

Attracting Internal Medicine Trainees to Rheumatology: Where and When Programs Should Focus Efforts

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ABSTRACT. Objective. To determine where and when efforts should be focused to increase recruitment of rheumatology trainees from internal medicine (IM) programs.

Methods. (1) We calculated the percentage of trainees at each of the 13 English-speaking Canadian IM-accredited programs who entered a rheumatology training program in Canada from 2005 to 2007. We then correlated this with the opportunity they would have had to do a rheumatology rotation in each of their 3 postgraduate years of IM training. (2) We calculated the overall percentage of residents who remained at the same training institution after their IM program, 2005-2007, comparing this to 4 similar-size subspecialty training programs.

Results. Among IM trainees, 3.5% began rheumatology training in Canada. There was a positive relationship at the postgraduate year 1 (PGY1) level between more rheumatology opportunities and chance of entering rheumatology ($r^2 = 0.35$, $p < 0.05$), but not at the PGY2 or PGY3 level. Among rheumatology trainees, 78% remained at the training institution where they completed IM training, more than the 70% of gastroenterology trainees, 68% of nephrology trainees, 67% of endocrinology trainees, and 76% of infectious diseases trainees.

Conclusion. The opportunity for a rheumatology rotation in the first year of IM training increases the likelihood the trainee may choose rheumatology as a career. Further, most rheumatology trainees continue at the same institution as their IM training, more than other subspecialties. This information may assist recruitment efforts to increase numbers of rheumatology trainees and the overall rheumatology workforce. These data warrant reevaluation of IM programs of study in order to influence trainee career choices and plan better for future workforce requirements in all IM fields. (First Release Nov 1 2009; J Rheumatol 2009;36:2802-5; doi:10.3899/jrheum.081200)

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Rheumatologists diagnose and manage a diverse group of musculoskeletal and inflammatory conditions¹, ranging from arthritis and lupus to myositis and vasculitides. The number of patients with arthritis alone is growing, yet despite growing need, the number of rheumatologists appears to be contracting². With just under 5000 rheumatologists in the United States, and a proportionally similar 309 rheumatologists practising in Canada³, an ever-growing gap in rheumatologic care looms if this trend continues. To replace retiring clinicians and increase the number of rheumatologists, more internal medicine (IM) residents are required to select rheumatology as their subspecialty. The necessity of attracting more residents remains a difficult

task that should not be the responsibility of rheumatology program directors exclusively, but should involve all rheumatologists who work with trainees, and more broadly, faculty administrators and curriculum developers. Efforts need to be made by exposing IM residents, program directors, and The Arthritis Society to our immediate need.

Surveys of current rheumatologists and rheumatology trainees suggest that previous positive rheumatology exposure, usually at an early stage in training, influences their decision-making process^{4,5}. However, more specific data are not available. Anecdotally, there is also a prevailing view that medical residents should be encouraged to do their training at more than one site in order to improve the training experience. Therefore, the effort program directors should make to attract residents from their own institution's IM residents, or potential external candidates, may be of assistance.

Using elective opportunities in 3 postgraduate years (PGY) of training for IM residents as a surrogate for potential opportunities to do a rheumatology elective, we examined Canadian national data from 2005 to 2007 to determine

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if there was a relationship between the opportunity for early rheumatology elective experience and increased rate of developing rheumatology trainees. This is particularly useful to examine in Canada, where funding for rheumatology positions has outnumbered rheumatology trainees for a number of years and is therefore not a limiting factor. Further, over the same time, we examined the rate at which trainees continued their rheumatology training at the same site after their IM program, using other subspecialty programs for comparison.

MATERIALS AND METHODS

The Canadian Post-MD Education Registry (CAPER) maintains an individual longitudinal file containing sociodemographic information and details of the current and past training programs of each medical resident enrolled at all faculties of medicine in Canada. It is therefore possible to track each anonymous rheumatology trainee based on their site of IM training. Using these data⁶, we calculated the percentage of trainees at each of the 13 English-speaking Canadian IM-accredited programs who entered a rheumatology training program in Canada for the 3 academic years 2005 to 2007. A percentage was used rather than absolute numbers, as programs across Canada differ dramatically in size. A 3-year period was chosen to reflect current training practices at each site, assuming there would be few changes over this period that could affect results. Using a linear regression model, we correlated this with the opportunity trainees would have to do a rheumatology rotation in each of their 3 PGY of IM training. Curriculum information on the 3-year IM programs was collected from the program descriptions provided on the Canadian Residency Matching Service (CaRMS) website⁷, the group responsible for coordinating the PGY1 residency match for final-year medical students. A scoring system was developed to determine the chance a resident would complete a 4-week or 1-month rheumatology rotation, ranging from 0, indicating there was no chance of completing a rotation over a given 4-week rotation, to 1, indicating a 4-week rheumatology rotation was obligatory at that institution. For a "selective," defined as rotations when residents select one of a limited choice of subspecialties, a score reflective of this was given. For instance, if a resident could choose between rheumatology and endocrinology, a score of 0.5 was assigned. For an elective, a score of 0.1 was assigned, as there would be a 10% chance the resident would choose rheumatology from roughly 10 subspecialty rotations available at most IM sites. A cumulative score for each institution was recorded for each postgraduate year of training.

Using the original CAPER data, we determined how many rheumatology trainees did their training at the same institution as their IM training over the same 3 academic years 2005 to 2007. We calculated a composite score using 2 methods: one based on total trainees and a second using the mean of the IM training programs to ensure no single program was more heavily weighted and skewing the data. Using one-tailed student t test, we compared this to 4 other subspecialty programs — gastroenterology, nephrology, endocrinology, and infectious diseases — to see if there was a significant difference between rheumatology and other programs.

RESULTS

Between the 3 academic years 2005-2007, 23 out of 651 IM trainees from 13 Canadian IM training sites entered a Canadian rheumatology training program, representing 3.5% of total IM trainees. Because of the small number of training sites and so few trainees, we have not identified site-specific statistics in order to maintain anonymity of the trainees. The range of trainees was from 0 at 2 sites to a maximum of 5 trainees. Trainees as a percentage of total IM

residents at each site ranged from 0 to a high of 9.1% at one site (Table 1).

Elective opportunities for rheumatology varied at each site and between each postgraduate year of training. In the PGY1 year, opportunities to complete a 4-week or 1-month rheumatology rotation ranged from 0 to 6 chances, PGY2 between 1 and 9, and PGY3 between 2 and 9. Over the 3-year curriculum, the total number of rheumatology opportunities ranged between 10 and 18 (Table 1).

In a linear regression model (Figure 1), there was a positive relationship between the number of opportunities to do rheumatology at the PGY1 level and the development of rheumatology trainees ($p = 0.033$). The coefficient of determination was $r^2 = 0.3531$. No significant relationship was identified at the PGY2 level ($p = 0.17$, $r^2 = 0.1627$) or the PGY3 level ($p = 0.32$, $r^2 = 0.0879$).

Of the 23 residents who entered a rheumatology training program in Canada between the 3 academic years 2005-2007, 18 remained at the same training site where they completed their 3 years of general IM training (78% of trainees). By site, this ranged from a minimum of 0, to a maximum of 100% at 7 sites, for an average of 78% between the 11 programs that had rheumatology trainees. This result was higher than all 4 comparator subspecialties. Among trainees 70% (73/105) of gastroenterology, 68% (41/60) of nephrology, 67% (33/49) of endocrinology, and 76% (25/33) of infectious diseases trainees remained at the same site where they did their IM training (Table 2). When examined by institution, rheumatology again demonstrated the highest rate of retention, with an average of 56% of gastroenterology trainees ($p = 0.043$), 62% of nephrology trainees ($p = 0.055$), 54% of endocrinology trainees ($p = 0.276$), and 61% of infectious diseases trainees ($p = 0.086$) remaining at the same site.

Table 1. Site specific opportunity for completing a rheumatology rotation and development of rheumatology trainees (2005–2007).

Site	PGY1	PGY2	PGY3	Rheumatology Trainees, % (N)*
1	0	0.8	0.2	0.0 (0)
2	0	0.9	0.6	2.4 (1)
3	0.1	0.2	0.9	0.0 (0)
4	0.25	0.5	0.5	1.1 (1)
5	0.3	0.4	0.4	2.1 (1)
6	0.4	0.4	0.6	3.0 (1)
7	0.4	0.5	0.8	3.5 (4)
8	0.4	0.5	0.5	4.2 (2)
9	0.4	0.2	0.5	8.8 (5)
10	0.5	0.1	0.4	6.7 (2)
11	0.6	0.6	0.6	1.9 (1)
12	0.6	0.6	0.6	3.3 (2)
13	0.6	0.5	0.3	9.1 (3)

* Percent of total IM trainees (absolute numbers).

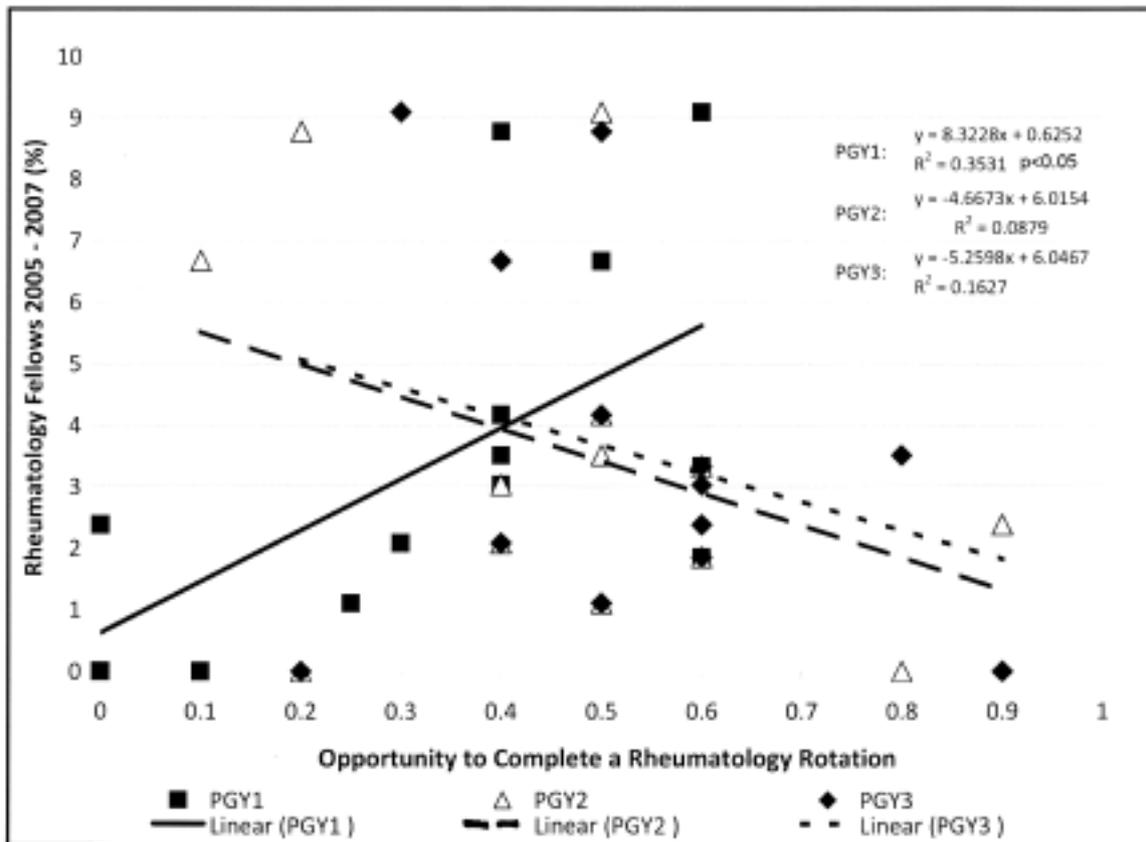


Figure 1. Linear regression model. Rheumatology opportunities in each postgraduate year of internal medicine training versus the number of rheumatology trainees developed, by site.

Table 2. Percentage of Canadian residents who complete their IM and rheumatology training at the same site.

	Rheumatology	Gastroenterology	Nephrology	Endocrinology	Infectious Disease
No. of trainees	23	105	60	49	33
No change in training site, %	18 (78)	73 (70)	41 (68)	33 (67)	25 (76)

DISCUSSION

Our study demonstrates when and where efforts should be placed to increase recruitment of rheumatology trainees. This is crucial because as this study has shown, very few IM residents are choosing rheumatology as a subspecialty career choice. In Canada, this is 3.5% of total IM residents. This compares to previous data, with 4.4% of IM residents selecting rheumatology when calculated from the 2008 American subspecialty match⁸. West, *et al* recently reported similar numbers, with only 3.2% of American-trained PGY3 residents choosing a career in rheumatology⁹.

We show that the opportunity to complete a rheumatology rotation in the first year of IM training has a positive influence on the trainee's choice, and in our study accounts for over one-third of the factors that affect this choice. This association may not be surprising given the results of 2 retrospective studies examining influences on choosing a

rheumatology career. In a 2007 survey of American rheumatology trainees, the majority only developed their interest in rheumatology during residency, with nearly 25% during their internship year⁵. The most influential aspect of that choice was a previous clinical rotation. A subsequent but similar British survey of practising rheumatologists again demonstrated early residency training exposure being the most commonly cited reason for choosing a rheumatology career⁴. Other reasons named included but were not limited to subject interest, inspirational mentors, and lifestyle and educational experiences, all of which would seem to require previous rheumatology experience. Another 2008 survey of Irish rheumatologists did not appear to find experience to be important, although subject interest remained important¹⁰. We have demonstrated a rather strong association, and yet this may be an underestimate as our association is only with the opportunity to do an early rheumatology rotation rather

than definitively completing a rheumatology rotation itself. Similarly, a study by Cannella and colleagues demonstrates a significant increase in rheumatology trainees compared to the American national average when all IM residents had the opportunity to complete a rheumatology rotation at their institution¹¹.

Further, rheumatology program directors should focus their efforts on recruiting trainees from their own institution. Nearly 80% of trainees did not change training sites, and indeed, only 5 residents did so over a 5-year period. This was greater than all other comparator subspecialties when we examined the absolute numbers, with only infectious diseases (which has smaller recruitment, similar to rheumatology) approaching a similar rate. When we examined the data by institution in an attempt to decrease bias of larger sites, there was no significant change, with a statistically significant difference between rheumatology and gastroenterology, and a trend towards significance when rheumatology was compared to either nephrology or infectious diseases. Only endocrinology, again a smaller program, was similar. It is unclear if rheumatology trainees by their nature would rather continue training at the same site. It is also possible that because of the low level of interest rheumatology trainees need not change institutions, as they have less competition for training positions, which may not be the case for larger subspecialty programs.

There are a number of weaknesses to our study. As stated, we correlated only the opportunity for rheumatology experience with rheumatology trainees, not directly examining whether or not that experience occurred. However, we believe this may work to our advantage, as subsequent studies examining this more closely may demonstrate a stronger link. Further, it is reassuring that no such relationship was found at the PGY2 or PGY3 level, and while not statistically significant, there was a trend away from significance with each year of training. Data from CAPER relies on the submission of identifying data by each trainee to their home institution; therefore we may be missing trainees who have not submitted this form. However, CAPER has recorded data on 651 IM residents. At most, there were about 750 IM residents in Canada based on current CaRMS data, although the PGY1 resident numbers have increased over the last few years since our data were collected. This suggests that at worst, we collected 86% of Canadian trainee data. CAPER also does not record residents who pursue further training outside Canada; therefore, our data also do not reflect that possibility. While the CaRMS website is intended to be up to date, some program details could be in error, which could skew the count of elective opportunities. However, by using CaRMS data, we intended to ensure equally reliable data for each IM program.

We demonstrated that the opportunity for a rheumatology rotation in the first year of internal medicine training increases the likelihood the trainee may choose rheumatology as a career. Further, most rheumatology trainees continue at the same institution as their IM training, more than other subspecialties. This information may assist rheumatologists in their recruitment efforts to increase the number of rheumatology trainees and the overall rheumatology workforce. Further, these data should influence IM program directors and curriculum developers in reevaluating their program of study in order to influence trainee career choices and improve plans for future workforce requirements in all internal medicine fields.

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