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Assessing the Need for Improved Access to Rheumatology Care: A Survey of Massachusetts Community Health Center Medical Directors

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Abstract

Objective—Access to rheumatology care can expedite diagnosis and treatment of rheumatic diseases and reduce disparities. We surveyed community health center (CHC) medical directors to evaluate rheumatology care in underserved areas and potential strategies for improvement.

Methods—We identified 77 Massachusetts CHCs that provide adult medical services and sent a 40-item survey to their physician medical directors. Survey questions assessed the centers' prevalence of rheumatic diseases, prescribing practices of immunosuppressive medications, and possible interventions to improve care. We compared CHC characteristics and rheumatology-specific items and then stratified our data by the response to whether improved access to rheumatology care was needed. Qualitative data were analyzed thematically.

Results—36 CHC physician medical directors returned surveys (47% response rate). 55% indicated a need for better access to rheumatology care. 86% of CHC physicians would not start a patient with rheumatoid arthritis on a disease modifying anti-rheumatic drug; 94% would not start

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Disclosures

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a patient with systemic lupus erythematosus on an immunosuppressant. When we compared CHCs that reported needing better access to rheumatology care to those that did not. The former described was a significantly greater percentage of patients with private insurance or Medicaid who required outside rheumatology referrals ($p<0.05$). Language differences and insurance status were highlighted as barriers to obtaining rheumatology care. 16 (57%) directors ranked the patient navigator—a layperson to assist with care coordination—as their first choice intervention.

Conclusions—CHC medical directors expressed a need for better access to rheumatology services. A patient navigator for rheumatic diseases was proposed to help improve care and reduce health disparities.

Keywords

access to care; health disparities; rheumatoid arthritis; systemic lupus erythematosus; community health

Introduction

Early access to disease-modifying anti-rheumatic drugs (DMARDs) can dramatically change the course of rheumatoid arthritis (RA) (1). Similarly, consistent monitoring and appropriate use of immunosuppressants for systemic lupus erythematosus (SLE) can reduce morbidities including end-stage renal disease and premature coronary artery disease (2). Among patients with RA, access to rheumatologists is associated with reduced racial disparities in DMARD use, and overall improved quality of care and outcomes (3, 4). SLE patients in lower socioeconomic status groups are less likely to identify a rheumatologist as their primary SLE provider and travel significantly further for their care (5). In addition, SLE patients cared for by non-rheumatologists are rarely prescribed hydroxychloroquine, a medication central to disease control (6). Differences in access to subspecialty care may contribute to the known disparities in SLE morbidity and mortality by income, sex, race and ethnicity.

We investigated current access to rheumatology subspecialty care for underserved patients with RA and SLE across community health centers (CHCs) in Massachusetts. More than 1,100 federally-qualified CHCs operate 8,100 delivery sites in medically underserved areas in the U.S. treating nearly 20 million patients each year (7). In 2011, Massachusetts' federally-qualified CHCs provided care to over 600,000 residents; 66% were at or below 100% of poverty level, 21% were uninsured, 42% were Medicaid beneficiaries and 9% were enrolled in Medicare (8). The U.S. Patient Protection and Affordable Care Act of 2010 established the Community Health Center Fund that provides \$11 billion over five years to CHCs nationwide (9). A central priority is the development and implementation of innovative, high-value patient care delivery systems such as the patient-centered medical home model, at CHCs to reduce healthcare disparities (10). Massachusetts has been a leader in health care reform and in the promotion of the patient-centered medical home to provide coordinated, team-based care (11, 12). However, the relationship between this model and subspecialty care has yet to be systematically defined (13, 14). Therefore, a better understanding of the need for access to rheumatology services at CHCs in Massachusetts will aid in the design of innovative strategies to improve healthcare delivery under the Affordable Care Act.

To conduct a rheumatology care needs assessment, we partnered with a community-based organization in Massachusetts, the Center for Community Health Education Research and Service, Inc. We surveyed physician medical directors of CHCs to better understand barriers to subspecialty care in medically underserved areas. We also inquired about potential community-based interventions that have been implemented for other chronic diseases

including a patient navigator (a layperson from the community who provides education and advocacy to help guide a patient through the healthcare system), telemedicine (with phone or internet-based contact between primary care providers and subspecialists), and a health “passport” (a booklet of personalized health information and educational material carried by the patient), to improve care for RA and SLE patients (15–20). We hypothesized that there would be a significant need for better access to rheumatologists for these medically complex patients, and that CHC medical directors would be appropriately positioned to address this important and timely issue (21–23).

Materials and Methods

Survey Development

We developed a 40-question survey informed by two instruments developed for prior studies. The first study validated a survey that examined access to subspecialty care for uninsured patients at an academic teaching hospital (24). The second modified this survey based on key informant interviews to investigate access to off-site specialty services among patients at CHCs (13). We developed additional items to specifically address rheumatology access and modified the questions after piloting the survey with 5 physicians practicing at CHCs affiliated with Brigham and Women’s Hospital. Final survey questions inquired about CHC characteristics, availability of subspecialty care by patient insurance status, number of CHC patients with RA and SLE, and prescribing practices of DMARDs for RA and immunosuppressants for SLE (see Appendix 1 **available online only at** www.jclinrheum.com for full survey). We also proposed four potential interventions previously studied for other chronic diseases: 1) a rheumatic disease-specific patient navigator—a layperson from the community who would provide a range of advocacy and coordination services based on a patient’s individual needs, 2) telemedicine—regular communication either by teleconference, phone or email between the CHC’s primary care physicians and academic rheumatologists, 3) a trained nurse practitioner on-site who would be affiliated with a remote rheumatologist, and 4) a rheumatic disease-specific health passport – a booklet containing both educational materials and personalized health information (15–17). We asked physicians to rank their preferred interventions and for written feedback about each. The Partners Healthcare Human Research Committee approved this study and all materials used.

Participant Identification

We first identified 50 Massachusetts CHC organizations and 303 federally-supported sites listed by the Massachusetts League of Community Health Centers and the National Association of Community Health Centers (8). We then identified 105 health centers that provided adult internal medicine care, had a stand-alone facility, and a designated physician medical director, confirmed by phone conversation. Similar to prior studies, we chose to survey physician medical directors because of their knowledge of the healthcare system, their insight into the practices of multiple healthcare providers, and their personal experience with patient care (13, 21). After accounting for multiple CHC sites with a shared medical director, 77 directors were mailed survey questionnaires. The surveys were first distributed in June 2011 and responses were collected through December 2011. In partnership with the Center for Community Health Education Research and Service, Inc., follow-up telephone calls were made, and e-mails, faxes and additional mailings were sent to encourage survey completion. We provided a \$50 gift card to all participants.

Analysis

For each participating CHC, we determined urban versus rural location using the CHC’s ZIP code and U.S. Census housing data (25). We assessed location in a federally-defined

medically underserved area using U.S. Department of Health Resources and Services Administration data (26).

Survey data was entered and verified for accuracy (TLN, CHF). Responses to questions were categorized by CHC characteristics and RA or SLE-specific information. Means and standard deviations were calculated for all numerical responses. Data were then stratified by the director's response to the question of whether improved access to rheumatology care was needed and chi-square tests were used to calculate p-values. Analyses were conducted in SAS, (Version 9.2, Cary, NC). Qualitative data obtained from responses to intervention preferences were analyzed thematically both for each intervention and overall (CHF, DHS). Single counting was employed to further delineate each theme (CHF, DHS) (27).

Results

Of the 77 physician medical directors surveyed, 36 (47%) responded. Of these, 24 (67%) described their CHC as federally-qualified, and 3 (8%) as federally-qualified look-alike centers, both of which are reimbursement designations from the U.S. Department of Health and Human Services (Table 1). Look-alike centers meet all of the requirements of federally-qualified health centers, notably location in an underserved area, provision of primary care services, and a sliding fee scale, however they do not receive funding from a specific federal grant (28). Among respondents, 7 (19%) were owned by academic medical centers, however 24 (67%) were affiliated with an academic institution and 10 (28%) admitted patients to teaching hospitals. 26 centers (72%) were located in federally-designated medically underserved areas. On average, 91% (SD 25) of the housing in the CHC ZIP codes was classified as urban.

Overall, 30 (80%) of the CHCs participated in a referral network. The mean percentage of visits for patients with private insurance that resulted in outside referrals was 21% (SD 16); similar to 27% (SD 20) with Medicaid, and 20% (SD 13) without insurance. The majority of CHCs (52%) referred patients to rheumatologists at academic medical centers. Of the 33 directors who responded to the question, 18 (55%) indicated that there was a need for better access to rheumatologists at their CHC. However, 20 (61%) felt that their patients would prefer to see a rheumatologist on-site at their CHC. Two CHCs (5.6%) had an on-site rheumatologist, one for a half-day per week and one for a full day per week.

The CHCs served a wide range of RA and SLE patients. Eight of the respondent CHCs estimated that their physicians had fewer than 10 RA patients, and 14 had fewer than 10 SLE patients. 12 CHCs served greater than 30 RA patients, whereas only 4 CHCs had greater than 30 SLE patients. Of the two CHCs with on-site rheumatologists, one reported having greater than 30 SLE and RA patients, 81–100% of whom see a rheumatologist. The majority of respondents felt that their CHC physicians would neither start a RA patient on a DMARD (86%) nor a SLE patient on an immunosuppressant (94%). However, 58% of director's stated that their physicians would refill a DMARD and 50% would continue an immunosuppressant.

After stratifying by the medical directors' response to whether better rheumatology access was needed, we observed no statistically significant differences by CHC location in medically underserved areas or affiliation with academic medical centers (Table 2). There were also no differences in DMARD or immunosuppressant prescribing practices. Among directors who indicated a need for better access, 44% felt that the majority of their SLE patients saw a rheumatologist, compared to 80% in the group with sufficient access ($p=0.08$). A similar trend was noted among RA patients ($p=0.11$). Medical directors at CHCs that needed better rheumatology access were more likely to report that patients with

Medicaid ($p=0.01$) and private insurance ($p=0.04$) required outside referrals, compared to directors at CHCs that did not need better access.

Of the 36 respondents, 28 (78%) ranked the proposed intervention options from 1 (preferred) to 4 (Figure 1). The highest ranked option was a patient navigator; 16 (57%) respondents ranked it first. Dominant themes based on written responses included the role of the navigator to coordinate care (5/18, 28%), to reduce cultural and language barriers (9/18, 50%), and to assist with management of other chronic illnesses (3/18, 6%). Feedback regarding a CHC-based nurse practitioner/physician's assistant with a remote rheumatologist included onsite access to rheumatology care and DMARD therapy (5/17, 29%), and the need for a well-trained, independent practitioner (5/17, 29%). In terms of rheumatic disease-specific health passports, nearly half (44%) of the medical directors' felt that low literacy, English language skills, level of education, poor compliance, and cultural differences would limit its use. Three respondents (17%) felt that an internet-based version would be inaccessible for the majority of their patients. The least preferable intervention was telemedicine; 13 (46%) respondents ranked it last. Limitations included inadequate technology and technical support (8/20, 40%), the impersonal nature of telecommunication (4/20, 20%) and language and literacy issues (3/20, 15%).

A few medical directors highlighted additional obstacles to rheumatology care. One respondent stated that the main problem is not a lack of rheumatologists but rather, inadequate "access due to insurance and language barriers." Similarly, two other directors noted the challenge of finding nearby rheumatologists, even at major medical centers, willing to accept patients with no insurance or with MassHealth (the state Medicaid program).

Discussion

Our study of CHC medical directors across Massachusetts demonstrated that at least 50% of CHCs reported that they required improved access to rheumatology care for their primarily underserved, low-income patients. Prior studies have demonstrated that expedited and consistent access to rheumatologists improves laboratory surveillance of disease activity, DMARD and immunosuppressant use, and overall quality of care for SLE and RA patients (3, 6). Our data demonstrated that the majority of primary care physicians at CHCs do not initiate DMARDs for RA or immunosuppressants for SLE, and that many also do not refill these medications. Therefore, access to rheumatologists is necessary to ensure standard of care therapies for this patient population.

CHCs with a range of characteristics responded to our survey (Table 1). We found that affiliation with an academic institution did not confer better access to rheumatologists. A study of access to cardiologists similarly demonstrated that CHCs were less likely to obtain specialty consultation for their patients compared to hospital-based clinics, regardless of academic affiliation (21). Medical directors described insurance status and low income as barriers to rheumatology care. Even in states like Massachusetts with high Medicaid enrollment rates and fewer uninsured individuals, subspecialty providers who do not accept public insurance may result in limited access (29). A California-based cohort study demonstrated that among SLE patients with lower incomes, the presence of health insurance, particularly Medicare and Medicaid, did not guarantee equal access to subspecialty care (5). It is possible that these individual and provider-level factors play a greater role in determining access than an institutional-level tie. In addition, academic affiliation may not guarantee geographic proximity, or automatic access to subspecialty appointments.

On average, we found that CHCs with directors reporting fewer RA and SLE patients also described no need for improved rheumatology access. The two CHCs with on-site rheumatologists were the exception to this; both had moderate to high numbers of RA and SLE patients. It is likely that the number of patients with chronic, debilitating rheumatic disease like SLE and RA determines perceived need for rheumatology services. However, it is also possible that SLE and RA cases may be undetected or underreported in the absence of subspecialty care which may result in an underestimation of actual need (30).

Our study also proposed potential interventions to improve access to quality rheumatology care. Directors clearly preferred a face-to-face strategy such as a patient navigator to personally coordinate care based on a patient's specific needs, over long-distance telemedicine. While a health passport containing both educational materials and personal health information was considered valuable, directors expressed concerns regarding patients' literacy, access to technology, and cultural and language differences. Directors favored a patient navigator to assist with care coordination, advocacy and patient education however several were hesitant to limit this intervention exclusively to rheumatic diseases. The patient navigator model for chronic disease management has been shown to be a cost-effective strategy to improve access and quality of care (10, 19). In a prior study, a navigator helped to overcome key cultural, literacy and language barriers faced by vulnerable patient populations and improved access to preventative services such as colonoscopies, and to subspecialty oncology care (17). Under the Affordable Care Act, with the increase in funding specifically for quality improvement and patient-centered care innovations at CHCs, implementation of a navigator model is both realistic and timely (9). Further studies are necessary to determine whether a rheumatic-disease specific navigator is feasible, cost-effective, and effective for this underserved patient population.

There were limitations to this study. Despite multiple attempts and a range of methods to encourage participation, our survey response rate was 47%. CHC medical director turnover rate is high with 26 (34%) new directors at the 77 identified health centers within the past year. This likely explains why our response rate was similar to prior studies conducted among medical directors (13). In addition, while prior studies have similarly surveyed medical directors, there may be a difference between their responses and the general practice of clinicians at the CHCs (21–23). Given the survey format of this study and our interest in medical directors' perceptions of rheumatology access, we did not use actual utilization data to verify the accuracy of the responses. It is possible that our finding that 55% of CHCs have adequate access may underestimate the need because of selection bias. Directors from the most resource-poor areas may not have felt that participation would lead to significant improvement and therefore did not respond to our survey. Response bias is also plausible whereby medical director's working in resource poor settings may have been more likely to respond and may have overestimated their need for better rheumatology access given their overall need for improved services. In addition, most respondents were from urban CHC and therefore, barriers that are more specific to rural settings may not be fully represented. In addition, Massachusetts is a unique state with near-universal health insurance coverage and high participation in Medicaid. Therefore, the findings from this survey may not be generalizable to other states (31). Finally, while notable trends were observed between CHCs that needed better access compared to those that did not, our small sample size limited the statistical power of our comparisons.

In conclusion, this study demonstrated that a significant percentage of CHCs across Massachusetts require better access to rheumatology care, particularly for their SLE and RA patients. This increased need should be taken into account as the relationship between subspecialty care and primary care through the patient-centered medical home is further defined. Increased funding to CHCs under the Affordable Care Act should promote

innovative strategies to improve subspecialty access. Continued efforts are needed to develop and test a cost-effective intervention such as a patient navigator, to ensure that this underserved population with a high burden of chronic diseases has early and sustained access to rheumatology expertise.

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Appendix 1: Survey Questionnaire

A Survey of Community Health Center Access to Rheumatology Care

Please complete the confidential survey below.

Thank you for your time!

What is the name of your health center? _____

What is your role or title at your health center? _____

What is your first name? _____

What is your last name? _____

Is there a Rheumatologist who practices at your health center?

Yes No

How often does the Rheumatologist practice at your health center?

Every other week

1/2 day per week

1 day per week

2–3 days per week

> 3 days per week

Please estimate the number of patients with rheumatoid arthritis (RA) seen at your center (feel free to consult with colleagues):

0–10

11–20

21–30

>30

Please estimate the number of patients with systemic lupus erythematosus (lupus) seen at your center (feel free to consult with colleagues):

0–10

11–20

21–30

>30

What percentage of your patients with Rheumatoid Arthritis (RA) see a rheumatologist?

0–20%

21–40%

41–60%

61–80%

81–100%

What percentage of your patients with Lupus see a rheumatologist?

0–20%

41–60%

61–80%

81–100%

When doctors at your health center refer to a rheumatologist, is it to (check all that apply):

A Community Rheumatologist

A Rheumatologist based at a community hospital

A Rheumatologist at a local hospital

A Rheumatologist at an academic medical center?

Other: _____

The following questions refer to disease modifying anti-rheumatic and immunosuppressive drugs including:

Methotrexate

Hydroxychloroquine (Plaquenil)

Abatacept (Orencia)

Infliximab (Remicade)

Adalimumab (Humira)

Sulfasalazine (Azulfidine)

Leflunomide (Arava)

Etanercept (Enbrel)

Rituxan (Rituximab)

Gold

Mycophenolate (Cellcept)

Azathioprine (Imuran)

Do doctors at your health center start patients with RA on disease modifying anti-rheumatic drugs (DMARDs)? (Feel free to consult with colleagues)

Yes No

Do doctors at your health center continue or refill DMARDs? (Feel free to consult with colleagues)

Yes No

Do doctors at your health center start patients with Lupus on immunosuppressive medications? (Feel free to consult with colleagues)

Yes No

Do doctors at your health center continue or refill immunosuppressive medications? (Feel free to consult with colleagues)

Yes No

Is there a need for better access to Rheumatologists? (Feel free to consult with colleagues)

Yes No

Do you feel that your patients would prefer to see a rheumatologist who practiced part-time at your health center rather than at an academic hospital?

Yes No

For the next 4 questions, please rate each option from 1–4 (1=best, 4=worst) and give your reasons.

NAVIGATOR MODEL: Patient navigator is put in place to assist patients with coordination of doctors visits, medication management, and various other tasks designed to help patients navigate the health care maze with ease.

- 1
- 2
- 3
- 4

Why did you choose this rating for the Navigator Model?

TELEMEDICINE: Real-time multimedia network connection with Rheumatologist.

- 1
- 2
- 3
- 4

Why did you choose this rating for Telemedicine?

NURSE, NURSE PRACTITIONER, OR PHYSICIAN'S ASSISTANT 1 WORKING WITH REMOTE RHEUMATOLOGIST: RN/PA helps in diagnosis and management of follow-up with easily accessible back-up.

- 1
- 2
- 3
- 4

Why did you choose this rating for RN/PA Model?

PATIENT EMPOWERMENT MODEL: Patient is given a paper-based or internet-based tool that contains their rheumatic disease-related information (medications, appointments, recent labs) that will be updated at each visit and available both to the patient and to the provider.

1
2
3
4

Why did you choose this rating for the patient empowerment model?

Other suggestions: _____

Does your health center participate in a referral network? Yes No

Does your health center have an affiliation with a medical school, teaching hospital, or other type of academic institution?

Yes No

Please indicate the nature of your affiliation with the following (Check all that apply):

Training of medical students

Training of clinical specialty fellows

Training of nurses

Training of advance practice providers (NP or PA)

Training of other health professionals

Training of residents

Training of social workers

Training of mental health professionals

Does your health center have an affiliation with a teaching hospital? Yes No

How many hospitals? _____

Do physicians at your health center have appointments at a teaching hospital?

Yes No

Do physicians at your health center admit patients to a teaching hospital?

Yes No

Does your health center have an affiliation with a non-teaching hospital?

Yes No

How many hospitals? _____

Are any of the following available in your organization in computerized format?

Medication lists

- Available at all clinic sites
- Available at some clinic sites
- Not available at any clinic site

Clinician notes

- Available at all clinic sites
- Available at some clinic sites
- Not available at any clinic site

Reminders for specific care (e.g. HbA1c test, BP reading)

- Available at all clinic sites
- Available at some clinic sites
- Not available at any clinic site

Disease specific flow sheets

- Available at all clinic sites
- Available at some clinic sites
- Not available at any clinic site

Clinical guidelines or other resources to support clinical decision making

- Available at all clinic sites
- Available at some clinic sites
- Not available at any clinic site

The following questions refer to obtaining certain services outside of the center for your patients when the services are medically necessary and not available at your center.

What percentage of visits to your health center for patients with private insurance (excluding Medicare) result in medically necessary referrals for services not provided by your center? If you cannot provide an exact percentage, please use your best estimate.

What percentage of visits to your health center for patients with Medicaid result in medically necessary referrals for services not provided by your center? If you cannot provide an exact percentage, please use your best estimate.

What percentage of visits to your health center for patients without insurance result in medically necessary referrals for services not provided by your center? If you cannot provide an exact percentage, please use your best estimate.

What is your current profession?

Health Care Administrator

Nurse Practitioner

Physician Assistant

Physician

Nurse

Other: _____

What is your center's UDS number? _____

How would you describe your center?

Federally qualified center

Owned by an Academic Medical Center

"Look alike" center

Other

Other: _____

Feel free to give us your reactions to the survey or communicate anything else you feel is important. _____

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Key Points

- More than one-half of the Massachusetts community health center medical directors surveyed felt that improved rheumatology services were needed for their typically underserved patient population.
- Patients with systemic lupus erythematosus and rheumatoid arthritis are unlikely to have essential immunosuppressive medications initiated if they are unable to access rheumatology care which may contribute to disparities in outcomes.
- A patient navigator to assist with care coordination, education and advocacy that specifically targets high-risk, underserved patients at community health centers with rheumatic diseases may improve access to subspecialty care.

Figure 1. Medical directors' ranked their preferences, first (most preferred) to fourth (least preferred), for four proposed intervention models to improve to rheumatologic care. 28 of the 36 respondents (78%) indicated their preferences.

Table 1

Characteristics of Community Health Center (CHC) Survey Respondents

Community Health Center (CHC) Characteristics	N (%) or Mean ($\pm$ SD)*
CHC Classification	
Federally Qualified	24 (66.7)
Owned by Academic Center	7 (19.4)
“Look Alike” Center	3 (8.3)
Other	1 (2.8)
Location in a Medically Underserved Area ZIP code [†]	26 (72.2)
Mean percent of urban housing by ZIP code [‡]	90.9 ($\pm$ 25.2)
Rheumatologist onsite at CHC	2 (5.6)
Participation in a referral network	30 (80.3)
Academic affiliation	24 (66.7)
Teaching hospital affiliation	17 (47.2)
Non-teaching hospital affiliation	10 (27.8)
Visits with private insurance resulting in outside referrals	21.3 ($\pm$ 16.2)
Visits with Medicaid resulting in outside referrals	27.3 ($\pm$ 19.7)
Visits without insurance resulting in outside referrals	19.9 ($\pm$ 13.1)
Rheumatologist referrals	
In the community	18 (33.3)
At a Community Hospital	8 (14.8)
At an Academic Center	28 (51.8)
Preference for an onsite rheumatologist	22 (61.1)
Number of RA patients at CHC	
0–10	8 (22.2)
11–20	6 (16.7)
21–20	6 (16.7)
>30	12 (33.3)
Percent of RA patients who see a rheumatologist	
0–20	1 (2.8)
21–40	5 (13.9)
41–60	3 (8.3)
61–80	9 (25)
81–100	18 (50)

Community Health Center (CHC) Characteristics	N (%) or Mean ($\pm$ SD) *
CHC physicians start DMARDs for RA	5 (13.9)
CHC physicians refill DMARDs for RA	21 (58.3)
Number of SLE patients at CHC	
0–10	14 (38.9)
11–20	10 (27.8)
21–30	4 (11.1)
>30	4 (11.1)
Percent of SLE patients who see a rheumatologist	
0–20	0 (0)
21–40	3 (8.3)
41–60	3 (8.3)
61–80	7 (19.4)
81–100	22 (61.1)
CHC physicians start immunosuppressants for SLE	1 (2.8)
CHC physicians refill immunosuppressants for SLE	18 (50)

* Denominator for each characteristic is 36; “no” responses and blank responses were included. All questions had less than 5 blank responses, with the exception of “Academic affiliation” which had 9 (25%) and “Preference for an onsite rheumatologist” which had 12 (33%).

[†] Determined using ZIP code information and U.S. Department of Health Resources and Services Administration data

[‡] Determined using 2000 U.S. Census data based on percentage of urban and rural housing in each CHC ZIP code

Table 2

Survey Responses Stratified by the Need for Better Access to Rheumatology Care

Survey item	“Yes” need for better access* N (%) or Mean (±SD)	“No” need for better access* N (%) or Mean (±SD)	P value [†]
Community Health Center (CHC) classification			
Federally-Qualified	3 (76.5)	10 (66.6)	0.11
Owned by Academic Center	1 (5.9)	4 (26.7)	
“Look-Alike” Center	3 (17.6)	0 (0)	
Rheumatologist onsite at CHC	0 (0)	2 (13.3)	0.19
Participation in a referral network	14 (77.8)	13 (86.7)	0.66
Affiliation with academic institution	10 (55.6)	11 (73.3)	0.99
Affiliation with non-teaching hospital	7 (38.9)	2 (13.3)	0.13
Location in a medically underserved area	15 (83.3)	10 (66.7)	0.42
Mean percent of urban housing by ZIP code	83.9 (33.8)	97.8 (8.6)	0.13
Visits with private insurance resulting in outside referrals	26.4 (18.0)	13.1 (8.6)	0.04
Visits with Medicaid resulting in outside referrals	33.4 (18.9)	19.0 (19.4)	0.01
Visits without insurance resulting in outside referrals	24.8 (11.7)	11.6 (8.6)	0.08
CHC physicians start disease modifying anti-rheumatic drugs (DMARDs) for RA	4 (22.2)	0 (0)	0.11
CHC physicians refill DMARDs for RA	12 (66.7)	6 (40)	0.17
CHC physicians start immunosuppressants for SLE	1 (5.6)	0 (0)	0.99
CHC immunosuppressive medication refills for SLE	8 (44.4)	8 (53.3)	0.73
Percent of SLE patients who see a rheumatologist			
0–20	0 (0)	0 (0)	0.08
21–40	2 (11.1)	1 (6.7)	
41–60	2 (11.1)	1 (6.7)	
61–80	6 (33.3)	0 (0)	
81–100	8 (44.4)	12 (80)	
Percent of RA patients who see a rheumatologist			
0–20	1 (5.6)	0 (0)	0.11
21–40	5 (27.8)	0 (0)	
41–60	1 (5.6)	2 (13.3)	
61–80	5 (27.8)	3 (20)	
81–100	6 (33.3)	10 (66.7)	

* 35 of 36 respondents answered this specific question; there were 18 “yes” responses and 15 “no” responses.

[†] P value: Chi-square tests were used to compare “Yes” responses to the question: “Is there a need for better access to rheumatologists?”