Established in 1871

SMW

Swiss Medical Weekly

Formerly: Schweizerische Medizinische Wochenschrift

Supplementum 205

ad Swiss Med Wkly
2014;144
August 21, 2014

The European Journal of Medical Sciences

Joint annual meeting
Swiss Society of Rheumatology
Swiss Society of Physical and Rehabilitation Medicine

Interlaken (Switzerland), September 4–5, 2014

EMH Media
SCHWEIZERISCHER ÄRZTEVERLAG
EDITIONS MEDICALES SUISSES

Supported by the Swiss Academy of Medical Sciences (SAMS), the FMH (Swiss Medical Association) and by Schwabe AG, the long-established scientific publishing house founded in 1488

Official journal of the Swiss Society of Infectious Diseases, the Swiss Society of Internal Medicine and the Swiss Society of Rheumatology

Suppl. 205
ad Swiss Med Wkly
2014;144
August 21, 2014

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All communications to:
EMH Swiss Medical Publishers Ltd.
Swiss Medical Weekly
Farnsburgerstrassse 8
CH-4132 Muttenz, Switzerland
Phone +41 61 467 85 55
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ISSN printed version: 1424-7860
ISSN online version: 1424–3997

P 1

The Impact of introducing DRG on Functional Abilities and Co-morbidity of Patients in a Rehabilitation Centre

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Introduction: To assess the impacts of DRG (diagnosis related groups) introduced in 2012 in Switzerland on functional abilities and co-morbidity of patients entering a Rehabilitation centre for neurological and/or musculoskeletal rehabilitation.
Methods: The functional status of patients on admission to the Rehabilitation centre between January 2011 to December 2013, were assessed using the FIM (Functional Independence Measure, score 18–126), the Chedoke Activity score and the POMA-Tinetti score. Information on gender, age, the referring hospital or physician, the duration of stay, the return transfer rate to an acute ward and the Charlson co-morbidity score also were collected. The StatView® version 5.0 (SAS Institute Inc., Cary, NC) was used for all data evaluations.
Results: Data of patients admitted in the year 2011 (n = 312) before introduction of DRG and patients admitted in the years 2012 (n–300) and 2013 (n = 319) after the introduction of DRG were analysed. The mean age was 73 years and the mean length of hospital stay was 30 days in both groups. The proportion of patients referred for neurologic rehabilitation for the year 2011, 2012 and 2013 was 51.9%, 44.3% and 39.8%, respectively. The other patients were admitted for musculoskeletal rehabilitation. Interestingly no significant differences were found on the mean Charlson co-morbidity score. The admitted patients were comparable in terms of their baseline characteristics, even when stratified by age, disease group, etc. The FIM-Score, the Chedoke McMaster Index and the POMA Tinetti-Score showed no significant changes for both rehabilitation modalities over the years 2011, 2012 and 2013 despite the introduction of DRG in 1.1.2012.
Conclusion: In the first two years after the introduction of DRG, there were no significant change in functional abilities of patients entering a Swiss rehabilitation centre when assessed by FIM, Chedoke McMaster Activity Index and the POMA Tinetti Score at entry, which argues against an earlier referral, for example because of financial interests. In contrast to that, studies from other countries showed significant effects after the introduction of DRG on functional abilities of patients entering rehabilitation centres[1]. These results could be the consequences of the special situation of our rehabilitation centre, being integrated in an acute hospital. This circumstance facilitates early referrals because of the easy access to an emergency room, an intensive care unit and acute medical treatment, and early referral was already established before the introduction of DRG. Another possible explanation would be, that the evaluation of the financial impacts of DRG on the balance sheet
of a hospital, is still in progress and the pressure for earlier referrals to rehabilitation facilities has not yet been developed.

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P 2

Short-term effects of inpatient rehabilitation in hip and knee osteoarthritis: prospective cohort study with intra-individual controlled effects

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Background: It is often impossible to operate highly aged and comorbid patients with hip and knee osteoarthritis (OA). The aim of this study was to compare health and quality of life in those patients to population normative data and to quantify therapy effects of a 2–3 week, inpatient rehabilitation program.
Methods: Naturalistic prospective cohort study correcting the effects by changes that were observed during waiting time prior to rehabilitation at home (corrected effect sizes). Participants having hip OA (n = 88) or knee OA (n=164) were evaluated by the generic Short Form 36 (SF–36) and the condition-specific Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC).
Results: Four or more comorbidities were reported in 45.3% hip OA and 51.8% knee OA. All SF–36 scales showed highly significantly lower health when compared to the norms. At discharge from rehabilitation, corrected effects sizes quantified improvements by 0.43–0.62 for pain, 0.19–0.51 for function, and 0.19–0.30 in psycho-social dimensions (all statistically significant). Those in pain and function were, with one exception, higher than minimal clinically important differences, i.e., changes that are subjectively perceived as improvements by the patients.
Conclusion: Hip and knee OA patients reported high burden of the disease by OA itself but also by high number of comorbidities. Inpatient rehabilitation improved pain, function, and psycho-social health by mostly moderate, statistical significant and clinically relevant effects.

Reference:
Angst F et al. Arch Phys Med Rehabil 2013;94;2139–45.

P 3

The role of affect and coping for pain relief and functional improvement in the outpatient phase after an inpatient pain program

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Background: Associations between psychological factors with pain severity and physical functioning have been proven in several studies of specific interventions. However, no study examined those in an outpatient setting after inpatient treatment. This study aimed to determine factors associated with pain relief and improved physical functioning in chronic pain patients during outpatient management immediately after a standardized inpatient pain management program.
Methods: This prospective cohort study examined 291 patients having chronic back pain or generalized soft-tissue pain including fibromyalgia. Comprehensive outcome measurement used standardized instruments at discharge from inpatient rehabilitation (baseline) and the 5 month follow-up at home. Stepwise forward multivariate linear regression analysis examined the correlation of various co-factors with change of pain severity and change in physical functioning.
Results: The regression models showed good fit explaining variances of 56.1% for change in pain and 41.0% for change in physical function. Relief of anxiety (20.7% explained variance), low baseline depression (5.5%), and reduced catastrophizing (4.7%) were the most important predictors for pain relief. Functional improvement was most strongly associated with relief of anxiety (13.3%) and low baseline depression (7.1%).
Conclusions: Anxiety, depression and catastrophizing play an important role in pain relief and functional improvement during outpatient management immediately after, as already shown during an inpatient pain program. Therapies addressing these domains are likely to improve the whole syndrome of chronic pain.

Reference:
Fuss I et al. Clin J Pain 2014;30(4):279–85.

P 4

Interdisciplinary Collaboration in Swiss Rehabilitation Hospitals: How do patients participate in discharge plans?

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Introduction: In today's healthcare practice, professionals are expected to include patients in the decision-making process regarding their health. Rehabilitation centres rely in particular on patient involvement, and they are predestined for collaborative practices due to various health and social care professionals working alongside to provide care for patients. While interdisciplinary collaboration has been promoted in both education and practice, little evidence exists on how patients actually participate within interdisciplinary meetings. The objective of this study is to investigate how rehabilitation teams include and address patients' views when planning discharge.
Methods: Thirty-seven patients from three Swiss rehabilitation centres were included. A total of 164 interactions were videotaped during which treatment goals and discharge plans were discussed: 74 interdisciplinary meetings (28 with patients being present) and 90 clinical visits with physicians, nurses or social workers and their patients (27 hours of recordings). Conversation analysis, an inductive observational method, was used to identify the structure of interactions and different communication patterns.
Results: Different "philosophies" were identified: [1] A patient-centred process (PCP), [2] a Primary Nursing approach (PN), and [3] an explicit goal setting process (GSP). Particular communicative practices were inherent to each of those approaches. In PCP, physicians play a central role in addressing discharge decisions with patients while referring to prior team discussions. The PN model, a nurse-led process, made visible two different communication styles: a "reciprocal" and an "individual" perspective. In GSP, patients' input for rehabilitation goals is important, however, professionals have to meet up to institutional demands and formulate goals useful for practice. Patient participation is therefore limited to topics related to patients' personal experiences.

Conclusions: The findings demonstrate that institutional organization influences communicative practices within teams and impacts patients' involvement. The study identified verbal and non-verbal interactional resources that enhance or limit patient involvement in discharge planning. A detailed analysis of video recordings is helpful to describe communication patterns in healthcare interactions and make practices explicit.

P 5

3D-Gait analysis & evaluation of orthotics in primary rehabilitation of a patient with an incomplete spinal cord tetraplegia: A case report

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Introduction: A representative case report is presented to demonstrate the importance of 3D-Gait analysis in the complex process of primary rehabilitation of incomplete spinal cord injured patients. The aim is to better understand the pathomechanics of gait in these patients, select appropriate therapeutic measures and to judge the effect of orthotic devices.
Methods/Case Presentation: A 19 years old male with traumatic incomplete spinal cord tetraplegia sub C5 (AIS D) due to a severe mountain bike accident was referred twice for 3D gait analysis during his primary rehabilitation at the Swiss Paraplegic Centre. The neurological deficit with widespread severe muscle weakness was significantly more distinct on the right side. The first gait study was performed 6 month after onset of primary rehabilitation when he was able to walk with two crutches for about 5 weeks, using a 4-point gait pattern. The follow-up analysis took place 2 months later, to judge the rehabilitation progress and the efficacy of the recommended orthotic device (Dynamic Walk AFO, Cenris). Three-dimensional lower extremity joint kinematics, joint kinetics, surface electromyographic (EMG), and spatio-temporal data were collected with an instrumented gait analysis system (Qualisys).
Results: In the first analysis his gait velocity of 22.4 m/min was severely reduced by 71% of the norm. Kinematic analysis documented general muscle weakness with disturbed pelvic and hip motion and deficient action of the dorsiflexors at the right foot. A toe-off-orthesis on the right leg was recommended. The follow-up gait study 2 months later, demonstrated a huge improvement. He still used two crutches, but gait velocity of 51.8 m/min was only reduced by 36%. Dorsiflexion and foot clearance were still deficient with the brace, indicating an insufficient action of the brace. It would be desirable to optimize the support the calf muscles, but because of the severe muscle weakness in the hip area, this is not possible.
Conclusion: This Case report demonstrates the benefit of gait analysis in quantifiying the progress during rehabilitation and to adjust orthotic devices.

P 6

Posturology and posturometry appoach in rehabilitation

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Posturology is the medical science that studies the body's static posture while posturometry is the medical science used to measure the results.
In medical rehabilitation they are of crucial importance from the holistic point of view in both the diagnosis and treatment.
The M.P.R. (Myofunctional and Postural Rehabilitation) is a method, that uses both posturology and posturometry, for a complete diagnosis, planning and treatment, in medical sciences, to treat patients with neuromuscular deseases.
Posturlogy allows medical sciences, to have a global and holistic approach, where as posturometry is used to scientifically measure posturology, transforming it into Science. By using posturology and posturometry in combination, this method allows medical sciences, to reach at the root of the problem.
Combining both the results in rehabilitation will be pernanet, and longlasting.
The aim of this poster, is to show the basis of posturology and posturometry, applied in the M.P.R.

P 7

Comparison of short- and mid-term outcome of Italian-speaking and German-speaking patients after an interdisciplinary pain management program

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Background: The aim of this study was to quantify state and midterm changes of health state and quality of life of native Italian-speaking patients with fibromyalgia or chronic back pain before and after a 4-week, interdisciplinary inpatient pain program and to compare the results with native German-speaking patients.
Methods: Prospective cohort study with 35 Italian-speaking and 135 German-speaking patients. Health-related quality of life, pain, fear and depression were measured and compared to normative data of healthy controls at baseline. Effects of treatment were quantified by effect sizes (ES) and compared to German-speaking patients.
Results: At baseline, physical and psychosocial health, depression and fear of the Italian-speaking patients were significantly worse ($p < 0.001$) than normative data. After the program, Italian-speaking patients improved in pain by ES = 0.97, social functions by ES = 0.68, anxiety by ES = 0.07, and depression by ES = 0.16. These effects were higher than in the German-speaking patients in pain (ES = 0.78) and in the social function (ES = 0.52), but not in fear (ES = 0.34) and depression (ES = 0.47). Six months after entry to the clinic, the effects nearly remained stable for the German-speaking patients, but the Italian-speaking patients lost these effects completely.
Conclusions: An interdisciplinary inpatient pain management program has moderate to large short-term effects in Italian-speaking patients, comparable to those among German speakers. These effects may stem from positive group dynamics, since it was observed that among the Italian patients there was an especially close and mutually supportive camaraderie. The further outpatient management recommended at the end of inpatient treatment could not maintain these effects.

P 8

On the way to specialized cancer rehabilitation in Switzerland: Preliminary results of a naturalistic controlled comparative cohort study

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Introduction: Various international studies show the effectiveness of cancer rehabilitation programs [1]. In Switzerland as compared to other Western countries, only little is known about health and Quality of life (QoL) in patients who undergo cancer rehabilitation programs [2]. The aim of this study is to compare the state and change of physical health and QoL of cancer patients with and without rehabilitation [4].
Methods: We perform a multicenter naturalistic, comparative cohort study on quality of life and distress including patients aged ≥18 years with a diagnosis of cancer. The intervention group undergoes rehabilitation and is compared to two control groups: Control group 1 consists of patients with medical indication for rehabilitation but will not undergo rehabilitation, whereas in control group 2 there is no indication for rehabilitation. Data are collected at the beginning (T1) and end of hospitalization (T2), at the end of rehabilitation (T3), and three months after (T4). We included 78 patients and plan to expand up to a number of 132 patients.
Results: Preliminary analysis showed that values for QoL varied significantly with impairment between beginning (T1) and end of acute hospitalization (T2) ($p < 0.001$). QoL mean scores of the intervention group were higher in trend than that of the control group 1 at T3 ($p = 0.094$). Mean scores for QoL of the intervention group ($p = 0.01$) improved significantly between T2 and T3 while that of the control group 1 did not. Post rehabilitation assessments (T4) are currently ongoing.
Conclusion: Evaluation of the natural trajectory of cancer treatment course and comparison of cohorts with and without rehabilitation will provide outcome and effect data that are not known up so far in Switzerland. The results may help to improve and specify cancer rehabilitation interventions.

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P 9

Pain reduction and gain of function following radiotherapy in patients with benign conditions

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Objective: The aim of the study is to prospectively assess the pain reduction and gain of function following low dose radiotherapy (RT) for benign disease. 50 patients with finger osteoarthritis, epicondylitis or plantar fasciitis have been treated and we describe 3 representative study patients.
Materials and Methods: Low dose RT was delivered using 8 x 50cGy with 200kV. Pain was assessed using the Visual Analogue Scale (0–10). Musculoskeletal function was objectively documented with validated tests (dynamometer and walking test WT). Assessments are performed at 0, 2, 6 and 12 months after RT.
Results: A 60 year old lady with osteoarthritis of the fingers was irradiated and by 2 months, the pain had reduced from 8 to 5. The grip test improved from 11 kg bilaterally to 16 kg (R) and 14 kg (L) and the pinch test doubled from 2 kg bilaterally to 4 kg.
A 41 year old lady with lateral epicondylitis reported pain of 7 which reduced to 1 by 2 mths and remained improved at 6 mths. The grip test strengthened by 10 kg after 2 mths and was sustained at 6 mths.
A 48 year old lady with plantar fasciitis reported no pain reduction after 2 months. The RT was repeated and the pain resolved completely 2 months later. At this timepoint, she completed the 40 m WT 38% faster than at baseline.
Conclusion: The data from these three patients show a sustained improvement in pain control reflected by the gain of force and velocity. RT shows a clear benefit in patients where conventional therapies have failed.

P 10

Staying safe throughout the day – preventing falls at home

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Avoiding falls in the home environment for the elderly is proven as an effective intervention to reduce health costs in society on the one hand and to increase the quality of life and independence of the target group concerned on the other hand. As a result, the Swiss League Against Rheumatism has developed a service to reduce fall risks, which enables a behavioural and environmental preventative assessment of their own home for elderly people at risk of falling. Interested persons at risk of falling register themselves directly or via their GP or Spitex at a Swiss League Against Rheumatism coordination site. The coordination site charges specially-trained physiotherapists with assessing guidance. After consultation, examination and assessment, changes are undertaken in the living area that we deemed necessary. Cases of tripping are eliminated. In addition, the elderly are counselled individually and instructed in strength and balance training over 2–3 sessions. After the assessment, a report is drawn up showing the recommended follow-up actions that will be made available by the supervising doctor and, where possible, Spitex.
A telephone call-back or a second visit to the elderly person consulted is carried out after approx. 4 weeks. The elderly person will be contacted again by telephone 6 months later.
The service has been tested in the context of a pilot project in the Canton of Lucerne, in which around 100 house visits were carried out. The project has been accompanied by a master's thesis for ZHAW [Zurich University of Applied Sciences] and evaluated. The results show that the intervention was simple to implement and constructive. Due to the positive feedback from the partners involved and the elderly people, the Swiss League Against Rheumatism is now also introducing this service on a national level. Additional secondary research in relation to the long-term cost effect and the influence on quality of life of the elderly is planned. With this service, the Swiss League Against Rheumatism wishes to make a contribution towards the independence and quality of life of the elderly.

P 11

Utility of joint ultrasonography in the diagnosis of suspected acute crystal arthritis: results of a prospective controlled study of 109 patients

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Background: Ultrasound (US) features of gouty and CPP arthritis have been described and the technique has been proposed as a diagnostic tool in chronic arthritis. There have been limited studies on the specificity and sensitivity of this technique as a diagnostic tool when applied to the setting of acute arthritis, and how this technique performs in comparison to the gold standard: the identification of crystals by polarising microscopy.
Objective: The primary objective was to determine the performance of ultrasound as a diagnostic tool for acute CPP and urate crystal arthritis.
Methods: 112 consecutive patients who presented with a clinical suspicion of a microcrystalline acute arthritis (<10 days duration) were prospectively included in the study between October 2012 and May 2014. All patients underwent an US of the symptomatic joint as well as both knees, ankles and 1st MTP joints, and joint aspiration for microbiology and crystal analysis was performed.US and joint aspiration were performed within 24 h of each other. The rheumatologist who performed US was "blinded" to the clinical history, joints examination and joint fluid analysis.
Results: In 109/112 patients, joint fluid was obtained from the symptomatic joints. 88/109 patients had a microcrystalline arthritis on fluid aspiration: 51 MSU, 26 CPP and 11 had both crystals. No crystals were detected in 21.
On the symptomatic joints US signs of microcrystalline arthritis were found in 65/88 patients (global sensitivity for both crystal arthritis: 74 %) and in 3/21patients with no crystals (global specificity for both crystal arthritis: 86%).
When we took in account US signs of other joints, the ultrasound sensibility for gout rose from 67% to 88% and for CPP from 66% to 86%. However, the specificity went down from 89% to 74% for gout and from 86% to 68% for CPPD.
Conclusions: In patients with clinical suspicion of acute microcrystalline arthritis, US signs of gout or CPP can be used as a diagnostic tool.
Joint aspiration remains the gold standard due to the moderate sensitivity of ultrasound when evaluating only the symptomatic joints and the decrease in specificity when evaluating additional non symptomatic joints.

P 12

Incomplete distal renal tubular acidosis in osteoporosis/ osteopenia – prevalence and impact of alkali treatment

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Background: Chronic acid retention is known to promote bone dissolution.
Objectives: To prospectively assess the prevalence of distal renal tubular acidosis (dRTA) in low bone mass patients (LBM) and the impact of chronic alkali treatment.
Methods: From 1/2006-12/2010, we screened all LBM referred for metabolic evalua-tion of T-Scores $\leq$–1.0 at lumbar spine and/or hip (Hologic or Lunar) for dRTA. In fasting venous blood, Ca^{++}, venous bicarbonate (VenBic), creatinine (Crea) and 25-OH-vitamin D (25-OH-D) were measured. LBM with hypercalcemic disorders were exclu-ded. In all 183 LBM (157 F, 26 M, age 17–86 ys.), 2nd morning urine pH (normal <5.80) was measured (pH-meter) after 12 hrs. of fasting. If U-pH remained > 5.80, LBM underwent 1-day acid loading by ammonium chloride (NH_4Cl, 50 mg/kg BW in 3 oral doses), and U-pH and venous blood were remeasured the next morning. Normal values were obtained from 21 healthy controls (C, 11 F, 10 M, age 25–80 yrs.). All LBM with dRTA were recommended additional alkali citrate (K-Cit), and follow-up DXAs were obtained until 4/2014. Paired and unpaired t-tests were used, values are means $\pm$ SD.
Results: 85 LBM underwent NH_4Cl loading, which caused U-pH to drop from 6.64 $\pm$ 0.54 to 5.62 $\pm$ 0.69 ($p < 0.0001$) vs. from 5.71 $\pm$ 0.55 to 5.09 $\pm$ 0.17 in C ($p < 0.001$). The fall in U-Cit/Crea ($p < 0.0001$) in all subjects proved systemic effects of NH_4Cl. With U-pH >5.44 (mean +2 SDs in C) after NH_4Cl, dRTA was diagnosed in 42 LBM (39 F, 3 M), i.e., 23%. Since VenBic remained normal, *incomplete* dRTA (idRTA) was diagnosed by definition. After NH_4Cl, Ca^{++} (mmol/l) increased only in idRTA ($p = 0.042$). 25-OH-D was not different between subgroups , and baseline T-scores were equal in Non-RTA and idRTA. Among 42 idRTA, 11 were lost for follow-up. In idRTA adherent to K-Cit for 1.6–7 years (n = 21), T-scores rose from –2.15 $\pm$ 0.77 to –1.74 $\pm$ 0.85 ($p < 0.001$) at lumbar spine and tended to rise at femoral neck (from –1.59 $\pm$ 0.84 to –1.43 $\pm$ 0.81, $p = 0.08$), but did not change at total hip. In idRTA not adherent to K-Cit (n = 10), T-scores at all sites either remained unchanged or tended to deteriorate.
Conclusions: 1) The prevalence of idRTA in LBM is high, i.e., 23%; 2) Upon acid loa-ding, idRTA patients do not lower VenBic and U-pH normally, but raise fasting blood Ca^{++}, suggesting reduced extra-, but increased *intra*cellular acid buffering by bone with enhanced Ca release. 3) Additional long-term alkali treatment with K-Cit helps to fur-ther improve bone mass at lumbar spine in LBM with idRTA.

P 13

Risk Factors For the Development of Anti-Citrulinated Protein Antibodies in Individuals Genetically at Risk for RA

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Introduction: The pathophysiology of rheumatoid arthritis (RA) is currently viewed as a process that starts with a pathologic activation of the immune system that eventually leads to the clinical manifestation of the disease. Systemic autoimmunity has been defined as one of the specific phases preceding the development of RA. Different risk factors may be relevant for each specific phase in RA disease development.
Objective: To analyse putative environmental, genetic and demographic risk factors associated with the development of systemic autoimmunity associated with RA in individuals genetically at risk.
Methods: This is a prospective cohort study of individuals genetically at risk of developing RA, namely first degree relatives (FDRs) of patients with known active RA. Only individuals without clinical evidence of RA were enrolled, and then followed-up yearly to detect the development of active arthritis. We included in this analysis only individuals with available anti-CCP status (anti-CCP 2.0 or anti-CCP 3.1). We pooled individuals from two separate cohorts, one from Switzerland (n = 682) and one from France (n = 148). We used logistic regression to analyse univariate and multivariate associations between a positive anti-CCP status and putative risk factors.
Results: A total of 830 FDRs of RA patients are presented, of which 41 (5%) were anti-CCP positive. FDRs had a mean age of 46 years, 79% female, 61% shared epitope positive, and 24% had a history of at least one episode of swollen joint, either at inclusion or during follow-up.
In univariate analysis, a positive anti-CCP status was significantly associated with heavy tobacco smoke (> 10 pack-years, Odds Ratio (OR): 2.8, p = 0.02), loss of teeth (OR: 1.07, p = 0.001), the presence of a swollen (OR: 2.5, p = 0.04) or a tender joint (OR: 2.1, p = 0.03). In multivariate adjusted analysis, only loss of teeth (OR: 1.06, p = 0.005), heavy tobacco smoke (OR: 2.6, p = 0.039) and the history of a swollen joints (OR: 1.16, p = 0.002) were independently associated with anti-CCP positivity. Furthermore, male sex trended to be protective (OR: 0.39, p = 0.089) and the effect of obesity on anti-CCP development tended to differ by sex. In males obesity was associated with an increased risk, while in women obesity was associated with a decreased risk (OR: 4.86 vs. OR: 0.18, p = 0.075). No association between anti-CCP and the presence of the shared epitope, alcohol consumption or various joint symptoms was found, which may be explained by limited statistical power.
Conclusion: In individuals genetically at risk for RA, the development of anti-CCP antibodies was associated with tooth loss, tobacco smoke and the occurrence of a swollen joint. Taken together, these results suggest similar risk factors for the production of anti-CCP antibodies and the development of classifiable RA, suggesting that the occurrence of anti-CCP antibodies is a valid intermediate marker of RA development.

P 14

Long-term safety of ustekinumab: 5 years of follow-up from the psoriasis clinical development program including patients with psoriatic arthritis

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Background/Purpose: Ustekinumab(UST) is approved for moderate-to-severe psoriasis (PsO), and is currently in Phase 3 development for psoriatic arthritis (PsA). We report the long-term safety experience of UST in the sub-group of PsO patients with a medical history of PsA (PsA Sub-group) compared with the overall PsO population (Overall Population) from the PsO development program with up to 5yrs of treatment and follow-up.
Methods: Pooled safety data across one Phase 2 and three Phase 3 [PHOENIX 1, PHOENIX 2, ACCEPT] clinical trials in pts with moderate-to-severe PsO were analyzed. Pts received UST 45 mg or 90mg SC 12wkly through up to 5yrs. The presence or absence of PsA (history of or current) at baseline was reported. No concurrent treatment for PsO or PsA was permitted throughout the studies, except for low potency topical steroids for PsO during the open-label long-term extensions of PHOENIX 1 and 2. Event rates for overall safety endpoints (adverse events [AEs], infections, AEs leading to discontinuation, serious AEs [SAEs]) and AEs of interest (serious infections, nonmelanoma skin cancers [NMSC], other malignancies, major adverse CV events [MACE]) were analyzed. All patients who received ≥1 dose of UST were included in the analyses. Data from the two UST dose groups were analyzed as a combined group. Results are expressed in events per 100 pt-years of follow-up (PY) and compared between the PsA Sub-group and Overall Population.
Results: The Overall Population included 3117 pts (8998 PY) who received ≥1 dose of UST; with 1482 (47.5%) pts treated for >4yrs or more (including 838 [26.9%] for >5yrs). At baseline, the majority of pts were white (92.2%), male (68.5%), median age of 46yrs. Mean BSA involvement was 26.2% + 16.7 and mean PASI score was 19.7 + 7.7; 27.5% of pts had concomitant PsA. Safety results for the PsA Sub-group and Overall Population are detailed in Table 1. Through Yr5, event rates for overall safety endpoints and AEs of interest were generally comparable between the groups.
Conclusion: With continuous UST exposure for up to 5yrs and approximately 9000 patient-years of follow-up in the PsO development program, long-term safety in the Overall Population were consistent with previous reports at earlier follow-up and event rates were generally comparable to other currently approved biologic agents. Long-term safety in the sub-group of PsO patients with a history of PsA at baseline were generally comparable to those in the overall study population.

Safety Through up to 5 yrs Follow-up (Events per 100 pt-yrs of follow-up)

	PsA Sub-group	Overall Population
Treated pts(n)/Pt-yrs of follow-up	858 / 2490	3117 / 8998
Overall Safety: AEs	249.40 (243.23, 255.68)	232.59 (229.44, 235.76)
Infections	91.49 (87.77, 95.32)	86.52 (84.61, 88.47)
AEs leading to d/c	2.77 (2.16, 3.51)	2.40 (2.09, 2.74)
Serious AE	8.59 (7.48, 9.83)	7.10 (6.56, 7.67)
AEs of Interests: Serious infxns	1.53 (1.08, 2.09)	1.10 (0.89, 1.34)
NMSC / Other malignancies	0.48 (0.25, 0.84) / 0.72 (0.43,1.15)	0.52 (0.39, 0.70) / 0.60 (0.45,0.78)
MACE	0.56 (0.31, 0.94)	0.44 (0.32, 0.61)

P 15

Antibodies against biologic agents (ADAb) in a real life rheumatology cohort: immunogenicity is not similar among all the biologic agents

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Introduction: Immunogenicity including the emergence anti-drug antibodies (anti-drug antibodies: (ADAb) has been proposed as one of the possible cause responsible for the failure to biological treatment. The proportion of patient developing such ADAb varies among the studies depending of the characteristics of the patients, the type of tests and the type of illness. Since the beginning of 2013, we have introduced the dosages of antibodies against most of the biologics used regularly in our rheumatology clinic. The aim of this study is to compare the % of patients presenting ADAb in our cohort.
Methods: Between march 2013 and May 2014, we used the kit (lysatracker) to evaluate simultaneously serum ADAb, the drug and the TNF levels. The essay was developed and largely validated for all the monoclonal antibodies biologics used in rheumatology (infliximab, adalinumab, golinumab, certolizumab, tocilizumab and rituximab).
Results: 625 measurements on 235 patients have been performed. This number represented about half of the patients treated by monoclonal antibodies in our clinic. Around 70 patients had ADAb measured against several biologics. The percentage of ADAb for each biologic is summarized in table 1.

	infliximab	golinumab	adalinumab	certolizumab	All tnf	rituximab	tocilizumab
Nb exposed to the medication	96	21	33	3	160	20	62
ADAb + %	33	18	17	(1/3)	28	0	0

>90% of the patients with high ADAb had immeasurable medication. ADAb against several monoclonal was rare (5/70) and always associated to exposure to each medication. ADAb can persist up to 3 years after exposure.
Conclusions: Around a quarter of the patients treated by ant TNF had ADAb while no patient on tocilizumab or rituximab had such antibodies although these two medications are not fully humanized. ADAb seem therefore to be more promoted by the idiotype and the mode of action than the humanization or nor of the monoclonal antibody. The clinical significance of those differences should be further evaluated.

P 16

Lupus syndrome induced by anti TNF does not seem to be related to the appearance of antibodies against the medication. (ADAb)

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Introduction: Anti TNF therapy can induce auto immunity: production of auto antibodies (ANA, more rarely anti-dsDNA) but also immunogenicity: development anti drug antibodies (ADAb). The relation between the two disorders is not well known although they can occur in the same patients and both can lead to the reappearance of arthralgia.
The goal of the study was to determine if in presence of ADAb, autoimmunity was more frequent and therefore could potentially trigger such antibodies.
Methods: Since the beginning of 2013, the measurement of antibodies against anti-TNF (ADAb) has been introduced in our hospital and validated. ADAb were found in 45 out of the 150 patients under anti-TNF therapy.
In 22 patients with ADAb+, anti-nuclear and anti dsDNA antibodies could also be also analyzed at the same time as the ADAb assays. The results were compared with 22 ADAb- patients matched to ADAb+ patients in term of age, gender, type of illness and type of medication.
Results: 11 patients had high level ADAb against infliximab (>200), 4 against adalinumab and 1 against golinumab. Auto antibodies (ANA, dsDNA) induced by anti-TNF were frequent in both ADAb+ and ADAb- patients without significant differences (see table).
Conclusion: Our study suggests that auto immunity is as frequent in absence of ADAb as in presence of such antibodies. The physiopathology of both disorders seems therefore not to be linked.

	At time of ADAb dosages number of patients		Ever since on anti TNF number of patients	
	ADAb+	ADAb–	ADAb+	ADAb–
Anti nuclear + (>1/320)	8/22	12/22	10/22	13/22
Anti sDNA+ (>200 Ui)	4/22	1/22	4/22	1/22

P 17

High level of antibodies against anti-TNF agents after intra-articular injections for a nonspecific monoarthritis of the knee

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Introduction: Intra articular injection of anti-TNF agents is not strictly scientifically validated and therefore not reimbursed in most countries. There are however a few publications, mostly case reports or short non randomized series, dealing with this procedure. To our knowledge there is however very few cases about repeated intra-articular injections of anti-TNF agents and no publication about the appearance of antidrug antibodies (ADAb) against TNF blockers after intra articular infiltrations
Methods: Since the beginning of 2013, we have introduced in our hospital the dosages of antibodies against anti-TNF. The kit (lysatracker) which evaluates simultaneously the ADAb, the drug and the TNF levels has been validated.
Results: We reports the case of 35 years old patient suffering from an inflammatory non-specific mono-arthritis of the right knee since which did not respond to at least three consecutive intra-articular steroid injections. The search for a specific rheumatoid disease was negative and in absence of other systemic and articular manifestation non DMARD were introduced. An intra-articular injection of 100 mg of infliximab was performed The response was excellent with rapid disappearance of joint inflammation.
He came back six months later asking for a second infiltration. We decided to practice ADAb against infliximab. The level was very high but without cross reaction with ADAb against other anti-TNF agent in particular adalinumab. We decided therefore to infiltrate the knee with the latter agent once again with good success. After two months, the patient announced a relapse of fluid in his knee. ADAB against infliximab were still present but this time but ADAb against adalinumab were also detected.
Discussion: ADAB can appear even after one single intra-articular infiltration with an anti-TNF agent. Usually ADAb in blood do not appear after a single contact with a new biologic. Some studies have suggested that sub-cutaneous administration could enhance the risk of developing ADAb due to the presence of a large amount of macrophages. Such cells are present in an even larger number inside an inflamed synovial. The route of administration could therefore be responsible the rapid appearance ADAB leading to a loss of efficacy after repeated injections. As occurrence of reactive allergic reaction is known be much more frequent in presence of ADAB repeating such infiltrations could also be dangerous.
Conclusion: This case should render the rheumatologist very cautious about repeating intra-articular joints injections with anti-TNF agents. The dosage of ADAB before repeating the procedure should be recommended.

P 18

Neuroarthropathy of Foot revealing AL Amyloidosis: a Case Report

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Background: AL amyloidosis due to deposition of monoclonal immunoglobulin light chains usually λ isotype called “Immunoglobulin light chain (AL) amyloidosis” is a rare hematologic disease. The appearance of a neuroarthropathy in AL amyloidosis has been however very seldom reported in the literature.
Methods: Descriptive case report of a patient with neuroarthropathy of lower limbs due to AL amyloidosis.
Results: A 51-year-old female was diagnosticated with AL amyloidosis, after twenty months of investigations for small painful deformities of the feet. Chronic peripheral neuropathy occurs as a manifestation of AL amyloidosis in 25% of the case. It may exceptionally be complicated by neuroarthropathy. In this case, the paucity of clinical and electrophysiological signs delayed the diagnosis. The severity of the neuroarthropathy dominated the clinical and the poor functional outcome.
Discussion: The diagnostic pitfalls, the prognosis and the treatments of both the peripheral neuropathy and the arthropathy related to AL amyloidosis are discussed.
Conclusion: In the presence of a mild peripheral neuropathy and a distal destructive and painless arthropathy, the diagnosis AL amyloidosis should be considered. The two key diagnostic procedures are serum protein electrophoresis and nerve biopsy. Delay in treatment worsens the prognosis.

P 19

Tophaceous gout of the lumbar spine: dual-energy computed tomography scan (DECT) clinical utility

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Introduction: Tophaceous gout rarely affects the spine and about 50 cases have been reported [1]. It can mimic spondilodiscitis [2] and so diagnosis requires invasive approach. If only recently DECT has been proved as a useful diagnostic tool in peripheral gout when samplings fail [3], its role in spine involvement has yet to be determined and literature is poor [4]. In the present case DECT had an impact on clinical decision.
Case: A 68-year old man with a background history of previous *podagra* was admitted to our emergency department reporting a 7-day history of back pain and fever. Laboratory findings were elevated C-reactive protein (162 mg/L) and procalcitonin (0.46 µg/L) and

repeated blood cultures resulted negative for bacterial growth. Lumbar MRI showed a gadolinium enhancement of L1–L2 and L5–S1 vertebral bodies. A CT-scan guided biopsy of both discs and facet joints were made, no purulent material was found and eubacterial PCR was negative. Waiting for cultures, empirical antibiotics therapy was introduced with laboratory improvement. The pathological examination of facets joints revealed tophus and cultures showed no evidence of bacterial growth. Findings were interpreted as isolated lumbar gout, antibiotics were stopped and steroids were introduced with clinical and paraclinical benefits. After 6 days developed a new increase of blood inflammatory signs with unilateral L5 radiculopathy accompanied by motor weakness. Antibiotic therapy was re-introduced and decompressive laminectomy was effectuated showing chalky material surrounding the nerve and a new confirmed presence of tophus. Cultures didn't reveal bacterial growth but eubacterial PCR was positive (2/4 samples) and we could identify *Streptococcus mitis*. DECT was performed and showed facet joints involvement without gouty implication of vertebral bodies and epidural space. Since iatrogenic contamination was considered unlikely ceftriaxone was started with a new complete biohumoral regression.
Conclusions: To our knowledge this is the first case of lumbar gout coexisting with spondilodiscitis. Although gouty spinal involvement it's pathologically confirmed, infectious complications are hardly differentiated and DECT could be useful.

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P 20

Pathergy-induced Premature Labor and Pseudosepsis Following Knee-Arthroscopy – A Case Report

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Objective: To present and discuss a severe form of pathergy with pseudosepsis and to increase the awareness for pathergy as a rare but important and often neglected differential diagnosis.
Case: A 27 year old woman with a history of recurrent erythema nodosum underwent an arthroscopic partial medial meniscectomy of the right knee during the 28th week of her first pregnancy. Within days she developed premature and irrepressible labor-pain, signs and symptoms of septic arthritis of the right knee and a systemic inflammatory response syndrome (SIRS). After an inevitable cesarean section due to strong suspicion of amnion infection and repetitive lavage of the right knee, progressive soft tissue necrosis reminiscent of a necrotizing fasciitis evolved at surgical skin lesions requiring multiple debridements. In addition, a central venous catheter had to be replaced due to purulent secretion at the puncture site. However, comprehensive and thorough microbiological analyses of the catheter as well as of multiple tissues and body fluids remained entirely negative. Despite adequate empirical antibiotic treatment the conditions continuously deteriorated and the patient intermittently became dependent on vasopressors and oxygen. After almost three weeks, the pathognomonic pattern of intervention-associated sterile inflammatory complications was finally recognized and diagnosed as severe pathergy reaction. Consecutively, the patient quickly improved after administration of high dose methylprednisolone pulses followed by oral glucocorticoids. However, the delayed diagnosis resulted in a functionally relevant tissue defect and wound healing was severely delayed, most likely as a result of a catabolic or at least insufficiently anabolic state due to prolonged SIRS.
Conclusion: Pathergy is defined and characterized by an uncontrolled, overshooting recruitment and activation of neutrophils following mechanical stimulation and should always be considered as a cause of post-interventional complication if no pathogens can be detected. Furthermore, an initial local pathergy reaction can consecutively cause a severe sterile systemic inflammatory response syndrome called pseudosepsis.

P 21

Surgical compared to conservative therapy of lumbar disc herniation with nerve root compression in a quality management program

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Background: Current evidence for outcomes of surgical versus conservative treatment of lumbar disc herniation with nerve root compression is ambiguous.
Objectives: To evaluate the outcomes of cases with lumbar disc herniation followed prospectively in a quality control setting from the time of treatment.
Methods: In the routine inpatient and outpatient units of the Neurosurgery and Rheumatology Departments of the Kantonsspital Aarau, Switzerland cases with lumbar disc herniation were followed routinely with the North American Spine Society (NASS) questionnaire and the SF-36 to assess back pain, physical function, neurologic deficits and quality of life.
Surgery was according to standard open discectomy and conservative treatment was analgesia, physiotherapy and periradicular infiltrations with local anesthetic and triamcinolone, or periradicular pulsed radiofrequency. Assessments were performed at weeks 6, 12, 52 and 104, with pain at weeks 6 and 12 as the primary outcome. Only cases with non-missing primary outcome data were included in the analysis. Missing data was filled in with multiple imputations, and mixed-effects models were used to account for repeated measures within cases. Baseline group differences were adjusted for by inverse probability weighting.
Results: In the surgical treatment group, less back pain was present at 6 weeks (–0.97; 95% confidence interval –1.89 to –0.09) and the proportion of patients reporting ≥50% decrease in back pain symptoms from baseline to 6 weeks was higher (48% vs. 17%, risk difference: 0.34; 95% confidence interval 0.16 to 0.47). They also had less physical function disability at 1-year follow-up (–3.7; 95% confidence interval –7.4 to –0.1). Between-group differences were minimal for all other outcomes, with confidence intervals including the null effect.
Conclusions: Surgical treatment seems to provide faster relief than conservative treatment in back pain symptoms of patients with lumbar disc herniation, but did not show a clear benefit over conservative treatment in mid- and long-term follow-up.

P 22

Safety of ustekinumab from the placebo-controlled periods of psoriatic arthritis and psoriasis clinical developmental programs

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Background/Purpose: To describe the short-term safety experience of UST during the double-blind, PBO-controlled portion of the PsA & PsO clinical developmental programs.
Methods: Safety data for the PsA population were pooled from a Ph2 (n = 146) & 2 Ph3 (PSUMMIT I [n = 615], PSUMMIT II [n = 312]) studies of UST in pts with active PsA. Safety data for the PsO population were pooled from 1 Ph2 (n = 320) & 2 Ph3 (PHOENIX 1 [n = 766] & PHOENIX 2 [n = 1230]) studies of UST in pts with moderate-to-severe PsO, including a sub-grp of pts with documented PsA (history of or current) at baseline (BL) [n = 628]. Pts were randomized to PBO, UST45mg, or UST90mg. The PBO-controlled period was 16wks for all PsA studies, 20wks for the Ph2 PsO study, & 12wks for Ph3 PsO studies. Concomitant therapy(i.e. stable doses of MTX/oral corticosteroids/NSAIDs) were permitted in PsA studies; no concurrent therapies for PsO/PsA were permitted in the PsO studies. Event rates for overall safety endpoints (overall AEs, infections, AEs leading to discontinuation, serious AEs [SAEs]) & AEs of interest (serious infections, nonmelanoma skin cancer [NMSC], other malignancies, major adverse CV events [MACE]) were analyzed & compared between the PBO & UST grps within each population. Data for the UST dose grps were analyzed & presented as a combined grp. All pts who received ≥1 dose of tx were included in the analyses. Results were reported as number of events per 100 pt-yrs of follow-up (PY).
Results: 1071 treated pts (379 PBO, 692 UST) were included in the PsA population & 2314 treated pts (732 PBO, 1582 UST) were included in the PsO population (including 207 PBO, 421 UST in PsA sub-grp). BL demographics & medical history were generally comparable between the PsA & PsO populations with similar proportions of pts reporting relevant comorbidities, including diabetes,

hyperlipidemia, hypertension & family history of coronary heart disease. In the PsA population, median duration of PsA at BL was >4 yrs & >75% had PsO with ≥3% BSA skin involvement. In the PsO population, median BSA involvement was 21%; median PASI score was 17 & 27% had PsA. Safety outcomes observed during the PBO-controlled period are detailed (Table). Within each population, rates of overall AEs, infections, & SAEs in pts receiving PBO or UST were generally comparable. Slightly higher rates of AEs leading to discontinuation were observed across all PBO grps & a slightly higher rate of SAEs was observed in the PBO grp in the PsA population. Event rates of AEs of interest were generally comparable, with overlapping confidence intervals, between the PBO & UST grps within the PsA & PsO populations.

Conclusion: During the PBO-controlled portion of the studies, UST was well-tolerated in pts with PsA & PsO. Overall safety observations were consistent between both populations, & safety event rates were generally comparable between pts receiving PBO & UST within each population.

Table Overall safety during the PBO-controlled period of the PsA and PsO studies (Events per 100 PY)

	PsA studies		PsA sub-grp from PsO studies		All pts from PsO studies	
	PBO	UST	PBO	UST	PBO	UST
Treated pts (n)	379	692	207	421	732	1582
PY of follow-up	110	209	49	106	177	407
AEs	348.07	375.83	476.42	481.32	413.24	502.91
Overall infections	110.59	100.06	139.89	142.79	142.79	141.16
AEs leading to d/c	13.79	3.85	12.37	5.71	9.74	5.95
SAEs	12.69	5.75	4.05	6.62	6.78	7.62

AE of interests during the PBO-controlled period of the PsA and PsO studies (Events per 100 PY [95% CI])*

	PsA Studies		All Pts from PsO studies	
	PBO	UST	PBO	UST
Treated pts (n)	379	692	732	1582
PY of follow-up	110	209	177	407
Serious Infections	0.91 (0.02, 5.05)	0.00 (0.00, 1.43)	1.70 (0.35, 4.96)	1.23 (0.40, 2.87)
NMSC	0.00 (0.00, 2.72)	0.48 (0.01,2.67)	1.13 (0.14, 4.09)	0.74 (0.15, 2.16)
Other malignancies	0.00 (0.00, 2.72)	0.00 (0.00,1.43)	0.57 (0.01, 3.15)	0.25 (0.01, 1.37)
MACE	0.91 (0.02, 5.05)	0.00 (0.00, 1.43)	0.00 (0.00, 1.69)	1.23 (0.40, 2.87)

*Event rates for AEs of interest for the PsA sub-grp of the PsO studies are not presented separately due to low number of events observed

P 23

Efficacy and Safety of Ustekinumab in Patients with Active Psoriatic Arthritis: 2-year Results From a Phase 3, Multicenter, Double-blind, Placebo-controlled Study

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Backgound/Purpose: To evaluate long-term clinical/radiographic efficacy of subcutaneous UST 45/90 mg in patients with active psoriatic arthritis (PsA) through wk108 of the PSUMMIT 1 trial.

Methods: Adult PsA pts (n = 615) with active disease (≥5 SJC and ≥5 TJC;CRP ≥0.3 mg/dL) despite DMARD and/or NSAID therapy were randomized to receive UST45 mg, 90 mg, or PBO at wks 0, 4, and q12wks. At wk16, pts with <5% improvement in TJC & SJC entered blinded early escape (PBO → UST45 mg; UST45 mg → 90 mg; 90 mg → 90 mg). PBO-treated patients subsequently crossed over to UST 45 mg at wk24. Patients received q12wks dosing to wk88, with final efficacy evaluation at wk100 and safety assessment at wk108. Stable concomitant MTX use was permitted but not mandated. Pts treated with prior anti-TNF agents were excluded. Primary endpoint was ACR20 response at wk24. Other efficacy measures included ACR50, 70 responses, changes in HAQ-DI, and changes in vdHS-S scores. Patients who discontinued study agent due to efficacy-related reasons or who initiated protocol-prohibited medications were counted as non-responders. Otherwise, missing data were not imputed. Patients randomized to 45 mg group who entered early escape to receive 90 mg at wk 16 were included in the 45 mg group in analyses.

Results: Through wk108, 79.7% of pts (490/615) completed study agent administration; 20.3% discontinued study agent [including 5.0% for adverse events, and 6.5% for lack of efficacy]. At wk24, significantly larger proportions of UST 45/90 mg pts had ACR20/50/70 responses, and greater improvements in HAQ-DI than PBO patients. Clinical improvements were generally maintained through wk100 (table). Of 440pts with ≥3% BSA involvement at baseline, 63.9%, 72.5% and 71.3% of PBO → 45 mg, 45 mg and 90 mg groups achieved PASI 75 at wk100. Wk24 analysis of PSUMMIT 1 demonstrated that UST treatment significantly inhibited radiographic progression at wk24 compared with PBO. Inhibition of radiographic progression was maintained at wk 52 and wk100 (table). Through wk108, with average follow-up of 91.9 wks, rates (per 100pt-years of f/u) of AEs and serious AEs were 160.60 and 7.10, respectively, in the combined UST group. Rates of serious infections, malignancies, and major adverse cardiovascular events (MACE) were 1.23, 0.38, and 0.66, respectively, in the combined UST-treated group. The proportion of UST injections with injection-site reactions was 0.4%.

Conclusion: In PSUMMIT 1, q12 wk maintenance injections for both UST 45 mg and UST 90mg maintained clinical efficacy through wk100. Effects on inhibition of radiographic progression were maintained through wk100. UST continues to be well tolerated and demonstrated a safety profile similar to that seen in PsO patients.

	PBO → 45 mg (n = 189)	UST 45 mg (n = 205)	UST 90 mg (n = 204)
Wk52			
ACR20 /ACR50/ ACR70	65.4/37.8/16.2%	55.4/31.3/17.9%	60.3/37.0/21.2%
Mean change from bsl HAQ-DI	–0.37 + 0.45	–0.34 + 0.56	–0.43 + 0.56
HAQ-DI responders (achieving >0.3 improvement from bsl)	53.8%	47.4%	51.3%
Mean % change (median) from bsl entheses score (MASES index)*	–47.63 + 73.66 (–87.50)	–46.08 + 85.99 (–83.33)	-56.47 + 54.78 (–74.17)
Mean % change (median) from bsl dactylitis score**	–68.38 + 55.99 (–100.00)	–55.57 + 79.00 (–100.00)	–55.17 + 112.82 (–100.00)
Total vdH-S mean change from bsl at wk52	1.49 + 8.18	0.48 + 2.47	0.55 + 2.96
Wk100			
ACR 20/ACR50/ACR70	62.7/37.3/18.6%	56.7/38.8/24.7%	63.6/46.0/22.2%
Mean change from bsl HAQ-DI	–0.36 + 0.51	–0.36 + 0.56	–0.45 + 0.60
HAQ-DI responders (achieving >0.3 improvement from bsl)	50.3%	47.8%	51.7%
Mean % change (median) from bsl entheses score (MASES index)*	–38.90 + 91.07 (–87.08)	–46.27 + 101.79 (–100.00)	–58.17 + 56.62 (–100.00)
Mean % change (median) from bsl dactylitis score**	–65.14 + 59.63 (–100.00)	–71.30+54.76 (–100.00)	–57.66 + 125.69 (–100.00)
Total vdH-S mean change from bsl	2.26 ± 12.578	0.95 ± 3.816	1.18 ± 5.52

Patients who did not receive UST are excluded; *Enthesitis at baseline n = 425; **Dactylitis at baseline n = 286

The numbers refer to the pages of this supplement.