Results In 6 focus groups including 36 rheumatologists (37% male), the key dilemma in lupus pregnancy was reported to be medically ill-timed pregnancies. We identified four modifiable barriers to effective pregnancy planning: 1.) physician/patient communication about contraceptive use was often directive, which is ill-suited to the sensitive discussion; 2.) some rheumatologists have a knowledge gap, with only 37% identifying mycophenolate mofetil as a major teratogen and most greatly over-estimating the efficacy of Depo-provera®; 3.) local rheumatologists and OB/GYN frequently did not communicate, leading to varying treatment plans and confusion for patients; and 4.) pregnancy planning conversations were derailed by limited patient-trust and physician-empathy about a young woman's desire to be a mother.

Conclusions While we hope that the coming inaugural ACR Reproductive Health Guidelines will improve pregnancy management and outcomes for women with SLE, prior research demonstrates that simple guideline publication does little to influence care. We have identified several important, modifiable factors that, if addressed, may allow the guidelines to have a stronger impact on pregnancy success. We have built HOP-STEP (Healthy Outcomes in Pregnancy in women with SLE Through Educating Providers), an in-person and online program, to enable open and honest conversations about pregnancy planning and management between rheumatologists and women with lupus (www.LupusPregnancy.org).

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106

PREGNANCY INTENTION AMONG WOMEN WITH SLE AND OTHER RHEUMATIC DISEASES

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Background An estimated half of all pregnancies in the US are unplanned. In general, unplanned pregnancies are at higher risk for pregnancy loss and birth defects; an estimated 1/3 are electively terminated. Among women with rheumatic disease, the risks of unplanned pregnancy are even higher due to the frequent use of teratogenic medications and complications from active disease at conception. We sought to determine the frequency of unplanned pregnancy and the demographic differences between planned and unplanned pregnancies in a university-based pregnancy and rheumatology clinic.

Methods At enrollment into a prospective rheumatology pregnancy cohort, each woman completed the London Measure of Unplanned Pregnancy (LMUP), a validated 6-question survey that assesses a woman's intentions for conception. Demographic and historical rheumatologic data were collected. A higher LMUP score indicated a higher degree of pregnancy planning; a planned pregnancy has a score of 10–12.

Results Eighty-two pregnant women completed the survey between January and December 2018. The majority of women were white (68%), well-educated (77% at least college educated), married (77%), and had private insurance (77%); the average age was 30.7. The most common diagnosis was SLE (26%), followed by RA (21%) and UCTD (18%).

The median LMUP score was 11 with 71% of women having a planned pregnancy. Of the women with an unplanned pregnancy, only 37% reported contraceptive use, including progesterone-only pill (8%), IUD (4%), and barrier methods (25%). No differences in contraception use between women with and without SLE were observed.

In comparison to women without SLE, those with SLE were more likely to have an unplanned pregnancy (25% without SLE vs 43% with SLE, $p=0.2$). The LMUP score was significantly lower for women with SLE (mean 10.3 non-SLE vs 9.0 SLE, $p=0.07$; median 12.0 non-SLE vs 10.0 SLE, $p=0.01$). Only 43% of women with SLE reported that they had intended to get pregnant, compared to 75% of non-SLE women ($p=0.02$) and 48% of women with SLE reported taking folic acid or a prenatal vitamin compared to 72% of non-SLE women ($p=0.06$).

Conclusions Among this largely upper-middle and middle class population, most pregnancies were planned and most women took steps pre-pregnancy to prepare; this data may not reflect the typical rheumatology clinic. Among women with SLE, however, a higher proportion of pregnancies were unplanned. Our next steps will be to correlate pregnancy intention with outcomes and implement approaches to limit unplanned pregnancies among women with SLE.

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107

FEATURES OF NEUROPSYCHIATRIC LUPUS IN NBA2 MOUSE MODEL

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Background Neuropsychiatric lupus (NPSLE) is a common but poorly understood manifestation of systemic lupus erythematosus (SLE), affecting up to 80% of SLE patients. Current treatments include broad immunosuppression and symptomatic control rather than addressing pathogenesis. Current mouse models of NPSLE were developed by selective inbreeding until a complex genetic background resulted in spontaneous development of SLE. However, these models are not easily manipulated by genetic tools, which prevents elucidation of a more specific mechanism. We propose to establish the neurobehavioral phenotype of the B6.Nba2 spontaneous mouse model of SLE, known to depend on interferon (IFN)-. Interestingly, recent studies suggested that IFN- contributes to NPSLE by stimulating microglia, making it a promising potential drug target.

Methods Age- and sex-matched B6.Nba2 and B6 mice were tested ($n=3-5$). We used open field testing as a general measure of movement and anxiety-like behavior and elevated plus maze as a more specific measure of anxiety. A novel object placement test assessed spatial memory. Rotarod testing was used to characterize motor coordination, and the forced swim test assessed for depression-like behavior. Students t-test with Welch's correction was used for statistical analysis.

Results B6.Nba2 mice moved less distance and at a slower velocity and spent less time in the center of the open field than B6 mice ($p=0.0005$). To determine whether this was truly from anxiety or if it was a result of motor deficits, we ran elevated plus maze and rotarod tests. In the elevated plus maze, B6.Nba2 mice spent more time in the closed arms than

B6 mice ($p < 0.0001$), reflecting increased anxiety. There were no differences in motor coordination, supporting an anxiety phenotype leading to decreased movement in the open field. On novel object placement testing, there were no differences in time spent with the novel object. Lastly, the forced swim test revealed that B6.Nba2 mice spent more time immobile than B6 mice ($p < 0.02$), suggesting a depressive-like behavior in B6.Nba2 mice.

Conclusions Our data suggest that the B6.Nba2 mouse model expresses a strong anxiety phenotype, a depressive phenotype, but no deficits in spatial memory. This observation warrants further exploration of the B6.Nba2 as a mouse model of NPSLE along with analyses of brain histology and morphology and future evaluations of the relationship between IFN- γ , auto-antibody levels and neurological disease manifestations.

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108

EVALUATION OF PSYCHOMETRIC PROPERTIES OF THE PATIENT-REPORTED OUTCOMES MEASUREMENT INFORMATION SYSTEM PHYSICAL FUNCTION 10-ITEM SHORT FORM IN SYSTEMIC LUPUS ERYTHEMATOSUS

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Background While the PROMIS (Patient-Reported Outcomes Measurement Information System) physical function short form 10a (PF10a) is both practical and acceptable for implementation in routine clinical practice, its psychometric properties have not been evaluated in Systemic Lupus Erythematosus (SLE). We examined the validity and responsiveness of PF10a in SLE among a racially/ethnically diverse clinic population and developed estimates of the minimally important difference (MID).

Methods Data were derived from electronic health records for all SLE patients seen in a university-based rheumatology clinic between 2013 and 2018. We evaluated the PF10a's floor and ceiling effects among different racial/ethnic groups. Construct validity was assessed by examining Spearman's correlation coefficients between the PF10a and other patient-reported (pain (scale 0–10) and pain visual analogue scale (VAS) (scale 0–100)), physician-reported (SLE disease activity index (SLEDAI)) and laboratory (erythrocyte sedimentation rate (ESR)) measures. Known-group validity was assessed by evaluating effect size (Cohens d) between categories of pain (no pain vs. moderate-severe pain). We used standardized response means to examine the responsiveness of the PF10a to longitudinal changes in pain and SLEDAI. MID was estimated using distribution based and anchor-based methods.

Results We included 612 patients in cross-sectional analyses of validity and 462 patients in longitudinal analyses of responsiveness. Mean age was 40.5 ± 14.6 , 87% were female and 32% Caucasian. The PF10a had ceiling effects above the commonly accepted criteria of 15% among Caucasian (23%), Asian (23%) and Other (17%) race/ethnicities, and no floor effects. Construct validity analyses showed strong correlations ($=0.66$, $p < 0.05$) with pain VAS, moderate correlations ($=0.58$, $p < 0.05$) with pain, and weak correlations with ESR ($=0.25$, $p < 0.05$) and SLEDAI ($=0.16$, NS). Known-group validity analyses showed large differences among pain groups

(Cohens $d=1.49$, $p < 0.05$). The PF10a was responsive to improvements in pain (SRM= 0.5) and SLEDAI (0.49), but less so to deteriorations in pain (SRM= -0.42) or SLEDAI (SRM= -0.24). Distribution-based MIDs were $+8$ for improvement and -7 for deterioration. Anchor-based MIDs were $+2$ for improvement, -3 for deterioration with pain as anchor and $+5$ for improvement, -5 for deterioration with SLEDAI as anchor.

Conclusions Although the PF10a showed some ceiling effects, it had good validity in this young racially/ethnically diverse sample with SLE. The PF10a was responsive to improvements in pain and disease activity. The anchor-based MIDs appear to be similar to those reported for PF10a in rheumatoid arthritis. This information supports the use of the PF10a in SLE and provides important information to facilitate interpretation of scores.

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109

DERMAL LYMPHATIC CHARACTERIZATION AND PHOTSENSITIVITY IN THE MRL/LPR LUPUS MODEL

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Background Proper function of lymphatic vessels is needed to limit the magnitude and duration of tissue inflammation, and in direct regulation of immune cell activity. Inflammatory states such as rheumatoid arthritis and psoriasis are associated with lymphatic dysfunction, but lymphatics in lupus models have not been well characterized. SLE patients are photosensitive, developing inflammatory skin lesions upon exposure to even ambient ultraviolet radiation (UVR). We hypothesized that lymphatic dysfunction may contribute to photosensitivity in lupus.

Methods MRL/MpJ-Fas lpr/lpr (lpr) mice and age-/sex-matched MRL controls were evaluated at baseline, 1 day, 1 week and 1 month after exposure to $2000-2500 \text{ J/m}^2$ of UVB radiation. Lymphatic function was assessed with an intradermal injection of $1 \mu\text{L}$ of 2% Evans blue (EB) to the ear, followed by measurement of EB concentration in the draining lymph node (dLN) 1 min later. Flow cytometry of ears and dLN allowed quantification of resident cell populations. Kruskal-Wallis test, followed by Dunns test for multiple comparisons were used to compare the groups; data is presented as mean $\pm$ SE, with a two-tailed p -value of < 0.05 considered significant.

Results At baseline, the effective flow of EB, calculated as EB concentration in the dLN, per ear lymphatic endothelial cell (LEC) number, is comparable between the 2 groups. Following UVR, in both lpr and control mice, there is an increase in the effective flow of EB to the dLN, that starts as early as 1 day, and continues to increase at 1 week, in similar levels between the 2 groups. At 1 month post-UVR, however, the flow continues to improve in the MRL control mice, but there is no similar improvement in the lpr mice. In fact, while at baseline, 1 day and 1 week the mean relative lymphatic flow in the lpr mice ranges from 1.6-, 2.5- and 0.9- fold of controls, respectively, at 1 month the effective flow in the lpr mice is only 5% that of controls ($p=0.007$).