cohort. We estimated the annual age- and sex- standardized proportion of patients who filled prescriptions for at least one of the drugs of interest (table).

Results A total of 30 787 patients with prevalent SLE were identified, of whom 5267 had LN. Mean age (SD) was 49.3 (14.1) years for SLE and 51.9 (17.2) years for LN. Ninety percent were female, 61.0% White, 17.4% Black, 11.2% Hispanic, 3.0% Asian and 7.0% other/unknown. Use and time trends of therapeutic agents for 2006–2016 are included in the table. Anti-malarials were the most frequently used drug class, with some temporal change over the course of the study; 50.1% in 2006 to 47.5% in 2016 for SLE, and 38.8% in 2006 to 45.1% 2016 for LN. Prednisone was the second most frequently used drug, decreasing from 40.0% in 2006 to 34.7% in 2016; use of methylprednisolone and other systemic glucocorticoids increased during that time period. Methotrexate was the most commonly used nonbiologic immunosuppressive drug in SLE (8.0%), while MMF was most frequently prescribed in LN (15.0%). Cyclophosphamide use declined over the last decade for SLE (1.2% to 0.3% in 2016) and LN (4.2% to 1.3% in 2016). Belimumab was the most commonly used biologic for SLE with a slight uptrend since approval. Rituximab use increased in SLE and was the most commonly used biologic for LN. At any point in time ~24% of the patients were not receiving any of the medications of interest.

Conclusions Over the past decade, a substantial proportion of patients with SLE and LN continued to receive glucocorticoids. The proportion of patients receiving nonbiologic immunosuppressants remained stable, however there was a progressive decline in the use of cyclophosphamide. Since 2011 the proportion of patients receiving rituximab is higher than for cyclophosphamide. The increasing use of rituximab, which is not currently approved for SLE or LN, highlights the need to clarify its therapeutic role in these diseases.

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113 IMPACT OF THE HOP-STEP PROGRAM IN IMPROVING PROVIDER KNOWLEDGE AND SKILLS FOR LUPUS PREGNANCY PLANNING AND MANAGEMENT

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Background The HOP-STEP Program (Healthy Outcomes in Pregnancy with SLE through Education of Providers) is designed to optimize lupus pregnancy outcomes through providing physicians with the necessary knowledge, skills and resources to guide pregnancy planning and management. The goal of this analysis was to measure the impact of the HOP-STEP program.

Methods The in-person component of HOP-STEP was presented at the Association of Women in Rheumatology (AWIR) Conference in August 2018. The workshop included a presentation, peer roll-playing workshop, patient simulation, and distribution of Preparing for Pregnancy Checklist and Birth Control for Women with Lupus handouts. A survey was emailed to 149 individuals before and after workshop completion.

Results The analysis included 68 pre-surveys (response rate 46%, 93% women, 66% attending-level rheumatologists) and 55 post-surveys (response rate 37%, 95% women, 62% attending-level rheumatologists).

Systematic approach: After the program, more providers had a systematic approach to preparing a woman with lupus for pregnancy (45.6% to 94.6%; $p<0.0001$).

Contraception: There was an increase in correct responses regarding emergency contraception (47% to 91%, $p<0.0001$); a decrease in correct responses regarding IUD use (96% to 77%, $p=0.003$); and no difference in correct responses to questions regarding thrombotic risk or efficacy of contraception.

Teratogenicity: After the program, fewer providers identified pregnancy-compatible medications (azathioprine and tacrolimus) as teratogenic (60% to 9%; $p<0.0001$). Additionally, more providers identified all three teratogenic medications (methotrexate, mycophenolate, and cyclophosphamide) (80.9% to 92.7%; $p=0.07$).

Birth Defects: Participants were asked to put medications in order from most to least likely to cause birth defects, the correct order being mycophenolate or cyclophosphamide, methotrexate, then leflunomide. No difference was observed in correctly ordered medications (16.2% to 16.4%; $p=1.0$). However, there was an increase in providers who correctly identified mycophenolate as the most or second-most teratogenic (13% to 44%; $p=0.02$).

Provider Confidence: Participants were asked to rank their confidence on a scale of 0 (not confident) to 100 (very confident). Median provider confidence increased for helping women with lupus choose appropriate contraception (59 to 89; $p<0.0001$) and medications compatible with pregnancy (66 to 91; $p<0.0001$).

Conclusions After participation in the in-person HOP-STEP program, providers had increased knowledge and confidence in pregnancy planning and management in lupus patients. The program emphasized skills over knowledge, as is reflected in the survey results. The handouts used in the program provide all of the necessary information, which can overcome existing and ongoing gaps in rheumatologists knowledge.

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114 FEATURES OF FIBROMYALGIA IN LUPUS NEPHRITIS

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Background Patients with SLE have poor health related quality of life (HRQoL), however the predominant causes for decreased HRQoL in different subgroups of SLE are not well understood. Features of fibromyalgia, including fatigue, widespread pain, depression, sleep and cognitive dysfunction, are prevalent in SLE affecting 20%–65% of patients and often contribute to disability and poor health related quality of life (HRQoL). These aspects of fibromyalgia have not been well described in lupus nephritis (LN). We evaluated self-reported symptoms of fibromyalgia and mood disorders in patients with and without lupus nephritis

Methods This was a cross sectional study of SLE patients (ACR 1997 or SLICC 2012 criteria) from July to November 2018. All patients completed Systemic Lupus Activity Questionnaire (SLAQ), Patient Health Questionnaire-9 (PHQ9), and

Abstract 114 Table 1 Clinical Characteristics of Fibromyalgia in Lupus Nephritis

	Active Nephritis n=34	Nephritis in Remission n=33	Non-nephritis n=138	Overall p-value
Physician Assessments				
PGA	1.3 (0.8)	0.5 (0.6)	0.7 (0.6)	<0.0001*,†
SLEDAI	9.1 (4.3)	3.2 (3.3)	3.0 (2.7)	<0.0001*,†
Patient Reported Measures				
Depression (PHQ-9) (n=174)	9 (33%)	8 (27%)	54 (46%)	0.1
SLAQ				
Lupus flare	26 (81%)	17 (55%)	85 (68%)	0.08
Patient disease activity (range: 0-10)	5.5 (3.3)	3.5 (2.6)	5.1 (3.0)	0.009*
Total SLAQ score	12.5 (8.3)	10.5 (7.1)	14.0 (8.1)	0.1
SLAQ Elements (moderate-severe)				
Muscle pain	13 (38%)	11 (35%)	82 (60%)	0.008*,†
Forgetfulness	5 (15%)	9 (27%)	49 (36%)	0.05†
Anxiety	5 (15%)	6 (18%)	35 (26%)	0.3
Numbness	4 (12%)	6 (18%)	42 (31%)	0.04*,†
2016 ACR Fibromyalgia Criteria				
Fibromyalgia	4 (12%)	3 (9%)	32 (23%)	0.1†
Total areas of pain	4.0 (4.0)	2.4 (2.6)	5.2 (4.6)	0.002*,†
Symptom severity score (SSS)	3.1 (2.5)	3.7 (2.6)	4.5 (2.7)	0.01*,†
SSS Elements (moderate-severe)				
Cognitive dysfunction	6 (18%)	9 (27%)	52 (38%)	0.06†
Fatigue	16 (47%)	17 (52%)	89 (64%)	0.1†
Waking unrefreshed	14 (41%)	12 (36%)	76 (55%)	0.09†
Fibromyalgia severity score (areas of pain + SSS)	7.1 (6.1)	6.1 (4.4)	9.8 (6.5)	0.003*,†
Laboratory Measures				
Sedimentation Rate (n=171)	45.6 (25.2)	22.0 (21.2)	25.2 (24.0)	0.0003*,†
CRP (n=175)	0.8 (1.1)	0.4 (0.7)	0.7 (1.1)	0.4
Urine Protein-Creatinine Ratio	1181(1067)	169 (116)	197 (717)	<0.0001*,†
WBC	6.4 (3.1)	5.4 (2.3)	6.0 (2.3)	0.3
Platelets	260.9 (89.5)	254.5 (84.4)	259.2 (77.5)	0.9
Low C3/C4	10 (29%)	10 (30%)	18 (13%)	0.01
+anti-dsDNA	17 (50%)	11 (33%)	41 (30%)	0.08†
+Ro (n=198)	15 (47%)	15 (50%)	47 (35%)	0.2
+La (n=197)	5 (16%)	3 (10%)	16 (12%)	0.8
+RNP (n=198)	24 (75%)	14 (47%)	47 (35%)	0.0001*,†
+Sm (n=198)	19 (59%)	14 (47%)	31 (23%)	<0.0001*,†
Medications				
Hydroxychloroquine	31 (91%)	28 (85%)	108 (78%)	0.2
Prednisone	22 (65%)	13 (39%)	41 (30%)	0.0009*,†

*p<0.05 for Active Nephritis vs. LN Remission vs. Non-Nephritis, † p<0.05 for Nephritis (Active or Remission) vs. Non-Nephritis, All outcomes are reported as Mean (SD) or n (%)

2016 ACR Fibromyalgia criteria. Active nephritis was defined as UPC>500 mg and/or active urinary sediment excluding other causes. Fibromyalgia was defined as 7 areas of pain with 5 symptoms severity score (SSS) or 4 areas of pain with 9 SSS. Differences across groups were analyzed by Fishers exact test and ANOVA.

Results 205 patients completed patient reported outcome measures (92% female, mean age 45.1 years). In our cohort

17% had active nephritis, 16% were in nephritis remission and 67% had no history of nephritis. Of patients with nephritis, 28% had membranous class V, 27% had proliferative or proliferative/mixed LN, 3% class I/II, 0.5% post-transplant, 0.5% ESRD on dialysis, and class was unknown in 32%. The prevalence of fibromyalgia was 10.5% in those with nephritis compared to 23% of patients without nephritis (p=0.04). Patients with LN had statistically significantly lower fibromyalgia severity scores, symptom severity scores, areas of pain, fatigue, cognitive dysfunction, sleep disturbance, forgetfulness, muscle pain, and numbness. Patient-reported disease activity was significantly lower in patients with LN remission. Depression and anxiety were not significantly different between groups.

Conclusions Patients with both active and inactive lupus nephritis have lower rates of fibromyalgia, fatigue, sleep and cognitive dysfunction compared to non-nephritis lupus patients. Depression and anxiety were pervasive among all lupus groups and persisted even after achieving lower disease activity. The drivers of low HRQoL may be distinct across SLE subgroups. Lupus nephritis patients have high rates of disability and poor HRQoL, however the mechanism underlying these outcomes in nephritis is less likely related to features of fibromyalgia

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115 INTRODUCTION OF BIOSIMILARS (SIMILAR BIOLOGICAL) AS FINANCIAL SAVING TO OUR COUNTRIES FOR RHEUMATIC DISEASES

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Background Biosimilars are innovative therapeutic drugs which offer a cheaper alternation for biological which used for management of chronic rheumatic diseases. The aim of this review is to go through the written data to introduce biosimilars in our countries.

Methods Biosimilars are considered as an opportunity for rheumatology patients who are on traditionally expensive biological.

Some countries in (MENA) region Middle East and North Africa are unable to adjust their healthcare expenditure to provide biologic therapies. 71% rheumatologists from MENA countries at meeting were agreed with European League Against Rheumatism (EULAR) recommendations for introduction of biologic therapy.

Egypt has already established their own regulatory frameworks for biosimilar approval in 2013. Interest in biosimilar researches in MENA region continues grow to introduce price competition, transitioning from biological to biosimilar for rheumatoid, ankylosing, psoriasis and reduce the expenditure of healthcare without any differences in health outcomes which is important from a social perspective.

Results In 2013 the European Medicines Agency (EMA) has approved biosimilar for treatment of inflammatory disease. Adalimumab biosimilars will be available in the European market at the end of 2018. Switching to rituximab biosimilars in rheumatic conditions is still restricted to small sized studies with limited reporting of efficacy and safety outcomes. Depend on evidence several biosimilars approved by the EMA for adalimumab (BI 695501, SB5, and ABP 501), infliximab (SB2, CT-P13, and infliximab-qbtx), etanercept (GP2015 and SB4) and rituximab (CT-P10 and GP2013). The duration of treatment were detected in many trials Published data in EMA Public Assessment Reports (EPAR), PubMed and European League Against Rheumatism (EULAR) and American College of Rheumatology (ACR).

Conclusions Switching to biosimilars in the treatment of inflammatory rheumatic conditions continue as great deal of attention give promise of significant cost saving. Biosimilars could be a good option as first line therapy based on available data but clinical studies are still not sufficient.

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116 EARLY LIFE BODY SIZE AND RISK OF SYSTEMIC LUPUS ERYTHEMATOSUS

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Background Systemic lupus erythematosus (SLE) is a chronic autoimmune disease. Adult obesity may increase risks of SLE. SLE autoantibodies have been detected in patients many years prior to a SLE diagnosis, suggesting that etiological factors may influence SLE risks early in life. Child or adult height as a risk factors for SLE has not been investigated. However, there are suggestions of a genetic link between SLE and tall adult height. The evidence of an association between birth weight and SLE risks is inconsistent. We therefore investigated whether birth weight, childhood body mass index (BMI [kg/m^2]), and height are associated with later risks of SLE.

Methods We used the Copenhagen School Health Records Register which contains annual weight and height measurements at ages 7 to 13 years on 4 06 308 children born from 1930–1996 who attended schools in Copenhagen. Information on birth weight was obtained from 1936 onwards. SLE diagnosis was obtained through linkage to the Danish National Patient Register using unique personal identification numbers. Cox hazard regressions were performed to estimate hazard ratios (HR) and 95% confidence intervals (CI).

Results 3 46 545 children (1 75 494 boys) were included. During 40 years of follow-up there were 435 cases of SLE (69 men). As there were no significant interactions with sex, analyses are presented for sex combined. For birth weight there was no significant association with SLE. For childhood BMI there was a positive and significant, or borderline significant, association with SLE at all childhood ages. At age 13 years the HR was 1.13 (95% CI: 1.02–1.26) per BMI z-score and HRs were similar across all ages. For childhood height there were significant and positive associations with SLE at all