

Reasons for failure to receive pneumococcal and influenza vaccinations among immunosuppressed patients with systemic lupus erythematosus



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ABSTRACT

Objective: To better understand why immunosuppressed individuals with systemic lupus erythematosus (SLE) fail to receive influenza and pneumococcal vaccines.

Methods: These cross-sectional data were derived from the 2009 cycle of the Lupus Outcomes Study (LOS), an annual longitudinal telephone survey of individuals with confirmed SLE. Respondents were included in the analysis if they had taken immunosuppressive medications in the past year. We assessed any prior receipt of pneumococcal vaccine and influenza vaccine in the past year, and then elicited reasons for not receiving vaccination. We used bivariate statistics and multivariate logistic regression to assess frequency and predictors of reported reasons for not obtaining influenza or pneumococcal vaccines.

Results: Among 508 respondents who received immunosuppressants, 485 reported whether they had received vaccines. Among the 175 respondents who did not receive an influenza vaccine, the most common reason was lack of doctor recommendation (55%), followed by efficacy or safety concerns (21%), and lack of time (19%). Reasons for not receiving pneumococcal vaccine ($N = 159$) were similar: lack of recommendation (87%), lack of time (7%), and efficacy or safety concerns (4%). Younger, less-educated, non-white patients with shorter disease duration, as well as those immunosuppressed with steroids alone, were at the greatest risk for not receiving indicated vaccine recommendations.

Conclusions: The most common reason why individuals with SLE did not receive pneumococcal and influenza vaccines was that physicians failed to recommend them. Data suggest that increasing vaccination rates in SLE will require improved process quality at the provider level, as well as addressing patient concerns and barriers.

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Background

Vaccine-preventable diseases remain common causes of morbidity and mortality in the United States. Nevertheless, in 2011–2012, only 50% of children and 40% of adults received an influenza vaccine [1]. Therefore, improving vaccination rates in the general population has become a national health care priority, targeted by initiatives such as Healthy People 2020 and performance measurement programs such as the Physician Quality Reporting System and Meaningful Use.

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As estimated five-year survival in systemic lupus erythematosus (SLE) has improved from <50% to >95% over the past 50 years, preventive care has become increasingly important [2]. Infection is now the third-leading cause of death in individuals with SLE in developed countries. Nearly half of those deaths are attributed to pneumonia, making vaccination against influenza and pneumococcus critical to prevent mortality [3]. Recent literature also suggests that hospitalizations for pneumonia among individuals with SLE are common and may be preventable [4]. Currently, vaccination against pneumococcus and influenza is recommended for all immunosuppressed SLE patients [5].

Nonetheless, previous work has shown that only 50–60% of SLE patients receive indicated influenza and pneumococcus vaccinations, and only 40% are up-to-date on both vaccines [6]. This is similar to findings in other chronic diseases such as rheumatoid arthritis, inflammatory bowel disease, and diabetes [7,8]. Predictors of receiving vaccinations in previous studies have included

older age, college education, increased physician visits, and lower disease activity. However, reasons why individuals with SLE fail to receive vaccines have not been previously explored. Causes may include lack of knowledge about vaccination recommendations, competing demands of complex SLE-related care, concerns about vaccine safety in immunocompromised hosts, lack of coordination among providers, and lack of access to vaccines.

The goal of this study is to explore provider-based (e.g., recommendation of vaccines), patient-based (e.g., vaccine beliefs), and health system-based (e.g., vaccine availability) reasons regarding why immunosuppressed individuals with SLE fail to receive influenza and pneumococcal vaccines.

Methods

Data source

The study cohort consisted of 814 individuals participating in the 2009 Lupus Outcomes Study (LOS) survey, an ongoing longitudinal study of persons with SLE from the United States. Details regarding eligibility and enrollment of participants have been described elsewhere [9]. Briefly, respondents were recruited from an existing cohort, the UCSF Lupus Genetics Project [10], developed from a combination of academic rheumatology clinics, community rheumatologists, and various non-clinical sources (e.g., support groups, conferences, newsletters, and websites). All participants had a confirmed diagnosis of SLE according to chart review supervised by a rheumatologist. Respondents participated in annual structured telephone interviews containing validated items pertaining to demographic and socioeconomic characteristics, SLE disease activity and manifestations, medications, general health, mental health, cognition, employment, health care utilization, and health insurance coverage. Interviews are conducted throughout the year. The study was approved by the UCSF Committee on Human Research, and all participants provided written informed consent.

Measures

The primary outcome measure was patient-reported reason for failure to receive influenza or pneumococcal vaccine. We assessed any prior receipt of pneumococcal vaccine and influenza vaccine in the past year. Respondents who did not receive a vaccine were asked whether their physician had recommended it (Fig. 1). If the

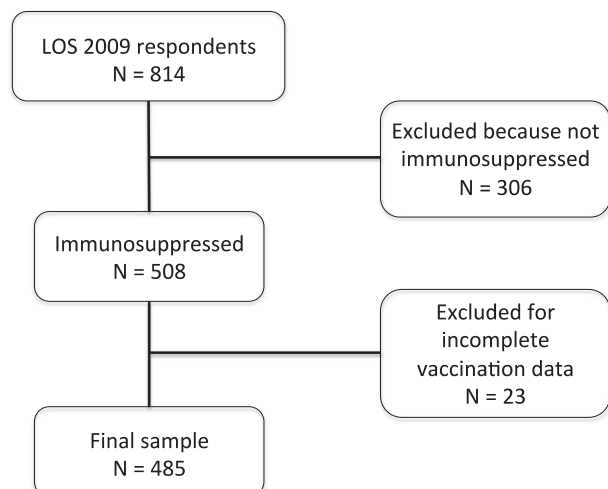


Fig. 1. Survey questions assessing vaccination status in the 2009 wave of the Lupus Outcomes Study.

vaccine was recommended but not received, interviewers elicited reasons for not receiving vaccination using categorical responses (efficacy or safety concerns, lack of time or motivation, vaccine availability, cost or access to care, and allergy). Responses not represented in the categories were recorded as free text and later categorized by two reviewers (E.L. and L.T.), who resolved differences by consensus.

Sociodemographic predictor variables included age, sex, race/ethnicity (non-Hispanic white vs. all other), and education (bachelor's degree or higher vs. lower education, given overall high educational attainment in the cohort).

Health insurance status was categorized as employer-sponsored, Medicare, Medicaid, or no insurance. We assessed whether respondents had visited a generalist MD (internist, internal medicine specialist, family doctor, or general practice doctor) in the past year, and whether they had visited a rheumatologist in the past year. Respondents were categorized as immunosuppressed if they reported use of steroid medications (oral or IV glucocorticoids), DMARD medications (azathioprine, mycophenolate mofetil, mycophenolic acid, methotrexate, tacrolimus, cyclosporine, leflunomide, or cyclophosphamide), or biologic medications (etanercept, adalimumab, infliximab, abatacept, or rituximab) in the past year. Based on reported use of immunosuppressive medications, we created three categories of immunosuppression for our primary analysis: (1) steroids alone, (2) DMARD with or without steroids, and (3) biologic with or without DMARD or steroids. Additional variables used to explore the effect of the intensity of immunosuppression included current steroid dose, low-intensity immunosuppression (prednisone ≤ 5 mg daily without use of other immunosuppressive drugs), high steroid dose (> 10 mg for > 90 days), and high-intensity immunosuppression (high steroid dose with concomitant DMARD or biologic use).

Disease-related predictor variables included disease duration and disease activity assessed with a validated, self-reported measure, i.e., the Systemic Lupus Assessment Questionnaire (SLAQ) [11]. The influence of renal disease was explored but was not found to significantly alter the likelihood of vaccine recommendation in bivariate or multivariate analysis and therefore was not included in the final models.

Study sample

Respondents were included in the analyses if they had taken any immunosuppressive medications in the past year ($N = 508$) and were therefore qualified for receipt of both influenza and pneumococcal vaccinations. We excluded those who failed to report whether they had received influenza and pneumococcal vaccines. Survey questions used to assess vaccination status and vaccine recommendation are displayed in Figure 2. Reasons for not receiving a vaccination were assessed among all individuals who reported having not received a vaccination ($N = 175$ for influenza and $N = 159$ for pneumococcal). When assessing predictors of receiving a vaccine recommendation, all individuals who had received a vaccination or reported physician recommendation of vaccination were included in the vaccine-recommended group ($N = 389$ for influenza and $N = 346$ for pneumococcal). These respondents were compared with individuals who did not receive vaccination and reported that their physician had not recommended vaccination ($N = 96$ for influenza and $N = 139$ for pneumococcal).

Statistical analysis

Characteristics of the cohort and reasons for failure to receive vaccinations were assessed using summary statistics. We used

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