Abstract 87 Figure 1

Conclusions This review highlights risk factors for developing LN and progressing from SLE/LN to ESRD. Male patients, patients of non white ethnicities, and patients of a younger age at SLE diagnosis had the highest risk for developing LN and progressing from SLE/LN to ESRD. Of the renal parameters, elevated serum creatinine was identified as the best predictor of worsening disease state. A higher risk of worse outcomes is seen in the earlier SLE/LN disease stages, demonstrating the importance of early diagnosis and the need for effective disease modifying treatments for SLE and LN.

Funding Source(s): Study funded by GSK.

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ASSESSMENT OF CLINICAL CLASSIFICATION CRITERIA-BASED COMPUTATIONAL PHENOTYPES TO DETECT PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS IN ELECTRONIC HEALTH RECORDS

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10.1136/lupus-2019-lsm.88

Background Systemic Lupus Erythematosus (SLE) is a systemic autoimmune disease with diverse manifestations that can occur over a long period of time. Electronic health record (EHR) data presents a rich source of information that can be used to understand the varied presentation of SLE. We examined three

clinical classification criteria for SLE to assess whether they could be a foundation for phenotype-based detection of patients with SLE in EHR data.

Methods We assessed algorithm performance over 600 medical records from the Northwestern Medicine Electronic Data Warehouse, 472 of which had definite SLE and 128 which did not, based on chart review. We developed algorithms, based on the American College of Rheumatology (ACR), Systemic Lupus International Collaborating Clinics (SLICC) and the proposed European League Against Rheumatism/American College of Rheumatology (EULAR/ACR) classification criteria using only structured data elements (diagnosis codes (ICD9/ICD10) and lab results) to determine whether patients met the classification criteria for definite SLE.

Results As shown in table 1, the overall identification rate of SLE ranged from 58% to 78% across the three algorithms. All three criteria-based algorithms had greater than 95% specificity and greater than 98% positive predictive value (PPV). Sensitivity of the algorithms ranged from 52% to 69% and negative predictive value (NPV) from 35% to 55%. The SLICC-based algorithm had the overall highest performance, detecting 78% of the patients with definite SLE as determined by chart review, with 99% PPV, 69% sensitivity, 98% specificity and 55% NPV.

Conclusions The ACR-, SLICC- and proposed EULAR/ACR-based EHR algorithms all detect a significant proportion of patients that were classified as having definite SLE by chart review, with high PPV and specificity. Low NPV of

Abstract 88 Table 1 Performance statistics for clinical classification criteria-based algorithms for identifying sle in medical record data

Algorithm Criteria	True Positive	False Positive	True Negative	False Negative	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
ACR	323/472 (68%)	6/128 (5%)	122/128 (95%)	149/472 (32%)	68%	95%	98%	45%
SLICC	369/472 (78%)	5/128 (4%)	123/128 (96%)	103/472 (22%)	69%	98%	99%	55%
proposed EULAR/ACR	272/472 (58%)	5/128 (4%)	123/128 (96%)	200/472 (42%)	52%	96%	98%	35%

all three algorithms likely reflects undetected cases of SLE resulting from low detection of clinical and laboratory criteria (such as arthralgia and ANA tests) that are not consistently documented in structured data in the medical record. Use of structured data improves portability of the algorithms to other EHR datasets, but may have reduced the ability of the algorithms to detect important/highly weighted classification criteria that are documented primarily in free text notes. All three algorithms may improve through use of natural language processing (NLP) of physician notes for criteria that were difficult to detect using only diagnosis codes and labs, but may reduce portability as a result of the customization required for NLP to be effective.

Funding Source(s): National Institute of Arthritis and Musculoskeletal and Skin Diseases (R21 AR072263) and NHGRI U01HG006388

89 THE DILATATION OF MAIN PULMONARY ARTERIAL MEASURED BY CHEST MULTISLICE COMPUTED TEMOGRAPHY PREDICT POOR LONG-TERM OUTCOME IN CONNECTIVE TISSUE DISEASE ASSOCIATED PULMONARY ARTERIAL HYPERTENSION

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10.1136/lupus-2019-lsm.89

Background Pulmonary arterial dilatation is a common manifestation of chest multislice computed tomography (MSCT) in patients with pulmonary arterial hypertension (PAH). The exact clinical significance of these phenomena has not been clarified in connective tissue disease (CTD) associated PAH. We want to observe whether the dilatation of pulmonary arterial was associated with poor outcome in patients with CTD-PAH.

Abstract 89 Table 1 Baseline demographic and clinical characteristics of survivors and non-survivors with 140 CTD-PAH

	All Patients	Survivors	non-Survivors	P value
Subjects,n	140	104(74%)	36(36%)	----
Female,n	132(94%)	100(96%)	32(89%)	0.1055
Age,years	44.32±16.11	43.08±1.56	47.92±2.15	0.1234
Underlying CTD				
SLE,n	60(43%)	45(43%)	15(42%)	0.8670
pSS,n	27(19%)	22(21%)	5(14%)	0.3410
SSc,n	17(12%)	9(9%)	8(22%)	0.0317
Overlap Syndrome,n	16(11%)	12(12%)	4(11%)	0.9446
UCTD,n	9(6%)	7(7%)	2(6%)	0.8043
MCTD,n	6(4%)	5(5%)	1(3%)	0.6042
RA,n	4(3%)	3(3%)	1(3%)	0.9735
DM,n	1(1%)	1(1%)	0	0.5549
Duration of CTD,months	72.10±7.66	64.68±8.43	91.65±16.63	0.0640
Duration of PAH,months	10.83±1.92	10.16±2.24	12.77±3.73	0.0524
WHO FC				
I-II,n	63(45%)	34(33%)	7(19%)	<0.0001
III-IV,n	77(55%)	70(67%)	29(81%)	----
6MWD,m	359.90±21.81	385.80±19.62	278±57.16	0.0239
NT-proBNP,ng/l	2787±538.30	1628±35.56	6231±1842	<0.0001
PASP,mmHg	69.24±1.59	67.24±1.81	74.49±3.21	0.0427
MPA diameter,mm	35.52±0.43	34.72±0.48	37.84±0.86	0.0012
RPA diameter,mm	23.63±0.31	23.23±0.36	24.76±0.60	0.0268
LPA diameter,mm	18.95±0.30	18.46±0.34	20.36±0.57	0.0065
AAo diameter,mm	30.60±0.42	30.25±0.49	31.63±0.84	0.1492
DAo diameter,mm	22.33±0.27	22.05±0.31	23.14±0.55	0.0805
MPA/AAo	1.18±0.02	1.18±0.02	1.20±0.03	0.5656
MPA/DAo	1.62±0.02	1.61±0.03	1.64±0.05	0.7047