in 18% of SLE, 13% of DM and 1% of non-SLE, non-DM cohorts, and baseline HF in 6% of SLE, 5% of DM and <1% of non-SLE/non-DM patients. HF hospitalization rates per 1,000-person years were similar in SLE and DM, both higher than the general population (table 1). Adjusted HRs for first HF hospitalizations were higher among DM and SLE patients compared to non-SLE, non-DM patients. When patients with baseline HF were excluded, HRs for first HF hospitalizations were similar in SLE and DM.

Conclusion SLE and DM patients had significantly higher rates of HF hospitalization than age- and sex-matched general Medicaid patients. The risk of HF hospitalization was >2 x higher among both SLE and DM patients, with important implications for improving care for SLE.

Abstract CS-19 Table 1 Rates and multivariable hazard ratios for hospitalizations for HF* among SLE patients and age- and sex-matched DM patients, compared to the general (non-SLE, non-DM) medicaid population, 2007–2010

Cohort†	Events	Person-years	Rate‡ (95% CI)	HR§ (95% CI)	
				Including all patients	Excluding patients with baseline HF
General Medicaid	620	2 50 281	2.5 (2.3–2.7)	1.0 (ref)	1.0 (ref)
SLE	837	73 299	11.4 (10.7–12.2)	**2.4 (2.2–2.7)**	**2.5 (2.3–2.8)**
Diabetes Mellitus	1675	1 45 692	11.5 (11.0–12.1)	**4.0 (3.6–4.3)**	**2.7 (2.4–2.9)**

*HF: Heart failure events by hospitalization ICD-9 diagnosis codes 402.01, 402.11, 402.91, 404.01, 404.11, 404.91, 404.03, 404.13, 404.93, and 428.xx, but excluding 398.91 rheumatic heart disease (Chen J, Circulation, 2013).
†Cohort: SLE cohort defined as>3 SLE ICD-9 codes (710.0), each separated by >30 days; DM cohort defined as>3 ICD-9 codes (249.XX, 250.XX, 357.2, 362.01–362.06, 366.41), 1:2 matched by age, sex to SLE cohort; General Medicaid cohort defined as any non-SLE, non-DM ICD-9 code on same date as SLE index date, 1:4 matched by age, and sex to SLE cohort
‡Rate: Rate of first HF hospitalization events per 1000 person-years of follow up
§HR: Hazard ratio for first HF hospitalization event adjusted for age, sex, race/ethnicity, US region of residence, zip-code level socioeconomic status, Charlson comorbidity index; Two separate models: 1) including all patients, 2) excluding patients who had baseline HF diagnosis

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CS-20 A SYSTEMATIC REVIEW OF EMPLOYMENT OUTCOMES OF ADULTS WITH CHILDHOOD-ONSET SYSTEMIC AUTOIMMUNE RHEUMATIC DISEASES

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Background With improved survival, most patients with childhood-onset systemic autoimmune rheumatic diseases (ChildSARDs) now live to become adults. Employment is a major milestone of independence in adulthood and has obvious impacts on socioeconomic attainment. Employment is associated with access to health insurance and healthcare. Therefore, employment is an important outcome. We aim to systematically review employment outcomes of adults diagnosed with ChildSARDs.

Methods Systemic autoimmune rheumatic diseases (SARDs) include: systemic lupus erythematosus (SLE), inflammatory myositis, Sjogren's syndrome, systemic sclerosis, and systemic vasculitides. We developed a search strategy with an academic librarian and searched MEDLINE, Embase, and Scopus for full-length English articles (January 1990 and November 2017). If a study contained ChildSARDs and adult-onset SARD adults, we contacted the authors for clarification on the number of ChildSARD patients and their employment outcomes. We extracted information on study design, employment outcome measures, prognostic factors, and confounders using a standard data collection form. Study quality was graded independently by 2 reviewers using the Quality in Prognosis Studies (QUIPS) risk-of-bias tool.

Results Of 2109 abstracts, 5 publications from 4 studies (4 SLE, 1 juvenile dermatomyositis) were included. There were 296 patients (257 SLE, 39 JDM); study participants had a mean age of 23.3–29 years with a mean disease duration of 7.6–15 years. Only 1 study was longitudinal (≥3 repeated outcome measurements). 80% were from North America. No study made comparisons of the employment outcomes of patients with the general population. Moderate to high risks-of-bias were commonly found in the domains of study population (100%), prognostic factor measurement (80%), and confounding (80%). 47% of the patients were working (full/part-time), 21% were studying and the remaining 32% were not working. Two studies assessed work productivity, and one measured work characteristics. Income was reported in two studies. Prognostic factors for employment identified in 3 studies were generally either disease characteristics or work-related characteristics.

Conclusion There is scarce information on employment outcomes of ChildSARDs adults in literature. There was little information on work characteristics and productivity; prognostic factor testing was limited. Important study domains, such as population and confounding, are at moderate-high risk-of-bias. Future studies should aim to study more ChildSARD diseases. Careful attention should be paid to study design, and investigators should collect more comprehensive information on employment beyond work status, compare patient outcomes to the general population, and test for the effects of both sociodemographic and disease related factors within the same models.

CS-21 A SYSTEMATIC REVIEW OF PROGNOSIS STUDIES IN CHILDHOOD-ONSET SYSTEMIC AUTOIMMUNE RHEUMATIC DISEASES

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Background With tremendously improved survival, many adults live with childhood-onset (onset <18 years) systemic autoimmune rheumatic diseases (ChildSARDs) which are systemic lupus erythematosus (SLE), Sjogren's syndrome, idiopathic inflammatory myositis (IIM), systemic sclerosis, and systemic vasculitides. Little is known about ChildSARD outcomes in adulthood. We systematically reviewed prognosis studies performed on ChildSARD adults to summarize the

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scope of outcomes studied, and evaluate for methodological issues.

Methods With an academic librarian, we developed search strategies in MEDLINE and Embase (January 1990 – May 2017) to search for full-length English articles. Our strategies were iteratively fine-tuned and finalized after peer-review by librarians. We supplemented the search with hand-searching of the references of review articles and included articles. If a study included both pediatric and adult subjects, we included the study only if the median or mean age at outcome ascertainment was ≥18 years. Information about outcomes and study designs was recorded. All studies were graded independently by two reviewers using the Quality in Prognosis Studies risk-of-bias tool.

Results Of 14 100 articles, 26 publications were included in this review. Of these, only 10 (36%) focused on adults; while the rest studied mixed adult and paediatric populations. Two studies (7%) were longitudinal (repeat measures on ≥3 occations) while the remainder assessed outcomes on a single occasion. About 80% of studies were published within 2010–2017. The most commonly studied diseases were SLE (61%), IIM (18%), and systemic sclerosis (11%). The most commonly reported primary outcomes were organ damage (29%), cardiovascular outcomes (14%), and mortality (14%). The mean ages at outcome assessment were 19.5–46.8 years for adult-only studies and 19.3–35 years for mixed studies. Moderate to high risk-of-bias was found in all studies for study participation, 90% for study attrition, 61% for prognostic factor measurement, 36% for outcome measurement, 89% for confounding, and 54% for statistical analysis.

Conclusion There is need for more information about adulthood outcomes of ChildSARDs. Longitudinal data was especially lacking. We recommend that future studies on ChildSARD outcomes be undertaken in the framework of a longitudinal cohort. Adult outcomes should be separately reported from pediatric outcomes in a mixed cohort. Study populations should be clearly defined to allow for accurate MESH coding so as to facilitate easy searching for such information and for knowledge dissemination. Careful attention should be paid during study design to reduce bias in choice of study populations, especially in accounting for attrition and confounding.

CS-22 CONFIRMATORY FACTOR ANALYSIS OF THE PATIENT-REPORTED PERCEIVED DEFICITS QUESTIONNAIRE IN SYSTEMIC LUPUS ERYTHEMATOUS: CAUTIONS FOR USE OF SUBSCALES

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Background Approximately 38% of adults living with Systemic Lupus Erythematosus (SLE) experience cognitive impairment (CI) that can detrimentally affect employment, disease self-management, and quality of life. Identifying those with SLE related CI is critical, but is difficult to do in busy and resource-limited clinics. The patient-reported 20-item Perceived Deficits Questionnaire (PDQ-20), used to screen for SLE related CI, could be less time and cost-burdensome than other objective instruments. However, there is a dearth of published measurement property evidence for using the PDQ-20 with SLE patients. In adults with Multiple Sclerosis the PDQ-20 is purported to have four factors (subscales): attention/concentration, retrospective memory, prospective memory, and planning/organization. This structure has not been examined in adults with SLE. The purpose of this study is to examine the factor structure and the internal consistency of the PDQ-20 in an SLE cohort.

Methods Consecutive SLE patients aged 18–65 years were recruited from a single rheumatology center between July 2016 and March 2018. Patients completed the PDQ-20. Analyses included socio-demographic descriptive analyses and confirmatory factor analyses (CFA) of the purported PDQ-20 four-factor structure. Sample size calculations indicated that a cohort of n=177 was sufficient to perform the CFA (power=0.99). Analysis was completed on returned baseline PDQ-20 data using SAS® software.

Results Patient demographics are presented in table 1. There was no missing PDQ-20 data. CFA model fitting was adequate (standardized root mean square residual=0.05; root mean square error of approximation=0.10; Bentler comparative fit index=0.90). All factor loadings were statistically significant (factor loading range 0.55–0.88; all t-value >9.82). All factors highly correlated with each other (correlation range: 0.87–0.97; all $p<0.01$). Lagrange Multiplier (LM) tests indicated that multiple alternate item-factor pathways could improve the four-factor model (ten largest significant LM statistics range from 7.92–20.78; new possible pathways for 7 items to other factors). Item 19 ('forget to take medication') had low reliability to its purported factor ('prospective memory'; $R^2=0.30$). The internal consistency (Cronbach's alpha) for the four factors ranged from 0.82 to 0.91.

Abtract CS-22 Table 1 Socio-demographic information of recruited patients (n=208) who returned and did not return PDQ-20*

	PDQ-20 returned (n=177)	PDQ-20 not returned (n=31)
Sex (% female)	89.8%	83.9%
Age at study visit (mean±SD years)	42.75±12.12	41.97±12.75
Age at SLE diagnosis (mean±SD years)	28.16±10.48	28.57±10.19
Highest education level obtained at study visit (% of sample¶)	High-school or less 25.1% College/University 74.9%	High-school or less 16.1% College/University 83.9%
Employment status at study visit (% of sample¶)	Employed 51.7% Retired 2.9% Homemaker 6.9% Student 5.2% Disability/sick leave 27.6% Looking for work 4.0% Other 1.7%	Employed 73.3% Retired 0.0% Homemaker 3.3% Student 6.7% Disability/sick leave 16.7% Looking for work 0.0% Other 0.0%

*All demographic variables not statistically significantly different between groups (p>0.05); all data from baseline visits of longitudinal study.
¶n=170 (7 patients missing data) for returned group; n=31 for not returned
¶n=174 (3 patient missing data) for returned; n=30 (1 missing) for not returned

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