Sharing Ongoing Care with Primary Care Physicians Opens Up Opportunity for Timelier and Earlier Care by Rheumatologists for Patients with New Inflammatory Polyarthritis

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ABSTRACT. ***Objective.*** In our region in Quebec, Canada, access to rheumatologists is very limited. Sharing followup of stable patients with their primary care physicians (PCP) could increase access to rheumatologists. In our study, we assessed the feasibility and potential benefits of sharing followup of inflammatory arthritis (IA) patients with their PCP.

Methods. We reviewed the clinical records of 300 patients with peripheral arthritis who presented at our rheumatology outpatient clinic between July and October 2015. We distributed questionnaires to their treating rheumatologist, asking whether a PCP could participate in the followup of the patient and whether there were any factors that would prevent shared followup. We also distributed questionnaires to PCP to assess their level of comfort in participating in the followup care of patients with arthritis.

Results. Chart review was completed on 300 patients. There was no treatment modification in 49% of the cases, and 38% of the visits were deemed unnecessary by the attending rheumatologist. We found that 74% of PCP were very interested in sharing the arthritis followup care of their patients. According to PCP, the main barriers to shared followup were treatment with biological agents, active disease, and need for infiltrations. Main organizational barriers were the lack of rheumatologist availability to see patients urgently (46%) and the lack of clear guidelines for the management of IA (58%).

Conclusion. Up to 38% of peripheral IA visits to a rheumatologist could have been prevented and done by a PCP. In our department, this represented up to 19 followup visits per week that could have been avoided by involving a PCP. (First Release December 1 2017; J Rheumatol 2018;45:266–73; doi:10.3899/jrheum.170494)

Key Indexing Terms:
PERIPHERAL INFLAMMATORY ARTHRITIS
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Rheumatoid arthritis (RA) affects 0.9% of the Canadian population, mostly between the ages of 40 and 70 years. This results in direct and indirect costs totaling Can$ 5 billion per year[1]. Early management by a rheumatologist and rapid treatment with disease-modifying antirheumatic drugs (DMARD) greatly reduce the irreversible complications of the disease, increase the chances of remission, and prevent the development of invalidity. Ideally, these treatments should be initiated within 12 weeks of onset of symptoms[2]. The Canadian Rheumatology Association recommends consultation and management by a rheumatologist within 4 weeks of referral for suspected RA and 6 weeks for psoriatic arthritis (PsA)[3]. According to the Arthritis Alliance of Canada, the greatest intervention a rheumatologist can contribute to the management of inflammatory arthritis (IA) is to make an early diagnosis and initiate early treatment with nonbiologic DMARD (nbDMARD), and to provide rapid access to biologic DMARD (bDMARD) for patients not responding to first-line therapy. This strategy would result in healthcare savings totaling Can$ 39 billion in direct and indirect costs over the next 30 years[1].

In many Canadian regions, access to a rheumatologist in

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a timely manner is difficult, and the delay between the request for consultation sent by the primary care physician (PCP) and the first visit to a rheumatologist is particularly problematic, with waiting times for patients suspected of having RA that could exceed 2 years (unpublished data). Only 25% of these consultations are conducted within the recommended time frame of ≤ 4 weeks in our hospital. Given the increasing prevalence of RA and PsA, it can be expected that this situation will only deteriorate further in the future[1,4].

In our experience, patients attend all their IA followup visits with a rheumatologist, even when their IA is well controlled and no treatment modification is necessary. Researchers reported that 45% of followup visits did not lead to a particular intervention[5]. Because routine followup visits account for 75% of a rheumatologist's practice[6], there appears to be a certain type of patient whose care could be provided by other healthcare professionals.

The main objective of our study was to evaluate how many visits could be saved if stable patients with IA were followed jointly by their PCP. We also assessed the interest and comfort level of PCP to manage these patients, and we collected information on their perceived barriers to adequate IA care.

MATERIALS AND METHODS

The Centre Hospitalier Universitaire (CHU) de Québec-Université Laval Ethics Committee approved this study (2015-2223, B14-12-2223) and all participants signed a consent form before entering into the study. We conducted a cross-sectional descriptive study that allowed us to describe the patient population seen in our department and the interest of PCP in shared followup of patients with IA. The project was divided into 3 parts, in which we assessed the following: (1) according to a questionnaire completed by the rheumatologist during the outpatient visit, the number of followup visits that could have been done by PCP, taking into consideration the patients' characteristics collected by chart review; (2) from clinical vignettes, the possibilities for shared medical followup of fictive patients according to rheumatologists and PCP; and (3) using a mailed questionnaire, the interest and ability of PCP to manage patients with peripheral IA.

Patients. The source population consisted of all patients ≥ 18 years of age with peripheral IA, according to their treating rheumatologist, who were seen in our outpatient rheumatology clinic between July and October 2015. Exclusion criteria were an index visit for a patient admitted to the wards or directly referred from the Emergency Department, or a patient with any type of inflammatory axial arthritis. To have a study population representative of our source population, we asked the participating rheumatologists to include each patient meeting the inclusion and exclusion criteria in the study from randomly selected weeks. If a patient was seen more than once during the period of observation, only the first visit was considered in the analyses. Each rheumatologist could enroll a maximum of 50 patients. Patients were not directly contacted and only the information gathered in their charts and in the additional study questionnaires completed by their rheumatologists were used. Data on patients (age and sex) and on IA (diagnosis, no. years since diagnosis, presence of rheumatoid factor and/or anticyclic citrullinated peptide antibody, erosions, deformity) were collected in medical charts. We also noted the level of control of the IA through the review of the last HAQ score, last sedimentation rate and C-reactive protein values, number of active joints at the index visit, joint infiltration at the index visit, as well as the presence of comorbidities, estimated last glomerular filtration rate, hepatic disease or abnormal liver function tests, fibromyalgia, disease associated with IA, intolerance or allergies to drugs, and previous history of infection requiring hospitalization or intravenous treatment. The tender and swollen joint counts were recorded in the chart for every followup visit. Finally, we collected information on IA treatment with the current medication, including the route of administration of any DMARD, glucocorticoids, and non-steroidal antiinflammatory drugs; the current or previous use of a bDMARD; the presence of hematological or biochemical abnormalities that affected the management and/or were mentioned in the rheumatologist's clinic visit report; and any change in medication during the index visit or previous visits. We also collected information on followups such as the time since last appointment, the recommended time given by the PCP at the last visit for their next appointment, and whether there was easy access to a dedicated PCP. The decision to modify the therapy is mainly based on the number of active joints. The inflammatory markers and the progression of joint damage on radiographs also influence treatment adjustments, but this information was not always recorded in the chart.

By using physicians' appointment lists, data were collected on the number of rheumatologists working at outpatient clinics on a given day, number of adult patients encountered, and number of new adult rheumatology consultations.

Rheumatologists. The 9 rheumatologists working at the CHUL hospital of the CHU de Québec–Université Laval were invited to participate and signed consent forms. Participating rheumatologists completed a study questionnaire on the patients seen during the observation period. For each patient, we collected data on diagnosis; we questioned whether the current visit could have been made by a PCP, and if the answer were negative, we asked them to elaborate on the reason. We collected information on how often the rheumatologist deemed that the PCP should see the patient in relation to the IA, how often the rheumatologist should see the patient in relation to the IA, and what reasons would prevent the patient from being followed by the PCP. The rheumatologist also indicated whether a PCP or a specialized IA nurse practitioner could more adequately follow the patient.

In addition, clinical vignettes were developed in which some possibly challenging clinical conditions of a fictive patient with peripheral IA were highlighted (Supplementary Material, available from the authors upon request): chronic kidney disease, erosive arthritis, a need for intraarticular steroid injections, use of a bDMARD, use of corticosteroids, active arthritis, and triple therapy consisting of a combination of methotrexate, hydroxychloroquine, and salazopyrine. For each clinical vignette, rheumatologists were asked a series of questions: how often the PCP should follow the patient for IA (intervals of 3, 6, 12, or 24 months, with an option to refuse any followup by the PCP if the rheumatologist considered that this patient could only be followed by a rheumatologist); what factors would prevent the patient from being followed by a PCP; how often they would want to follow the vignette patients (intervals of 3, 6, 12, or 24 months); and whether the patient could be more adequately followed by the PCP or a specialized rheumatology nurse.

PCP. Our source population for PCP included all active general practitioners working in the Quebec City region and affiliated with the Quebec City Network Clinics. A network clinic is a well-established group of physicians or a group of clinics that already provides services to the population, and agrees to play the coordination and liaison role with the integrated health and social services centers of the area. All were invited to participate in the study through a mailout that included informed consent, the same clinical vignettes given to the rheumatologists, and an anonymous questionnaire that they were asked to return in a prestamped envelope. This questionnaire collected information on the number of years in practice, estimated number of patients with IA seen in their practice in the past year, whether they had referred any patients to rheumatology for IA in the past year, and whether they were interested in getting more involved in the followup of patients with PsA or RA. We also assessed whether they were comfortable with the following: prescribing an nbDMARD before referring a patient with a suspicion of IA (including the reasons for not prescribing nbDMARD), renewing any nbDMARD and which one, renewing a bDMARD, adjusting the dose of nbDMARD, prescribing a new nbDMARD to a patient whose

diagnosis is confirmed and which one, doing a joint infiltration with cortisone, and prescribing a treatment of prednisone. Finally, we asked for the perceived barriers to the management of IA and the tools that would facilitate the management of IA. Based on 7 clinical vignettes, PCP were also offered a questionnaire similar to that of the rheumatologists (Supplementary Material, available from the authors upon request). The questionnaire was sent by mail, followed by 2 reminders 1 month apart.

Sample size. Considering the estimated percentage from a UK study that 45% of rheumatology visits could have been made by a PCP, we estimated that we would need 290 patients for our study[5]. We calculated that 248 PCP completing the questionnaires were needed to result in 70% of PCP with an interest to follow patients with IA. Both calculations assumed a margin of error of 5% with 95% CI, and a finite population of 1200 and 1064, respectively.

Statistical analyses. Quantitative variables are presented in mean (SD), while frequencies and percentages are used for qualitative variables. Percentage of visits that could have been made by PCP was transformed into an absolute number of visits per week. Wilcoxon Mann-Whitney U test and Exact Pearson chi-square test were used, respectively, to compare quantitative and qualitative variables. They compared the following: (1) patient's characteristics between those considered and not considered by the rheumatologist for shared followup; (2) PCP's characteristics between those accepting and not accepting care of at least 1 patient as described in the clinical case scenarios; and (3) vignette results from rheumatologists and PCP. A multivariate logistic regression with stepwise selection was performed to identify patients' characteristics, predicting the possibility to share medical followup and visits that could have been done by a PCP. OR are presented with 95% CI. Statistically significant results were considered if the p value was < 0.05. Analyses were done using SAS version 9.3 (SAS Institute Inc.).

RESULTS

Possibilities for shared medical followup of patients with peripheral IA attending our adult outpatient rheumatology clinic, according to rheumatologists. Of the 2338 rheumatology visits performed during the observation period, 1317 were made by rheumatologists participating in the project on 300 patients, i.e., 23% of patients seen during the study period. Seventy percent were women, 76% had a diagnosis of RA, and 40% had disease duration of > 5 years (Supplementary Table 1, available with the online version of this article). Of these patients, 81% were treated by any nbDMARD and 37% took a bDMARD. At the time of the rheumatology visit, > 70% of these patients with peripheral IA were in remission (0 active joints) or mild disease activity (1 to 4 active joints, Figure 1A). Figure 1B showed the time spent since the last rheumatology followup visit.

According to medical records, there were 2 most frequently observed reasons why rheumatologists considered a visit useless: 55% of the visits involved no change in treatment, and 48.5% of cases required no intervention. The attending rheumatologist deemed 38% (95% CI 33–44) of the visits unnecessary (Figure 2A). This percentage corresponds to 204 visits (95% CI 168–240) during our study period, or to 16 visits per week (95% CI 13–19). The participating rheumatologists found that a visit to rheumatology was necessary mostly because of an active IA. In these patients, the visits were considered useful because of a change in treatment in 46% of patients, or frequent adjustment in 41% of cases (Figure 2B). The rheumatologists did not report any reason for refusing a shared medical followup with PCP in 60% of the cases (Figure 2C). In the multivariate model, the independent variables that predicted a favored shared medical followup were a diagnostic time of IA of ≥ 1 year, no change in treatment, and a low number of active joints (Table 1). According to the multivariate model, a visit that could have been done by a PCP was predicted by the absence of infiltration, a diagnostic time of IA of 4 years or more, no change in treatment, and a low number of active joints (Table 2).

Possibilities for shared medical followup of fictive patients from clinical vignettes, according to rheumatologists and PCP. The analysis of clinical vignettes revealed that 50% of rheumatologists considered small joint infiltrations or corticotherapy as an obstacle to shared followups, whereas knee infiltration, bDMARD, or an active IA was an obstacle for only one-third of them (Table 3). This observation was in contrast with the observation made in the real patient population, in which an obstacle to shared followup was mostly attributed to an active IA in 63% of cases, chronic kidney disease in 60%, and biological agent in 41% (Table 3). The main barriers to shared followup by PCP were treatment with bDMARD (41.6%), disease activity (48%), and the need for small joint infiltration with cortisone (33.8%, Table 3).

Interest and ability of PCP to manage patients with IA. Only 85 anonymous questionnaires were completed by PCP. They were in practice for a mean duration of 24 years (SD = 10) and had a mean of 15 patients with IA in their clinic (Supplementary Table 2, available with the online version of this article). Most of them referred a patient to rheumatology in the previous year. Of the participating PCP, 74% (95% CI 63–83) declared that they were very interested in sharing followup of their patients with IA. Although only about one-third of them prescribed nbDMARD before the diagnosis of the rheumatologist or added nbDMARD after the diagnosis, 79% and 24% of them stated they were comfortable in renewing nbDMARD and bDMARD prescriptions, respectively. A large percentage of the participating PCP were comfortable in performing infiltrations or prescribing prednisone for IA flare (Supplementary Table 2). According to PCP, the discomfort in prescribing nbDMARD before the first rheumatology visit was explained by the need for a diagnosis in 69%, a therapeutic opinion in 57%, and an opinion on followup in 42% (Figure 3A). Organizational barriers to shared followup were the lack of clear guidelines for patient management (58%) and lack of availability for rheumatologists to reevaluate the patients (46%, Figure 3B). A large majority of PCP estimated that clinical tools such as decision trees addressing undesirable treatment effects or ongoing IA activity would be very useful for shared followup. Another solution deemed useful by 84% of PCP was access to a specialized IA nurse (Figure 3C).

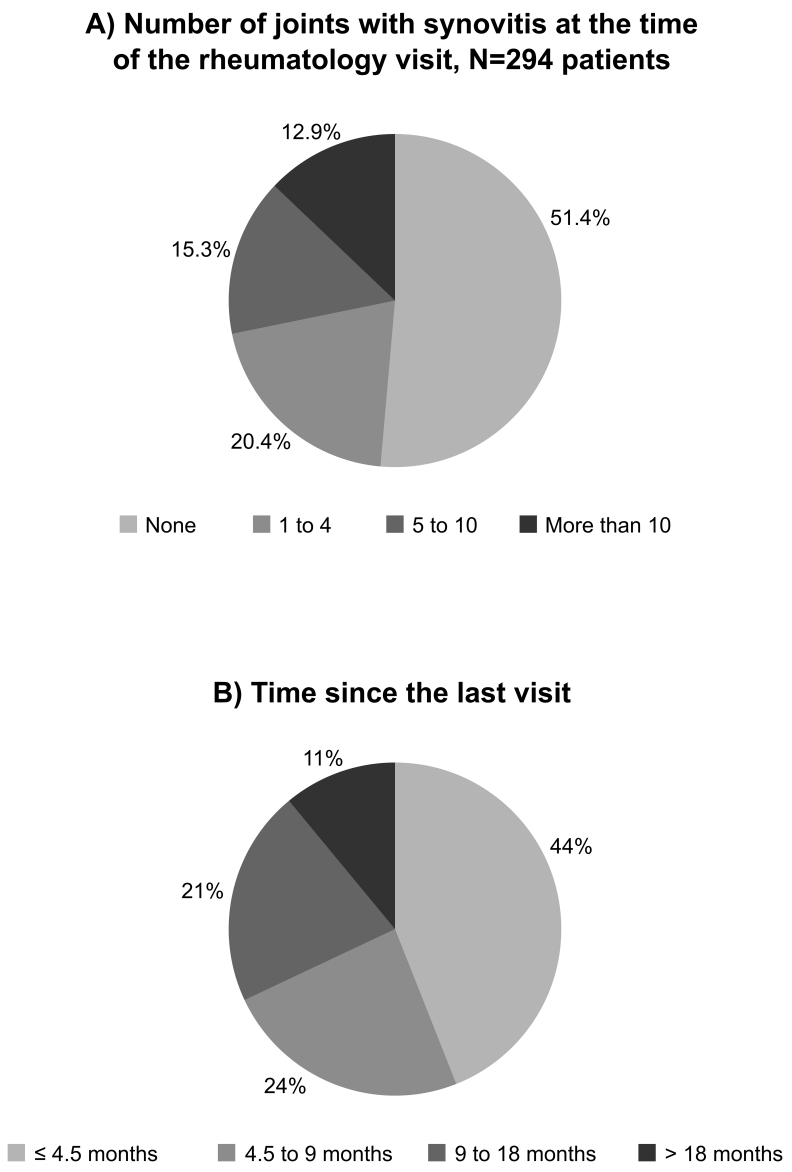

Figure 1. Characteristics of real patients with peripheral inflammatory arthritis in rheumatologist followup: (A) no. active joints at the time of the rheumatology visit; and (B) time since the last visit.

DISCUSSION

In our study, no clinical intervention was performed in 49% of the rheumatology visits, and 38% of the visits were deemed unnecessary by the attending rheumatologist. Of the participating PCP, 74% said that they were quite interested in sharing followup of their patients with IA. These were the best predictors of a visit that could have been done by a PCP: absence of need for infiltration, > 4-year time period since IA diagnosis, no change in treatment needed, and a low number of active joints. Although our results highlighted that a large percentage of patients were seen by the rheumatologists for followup past the prescribed time limit, > 70% of these patients were in remission or low disease activity state at the time of their visit.

After 2 reminders, the number of PCP answering the anonymous questionnaire remained lower than expected, which meant that we did not reach our initial power calculations to establish firm conclusions based on our questionnaires. However, these data remain interesting and very informative. Indeed, the main obstacles to shared followup according to PCP (mainly active IA, biological agent, and small joints infiltrations) were also identified by rheumatologists as obstacles, either in their own patients or in the clinical vignettes.

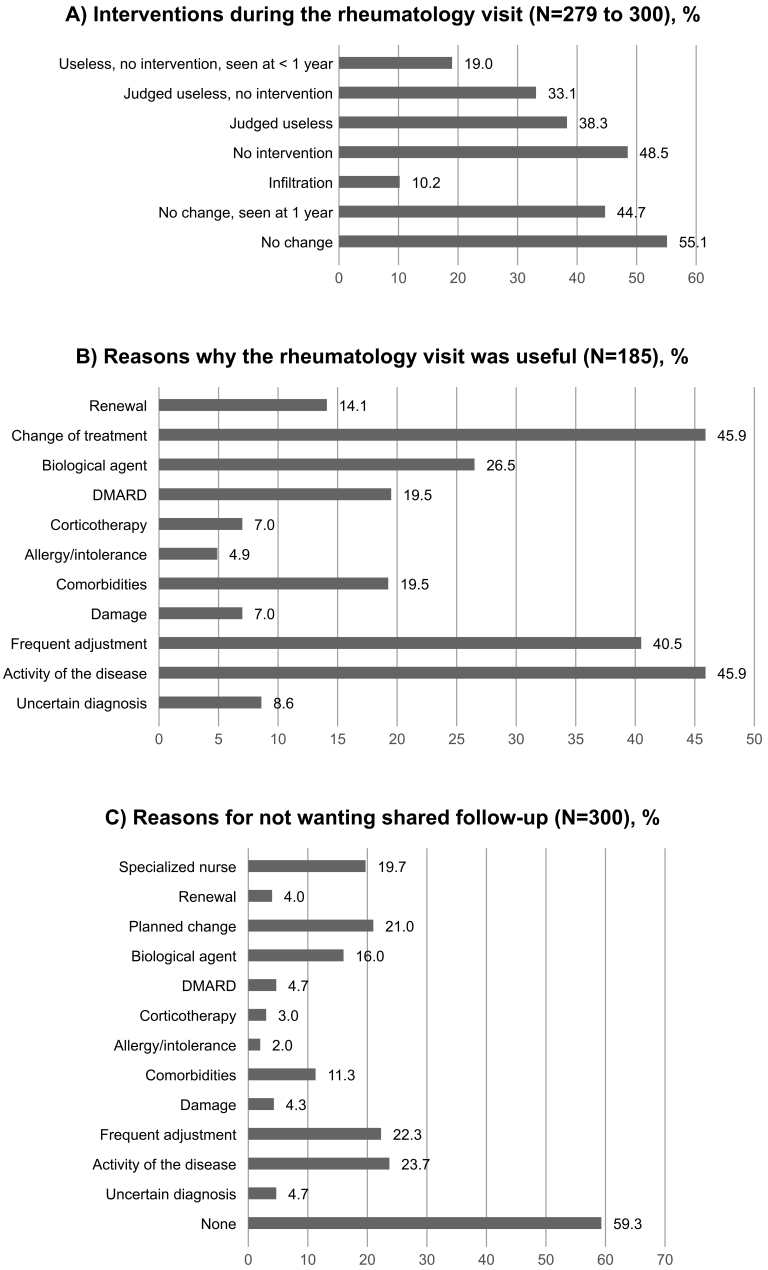

Figure 2. Possibilities for shared medical followup for real patients with peripheral inflammatory arthritis, according to rheumatologists: (A) interventions during the rheumatology visit; (B) reasons why the rheumatology visit was useful; and (C) reasons for not wanting shared followup. Figure 2A summarizes the information collected from the questionnaires for each participant regarding the usefulness of the rheumatology visit. The data are from the treating rheumatologist and the information extracted from the patients' medical charts by an independent assessor regarding the management of inflammatory arthritis by the rheumatologist during this visit. DMARD: disease-modifying antirheumatic drugs.

Comparing our results to the literature is limited considering the lack of publications in this area. In accordance with Primdahl, *et al*, who reported that 45% of rheumatology visits did not lead to any change[5], we observed a similar result in our study, with an absence of intervention in 49% of patients. In the literature, different monitoring models have been developed, notably in the United Kingdom and Denmark. In the British model, patients with stable disease were randomized to regular monitoring by a rheumatologist, or to followup only when the patient requested it. Patients had

Table 1. Multivariate model for predicting shared medical followup, according to rheumatologists.

Variables	OR	95% CI	p
Time since diagnosis			
< 1 yr	Ref.		
1–4 yrs	4.78	1.61–14.22	< 0.0001
> 4 yrs	13.21	4.45–39.23	
Change in treatment, yes vs no	0.49	0.26–0.95	0.035
No. active joints			
0	Ref.		
1–4	0.21	0.10–0.45	< 0.0001
5–10	0.08	0.03–0.23	
> 10	0.05	0.01–0.20	

Table 2. Multivariate model for predicting visits that could have been done by a primary care physician, according to rheumatologists.

Variables	OR	95% CI	p
Infiltration, yes vs no	0.10	0.02–0.39	0.001
Time since diagnosis			
1–4 yrs vs < 1 yr	2.74	0.93–8.11	0.0065
≥ 4 yrs vs < 1 yr	5.25	1.82–15.11	
Change in treatment, yes vs no	0.09	0.04–0.20	< 0.0001
No. active joints			
1–4 vs 0	0.20	0.08–0.49	< 0.0001
5–10 vs 0	0.05	0.01–0.22	
> 10 vs 0	0.11	0.02–0.54	

access to a telephone line to see a specialized IA nurse if needed, and they were followed by their PCP. After 6 years, there was no clinically significant change, but patients and their PCP were more satisfied when rheumatology visits were organized only when needed. This intervention led to a significant reduction in followup visits (median 8 vs 13 visits over 6 yrs)[6]. In Denmark, researchers evaluated 2 new systems: a 3-month followup by a specialized IA nurse and another followup if necessary, similar to the British model. These followup models were compared to followup by the rheumatologist, and both proved adequate after 2 years. The group followed by a nurse was even more satisfied and had higher self-efficacy at the end of the study[5]. Indeed, nurse-led clinics were shown to bring socioemotional communication skills to enhance patient participation[7]. These data were further confirmed in a recent Spanish study, in which nurse-led rheumatology clinics were also found to improve some clinical outcomes in patients with IA, giving rise to a lower frequency of primary care consultations and an improvement in patients' work productivity[8,9].

Our study has several limitations. Because only 35% of the PCP returned the questionnaire, it is unknown whether these respondents are representative of all PCP. The sample size for PCP was lower than our initial calculation, resulting in a larger CI than planned (margin of error: 10% vs 5%). The study was carried out in a single center, and the results may not be generalizable to other settings. In addition, the questionnaires were only sent to PCP affiliated with the Quebec City Network Clinics. The selected physicians were not entirely representative of the whole population of PCP in the area, and we failed to include all the PCP who referred patients to rheumatology. That said, physicians affiliated with the Network Clinics are probably the ones who refer a high volume of patients to rheumatology, and the structure of their network makes them more likely to be open to more interactions in the future, so that we can set up a shared followup project for their patients with IA. The use of questionnaires and clinical vignettes that have not been externally validated can also be seen as a limitation of our study. Lastly, the PCP who completed the questionnaires were likely to be more motivated to do shared medical followup than those who failed to respond, likely providing better support for shared care than what is felt by all PCP.

By knowing how many patients with IA are stable and what types of medications they use, a better assessment can be made regarding the number of weekly visits that rheumatologists might be relieved of. These visits could be replaced by consultations on newly referred patients, which cannot currently be carried out because of lack of availability. The profile of the population from this study can be used as a historical reference comparator group for a new study to determine whether we can apply the shared followup of IA patients with PCP and successfully open up time for rheumatologists to consult with more newly referred patients who most need the rheumatologists' expertise.

Many PCP in our region are interested in participating in shared medical care for patients with IA. Up to 38% of peripheral IA visits could have been done by a PCP rather than by a rheumatologist. By extrapolating these findings to all rheumatologists in our university hospital, this represents 13 to 19 visits per week that would have been avoided if a PCP had been involved.

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ONLINE SUPPLEMENT

Supplementary material accompanies the online version of this article.

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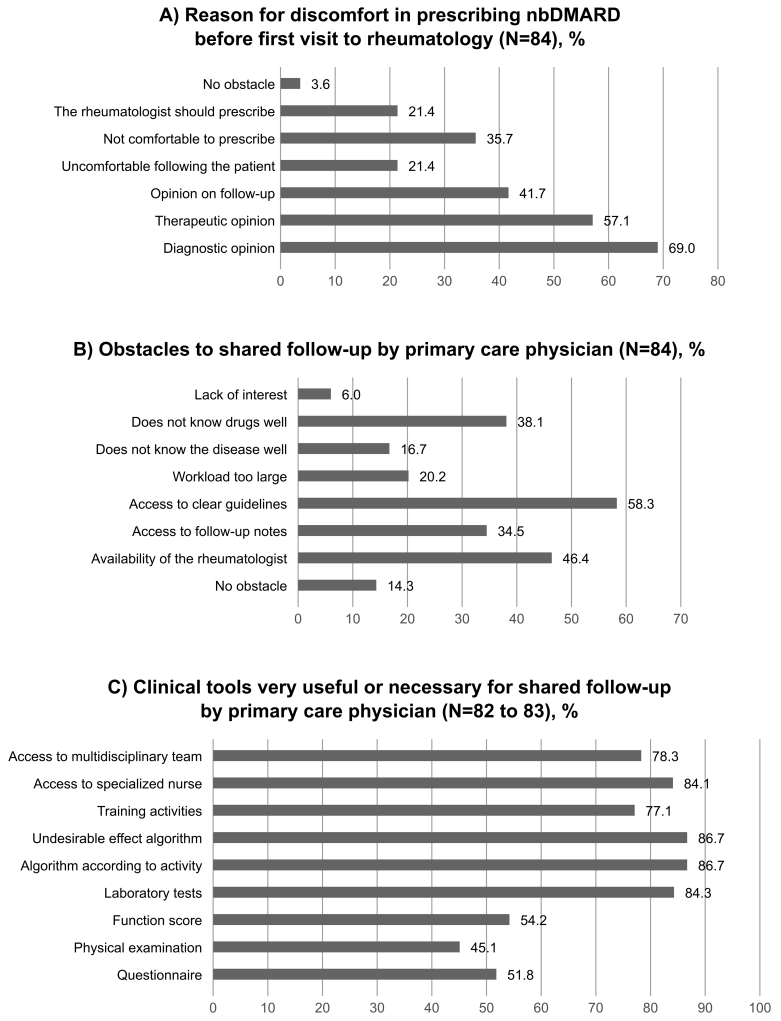

Figure 3. Shared medical followup for patients with peripheral inflammatory arthritis according to PCP: (A) reason for discomfort in prescribing DMARD before first visit to rheumatology; (B) obstacles to shared followup by PCP; (C) clinical tools very useful or necessary for shared followup by PCP. (nb)DMARD: (nonbiologic) disease-modifying antirheumatic drugs; PCP: primary care physician.

Table 3. Obstacles to shared medical followup related to patients' characteristics, according to rheumatologists and PCP. Values are in %.

Condition of the Fictive Patient on Clinical Vignettes	Rheumatologists Who Consider This Condition an Obstacle to Shared Followup, n = 6	PCP Who Consider This Condition an Obstacle to Shared Followup, n = 80	Real Patients with This Condition in Whom This Has Been Considered an Obstacle by Rheumatologists
Chronic kidney disease	16.7	10.3	60.0, n = 10*
Erosive arthritis	16.7	6.3	11.2, n = 89
Knee infiltration	33.3	13.2	23.3, n = 30**
Biological agent	33.3	41.6	40.9, n = 110
Small joints infiltration	50.0	33.8	23.3, n = 30**
Corticotherapy	50.0	2.7	19.4, n = 36
Active arthritis	33.3	48.0	62.7, n = 94
Triple therapy	0	9.6	Not evaluated, n = 2

*glomerular filtration rate < 45 ml/min. **regardless of the infiltrated joint. PCP: primary care physicians.

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