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Background: Respiratory tract infections are among the leading causes of hospitalization in rheumatoid arthritis (RA) and *Streptococcus Pneumoniae* (Sp) is one of the most frequent pathogens involved. For these patients, the CDC recommends a combined vaccination scheme (CVS) using two types of Sp vaccines but evidence on its effectiveness remains insufficient.¹

Objectives: To assess the impact of the combined vaccination scheme on the incidence of Sp infections in patients with RA treated with DMARD.

Methods: A cohort was nested in a register including patients with RA who were prescribed a bDMARD or tsDMARD -either naïve or switch- from 2000 to March 2019. The target outcomes were invasive pneumococcal disease (IPD) and all-cause community-acquired pneumonia (CAP), as defined by relevant MedDRA codes. Demographic and clinical features were also retrieved. Each participant centre informed about the date when they implemented a systematic Sp vaccination protocol and whether they were using the CVS. Those not adopting this practice were excluded from the analysis.

Crude incidence rates (IRs) were calculated for each outcome as well as for its combination (combined variable defined as "Sp infections"). Exposure was split into two periods, considering the date when the CVS was officially recommended in Spain (May 2015). The incidence rate ratio (IRR) comparing pre and post implementation periods was estimated with a Poisson regression model adjusted for sex, age and comorbidities (Charlson Index).

Results: 1704 patients were included, their characteristics are shown in table 1. One centre was excluded for not using any Sp vaccination protocol while the remaining ones reported using the CVS. Crude IRs by periods (pre and post CVS implementation) and age groups are shown in table 2. The IRR of the post-vaccination period after adjusting for age, sex and comorbidities (Charlson index) was 0.40 (95% CI: 0.29 - 0.56), $p < 0.001$.

Table 1. Baseline features of the cohort.

Demographics	
Age, years *	60.6 (12.5)
Female	1356 (79.6%)
Current smoking	287 (16.8%)
RA clinical characteristics	
Disease duration, years*	9.1 (7.9)
RF positive	875 (74%)
ACPA positive	831 (71%)
DAS28*	4.6 (1.4)
Other clinical characteristics	
Body Mass Index*	27.5 (5.2)
Charlson index*	2.3 (1.5)
Chronic pulmonary Disease	125 (9.3%)
Diabetes mellitus	147 (9%)

*Data presented as mean (standard deviation).

Table 2. Crude IRs (95% CI) of the outcomes of interest split by age.

Overall		<65		≥65	
Pre	Post	Pre	Post	Pre	Post
SP-Infections					
33 (27.4-39.9)	12.7 (9.8-16.4)	28 (22.4-35)	11.8 (8.9-15.6)	60.3 (42.4-85.8)	19.5 (10.8-35.2)
IPD					
—	0.4 (0.1-1.6)	—	0.4 (0.1-1.8)	—	—
All cause CAP					
23.6 (19.0-29.3)	11.5 (8.8-15)	18.7 (14.4-24.4)	10.4 (7.7-14)	50.8 (34.8-74)	19.5 (10.8-35.2)

Conclusion: The incidence of Sp infections experienced a decrease in RA patients taking bDMARD or tsDMARD after the introduction of the stepwise combined vaccination scheme that is not related to age, sex or comorbidities.

References:

[1] Furer V, et al. *Ann Rheum Dis* 2019;0:1–14

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SAT0064

VACCINATION RATE AND RISK FACTORS FOR NON-VACCINATION IN RHEUMATOID ARTHRITIS: A CROSS-SECTIONAL PROSPECTIVE MULTICENTRIC OBSERVATIONAL STUDY

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Background: Rheumatoid arthritis (RA) patients are at increased risk of infections, some of which could be prevented in part by vaccination (1). Influenza and pneumococcal vaccines are recommended in RA (2). However, vaccination coverage of these patients remains very low. Five years ago, we found in a previous study that vaccination rates in France were 55% for pneumococcal and 60% for influenza vaccines (3).

Objectives: The aim of our study was to evaluate the vaccination rate among RA patients, compare it with our previous results, and identify factors associated with non-vaccination.

Methods: We conducted a cross sectional multicentric observational study in the rheumatology departments of 5 university hospitals in France. Data were collected from December 2018 to July 2019. Outpatients and hospitalized adult patients with RA according to the ACR/EULAR 2010 criteria were included. Data were collected during a single visit through an anonymous questionnaire completed by the patients. Pearson Chi-squared analysis and multivariable logistic regression were used to compare characteristics of vaccinated versus non vaccinated patients.

Results: 584 patients (77.9% of women, mean age 61.8±12.6 years old) were included. 81.7% were RF and/or ACPA positive, with a mean RA duration of 15.7±10.5 years, 58.2% were treated with methotrexate (MTX), and 68.6% with a biologic. Vaccination rate against pneumococcal was 78.9% (versus 55% in 2013, $p < 0.0001$) and 60.4% for influenza (versus 60% in 2013). The main reason for non-vaccination was absence of vaccine proposal (59.2%) for pneumococcal, and fear of vaccines (56.7%) for influenza. In the multivariate analysis, a higher level of education (OR [CI95] 4.4 [2.3-8.4], $p < 0.0001$), a very good opinion on vaccination (2.1 [1.1-4.1], $p = 0.003$), vaccination against influenza done (2.3 [1.3-4.2], $p = 0.006$), and exposure to biologics (4.0 [2.2-7.4], $p < 0.0001$) were associated with vaccination against pneumococcal. Age over 65 years old (2.0 [1.2-3.2], $p = 0.006$), participation in a patients' association (3.6 [1.4-8.9], $p = 0.006$), vaccination against pneumococcal done (2.4 [1.3-4.5], $p = 0.004$), exposure to biologics (2.1 [1.2-3.7], $p = 0.006$), a good (3.3 [1.4-8.9], $p = 0.03$) and a very good opinion on vaccination (6.6 [2.8-15.6], $p < 0.0001$) were associated with vaccination against influenza.

Conclusion: Vaccination rate against pneumococcal increased over the last 5 years but remained stable for influenza vaccine in French RA patients. This could be improved with patient's information and education, especially in patients age under 65, biologic naïve and with a bad opinion about vaccination.

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SAT0065

TIMING OF PNEUMOCOCCAL VACCINATIONS IN RELATION TO STARTING DISEASE-MODIFYING ANTI-RHEUMATIC DRUGS IN RHEUMATOID ARTHRITIS

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