TO FIP FOUNDATION/ PHARMACISTS WITHOUT BORDERS FINLAND

REPORT OF THE

PHARMABRIDGE PROGRAM

IN FINLAND, 23.09 – 13.10.2024

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PRESENTATION OF THE PROGRAM

I- CONTEXT

Pharmabridge is a program under the International Pharmaceutical Federation (FIP), particularly the FIP Foundation. The purpose of the program is to support the development of pharmaceutical scientists and practitioners by giving them the opportunity to learn more about their specific field of interest with another pharmacist and institution in the same field who have gained more experience and knowledge (1).

Being accepted into this program was a great privilege for me. It demonstrated that distance and challenges can be bridged through shared knowledge and collaboration.

In February 2024, the FIP Foundation hosted a webinar to introduce and discuss the program(1). After expressing my interest and completing the planning process, I finally arrived in Finland from September 23rd to October 13th to fulfill the Pharmabridge Program.

During this time, I connected with numerous pharmacists and pharmaceutical organizations in both Finland and Estonia.

As a pharmacist from the low- and middle-income country of Madagascar, this experience was transformative. It was not only an opportunity for professional growth but also a chance to gain insights on how to address healthcare challenges in my home country. I was happy to learn from them, but also to share about the pharmaceutical system in Madagascar.

This report presents key takeaways from my daily visits, including the host, visit structure, and topics discussed. It concludes with discussion, reflections and recommendations.

II- AIM OF THE VISIT

The purpose of the visit was to learn about patient-oriented clinical practice in Finland and to understand how Finnish pharmacists are educated and trained for their clinical roles. Through this experiential learning, I was exposed to innovative practices and new advancements, including technology, in the pharmaceutical field.

Below is an overview of the visits and programs I participated in during my stay in Finland:

Day	Date	Visited Organization	Hosts
1	23/09/2024	Association of Finnish Pharmacies	Inka Puumalainen, Director for Pharmaceutical Affairs and Sonja Kallio, Expert on pharmaceutical professional matters
2	24/09/2024	Association of MSc Finnish Pharmacists	Teemu Ali-Kovero, Executive manager
3	25/09/2024	University Pharmacy, City Center	Mari Havia, Pharmacist Kari Linden, Research Manager
		Oriola Wholesaler, Espoo	Garmiyan Amiri, Quality Specialist

4	26/09/2024	Pharmaca Health Intelligence	Elli Leppä, Development pharmacist
5	27/09/2024	Finnish Learning Center for Pharmacy	Katariina Kalsta, Executive manager Anna Salonen, Minna Svensk, Matias Lemmetty and Soile Tähtinen
6-7	28/09/2024 29/09/2024	Weekend break and discovery of Finnish culture	
8	30/09/2024	Community pharmacy in Lahti + Subsidiaries	Sirpa Peura, Pharmacy owner
9	01/10/2024	Visit of Estonia	Birgitta Laanmets, Manager of the pharmacy museum
10	02/10/2024	Community Pharmacy in Hanko + Presentation Patient Organization	Taavi Pärnänen, Pharmacist & Kia Peura, Pharmacist
11	03/10/2024	Community Pharmacy in Lahti + Presentation about Pharmaceutical Situation in Madagascar	Sirpa Peura Pharmacist without Borders in Finland
12	04/10/2024	Pharmacy seminar	Association of Finnish Pharmacists
13-14-15	05/10/2024 06/10/2024 07/10/2024	Weekend break and insight into GOOD PHARMACY PRACTICE with Eeva Teräsalmi	
16	08/10/2024	Helsinki University Hospital Pharmacy	Miia Kallio, Pharmacist
17	09/10/2024	Helsinki University Hospital Pharmacy	Tuulikki Muurman, Clinical Pharmacist
18	10/10/2024	The social insurance of Finland (KELA) - reimbursement system for medical expenses'	Terhi Kurko , Senior Researcher
		Faculty of Pharmacy, University of Helsinki - online	Marja Airaksinen, Professor
19	11/10/2024	Faculty of Pharmacy, University of Helsinki	Marika Pohjanoksa-Mäntylä, University lecturer
20	12/10/2024	Final day and discussion with Pharmacists without Borders	

III- BRIEF INTRODUCTION OF MY BACKGROUND AND THE PHARMACEUTICAL SITUATION IN MADAGASCAR

My name is Stephanie Niainahariravaka RAKOTOMALALA, and I am a pharmacist from Madagascar. I graduated from the University of Antananarivo in 2021 after six years of university study, culminating in the submission of my thesis. During this period, I completed internships in community pharmacies, hospitals, and a pharmaceutical supplier, where I noticed the urgent need for accessible, high-quality medicines for the Malagasy population.

Over the past three years, I have worked in various community pharmacies across Madagascar—from the capital city to the southeastern coast and even rural areas. These experiences deepened my understanding of the diverse healthcare needs within Madagascar's communities.

I wanted to learn more and gain insights into global practices, which led to my registration as an individual member of FIP and sparked my interest in the Pharmabridge program.

With a vast area of 590,000 km² and a population of over 30 million (31.9 million people—data from Worldometer)(2), Madagascar faces significant challenges in the pharmaceutical sector. According to Sustainable Development Goal (SDG) 3.c.1, pharmacist density should ideally be measured per 10,000 people(3). However, Madagascar has fewer than 0.01 pharmacists per 10,000 people as from the WHO data of 2021 (4).This severe shortage, particularly in rural areas, limits access to professional healthcare services and leaves many pharmacies understaffed. As a result, many people rely on informal sources, including unlicensed vendors, to obtain medications (5).

Poor infrastructure, especially in transportation and supply chains, further complicates maintaining a steady supply of medicines. Additionally, the high cost of medications and the lack of a national reimbursement system make essential medicines unaffordable for many Malagasy citizens. This lack of access often leads to poor treatment adherence and worsens health outcomes. For many, healthcare remains a privilege rather than a right (6).

Meanwhile, efforts are being made to address these challenges, such as promoting new inspector pharmacists (7), planning the opening of new pharmacy faculty and schools(8).

The full presentation (also delivered on my 11th day with Pharmacists Without Borders in Finland) can be found in the annexes.

DAY 1: ASSOCIATION OF FINNISH PHARMACIES

Hosts	Visit structure	Topics covered
Inka Puumalainen, Director for Pharmaceutical Affairs, and **Sonja Kallio,** Expert on Pharmaceutical Professional Matters	- Office tour - Presentation by the Association of Finnish Pharmacies (AFP) - Structured and informal discussions	- Structure, role and services of AFP - Overview of Finnish Pharmaceutical system - Regulatory framework - Pharmaceutical density and accessibility - Community pharmacies operation and workforce - AFP's Medical search tool - National Medication safety program

Fig 1. Association of Finnish Pharmacies

Today, the 23rd September, marked the beginning of my exploration of the Finnish pharmaceutical system.

We started with a tour of the Association's office, followed by a presentation to help me understand how community pharmacies operate in Finland. The presentation covered the state

of community pharmacies, the regulatory system, and the organization and services offered by the Association of Finnish Pharmacies (AFP).

The AFP represents the owners of Finnish community pharmacies who are also all pharmacists by education. It promotes the interests of its members and develops high standards of ethical and professional competence in pharmacy services within the broader healthcare sector.

Finnish law ensures that only licensed Proviisori M.Sc pharmacists can own pharmacies. The Finnish Medicines Agency (Fimea), an agency operating under the Ministry of Social Affairs and Health, grants these licenses and controls the number and location of the pharmacies. It decides who can operate a pharmacy, guaranteeing broad access nationwide. Medicine tariffs, marketing, and online pharmacies are also strictly regulated.

Pharmaceutical density and access in Finland are impressive. The country has a network of over 689 pharmacies, 188 subsidiaries, 115 service points, and around 250 online pharmacy services as of January 2024, serving a population of approximately 5.6 million and an area of 338,000 km².

Although Finland also faces medicine shortages, 98% of prescriptions are filled immediately. All medications, except for certain non-clinical therapeutic products (NCT-products), are sold exclusively in pharmacies, ensuring that consumers receive professional advice and safeguarding public health.

A typical Finnish community pharmacy is open for 54 hours/week and its staff includes:

- 1 Proprietary Pharmacist (owner, responsible for overall operations),
- 1 Staff Pharmacist (supports pharmaceutical services),
- 5 Assistant Pharmacists (handle customer interactions and dispensing),
- 4 Technical Assistants (support logistical and operational tasks).

Medication counselling by community pharmacy was mandated by law in 1983. In order to fulfil these requirements, only pharmacists are allowed to provide the therapeutic advice in pharmacies.

I have been also introduced to the AFP's *Medicine Search* tool, which helps pharmacies and customers locate specific medicines, improving the efficiency of the dispensing process.

One essential aspect of Finland's commitment to healthcare is medication safety, exemplified by the National Medication Safety Programme. This initiative includes:

- Introducing the patient safety reporting system (HaiPro) to community pharmacies,
- Developing a strong medication safety culture,
- Enhancing community pharmacists' competence in medication risk management.

DAY 2: THE FINNISH PHARMACISTS' SOCIETY - Proviisoriyhdistys.

Hosts	Visit structure	Topics covered
Teemu Ali-Kovero, Executive manager and team	- Presentation by Proviisoriyhdistys - Presentation about Pharmacy in Madagascar - Structured and informal discussions	- Career progression for pharmacists in Finland - Roles and responsibilities of M.Sc. Pharmacists - Key competences of M.Sc. pharmacists - The role of the association

Fig 2. Visit to Proviisoriyhdistys

The discussion highlighted the **general career progression** for pharmacists, which includes the following pathway:

Pharmacy Student → Bachelor of Science (B.Sc.) → Master of Science (M.Sc.) → Specialization, Higher education, pharmacy ownership, or work outside pharmacies.

There are more than 3.000 M.Sc. pharmacists and 7.000 B.Sc. pharmacists in Finland.

M.Sc. pharmacists play several critical roles within pharmacies, which include:

- **Ownership and management**: Many pharmacists take on managerial responsibilities, overseeing daily operations and strategic direction.
- **Expertise in various areas**: Because of their specialized knowledge, they are able to address diverse pharmaceutical needs.

The daily tasks of M.Sc. pharmacists encompass numerous skills:

- **Leadership**: They lead pharmacy teams, ensuring effective operations.
- **Collaboration**: Building partnerships with healthcare providers and stakeholders
- **Human Resource Management**: Responsibilities include hiring, training, and maintaining staff competency.
- **Financial Management**: Pharmacists handle economic aspects of pharmacy operations, including budgeting and financial reporting.
- **Quality Assurance**: Ensuring high standards of service and compliance with regulations
- **Documentation and Standard Operating Procedures (SOP)**: They maintain standard operating procedures and proper documentation practices.
- **Education**: Involvement in teaching, whether through formal education or training for pharmacy staff.

The association aims to unite all M.Sc. pharmacists across Finland, promoting collaboration and professional growth. Their services include:

- Providing real value for M.Sc. pharmacists
- Offering negotiation tools
- Organizing workgroups for community and industry sectors
- Supporting a young organization
- Encouraging teamwork with doctors and nurses
- Providing an unemployment fund

DAY 3 MORNING: UNIVERSITY PHARMACY AT CITY CENTER

Hosts	Visit structure	Topics covered
Mari Havia, Pharmacist and team	- Tour - Presentation - Discussion	- Overview of the University Pharmacy - Pharmacy operations and patient experience - Online pharmacy services - Role in education and research - Innovative healthcare solutions and technology integration - Sustainability initiatives

The University Pharmacy is the only pharmacy chain in Finland. It has 17 pharmacies across 14 towns and cities, along with 5 partner pharmacies.

Today, I had the chance to visit the branch located in the heart of Helsinki's City Center. This pharmacy is one of the largest in Finland, with two spacious floors. Patients in Finland are served while seated, ensuring comfort during consultations. Each floor has eight desks where pharmacists meet patients.

The pharmacy offers a wide variety of brands and features a robotic system for managing stock efficiently. I also learned about their office team, which manages online pharmacy services, providing a wide selection of products, 24/7 live chat with patients, fast delivery, and personalized service. The pharmacy has a dedicated area for patients to return unused medicines.

As a university pharmacy, it plays a unique role in the Finnish healthcare system. It hosts pharmacy student internships, manufactures orphan medicines, and provides a space for students and researchers to conduct studies. Notably, innovative healthcare solutions, such as daily antibiotic infusions, have been developed here.

The University Pharmacy also prioritizes sustainability through:

- Knowledgeable and reliable service.
- High-quality products.
- Supporting employee well-being.
- Minimizing environmental impact.
- Creating positive social impact.

During my visit, I observed impressive technologies, including:

- AI-based supply management.
- Wolt delivery services for fast and convenient shipping.
- An AI-driven work shift planning system.

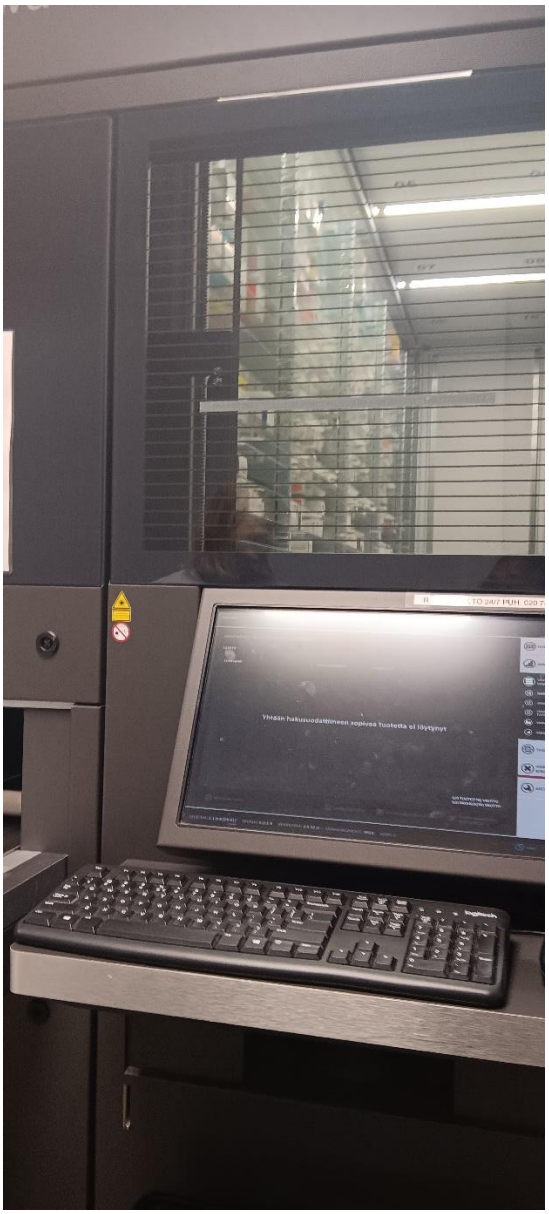


Fig 4. Robotic system to manage the stock in the University Pharmacy at City Center

DAY 3 AFTERNOON: ORIOLA WHOLESALER

Hosts	Visit structure	Topics covered
Garmiyan Amiri, Quality Specialist	- Presentation - Tour - Formal and informal discussion	- Overview of Oriola - Core services - Commitment to Medicine availability and Patient safety - Operational efficiency and automation - Quality management system - Sustainability and customer experience

I had the privilege of attending a presentation and touring the pharmaceutical supplier Oriola on this day. The visit provided valuable insight into this big company's key role in the healthcare value chain, focusing on ensuring medicine availability, patient safety, and access to healthcare products.

Oriola has been securing the distribution of medicines to patients and customers since it established its first medicine wholesaler in 1907. With around 930 employees, Oriola serves pharmaceutical companies, pharmacies, hospital pharmacies, patients, veterinarians, and retail customers in Sweden and Finland. Their services cover a wide range, including distribution, dose dispensing, advisory, and digital solutions. It is committed to improving customer experience, promoting sustainability, and building partnerships to meet evolving market needs.

I was impressed by the size and scale of Oriola's facility during the tour. The visit showcased their strong commitment to medicine distribution and traceability, which are crucial components of Nordic healthcare systems. The efficiency of their automated systems for storage, picking, and dose dispensing was both evident and inspiring.

I was also introduced to their extensive Quality Management System and their pathways, documentation, and SOPs, all critical to ensuring the integrity of the entire supply chain.

Fig 5. Visit to Oriola whole

DAY 4: PHARMACA HEALTH INTELLIGENCE

Hosts	Visit structure	Topics covered
Elli Leppä, Development pharmacist and team	- Presentation by Pharmaca Health Intelligence team - Facility tour - Presentation about Pharmaceutical system in Madagascar - Formal and informal discussion	- Overview of Pharmaca - Core services

During my visit, the Pharmaca team gave an overview of the company and its various services. After the presentation, we toured the facility to understand how Pharmaca works as a workplace for pharmacists. I also had the chance to give a brief presentation and discuss the pharmaceutical system in Madagascar with the Pharmaca team.

Founded in 1975, Pharmaca Health Intelligence is a leader in pharmaceutical and health information in Finland. They provide creative solutions to meet the needs of the healthcare sector, focusing on turning data into insights that help improve decision-making.

They offer a wide range of services for healthcare providers, pharmacies, citizens, and pharmaceutical companies. Their products include a detailed pharmaceutical database, Business Intelligence services, and training programs. A key brand under Pharmaca is Pharmaca Fennica®.

Fig 6. Pharmaca organization structure

One standout service is the VNR system (Nordic Number), which provides a unique identification code for pharmaceutical products across Nordic countries. This system is important for ensuring transparency and efficiency in drug distribution in these regions.

Pharmaca also plays a crucial role in maintaining the National Pharmaceutical Database, which supports the electronic prescription system in Finland. Managed on behalf of Kela (the Finnish Social Insurance Institution), this database ensures that users of electronic prescriptions have access to accurate and up-to-date information on prescribed and delivered medicines. With this structured pharmaceutical information, Pharmaca boosts healthcare efficiency and safety. This saves professionals time and helps prevent medication errors.

In addition, Pharmaca provides timely information on drug shortages lasting at least two weeks, helping healthcare professionals decide if new prescriptions are necessary. It also identifies alternatives, such as different packages or interchangeable drugs with the same active ingredient. This helps ensure continuous patient care during supply shortages.

Pharmaca Fennica Premium includes additional features for drug identification, offering clear images of tablets, capsules, packages, and devices like inhalers and injectors. These visual aids make it easier for healthcare workers and patients to recognize and safely use medications.

DAY 5: FINNISH LEARNING CENTER FOR PHARMACY, FOK

Hosts	Visit structure	Topics covered
Katariina Kalsta, Executive manager Anna Salonen, Minna Svensk, Matias Lemmetty and Soile Tähtinen	- Presentation of the pharmaceutical system in Madagascar - Presentation of the Finnish Learning Center for Pharmacy - Discussion	- Overview of FOK and its services - Continuing education in Finland - Digital badge service - Pharmacy days congress

Fig 7. Visit to Finnish Learning Center for Pharmacy, FOK

The Finnish Learning Center for Pharmacy, established in 1980, is a non-profit organization dedicated to providing continuing education for the pharmaceutical sector. They organize the largest annual professional congress named Pharmacy Days.

My visit began with a presentation I gave about the pharmaceutical situation in Madagascar, followed by the team's presentations about FOK center and its services. These included overviews of the Organization, their educational services, support for hospital pharmacies, Pharmacy Days, and the Badges for Community Pharmacy program.

This visit highlighted the significance of continuous education and adaptation in Finland's pharmaceutical sector. The center's dedication to high-quality training ensures that professionals are well-prepared to address the challenges of a rapidly changing healthcare environment.

Key insights :

- Continuing education in Finland is voluntary, with no mandatory courses or exams after graduation. However, the Medicines Act requires professionals to keep their knowledge updated. Employers usually pay for these training programs, which can be completed

during work hours. It is recommended that employees participate in 2–4 training days per year, combining shorter sessions if needed.

- The Learning Center organizes 60–80 courses annually, including training days, online courses, and webinars. Topics cover medication reviews, medication safety, data protection, pharmacology, and therapeutic areas. All courses are independently designed without pharmaceutical company influence, ensuring a strong focus on quality.
- Participants mainly include pharmacists, pharmacy owners, and pharmacy technicians from community and hospital pharmacies, with some programs also catering to pharmaceutical industry employees.
- There are differences between the courses offered in hospital and community pharmacies. In hospital pharmacies, FOK offers seminars with many case examples from different hospitals, as well as lectures on general topics like risk management, GMP, clinical subjects, and well-being at work. They also provide online courses in compounding and ward pharmacy, which are designed to help orient new employees.
- During the visit, it was highlighted how structured FOK is in providing training and maintaining Knowledge Management at pharmacies through its Digital Badge service. They have a tool for skill mapping and a plan for training and workplace learning.
- **The Pharmacy Day Congress** is held annually since 1977 and is the largest educational event for pharmacists in Finland. It includes a broad seminar program, a large exhibition, and numerous networking opportunities.

DAY 6 AND DAY 7: WEEKEND BREAK AND MORE DISCOVERY OF FINLAND'S CULTURE

Hosts	Visit structure	Topics covered
Kia Peura, Pharmacist without Borders in Finland	- **Cultural exploration**	- **Mushroom picking** - **Sauna culture** - **Cottage life** - **Finland's landscape**

Taking time to relax is essential for personal well-being, and this weekend gave me the opportunity to unwind and explore the fascinating aspects of Finnish culture. Here are some highlights of facts about Finland/Finns that I discovered:

- **Mushroom Picking**: For many Finns, mushroom picking is more than a hobby—it's a cherished tradition and a way to connect with nature. Finland's vast forests are abundant with variety of mushrooms, and the "Everyman's Right" allows anyone to pick mushrooms freely in the wild. While walking in the forest and picking those mushrooms, we can feel how Finns has respect for nature and sustainable living.
- **Sauna Culture**: The sauna is deeply ingrained in Finns life, with more saunas than cars in the country. Almost every household has one, and it's a place for relaxation, reflection, and even socializing. The concept of sauna etiquette, such as entering quietly and respecting others' space, was fascinating to learn. I experienced how the sauna is more than just a ritual—it's a cornerstone of Finnish identity.
- **Cottage Life**: Spending time at a Finns cottage (called *mökki*) is another fascinating cultural discovery. These cottages, often situated by lakes or in forests, are places to disconnect from the busy world and reconnect with nature. These are beautiful and calm houses, with beautiful view to the nature and lakes. Many Finns spend their weekends or holidays at their cottages, enjoying simple pleasures like swimming, fishing, sitting by the fire and sauna for sure.
- **The Land of a Thousand Lakes**: Finland is famously known as the "Land of a Thousand Lakes," although it actually has over 180,000 lakes! These lakes play a significant role in Finnish life, offering opportunities for swimming, boating, and ice fishing in winter. I was amazed by how well-preserved these natural water bodies are, reflecting the Finnish commitment to environmental conservation.

This weekend break allowed me to experience the peaceful and harmonious lifestyle that Finns cherish. The connection between people and nature here is inspiring, and it's something I hope to take back with me.

Fig 8. Basket full of mushrooms

DAY 8 AND DAY 11 MORNING: VISIT AND SHADOWING WORK IN COMMUNITY PHARMACY IN LAHTI AND ITS SUBSIDIARIES

Hosts	Visit structure	Topics covered
Sirpa Peura, Pharmacy owner and team	- Facility tour of the main pharmacy - Shadowing operations - Visit of the 2 subsidiaries - Discussion	- Community pharmacy operations - Standard Operating Procedures (SOPs) - Pharmacy and workflow management - Reimbursement system - Narcotic security and compliance

Fig 9. Me and Sirpa Peura, the pharmacy owner

On Day 8 and Day 11, I had the chance to visit and shadow the operations of a community pharmacy in Lahti and its subsidiaries. These visits provided a meaningful insight into how Finnish community pharmacies looks like and how they prioritize patient-centered care and maintain efficient workflows in a very organized space.

In addition to the tour of the facilities, I was introduced to a variety of Standard Operating Procedures (SOPs) essential to the pharmacy's operations, including:

- General activities.
- Pharmaceutical services.
- Dose dispensing.
- Drug compounding.
- Procedures for suspected falsified medicines.
- Data protection.
- Home transportation and customer service.

SOPs are designed to be as clear and concise as possible, ensuring consistency and efficiency in daily tasks.

Sirpa Peura, the pharmacy owner, shared her valuable experience, emphasizing the significant responsibility of pharmacy professionals. She highlighted key aspects of her work that is to oversee all the managerial work of the pharmacy as well as selecting new products, overseeing dose dispensing, narcotic security and compliance.

Additionally, the pharmacist manager in charge discussed how they manage workflow shifts, inventory, and supply chain logistics. Their approach demonstrated the importance of balancing operational efficiency with patient care.

I also learned about Finland's unique reimbursement system, which strictly adheres to regulations. Medications are dispensed in limited quantities (up to a three-month supply), ensuring precise dose calculations and avoiding early or excessive dispensing. Reimbursements from the Social Insurance Institution of Finland, Kela, are processed on the 12th day of the following month, showcasing an organized and reliable payment structure.

DAY 9: SPECIAL VISIT IN THE COUNTRY OF ESTONIA, VISIT OF RAEPTEEK (TOWN HALL PHARMACY)

Hosts	Visit structure	Topics covered
Birgitta Laanmets, Manager of the Pharmacy Museum	- Guided tour - Interactive experience - Discussion	- History of Raepteek - Role of Pharmacists in Medieval times - Traditional medicinal preparations - Education and regulation of community pharmacies

Today, we sailed to Tallinn, Estonia, to explore this charming country and visit the Raeapteek, the oldest continuously operating pharmacy in Europe. The pharmacy was first mentioned in town records in 1422 and has remained in the same building for over 600 years. Adjacent to the pharmacy, there is now a museum, and we were fortunate to receive a private guided tour led by the pharmacy museum's manager.

The visit was truly enriching, offering us a deeper understanding of the history of pharmacy in Estonia. We learned that there were periods when pharmacists were not only responsible for dispensing medicines but also served as medical experts and town doctors. The Raeapteek was a hub for advice, treatment, and even spiritual assistance, reflecting the multifaceted role of pharmacists in medieval society.

During the tour, the guide shared fascinating anecdotes about the pharmacy's history. Medieval training methods was also explained and we tasted the famous Claret-spiced pharmacy wine acknowledging the apothecary's tradition of preparing medicinal beverages.

One of the most interesting aspects of the visit was observing how the pharmacy and museum collaborate harmoniously. This partnership beautifully illustrates the coexistence of modern pharmaceutical practices with traditional medicine and cultural heritage in Estonia.

Nowadays, Community pharmacies in Estonia provide both traditional and extended services. Pharmacists (in Estonian proviisor) study for five years and graduate with a M.Sc degree. A pharmacist can be the owner of a pharmacy, or work as a pharmacy manager or chief pharmacist in either a community of hospital pharmacy. Assistant pharmacists (in Estonian farmatseut) study for 3 years; after graduation, they are mainly employed in community pharmacies.

Fig 10 and 11. Sailing to Estonia and the famous Claret-spiced pharmacy wine

DAY 10: VISIT AND SHADOWING WORK IN A COMMUNITY PHARMACY IN HANKO + SPECIAL PRESENTATION TO A PATIENT ORGANIZATION

Hosts	Visit structure	Topics covered
Kia Peura, Pharmacist	- Presentation by Kia Peura	- Community Support in Healthcare
Taavi Pärnänen, Pharmacist at Hanko	- Pharmacy tour - Hands-on observation - Interactive simulation	- Community pharmacy operations - Patient-centered care - Safety features for medical packages (QR and VNR code) - Inventory management

Back in Finland, we traveled to the town of Hanko, where I attended a presentation by Kia Peura to an organization supporting individuals and families managing patients undergoing treatment.

After the presentation, I had another opportunity to observe and actively participate in the operations of a community pharmacy. This experience included a guided tour, where I gained valuable insights into their daily workflows, tools, and best practices.

Key insights and activities observed:

- **Operational efficiency**: Integration of a robotic dispensing system and organized management of reserved medicines for customers.
- **Patient-centered care**: A strong focus on providing personalized and attentive service.
- **Use of the VNR code**: QR-code (authentication of medicines with QR codes is done in EU countries to combat counterfeit medicines) Each packet has a unique QR code, which is read in the pharmacy prior given to a patient. The package is then marked as sold to some central system, so that the package cannot be resold later. VNR-code is used within Nordic Countries as identifying medicine's trading licenses. Each packet of same medicine from same seller has the same VNR code, however different strengths and package sizes all have their own code.
- **Inventory management**: Daily routines to maintain stock accuracy and prevent shortages.
- **Narcotic security and compliance**: Strict protocols to ensure the safe storage and handling of controlled substances.

This visit highlighted how advanced technology, meticulous management, and patient-focused care combine to create an effective and trustworthy pharmacy system. It was very exciting to shadow the work of Pharmacist there and we performed an interactive simulation of medicine's recuperation with Taavi Pärnänen, Pharmacist at Hanko.

Fig 12. Community Pharmacy in Hanko

DAY 11 AFTERNOON: PRESENTATION OF THE PHARMACEUTICAL SITUATION IN MADAGASCAR

Hosts	Format	Topics covered
Pharmacist without Borders Finland	- **Hybrid Presentation** (6 on-site, 14 online) - Discussion	- Pharmaceutical system in Madagascar

With the support of Pharmacists Without Borders Finland, I had the privilege of giving a hybrid presentation about the pharmaceutical situation in Madagascar.

The session had approximately 20 participants, including 14 online and 6 on-site. My presentation covered:

- An introduction to Madagascar and its people
- The history of pharmacy in Madagascar
- The pharmaceutical legal framework
- Pharmaceutical demography
- The health supply chain system in Madagascar
- Key challenges in the pharmaceutical sector
- Pharmaceutical education
- Future perspectives for pharmaceutical practice in Madagascar

After the presentation, we had an engaging discussion about the severe shortage of pharmacists in Madagascar and how this contributes to feelings of being overworked among those in the profession. Reflecting on the two weeks I've already spent in Finland, this experience was particularly impactful and transformative.

DAY 12: PROVIISORI SEMINAR AND EXHIBITION

Hosts	Format	Topics covered
Association of M.Sc. Pharmacists	- **Seminars** - **Exhibition** - **Panel discussion**	- **The resilience of the pharmaceutical economy**. - **Integrating sustainability into daily pharmacy operations** - **Panel discussion: "Small and large responsibilities in the pharmaceutical sector"**

We were honored to attend the Pharmacy Seminar on Sustainability in Pharmacy Practice on October 4th, 2024. The event featured fascinating exhibitions and sessions, including:

- **The resilience of the pharmaceutical economy**
  This session explored strategies for maintaining cost efficiency while ensuring quality patient care in Finland. Discussions covered the current economic challenges, the need for innovative financial solutions, and how pharmacists can contribute to cost optimization.
- **Integrating sustainability into daily pharmacy operations**
  Best practices were shared on how to incorporate environmental sustainability throughout a drug's lifecycle. The session highlighted the pharmacist's role in promoting sustainable medicine use, balancing environmental concerns with healthcare responsibilities.
- **Panel discussion: "Small and large responsibilities in the pharmaceutical sector"**
  Experts discussed the future of "green medicines" and their potential to enhance sustainability in the pharmaceutical industry.

I witnessed how committed Finnish pharmacists are to address the economic challenges of medicine management and integrating sustainability into daily operations. The seminar emphasized that:

1. Sustainability should be integrated at every stage, from drug development to patient care.
2. Public and private sectors must work together to achieve economic and environmental goals.
3. Pharmacists play a key role in driving changes in medicine use and healthcare delivery.
4. Systems like Kela's reimbursement are essential for reducing healthcare costs and improving efficiency.
5. Pharmacists are vital in reducing waste, encouraging proper medicine use, and addressing environmental impacts.

Fig 13. Exhibition during the Proviisori Seminar day

DAY 13-14-15: WEEKEND BREAK AND INTRODUCTION INTO GOOD PHARMACY PRACTICE

Hosts	Visit structure	Topics covered
Eeva Teräsalmi, Pharmabridge coordinator	- Discussion - Weekend break in the cottage - Exploration of pharmaceutical books	- Good Pharmacy Practice - History of Pharmabridge - Opportunitues with International Pharmaceutical Federation (FIP)

During these next free days, Eeva Teräsalmi took me with her and shared her valuable professional experiences, plus her rich pharmaceutical resources, with a special focus on Good Pharmacy Practice (GPP).

As the primary mission of pharmacy practice is to improve health and help patients use their medicines effectively; to achieve this, clear guidelines on GPP are essential to ensure the quality and safety of pharmacists' work. I explored various books and reports detailing how different countries have implemented GPP tailored to their specific needs. A key takeaway was the importance of convincing governments about the value of quality pharmaceutical services. The ultimate goals include achieving self-sufficiency in training pharmacy personnel; and ensuring patients receive the right medicines in the correct doses and forms.

This experience also gave me the opportunity to reflect on the broader scope of international pharmaceutical collaboration. The **Pharmabridge** initiative, which facilitated my exchange, was originally established to strengthen pharmacy services worldwide by connecting pharmacists from different regions. It provides a platform for professional exchange, capacity building, and practical learning, reinforcing the principles of GPP across various healthcare settings.

Additionally, I learned more about the role of the **International Pharmaceutical Federation (FIP)** in advancing pharmacy practice globally. Through its network, FIP supports policy development, education, and advocacy, helping pharmacists worldwide contribute effectively to healthcare systems. This connection to FIP also opens doors to valuable resources, professional development opportunities, and collaborations aimed at improving pharmacy practice on a global scale.

Fig 14. Weekend break in the cottage

DAY 16 AND 17: HELSINKI UNIVERSITY HOSPITAL PHARMACY

Hosts	Visit structure	Topics covered
- Miia Kallio, Pharmacist - Ilona Niittynen, Medicinal Information Pharmacist - Niina Laihana, Drug Compounding Pharmacist - Tuulikki Muurman, Clinical Pharmacist - Niina Laihanen (pharmacist) - Eero Lounasvaara, pharmacist	- Introduction to HUS and HUS Pharmacy - Guided tours and discussions with experts - Observations of pharmacy operations and clinical integration - Case studies and practical demonstrations	- Overview of Helsinki University Hospital and HUS Pharmacy - Role of the Medicinal Information Pharmacist - Drug Compounding processes - Cytotoxic lab tour - Dose dispensing in clinical wards and Clinical Pharmacy - Pharmacogenomics panel - Medication safety practices - Electronic Resource Management system

During these two days, I was introduced to many scopes of operations at Helsinki University Hospital (HUS) Pharmacy. The team extended a warm welcome and guided me through various departments and initiatives that provide essential services to the hospital and its patients.

Topics covered:

- Overview of the Helsinki University Hospital and HUS Pharmacy
- Role of the Medicinal Information Pharmacist
- Drug Compounding processes
- Cytotoxic lab tour
- Dose dispensing in clinical wards and Clinical pharmacy
- Pharmacogenomics panel
- Medication safety practices
- Electronic Resource Management system

In the following section, I will outline the key insights gained from these visits:

1. **About the Helsinki University Hospital (HUS)**:
    - HUS is the largest provider of specialized healthcare in Finland, treating 680,000 patients annually with a workforce of 27,000.
    - The hospital embraces sustainable healthcare practices, prioritizing cost savings while maintaining high-quality care.
    - HUS operates across 200 locations, with 25 buildings and 3,000 beds. Patient rooms are designed for 1-2 patients each, minimizing the risk of infection transmission.
    - Advanced technologies like operating robots and AI integrated with the EPIC system support the hospital's operations. Digital tools like the Maisa app enable remote consultations, while "Health Village" provides chat services for various healthcare pathways.

2. **About the HUS Pharmacy**:
    - Established in 1960, HUS Pharmacy employs over 500 staff, including more than 250 pharmacists. Its services include customer service, procurement, production, clinical pharmacy, logistics, and medication safety.
    - The pharmacy conducts approximately 150 drug trials each year, focusing on oncology treatments, with several pharmacists involved in double-blind studies.
    - Regular authority checks are conducted every three years to maintain compliance. The pharmacy also tenders for pharmaceutical suppliers every two years to ensure competitive pricing.
3. **Medicines information in the service area of HUS Pharmacy**:
    - Alongside with Clinical pharmacology unit, Poison information center and Teratologic information center; the Medication information unit at HUS Pharmacy consists of six pharmacists (two full-time, four part-time) who respond to inquiries from healthcare professionals, handling around 2,000 inquiries annually.
    - The questions that they receive includes: compatibility of parenteral drugs, reconstruction or dilution of parenteral drugs, crushing tablets, administering drugs via enteral feeding tubes, drug allergies, dosing and excipients for children, shelf life after opening, etc.
    - Most inquiries are made via phone or email/chat. The team holds weekly meetings to discuss complex cases, particularly involving drug interactions and pharmacogenomics.
    - The team also publishes weekly newsletters that provides handouts about medicines information, medication safety and product defect.
    - They use many databases to help them do the work like SPCs, manufacturers, specialist consultations, Micromedex (IV compatibility), UpToDate and Medicines Complete

4. **Manufacturing at HUS Pharmacy**:

The manufacturing operations at HUS Pharmacy are strategically located in Meilahti, Jorvi, and Kotka. These facilities focus on producing medicines and preparations that are not commercially available, tailored to meet the unique needs of hospital patients.

Key aspects of the manufacturing process include that:

- HUS Pharmacy produces custom-made oral solutions for children, patient-specific medicines, parenteral nutrition, and antibiotic infusers for hospital patients who can be treated at home. These tailored products address gaps in commercially available medicines, ensuring optimal care for patients with unique needs.
- The manufacturing process involves a multidisciplinary team, including pharmacists (both M.Sc. and B.Sc.) and technicians. Their roles span the entire process, from development and planning to manufacturing, packaging, and labeling.
- **Struct processes and cleanroom regulations are in place to minimize the risk of contamination (**The manufacturing premises, workflows, and even the attire of staff;

materials are transferred between cleanrooms of different grades under tightly controlled conditions.)

- **Environmental monitoring** ensures consistent control of key parameters, such as temperature, pressure differentials, and airborne particles in Grade A and B cleanrooms. Periodic assessments include particle classification and microbiological monitoring to maintain compliance with stringent quality standards.
- Robust quality assurance measures are in place to guarantee the safety and efficacy of the manufactured products. New employees undergo rigorous testing and incubation periods to confirm their competency in sterile manufacturing processes.

5. **Cytotoxic lab and orders**:

Meticulous safety measures and advanced systems are in place to ensure the safe preparation and handling of cytotoxic medications. They are crucial for protecting both staff and patients from the risks associated with hazardous substances.

The cytotoxic lab operates in specialized cleanroom environments designed to maintain sterility and contain hazardous substances. These rooms are classified according to specific standards, with controlled airflows and filtration systems to prevent contamination and exposure.

Cytotoxic drugs are ordered based on patient-specific prescriptions, which include detailed instructions for dosage and preparation. Orders are carefully reviewed by pharmacists to ensure accuracy before preparation begins. Barcode systems and digital checks are integrated to track and verify each step of the process, reducing errors and ensuring traceability.

6. **Dose Dispensing & Clinical Wards**:

Pharmacists play an important role in making sure that the right medicines are given to patients in hospital wards. They check medications carefully and help keep track of what patients are taking to avoid any mistakes. They also explain medications to patients before they leave the hospital, making sure they understand how to take them.

Pharmacy students in clinical internships work alongside doctors and nurses, gaining experience in both patient care and interprofessional collaboration. Their daily tasks involve reviewing and verifying medication orders, conducting medication reconciliations, and preparing educational presentations.

During my visit, I was introduced to the daily work of Pharmacists in clinical wards such as:

- **Medication Management**: Pharmacists routinely check patients' medication lists, attend medical rounds, and monitor medication administration, ensuring the accuracy and safety of treatments.
- **Dose Dispensing with the help of nurses and Digital tools like ABOTTI and Pharmaca**: Patients wear smart devices, such as QR-coded bracelets, to ensure proper medication administration. Nurses verify this through dose-dispensing cups prepared and double-checked by pharmacists. Pharmaca provides comprehensive drug information and images, including therapeutic indications and brand variations, ensuring alignment with patients' lab results and orders.

- **Patient guidance**: Before discharge, pharmacists explain medication regimens, document this in the system, and ensure physicians can view the information. They guide patients on continuing treatment after leaving the hospital.
- **Inventory management**: Pharmacists manage drug inventories, checking narcotics and opioids, monitoring room and fridge temperatures, and handling medication expiry through systems like **Pyxis**.
- **Interprofessional learning**: Collaboration with healthcare teams enhances mutual learning, with pharmacists contributing to medication safety plans and participating in interprofessional education for other healthcare staff.
- **Error reporting**: Pharmacists track and analyze medication errors (e.g., wrong patient or expired medicines) three times a year to enhance patient safety strategies.

7. **Pharmacogenomics panel**:

Pharmacogenomics is becoming increasingly significant in personalizing treatments based on an individual's genetic makeup. It allows healthcare providers to tailor medication plans, minimizing side effects and improving efficacy.

Pharmacogenomics helps explain why some patients experience more severe side effects from certain medications compared to others. This is especially important when dealing with variations in drug metabolism.

In Finland, pharmacogenomic data is increasingly integrated into patient care, particularly in collaboration with clinical pharmacologists. This approach is often applied in oncology, radiology, and psychiatry.

So, pharmacogenomics is used to review drugs that can have significant genetic implications, such as anti-emetics, painkillers, cytotoxic medications, and medicines used in psychiatry. The Clinical Pharmacogenetics Implementation Consortium (CPIC) reviews international evidence to provide guidance and recommendations for applying pharmacogenomic information in clinical practice.

Finland follows guidelines such as the **Current Care Guidelines (CCG)** from the UK, along with ongoing pharmacogenomic tests, to optimize patient outcomes.

Factors like a patient’s body size and plasma drug levels are monitored, especially in cases of poor metabolizers where drug levels can become too high, increasing risks like **QT prolongation**, which could lead to dangerous heart rhythms. Pharmacogenomic data will be integrated into patient records using systems like **Abotti** and **Kanta e-patient notes** for future reference and personalized care management.

After the whole presentation, I was presented to two case studies that gave me clearer view of the Pharmacogenomics system

8. **Medication Safety**:

Medication safety is a critical focus at HUS Pharmacy, where advanced systems are employed to track, prevent, and address potential medication errors, safeguarding patient well-being.

It is really important in the dose dispensing process as it involves a stringent double-checking system to minimize errors. A study of potential causes identified 22 reasons why incorrect medication cups might be used, underlining the need for a meticulous approach.

While approximately 30% of medical errors in hospitals are related to medication, HUS Pharmacy emphasizes the importance of technological advancements to be able to continuously lower this rate. Understanding the root causes of errors (whether through lack of knowledge or procedural lapses) is key to improving safety outcomes.

Maintaining a strong culture of quality is also essential. HUS Pharmacy, through its medication safety efforts, emphasizes that ensuring a balance between work efficiency and safety protocols is crucial for long-term success. Every quarter, error reports are reviewed using the HaiPro system. Quality managers, pharmacists, and physicians work together to analyze these reports, identifying patterns and developing corrective strategies.

Continuous improvement is the goal. By analyzing errors, teams work on strategies to avoid similar mistakes in the future, focusing on maintaining safety without compromising productivity.

Pharmacists at HUS Pharmacy play therefore a multifaceted role in Medication safety. They provide crucial information, develop guidelines, offer assistance, and engage in educational activities to promote medication safety.

Looking ahead, the integration of robotic dispensing systems is being explored as a means to further enhance medication accuracy and reduce human error.

9- The detailed process from diagnosis to prescription to Pharmacy ERP (Electronic Resource Management system):

The process begins with a thorough diagnosis by physicians. Based on the diagnosis, a comprehensive treatment plan is created. Once the treatment plan is established, it is reviewed and scheduled by a multidisciplinary team, including physicians, nurses, and pharmacists. Key steps include verification of patient records, scheduling sessions, filling the orders and medication verification. This Electronic Patient Record system is called APOTTI (Epic system).

The Pharmacy ERP system ensures seamless integration and traceability throughout the process by:

- Managing medication inventory and ensuring the availability of required drugs.
- Tracking treatment schedules and automating reminders for reordering critical medications.
- Generating detailed reports on medication usage, patient outcomes, and compliance with treatment protocols.

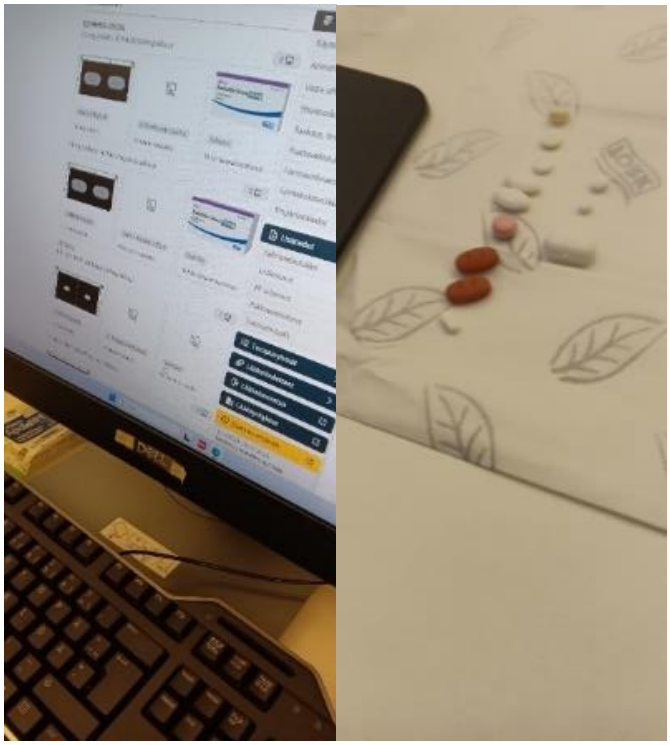


Fig 15. Verification of drugs with Pharmaca for drug dispensing

DAY 18: VISIT TO THE SOCIAL INSURANCE OF FINLAND (KELA)

Hosts	Visit structure	Topics covered
Terhi Kurko, Senior Researcher	- **Presentation of Kela** - **Discussion** - **Facility tour**	- Finnish nationwide medicine reimbursement system - Electronic prescriptions in Finland - Medication cost reimbursement categories (basic and special) - Equal treatment principle in reimbursement rates - Kela Research: drug use, prescribing practices, costs, and pricing policies

Today, I had an insightful discussion and made an interesting discovery about the Finnish national medicine reimbursement system financed by national Social Insurance and maintained by Kela which is short from ‘’Kansaneläkelaitos’’ which translates to the social insurance institution. It is the organization responsible for putting into action the medicines reimbursement system and paying reimbursements, but it is the Finnish nationwide Social Insurance, that is financing the reimbursement system.

’In Finland, electronic prescriptions are used to prescribe medicines, which are the dispensed pharmacies. Those electronic prescriptions were used since 2017 nationwidely, before that they had traditional paper prescriptions.

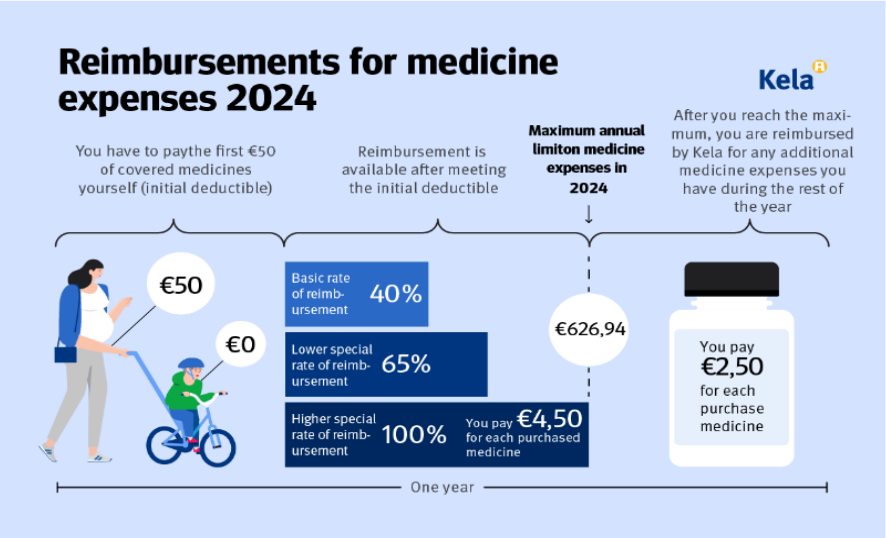
The majority of medicines prescribed are eligible for reimbursement through the Finnish Health Insurance (Kela). Every resident in Finland, regardless of their place of residence or other factors, is entitled to reimbursement for for those medicines included in the reimbursement system.

This system ensures equitable access to medicines by linking reimbursement rates to the severity of illnesses. It includes both basic and special reimbursement categories, specifically for chronic and severe conditions. Pharmacies immediately reduce the cost for patients, with Kela compensating the reimbursed amount afterward: that’s why it is called direct reimbursement.

The Finnish reimbursement model is built on the principle of equal treatment when it comes to the payment of reimbursements. The rate of reimbursement is determined by the severity of the illness. Additionally, Kela plays a key role in pharmaceutical data analysis through Kela Research, which focuses on rational drug use, prescribing practices, consumption, costs, reimbursements, and the availability of medicines. Kela’s research staff also contribute their expertise to pharmaceutical development projects and assist in preparing statements on drug pricing and reimbursability.

Reimbursements for medicine expenses

Kela provides reimbursements for the costs of medicinal products, clinical nutrients and emollient creams that have been prescribed for the treatment of an illness. On this website, the word medicine is used to refer to all of these products.



The initial deductible is 50 euros

Fig 16. Reimbursements by Kela system as for 2024.

DAY 18 AFTERNOON AND DAY 19: FACULTY OF PHARMACY, UNIVERSITY OF HELSINKI (ONLINE AND ON-SITE)

Hosts	Visit structure	Topics covered
• Prof. Marja Airaksinen, Professor • Prof. Marika Pohjanoksa-Mäntylä, University Lecturer • Prof. Mia Siven	- **Online session with Prof. Marja** Airaksinen - **Visit of the Faculty of Pharmacy at the University of Helsinki** - **Presentations** - **Workshop**	- Role of medication safety in reporting medication errors - Engagement strategies for deprescribing - Introduction of the Faculty of Pharmacy and its degrees - Presentation of Pharmacy research - Sustainability in pharmacy practice - Tools like Medstopper and deprescribing.org for decision-making in Pharmacy

During my visit to the Faculty of Pharmacy at the University of Helsinki and my online session with Professor Marja Airaksinen, I had the opportunity to engage in insightful presentations and discussions that showcased the institution's leadership in pharmaceutical education and research. The online session provided a comprehensive overview of their degree programs, research opportunities, and ongoing work in medication safety.

One of the key topics covered was the role of medication safety, with a focus on the **No-blame culture** and the **Swiss cheese model** in reporting medication errors. This approach encourages open reporting without fear of blame, fostering a culture of safety and learning. Additionally, the session highlighted effective strategies for engaging stakeholders in **deprescribing**, a critical practice in managing polypharmacy and optimizing patient care.

- **About the Faculty of Pharmacy in University of Helsinki**

The Faculty of Pharmacy is a nationally and internationally recognised unit of multidisciplinary research and education with an extensive network of partners. It offers a robust educational structure designed to equip students with both theoretical and practical knowledge for modern pharmaceutical practice. The undergraduate and graduate level degrees offered by the Faculty of Pharmacy are:

1. **Bachelor's Science in Pharmacy (farmaseutti)**: Focuses on foundational pharmaceutical sciences, patient-centered care, and community pharmacy practice. The program emphasizes hands-on learning in simulated environments to prepare students for real-world scenarios. The Bachelor's degree consists of 180 credits and completing the degree takes three years.
2. **Master's Program in Pharmacy (proviisori)**: Provides advanced studies, there are 7 different majors for pharmacy students to choose from: Social pharmacy, industrial pharmacy, pharmaceutical technology, pharmaceutical chemistry, pharmacology, pharmaceutical biology, and biopharmacy. The Master's degree consists of 120 credits and completing the degree takes 5 years as a whole (Bachelor's degree + two years).
3. **Master of Science in Master's Programme in Pharmaceutical Research, Development and Safety**: The faculty is renowned for its innovative research in medication safety, pharmacotherapy, and interdisciplinary collaboration. Students and researchers are provided with opportunities to engage in cutting-edge projects that

address global challenges in pharmacy and healthcare. The master's degree consists of 120 credits (ECTS), the equivalent to two years of full-time studying.

- **About the Master's Programme in Pharmaceutical Research, Development and Safety**

In the afternoon, I had the privilege to attend two in-depth presentations:

- **Detected Medication Errors and Interventions in Community Pharmacies** (Presenter: Mannermaa, S., Mäkinen, E., Koskenkorva, T., Holmström A-R.)

  This presentation emphasized the important role that community pharmacies play in detecting and preventing medication errors that originate in healthcare settings, such as hospitals and clinics. Community pharmacies serve as an essential defence mechanism in improving the quality of outpatient care. Therefore, there is a need to develop local collaboration models between healthcare settings and community pharmacies. This would enhance medication risk management for outpatients and better utilize the expertise of community pharmacists in managing these risks.

- **Currents in Medication Safety – Examples of Studies** (Presenter: Dr. Anna-Riia Holmström) Dr. Holmström's presentation explored the broader landscape of medication safety, discussing its multifaceted nature and the systems-based strategies needed to prevent errors. She outlined how both drug safety and medication safety are essential components for ensuring safe pharmacotherapy across healthcare systems.

After that, we had an interesting discussion with Prof. Mia Siven about **Sustainability and Pharmacy practice.** She shared with me how it took place with the participation of Generation Green through a university contest and its impacts since then.

At the end of the session, I attended a **workshop** where pharmacists and pharmacy students collaborated on case studies. This interactive session allowed participants to work together, applying their knowledge to real-world scenarios and discussing the practical applications of medication safety in community pharmacy practice. Tools like Medstopper and deprescribing.org were introduced to help make decisions.

Fig 17. A nice pharmacy picture in the Faculty of Pharmacy office

DAY 20: FINAL DAYS AND DISCUSSION WITH PHARMACISTS WITHOUT BORDERS FINLAND

Hosts	Format	Topics covered
Kia Peura, Pharmacists without Borders in Finland	- Reflection on the entire stay - Discussion - Exchange of knowledge	- Mission and activities of Pharmacists Without Borders Finland - Resources for establishing similar initiatives: organizational structure, volunteer engagement, partnership strategies - Importance of international collaboration in promoting health equity globally

On my final day in the beautiful country of Finland, I had the opportunity to reflect on my entire stay and engage in a meaningful discussion with my host, Kia Peura, from *Pharmacists Without Borders Finland*.

Kia provided valuable insights into the mission and activities of Pharmacists Without Borders Finland (PSF), an organization committed for the implementation of safe drug supply and rational use of drugs, in areas and countries with limited resources. She explained how PSF contribute to increase information on international pharmacy issues and encourage their members to participate in international collaboration.

During our discussion, Kia shared practical resources and guidance on how to potentially establish a similar initiative in Madagascar. These included information on organizational structure, volunteer engagement, and partnership strategies with both national and international stakeholders. This exchange of knowledge was particularly inspiring, offering new perspectives on how pharmaceutical professionals can contribute to global health initiatives while addressing local needs.

This conversation was a fitting conclusion to my Pharmabridge experience, as it underscored the importance of international collaboration and the role pharmacists can play in promoting health equity globally.

Fig 18. Me and Kia Peura from PSF Finland

CONCLUSION: REFLECTIONS AND RECOMMENDATIONS

The Finnish pharmaceutical system is well-organized and ensures high-quality healthcare and access to medicines. Strict regulations on pharmacy ownership, licensing, and workforce structure contribute to an effective system that guarantees quality services and medicine availability(9).

Finland has a high number of pharmacies and pharmacists as of 20.3 pharmacists per 10 000 population (according to the WHO data as of 2021), making it easier for people to access their medications(10). Only **Proviisori** pharmacists can own and manage a pharmacy, while only qualified pharmacists (**Proviisori** and **Farmaseutti**) are allowed to dispense medicines and provide patient counselling. Pharmacy technicians mainly handle medicine storage and logistics in community pharmacies (11).

Organizations such as the **Association of Finnish Pharmacies (AFP)**(12) and **Proviisoriyhdistys** (13) advocate for pharmacists, promote ethical standards, and encourage collaboration and professional development. Pharmacy education in Finland is well-structured, with two main degree qualifications. The **B.Sc. in Pharmacy (Farmaseutti)** takes at least three years, including six months of practical training, while the **M.Sc. in Pharmacy (Proviisori)** requires an additional two to three years and includes a research project (14). From education to specialization and ownership, Finnish pharmacists develop skills in leadership, financial management, and quality assurance(13) .The **University Pharmacy**, with 17 branches, is a leading example of combining education, research, and patient care. It provides student internships and contributes to the development of specialized medicines(15).

Finnish health policy focuses on two main goals: ensuring the best health outcomes and reducing health inequalities. The government, through the **Social Insurance Institution of Finland (Kela)**, provides health insurance for all Finnish citizens. Medication reimbursement depends on the type of medicine and the patient's diagnosis. Prescription medicine prices are the same across all community pharmacies (16). For the last 2 years, pharmacies have been able to give discounts on OTC drugs although this cannot be advertised

Beyond community pharmacies, companies like **Oriola**(17) and **Pharmaca**(18) play key roles in medicine distribution and pharmaceutical information. **Oriola** ensures medicine availability and safety through efficient distribution and quality control. **Pharmaca** provides health information services and manages Finland's electronic prescription system with tools like the **Nordic Number (VNR)** system.

Finland also places strong emphasis on continuing education for pharmacists. Organizations like the **Finnish Pharmacists Association (FOK)**(19) offer training programs, including the annual **Pharmacy Days Congress**, to help pharmacists stay updated with new developments [6].

Both **hospital and community pharmacies** in Finland aim to provide excellent patient care. The **University Hospital Pharmacy**(20) employs pharmacists in various roles, including medicine management, drug compounding, pharmacogenomics, and medication safety. Collaboration with healthcare professionals ensures a comprehensive approach to patient care.

My experience in Finland has inspired me. The country's focus on sustainability, innovation, and healthcare improvement provides valuable lessons for Madagascar. Learning about

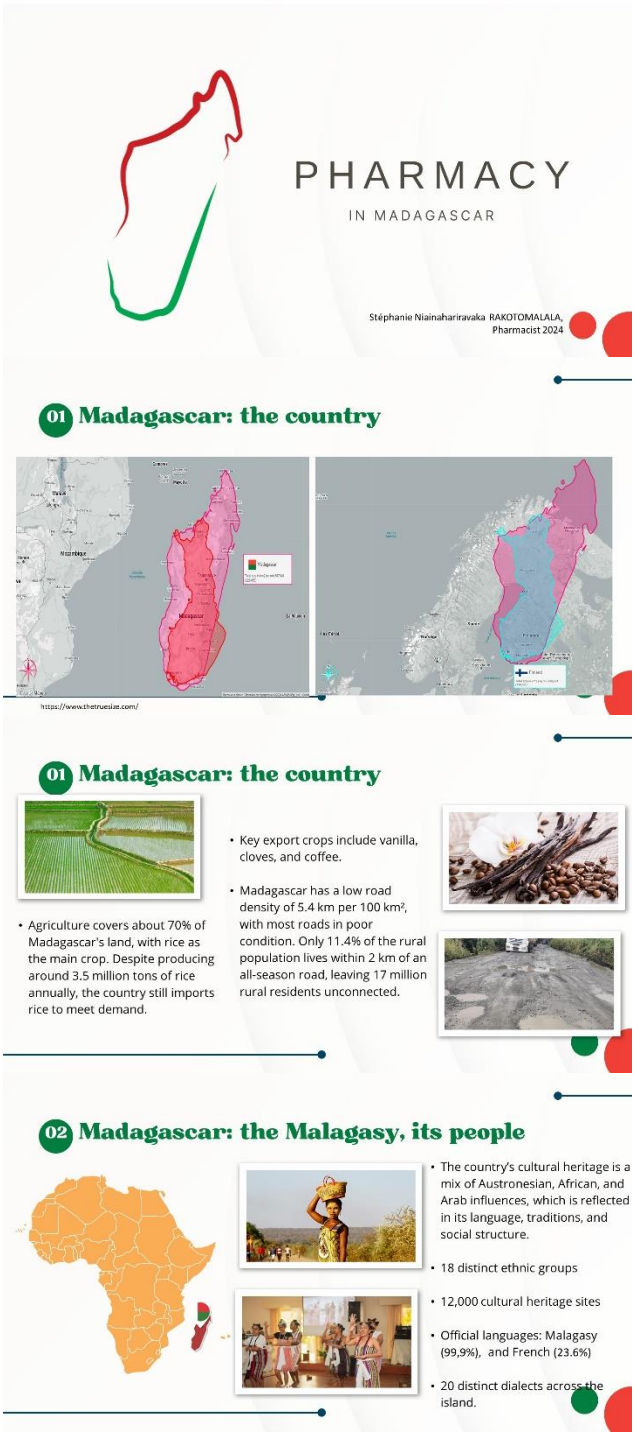
Finland's history and development has also given me hope. In the early 20th century, Finland was a poor country with few resources. However, through resilience, strong education, anti-corruption policies, and investment in people, it became one of the world's most successful and happiest nations(21). Madagascar has great potential for growth with its natural resources and strategic location. With the right mindset and determination, we can develop competitive industries that support sustainable economic progress.

Increasing the number of pharmacists and expanding their roles is essential for Madagascar. Opening new pharmacy schools in different regions and creating a strong system to retain graduates should be a priority. More pharmacists will help ensure a safe and legal pharmaceutical supply chain. Strengthening clinical training will give pharmacists the skills and confidence needed for patient care. Health literacy programs and a **national medication reimbursement policy** can improve treatment adherence and medicine access. Research on pharmacy practice and healthcare challenges should be encouraged to support **evidence-based policies**. By combining our cultural strengths and resources with innovation, we can advance both the pharmaceutical sector and national development.

The Finnish pharmaceutical system serves as a strong example of effective healthcare delivery, with clear regulations, community involvement, and a focus on education and professional growth. The **Pharmabridge program** was a unique opportunity for learning and cultural exchange. It broadened my perspective, strengthened my skills, and gave me new ideas for improving pharmacy practice in Madagascar. Future collaborations will be important for implementing innovative projects. This experience is not a rigid model to copy but proof that change is possible with the right commitment. The journey ahead will have its own challenges, but key principles like good governance, education, inclusion, and innovation will remain essential for success. Strengthening research, sharing knowledge, and fostering global collaboration will help improve pharmacy practice worldwide.

ANNEXES

Annexe 1: Slides of the presentation of the Pharmaceutical Situation in Madagascar



History of Pharmacy in Madagascar

1968- 1970	1970-1975	1975-2005	2006-NOW
Early Development	**Expansion of Malagasy Pharmacists**	**Educational Shifts and Past Industry Contributions**	**Establishment of Pharmacy Education in Madagascar**
• 20-40 Pharmacies in the late 1960s • Over half were located in Antananarivo • Mostly Pharmacists were Foreign Nationals • Malagasy Pharmacists were trained at the Befelatanana School of Pharmacy (now INSPC) • Initially, Malagasy Pharmacists worked in the Central Pharmacy (Now the Drug Agency) • The Befelatanana School of Pharmacy closed in the 1970s	• After Madagascar's independence in 1960, many Malagasy nationals returned from studying in France. • A significant number of these returnees specialized in the pharmaceutical industry. • They initially worked in the country's only pharmaceutical laboratory. • Eventually, these pharmacists opened their own pharmacies. • Due to selling restrictions in Antananarivo, many established pharmacies in provincial areas.	• 1975: Malagasy pharmacists began training in Eastern countries. • 1980s: Two local pharmaceutical industries, Laboratoires OFAFA and RATHERA, were established. • These labs, along with Laboratoires FARMAD, produced generic and licensed medicines. • 1980s: Students studied in Europe, China, Africa, and India. • OFAFA and RATHERA closed in 2007 due to financial issues, ending local manufacturing. • Efforts to rebuild the industry continue.	• Early 2000s: Madagascar had only 250 pharmacies for 17 million people, leading to a pharmaceutical shortage. • 2005: 6 year curriculum of Pharmacy Department established at the University of Antananarivo to address the shortage; with an expected of 25 pharmacists per year • 2011: First class graduated; 2 pursued doctorates with Foundation support. • 2020: 6 year curriculum of Pharmacy at the University of Mahajanga opening with an expected 40 pharmacists per year

03 Pharmaceutical Legal Framework

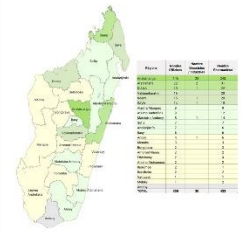
•The **Ministry of Public Health** in Madagascar is the main governing body that regulates pharmacies and pharmaceutical practices through the Medicines Agency of Madagascar (AgMed).

•The **Malagasy Pharmacy Council** (Ordre National des Pharmaciens de Madagascar) oversees the profession, licensing, and ethical conduct of pharmacists.

•Regulations are in place to ensure the safe distribution of medicines through licensed pharmacies, but enforcement is often inconsistent, especially in rural areas.

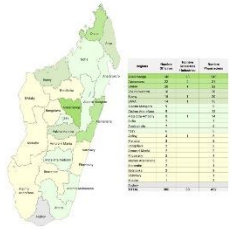
04 Pharmaceutical demography

Cartographie pharmaceutique - Juillet 2023



04 Pharmaceutical demography vs Population Distribution

Cartographie pharmaceutique - Juillet 2023



Population Distribution (Jan 2023)

Region	ISO	Capital	Area	Population	Density
Analamanga	MG-AMA	Antananarivo-Renivohitra	17.346	3.812.536	219,8
Itasy	MG-ITA	Miarinarivo	6.368	964.146	151,4
Vakinankaratra	MG-VAK	Antsirabe	16.599	2.191.677	132,0
Bongolava	MG-BON	Tsiroanomandidy	17.937	1.062.330	59,2
Haute Matsiatra	MG-HAM	Fianarantsoa	20.294	1.534.254	75,6
Amoron'i Mania	MG-AMM	Ambositra	16.143	889.497	55,1
Vatovavy	MG-VAT	Manakara	19.682	1.533.112	77,9
Fitovinany	MG-FIT	Farafangana	16.826	1.190.197	70,8
Atsimo-Atsinanana	MG-ATA	Farafangana	16.826	1.190.197	70,8
Ambatofinandrahana	MG-AFI	Fianarantsoa Est	31.666	1.211.380	38,3
Ihorombe	MG-IHO	Ihosy	26.062	443.172	17,0
Menabe	MG-MEN	Morondava	49.568	727.397	14,7
Betsiboka	MG-BET	Maevatanana	29.391	417.820	14,4
Melaky	MG-MEL	Maevatanana	40.557	256.237	6,3
Total			**570.495**	**27.146.927**	**47,6**

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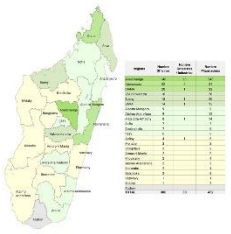
04 Pharmaceutical demography vs Population Distribution

Cartographie pharmaceutique - Juillet 2023



Population Distribution (Jan 2023)

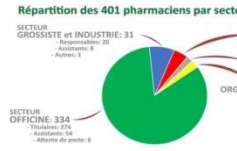
Region	ISO	Capital	Area	Population	Density
Analamanga	MG-AMA	Antananarivo-Renivohitra	17.346	3.812.536	219,8
Itasy	MG-ITA	Miarinarivo	6.368	964.146	151,4
Vakinankaratra	MG-VAK	Antsirabe	16.599	2.191.677	132,0
Bongolava	MG-BON	Tsiroanomandidy	17.937	1.062.330	59,2
Haute Matsiatra	MG-HAM	Fianarantsoa	20.294	1.534.254	75,6
Amoron'i Mania	MG-AMM	Ambositra	16.143	889.497	55,1
Vatovavy	MG-VAT	Manakara	19.682	1.533.112	77,9
Fitovinany	MG-FIT	Farafangana	16.826	1.190.197	70,8
Atsimo-Atsinanana	MG-ATA	Farafangana	16.826	1.190.197	70,8
Ambatofinandrahana	MG-AFI	Fianarantsoa Est	31.666	1.211.380	38,3
Ihorombe	MG-IHO	Ihosy	26.062	443.172	17,0
Menabe	MG-MEN	Morondava	49.568	727.397	14,7
Betsiboka	MG-BET	Maevatanana	29.391	417.820	14,4
Melaky	MG-MEL	Maevatanana	40.557	256.237	6,3
Total			**570.495**	**27.146.927**	**47,6**

Last update: 17.01.2023 - 22:09:10

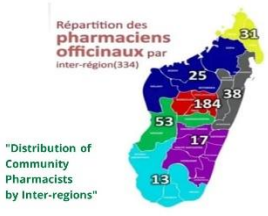
NB: **Number of Depots of Medicine**– 1633 in 2015

Definition of Depots of Medicines: Center for the sale and distribution of essential pharmaceutical products, managed by a holder who must possess a high school diploma degree and undergo two months of training in a pharmacy.
The operating license for depots is issued by the Ministry of Health to non-pharmacists in areas where there are no pharmacies within a 10 km radius.
This depot is authorized to sell the 185 medications and medical supplies listed by the Ministry of Health.

REPARTITION DES PHARMACIENS PAR SECTEUR

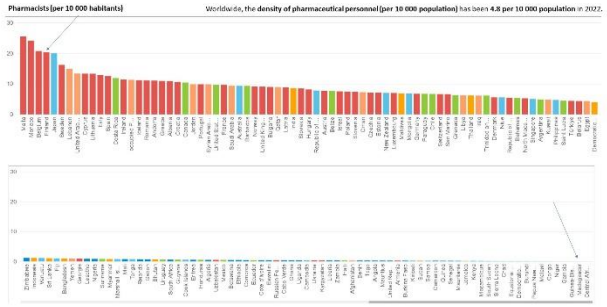


"Distribution of Pharmacists by Sector (2022)"

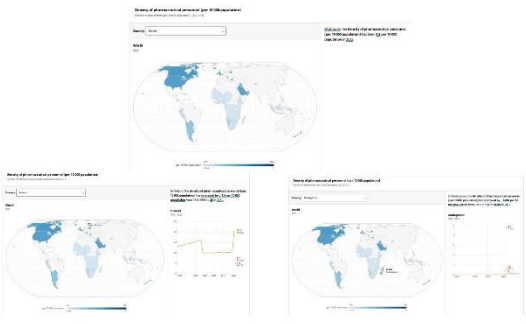


"Distribution of Community Pharmacists by Inter-regions"

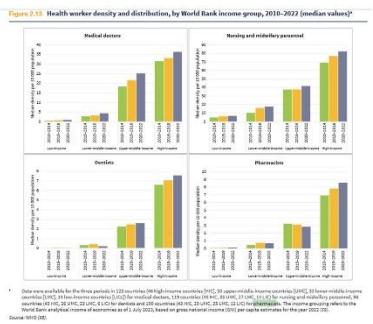
"Distribution of Hospital Pharmacists by Inter-regions"



https://www.who.int/data/gho/data/indicators/indicator-details/GHO/pharmacists-(per-10-000-population)



https://www.who.int/data/gho/data/indicators/indicator-details/GHO/pharmacists-(per-10-000-population)

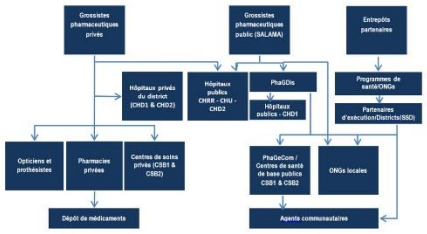


ANTANANARIVO

INFORMAL SITUATION

VERY UNDESERVED AREA

05 Madagascar's Health Supply Chain System



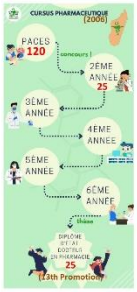
https://healthmarketlinks.org/sites/default/files/resources/Madagascar%20Private%20Sector%20Assessment%20Draft%20Report%201.19.18_0.pdf

06 Main Challenges in the Pharmaceutical sector

Key Challenges	Details	Actions to Take
1. Fragile Supply Chain	- International crises (COVID and Ukraine war) have weakened the supply chain. - Rising costs and limits on available imports create difficulties. - Short shelf life of available medicines.	Strengthen the entire supply chain for better resilience and healthcare coverage.
2. Currency Volatility	- Unstable Ariary with little control from the Central Bank. - Decreased purchasing power for the population. - High risk of currency loss.	Support and finance private initiatives that benefit the community.
3. Quality Control Issues	- Weak enforcement of public health regulations.	Train and formalize pharmaceutical stakeholders to comply with regulations and ethics.
Pharmacist's Role	- Pharmacists work to ensure medicines are available, accessible, and of high quality for all Malagasy people. - They oversee medicines from production to delivery.	Create a harmonious, accessible, efficient, quality, and secure healthcare system.

Ref: ROUND TABLE OF MAY 12, 2023, ONP Madagascar

07 Pharmaceutical Education



08 Key perspectives of pharmaceutical practice in Madagascar

Regulatory Framework:
Ensuring compliance with local and international standards for the importation, distribution, and sale of medications.

Health Infrastructure:
Issues related to the distribution of medicines across healthcare facilities, especially in remote regions.

More Pharmaceutical Workforce:
A shortage of trained pharmacists, particularly in industrial and regulatory roles, poses a challenge.

Public-Private Partnerships:
Collaboration between government and private sectors can strengthen supply chains, improve regulation, and ensure better access to medications across the country.

THANK YOU
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