accuracy of the model was estimated by receiver operating characteristic (ROC) analyses. The area under the curve (AUC) and corresponding 95% confidence intervals (CI) were calculated using 1,000 bootstrap replications.

Results: Among the 40 patients included, 31 (78%) fulfilled the OARS-OMER-ACT responder criteria. From the included general patient characteristics (Table 1), elastic net selected baseline hand function as only predictor of treatment response, with an AUC of 0.78 (95% CI 0.60;0.96) (Figure 1). In model 2, we added the 286 Lipidizer™ platform variables to model 1. In addition to hand function, two lipids were selected: diacylglycerol(DAG)(16:0/16:0) and phosphatidylethanolamine(PE)(O-18:0/20:4), which improved the discriminatory accuracy to an AUC of 0.92 (0.83;1.02). Lastly, model 3 was fit with patient characteristics as well as oxylipins, resulting in selection of AUSCAN function and three oxylipin predictors: 9-hydroxy-octadecatrienoic acid (HOTrE), 5-hydroxy-eicosapentaenoic acid (HEPE) and 10-hydroxy-docosahexaenoic acid (HDHA), with an AUC of 0.85 (0.69;1.02).

Conclusion: The patients' lipid profile improved the discriminative accuracy of the prediction of prednisolone treatment response in patients with inflammatory hand osteoarthritis compared to prediction by commonly measured patient characteristics alone. This exploratory study suggests that lipidomics is a promising field for biomarker discovery for prediction of anti-inflammatory treatment response.

Table 1. Baseline characteristics

	All prednisolone treated n = 40	Responders n = 31 (78%)	Non-responders n = 9 (23%)
General characteristics			
Age, year	62.4 (9.3)	62.9 (9.4)	60.8 (9.4)
Sex, % women	85	84	89
BMI, kg/m ²	27.4 (4.4)	27.8 (4.2)	26.2 (5.0)
Education, % high	46	42	56
Disease duration	6.7 (7.1)	7.2 (7.4)	4.9 (5.8)
Erosive OA, %	71	74	56
Kellgren-Lawrence sum score, 0-120	35.1 (16.4)	34.1 (16.5)	37.5 (14.7)
Ultrasound synovitis sum score, 0-90	16.2 (6.6)	15.5 (6.4)	18.7 (7.2)
VAS global assessment, 0-100	52.3 (20.6)	54.2 (16.8)	45.6 (30.8)
AUSCAN pain, 0-20	11.0 (3.3)	11.3 (2.4)	10 (5.4)
AUSCAN function, 0-36	17.7 (7.6)	19.6 (6.6)	11 (7.5)

Numbers represent mean (SD) unless otherwise specified. AUSCAN = Australian/Canadian Hand Osteoarthritis Index, BMI = body mass index, VAS = visual analogue scale

Figure 1. Prediction model characteristics

A) shows the variables included for model fitting of the three prediction models, colours correspond to the lines of the ROC curves in B). Of model 2, only the lipid classes are shown. Variables in bold font were selected in the final models. Model 1: General patient characteristics, model 2: model 1 + Lipidizer™ platform, model 3: model 1 + oxylipin platform. Abbreviations: AUC = area under the curve, AUSCAN = Australian/Canadian Hand Osteoarthritis Index, CE = cholesteryl ester, CER = ceramide, DAG = diacylglycerol, DCER = dihydroceramide, FFA = free fatty acid, HCLER = hexosylceramide, KL = Kellgren-Lawrence, LCEr = lactosylceramide, (L)PC = (lysophosphatidyl)choline, (L)PE = (lysophosphatidylethanolamine), OA = osteoarthritis, SM = sphingomyelin, TAG = triacylglycerol, VAS = visual analogue scale, 9-HOTrE = 9-hydroxy-octadecatrienoic acid, 5-HEPE = 5-hydroxy-eicosapentaenoic acid, 10-HDHA = 10-hydroxy-docosahexaenoic acid.

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POS1088

EFFICACY OF SUBCUTANEOUS TANEZUMAB FOR THE TREATMENT OF OSTEOARTHRITIS OF THE KNEE OR HIP: A POST-HOC SUBGROUP ANALYSIS OF PATIENTS FROM A RANDOMIZED, NSAID-CONTROLLED STUDY WITH A HISTORY OF DEPRESSION, ANXIETY, OR INSOMNIA

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Background: Tanezumab is a monoclonal antibody directed against nerve growth factor. It is in development for the treatment of moderate to severe chronic pain associated with osteoarthritis (OA) in adult patients for whom other treatments are ineffective or not appropriate. Phase 3 clinical trials have demonstrated the efficacy of subcutaneous tanezumab versus placebo for pain and function outcomes over various timepoints. Largely similar change from baseline was demonstrated in an oral nonsteroidal anti-inflammatory drug (NSAID)-controlled study.^{1,2,3,4} The efficacy of some other OA therapies can be dampened in patients with depression, anxiety, or insomnia.^{5,6,7}

Objectives: A post-hoc analysis to explore the efficacy of subcutaneous tanezumab after 16 weeks treatment, as compared to oral NSAID, in patients with OA and a history of depression, anxiety, or insomnia at baseline.

Methods: Subgroup analysis of data from a randomized, double-blind, double-dummy, active-controlled phase 3 study of subcutaneous tanezumab (2.5 mg or 5 mg every 8 weeks) vs twice daily oral NSAID in patients (≥18 years) with radiographically-confirmed moderate to severe hip or knee OA (Kellgren-Lawrence grade ≥2; NCT02528188).⁴ Co-primary efficacy endpoints were change from baseline to week 16 in Western Ontario and McMaster Universities OA Index (WOMAC*) Pain and Physical Function subscale scores (both ≥5/10 at randomisation; increasing score indicates increasing pain/disability), and Patient's Global Assessment of OA (PGA-OA, ≥3/5 at randomisation; increasing score indicates poorer condition). Enrolled patients had a history of inadequate pain relief with acetaminophen; inadequate pain relief with/intolerance to/contraindication to tramadol or opioids; or an unwillingness to take opioids. Patients were on a stable dose of NSAID for ≥30 days before screening. Data are presented as least squares (LS) mean change from baseline to week 16 for the whole population and for subgroups of patients with/without a history of depression, anxiety, or insomnia at baseline. Exploratory statistical analysis was conducted by analysis of covariance. P values were not adjusted for multiplicity. This exploratory post-hoc analysis was not part of the pre-specified hypothesis testing plan or included in any sample size calculations; therefore, comparisons between treatment arms or patient subgroups should be interpreted with caution.

Results: Overall, 2996 patients were randomized and received at least one dose of study treatment (subcutaneous tanezumab 2.5 mg: n=1002; subcutaneous tanezumab 5 mg: n=998; oral NSAID: n=996). In this population (comprising patients with or without a history of anxiety, depression or insomnia), all treatments were associated with notable and largely similar magnitude improvements in WOMAC Pain, WOMAC Physical Function, and PGA-OA at week 16 (Figure 1). Across treatment groups, differences in LS mean change from baseline in patients with

Figure 1: Co-primary efficacy endpoints after 16 weeks of treatment

*p<0.05 vs NSAID

LS, least squares; NSAID, nonsteroidal anti-inflammatory drug; SE, standard error; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.

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and without a history of depression, anxiety or insomnia ranged between 0 - 0.34 for WOMAC Pain and Physical Function and 0 - 0.19 for PGA-OA.

Conclusion: Patients with a history of depression, anxiety, or insomnia did not appear to experience dampened improvements in pain or function with tanezumab or NSAID, as compared to those without.

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POS1089

ASSOCIATION BETWEEN PAIN SEVERITY AND HEALTHCARE UTILIZATION IN AN OSTEOARTHRITIS POPULATION: AN 18-YEAR RETROSPECTIVE COHORT STUDY

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Background: Osteoarthritis (OA) is a common disease that varies in severity among patients. A standardized definition to classify patients into different severity levels is lacking, however, due to the disease's complex pathogenesis and presentation. Prior studies have shown associations between pain severity and higher healthcare resource utilization (HRU) and costs. We investigated an association between pain severity and higher healthcare resource utilization by examining the use of specific OA-related treatments across pain intensity levels in a large, integrated health system's OA population over an 18-year period.

Objectives: Our aim was to compare use of medications and other treatments among OA patients experiencing mild, moderate, or severe pain.

Methods: This was a retrospective study of electronic health records from 2001 to 2018 at Geisinger, an integrated health system in Pennsylvania. Patients were included with a diagnosis code for OA (ICD-9: 715.*, ICD-10 M15-19) on a problem list or encounter or an OA-specific procedure (hip or knee replacement, arthroscopy or injection). We examined pain scores (0-10 scale, with 10 being worst pain) taken after the first OA diagnosis date and defined pain episodes starting on the pain score's date and lasting for 90 days. If a new pain score was measured before 90 days elapsed, the episode was extended for an additional 90 days, with this process repeated as necessary. Each episode was categorized as mild (pain score 0-3), moderate (4-6), or severe (7-10) based on initial score, and patients could contribute multiple episodes to the analysis. Descriptive statistics were used to quantify treatment utilization during each patients' mild, moderate and severe episodes. Percentages of patients who had any use of 10 medication types (tramadol, non-tramadol opioids, nonsteroidal anti-inflammatory drugs (NSAIDs), injectable corticosteroids, acetaminophen, salicylates, duloxetine, homeopathic medications, other topical medications, and other over-the-counter (OTC) medications were compared across pain episode types. Percentages of patients with knee or hip surgeries, spine or joint imaging procedures (x-ray, computed tomography or magnetic resonance) and consults to OA-related care (pain management, orthopedics or physical medicine and

rehabilitation) were also compared. All analyses used logistic regression with p-values <0.05 considered significant.

Results: We identified 290,897 patients with OA, representing 34% of the health system population in 2018; 58% were female with mean age of 49 years and mean BMI of 30.5kg/m². A total of 801,144 pain episodes were defined, with 75% of patients having at least one pain score. The two most frequently occurring pain scores were 0 (17%) and 5 (13%), and pain episodes were classified as 43% mild, 32% moderate and 25% severe. Significantly higher percentages of patients used certain medication types (NSAIDs, injectable corticosteroids, non-tramadol opioid, duloxetine) in both moderate and severe pain episodes as compared to mild episodes, but other medication types were less likely to be used as pain severity increased (acetaminophen, salicylates, homeopathic medications, other OTC medications). Knee or hip surgeries, imaging, and consults to OA-related specialists were all consistently significantly more likely to occur in patients during moderate or severe pain episodes versus mild episodes (relative risk ratios of 1.76, 1.25 and 1.35 for moderate vs mild, respectively, and 2.00, 1.44 and 1.46 for severe vs mild, all p-values <0.05).

Conclusion: While pain is generally recognized to be a subjective measure that could be influenced by other unmeasured factors and can be confounded with treatment effectiveness, it is nevertheless the primary symptom of OA. It is important to understand the relationship between pain intensity and treatment utilization, and our results support an overall association between pain and utilization but provide new details on the extent to which it depends on specific utilization type.

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POS1090

ASSOCIATION BETWEEN ANTIBIOTIC USE AND KNEE PAIN AND FUNCTION IN OA: DATA FROM THE OSTEOARTHRITIS INITIATIVE

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Background: Recently, gut dysbiosis has been linked with joint pain in osteoarthritis (OA) (1). Thus, it can be hypothesized that antibiotic use impacts symptoms of OA. To date, there have been no studies assessing association between the intake of antibiotics and clinical manifestations of knee OA.

Objectives: To evaluate association between the use of antibiotics and OA-related knee pain and function.

Methods: For the current study we used 4-year longitudinal data obtained from the Osteoarthritis Initiative (OAI) progression (n= 1390) and incidence (n = 3284) subcohorts, which are publically available at <https://oai.nih.gov>. The outcome variables studied were Western Ontario McMaster Osteoarthritis Index (WOMAC) pain and function subscales. To acquire information about the use of antibiotics, a medication inventory method was used. We excluded participants who used antibiotics at or 30 days prior to baseline (a "new-user" design). Antibiotic users were defined as those with at least one recorded use during first four years of the study. The participants were matched into antibiotic users/non-users pairs using genetic matching based on various demographic and clinical characteristics. The outcomes were assessed at baseline and annually until year 4. Generalized