3 months ($\beta=0.89$ (95% CI 0.03–1.74), $P=0.04$. 44.4 % of pts with CP level <20 mg/L achieved EULAR response after 3 months treatment, while 73.5 % of pts with CP level 20–40 mg/L and 55.2 % with ≥ 40 mg/L were responders. However, the difference in EULAR response between pts with CP level ≥ 20 vs. <20 mg/L did not reach statistical significance (OR 1.5 (95% CI 0.5–5.1), $P=0.48$).

Conclusions: Certolizumab serum levels ≥ 20 mg/L were associated with DAS28 improvement, but not significantly with EULAR response after 3 months treatment in RA pts. We suggest 20 mg/L as a lower target limit for non-trough CP samples in RA-patients. No additional benefit of having a certolizumab level over 40 mg/L was observed.

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SAT0186

TREATMENT RESPONSE OF INTRAVENOUS TOCILIZUMAB IN PATIENTS WITH RHEUMATOID ARTHRITIS BASED ON THE LEVEL OF PRIOR EXPOSURE TO BIOLOGIC THERAPY: RESULTS FROM THE KOBIO

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Background: Previous studies have showed that response rate to biologic therapy in patients with rheumatoid arthritis (RA) are lower in those who had prior exposure to multiple biologic agents compared with first-time users. However, most of these studies targeted on patients undergoing anti-TNF therapy.

Objectives: To investigate the treatment response of RA patients using intravenous tocilizumab (TOC) as the first biologic agent, comparing with those who had prior exposure to other biologic agents

Methods: Data of RA patients treated with TOC were obtained from the Korean College of Rheumatology Biologics Registry (KOBIO). Patients were grouped as first (1st)-line, second (2nd)-line, and third or more (≥ 3 rd)-line users. Clinical outcomes including SDAI changes at the first year and second year of TOC therapy were evaluated, and subsequent switching to another biologic agent and its associated factors were analyzed using the Cox proportional hazard model.

Results: A total of 408 patients were included in the study; 1st-line (n = 258), 2nd-line (n = 95), ≥ 3 rd-line (n = 55) users. The mean age was 54.0 years, and mean disease duration of 8.2 years. At baseline, mean SDAI was 30.0, and 7.1% of patients were treated without a concomitant conventional DMARD, which increased to 21.6% at the end of the second year. The clinical response of related parameters in 1st-line TOC users were more robust than the 2nd-line or ≥ 3 rd-line users, and greater proportion of 1st-line users achieved remission or low disease activity at the second year ($p=0.00291$) (figure). In addition, switching to another agent was more frequent in the 2nd-line or ≥ 3 rd-line users within 2 years (1st, 2nd, ≥ 3 rd-line users, 4.7%, 15.1%, 11.1%, respectively). A multivariate analysis revealed that higher baseline SDAI (HR 1.1018, $p=0.00680$) and multiple prior exposure to biologics (HR 2.5751, $p=0.0139$) were predictors of subjects switching to other agents.

Conclusions: Amongst RA patients with high disease activity who receive TOC, patients naïve to biologics have better treatment response and lower switch rates after two years.

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SAT0187

GOLIMUMAB IMPROVES WORK PRODUCTIVITY AND ACTIVITY IMPAIRMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS (RA), ANKYLOSING SPONDYLITIS (AS) AND PSORIATIC ARTHRITIS (PSA): 1-YEAR RESULTS FROM A NON-INTERVENTIONAL TRIAL IN GERMANY

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Background: Non-interventional studies (NIS) are essential instruments in pharmaceutical research not only for pharmaceutical companies but also for regulatory authorities or reimbursement bodies in Germany.

Aside from direct costs caused by a disease, German sick funds as well as health authorities have a keen interest in indirect costs, such as costs derived from loss of work productivity.

Objectives: It is the aim of this study to show the benefit of Golimumab (GLM) in work productivity and activity for RA, AS and PsA patients in Germany. The analysis was performed using the validated indication-specific Work Productivity Activity Impairment (WPAI) Questionnaire as primary endpoint. The WPAI is rated to be the most psychometrically validated and frequently used instrument for measuring of health-related work-productivity.

Methods: As primary endpoint, the change of work productivity impairment and ability for daily activities in month 3 (V1) versus baseline visit (V0) was evaluated. All 4 subscores of the WPAI were analysed: disease related absence from work (absenteeism), working while sick (presenteeism), total work productivity impairment (TWPI) and activity impairment with TWPI as primary score.

In addition, an evaluation of the activity impairment in the mITT population (modified-Intention-To-Treat) was performed.

As exploratory endpoint, the change in work productivity/activity impairment after 6 months and 12 months versus baseline as measured by WPAI for PsA, RA and AS patients treated with Golimumab in German clinical practice was evaluated.

Results: Of 748 patients (100%) who started treatment with Golimumab at V0 (baseline), 666 (89.0%), 634 (84.8%) and 552 patients (73.8%) continued treatment until V1 (Month 3), V2 (Month 6), and V3 (Month 12/end of observation period), respectively.

Efficacy analyses were performed on the mITT population which included 700 patients (RA=237, PsA=235, AS=228) who had at least 2 documented visits.

The statistically significant improvements (all p-values <0.05) in the mean WPAI domain scores were maintained over the 12-month observation period in all 3 indications with a higher treatment effect regarding "activity impairment" and "presenteeism" than with "absenteeism". The magnitude of improvements in the 4 WPAI domains and the time course of improvements varied between the underlying disease (RA, PsA, AS).

In general, the improvements in the 4 WPAI domains were greater in patients with AS and PsA compared to RA patients. A continuous improvement over time was seen in AS patients regarding the domain "activity impairment". A positive effect of pre-treatment with biologics (i.e. better improvement in WPAI) was seen in RA

patients for 3 domains (TWPI, absenteeism, presenteeism), and in PsA patients for 2 domains (absenteeism, activity impairment).

Conclusions: Golimumab s.c. 1 x monthly is an effective treatment in patients with RA, AS and PsA.

All scores of the WPAI showed a significant ($p < 0.05$) reduction in mean score values in each indication.

Golimumab leads to an improvement of work productivity and daily activities in all patients already within the first 3 months of treatment and provided sustained improvement in WPAI in patients with RA, PsA and AS.

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SAT0188

TOCILIZUMAB IN EARLY RHEUMATOID ARTHRITIS DELIVERS CLINICAL AND ULTRASOUND-CONFIRMED RAPID AND DEEP REMISSION WITH ABOLITION OF PD – TREMERA STUDY

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Background: Tocilizumab (TCZ) has shown impressive outcomes in early RA (ERA) with clinical remission rates of up to 80%¹. The speed and depth of remission of TCZ in treatment-naïve ERA have not been specifically evaluated.

Objectives: To evaluate the rate and depth of clinical and imaging response and remission, and timing of optimal response in ERA.

Methods: A prospective, open-label, RCT of active (DAS28 ≥ 3.2), new-onset (symptom duration ≤ 12 months) treatment-naïve RA (2010 ACR/EULAR RA classification criteria), randomised 1:1, and treated with either TCZ 8 mg/kg (4-wkly) monotherapy or TCZ 8 mg/kg (4-wkly) and methotrexate (MTX) combination for 48 weeks.

Clinical response/remission rates, and patient reported outcomes (PRO) were evaluated at early (wks 4 and 12) timepoints, and wks 24 and 48. High resolution US dominant hand ($\pm$ other baseline active joints) was performed at baseline, wks 12, 24 and 48. Odds ratios were calculated using Firth logistic regression.

Results: 20 pt [16 female; 13 RF+, 15 ACPA+; mean(SD) age 55.25(12) years] were recruited; baseline mean(SD) DAS28-ESR 5.98(1.21), HAQ 1.64(0.67). High-hurdle endpoints: at wk4, 30%, 95% and 35% achieved DAS28-ESR rem, EULAR and ACR50 response respectively; and continued to increase, peaking at wk48 with 67%, 93% and 63% respectively [OR wk4 1.0, 0.3, 0.7 and wk48 1.4, 3.0, 4.0 respectively]. Sustained DAS28-ESR remission (8 successive weeks) was observed in 40%; chisq=0.5, $p=0.462$; mean (90% CI) time to remission 38.3 (33.2, 43.3) wks.

PRO: Baseline median(IQR) VASGH 56.5(29,71.5) improved by wk4 to 24 (14,54), maintained wk48 24.5(3.5,46.5); VASDA from 62(54,77.5) to wk4 22 (12.5,49.5), further improved by wk48 14.5(3.5,44.5); VASpain from 63.5(42,77) to wk4 19.5(4,53), maintained wk48 17.5(2.5,49.5). Similarly, median(IQR) HAQ at baseline 1.63(1.25,2.13) decreased by wk4 1.13(0.19,2.0) and wk48 0.75 (0.19,1.38).

Ultrasound: Baseline mean grey scale (GS) and power Doppler (PD) (as well as DAS28-ESR) are shown in the figure below, illustrating rapid reduction by wk4 that continued through the study period to all achieving PD=0 by wk48. Baseline median (IQR) erosions 0 (0, 0) remained unchanged throughout study. Baseline GS and PD appeared to associate with achievement of DAS44ESR remission ($p=0.038$ and $p=0.043$ respectively).

No meaningful numerical differences between the two treatment arms was recorded.

Conclusions: Conclusion TCZ in ERA (both monotherapy and TCZ/MTX combination) was associated with rapid clinical and imaging improvements, strikingly abolishing PD; with sustained remission in almost half the patients. The peak imaging response was noted at 48 weeks. Impressively, rapid PRO improvement

was also observed. These data indicate convincing patient-relevant, imaging-determined depth of remission in a new-onset, treatment-naïve RA cohort.

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SAT0189

DYNAMICS OF CIRCULATING TNF DURING ADALIMUMAB TREATMENT OF RHEUMATOID ARTHRITIS USING A NOVEL DRUG-TOLERANT TNF ASSAY

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Background: Tumor necrosis factor- (TNF) inhibitors are effective in the treatment of rheumatoid arthritis (RA); these include adalimumab, which binds TNF to form inactive complexes. Once in remission, a proportion of patients can successfully discontinue adalimumab treatment, indicating that blocking TNF is no longer necessary for disease control. We developed a novel assay that can quantify TNF in the presence of large amounts of TNF-inhibitor, i.e. a 'drug-tolerant' assay.

Objectives: To investigate, for the first time, the relationship between TNF levels and disease course during adalimumab treatment.

Methods: The new drug-tolerant competition enzyme-linked immunosorbent (ELISA) assay was used to quantify TNF levels on initiation and during 2 years of adalimumab treatment in 206 consecutive RA patients. The relationship between TNF levels and clinical response was evaluated.

Results: Circulating TNF levels were close to the detection limit at baseline, but TNF levels increased on average >50-fold upon adalimumab treatment (**figure 1A**; black lines show median (IQR)), and reached a stable level in time in the majority of patients (**figure 1B**; representatives of n=206), regardless of disease activity. During treatment, TNF was in complex with adalimumab, and recovered as inactive 3:1 adalimumab:TNF complexes. Low TNF levels at week four were associated with a higher frequency of anti-drug antibodies (ADAs) at subsequent time points (**figure 1C**) and significantly less methotrexate (MTX) use at baseline. Furthermore, week four TNF levels were significantly correlated with SDAI score, with significantly lower TNF levels in patients who did not reach remission (Spearman $r = -0.18$; $p=0.015$; **figure 1D**)

Conclusions: TNF levels, mostly in complexed form, do not appear to decline in patients that reach remission, and may therefore not be predictive for treatment