date. HH patients with pain showed significantly lower JSV at MCP 2 and 4 ($p=0.009$) and exhibited a significantly higher joint asymmetry in MCP 3 ($p=0.012$) compared to their pain free colleagues. When looking at clinical correlations we found that time since HH diagnosis was positively correlated with the MCP4 JSW asymmetry ($R^2=0.451$, $p=0.040$) and MCP 4 JSW.SD ($R^2=0.475$, $p=0.030$). The number of phlebotomies since diagnosis was strongly correlated with the JSW.SD (MCP2-4: $0.4552<0.581$, $p<0.050$) at all MCP sites.

Abstract FRI0596 – Figure 1. 3D surface reconstructions of the MCP3 with the local joint space width mapped into the joint space in pseudo-colour. Blue and green colours reflect narrow joint space width, while red colours code for a broader joint space width. A) 55 year old male with a BMI of 21.9 kg/m² who has been diagnosed with hemochromatosis 8 years ago, but received only occasionally phlebotomies. B) 48 year old male (BMI 22.9 kg/m²) with a diagnosis of hemochromatosis of 8 years who received regular phlebotomies every 2 months. Both patients presented at the study date with hand pain. Note the larger and more symmetrical joint space width in patient B.

Conclusions: Our study provides the first evidence that joint space assessment of MCPs via HR-pQCT in patients with hereditary hemochromatosis is feasible and can provide a thorough structural joint characterisation and thus support the physician in his initial HH arthropathy assessment. Our findings suggest, that regular phlebotomies since diagnosis may preserve joint space morphology leading to a more evenly maintained joint space. However, larger studies are needed to validate our results.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.4903

FRI0597 VALIDATION OF WEB-BASED CALIBRATION MODULES FOR IMAGING SCORING SYSTEMS BASED ON PRINCIPLES OF ARTIFICIAL INTELLIGENCE: THE SPARCC MRI SACROILIAC JOINT INFLAMMATION SCORE

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Background: The application and appropriate use of imaging-based scoring instruments is usually based on passive learning from published manuscripts while real-time interaction with instrument developers is often non-feasible. Moreover, most instruments lack knowledge transfer tools that would facilitate attainment of pre-specified performance targets for reader reliability.

Objectives: 1. To develop a web-based calibration module for the SPARCC MRI SIJ Inflammation Score based on consensus scores from these instrument developers, experiential game psychology, and real-time iterative feedback. 2. To test

the feasibility and attainment of pre-specified performance targets for reader reliability.

Methods: The scoring of inflammatory lesions of the SIJ on MRI using the SPARCC method is based on SIJ quadrants and the calibration module is comprised of 50 DICOM cases, each with scans from baseline and 12 weeks after the start of TNF inhibitor therapy. Scans are scored blinded-to-time-point. Continuous visual real-time feedback regarding concordance/discordance of scoring per SIJ quadrant with expert readers is provided by a color-coding scheme. Reliability is additionally assessed by real-time intra-class correlation coefficient with the first ICC data being provided after 20 cases. Accreditation for SPARCC BME score is achieved with status and change score ICC of >0.8 and >0.7 and is based on the final 20 cases. 26 readers scored the SPARCC BME module (7 rheumatology fellows, 2 chiropractors, 1 undergraduate, 8 rheumatologists, 8 radiologists) with 21 having no prior experience. Feasibility was assessed by 8-item survey.

Results: The majority of readers achieved accreditation for SPARCC BME score on the basis of sufficient reliability with instrument developers for both status and change scores, irrespective of prior experience (table 1). All readers who completed the module a second time, 6 months after the first exposure, achieved accreditation for SPARCC BME score. All readers rated the modules as easy and intuitive with average time for reading each case for SPARCC BME being 8 min.

Abstract FRI0597 – Table 1

	Status Score			Change Score		
	Mean ICC (95%CI)	Median ICC	N (%) Achieving ICC>0.80*	Mean ICC (95% CI)	Median ICC	N (%) Achieving ICC>0.70*
All readers (N=26)	0.84(0.81-0.87)	0.84	18(69.2%)	0.74(0.69-0.79)	0.76	17(65.4%)
Second read (N=8)	0.89(0.87-0.91)	0.89	8 (100%)	0.84(0.79-0.90)	0.86	8 (100%)
Naïve readers** (N=10)	0.83(0.79-0.87)	0.84	8 (80%)	0.74(0.66-0.83)	0.79	7 (70%)
Rheumatologists (N=8)	0.86(0.79-0.92)	0.85	6 (75%)	0.78(0.69-0.87)	0.79	6 (75%)
Radiologists (N=8)	0.84(0.77-0.91)	0.82	4 (50%)	0.70(0.59-0.81)	0.72	4 (50%)

*Proficiency targets for reader reliability

**7 rheumatology fellows, 2 chiropractors, 1 undergraduate

Conclusions: Experiential web-based learning is an effective and feasible calibration tool to achieve proficiency targets in the scoring of MRI scans for SIJ inflammatory lesions.

Disclosure of Interest: W. Maksymowych Shareholder of: CaRE Arthritis, S. Krabbe: None declared, D. Biko: None declared, P. Weiss: None declared, M. Maksymowych: None declared, J. Cheah: None declared, G. Kröber: None declared, U. Weber: None declared, K. Danebod: None declared, P. Bird: None declared, P. Chiowchanwisawakit: None declared, J. Moeller: None declared, M. Francavilla: None declared, J. Stimec: None declared, T. Kogay: None declared, V. Zubler: None declared, M. Battish: None declared, N. Winn: None declared, D. Rumsey: None declared, R. Guglielmi: None declared, S. Pedersen: None declared, H. Bouterup: None declared, S. Shafer: None declared, J. Jaremkó: None declared, F. Malik: None declared, E. Heffernan: None declared, M. Johansson: None declared, B. Trinh: None declared, J. Paschke: None declared, R. Lambert: None declared

DOI: 10.1136/annrheumdis-2018-eular.6880

FRI0598 THE AGREEMENTS BETWEEN CLINICAL SIGNS AND ULTRASOUND-DETERMINED JOINT INFLAMMATION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: The identification of synovial inflammation in rheumatoid arthritis (RA) patients mainly depends on the presence of tenderness and/or swelling joints by physical examination, however not entirely reliable. Ultrasound, especially the synovial hyperplasia evaluated by grey scale (GS) and synovitis by power Doppler (PD), is more sensitive in reflecting joint inflammation, but their clinical significance has not been fully understood^[1].

Objectives: To investigate the agreement between clinical-detected signs and US features of joint inflammation in wrists and hands, and further determine the grades of GS synovial hyperplasia and PD synovitis which correspond to presence of tenderness or swelling in an individual joint in RA patients.

Methods: Twenty-two joints, including bilateral wrists, proximal interphalangeal (PIP) and metacarpophalangeal (MCP) joints, were respectively evaluated by clinical and ultrasound examination by different rheumatologists in 258 RA patients. Ultrasound-determined joint inflammation, including synovitis, tenosynovitis/peritendinitis, were detected, by using semi-quantitative scoring systems (0–3) for GS