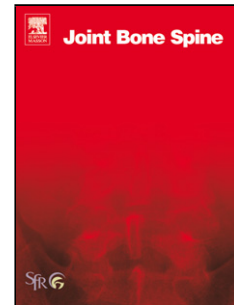


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Rheumatology residency in France: an assessment of the past and the unknowns of a new reform.

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Educational training, Rheumatology residency, burn-out

Rheumatology residency is highly diverse among European countries [1]. In France, at the end of medical school, a national ranking exam (ECN) determines the ability of the students to choose his/her specialty and the city they train in according to the rank they obtained. The main difference between the French residency program and most European training is the absence of formalized general internal medicine training prior to the rheumatology residency. France has profoundly changed the backbone of residency and the new residency program started to enroll students in November 2017. The previous and the new program will be co-existing until 2021. The old practical training includes 4 semesters of rheumatology and 4 semesters in other medical specialties (Figure 1) that can be freely chosen by the residents according to their ranking at the ECN and the number of validated semesters. Among the 4 semesters in

rheumatology, 3 rotations must be done in teaching hospital (CHU) and 1 in non-teaching hospital. These last centers are hospitals located in the same region as the teaching hospital but without academic function. They can train residents if they satisfy with teaching requirements and are certified for a maximum period of 5 years. In the old program, theoretical education included local faculty delivered courses and complementary nationally available training called “Diplomes Universitaires” (DU) that allowed residents to acquire focused education on various topics. One of the major elements of this reform is to put skills in the foreground in association with knowledge. This new national backbone for residency programs in rheumatology provides theoretical and practical teaching divided into 3 phases (Figure 1). The first phase is though as a general internal medicine training of one year that includes one semester in Rheumatology. The second phase contains 2 semesters of rheumatology and 2 in other specialties and is concluded with the Doctor of Medicine degree (M.D.). The third phase is a one-year rheumatology senior resident program that ends with the rheumatology board certification. We conducted a survey to ask residents from the old system how they were trained in the practical, technical, theoretical, and scientific skills that are required to become a rheumatologist. A 53-item online questionnaire was sent to all young French trainees in rheumatology between February and May 2016. The goal was to provide knowledge on the previous residency program to help better design the new training that is implemented gradually as new students are enrolled.

Rheumatology: an attractive specialty for medical students.

For the purpose of the survey, we separated France into 3 different geographical areas: north region, south region and Paris delimited as described in figure 2.

Among the 442 young rheumatologists contacted by email, the response rate was 29.4% which represented 130 members (53 from the North, 43 from the South, 32 from Paris and 2 unknown). This response rate was similar to the published rate of response in online questionnaires without particular incentive[2]. A 24% response rate was observed in a similar study targeting rheumatology residents across Europe[3]. This response rate may induce bias towards a specific population of residents with increased interests towards research. The 27 cities that can be chosen by medical student after the national ranking exam, residents from 24 cities answered this survey. This meant that 89% of the French territory was covered although sampling variation could have occurred. The characteristics of the population and their geographical origin are described in table 1. Among respondents, 63% were women with a mean age of 26.7 ± 1.8 years without any difference between the 3 geographical regions. Trainees who responded to the survey were mainly between the second and third year of residency (mean number of validated residency semesters $=4.7 \pm 2.2$).

Medical students who chose rheumatology after the final exam were ranked in the first quarter of the candidates as the average ranking of young rheumatologists at the ECN was 1719 ± 1102 out of a total of about 8000 participants each year. Due to the limited number of spots (defined by the French ministry of health) in each city, half of the students had to move to another city to train in rheumatology (52%). Students from Paris were less prone to move than the other residents (36% for Paris vs 42% for the South vs 62% for the North, $p = 0.03$). The major cause of mobility was the possibility to practice rheumatology while favoring an area close to their region of origin to keep family rooting (figure 2). Seventy-three percent of students have declared that rheumatology was their first choice after the ECN.

Practical rheumatology training: from bedside to simulation session

Regarding the 4 semesters spent in rheumatology departments, 70% of participants were satisfied with the training course distribution with 3 rotations in CHU and 1 rotation in non-teaching hospital centers as required by the teaching authority. The access to a rheumatology department in a CHU was possible for two-thirds of residents during the first year. However, 68% of students who had access to the CHU only in their second year, would have preferred to go earlier. This wish can be achieved in the new reform as first-year trainees have the obligation to do one semester in rheumatology in a teaching hospital whatever their rank at the national exam. Among the 4 freely chosen semesters, internal medicine, physical medicine and rehabilitation, neurology and radiology were the most attractive specialties for young rheumatologists (figure 3). Also, 92% of responders expressed their wish to have the opportunity to spend 6 months in private practice. Unavailable in the old model, a rotation in private practice is now possible for trainees enrolled in the new reform.

Technical acts are essential in rheumatology but the training during residency was disparate and not formalized. Joint injection was learned mostly directly on patients for 70% of responders while only 20% experienced training sessions on manikins but this practice will grow up in the coming years. Articular ultrasound and X-ray controlled injections were most performed by trainees during residency (89% and 56% respectively) while bone density scans were less frequently performed (38%). Electromyography was rarely accessible (7%).

Pedagogic sessions on clinical situation have been proposed to 9% of trainees by roleplay or on a computer program suggesting that most of them have been trained directly at the patient's bedside. In the future, the advent of new technologies will improve the training of students facing complex clinical situations.

Theoretical rheumatology training: from a regional to a national education

Teaching was organized at two levels: The regional level was mainly composed of courses delivered by teachers (54 %) whereas the inter-regional seminars regrouping different regions gave the opportunity to residents to present a topic to their colleagues (51%). Overall rheumatology courses were mostly dispensed at the regional level: 95% of residents attended this type of course. Access to a lecture by a professor was significantly associated with a higher degree of student satisfaction on a scale of 0 to 5 ($3,0 \pm 1$ vs $2,3 \pm 0,8$ $p=0,002$). Fifty percent of residents were able to attend 50 to 80% of courses. Theoretical teaching was organized as a minimum of 250 hours for the whole residency and has been increased to one-half day per week so a total of 120 hours per year which is 2 times more than before.

One-third of residents were currently registered in the EULAR online course or had completed it but only 40% agreed that this course should be mandatory to become a rheumatologist. Results were similar to young European rheumatologists with 38% of enrolment rate but 68% suggested that this course had to be mandatory[4]. In France, this course remains not mandatory for trainees but the French academic teachers (COFER) created an online video course fitted with self-assessment of knowledge.

The French Rheumatology society's (SFR) free congress policy for residents allowed 100% of them to attend the French congress. International congresses were less accessible with 7,6% of residents able to attend the EULAR, 5,1% the ACR congress and none for the ASBMR congress. This participation was very low compared to European rheumatologists (EULAR 66.4%, ACR 22.3%) [4] but the SFR is trying to increase this participation rate by offering financial support dedicated to young presenting authors.

Research training: the missing part of the new training?

Scientific training during residency is highly encouraged but not mandatory. Across Europe, only 4/45 countries have a mandatory research period [1]. Fifty-four percent of responders have done or will do a master meaning they extended their training to 5 years. The research topics of the masters were: biology (76 %), epidemiology (18%), biomechanics (4%) and 2% for other subjects. In the reasons stated by residents to take a one-year break to obtain a Master of Science, 65% stated that it greatly helped to obtain a fellowship as this position is sometimes highly competitive. Also, 30% of trainees had to wait one year to become a fellow as there are less positions available than residents. Despite this, 94% were at least satisfied with their research experience. The new training does not include this research training as mandatory and will be left unchanged from the previous system.

Future practice perspective: an impulse toward private practice

Sixty-two percent of residents expect to do a 2-year fellowship even if one third have to wait one year to get the job. Students feel it allows to acquire autonomy in the management of musculoskeletal diseases. However, the third phase of the new curriculum aims to empower students to be ready to settle in private practice with more confidence at the end of residency and therefore quicker than in the old program.

Most rheumatologists in training already know what type of position they would like to have when they certify (99%). Forty-six percent of residents would like to open a private practice but staying in contact with the hospital is of high value since only 10% would open a private practice without any contact (figure 4). A key message from this is that young rheumatologists choose the specialty for its propensity to be fulfilling in a private practice.

For instance, acquiring autonomy to use ultrasound is a major factor that will allow residents to feel more confident for their future practice. In our survey, 50% of French residents declare

being able to perform a musculoskeletal ultrasound. This reform allows 100% of residents to acquire the basic knowledge of the EULAR On-line Introductory Ultrasound course.

Quality of life during training

Particular attention has been devoted to the well-being of residents in the last few years. A first law tried to limit the number of working hours to 48h a week but the measures taken to enforce it were very variable between the different cities. Sixty percent of responders did not feel any benefit from these changes. On the contrary, this reduction in working time has created an additional burden for residents left to cover the absence of others.

Twenty percent of residents experienced a burnout episode during their training. Most of them reported difficulties directly linked to excessive working hours, stress at work, lack of recognition and isolation. This rate is in accordance with those found in the literature. In a 6 years prospective study of 3588 US residents, 45% declared having experienced burnout symptoms but their prevalence varied according to the specialty. Female sex, anxiety and specialty choice regret status were associated with an increased risk whereas a high level of empathy, emotional support and having children was protective against symptoms of burnout[5]. In our survey, when a sick leave was prescribed to the resident only 5% agreed to take the allocated time due to fear of stigmatization. Thus, great attention must be paid to detect the first signs of malaise at work in order to prevent the occurrence of burnout and close monitoring of the number of burn-out should be implemented with changes in the residency program.

The French training in the European perspective.

Two European surveys that focused exclusively on educational experience in rheumatology and training programs have been conducted in 2011 and 2015 but French respondents were small contributors in these studies[1,4]. Previous studies questioned the resident's opinion on their training during changes in their programs[6]. The EULAR online course on rheumatic disease could be a tool to homogenize rheumatology education in Europe but it is not mandatory in the previous or new curriculum. Only one European country requires completion of this course to become a rheumatologist [1].

The length of the new training: an ongoing controversy.

Young rheumatologists are satisfied with the current 4 years of training. They are looking forward to the semester in private practice that will be allowed by the new residency program that started in November 2017. However, there is a controversy on the overall duration of the residency with the reform. Some claim that it will be reduced to 3 years after the reform (figure 1) with a fourth year as a fellow. While most previous residents have 4 years residency and 2 years of fellowship, the new organization is thought to reduce the duration of French rheumatology residency (Figure 1), increasing the difference between France and the other European countries[1]. Others claim that the 4th year as residents will not be a fellowship year and that this will not reduce the duration of the training. Since the details of the application of this fourth year are subject to interpretation representative teachers and students' organizations have advocated to obtain a fifth year of residency.

In conclusion, this survey of young rheumatologists' residency training provides a useful description of the previous training that is the base to continue to build a successful new system. The new core curriculum which started to enroll in November 2017 seems to meet the

expectations of residents from the old program but there are still some unknown aspects that need to be followed carefully.

Disclosure of interests

S.B. and O.F. declare no conflict of interest relevant to this study.

Acknowledgments

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References

- [1] Sivera F, Ramiro S, Cikes N, Dougados M, Gossec L, Kvien TK, et al. Differences and similarities in rheumatology specialty training programmes across European countries. *Ann Rheum Dis* 2015;74:1183–7.
- [2] Guo H, Zhang H, Lu L, Ezzelarab MB, Thomson AW. Generation, cryopreservation, function and in vivo persistence of ex vivo expanded cynomolgus monkey regulatory T cells. *Cell Immunol* 2015;295:19–28.
- [3] Sivera F, Ramiro S, Cikes N, Cutolo M, Dougados M, Gossec L, et al. Rheumatology training experience across Europe: analysis of core competences. *Arthritis Res Ther* 2016;18:213.
- [4] Bandinelli F, Bijlsma JWJ, Ramiro MS, Pia E, Goekoop-Ruiterman YPM, Sivera F, et al. Rheumatology education in Europe: results of a survey of young rheumatologists. *Clin Exp Rheumatol* 2011;29:843–5.
- [5] Dyrbye LN, Burke SE, Hardeman RR, Herrin J, Wittlin NM, Yeazel M, et al. Association of Clinical Specialty With Symptoms of Burnout and Career Choice Regret Among US Resident Physicians. *JAMA* 2018;320:1114–30.
- [6] Mazzuca SA, Brandt KD. CLINICAL RHEUMATOLOGY TRAINING IN AN UNCERTAIN FUTURE. Opinions of Recent and Current Rheumatology Fellows About an Extended Fellowship in Musculoskeletal Medicine. *Arthritis Rheum* 1994;37:329–32.

Figure 1: Graphical representation of the previous and current rheumatology residency programs

(A) Scheme of the previous rheumatology training that is still valid for residents that entered the program in November 2016

(B) Scheme of the new rheumatology training that started in enrolling residents in November 2017

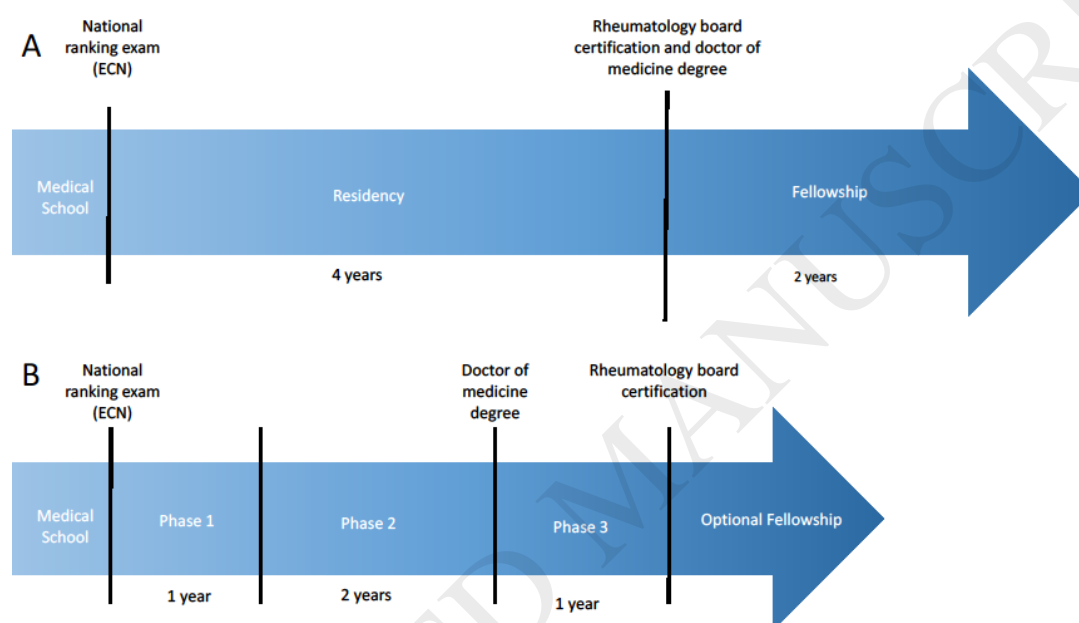


Figure 2: Mobility of residents between medical school and residency

Residents who changed cities between medical school and residency are represented. Each city is represented by a specific color. Fluxes are represented by colored lines from the departure city. The size of the line is proportional to the number of students. The direction is indicated by the larger part of the line being the destination. The black line separates the country in the north and south regions.

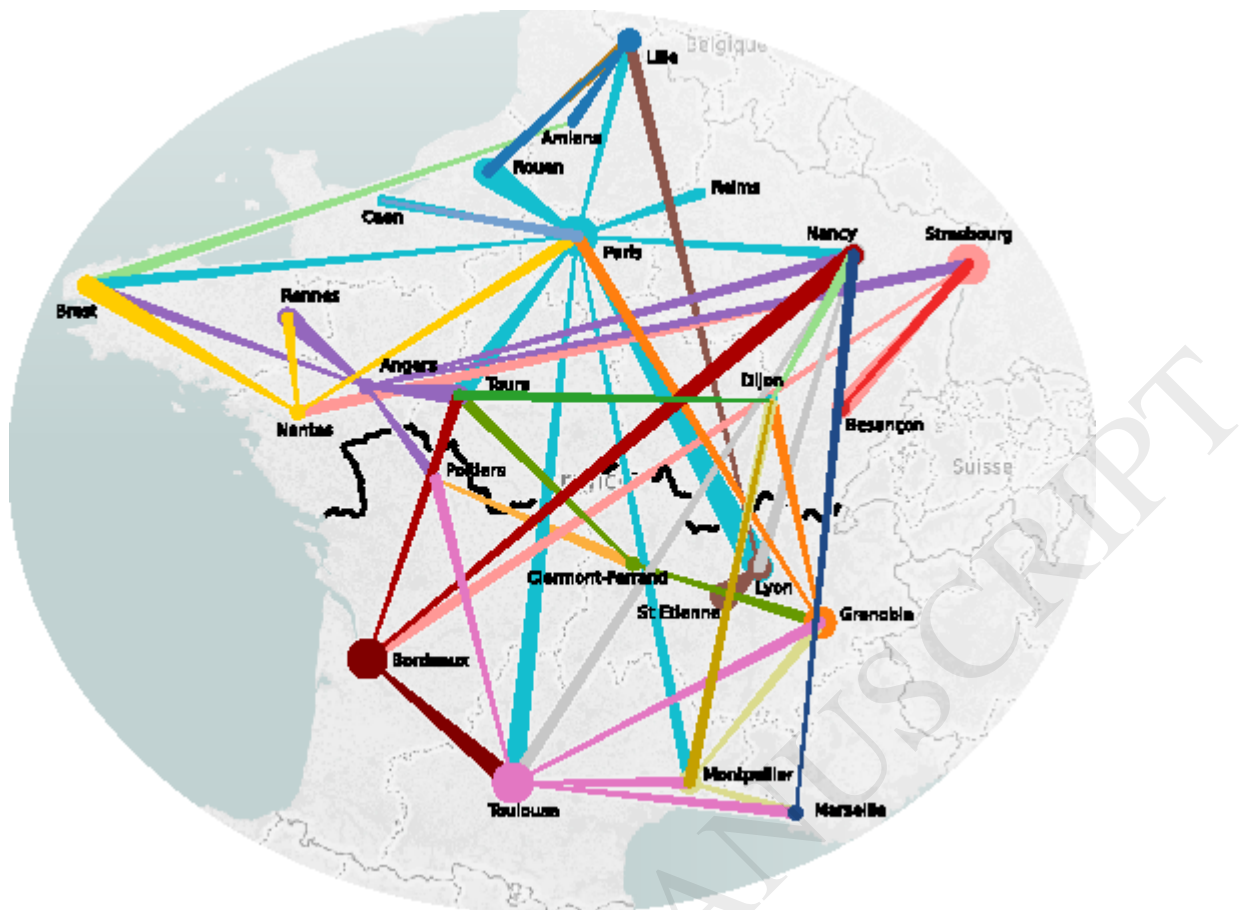


Figure 3: Type of wished or completed semesters outside of rheumatology

Results are displayed as a percentage of the responses. The specialty that recorded less than 0,8% of responses were excluded for readability and relevance of the figure.

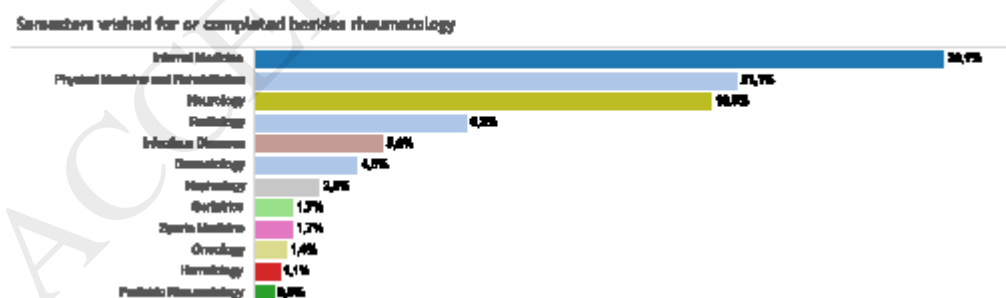


Figure 4: Wished type of future position of Residents in France.

Results are displayed as a percentage of the responses.

What type of position do you wish to have as a Rheumatologist?

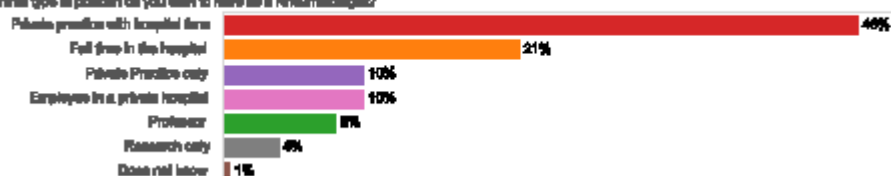


Table 1: Characteristic of the population

	<i>All participants</i>	<i>North region</i>	<i>Paris</i>	<i>South region</i>
	n= 130	n= 53	n= 32	n= 43
<i>Age (mean \pm SD)</i>	26,7 (\pm 1,8)	26,6 (\pm 1,8)	26,6 (\pm 1,8)	26,9 (\pm 1,7)
<i>female (%)</i>	81 (63)	30 (57)	21 (68)	30 (70)
<i>Ranking at ECN (mean \pm SD)</i>	1719 (\pm 1102)	2208 (\pm 1106)	1229 (\pm 634)	1538 (\pm 1164)
<i>Numbers of validated semesters (mean \pm SD)</i>	4,7 (\pm 2,2)	4,6 (\pm 2,2)	4,3 (\pm 2,3)	4,9 (\pm 2,1)
<i>Numbers of residents with at least 4 validated semesters (%)</i>	78 (58)	35 (66)	16 (50)	27 (63)

Continuous values are expressed in mean \pm SD, ECN: national ranking exam CHU: teaching hospital, NA: not applicable