while ii) poor baseline function as reflected by a higher health assessment questionnaire (HAQ) score was predictive of CVE with an AHR of 5.2 (95% CI 1.2-23). Conclusion: ERA patients treated by a T2T strategy did not develop excess CVE compared to CV risk factor-matched controls over 5 years. A longer disease remission duration was protective while a higher baseline HAQ was associated with a higher CVE risk.

REFERENCES:

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### OP0104

**DIFFERENCES IN LOW-DENSITY LIPOPROTEIN (LDL) PARTICLE COMPOSITION AND OXIDATION MAY UNDERLIE THE PARADOXICAL ASSOCIATION OF LOW LDL WITH HIGHER CORONARY ATHEROSCLEROSIS BURDEN IN RHEUMATOID ARTHRITIS**

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Background: The association between cholesterol and cardiovascular disease (CVD) risk is attenuated in Rheumatoid arthritis (RA). In fact, RA patients in the lowest low-density lipoprotein (LDL) group (<70mg/dl) may experience unexpectedly high CVD risk.

Objectives: We here explored whether patients with LDL<70mg/dl (Group 1) had higher coronary atherosclerosis burden compared to other LDL groups (Group 2: 70≤LDL<130 and Group 3: LDL≥130), as a reason for this risk. We further evaluated whether low LDL in group 1 associated with differences in inflammation, LDL particle composition or oxidation.

Methods: One hundred fifty RA patients without symptoms or history of CVD underwent coronary atherosclerosis evaluation with computed tomography angiography. Coronary artery calcium (CAC), number of segments with plaque (segment involvement score), stenotic severity (segment stenosis score), and extensive (>4 segments with plaque) or obstructive disease (>50% stenosis) were assessed. Lipoprotein classes and subclasses were directly measured. Oxidized LDL (oxLDL) was measured with monoclonal antibody E06. Chemiluminescence Elisa quantified IgG and IgM antibodies to oxLDL (anti-oxLDL) and apoB100 immune complexes (IC). Prolinflammatory cytokines were measured with Erenna Immunoassay. Robust linear and logistic regression models adjusted for Framingham DAgoastroin score, obesity, disease activity, bDMARD and statin treatment-evaluated associations between LDL groups and plaque outcomes. Similar models evaluated adjusted differences in LDL subclasses, oxLDL, anti-oxLDL, anti-ApoB100 IC, and cytokines across LDL groups.

Results: Group 1 patients had higher coronary plaque burden (Figure 1A) and 2.8 times greater risk of extensive or obstructive disease (adjusted OR 2.82 [95% CI 1.12-7.17], P = 0.031) compared to LDL>70 groups. Among statin naïve patients, those with LDL<70 also had higher oxLDL (log-transformed adjusted mean 2.55 [95% CI 2.34-2.77] versus 2.27 [95% CI 2.19-2.36], P = 0.018 for LDL>70). Notably, Group 1 patients also had higher anti-oxLDL IgG and anti-ApoB100 IgG IC levels compared to other groups (Figure 1B). LDL subclass relative content in the LDL particle differed across groups (Figure 1C). Lp(a) was higher in LDL particles in Group 1 (adjusted mean 16.04% [95% CI 11.75-20.33], versus 10.48% [95% CI 8.20-12.75] in Group 2, P = 0.026 and 7.41% [95% CI 0.77-14.04] in Group 3, P = 0.033). Notably, Lp(a) content strongly associated with oxLDL (Pearson’s r = 0.83, P < 0.0001). This association was stronger for Group 1 compared to others (P = 0.005, Figure 1D).

Conclusion: RA patients with LDL<70mg/dl had higher coronary atherosclerosis burden. Low circulating LDL in that group may reflect higher oxidation; this was mostly linked to the larger Lp(a) relative content of LDL and its significantly higher oxidation potential in that group. OxLDL immune recognition was linked to higher IgG anti-oxLDL Ab and anti-ApoB100 IC levels in the LDL<70 group, which further associated with higher Lp(a) elaboration and atherosclerosis burden.

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### OP0105

**FEASIBILITY AND USEFULNESS OF MAPPING BIOLOGIC REGISTRIES TO A COMMON DATA MODEL: ILLUSTRATING USING COMORBIDITIES**


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Background: The Observational and Medical Outcomes Partnerships (OMOP) common data model (CDM) provides a framework for standardising health data with a view towards federated analyses, thus maximising the use and power of combining disparate datasets.

Objectives: To assess feasibility and usefulness of mapping biologic registry data from different European countries to the OMOP CDM and present initial descriptive data regarding comorbidities.

Methods: Five biologic registries, as part of a funded FOREUM project, have been mapped to the OMOP CDM: 1) the Czech biologics register (ATTRA), 2) Registro Español de Afectados de Enfermedades Infecciosas y Reumatologicas (BIOBADASER), 3) British Society for Rheumatology Biologics Register for Rheumatoid Arthritis (BSRBR-RA), 4) German biologics register ‘Rheumatoid arthritis observation of biologic therapy’ (RABBIT), and 5) Swiss register ‘Swiss Clinical Quality Management in Rheumatic Diseases’ (SCQM). The mapping includes socio-demographic, observation period within the studies, baseline comorbidities, and baseline medications. Only patients with RA were included. Using R, registers received identical scripts to run on their mapped databases to produce an initial description of patient characteristics without the need to share patient-level data.

Results: A total of 54,458 individuals are included the five registries being mapped to the OMOP CDM, see table. Age and gender distribution was similar across registries. All registers reported on cardiovascular system comorbidities, diabetes mellitus, mental disorders, and other systemic comorbidities. However, it was noted that results of comorbidity mapping relies on what each registries collect on each patient at the point of registration.

While the Charlson comorbidity index could be calculated within each registry, due to lack of the specific coding needed, such as “uncomplicated diabetes mellitus” / “end-organ damage diabetes mellitus”, it was felt to be an inaccurate
measure. The granularity of the comorbidities was insufficient, as many registers coded, for example, diabetes mellitus without any extra information.

<table>
<thead>
<tr>
<th>Registry</th>
<th>ATTRA</th>
<th>BIOBADASER</th>
<th>BRBRR-RA</th>
<th>RABBIT</th>
<th>SOCM</th>
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<tr>
<td>Country</td>
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<td>Germany</td>
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<tr>
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<td>3012</td>
<td>25179</td>
<td>13652</td>
<td>10281</td>
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</tbody>
</table>

Gender
- Female: 1808 (77%) 2372 (79%) 18905 (75%) 10191 (75%) 7584 (74%)
- Male: 526 (23%) 640 (21%) 6184 (25%) 3461 (25%) 2697 (26%)

Age at observation at start date
- First observation start date: Feb-2002 - Oct-1999

Number of comorbidities
- Disorder of cardiovascular system: 340 (39%) 479 (39%) 2239 (9%) 6330 (46%) 3969 (39%)
- Diabetes mellitus: 331 (14%) 208 (7%) 1229 (9%) 6330 (46%) 3969 (39%)
- Depressive disorder: 165 (7%) 0 4971 (20%) 1023 (7%) 1337 (13%)
- Disorder of respiratory system: 215 (9%) 209 (7%) 4125 (16%) 1282 (9%) 1630 (16%)

Conclusion: This is the first analysis of data from the newly mapped OMOP CDM across five European registers. Through mapping the registers into a CDM, and using the same script, the ability to undertake collaborative analysis without sharing patient level data outside of the country can be realised. Due to differences in study design and data capture, there needs to be a focus on harmonising the coding and analysing of the comorbidities and drugs across registries.

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Bone & Joints

**THE ASSOCIATIONS BETWEEN BARIATRIC SURGERY AND HIP OR KNEE ARTHROPLASTY, AND HIP OR KNEE OSTEOARTHRITIS: A COHORT STUDY FROM SWEDISH NATIONWIDE HEALTHCARE REGISTRIES**

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**Background:** Osteoarthritis (OA) is a slowly developing chronic joint disease mainly characterized by joint pain which may lead to physical disability. OA in weight bearing joints, such as the hip and knee, was suggested to be susceptible to high body weight. In end-stage disease, hip and knee OA are often treated with arthroplasty. The impact of weight loss among obese patients on hip and knee arthroplasty has not been assessed to date.

**Objectives:** To assess the association between bariatric surgery and hip or knee arthroplasty. As a secondary aim, we assessed the association between bariatric surgery and hip or knee OA in a secondary care setting.

**Methods:** We performed a propensity score (PS)-matched cohort study using data from Swedish nationwide healthcare registries (patient registry [secondary care], causes of death registry, prescribed drug registry). Patients aged 18-79 years who underwent bariatric surgery between 2006 and 2019 were matched to up to 2 obese bariatric surgery free patients (called unexposed patients) based on their PS. PS-matching was carried out in risk set sampling to reduce selection bias, within 4 sequential cohort entry blocks to account for time trends biases. The primary outcome was hip or knee arthroplasty. The secondary outcome was a diagnosis of hip or knee OA in secondary care. We excluded patients with differential indications for arthroplasty or OA (e.g. rheumatoid arthritis, septic arthritis). After a 1-year run-in period, patients were followed in an “as-treated” approach until the outcome or censoring due to onset of an exclusion criterion, change of exposure status, or end of study follow-up. We applied Cox proportional hazard regression to calculate hazard ratios (HR) with 95% confidence intervals (CI) of hip or knee arthroplasty, and separately of hip or knee OA, among bariatric surgery patients when compared to obese unexposed patients. Additionally, we performed analyses in subgroups of age, sex, joint location, bariatric surgery type, and by duration of follow-up.

**Results:** A total of 39 392 bariatric surgery patients were PS-matched to 61 085 obese unexposed patients. The primary population had a mean age of 42 years, a mean follow-up of 6.5 years, and 72.5% of patients were women. We observed 1138 and 1108 hip or knee arthroplasties among bariatric surgery and obese unexposed patients, respectively. We observed an overall increased risk of hip or knee arthroplasty among bariatric surgery patients (HR of 1.43, 95% CI 1.32-1.55), compared to obese unexposed patients. The risk for knee arthroplasty was higher than that for hip arthroplasty among bariatric surgery patients (HR of 1.53, 95% CI 1.42-1.76), compared to hip OA patients (HR of 1.21, 95% CI 1.06-1.39, respectively). Patients who underwent combined malabsorptive and restrictive bariatric surgery yielded highest risks of hip or knee arthroplasty (HR of 3.58, 95% CI 1.34-9.54). Risks of hip or knee arthroplasty decreased with duration of follow-up (highest risks 1-3 years post-bariatric surgery, HR of 1.79, 95% CI 1.56-2.07). In secondary analyses, risks of secondary care hip or knee OA were decreased among bariatric surgery versus obese unexposed patients (HR of 0.84, 95% CI 0.79-0.90). We observed lower risks for knee OA (HR of 0.82, 95% CI 0.76-0.88) than for hip OA (HR of 0.90, 95% CI 0.79-1.01) and observed lowest risks of hip or knee OA in early follow-up (1-3 years post-bariatric surgery) with a HR of 0.79, 95% CI 0.71-0.88, stable thereafter at a HR of 0.87, 95% CI 0.78-0.97.

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