



Sarah Anderson Bailee Meeker
Andersons6@findlay.edu meekerb@findlay.edu
PharmD student class of 2025
University of Findlay, Findlay, OH USA 45840

ELECTIVE INDIA PHARMACY ROTATION- LEARNING OUTSIDE THE CLASSROOM

This article dives into the unique experiences and lessons that come with completing a pharmacy rotation in India, with information coming directly from the personal experiences of two pharmacy students, Sarah and Bailee, who have recently spent a month immersed into the Indian healthcare system and culture while completing an elective international medicine rotation for pharmacy school. To understand a little bit more about how we got this unique opportunity a few questions should be answered.

What is the objective of this rotation?

The primary objective of this elective abroad international medicine rotation was to gain exposure to the diverse healthcare system and understand the role of pharmacy practice within that context. The itinerary of the trip was designed for us to get experience in the hospital setting to learn about the similarities and differences with the pharmacotherapeutic management strategies in India vs the USA, while also getting a large exposure to the culture and lifestyle of a different country along the way. Additionally, the rotation aimed to enhance our knowledge of the pharmaceutical manufacturing process and

having a better understanding of industrial regulations and quality assurance methods within one of the largest drug manufacturing countries in the world. Another key objective would be to work alongside healthcare professionals to develop cultural competence, improve communication skills, and understand the social determinants of health that affect medication use in India.

Why did we decide to go on this trip?

We decided to commit to this once in a lifetime opportunity because we are the type of students to embrace unique experiences and jump at any opportunity to broaden our education. We knew that turning down an opportunity such as this one would be selling ourselves short of gaining such a valuable perspective on not only pharmacy but on our personal worldview well.

How did we prepare?

This trip would be the first time that either of us had visited India, so preparation for the trip spanned over several months prior to our departure date. Our trip started on November 5th, so in August we started the preparation process by trying Indian food. In talking with our professor who has made this trip several times in accompanying US students on this trip, a major hurdle to jump was the difference in dietary palates. Luckily, both of us learned to love Indian food and felt comfortable to branch out and try new dishes. As a prerequisite to this trip, we took a Global Health elective that educated us and prepared us as to what to expect while being immersed in the healthcare system in India. Otherwise, we researched travel blogs and online platforms that aided us in the packing process so that we would have weather and culturally appropriate clothes to wear. Now that we have gone over the background of our trip, let's dive into our experiences while overseas and how the trip's objectives were fulfilled.



The first leg of our trip began in southern India in a town called Vadlamudi, just 20 kilometers south of Guntur in the state of Andhra Pradesh. While in this part of the country, we stayed in a guest house located on the campus of Vignan College. Vignan has a pharmacy school that in our time on campus we personally grew close to the students attending college there and became familiar with the structure of the pharmacy curriculum. In a side-by-side comparison of the curriculum of our pharmacy education and Vignan's, the core pharmacy concepts such as pharmacology, pharmaceuticals, medicinal chemistry, and clinical pharmacy are consistent. The place of small difference lies in the fact that Indian pharmacy programs often place a stronger emphasis on pharmaceutical manufacturing concepts due the large scale of opportunities in that field within India.

We got to spend time at an affiliated hospital in Guntur, Aster Ramesh hospital, where Vignan students gain experience in the hospital setting all throughout their curriculum. We spent the days there being immersed in the different specialties the hospital offers, and it allowed for us to reflect on our exposure with these disease states in the US and how they are being treated in Indian hospitals. We had interactions with patient files in the cardiology unit where we saw various types of cardiovascular disease, the largest challenge we faced while looking at patient charts was the identification of drugs that were being used. With the US documentation of administered medications being largely based on generic names, in India brand names are more often used, and another limiting factor is that the brand names used in India are different than the ones used in the US due to manufacturer designated naming strategy used in India.

During the later half of our time at the hospital, we spent time in the OB-GYN unit and in the

operating theater. All of the engagements that we had in these departments were for the first time as we had no prior exposure to these specialties in the US. During our time in the OB-GYN department, we were able to sit in on consultations regarding prepartum, peripartum, and postpartum treatment plans. We got to sit in on an emergency appendectomy and cesarean section delivery in the operation theater where we got interactive physician directed narration of each of these procedures. After this, we got to see the vaginal delivery of a baby. We were grateful to get these experiences as we likely would not be able to in the US.

In the last portion of our time at this hospital, we got to engage in a workshop with the on-site embryologist with other related doctors in the area to talk about improving IVF therapies with newer technology and the science behind male based fertility problems. To conclude our time at Ramesh hospital we got to observe an IVF embryo implantation procedure.

Another impactful pharmacy related experience that we gained while in the south was visiting one of the first ever pharmacist ran SUITs medical clinics in a rural village where the access to healthcare is limited. In this organization, patients are able to get seen on a walk-in basis where they are evaluated by a pharmacist head-to-toe including point of care testing of blood pressure, blood glucose, etc. Pharmacist have the authority to prescribe under collaborative practice agreements in India like the US, therefore, at the conclusion of the evaluation the patient can be prescribed medication if indicated and then get the medication filled at the onsite pharmacy.

We assisted the onsite pharmacist by getting blood pressure and blood glucose readings when needed as well as critically reviewing the information we had collected to make decisions on how to treat the patients. We were grateful



to be able to experience the pharmacist working in this setting because this is similar to how an ambulatory care pharmacist would be working as in the US, so we were able to relate this experience to our previous experience in that setting back home.

Our experience at SUITS medical camp rounded out our time in the clinical setting in the south, but that was only the beginning of new encounters in the world of pharmacy. We then traveled to Hyderabad in the more central part of the country where a large pharmaceutical manufacturing company, Aurobindo, holds its headquarters. While at Aurobindo we got to experience the industry side of pharmacy for the first time in our education. We rotated through various stations where we got in-depth explanations related to formulation development with hands on experience with tablet friability, solubility, dissolution, pH testing, and UV spectrometry demonstrations to name a few. Prior to attending these demonstrations, we had exposure to each of these analyses during organic chemistry labs but never with specific relation to drug manufacturing, so it was unique to get this new perspective that is more focused on the world of pharmacy. We also got to visit the pilot lab where we saw tablet manufacturing on a smaller and more demonstrative scale which allowed for us to get a in-depth explanation while being able to actually see the intricate process of tablet punching and manufacturing.

Our next journey was to visit Vishnu Institute of Pharmaceutical Education and Research, where we got experience with testing pharmaceutical agents in animal models. We started off at the VIPER lab with learning basic animal handling techniques, in which we quickly learned that this was not an easy skill. It took us nearly the entire morning to get a general feel for handling lab mice, rats, and

rabbits. While these animals are well-behaved, there are unique ways to handle each while also being courteous of what is comfortable for the animal. We got hands on experience with various routes of medication administration such as oral, intraperitoneal, intravenous, subcutaneous, and intramuscular in the rat model. We then went to a nearby lecture hall where we received a lecture from the lead professor at VIPER regarding legal restrictions and ethical considerations when doing animal experimentation in India. After getting this knowledge we then observed an actual animal experimentation where alprazolam, a benzodiazepine, was intraperitoneally delivered to a rat to analyze the anxiolytic effects it has on its performance in the electro-photometer.

We also had a variety of other exposures to pharmacist related job opportunities in India such as in a cosmetology clinic, vaccination clinic, and seeing what it is like to be a retail pharmacist. In Hyderabad, Derma Aura cosmetology clinic is a facility that is co-ran by a dermatologist alongside a pharmacist. Dr. Keerthi the pharmacist at this site, started our time there by speaking to us regarding her journey to becoming a pharmacist in the cosmetology setting and the course work she did on top of her PharmD education. We then toured the facility and talked about the services that they offer. We got to sit in on a consultation and procedure of a patient who was getting laser hair removal service. Also in Hyderabad, Rainbow Children's hospital is a newly opened pharmacist ran adult vaccination clinic located at the doors of this children's hospital to encourage patients to be up to date on their adult vaccinations and allow for easier access of care. We gained insight into how this project was put into action and the impact it has had on the community so far. We learned quickly that the retail and community pharmacy setting look very different in India vs the US. We learned that community pharmacies in India are largely



owned and operated by people with a two-year education in pharmacy with little pharmacotherapy knowledge.

Getting pharmacists in the community pharmacy setting with at least a Bachelor of Pharmacy degree is working progress within the country to bring more screening and medication safety knowledge to the retail setting. We got the opportunity to visit MedAux pharmacy which is a community pharmacy ran by Dr. Tilak. We were able to see the steps he has taken to initiate medication safety practices and implement patient friendly counseling strategies and different functions that he uses to ensure patients are getting the best care. At this pharmacy he has created his own software system to track patient demographics, medication profiles, fill history, and their language preference to ensure their medication label is in their preferred language. This pharmacy was a great experience to show the proper way that community pharmacies should be practiced across the country and hopefully the steps that Dr. Tilak has taken will pave the way for others to initiate within their own practice.

The rest of our journey took place in northern India at SGT college where we got to be immersed into ayurvedic medicine, and we were hosted by the college of ayurveda medicine that is within the campus. We got to hear lectures pertaining to the principles and strategies used in ayurvedic medicine. The language and practice of ayurveda was a completely new concept to us as we have only had education in western medicine, so it was hard to catch on to terminology but overall, the lectures were very informative and gave us a good overview. With the knowledge that we had gained during the lectures, we then went to the ayurvedic hospital that is on campus to see these practices and strategies in the practical setting. We toured the facility, got an

ayurvedic head massage, and we were able to witness a patient-provider interaction and an ayurvedic Nasyam procedure. Learning about this practice of medicine was very informative and allowed us to have a different outlook on western medicine and see where the implementation of ayurveda could be utilized in the US.

Overall, this international medicine rotation in India offers unique experiences that are truly unable to be replicated in the US. After having the above-described interactions with India's healthcare population, understanding their cultural differences, and getting a large range of perspectives within the pharmacy world we feel that it has deepened both our cultural competence and communication skills, while also enhancing our ability to understand global healthcare settings. The most valuable lesson that we have taken away from our time in India is the significance of patient-centered care and the need for flexibility in different treatment approaches, as well as the importance of cultural competence in effectively communicating with and understanding patients from different backgrounds. Ultimately, this experience instills a profound understanding of the broader role that pharmacists can play in making patient centered care decisions and enhancing public health on a global scale.

We would recommend this elective rotation to any student that wants to become a well-rounded and informed pharmacist, that can bring a new perspective on healthcare and the world of pharmacy. We have so many memories and a newfound knowledge that we will carry with us throughout the rest of our careers as pharmacists as well as the rest of our lives as a whole.



Global Health

AN ONLINE JOURNAL FOR THE DIGITAL AGE



Sarah, Bailee and Karthik with the owner, Tilak at the Medaux Pharmacy in Hyderabad, India



UF and Vignan students following observing surgical procedures at Aster Ramesh Hospital



UF students with Dr. Sekar at the conference. Provided an excellent opportunity to develop public speaking skills. Addressed over 1200 over the three conference presentations.



Goodbye India – View of Taja Mahal from Agra Fort, where Aurangzeb imprisoned his father Shahjahan, who had built Taja Mahal