amongst HPRs across Europe. It also shares information about the work of the HPR Standing Committee, Study Groups as well as showcasing projects being carried out by HPR country member associations. The new design for the newsletter will be highlighted, alongside the content structure and HPRs will be encouraged to contribute to ensure the newsletter stays relevant to its audience.

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Statistics made simple: a practical approach to complex concepts

SP0016 STEPWISE OR NOT TO STEPWISE? THE DO'S AND DONT'S OF MULTIVARIABLE MODELLING

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Introduction: Different types of regression analyses, including linear, logistic, and Cox regression, are commonly used methods in medical research. Usually, these analyses include more than one covariate as independent variables. This is particularly the case in observational studies: When investigating the possible association between an exposure and an outcome, there can be a large number of potential confounders. Examples are age, sex, body mass index, and lifestyle factors. How should we choose which variables to include in the model? Here I shall focus on two issues:

- Attempting to include too many covariates in the analyses
- Use of stepwise selection of covariates

These are among the most frequently encountered issues in statistical review of manuscripts submitted for the Annals of the Rheumatic Diseases Lydersen 2015 Limit the number of covariates

With a limited number of observations, how many covariates can you include? Traditional rules of thumb state that the ratio of observations per variable ought to be in the size of order 10. Some authors recommend 15, some 20, others state that 5 is sufficient. See Lydersen, 2015 and references therein.

Do not use stepwise selection

Stepwise selection of covariates basically means that only covariates that are statistically significant, typically with a p-value less than 0.05 or 0.10, are included in the model. A fundamental problem is the following: As always is the case in estimation, regression coefficients are estimated with some uncertainty. Hence, some are underestimated, and some are overestimated, that is, too far away from the null hypothesis. Including only covariates with small p-values causes overestimated coefficients to be more likely to be selected. This introduces bias away from the null hypothesis. Stepwise procedures used to be very popular, but today an increasing number of analysts criticise such methods. For example, Rothman et al. 2008 page 419 state: "There are several systematic, mechanical, and traditional algorithms for finding models (such as stepwise and best-subset regression) that lack logical and statistical justification and that perform poorly in theory, simulations and case studies ... One serious problem is that the P-values and standard errors ... will be downwardly biased, usually to a large degree".

Recommendation: Selection of covariates should be based on the research question at hand and on substantial knowledge such as what is biologically plausible. Chapter 10 'Predictor selection' in the book Vittinghoff et al. 2012 gives good guidance. Check that the number of covariates is small enough compared to the number of observations. Do not use stepwise selection.

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E-health for better care

SP0017 BITS AND BYTES: FITTING MEDICAL INFORMATION – PICASO THE PLATFORM FOR IMPROVED PERSONAL, COORDINATED CARE

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Coordination of care plans between healthcare sectors and efficient management of patients with co-morbidities is of large demand. Rheumatoid arthritis (RA) patients are at increased risk of cardiovascular diseases. Different stakeholders are potentially involved in the EULAR recommended management processes. Optimised orchestration of accumulated information is of major importance to ensure data quality, meaningful management processes and cost effectiveness. A newly developed information and communications technology platform within the Horizon2020-funded PICASO-project (www.picaso-project.eu) will support a continuum of care from hospitals and outpatient clinics to the home. The PICASO platform will be developed and trialled with patients and clinicians. First experiences will be reported. The platform will become available for RA-patients in routine care but also for wider applicability in Rheumatology and other chronic diseases.

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SP0018 SMART WEARABLES AND HEALTH APPS – THE RIGHT TOOL FOR HEALTH MONITORING AND IMPROVING QUALITY OF HEALTH?

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What role can technology play in enabling a shift from a traditional paternalistic model of care to a model based on empowered patient sharing ownership? In the traditional model, patients are fully reliant on the healthcare professional for information, diagnosis and treatment, with complexity to navigate through the ecosystem and where physicians are empowered rather than patients. Patient empowerment is enhanced thanks to technology enabled care, in which patients have access to their medical files, can use tools that allow them to be proactive and focus on prevention and where self-management is supported across the treatment pathway. Smart wearables and health apps are becoming more widespread and a commodity, while more and more research is being performed on the effectiveness of such devices on the quality of life of patients. The design of wearables and health apps itself can be approached in a patient-centric way, to maximise the benefits for patients and the uptake by patients. This presentation will discuss some evidences of the impact of technology on improvement of quality of life and how patients should be included in the design process.

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EULAR projects in paediatric rheumatology and UCAN

SP0019 UCAN AND PRINTO ALIGNED TO LINK BED AND BEDSIDE: PERSPECTIVE FROM THE BENCHSIDE

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In the past 2 decades we have gained important insights on the mechanisms of disease and therapy in children with Juvenile Idiopathic Arthritis (JIA). These insights have resulted in several game-changing therapeutic modalities in several

subtypes of JIA. In for example systemic JIA, we have learned that the systemic inflammatory mechanisms at onset of this disease, are primarily driven by innate immune cells and their inflammatory cascades. Both IL-1 and IL-6 blockade in sJIA have resulted in high response rates of sJIA patients.

Additional progress still has to be made in efficacy, cost reduction, minimization of side effects and taper and stop strategies of maintenance drugs. To ensure that the right goals are set, patients (and/or their parents in paediatric disease) should be involved in important research questions and goals. In addition, if we really aim to take the next step in improving the outcome and life of our patients, clinical innovations need to go hand in hand with basic discoveries to really affect care for patients.

Current clinical trials rely on the recognition of clinical phenotypes and have strict inclusion criteria. In these trials with more or less homogenous patient cohorts, response rates to a specific treatment are evaluated and compared to placebo or current standard therapeutics. This has resulted in the registration of multiple biological therapies for various JIA subtypes and to significantly improved response rates and disease outcomes for most JIA patients. However, still a major question in clinical practice remains: which biological to start in which patient and when.

Agreement on several consensus treatment plans in clinical practice for different subtypes of JIA, will help in comparing responses to registered therapeutics. However, to book further progress in the care for JIA patients, what we really need is a more molecular based set of classification criteria, or disease taxonomy, of JIA subtypes and (sets of) biomarkers for disease course/therapy response and biomarkers to assess subclinical disease activity. These criteria and biomarkers will enable informed decisions on the start as well as tapering/stop of maintenance therapy. Such a classification, as well as the discovery and validation of novel/promising biomarkers are likely to be developed in collaborative cohort studies with new onset JIA patients that are prospectively followed and sampled over time.

Facilitating the translation from bench to bedside is crucial for addressing the major current challenges in JIA management. When successful, it will set new standards for safe, targeted and personalised medicine in JIA.

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SP0020 HOW DIGITAL TOOLS CAN HELP TO CROSS BORDERS IN INTERNATIONAL COLLABORATIONS

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When people think of digital health, they generally think of health and wellness mobile apps, or wearable sensor devices like Fit Bit or the Apple Watch. But digital technologies are much more than that. Today's advanced digital health has evolved into software platforms that can connect and support patients, their families and connect them to their health systems, enabling outcomes research and management with direct input from networks of patients that can connect across geographical divides. And these systems enable communication between medical systems, enabling hubs and spokes of networked researchers and their patients that promote data capture, information sharing and enhanced communications to patients- by meeting them where they are. These new models are driving the ability to study interventions in real world contexts including patients' between visit activities and their engagement with multiple layers of the healthcare teams thereby promoting integrated research and care. With all of these capabilities, the question remains, "will the medical research community be ready to embrace it?"

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Ultrasound basic I

SP0021 HOW TO ASSESS DACTYLITIS+DEMO

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Dactylitis is a hallmark feature of psoriatic arthritis (PsA) and other spondyloarthritis, although it can also be present in other conditions such as sarcoidosis, gout or infections. Regarding PsA, dactylitis, which occurs in 30% to 50% of patients, is a highly discriminative feature for PsA diagnosis in early disease as well as a predictor factor for structural damage development. On ultrasound, dactylitis is a complex and heterogeneous "imaging syndrome" that includes a variety of elementary lesions, i.e. enthesitis (finger extensor tendon, collateral ligaments, flexor fibrous

sheaths, flexor pulleys, functional entheses), tenosynovitis, paratenonitis, synovitis, subcutaneous/peritendon tissue inflammation, and proliferative and erosive bone changes. High resolution B-mode ultrasound offers a detailed anatomical imaging of the different lesions present in dactylitis as well as Doppler ultrasound provides information on the inflammatory activity of the involved structures and tissues.

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SP0022 HOW TO ASSESS BONE EROSIONS – INDICATIONS, PITFALLS AND NEW TECHNIQUES + DEMO

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Detection of bone erosions is essential for the early diagnosis, the prediction of future bone damage, and the monitoring of therapeutic outcomes in patients with rheumatoid arthritis (RA).

Yet, bone erosions are not pathognomonic for RA. They occur in many other disease entities. Presence of bone erosions is characteristic for mixed connective tissue disease, juvenile idiopathic arthritis, gout, hemochromatosis, pigmented villonodular synovitis, among others. It is not uncommon in osteoarthritis. Bone erosions can be detected at entheses in spondyloarthropathy and in the joints of patients with psoriatic arthritis. Erosive changes can also be seen in bone neoplastic disease.

Conventional radiography is still considered the basic imaging method of detection of bone erosions, as well as a monitoring tool. However, more modern imaging techniques are becoming more widely used. They include ultrasonography, magnetic resonance imaging and computed tomography. Apart from higher sensitivity for detection of bone erosions, the new techniques offer simultaneous visualisation of soft tissues. Their role in follow-up of patients with erosive disease as well as erosive progression is still a subject of research.

In the short time allowed, the presentation will also address localization, pitfalls and characteristic appearance of bone erosions in main rheumatological diseases.

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SP0023 HOW TO ASSESS MECHANICAL AND INFLAMMATORY TENDINITIS + DEMO

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Tendinopathy is a frequent disorder that may last for several years and impair the quality of life of athletes, non-athletes and patients with inflammatory joint diseases where tendinopathy is a frequent complication.

The diagnosis can often be made alone by clinical examination, but in the selected cases, imaging can be determined for the correct diagnosis and treatment.

US has several significant advantages over MRI. The greatest strength of the US is that it is interactive and the examiner is in contact with the patient, and any site of reported pain or tenderness can be directly correlated with its real-time scan appearance on the screen. The ultrasonographer can make use of the dynamic real-time character of US, so that tendons can be studied throughout their range of motion and side-to-side comparison is always available during the US examination. This unique advantage over other cross-sectional imaging modalities like MRI is of course especially applicable in the evaluation of mobile structures such as tendons. Tissue with few mobile protons emits little or no signal and, therefore, the internal architecture of the tendon is not well demonstrated in MRI. In contrast, US shows the fine internal structure of tendons, and US therefore pictures the anatomic border of the tendon more precisely than MRI, and in agreement with this the "standard deviation" (SD) and "range of the mean difference" from repeated measurement are less in US than in MRI. It is easy to change to a higher-frequency US transducer to obtain greater spatial resolution. The spatial resolution of US is much better than that of MRI if both examinations are performed with the most modern equipment. Furthermore, US can demonstrate the neovascularisation (Doppler) and the stiffness of the tissue (elastography) in tendinopathy.

In the lecture, the ultrasound typical findings of different mechanical and inflammatory tendinopathies are reviewed and completed with a live demonstration of ultrasound scan of a tendon.

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