PHARMACOEPIDEMIIOLOGY IN BARCELONA

INTERNSHIP REPORT FOR ERASMUS + TRAINEESHIP GRANT
INFORMATION ON INTERNSHIP

DATES: September 25 - December 22, 2017
HOST ORGANIZATION: Fundació Institut Català de Farmacologia (FICF)
Preamble

With this internship report, I intend to tell the story of my internship in Barcelona. For practical purposes, the report is in a relatively chronological order divided into following sections:

1. **Preparations**: How I found my internship abroad?, the internship project, my preparations, search for accommodation, and my expectations
2. **Working as an Intern**: My tasks, their relevance to my studies and past experience, new learnings, what I learned from being in another country and work culture, how I feel about my internship, and problems encountered
3. **Social Life**: Cultural aspects of living in a foreign country, social relationships, cultural impressions and language issues
4. **Future**: This internship’s effect on my future plans, tips and recommendations for future interns, suggestions for Student & Arbeitsmarkt

Since this report is not scientific in content, instead of a bibliography section, the websites to some Institutes or definitions are referred by hyperlinks. Although I check these hyperlinks’ validity at the time of writing this report, I cannot ensure their future validity.

I am thankful to Ms. Karoline Staude and Mr. Johannes Hoch from Career Service (Student & Arbeitsmarkt) of Ludwig Maximilians University Munich for the diligent support. Any interested student can contact me, if she/he needs any additional information or support from a peer.
1) Preparations

For the degree of Master of Science in Epidemiology the students are required to an internship in a related work area. I have been particularly interested in drug safety, a subject area under pharmacoepidemiology (i.e. epidemiology of drugs), because of my work experience in a Pharma company. Because consultations and correspondence may take time, I started my search for internship in November-2016 although the deadline for internship application to Department of Medical Informatics, Biostatistics and Epidemiology (IBE) was end of February-2017.

My search started by consulting my mentor, who is a member of faculty in Public Health Institute at LMU, about if she was aware of any projects or contacts in this field. She referred me to two faculty members whose research topics were related to the subject area. With a short e-mail I introduced myself to them and expressed my interests. They did not have any current projects in this field. When they could provide only a limited number of contacts in Germany, I expressed my intention to go abroad in case of a suitable internship offer. This option greatly increased the number of potential applications. One of them, a renowned Professor of the faculty, not only provided me a number of contacts but also was kind to give a Letter of Recommendation (LoR) upon my request.

To all contacts in the Institutes and Companies my Professor mentioned, most of which were from the website of European Network of Centers for Pharmacoepidemiology and Pharmacovigilance (ENCePP) I sent a brief e-mail containing the following attachments: my up-to-date CV (2 pages long), a cover letter (1 page long including my motivation and possible timeline for internship), and the LoR. For my CV and cover letter, I had already requested feedback from sources I trusted, including my back-then contact from Student und Arbeitsmarkt, Mr. Johannes Hoch.

For most of the abovementioned internship application e-mails, I received no responses. A couple of organizations sent kind rejections. Luckily, I received a preliminary project offer from Dr. Luisa Ibañez at Fundacio Institut Catala Farmacologia (FICF) in Barcelona (BCN), Spain. The subject of the project was very exciting and in the exact field in which I wanted to work: “Antidepressants and Risk of Stroke”. The proposed internship project was collaborating in a retrospective cohort study to measure the risk of stroke associated with antidepressant use. Upon this offer, I immediately contacted Mr. Hoch to learn about scholarship options. I was aware of scholarship opportunities for internships abroad because Mr. Hoch had made a presentation on the subject.

With Dr. Ibañez, we continued communicating via e-mail and clarified the timeline, details of the project, and language requirements. The details and internship application was finalized at the end of February-2017 and FICF sent me an internship agreement to be signed. For the internship period (second part of my internship) eligible for Erasmus + Traineeship Grant, I prepared and collected the documents from May-2017 to August-2017.
Administrative paperwork requirements from IBE, FICF and Student und Arbeitsmarkt were the priorities. While completing and organizing them diligently, I visited Consulate of Spain in Munich to make sure that any visa or permit requirements were met. Luckily, no visas were required for the internship period but an identification number, Número de Identificación de Extranjero (NIE), from Spanish government was necessary. I prepared necessary documents and applied for this number.

For my accommodation search in BCN I initially asked to FICF if there were any convenient options. When they sent a public website for searching a room in shared apartments (WG), I decided asking to my friends in BCN, with whom I had me during the first part of my internship. One of my friends at FICF was going to have her rotation in a foreign country almost at the same period as I was going to be in BCN for the second part of my internship. For this period, she wanted to rent her room, which was very convenient for both of us since we did not need to search websites and contact strangers.

When the accommodation was all set - alongside with approval of my Scholarship application before my arrival to BCN, I made sure that I had enough cash because there is a fee for drawing cash from a German bank account in a foreign country. I did not want to pay this extra fee. Also, I checked the approximate fall-winter climate in BCN to pack-up and bring relevant clothes. Since the Epidemiology Master program was an international program, the program office had already arranged an intercultural communication training to all incoming students, including me, during the 1st term. Hence, I did not need to retake another intercultural training. The language of the internship was English, in which I was more or less proficient. Due to this, after passing the language test from Erasmus Online Language Support, I requested enrollment to Spanish language Course, in which I was almost an absolute beginner.

During this internship, I expected to get familiar with data analysis in a statistical software, develop my study design and literature search skills, and become proficient in advanced observational study methods like propensity score methods. Alongside these professional expectations, I wanted to learn about the work culture in Spain and form a network in Barcelona. An idea was to turn this project into a Master’s Thesis project.
2) Working as an Intern

During the 3 months of this internship, I mostly worked with the study data provided by SIDIAP, the data owner/manager of the study. My main task was to support data analysis. For realization of this task, it was important to initially know the data. All the statistical analysis mentioned below are performed in SAS Enterprise Guide 9.4.

The data description started with checking the data tables in SAS (Statistical Analysis System) for coherence and presence of all the requested variables by comparing them to the planned tables in the Operational Protocol. The missing values in the data tables were checked. For each variable, I ran and reported descriptive analyses (frequency analysis and, as appropriate, statistical analysis) in order to detect any abnormalities or extreme values in the data. Also, I joined the data tables or created new variables in preparation for analysis and further data checks. Another property of the data to report was the population coverage of each available table. I calculated the proportion of population of interest with at least one entry in the study data tables. As another source describing the data, I reviewed the latest version of Data Specification Document reported by SIDIAP.

An aspect to consider was the validity of the data. With the available data, I could compare the outcome of death or the outcome stroke from two different sources. This validity check was developed to check only incident stroke and to check the validity of time recorded in the data tables. I could also check the logical flow of longitudinal smoking status entries. I also checked the compliance of the dates with respect to the life course of the patients: theoretically patients cannot have medical data before birth or after death. During all these steps of data description and validity checks, I kept a diary of performed tasks. With data description and data validity related tasks, unanticipated qualities of data entry or recording practices were detected.

With the discovery of the qualities and limitations of the available data, the “new users” for analytic part and descriptive part of the study were redefined. According to the definition, new users were filtered from the data, their counts were Reported and the count of patients excluded at each condition was found to construct flow-chart. In order to see the correspondence, the new users for the descriptive study, which were defined according to prescription table, were compared with the independent table of dispensation. Similarly, the new users for the analytic study, which were defined according to dispensation table, were compared with the independent table of prescription. I also calculated the time between prescription and dispensation. The characteristics of new-users with no respective prescriptions was compared to characteristics of new-users with respective prescription.

Hospitalization data was further discovered to assess its usefulness as an exclusion criteria or outcome detection. The main discussion was if the use of this table would introduce any bias to the study or not.
All the above mentioned data description and checks also resulted in request of more inclusive, updated data tables from SIDIAP. For these data tables, I checked if all the codes (ICD9, ICD10 and ATC codes) requested from SIDIAP were present in the latest version of Data Specification Document and reported the missing codes.

My literature search skills developed on an as-needed basis. I read Marginal Structural Models in SAS Programming as a possible method for longitudinal data analysis. I searched the relevant literature for baseline confounding control methods, including propensity scores. I presented the subject of propensity score methods in observational studies. Additionally, I read about pros and cons of using composite endpoints. Meanwhile, I grew the habit of using Mendeley as a reference management software.

For refining the analysis plan, I further calculated the prevalence of individual outcomes (stroke or death) in the total study population, the summary statistics for number of visits, the average number of dates between successive visits and repeating diagnoses and their end dates. At the end of my internship, I presented my tasks, what was achieved and what awaits. I also submitted a report on the main findings/results from the internship.

During all these steps, my supervisor and the team of co-investigators helped me. They not only reviewed and revised my work, but also gave me tips and recommendations along the way. We held weekly meetings to discuss upcoming issues, follow-up the pending tasks and share information. During these meetings, I took and organized the meeting notes related to this project.

The abovementioned tasks, which were related to pre-analysis phase of an observational pharmacoepidemiologic study, was very similar to the subjects taught in Epidemiology and Research Design and Quantitative Methods Core Modules and Clinical Epidemiology Specialization Module at LMU. Describing and knowing the data prior to any analysis and designing the analysis according to the limitations/qualities of the available data were taught as critical steps in conducting quality research. Applying these was a great experience.

In summary, with this project I learned how to describe, explore, clean and validate pharmacoepidemiological data, how to use SAS Enterprise Guide and SAS Programming, how to review, edit and format study protocol. I also developed an understanding of pharmacoepidemiology-related variables, terms, classification systems and statistical methods, and how to control confounding variables in observational studies by propensity score methods.

Working full-time in the project, I never ran out of tasks to complete. In line with my expectations, I grew familiar with data analysis in a SAS, a statistical software. I also developed my study design and literature search skills. Although I cannot argue to have become proficient in advanced observational study methods like propensity score methods, I am more confident discussing them and have an idea about their advantages.
and pitfalls. My supervisor is supporting the idea: hopefully, the outcomes of this project will become my Master's Thesis.

What I learned from my tasks during the internship is one thing, what I learned from working in a different culture is another thing. Most importantly, I experienced collaborating with a team of researchers. This collaboration was in a foreign country, by which I increased my adaptability to work in foreign settings and with people with different worldviews.
3) Social Life

The FICF was multinational; composed mainly of people from Spanish-speaking countries. My coworkers were very kind, friendly and considerate. They always made me feel included. The culture is so friendly and inclusive that the people in the Institute started chatting with me when we met in the kitchen or on the corridor. In Catalonia, work relationship goes hand in hand with close personal relationship, which I found enjoyable. A good/trustful working relationship grows on the basis of a personal connection. Additionally, the relationships between coworkers were more egalitarian than I was used to. For instance my supervisor, the lead investigator of the project, was behaving very open and close to me and to other co-researchers in the project. I really liked this style and observed to learn.

Living in Barcelona was culturally a great experience. This city is filled with people who like outdoors and enjoy spending time in social spaces. There are a lot of nice parks around the city, which are great places to do sports or just to rest in the open air. In terms of general behavior in public spaces, it was important to observe people and to ask my coworkers and housemates about any confusion. Behaviors in traffic, in the metro and in the marketplace was different than what I was used to. The main principle of all the behaviors was kindness: I could see people helping each other in the marketplace, in the metro etc. Also, the rules were not regarded as too strict: for instance, pedestrians were crossing the street at red traffic light when they observed no car was coming. I tried to learn from their helpfulness and adapt to their flexible understanding of rules.

Another behavioral aspect I needed to learn and comply with was, of course, how to behave in the workplace and my new housemates. The first day I moved in, we discussed about all the responsibilities with my housemate. My main out-of-work contacts in Barcelona were my housemates, all of whom were physicians doing specialties. We not only shared the kitchen, bathroom and the living room but we shared our daily worries and tasks. My housemates practiced their English by talking to me and they helped me learn basic Spanish. We also cooked special dished from our countries.

Food was very important to the people I met in BCN. The time spared to enjoy meals, the varieties, and the chat around cooking and eating were signs of this. I think they were rightful in attributing this importance because the food there was fresh and delicious. As a representative of the Mediterranean cuisine, there were abundance of sea food and vegetables in every meal, also in the FICF’s personnel cafeteria. There were great variety of olives and cheeses available in local markets. There are local markets all around Barcelona, in which fresh varieties of meat, vegetables etc. can be bought. One of the markets close to my home was the historical Mercat de la Llibertat, which immediately became the destination of my weekly shopping. Both my housemates and coworkers also informed me about the region’s specialties and what to try.
In terms of maintenance of daily life, although I had thought knowing English would be enough for my internship period in Barcelona, I was wrong. Professionally, for my tasks and relationships in the Institute, English was enough. But out of the Institute, in the daily life, knowing at least intermediate level of Spanish would be very beneficial. Of course, the native language of Barcelona is Catalan, yet all people also speak Spanish. By attending a few Erasmus Online Language Support courses and during my daily encounters, I managed to learn very basic expressions.

I also had the chance to visit the tourist attractions. I visited Tarragona, which is a historic town from the Roman times and located South of Barcelona. All my coworkers in FICF were friendly and toured with me in the city and guided me. In the city, I visited Miro Museum, Picasso Museum, monuments of Gaudi, the old Cathedral, Santa Maria del Mar, Mercat de la Boqueria and of course Las Ramblas. Interesting districts to see were Barceloneta, Pabloneu and Gracia. For Dali Museum, I travelled to Figueres. Until mid-October, I also went to the beach to enjoy swimming.
4) Future

I already had interest in this subject field before starting the internship. This internship period, total of 5 months of which 3 months were eligible for Erasmus grant, was a confirmation of my interest. I love epidemiology related to interventions, particularly pharmacoepidemiology, and will continue working on these subjects, if possible. For immediate future, under the supervision of Dr. Ibañez, I plan to finalize the analytic part of the internship project. To this end we will suggest this project as a possible Master’s Thesis to IBE.

Becoming acquainted with Spanish culture and language will be beneficial for any international endeavor I will take in the future. Since Spanish is one of the most commonly spoken languages in the world, this familiarity will add value to my background experiences. Additionally, working/studying in diverse countries develops flexibility and self-confidence: after this internship, I feel like I can more easily start living and working in a foreign country in the future. My flexibility to adapt to new and unexpected events has greatly increased. I hope anybody who wants to do their internship abroad will find the chance.

Instead of satisfying it my appetite for travel and discovering new places, this internship increased it. Hopefully, I will continue visiting new places and meeting new people.

Following is a list of tips I have collected through making or observing mistakes. For any future intern, I would have the following recommendations:

• Spend time to prepare for and look for the internship of your dreams. Do not hesitate to consult your professors/mentors etc. and if possible, receive their support.
• If you have the possibility, learn the hosting country’s language beforehand (at least at intermediate level).
• Early in your application process, consult the Consulate of the country in which you are planning to do your internship to ensure any requirements are met.
• Collect necessary documents for application and internship as early as you can.
• If you do not know the rules in your new home or workplace, just ask. Also, observe how your housemates or coworkers behave to adapt your manners accordingly.
• Ask the locals for cheap and good shopping options. Also, ask them good sightseeing options.
• During your internship, do not hesitate to ask questions and contribute more than you are asked for.

Recommendations for interns planning specifically to come to Barcelona:
• Enjoy the nice weather and your time here. Spend time outside, frequently eat seafood and taste the great cuisine.
• There is a lot to learn from the friendly, kind and lively people of this city. Observe and for the sake of experience, try to adapt your behaviors.
• Take time to go around the city and to visit the great monuments here. Walk, cycle or swim as much as you can.

Finally, I wish I had suggestions for Student und Arbeitsmarkt. I have no suggestion for improvement because they have not only been so supportive and diligent but also all the process has flown so smoothly. For this internship period, I can only express my gratitude for their support and hope that future interns will be as lucky as I have been.