

**Recipient:** Styliani Giza, Greece

**Duration:** 2 months, 9 weeks (April 22<sup>th</sup>-June 21<sup>st</sup> 2024)

**Host center:** Diabetes & Endocrine Care Clinique Pédiatrique, Centre Hospitalier de Luxembourg

**Fellowship supervisor:** Prof. Carine De Beaufort

### **Introduction**

I was honored to be one of the ISPAD Allan Drash fellowship for year 2023 and I was indeed blessed to be finally able to stay 9 weeks at the Diabetes & Endocrine Care Clinique Pédiatrique (DECCP), Centre Hospitalier de Luxembourg (CHL) in Luxembourg with Prof. Carine De Beaufort as my mentor. I should admit that it was the most constructive, inspirational and empowering, “once in a life-time” learning experience for me and my first ever with international medical education.

Prof. De Beaufort is a pediatric endocrinologist with extensive and internationally-recognized experience in diabetes management and research and highly active engagement in ISPAD executive board and advisory council. She is a very smart, inspiring and communicative person. A longtime before arriving at Luxembourg we have discussed my objectives and she warmly introduced me to the members of the excellent team she has established. From the very first moment of my fellowship, I was strongly welcomed and I felt real member of the team.

DECCP is the only center in the whole country taking care of children with diabetes and endocrine diseases, not only from Luxembourg but also from neighbouring countries (Belgium, France, Germany). The DECCP team in the Pediatric Clinic (Kannerklinik) consists of 6 pediatric endocrinologists & diabetologists, 4 pediatric diabetes nurses, 2 dietitians and a psychologist and there is a close collaboration with other sub-specialists in the hospital. Over 350 children and adolescents with diabetes are followed in the clinic. The multidisciplinary team also cares for children with obesity and overweight in the context of MOTOR network, and a vast set of frequent but also rare endocrine conditions. The DECCP in the CHL is a highly esteemed Center of Excellence within the ISPAD Network, a Center of Reference for the SWEET project and a full member of the ERN-ENDO, with great experience in integrating electronic registration and evaluation of data in clinical practice, on the one hand, but also in the extended use of technology in diabetes care on the other one.

### **Learning objectives**

My specific aims for this clinical fellowship were to:

1. improve my training in the best use of newest technology for children and adolescents with T1D
2. attend CGM and pump start classes and evaluation of the reports and increase my knowledge on connected insulin pens, CGM downloads and analyses, insulin pumps
3. observe the team approach on new onset sessions, follow-up meetings and transition practice
4. follow a typical day of a diabetes camp
5. get familiar to the diagnostic and treating protocols of pediatric patients with genetic disorders of glucose and insulin homeostasis
6. attend educational training and webinars taking place at this time
7. participate, if possible, in a preparation of a manuscript or study protocol.

I am delighted to say that all my objectives as were expressed one year ago have been fulfilled and my expectations were exceeded.

### **Clinical experience**

#### **Diabetes Outpatient Clinic**

The Diabetes Outpatient Clinic is a full day clinic from around 8 a.m to 5 p.m that functions perfectly and offers a huge number of medical, nursing and dietary consultations as well as psychological care on daily base. About 85% of the children and adolescents in the service are on insulin pump, but even the rest that is on MDI treatment take advantage of the newest technologies regarding smart pens, i-port and CGM.

I have participated in the outpatient diabetes clinic of different pediatric endocrinologists and nurses who had different areas of expertise and interest and discussed newly diagnosed and long standing cases of all age groups, giving me a large spread of experience and influences. Every morning they helped me plan the daily programme according to the scheduled activities and their availability and convenience in order to participate in the most interesting and relevant to my objectives consultations. It was amazing to realize the efficiency and importance of the daily presence of members of different specialties of the diabetes team in the same place with the invaluable help of administrative staff.

Lot of time is dedicated to each family. Patients typically have appointments with at least 2 care team members during each quarterly visit. Each consultation is scheduled to last 30 minutes for the nurse and 30 minutes for the physician. Firstly, nursing consultation at which anthropometric parameters are evaluated, capillary glucose and HbA1C are measured, blood glucose readings are downloaded and any trends are identified and technical or other issues (even useful advice for vacation) are discussed. Secondly, medical consultation at which the pediatric endocrinologist meets the family to discuss the state of glycemic control, congratulate on positives and note the points for improvement, adjust pump settings or insulin injection doses and answer any queries. I had the opportunity to observe the interaction between patients, parents and health professionals focusing not only on conventional medical outcomes but also on physical activity, academic performance, psycho-social well-being and quality of life of patients/families, preventing diabetes from being at the center of life. I liked their communication skills: beginning and ending up their consultations with a handshake, making questions with true interest and always trying to find something positive to congratulate on and motivate patients and their families.

The clinic has a varying population in terms of demographics (age and sex), socio-economic status, cultural background and glycemic control. I had the opportunity to get exposed to various different kinds of patients. This gave me an insight into “how different but still the same” are patients on basic concepts and issues regarding their diabetes. In parallel, each patient’s diabetes management is unique without any discrimination and this was a invaluable clinical experience. Individualized care is evident even in the context of transition, as there is not a strict age limit but rather an age range for this, exceeding the age of 18 or 20 years in cases there is a need to extent care in a pediatric clinic for a while for patient’s benefit. I was surprised to attend the visit of an adolescent after the first consultation with an endocrinologist in order to discuss the general impression and affirm the successful transition.

Furthermore, due to the high genetic heterogeneity of population living in Luxembourg, I was engaged not only with T1D but also with MODY and other rare diabetes cases related to INS gene mutations or cystic fibrosis. The most challenging was to participate in the consultation of adolescents with T2D which is extremely rare in Greece. All this engagement gave me the opportunity to follow and discuss not only the classical but also the new pharmacotherapy, participate to multidisciplinary team meetings and get informed on research protocols for diabetes like INNODIA.

I also attended physicians and nurses completing the data of new visit form in DPV at the end of every consultation along with updating electronic medical recording of the clinic.

### **Diabetes Inpatient Clinic**

Inpatient visits are mostly in the context of children with newly diagnosed T1D and, as such, are very important for establishing trust between the child or adolescent and family and the members of diabetes team, which is essential for successful management of diabetes. I had the opportunity to participate in the education of 3 newly diagnosed T1D patients of all age groups with varying clinical presentation and personalized management that gave me a lot of experience. For one of these cases, I visited the emergency department with one of the nurses in order to accompany the patient to the pediatric clinic. These first minutes are very important in creating a relationship of trust. With the youngest one with stage 2 to 3 T1D, I had the great opportunity to participate in all the aspects of the pump start education from the very first moment of diagnosis and during the 3-day hospitalization and get familiar with advanced technology and specifically with CamAPS HCL system and observe how much it improves glycemic control in practice. It is an innovative treatment opportunity for very young children offered in Luxembourg, but not in Greece where there is not available HCL for patients below the age of 7 years. In general, it was very interesting to attend new onset T1D education following a checklist to provide the patients and their families with all the essential theoretical and practical knowledge about diabetes, self monitoring of blood glucose, hypoglycemia, hyperglycemia and sick day management, insulin injections and storage, glucometers, different types of CGM and insulin pumps and showing different CGM and pump catheter insertion technique. The education process is enriched with up-to-date, well-written, easy-to-read illustrated printed material. A time-table for all the consultations of the multidisciplinary team is organized from the admission and it is very helpful that it is shared with the family. There is a rotation of all the pediatric endocrinologists being engaged with diabetes and all the nurses according to their convenience, providing the opportunity to the family to interact with the whole of the multidisciplinary team, gaining knowledge in the same spirit but in a way that is not tiresome and monotonous neither for the family nor for the members of the team, as T1D education is not a matter of one person. The approach is truly multidisciplinary and the whole team functions together as one, providing holistic family-centred care, speaks the same language and gives the same message. This is very important for the best function of 24/7 emergency telephone access, as there is a monthly plan for on-call duties for all the pediatric endocrinologists engaged with diabetes and patients and parents can also talk with nurses for technical or other issues. In the context of the T1D education, I attended dietary consultation in order to see any differences from our approach. It was mind changing to see how patients are being encouraged to count carbohydrates and continue their life following the same path they were on before diabetes in a different and more flexible approach. Dietary education is accompanied by an excellent pocket book for easy carbohydrate counting. I am grateful for being offered one. An adolescent with T2D was also hospitalized and this was a great opportunity for me to get familiarized with T2D pharmacotherapy and follow the multidisciplinary care.

Physicians and nurses make also inpatient evaluation, consultation and counselling. I was lucky to visit patients with glucose metabolism and endocrine disorders not only in the pediatric clinic but also in the pedopsychiatric clinic as well as in the neonatal

intensive care unit and the one-day clinic, where endocrinology stimulation tests are performed by specialized nurses, enabling patients to be discharged the same day.

### **Technology**

I gained knowledge and experience in the use of the newest technology. I was exposed to a multitude of diabetes technologies, including CGM and AID systems. It was very helpful for me to be exposed to CGM and pumps that are not available in Greece, Dexcom G6 and G7 and Tandem Slim X2 and CamAPS with Dana and Ypsomed and make comparisons with FreeStyle Libre 2 and MiniMed 780G, respectively, available in Greece. I was also got informed on CGM ready to be commercially released in the near future in Luxembourg, like FreeStyle Libre 3 and Simplera Sync. I had the opportunity to observe the process of preparing different pumps for initiation and catheters and sensors for insertion. It was also impressive how physicians and nurses pay the necessary attention for skin protection through the selection of catheter type and suggestion of consumables for skin preparation and care. I noted in practice and discussed the advantages and limitations of each device and how to guide patients to make the appropriate choices regarding their glycemic control, care involvement and lifestyle. I learned more about how to interpret CGM and pump data and discuss on them with children and their families and how to support them in implementing changes and modify the settings accordingly to improve glycemic control. The daily interaction even with HCL systems that are not available in Greece made me understand how their algorithms work and compare their effect on glycemia.

I came to know about the ways to upload and download data from various CGMs, and insulin pumps onto the computer for saving in DPV and analysis purpose. I became more familiar to different diabetes care platforms, softwares and applications. I saw glooko transmitter facilitating transmission of data from CGMs and insulin pumps to Diasend account. The nurses teach also the patients how to download and share glucose readings.

I liked the fact that patients and families can receive the whole diabetes technology education in the hospital by nurses and company representatives are not implicated at all. As a result, every physician and nurse is fully skilled and equally capable in the technical support of CGMs and pumps. It is impressive that there are CGM and pump samples of any kind and consumables for demonstration and application and as a result education is theoretical and practical. Patient can have a trial of insertion of the pump and/or the sensor and take them at home for a couple of days to be more sure about the final choice.

### **Diabetes Camp**

I was lucky to have the opportunity to participate in a weekend with about 40 children and adolescents with diabetes, led by DCCEP medical staff with the support of the Association Luxembourgeoise du Diabète. It was such an inspiring and wonderful experience. Spending 24 hours with children with T1D for the first time made me deeply aware of their challenges, how to manage hyper and hypos, deal with the physical activity, calculate carbs and make insulin adjustments. I put to practice the knowledge that I had acquired in the first 2 weeks of the clinical fellowship and attended solving technology trouble shooting. It was very interesting seeing children wearing different diabetes technology devices. We also had fun and we had the time to interact in a more personal way not only with children but also as a team.

### **Endocrine Outpatient Clinic**

I had the opportunity to attend various interesting endocrine cases (obesity, growth, thyroid, puberty, metabolic bone and lipid disorders, rare endocrine diseases and

syndromes) and discuss their clinical approach and management. It was a great school for me.

I learned what should be the way to take the endocrine medical history through a well-structured series of questions in the electronic medical recording. Data entry into the electronic medical recording was done during the visit and there are not printed medical records. This process saves a lot of time. I found very useful planing of new consultations for 60 minutes, of phone consultations for discussion on evaluation results for 30 minutes and of follow-up visits at the end of the consultation by the secretaries.

### **Education programme**

The endocrinology team has weekly meetings every Tuesday to discuss on interesting cases and up-coming scientific issues (eg local protocols) according to the staff agenda being up-dated by every pediatric endocrinologist during the previous week. Complex cases were discussed in detail to gain and exchange experience in a friendly and cooperative way. It is very interesting that during the meeting they fill in the staff agenda with the basic conclusions and proposals. It was a great opportunity for me to learn from other team members, clarify any ambiguity and discuss up-to-date endocrinology management.

After endocrinology staff is the diabetes staff with the participation of all the multi-disciplinary team (pediatric endocrinologists, diabetes nurses, dietitians, psychologist). Diabetes team members discuss on new diabetes patients and problems faced by children and families and resolved during consultations and 24/7 emergency telephone calls. As a result, every team member gets informed for the course of every patient to ensure the uninterrupted continuation of follow-up.

On Tuesdays, there are also the MOTOR multidisciplinary team meetings for overweight and obese children and adolescents.

I also attended one of the monthly meetings with clinical geneticists for discussing their proposals for further evaluation on interesting cases.

I had also the opportunity to be informed on the latest data from company representatives on Freestyle Libre 3, Omnipod 5, IMCIVREE and to participate in a zoom meeting on up-coming issues for CamAPS system users after the kind invitation of Dr Schierloh.

All the consultations, the staffs and the discussions gave me a strong stimulus to read on every case and the relevant guidelines. It was a great learning experience to understand the local protocols for pediatric diabetes and various endocrine-related conditions.

During one of the staff meetings I made a presentation for my center in Greece and for what I have learned during my fellowship. I was asked to make comparisons and and think about proposals for them for further improvement but even now I cannot find something that needs to be changed.

I have attended a lesson on precocious puberty by Dr Marianne Becker in the context of the lessons of Wednesdays along with the pediatric fellows.

I was very lucky to attend one of the trainings at school for teachers of a T1D patient on diabetes with the nurse Mareva Francois.

### **Conferences**

I attended with the kind invitation of Dr Schierloh and the kind support of Mrs Virginie Renson, MEDTRONIC Therapy Specialist Diabetes, the MEDTRONIC Pediatric Expert's Meeting, in Gembloux, Belgium. It was a great opportunity to attend the talks of great speakers including Dr Schierloh on the newest diabetes technology advances and the clinical cases presentations.

### **Research experience**

Although the main aim of the fellowship was to improve my clinical expertise, I received the honorary proposal by my mentor to work on a scientific paper in collaboration with Dr Gloria Aguayo from the National Health Center of Luxembourg.

### **Other experiences**

It would be an omission, if I don't mention all the opportunities for invaluable memories: the fantastic weekend with children with diabetes at the north of Luxembourg, the excellent dinner and stay in Gembloux and the so warm and touching invitation for a lunch break, the day before leaving. They were fantastic opportunities to have a wonderful time, enjoy discussion and take photos.

### **Lessons learned**

I see this fellowship as a great opportunity in terms of clinical experience and I have improved my skills with newer diabetes technologies thanks to the experience and confidence I gained at this centre. Education is a continuous process that for diabetes patients starts with onset of diagnosis and continues for lifetime but for health professionals lasts for ever in order to be up-to-date for the best diabetes care. I realized the value of team in managing diabetes, that multidisciplinary team is the cornerstone in diabetes management and the more numerous the team, the better the care. The whole experience enhanced my passionate to try to offer children and adolescents with diabetes the most appropriate management.

### **Acknowledgement**

Looking back on this wonderful journey from the very first moment, I would like to acknowledge everyone who supported me in completing the ISPAD Allan Drash Clinical Fellowship:

- ◆ the Head of my Center Prof. Assimina Galli-Tsinopoulou for giving me the recommendation and permission for the fellowship
- ◆ ISPAD for accepting my application for the fellowship and providing me with this precious opportunity, which exposed me to the recent advances in managing diabetes in a well-recognized center by an amazing mentor. It helped me not only to upgrade my knowledge and experience but also to become a more mature person.
- ◆ my mentor Prof. Carine De Beaufort. My deepest gratitude belongs to her. It was such a great honor and privilege for me to know her and be her fellow. She was a wonderful mentor, so kind, caring, helpful and supportive. She warmly welcomed me and shared her invaluable experience with me in so many cases. She offered me generously the knowledge and the confidence to the extent that made me feel as one of her great team. I can't express my gratitude enough.
- ◆ the best team ever, the pediatric endocrinologists Dr Marianne Becker, Dr Nicolas Bonnet, Dr Chiraz Ghaddhab, Dr Ulrike Schierloh, Dr Michael Witsch, the diabetes nurses Muriel Fichelle, Mareva François, Yasmina Rayane, Dominique Schaeffer, the psychologist Michèle Schutz, the dietitians Sarah Clesen, Lynda Vandivinit. They are incredibly cooperative, very professional, highly qualified, with extensive experience, willing to discuss on every question. All warmly welcomed me, gave me generously opportunities to learn and shared their knowledge. They were really polite, very accepting, patient and empowered me all the time. I will not forget the kind smiles of everyone every morning I came in the hospital. Prof De Beaufort, you should be very proud for your team. The atmosphere is so lively but calm.

- ◆ Dr Gloria Aguayo from the National Health Center of Luxembourg for the knowledge she shared with me and the excellent collaboration we had for the preparation of the manuscript
- ◆ the secretaries and the administrative staff for being so kind and helpful
- ◆ all the families who were very welcoming for me attending their consultations
- ◆ my husband and my children who were incredibly supportive and empowering from the very first to the very last moment of this wonderful journey. Without their endless support I could not have fulfilled this life and career goal.

I am so lucky that I had my ISPAD Allan Drash Clinical Fellowship at DECCP. I couldn't have wished for anything more. I recommend all interested candidates not only to pursue this ISPAD fellowship but also think of DECCP as it will exceed all your expectations.

I am deeply grateful to my mentor Prof. De Beaufort and all the members of the team. You offered me so generously knowledge, experience and only positive feelings. It was a life changing experience for me.

I hope we will always stay in touch and we will be able to meet again as soon as possible. I am certain that everything I learned from Prof. De Beaufort and her colleagues will be an invaluable resource and inspiration for me to be a successful member of a pediatric diabetes team.