HRV was available in only 50. The baseline clinical characteristics were - median duration of disease 4 yrs (range: 3 months -16 yrs), RF positivity (80%), anti CCP positivity (76%), erosion (46%), DAS 28 - mean 5.92 1.54 and HAQ - mean 1.3 0.72. Autonomic function results are shown in table 1.

Conclusions:

- 1) There is a significant autonomic dysfunction in Rheumatoid arthritis.
- 2) Our data suggest significant decrease in parasympathetic reactivity and activity (tone) in patients with RA.
- 3) The resting SBP and heart rate is also significantly higher in the Rheumatoid arthritis.

Disclosure: The authors have declared no conflicts of interest.

TABLE I. - Autonomic reactivity tests & HRV

	Case (n=52)	Control (n=50)	P Value
Age (years)	40.8 ± 13.4	36.0 ± 11.6	0.06
Males, females	43, 9	34, 16	0.067
Systolic blood pressure (mmHg)	120 ± 19	111 ± 10	0.01
Resting heart rate	79.3 ± 13.7	72.4 ± 10.9	0.007
Deep breathing test	19.4 ± 9	29 ± 15.2	<0.001
E: I ratio	1.3 ± 0.2	1.5 ± 0.3	<0.001
HRV: values median (range)			
NN50 (parasympatic tone)	4 (0-105)	25 (0-750)	<0.001
LF Power (sympathetic tone)	158 (19-3047)	455 (5-3846)	<0.001
HF Power (parasympathetic tone)	213 (3-2464)	452 (5-12206)	0.022
LF/HF ratio	0.9 (0.09-18.4)	1.3 (0.13-149)	0.563

385. WHEN DO PATIENTS WITH RHEUMATOID ARTHRITIS (RA) DEVELOP RADIOLOGICAL SUBLUXATION OF THE CERVICAL SPINE?

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Background: Involvement of cervical spine (CS) is well recognised manifestation in advanced RA, but there are few studies in patients with early RA. The reported prevalence of CS disease varies widely from 25–80% and depends on the scoring methods used. In early RA CS involvement is less common. A recent study has shown that combination drug therapy when used early can retard onset of cervical spine disease [1]. The aims of this study were to determine the frequency and timing of radiological changes due to RA in the cervical spine over time and to examine associations with disease measures and outcomes.

Methods: RA patients with less than 2 years of symptoms and prior to use of disease modifying drugs (DMARDs) have been recruited into an inception cohort involving 9 centres in England since 1986. Clinical and laboratory measures were recorded at yearly intervals. Standard sequential monotherapy or step up DMARD therapy was used, started at median 2 months from presentation. Outcomes were measured at 3, 5, 10 and 15 years and included function, disease activity, x-ray damage, orthopaedic surgery and mortality. Neck x-rays were taken in maximal flexion & extension views, digitised onto CD ROM, and subsequently read by 1st author. The following criteria were used: Atlanto-Axial Subluxation (AAS): distance between the anterior aspect of dens and posterior aspect of the anterior arch of atlas >=3mm in flexion. Atlanto-Axial Impaction (AAI): Sakaguchi-Kauppi (S-K) method [2] was developed especially for screening purposes & relies on the position of atlas in relation to the axis. Sub-Axial Subluxation (SAS): posterior line of one vertebral body more than 3mm in relation to the next vertebra. Results are presented as summary statistics with median & quartiles (IQR), odds ratios (OR) with 95% confidence intervals (CI) & chisquare with p values.

Results: AAS >=3mm was found in 135 of 625 patients (21.6%) who were followed for up to 20yrs (median 9yrs). 9 had AAI and 39 (6.2%) had SAS. Median time to AAS was 5yrs (IQR 4-7). It was relatively more common in patients <40y at onset of RA (24% vs 15%, p < 0.005), but not related to Rheumatoid Factor or sex, or to measures of disease at baseline or 1yr. Patients with peripheral erosions at baseline were at increased risk of developing AAS (OR = 3.2, CI 1.4 – 6.9). Steroid use and number of DMARDs were both increased in AAS (p0.02 & 0.04). Both the number and type of major orthopaedic surgery were related to AAS (p < 0.005).

Conclusions: Cervical spine disease in RA was less common than many reports but was detected on x-ray at early stages of the disease. Atlanto-Axial subluxation was associated with both peripheral radiological damage and major joint replacement surgery. In view of the limited clinical indicators, patients can only be identified by a routine screening neck x-ray.

Disclosure: The authors have declared no conflicts of interest.

386. DIFFICULT TO CONTROL RA - DO THEY FAIL THE DRUGS OR DO WE FAIL THEM?

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Background: The Rheumatoid/Inflammatory Arthritis (RiA) Centre at Guy's & St Thomas' was created 4yrs ago with the treatment goal of achieving DAS28 remission. Despite this goal, we have patients with persistent severe disease activity (DAS>5.1). This study aimed to characterise this group, review past and current therapy and to identify if other factors contributed to the persistently high scores.

Methods: The RiA Centre database was used to identify patients with persistently high DAS (DAS 28 >5.1 on 2 occasions at least two months apart) over 12 month period. The following data was collected: demographics, disease characteristics, past and present treatments. Current drug therapy was verified from clinic letters. Significant pain not due to RA, references to depression and poor sleep were recorded. Diagnoses of fibromyalgia (FM) were noted. Chi squared tests were used to compare the characteristics of the high DAS28 group with the RA population on the database.

Results: 491 patients were identified with RA, 47(9.6%) of whom had persistent DAS28 >5.1 – 83% female, average age 58.8yrs. There were no significant differences in age, sex or ethnicity when compared to the whole database. There was a higher incidence of seropositivity (72%) and erosive disease (70%). 34(72%) patients were receiving anti-TNF therapy. Of these 5(15%) took no DMARD and 13(38%) had DMARD monotherapy. 13(28%) were not currently on anti-TNF therapy: 7 had never had anti-TNF, 5 of whom received DMARD monotherapy and 2 received 2 DMARDs. The remaining 6 had failed anti-TNF therapy and were awaiting Rituximab. In this group, 3 had failed 3 anti-TNFs, 1 failed 2 anti-TNFs, and 2 had experienced adverse reactions. In the high DAS group 11% had never received sulphasalazine, 47% hydroxychloroquine and 62% never received leflunomide. There was a statistically significant increased diagnosis of FM within this group: 6/47 (13%) compared with 2% within the database as a whole (p < 0.001; OR 6.46). Only 3(50%) of those with FM and high DAS were treated. Widespread pain other than from RA was a feature in 14/47 (30%).

Conclusions: Analysis of this group revealed that many could be on sub-optimal treatment. This study did not include the use of steroids or reasons why medications had been stopped. Our protocol uses triple therapy before anti-TNF, so the low use of some DMARDs may have been toxicity related. However these data suggest leflunomide use should be increased. Those awaiting Rituximab could also have been treated more aggressively. FM was a significant problem, often under treated. The study highlighted the difficulty in managing this patient group and the need to persist and revisit previous treatment options.

Disclosure: The authors have declared no conflicts of interest.

387. SURVEY OF THE CAUSES OF DEATH IN DMARD-TREATED RA PATIENTS

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Background: Rheumatoid arthritis (RA) has been shown to be associated with a significant increase in all-cause mortality. Although studies have reported increase in mortality from infections, malignant neoplasms and renal disease, the majority of studies now point to cardiovascular disease being the leading cause of death.

We wanted to compare local data on cause of death with published studies and therefore conducted a survey looking at how cause of death related to disease, choice of DMARD and what underlying cardiovascular risk factors the patient had. **Methods:** We searched on our DAWN database of patients (n=950) to find all patients on DMARDs who died between 1997 to 2007 (n=105). For out of hospital deaths, GP surgeries were contacted to determine the cause of death in the community. Data was recorded on the rheumatological condition they had, age at death, cause of death, DMARDs used and the presence of cardiovascular risk factors.

Results: In the last decade, 105 DMARD-treated patients had died. The male to female ratio was 38:67 and the mean age 71.6 ± 11.0 years. The majority of patients had RA (87%). The other diseases were SLE=2, CTD=4, PsA=3, SpA=2, PMR=2, WG=1.

81 patients (77%) died in hospital and 24 (23%) in the community. The commonest cause of death in all patients was cancer (n=39, 37%), followed by infection (n=31, 30%), cardiovascular (n=19, 18%) and other causes (n=8, 10%). The cause of death was not known in 8 patients (7%). In the 8 patients who died from other causes, these included pulmonary fibrosis (n=4, 3.8%), acute pneumonitis (n=2, 2.2%), acute renal failure (n=1, 1%) and colonic ischaemia (n=1, 1%).

In the cancer group, lung (34%) and GI (24%) malignancies were the commonest followed by prostate (11%), pelvic (10%), genitourinary (5%), brain (5%), breast (5%), skin (3%) and haematological (3%) cancers. In the infection group, 63% had bronchopneumonia, 34% sepsis syndrome and 3% orbital cellulitis. In the cardiovascular death group, 43% had MI, 31% cerebrovascular attack, 13% subarachnoid haemorrhage and 13% cardiac failure.

Hypertension was the commonest cardiovascular risk factor (38%) followed by previous IHD (31%), smoking (23%), DM (11%), hypercholesterolaemia (9%), family history (9%) and previous CVA (7%).

2 patients on infliximab died from malignant melanoma and bronchopneumonia. 2 patients on the combination of MTX/leflunomide developed acute pneumonitis. Patients with SLE/CTD died mainly from end-stage pulmonary fibrosis.

Conclusions: With better treatment, RA patients now die less frequently from renal disease and amyloid compared to 1980s.

Cancer was the commonest cause of death in our study, followed by infection and cardio/cerebrovascular disease. This study highlights the importance of careful follow-up and vigilance of DMARD-treated rheumatological patients.

Disclosure: The authors have declared no conflicts of interest.

388. LUNG DISEASE IN PATIENTS RECEIVING ANTI TNF THERAPY FOR RHEUMATOID ARTHRITIS

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Background: The prevalence of interstitial lung disease (ILD) in patients with rheumatoid arthritis (RA) is known to be between 2 – 20%. ILD contributes significantly to mortality in RA and is the commonest fatal extra-articular complication of the disease. The BSR biologics register has revealed that mortality from ILD in RA patients treated with TNF drugs is twice that of RA patients on MTX. We have assessed prevalence and outcome of lung disease in our population of RA patients currently on TNF therapy.

Methods: We identified all patients in Gateshead who are receiving anti TNF therapy and obtained case notes for those with RA. We examined population demographics and drug history, together with duration of disease and therapy. We recorded results of pulmonary function tests (PFTs) and chest radiography, together with results of further imaging where this had been performed. We noted the presence of all established lung disease and recorded any fatalities.

Results: We identified 84 patients prescribed TNF therapy for rheumatic disease, of whom 65 have RA. Of these 19 are male (30%) and mean duration of RA is 11 years. Treatment has been administered for a median of 36 months (range 3 – 76) and is with Etanercept (32), Adalimumab (20) or Infliximab (13). Most patients also receive methotrexate (53) or another disease modifying drug (4). PFTs were available in 50 RA patients (74%) and demonstrate median percentage predicted values of FEV1, VC and corrected gas transfer of 104%, 102% and 99% respectively. Just 5 patients (10%) have lung disease on PFTs confirmed by imaging (emphysema 3; pleural disease 1; ILD 1). No deaths from lung disease have been recorded among our patients on TNF therapy.

Conclusions: We have shown a low prevalence of pulmonary pathology among our RA patients on TNF therapy with no associated mortality. This is at odds with evidence from the BSRBR. We can reconcile this by revealing that we selectively seek to exclude RA patients with evidence of ILD from receiving anti TNF drugs. This policy requires a review of pulmonary function which has usually been tested on prior commencement of methotrexate. This approach appears to be effective in reducing morbidity and mortality from accelerated ILD, and we recommend its wider adoption. We need to know whether prior ILD constitutes a relative contraindication to the use of anti TNF therapy in RA patients.

Disclosure: The authors have declared no conflicts of interest.

389. INVARIANT NATURAL KILLER T (iNKT) CELLS IN EARLY RHEUMATOID ARTHRITIS (RA)

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Background: iNKT cells are a specialised subset of T cells that recognise glycolipid antigens and possess characteristics of both natural killer and T cells. iNKT cells play a key role in the regulation of many immune responses including autoimmunity, infections and tumour surveillance. Indeed, iNKT cell deficiency has been shown to exacerbate inflammatory arthritis in rodent models. Furthermore, it has been reported that peripheral blood iNKT cell frequency is reduced in patients with RA. However, these cross-sectional studies were performed using blood samples from patients with established RA who were receiving immunosuppressive therapy, which may affect the frequency of iNKT cells. Furthermore, it is unclear whether peripheral blood iNKT cell frequency is stable over time.

Methods: We measured the peripheral blood iNKT cell frequency from 23 normal healthy volunteers and 16 patients with established and 7 patients with early RA (with disease duration of less than 12 months) using flow cytometry. In the early RA group, the baseline frequency of iNKT cells in peripheral blood was enumerated before the patients receiving any immunosuppressive treatment, and on 4–6 further occasions over a period of 3 to 4 months. The DAS-28 score and C-reactive protein (CRP) were measured during each visit. Similar serial measurements of peripheral blood iNKT cell frequency were also performed on 6 healthy volunteers.

Results: Peripheral blood iNKT cell frequency were significantly lower in patients with early RA (0.0010% vs. 0.0754% of lymphocytes, $p=0.0001$) as well as established RA (0.0033% vs. 0.0754% of lymphocytes, $p < 0.0001$). Peripheral iNKT cell frequency was negatively correlated with serum CRP ($r = -3.67$, $p = 0.04$) but there was no correlation with DAS-28 score or ESR. Furthermore, peripheral blood iNKT cell frequency increased following treatment but remained significantly lower than normal controls (mean = 0.0013% of lymphocytes, $p = 0.004$). Finally, peripheral blood iNKT cell frequency was stable over time in healthy controls. In contrast, iNKT cell frequency varied considerably in patients with RA (mean coefficients of variation = 13.4% vs. 66.9% (normal vs. RA), $p = 0.001$).

Conclusions: Peripheral blood iNKT cell frequency in RA patients was significantly lower compared to healthy controls. The inverse relationship between iNKT cell frequency with CRP and the observations that iNKT cell frequency increased following treatment with disease modifying drugs lend further support to a role for iNKT cells in the pathogenesis of RA. Finally, enumeration of peripheral blood iNKT cell frequency in RA should take into account of the increased variability in these patients.

AD and AP contribute equally to this work.

Disclosure: The authors have declared no conflicts of interest.

390. RESEARCH INTO PRACTICE: HOW DO RHEUMATOLOGISTS MANAGE PATIENTS WITH EARLY RHEUMATOID ARTHRITIS (RA) AND WHAT PREVENTS THEM IMPROVING THEIR PRACTICE?

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Background: Increasing trial evidence suggests early, aggressive drug treatment of RA results in superior short and medium term outcomes and that tight, protocol driven, control of inflammation is more effective than routine follow up and non-standardised treatment regimens. We aimed to determine to what extent rheumatologists follow such treatment protocols and explore what practical barriers exist to prevent NHS rheumatologists from implementing optimal management of early RA.

Methods: The Early Rheumatoid Arthritis Network (ERAN) runs a multi-centre prospective inception cohort study of the secondary care management of patients with early RA in the UK. Lead rheumatologists at each of the active centres were surveyed, by e-mail. Participants were asked for their views on the management of early RA and information regarding their clinical service for early RA patients.

Results: 18 of 27 (67%) centres responded. All rheumatologists were convinced that early (<2 years from onset of symptoms) treatment of RA reduces patient morbidity and 16/18 (89%) that tight control of disease activity is more effective than conventional care in reducing disease activity. However, only 5/16 (31%) of centres felt their management approximated to 'tight control' and only 4/18 (22%) work to a written protocol. 16, 5 and 7 of 18 (89, 28, 39%) centres had previously used any combination therapy, or followed the COBRA or BeST protocols respectively in new RA patients. 12/17 (71%) routinely use the Disease Activity Score (DAS) and 10/17 (59%) the Health Assessment Questionnaire (HAQ) to assess RA activity. However only 1 centre was able to review patients at < 1 month and 3 (19%) were unable to review early RA patients at less than 3 month intervals. Rheumatologists identified lack of staffing and heavy clinic load ("I do not have a follow slot free until August 2008" (October 2007)) (7), discouragement from managers (1), inertia to organisational change (self and colleagues)(1), resistance from patients to high dose drugs (1) and lack of conviction that protocols work for all patients ("I am not entirely persuaded by some of the regimens" and "Some... do well on conservative regimens - I suspect we think we can spot these")(2) as barriers to change in clinical practice.

Conclusions: This (selected) group of rheumatologists believe early treatment and tight control of disease improves patient outcome. However few rheumatologists work to a written protocol or have used COBRA or BeST regimens. About 3/4 routinely use the DAS. Follow up intervals might preclude tight control of disease in some centres. Barriers to service improvement are both practical and attitudinal.

Disclosure: The authors have declared no conflicts of interest.

391. WHICH PATIENTS REQUIRE MULTIPLE JOINT SURGERY BY 10YRS OF RHEUMATOID ARTHRITIS (RA)?

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Background: Orthopaedic surgery is accepted as a surrogate marker for joint failure in RA, and is an uncommon, but serious outcome. This group has previously reported that large joint replacement was performed in 7% by 5 yrs. This study now has sufficient follow up to report on the type & frequency of joint surgery over 10 yrs. We also aim to explore possible predictive factors for multiple joint failure.

Methods: The Early RA Study (ERAS) is an inception cohort started in 1986 in 9 centres, which includes yearly standard clinical, radiological and laboratory measures. Treatment was conventional DMARD therapy and none received anti-TNF drugs at time of analysis. All inpatient episodes are recorded including details of orthopaedic interventions. Results are presented as summary statistics and odds ratios (OR) with 95% confidence intervals (CI).

Results: Orthopaedic surgery was performed in 307 of 1154 patients (27%) by 10 yrs (number of procedures = 529). Major joint surgery was performed in 140 patients (12%), mainly total replacement surgery for hips (THR) in 74 (6%), knees (TKR) in 69 (5%) and shoulders (TSR) in 11 (1%). Excision arthroplasty (EA) and/or joint fusion (JF) were performed in 125 (5%), mainly wrist (n=28), finger (n=23) and toe joints (n=33). 5 patients had atlanto axial fusions. 74 had minor surgery only (e.g. carpal tunnel decompression), 67 had only one EA or JF and 60 patients had only 1 joint replacement. 105 (9%) had multiple joint surgery, 70 with 2 major or 2 EA/JF operations and 35 with >2 major or intermediate type surgery. Time from presentation to surgery was lowest for THR (median 48 months if the 8 patients with hip fracture were excluded), highest for TKR & TSR (median 92 and 94 months respectively). Early surgery was also seen in those patients eventually undergoing multiple interventions compared to single joint surgery. Baseline features with predictive value for the multiple surgery group were female sex (OR 2.1 CI 1.3–3.4) and two copies of the RA related shared epitope (OR 2.4, CI 2–4.7). Clinical & laboratory measures at 1yr had better prognostic value than at baseline: HAQ (OR 2.9, CI 2.8–4.7), Haemoglobin (OR 2.5, CI 1.6–3.8), Disease Activity Score (OR 2.4 CI 1.6–3.8), ESR (OR 2.2, CI 1.4–3.4).

Conclusions: A group of RA patients requiring multiple joint surgery by 10 yrs has been identified. Measures of more severe disease activity were already present in these patients by 12 months and most of these predictive markers would be modifiable with more intensive therapy.

Disclosure: The authors have declared no conflicts of interest.

392. DOES RHEUMATOID ARTHRITIS CHANGE MUSCLE QUALITY?

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Background: Loss of muscle mass is a major factor contributing to impaired physical function and disability in patients with rheumatoid arthritis (RA). Lower muscle mass is linked to decreases in force production which in turn affect functional ability. The aim of this study was to investigate whether muscle quality (MQ), defined as force per physiological cross-sectional area of the muscle, and other contractile properties of muscle are compromised in patients with rheumatoid arthritis and also contribute to reduced physical function.

Methods: Quadriceps muscle force, activation capacity, and antagonist muscle co-contraction as well as patella tendon stiffness were assessed in twenty-two patients with stable rheumatoid arthritis (mean age 60 ± 11 years, age range 22–72 years) and age- and sex-matched (64% female) sedentary controls (mean age 60 ± 13 years, age range 22–76 years). Measurements were taken during maximal isometric contractions on an isokinetic dynamometer. Muscle fibre recruitment and antagonist co-contraction were determined by superimposed electrical stimulations and electromyographic activity respectively. Further contractile properties (electrically evoked peak force, time to peak force and half-relaxation time) were determined during electrical stimulation at rest. Resting fibre fascicle length, pennation angle and muscle volume were measured with ultrasound to determine physiological cross-sectional area. Ultrasound was also used to determine patella tendon stiffness. Appendicular lean body mass was measured by whole body DXA scan, and lower body physical function using one-leg standing balance, 8-foot up and go, 50-foot walk and 30-second sit to stand tests.

Results: Physical function was significantly lower in the patient group relative to the controls: balance by 26% (p=0.01), 8-foot up and go by 15% (p=0.01), 50-foot walk by 20.6% (p=0.001) and 30-second chair stand by 11.3% (p=0.08), although the difference for quadriceps force was not significant (144.6 Nm vs 156.7 Nm, p=0.40). Similarly, there was no difference in MQ (24.0 ± 8.5 Ncm⁻² vs 22.0 ± 7.1 Ncm⁻²) nor any difference in muscle fibre recruitment (79.5% vs 81.2%), antagonist co-contraction (9.0% vs 8.2%), and contractile properties (electrically evoked peak force 20.1 Nm vs 19.4 Nm, time to peak force 0.12 s vs 0.12 s, half-relaxation time 0.10 s vs 0.10 s). Patella tendon elongation was similar in the two groups (5.54 mm vs 5.06 mm). Despite patients having an increased body mass index of 4.7% relative to the controls (27.5 vs 26.2), they had a physiologically significant reduction in appendicular lean mass by 5.3% (16.4 kg vs 17.3 kg, ns).

Conclusions: In conclusion, muscle quality is not compromised in RA and therefore does not contribute to the impaired physical function.

Disclosure: The authors have declared no conflicts of interest.

393. DISEASE REMISSION IN RHEUMATOID ARTHRITIS-IS DISEASE ACTIVITY SCORE(DAS)28 AN ADEQUATE MEASURE FOR DISEASE REMISSION?

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Background: Disease remission is the principal goal of treatment in RA. DAS28 is routinely used to monitor disease activity and therapy. It is a composite score incorporating tender and swollen joints (out of 28), erythrocyte sedimentation rate (ESR) and global health. Global health and tender joint count influences DAS28 score, and hence does not always truly reflect disease activity. The aim of this study was to compare DAS 28 remission against clinical and musculoskeletal ultrasound (MSUS) remission.

Methods: 27 patients with early RA, in clinical remission and 2 patients in DAS remission, but not in clinical remission were included. Clinical remission was defined as having no synovial inflammation with normal inflammatory markers. DAS28 remission was defined as DAS28 < 2.6. All 29 patients underwent MSUS to confirm clinical or DAS remission. MSUS remission was defined as no sonographic evidence of synovitis/tenosynovitis. Treatment decisions were made based on MSUS findings.

Results: The mean patient age was 53 yrs (SD 17.5). Anti-(citruinated C-peptide) CCP was positive in 16 (57%) patients, rheumatoid factor (RF) in 17 (59%) patients. 9 (31%) patients were RF and anti-CCP negative at baseline. The median DAS28 score at baseline was 4.4 (IQR 4.0, 5.1). 5 (17%) patients had erosive disease at presentation.

17 (59%) patients were in DAS remission whereas 27 (93%) patients were in clinical remission. Out of 27 patients in clinical remission, 15 (55%) were also in DAS remission whereas 12 (45%) had DAS 28 score > 2.6. Clinical remission was achieved at a median of 4 months [IQR 3, 5] from first assessment.

Out of 17 patients in DAS remission, MSUS confirmed remission in 17 (77%) of patients, however 4 (23%) patients had evidence of synovitis using MSUS and their disease modifying therapy was escalated. Out of 12 patients in clinical remission, but not in DAS remission, MSUS confirmed remission in 10 (83%) patients, whereas 2/12 (17%) patients required therapy escalation because of active synovitis based on MSUS.

Conclusions: Assessment of remission using current methods is inaccurate. Using the DAS28 definition of remission alone has limitations. In this study 76% of patients with DAS28 > 2.6 had no evidence of active synovitis using MSUS, thus over-estimating disease activity. Clinical examination may miss sub-clinical synovial inflammation in early RA (4 patients in this group). This study highlights the limitation of clinical assessments, including DAS28 score for determining low levels of active disease and the importance of MSUS in directing treatment decisions especially in the early arthritis setting. Remission is a complex concept that should require an individual assessment supported by imaging. Further studies and larger samples can help better define remission in the light of new tools such as MSUS.

Disclosure: The authors have declared no conflicts of interest.

394. DOES SMOKING STATUS AND CORTICOSTEROID USE AFFECT THE RESPONSE TO ANTI TNF THERAPY IN PATIENTS WITH RHEUMATOID ARTHRITIS?

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Background: Studies have suggested an association between smoking, severe rheumatoid arthritis (RA) and poor response to treatment. The aim of this study was to investigate this hypothesis in a cohort of patients receiving anti TNF therapy.

Methods: We evaluated the case notes of 236 patients with RA taking anti TNF treatment. The following data were recorded; age, disease duration, markers of disease severity (rheumatoid factor, nodules and erosions) and disease activity scores (DAS); at baseline and at six months. Adverse effects of treatment were noted. The use of disease modifying drugs (DMARDs) and corticosteroids were also documented.

Patients were categorized according to their smoking status into i) current smokers (CS), ii) ex-smokers (ES) and iii) never smoked (NS). The influence of smoking status on change on DAS was assessed in a regression analysis in which the potential confounding effect of age, sex, disease duration and concurrent steroid and DMARD use was also examined.

Results: There were a total of 52 (22%) males and 184 (78%) females with median age of 60 years. 23% (54) were CS, 42% (98) were ES, and 35% (82) NS. The DAS reduction at 6 months showed a trend towards a greater fall amongst patients who never-smoked (mean 2.7 95%CI [2.4, 3.0]) when compared with current smokers (2.3 [1.7, 2.9]). The CS group were found to use a combination of DMARDs and steroids more frequently compared with the NS group, consistent with them having a more aggressive disease.

When the DAS response was confined to the subjects who were not taking steroids, the CS group was shown to have more marked and statistically significant attenuating effect on the response to anti TNF therapy (change in DAS 0.6 [0–1.3]). The incidence of side effects to anti TNF therapy was equal amongst the 3 groups. The results were not influenced by sex, age, disease duration or rheumatoid factor status.

Conclusions: Our findings support the observation that smokers with RA require more aggressive treatment. They also confirm that smoking attenuates the response to biologic therapy, although this effect can be masked by concurrent use of steroids.

Disclosure: The authors have declared no conflicts of interest.

395. INTERSTITIAL LUNG DISEASE (ILD) AND RHEUMATOID ARTHRITIS (RA) HAS A POOR PROGNOSIS AND EARLY MORTALITY

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Background: ILD encompass a broad spectrum of disorders that vary greatly in their clinical presentation, pathogenesis, prognosis, outcome and treatment. Pulmonary fibrosis (PF) is a well recognized but uncommon extra articular manifestation of RA. There are few prospective cohorts which have reported on the incidence and outcome of this complication in RA.

Methods: Patients with less than two years of symptoms and prior to use of disease modifying drugs were recruited into an inception cohort involving nine centres in England since 1986. Standard clinical and laboratory measures were recorded at yearly intervals. Outcome measures at 3, 5, 10 and 15 yrs included disability, disease activity, treatment response, x-ray damage, co-morbidity and mortality. Treatment included conventional disease modifying drugs (DMARDs), used either as sequential monotherapy or 'step up' combination drugs, started at median of 2 months from presentation. At the time of analysis biologic agents had not been used. Analysis included summary statistics and survival analysis.

Results: 1427 patients (66% women) were followed from 1–20 yrs (median 9 years), of whom 52 (3.6%) had PF, 13 (25%) diagnosed before or at presentation. Another 13, 10, and 10 were diagnosed by 3, 5 & 10 yrs respectively, and only 6 from 11–17 yrs. This equates to a 15-year cumulative incidence of 65.2/1000 (95%CI 44.7–94.6). Patients with PF were older at presentation of RA (63 yrs compared to 55 yrs in rest of cohort) and more common in men (4.7% vs 3%). Measures of disease (HAQ, ESR) were all higher at baseline & 1yr compared

to both the whole cohort, and to patients with other respiratory disorders. PF was a primary or secondary cause of death in 27 patients, equivalent to an incident rate of 182.4 per 1000 patient years (95%CI 127.5, 260.8). Survival graphs will demonstrate that the proportion of patients surviving by 2 yrs was only 51%. Patients with PF received more DMARDs and steroids because of more severe RA. 21 were treated with methotrexate, 9 prior to the diagnosis of PF. Although not proven, detailed analysis of these patients did not support a causal relationship.

Conclusions: PF is an early feature in RA and is associated with worse clinical & functional measures. There is also increased and early mortality. This study supports the consideration of more intensive therapy at early stages in these patients because of this morbidity & mortality.

Disclosure: The authors have declared no conflicts of interest.

396. RELATIONSHIP BETWEEN RHEUMATOID ARTHRITIS AND HORMONAL FACTORS IN AN OLDER CHINESE POPULATION

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Background: Hormonal factors are thought to play a part in the pathogenesis of rheumatoid arthritis (RA), but previous studies are conflicting. We examined the relationship between use of the oral contraceptive pill (OCP), parity, breast feeding and history of RA in a population of women from south China.

Methods: Cross-sectional data from 7,349 women over 50 who participated in the Guangzhou Biobank Cohort Study was analysed. A full reproductive history, including use of OCP, number of pregnancies and duration of breast-feeding were obtained by structured interview. Participants who reported physician diagnosed RA and those who reported pain in at least 3 joints (including wrist) were classified as having RA. Logistic regression was used to examine the relationships between RA and other factors, after adjusting for potential confounders. The analysis was repeated using a stricter definition of RA (having at least one of four assessed standard criteria).

Results: There was a significant linear relationship between both increasing numbers of children breastfed (table 1) and duration of breastfeeding and lower risk of RA (p for trend <0.01). When analysis was repeated with the more strict definition of RA, the same trend was seen though the results were only statistically significant in the highest categories of exposure. Among relatively few women who had ever used the OCP, there was a non-significant trend for decreased risk of RA with increasing duration of use. There was no significant relationship between parity and RA.

Conclusions: Our findings suggest that increasing duration of breastfeeding is associated with lower risk of RA. This concurs with some but not all previous research. Cortisol released during breastfeeding has been implicated as a potential mechanism for this association. These findings lend further support for advocating breastfeeding among women and for research into potential aetiological factors. The low number of women who used the OCP and were nulliparous could have diluted any effect from these exposures.

Disclosure: The authors have declared no conflicts of interest.

TABLE 1.

Risk Factor	Number(%)		Adjusted* OR (95% CI)
	No RA	RA	
No. children breastfed			
0	115(83.3)	23(16.7)	1
1	541(90.2)	59(9.8)	0.73 (0.43, 1.23)
2	2095(91.6)	192(8.4)	0.55 (0.35, 0.88)
3	1815 (90.0)	202(10.0)	0.60 (0.37, 0.95)
4	1894(90.5)	198(9.5)	0.49 (0.37, 0.78)
	p for trend <0.01		
Duration OCP use			
<5 years	802(89.7)	92(10.3)	1
5-9years	135(90.6)	14(9.4)	0.90 (0.50, 1.64)
>10 years	158(91.3)	15(8.7)	0.81 (0.46, 1.45)
	p for trend 0.46		

*Adjusted for age,weight,education,parity.

397. USING T-CELL SUBSETS AND T REGULATORY CELLS TO DEFINE IMMUNOLOGICAL REMISSION POST TNF-BLOCKADE

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Background: In patients with early RA, TNF-antagonist agents can induce a sustainable clinical remission (CR) after cessation of therapy. However in patients with established RA in clinical remission, therapy is often continued indefinitely. Available CR criteria do not predict sustained remission with or without therapy.

A particular CD4+ T-cell subset with potential pathological activity in RA, called "inflammation related cells" (IRC) has been identified. In established RA, with DMARD-induced remission, these cells persist by becoming "dormant" and are associated with relapse. In contrast to the restoration in Treg frequency and function observed in patients with active RA following TNF-blockade, no such changes are seen in DMARD-induced remission. The aim of this study was to determine whether Treg and IRC frequencies could be used to objectively define clinical remission and indicate in whom therapy can be safely withdrawn.

Methods: Patients achieving TNF-blockade induced CR (DAS28 <2.6) for at least 6 months were recruited. All patients received concomitant DMARD therapy as clinically indicated. Patients with early RA had received 12 months therapy with TNF-blockade versus placebo when the therapy was stopped (n=24). Patients with established RA (n=35) volunteered to cease therapy (n=10). Advanced 6 colour flow cytometry was used to measure the frequency of IRC and Treg [defined as FoxP3+ cells (but not as CD25high)] in blood samples. Multiplex cytokine analysis was undertaken.

Results: There were no differences in frequency of Treg between patients with established disease when comparing those stopping or continuing therapy or between TNF-blockade agents. In early RA, patients in TNF-blockade induced CR had a higher frequency of Treg when compared to placebo (p=0.01). This was also true in early RA compared with established RA (p=0.05). Furthermore, Treg frequency was higher in patients with established RA in sustained CR versus those experiencing disease flare (p=0.05).

The frequency of IRC was similar in established disease irrespective of TNF-blockade agent and whether stopped or continued. Frequency of IRC was more reduced in CR in early disease versus established disease (p<0.10) and when induced by TNF-blockade versus placebo (p<0.10). Higher frequency of IRC could also predict flare (p=0.008). In established disease, IL-10 levels were higher in TNF-blockade induced remission with no subsequent flare (p<0.10) whereas Rantes was lower in the same group (p=0.05).

Conclusions: Immunological remission and safe drug withdrawal could be defined using low frequency of IRC, high frequency of Treg and higher circulating IL-10. Achieving this status could help decide whether or not therapy could be withdrawn safely.

Disclosure: The authors have declared no conflicts of interest.

398. RADIOGRAPHIC PROGRESSION AND CLINICAL STATUS ARE DIFFERENTIALLY RELATED FOR ADALIMUMAB PLUS METHOTREXATE (MTX) VS. MONOTHERAPY WITH ADALIMUMAB OR MTX: SUBANALYSIS OF PREMIER

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Background: PREMIER was a 2-year (yr) trial of adalimumab (ADA) 40 mg every other week + weekly MTX vs. either agent alone in MTX-naïve patients (pts) with early RA. Previous analyses demonstrated that for all ACR responses, including ACR70, the mean change (Δ) in total Sharp score (TSS) after 104 weeks (wks) of treatment was significantly lower in ADA+MTX-treated pts versus MTX-treated pts. We have now extended this analysis by using DAS28 categories and non-overlapping categories of ACR response and by including the ADA monotherapy arm.

Methods: Post-hoc analyses were performed with observed clinical and radiographic data for pts in PREMIER who completed 104 wks of treatment and had radiographs plus DAS28 or ACR scores at baseline and Wk 104. Pts were grouped by the DAS28 score at Wk 104, and by the Wk-104 ACR response (see table for DAS28 and ACR categories). The mean ΔTSS were determined for these groups. Scatter plots of ΔTSS versus DAS28 at Wk 104 were prepared.

Results: In PREMIER, 799 pts were treated with ADA+MTX, ADA alone, or MTX alone, of whom 199, 161, and 166, respectively, completed 104 wks. For these pts, the mean ΔTSS was smaller with ADA+MTX than with MTX alone for each Wk-104 DAS28 category and for each Wk-104 ACR response category (table). Results for ADA pts were intermediate. MTX monotherapy approached the radiographic efficacy of ADA+MTX only for pts with essentially no clinical disease activity (ie, DAS28 <1.6 or ACR100). For MTX monotherapy only, a stepwise decline in mean ΔTSS was observed with improved clinical status at Wk 104 (table). For ADA+MTX, the mean ΔTSS was always low. Similarly, scatter plots demonstrated a strong, positive linear correlation between DAS28 and ΔTSS at Wk 104 for pts treated with MTX alone (slope=2.48, r=0.27; p<0.001), but not for pts treated with ADA+MTX (slope=0.46, r=0.13; p=0.07), or ADA alone (slope=0.90, r=0.12; p=0.15).

Conclusions: The mean ΔTSS during MTX monotherapy was highly dependent on clinical efficacy and was significantly greater than with ADA+MTX, especially when clinical disease activity was detectable. In contrast, ADA+MTX prevented nearly all radiographic progression, regardless of the level of clinical response. ADA monotherapy had an intermediate effect.

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Roche, Wyeth, Abbott, Schering-Plough and Bristol-Myers Squibb. K.P. and E.S. are full-time employees of and have stock options in Abbott. M.G. has declared no conflicts of interest.

Mean Δ TSS by DAS28 Score or ACR Response at Week 104

DAS28 Category	Mean Δ TSS by DAS28 (N)			ACR Response Category	Mean Δ TSS by ACR Response (N)		
	ADA+MTX	ADA	MTX		ADA+MTX	ADA	MTX
≥ 5.1	3.56 (9)	5.50 (13)	12.57 (14)	<20	2.09† (16)	4.82† (30)	11.48 (24)
3.2 to <5.1	1.75† (32)	6.26 (52)	9.37 (58)	20 to <50	1.89† (28)	7.80 (33)	8.06 (33)
2.6 to <3.2	0.92* (25)	7.94 (25)	5.83 (27)	50 to <70	1.98* (32)	2.96 (23)	6.42 (37)
1.6 to <2.6	0.95† (74)	1.16 (54)	2.80 (64)	70 to <100	0.63* (98)	4.17 (72)	4.45 (59)
<1.6	0.74 (55)	4.58 (12)	2.00 (14)	100	0.50 (25)	-0.33 (3)	2.15 (13)

*p < 0.05; †p < 0.01 vs. MTX.

Health Services Research, Economics and Outcomes Research

399. RHEUMATOLOGY OUTPATIENT CLINICS-WHEN WERE PATIENTS LAST SEEN BY THEIR CONSULTANT?

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Background: With expansion in nurse led and specialist registrar (SpR) clinics our Rheumatology outpatient (ROP) department perceived a potential problem in ensuring that patients are seen by their consultant on a regular basis. This survey was set up to assess whether this was a significant problem requiring further targeted strategies.

Methods: Consecutive patients attending ROP clinics held for each specific consultant and their team over the study period were surveyed. Details on who each patient had seen at their previous three ROP appointments was collected together with data on when they were last seen by their consultant. Information was gathered via a questionnaire on whether patients were restricted with regard to days and times that they could attend appointments and for what reasons. Computer records provided information on cancelled or missed appointments, the reasons for these, and whether rearranged appointments had resulted in a planned consultant review being rearranged with another member of that consultant's team.

Results: 215 patient attendances were surveyed and 176 of these were follow-up appointments. 99 of the patients attending for follow up (56%) had seen their consultant in the preceding 6 months and a total of 133 patients (76%) had seen their consultant in the preceding 12 months. However, one patient had not seen their consultant for 4–5 years, 4 had not for 3–4 years, 8 had not for 2–3 years and 18 had last had consultant review 1–2 years previously. 12 patients (7%) had never been seen by their consultant despite up to 32 months of follow up within the ROP department. For those patients who had previously seen their consultant the average time interval since their last consultant review was 9.2 months (range 2 days to 54 months).

114 fully completed patient questionnaires were received and 58 patients reported that they had had to decline appointments offered to them in the past. The most common reasons cited were being on holiday, being unwell or work commitments. 4 patients (2%) had had appointments planned for their consultant rearranged with another member of the ROP team; only one rearranged appointment was due to cancellation by the hospital.

Conclusions: These results indicate that the majority of patients in our ROP department have been reviewed by their consultant in the preceding 12 months; approximately a quarter of this relatively small sample population, however, have not.

A small minority of patients have never seen their consultant despite being seen in the ROP department for many years.

These results suggest that a formal system of referring patients for consultant review may be required within our ROP department. This would particularly be indicated for patients that have never been seen by the consultant in charge of their clinical care.

Disclosure: The authors have declared no conflicts of interest.

400. FACILITATING PHYSICIAN-PATIENT COMMUNICATION

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Background: Despite widespread availability of internet access, the National Health Service in the UK has not routinely adopted email to communicate with patients. The internet has been used elsewhere for physician-patient communication, either directly by email(1) or via internet patient-portals(2). Text messaging has also been used successfully; improving paediatric outpatient attendance rates in Australia(3) and compliance and self-efficacy in young diabetics in Dundee, Scotland(4).

In our hospital, rheumatology clinic letters are routinely posted to patients as well as their GP as a record of attendance, to provide a plan and improve communication. In the interests of modernisation, improving the department's efficiency and communication with patients we wished to investigate using email rather than post.

Our aim was to determine whether patients had email access and whether emailing clinic letters and appointments would be acceptable or even preferable to post.

Methods: This was a questionnaire survey of patients attending the rheumatology outpatient department in October 2007. It included new and review patients and sampling was performed throughout a variety of clinics to prevent bias.

Results: Data was collected from 109 patients. 67 (61%) had an email account of whom, 38 (56%) were willing to receive clinic letters or appointments by email. Only 26 cited this as their preference. The mean age of patients with and without an email account was 44 and 55 respectively; however age was not a predictor of preferred method of communication.

Conclusions: It is interesting that less than half of patients (39%) with email access and just less than a quarter (24%) of all patients would prefer to receive email communication. It could simply be a matter of familiarity with the current system and the reassurance of a paper document to file or bring to other appointments. Is a letter regarded as more professional? Are patients concerned about confidentiality, or internet security? These questions need to be addressed if email communication is to expand, and as environmental issues are increasingly debated, it could also cut down on paper, waste, and prove more efficient and economical.

Disclosure: The authors have declared no conflicts of interest.

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401. QUALITY OF GP REFERRAL LETTERS IS ASSOCIATED WITH OVERALL INFORMATION CONTENT AND SPECIFIC ITEMS OF INFORMATION

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Background: General practitioner (GP) referral letters form the basis of triage and initial out-patient appointments in UK Rheumatology departments. The system's effectiveness is dependent significantly on the quality and content of the referral letters, particularly more recently, as progressively more non-medical clinicians are involved in triage at an intermediate tier level. Despite this, no formal guidelines exist regarding optimal referral to a Rheumatology department and little has been published regarding the quality of the referral letters. We aimed to review the information content and quality of GP referral letters to our department.

Methods: The Bolton health district has a population of around 270,000 and 44 GP practices. Consecutive GP referral letters to the department of Rheumatology over 6 weeks were included in this analysis. Letters were scrutinised for inclusion of the following items of information: symptoms, symptom duration, examination findings, ESR/CRP, x-ray findings, treatment for pain (NSAIDs, coxibs, opioids), current medication list, past history, provisional diagnosis, and urgency status. Letters were given a global quality score (GQS) on a 5 point scale (1 = unacceptable, 5 = excellent). An applicable information score (AIS) was calculated for each letter as the ratio of the number of items of information included in the letter to the total number of items of information considered applicable for that letter, and expressed as a percentage. SPSS ver 11.5 was used for statistics.

Results: Of 181 letters received during the period, 39 were excluded (32 DXA requests, 7 probable DXA requests/unclear). Of the 142 analysed, the number (%) of letters in which information was included was: symptoms 134 (94.4); symptom duration 95 (66.9); examination 73 (51.4); ESR/CRP 67 (47.2); x-ray 21 (14.8); treatment for pain 72 (50.7); current medication 90 (63.4); past history 110 (77.5); provisional diagnosis 97 (68.3); urgency status 48 (33.8). The AIS mean \pm SD was 64.5 \pm 16.2 (range 20–100). Letters showed the following distribution according to GQS: 1 = 0%; 2 = 5.7%; 3 = 30.7%; 4 = 50% and 5 = 13.6%. Correlation (Pearson) between AIS and GQS was 0.67 (P < 0.001). GQS was significantly associated (Mann-Whitney U test) with the presence of symptom duration (P < 0.001),