Abstract OP0227 – Table 2 Association between glucocorticoids and methotrexate with post-operative hospitalised infection among abatacept treated patients, logistic regression model

	Adjusted OR (95% CI)	p-value
Average glucocorticoid dose		
None (n = 764)	Reference	-
≤5mg (n = 454)	1.32 (0.88-1.98)	0.18
5-10mg (n = 252)	2.40 (1.54-3.73)	< 0.001
>10mg (n = 67)	1.73 (0.74-4.06)	0.21
Methotrexate use (n= 573)	0.97 (0.68-1.38)	0.86

Included in the reduced multivariable model but not shown: abatacept stop timing, age, disability, sex, race, median household income, surgery type, chronic kidney disease, surgeon volume. Tested but excluded (p > 0.2): osteonecrosis, diabetes, congestive heart failure, asthma/COPD, obesity, Charlson score, previous biologic, hospitalizations, hospitalized infections, number outpatient visits, hospital volume, skilled nursing facility residence, extra-articular RA, region, urban, antibiotics/nsaids/opioids past 90 days, year.

Conclusions: Holding intravenous abatacept for ≥4 weeks (one dosing interval) was not associated with a lower risk of hospitalised infection, prosthetic joint infection, or 30 day readmission. Glucocorticoid use even at 5–10 mg per day was associated with significantly greater risk of post-operative infection.

REFERENCE:

[1] Goodman SM, et al. ACR/AAHKS Guideline for the Perioperative Management of Antirheumatic Medication in Patients With Rheumatic Diseases Undergoing Elective Total Hip or Total Knee Arthroplasty. Arthritis & Rheum 2017;69:1538–1551.

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OP0228 COMPARATIVE RISK OF BIOLOGIC THERAPIES AND RISK OF GLUCOCORTICOIDS IN PATIENTS WITH RHEUMATOID ARTHRITIS UNDERGOING ELECTIVE ARTHROPLASTY

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Background: Patients with RA undergoing major surgery are at high risk for infection. Different biologic DMARDs may be associated with different infection risks.[1]

Objectives: Goals were 1) to compare post-operative infection risk after arthroplasty in patients with RA exposed to different biologics, and 2) examine associations between glucocorticoid use and post-operative infection.

Methods: A retrospective cohort study using U.S. Medicare data from 2006-September 2015 evaluated adults with ≥2 ICD9 codes for RA undergoing elective inpatient primary or revision total knee or hip arthroplasty. Eligible patients received an infusion or prescription for abatacept, adalimumab, etanercept, infliximab, or tocilizumab within 8 weeks or a rituximab infusion within 16 weeks of surgery. Patients with hip fracture, malignancy, pre-existing infection, or non-elective surgery were excluded. Average glucocorticoid dose in the 3 months before surgery was calculated from oral prescriptions. Logistic or Cox regression evaluated associations between biologic exposure and post-operative outcomes: 1) hospitalised infection within 30 days (from discharge diagnoses, PPV >80%), 2) rate of prosthetic joint infection (PJI, ICD9 996.66) within 1 year, and 3) 30 day readmission among patients with discharge to home, skilled nursing facility, or inpatient rehab. Propensity scores based on the probability of receiving a specific biologic treatment were used to balance confounders across treatment groups using inverse probability weighting. Similar analyses were used to evaluate associations between glucocorticoid dose and outcomes in the same cohort, using inverse probability weighted analyses based on the probability of being in each glucocorticoid treatment category.

Results: Among 7929 surgeries in 7138 patients, there were 717 (9.0%) hospitalised infections within 30 days of surgery (most commonly urinary, skin/soft tissue, and pneumonia), 192 (2.8/100 person-years) PJI within 1 year, and 465/7554 (6.2%) 30 day readmissions. There was no significant difference in the risk of hospitalised infection, PJI, or 30 day readmission across biologic treatment groups (table 1). Glucocorticoid dose >10 mg/day (mean 13.5±3.5 mg/day) was associated with a significantly greater risk of hospitalised infection [aOR 2.37 (1.63–3.44)] and prosthetic joint infection [aHR 2.04 (1.09–3.84)] compared to no glucocorticoid use (table 1). Patients with glucocorticoid dose >10 mg also had a numerically greater risk of 30 day readmission that did not reach statistical significance [aOR 1.61 (0.99–2.61)] (table 1).

Abstract OP0228 – Table 1 Associations between preoperative biologic exposure or glucocorticoid dose and post-operative outcomes

	30-day hospitalized infection		1-year prosthetic joint infection		30-day readmission***	
	N (%)	aOR (95% CI)	N (inc/ 100py)	aHR (95% CI)	N (%)	aOR (95% CI)
Associations with biologic exposure before surgery						
Abatacept (n = 1369)	126 (9.2)	Reference	27 (2.8)	Reference	92/1296 (7.1)	Reference
Adalimumab (n = 1284)	108 (8.4)	0.86 (0.63-1.18)	50 (3.5)	0.83 (0.47-1.46)	78/1225 (6.4)	0.89 (0.62-1.28)
Etanercept (n = 1836)	173 (9.4)	1.03 (0.79-1.35)	27 (2.7)	1.00 (0.62-1.61)	112/1767 (6.3)	1.03 (0.74-1.43)
Infliximab (n = 2798)	249 (8.9)	0.96 (0.75-1.24)	58 (2.6)	1.08 (0.68-1.73)	143/2673 (5.4)	0.85 (0.62-1.16)
Rituximab (n = 337)	33 (9.8)	1.10 (0.69-1.75)	3 (1.2)	N/A**	21/314 (6.7)	1.03 (0.58-1.83)
Tocilizumab* (n = 305)	28 (9.2)	1.01 (0.62-1.63)	9 (5.1)	N/A**	19/279 (6.8)	0.85 (0.49-1.49)
Associations with average glucocorticoid dose before surgery						
None (n = 3966)	342 (7.8)	Reference	93 (2.5)	Reference	107/2045 (5.2)	Reference
≤5mg (n = 1915)	205 (9.6)	1.18 (0.98-1.42)	54 (3.0)	1.13 (0.80-1.59)	90/1026 (8.8)	**1.31 (1.04-1.63)**
5-10mg (n = 1033)	121 (11.0)	**1.28 (1.01-1.62)**	31 (3.4)	1.16 (0.75-1.79)	51/530 (9.6)	1.29 (0.98-1.71)
>10mg (n = 281)	49 (16.1)	**2.37 (1.63-3.44)**	14 (5.8)	**2.04 (1.09-3.84)**	11/132 (8.3)	1.61 (0.99-2.61)

Adjusted odds ratios (aOR) and hazard ratios (aHR) from logistic and Cox regression with inverse probability weights, with separate analyses for biologics and glucocorticoids. *Tocilizumab (n = 305) compared to abatacept (n = 941) year 2011-2015 only. **Excluded from adjusted analyses because of inadequate outcomes. ***Readmissions assessed among those with discharge to home, rehabilitation facility, or skilled nursing facility. Inc/100py = incidence per 100 person years. Bolded values are statistically significant with p < 0.05.

Conclusions: Risk of hospitalised infection, prosthetic joint infection, and readmission after arthroplasty was similar in patients with RA treated with different biologics. In contrast, glucocorticoid use, especially >10 mg/day, was associated with greater risk of hospitalised infection and PJI.

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[1] Yun H, et al. Comparative risk of hospitalized infection associated with biologic agents in rheumatoid arthritis patients enrolled in medicare. *Arthritis & Rheumatology* 2016;68:56–66.

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OP0229 THE ASSOCIATION OF BIOLOGIC DRUG-LEVELS WITH INFECTION RISK: RESULTS FROM THE BRITISH SOCIETY FOR RHEUMATOLOGY BIOLOGICS REGISTER FOR RHEUMATOID ARTHRITIS

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Background: High dose tumour necrosis factor inhibitor (TNFi) drugs are associated with an increased serious infection (SI) risk.[1] It is feasible that high biologic levels predict dose-dependent adverse events such as SI. No registries have systematically evaluated the effect of drug levels on infection risk.

Objectives: To assess the effect of biologic drug levels in rheumatoid arthritis (RA) patients on (i) all infections (AI) (ii) SI (infections requiring hospitalisation, IV antibiotics or lead to death)