**Supplemental Material**.

1. Hospital International Classification of Disease Adaptation (HICDA), International Classification of Diseases (ICD)-9 and ICD-10 codes and laboratories used to screen for systemic lupus erythematosus cases in the Rochester Epidemiology Project from 1976 to 2018.

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| **HICDA Code** | **Code Description** |
| 07161110 | LUPUS, NEPHRITIS |
| 07161111 | LUPUS, GLOMERULONEPHRITIS |
| 07161112 | LUPUS, GLOMERULITIS |
| 07161113 | LUPUS, RENAL INVOLVEMENT |
| 07161114 | LUPUS, NEPHROPATHY |
| 07161115 | NEPHRITIS, LUPUS |
| 07161116 | GLOMERULONEPHRITIS, LUPUS |
| 07161117 | NEPHROPATHY, LUPUS |
| 07161120 | LUPUS, ERYTHEMATOSUS, DISSEMINATED |
| 07161121 | LUPUS, ERYTHEMATOSUS, SYSTEMIC |
| 07161122 | LUPUS, NOS (DISSEMINATED) |
| 07161123 | SYNDROME, ROWELL, (RAULL'S) (ROULL'S) |
| 07161130 | LUPUS, ERYTHEMATOSUS, DISSEMINATED, DRUG-INDUCED |
| 07161131 | LUPUS, ERYTHEMATOSUS, SYSTEMIC, DRUG-INDUCED |
| 07161210 | DISEASE, LIBMAN-SACKS |
| 07161250 | LUPUS, CEREBRITIS |
| 07161252 | LUPUS, ERYTHEMATOSUS WITH CNS INVOLVEMENT |
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| 06954110 | LUPUS, ERYTHEMATOSUS |
| 06954111 | LUPUS, NOS (NONTUBERCULOUS, NOT DISSEMINATED) |
| 06954210 | LUPUS, DISCOID, ERYTHEMATOSUS |
| 06954211 | LUPUS, DISCOID |
| 06954220 | LUPUS, DISCOID, EYELID |
| 07161140 | LUPUS, PANNICULITIS |
| 07161141 | PANNICULITIS, LUPUS |
| 07748213 | CHILBLAIN, HUTCHINSON'S (LUPUS) |
| 07748210 | PERNIO |
| 07748212 | CHILBLAIN, NOS |
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| 02865130 | SYNDROME, ANTI PHOSPHOLIPID ANTIBODY (created 1988) |
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| 07169110 | DISEASE, COLLAGEN (CONNECTIVE TISSUE#) |
| 07169111 | DISORDER, CONNECTIVE TISSUE |
| 07169112 | DISEASE, CONNECTIVE TISSUE, NOS |
| 07169114 | DISORDER, AUTO-IMMUNE (CONNECTIVE TISSUE#), SEE ALSO DISEASE |
| 07169115 | REACTION, AUTO-IMMUNE |
| 07169116 | INFLAMMATION, CONNECTIVE TISSUE, NEC |
| 07169120 | DISEASE, CONNECTIVE TISSUE, MIXED |
| 07169250 | SYNDROME, OVERLAP (CONNECTIVE TISSUE) |
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| 02865112 | LUPUS, ANTI-INHIBITOR/ANTICOAGULANTS |
| 02865110 | CIRCULATING ANTICOAGULANT |
| 02865111 | ANTICOAGULANTS, CIRCULATING |
| 34727210 | ABNORMAL, SEROLOGY FOR SYPHILIS, FALSE POSITIVE |
| 34727211 | ABNORMAL, RPR, FALSE POSITIVE |
| 34728115 | SYNDROME, ANTICARDIOLIPIN |
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| 34729211 | HYPOCOMPLEMENTEMIA |
| 34729210 | ABNORMAL, COMPLEMENT (CH)(C)(CH50)(C4) |
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| 34728111 | ANTIBODY-ANTIGEN REACTIONS (ANTINUCLEAR ANTIBODIES) |
| 34728118 | ABNORMAL, DNA (includes anti dsDNA) |
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| 34728220 | TEST, COOMBS' (POSITIVE) |
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| **ICD-9 Code** | **Code Descriptions** |
| 710.0 | SYSTEMIC LUPUS ERYTHEMATOSUS (includes nephrotic involvement, Libman-Sacks disease) |
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| 695.4 | LUPUS ERYTHEMATOSUS |
| 373.34 | DISCOID LUPUS ERYTHEMATOSUS OF EYELID |
| 991.5 | Chilblain |
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| 710.8 | OTHER SPECIFIED DIFFUSE DISEASES OF CONNECTIVE TISSUE |
| 710.9 | UNSPECIFIED DIFFUSE CONNECTIVE TISSUE DISEASE |
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| **ICD-10 Code** | **Code Description** |
| M32.0 | Drug-induced systemic lupus erythematosus |
| M32.10 | Systemic lupus erythematosus, organ or system involvement unspecified |
| M32.11 | Endocarditis in systemic lupus erythematosus |
| M32.12 | Pericarditis in systemic lupus erythematosus |
| M32.13 | Lung involvement in systemic lupus erythematosus |
| M32.14 | Glomerular disease in systemic lupus erythematosus |
| M32.15 | Tubulo-interstitial nephropathy in systemic lupus erythematosus |
| M32.19 | Other organ or system involvement in systemic lupus erythematosus |
| M32.8 | Other forms of systemic lupus erythematosus |
| M32.9 | Systemic lupus erythematosus, unspecified |
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| L93.0 | Discoid lupus erythematosus |
| L93.1 | Subacute cutaneous lupus erythematosus |
| L93.2 | Other local lupus erythematosus |
| H01.121 | Discoid lupus erythematosus of right upper eyelid |
| H01.122 | Discoid lupus erythematosus of right lower eyelid |
| H01.123 | Discoid lupus erythematosus of right eye, unspecified eyelid |
| H01.124 | Discoid lupus erythematosus of left upper eyelid |
| H01.125 | Discoid lupus erythematosus of left lower eyelid |
| H01.126 | Discoid lupus erythematosus of left eye, unspecified eyelid |
| H01.129 | Discoid lupus erythematosus of unspecified eye, unspecified eyelid |
| T69.1 | Chilblain |
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| D68.61 | Antiphospholipid syndrome |
| D68.62 | Lupus anticoagulant syndrome |
| D68.312 | Antiphospholipid antibody with hemorrhagic disorder |
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| M35.1 | Other overlap syndromes |
| M35.8 | Other specified systemic involvement of connective tissue |
| M35.9 | Systemic involvement of connective tissue, unspecified |
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| **Laboratory test** |
| Antinuclear antibodies |
| DS-DNA ANTIBODY |
| ANTI-SM |
| LUPUS ANTICOAGULANT |
| Anticardiolipin, IgG, IgM, IgA |
| BETA 2 GLYCOPROTEIN 1 IgG, IgM, IgA |
| C4 COMPLEMENT, S |
| C3 COMPLEMENT, S |

1. Supplementary statistical analyses

Case finding and ascertainment

Clinical data for these criteria were thoroughly abstracted through medical record review. If a disease manifestation could be better explained by a condition other than SLE, it was not counted towards the criteria. Antiphospholipid antibodies (aPL) started to be tested in the 1980’s, thus in the rare case of a patient having a false positive serologic test for syphilis predating the testing for aPL, we attributed the two aPL-associated criteria points to those patients who had a false positive serologic test for syphilis. Incident SLE cases were defined according to the EULAR/ACR from January 1, 1976 to December 31, 2018. 1 We used the EULAR/ACR criteria because it classifies more patients with SLE in population-based studies than the SLICC and ACR97 criteria.2 The SLE incidence date was defined as the earliest date of criteria fulfilment. A case was considered to be incident if the patient was an Olmsted County resident prior to the SLE incidence date. Data regarding age, sex, self-reported race and ethnicity (Hispanic, and non-Hispanic White, Asian and Black), date of first documentation of each manifestation, date of diagnosis, date of last follow up, vital status, clinical characteristics and laboratory findings were recorded. To be considered a prevalent case, patients needed to reside in Olmsted County and meet the case definition prior to our four dates of point prevalence: January 1st of 1985, 1995, 2005 and 2015. To fully capture the prevalent cases, those who migrated to Olmsted County after diagnosis (and were therefore under treatment) were included in the prevalence estimation if they had 7 EULAR/ACR points and a physician diagnosis.

The review of all medical records and data extraction was performed using standardized Research Electronic Data Capture (REDCap) data capture tools hosted at Mayo Clinic.3 4 REDCap is a secure, web-based software platform designed to support data capture for research studies, providing 1) an interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; and 3) automated export procedures. Data abstractors were extensively trained, all the abstractors had a medical degree. All abstracted data were reviewed until each abstractor achieved 95% agreement with the first author. Audits of 10% random samples of the abstracted patients were performed throughout the data collection. The first author performed an independent review of all the patients who met the EULAR/ACR criteria to confirm that the disease manifestations were correctly attributed to SLE.

The SLE damage index 2000 was scored retrospectively at the time of classification. The retrospective assessment of SLEDAI has been previously validated.5

Statistical analysis

To explore the increasing racial diversity in the county potentially affecting the incidence of SLE, we estimated the overall incidence rates in the non-Hispanic White and racial and ethnic minority populations during the 1999-2018 timeframe and examined differences in incidence rates between the two groups using Poisson regression methods. The REP contains race and ethnicity information for the whole population since 1999, thus only incident cases since that year were included in this analysis. Trends in SLE incidence from 1999 to 2018 in the general county population and in the White county population were also assessed.

To investigate if milder cases are being identified over the years, a score was calculated as a proxy for disease severity and its relationship to the corresponding SLE incidence date was assessed using linear regression. The proxy score was derived using the EULAR/ACR criteria considering only additional criteria dates that occurred between the SLE incidence date and one year after the SLE incidence date. The proxy scores were graphically illustrated by SLE incidence date along with the smoothed conditional mean line plotted using local polynomial regression fitting methods.

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3. Harris PA, Taylor R, Thielke R, et al. Research electronic data capture (REDCap)--a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 2009;42(2):377-81. doi: 10.1016/j.jbi.2008.08.010 [published Online First: 2008/10/22]

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