



## PODEMOS: A Student-Led International Medical Brigade

Thomas Mason<sup>1</sup>; Nayanika Challa<sup>1</sup>; Jae Baek<sup>1</sup>; Arthur Pollauf<sup>2</sup>; Emily Veach<sup>2</sup>; Luis Regalado<sup>1</sup>; Jacy Leon<sup>1</sup>

<sup>1</sup>The Ohio State University College of Medicine, Columbus, OH, USA

<sup>2</sup>The Ohio State University College of Pharmacy, Columbus, OH, USA

**Corresponding Author:** Thomas Mason; email: thomas.mason2@osumc.edu

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### Abstract

PODEMOS, Spanish for “We Can”, is an interdisciplinary healthcare organization based in Columbus, Ohio, that is designed to meet the healthcare needs of communities around the city of El Progreso, Honduras. Honduras is a developing country in Central America that scores low in most indicators of healthcare quality and access. Most notably, there is a tremendous need for expanded access in rural communities. Established in 2008 by students from the Ohio State University College of Medicine, PODEMOS conducts biannual medical brigades that run primary care clinics in three rural communities around El Progreso through the volunteer service of United States (US)-based medical, pharmacy, and dental professionals. Additionally, the organization works with local leaders to provide healthcare services for patients with chronic conditions, fill gaps in US-based provider coverage, and recruit patients. PODEMOS bases its care on two models, the acute care model for common adult complaints and all children under the age of 18, and the chronic care model for a subset of adult patients who need more complex care for chronic conditions such as diabetes mellitus and hypertension. Providers then have access to select laboratory and pharmacy services for their patient’s needs. PODEMOS has had a large impact on local communities since its inception, as evidenced by the numerous acute patient visits in its 11 years of existence and the 136 patients currently enrolled in chronic care program. Nevertheless, the organization continues to face challenges in areas such as interprofessional collaboration, security, and maintaining patient turnout. This piece is a descriptive report on PODEMOS, a student-run international medical organization based out of the Ohio State University Wexner Medical Center, that seeks to inform other student-run organizations about the organization’s structure and operation.

### Healthcare and Honduras

The Republic of Honduras is a developing nation in Central America that lies between Nicaragua, El Salvador, and Guatemala. The country suffers from high levels of political instability and violence as well as staggering levels of income inequality and poverty. According to the Central Intelligence Agency (CIA) World Factbook, 65% of Hondurans live in poverty, and 33% are unemployed or underemployed.<sup>1</sup> These challenges, as well as an underdeveloped healthcare system, make it extremely difficult to meet the healthcare needs of the population.

The country has several public healthcare programs that are open to all citizens. Honduras’ Ministry of Health serves approximately 50-60% of the population and the Honduran Social Security Institute (IHSS) serves about 18%.<sup>2</sup> In addition

to this, the private sector accounts for 10-15% of health coverage, although only 2.9% of the country had private insurance as of 2017.<sup>2,3</sup> It is estimated that 1.5 million citizens, another 18% of the population, are unable to access proper healthcare.<sup>3</sup> Exacerbating the overall healthcare insufficiency is a lack of physicians nationally. There are approximately 0.37 physicians per 1,000 population in Honduras, marking the country’s physician density far below that of wealthier countries like the United States (US).<sup>4</sup> Adding, in another manner, to the healthcare disparity is the aforementioned high degree of income inequality; according to the World Health Organization, national gross domestic product per capita is \$4,270 purchasing power parity (GDP-PPP).<sup>5</sup> For comparison, the United States’ has a \$53,960 GDP-PPP.<sup>6</sup> Honduras’ healthcare expenditure per capita, meanwhile, is around \$400, which can

be compared to the United States' spending of \$9,403 per capita. Furthermore, pharmaceutical sales per capita are \$55 and \$970 in Honduras and the US, respectively.<sup>7</sup>

Rural communities face the largest challenges in terms of accessing care. Distance from care is associated with lack of access, but there are other contributing factors. Per a 2011 questionnaire assessing healthcare provider access in rural Honduran communities, lack of transportation, cost, the need to miss work, facility crowding, and lack of alternate childcare were all cited as significantly greater barriers for citizens residing in rural areas. These barriers also restrict access to other necessary medical procedures, such as laboratory testing or radiology for the same reasons that care is not sought initially. The same study reported that patients primarily sought healthcare only when they were sick, and much less so for preventative care.<sup>8</sup>

Honduras' profile of common mortality-causing disease includes a host of acute and chronic conditions. The prevalence of human immunodeficiency virus (HIV) is 0.4%, and the top three causes of deaths include perinatal conditions (16%), diabetes (6.7%), and congenital malformation (6.6%).<sup>2,9</sup> The incidence of diabetes is 7.4% in the Honduran adult population, while the prevalence of hypertension is 22.6%.<sup>2</sup> These rates are not far off from an approximate combined prevalence of 8.5% (diabetes) and 25.3% (hypertension) in Central America as a whole.<sup>10</sup> Around 46% of the Honduran population is overweight or obese, which can be compared to the overall overweight/obesity rate of 60% for Central America.<sup>11</sup> The morbidity and mortality of all of these conditions could be greatly reduced given proper healthcare access for a greater segment of the population. The goal of PODEMOS, a US-based professional student organization, is to meet the healthcare needs of underserved rural Hondurans in and around the city of El Progreso. This descriptive report discusses the organization's operations, models, challenges, and impact on the communities it serves.

## Clinic Overview

PODEMOS is an interdisciplinary student run organization that is overseen by a board of directors that include physicians, pharmacists, nurses, and other healthcare professionals. Every year there are two co-presidents that lead an executive board of about 15-20 students spanning mul-

iple disciplines and class years. Although elections happen every year, many students remain on the board or stay active in the organization for multiple years. The outgoing board ensures a smooth transition to an incoming board by holding elections in the winter so that students have the spring semester to ask questions and act as apprentices.

Participation for each brigade is limited by patient need, transportation, and faculty preceptors. In order to form a cohesive, interdisciplinary group, the team for each brigade is chosen using an application process. Although exact numbers can vary between each trip, most of the participants are first and second year medical and pharmacy students.

PODEMOS operates primary care clinics for residents of all ages in the rural communities of Siete de Abril, El Ebenezer, and Las Brisas de Libertad which are located near the city of El Progreso, Honduras. These clinics are staffed by healthcare professionals and professional students from the US who participate in biannual medical brigades. In addition, PODEMOS works with local Honduran physicians to provide chronic disease management services to patients in need. Thus, PODEMOS uses an interdisciplinary approach to serve patients through both the acute and chronic care models.

Before every brigade, trip leaders are in communication with the El Progreso City Hall and Honduran providers who work together to notify the communities of the dates of the brigade. This is often done through word of mouth. City Hall also has the capability to drive through communities with loudspeakers to announce the dates of the brigade to ensure a wider reach. Due to space and shelter limitations, clinics are normally run in the community school. Using desks and sheets, makeshift exam tables and rooms are produced that offer some degree of privacy for sensitive procedures like pelvic exams.

### *Acute Care Model*

Most patients seen by PODEMOS present for well checks or with various viral, bacterial, and fungal infections. When patients first arrive to the clinic, they are seen by students in the triage area where their vitals and chief complaint are recorded. In order to best serve the community, no patients are turned away and each person will be seen by at least one provider. After triage at the intake station, patients are directed to an acute care station where they are seen by a healthcare

team consisting of a US-licensed medical provider, a translator, and 1-2 students. Children are directed to a pediatrics station staffed by a licensed pediatrician or family medicine physician with a similar team. Each team works together to obtain a comprehensive history and focused physical exam to gain a better understanding of the patient's condition. In addition to the simple bedside exams, providers can conduct more invasive exams, such as a pelvic exam, if indicated. Access to diagnostic testing and imaging studies is limited, but certain resources are available to providers such as a point of care ultrasound that has been donated through a collaboration with the Ohio State University Department of Emergency Medicine. Students are actively involved in the decision-making process and are encouraged to ask questions to develop an accurate assessment and plan. These opportunities help students gain confidence in their physical examination and clinical reasoning skills as well as strengthen the team dynamic. Following examination by a physician, patients requiring medication are sent to a pharmacy station where their pharmaceuticals are dispensed, and they receive both verbal and pictorial education. The medications are free of charge to the patients and are provided in sufficient quantities to cover patients for the usual course of the condition. If patients require more medications for acute conditions, patients are informally referred to other brigades that serve the area.

#### *Chronic Care Model*

One of the unique aspects of PODEMOS is the continuity of care provided for a subset of patients. Due to time and funding restraints, the organization is only able to hold biannual brigades that participate in the acute care clinics. However, for many patients with severe diabetes and hypertension, biannual visits are not sufficient to adequately monitor their chronic diseases. The chronic care program was formed to specifically combat this problem by setting up quarterly visits by Honduran physicians and nurses with compliant patients who are being treated for non-insulin dependent diabetes mellitus (NIDDM), hypertension (HTN), cardiovascular disease (CVD), gastroesophageal reflux disease (GERD), and hyperlipidemia. These providers have access to laboratory services and medications provided by PODEMOS that are necessary to treat their patients. The Honduran physicians work closely with a US-based chronic care team to coordinate

resources and determine chronic care policies. Continuity of medical records is maintained by a unique web-based charting system, which allows both Honduran and US-based healthcare professionals to view relevant patient data. Patient records are kept in specially formatted spreadsheets that are stored within a secure web storage account. This system protects patient health information, minimizes costs, and lowers the workload of the Honduran providers as they do not have learn a new electronic health record. Additionally, the leadership of PODEMOS feels strongly that involving Honduran healthcare professionals creates more invested parties in the country and empowers them to become leaders in the communities they serve.

Unfortunately, funding is a major limiting factor in the Chronic Care Model. A majority of PODEMOS expenses come funding this program, as providers, labs, and medications all must be funded. Thus, it has been necessary to keep program enrollment to a maximum of 150 patients to conserve resources. Currently, 136 patients are enrolled across the 3 communities, with a small flux of patients in and out of the program each year. With the staggering rates of NIDDM and HTN in Honduras that were previously described there is certainly a need to expand this program as more people, including many who seek acute care with PODEMOS, would benefit from the chronic disease management that it provides.

#### *Interdisciplinary Model*

Another unique aspect of PODEMOS is its interdisciplinary nature. For the last 11 years, the medical, pharmacy, and dental communities at Ohio State have worked together to better address the healthcare needs of the Honduran population. To encourage and highlight the importance of interprofessional collaboration, students from all fields are rotated through acute care, chronic care, pediatrics, and pharmacy stations throughout the week of brigades. This allows students to have diversified experiences that they may not receive elsewhere. Anecdotal evidence has shown that students gain more knowledge regarding other healthcare professionals' scopes of practice and how professionals from different specialties can share information to better care for the entire patient.

Although dentistry currently does not participate with PODEMOS due to safety concerns, PODEMOS still embraces the interdisciplinary nature of healthcare and is working to establish re-

relationships with other disciplines at the Ohio State University Wexner Medical Center such as the School of Rehabilitation and Health Sciences and the College of Optometry.

### Impact

PODEMOS began as a small student initiative in the summer of 2008 led by students from the Ohio State University College of Medicine. The organization is a non-profit student led organization and was built on the concept that the evidence-based provision of care through consistent short-term interventions can provide important long-term value to patients who would have no other access to care. In any given brigade common chief complaints include headaches, ear infections, fever, rashes, joint inflammation, stomach pain, as well as general wellness visits. PODEMOS assesses each complaint thoroughly to provide patients with appropriate care. Through fundraisers and grants, the organization was able to incorporate a chronic care component to the program during the summer of 2014. This program currently manages 136 patients from three communities served by the brigade. The chronic care program treats chronic illnesses such as NIDDM, HTN, CVD, GERD and hyperlipidemia. PODEMOS continues to provide bi-annual clinical interventions to address both acute and chronic medical problems. These brigades have also been able to build sustainable and reliable relationships with patients in need and local facilities who wish to make healthcare more accessible in their communities.

Over the years PODEMOS has created a multidisciplinary healthcare team by incorporating dental and pharmacy students from the Ohio State University. The multidisciplinary team has diagnosed and treated patients suffering from tension headaches, acute otitis media, dental cavities, rhinosinusitis, upper respiratory infections, wound infections, dermatologic concerns, and general musculoskeletal issues. Furthermore, PODEMOS has grown by solidifying various relationships with a local Honduran government international healthcare-liaison department, various local healthcare providers, and local dental schools. During the summer of 2019, the organization partnered with a local government office focused on international affairs, particularly global health. This local department was willing to assist the brigade by providing food, water, security, and transportation which allowed

more funds to be used for medications. During this brigade, the group was also able to initiate a relationship with a local bilingual school willing to let their students volunteer and help translate and participate in future brigades. A relationship with dental students from El Progreso, who wished to contribute with dental resources and care, was also forged during this brigade. Future brigades will focus on building on these new relationships to continue to solidify the presence PODEMOS has been building within the El Progreso area since its inception in 2008. These relationships have allowed the organization to continue to expand to reach new communities in need and increase the number of patients the organization is able to enroll in the chronic care program. Siete de Abril, a community in El Progreso, Honduras, has been receiving aid from PODEMOS since 2008; since then, PODEMOS has expanded to provide consistent care to El Ebenezer, and Las Brisas de la Libertad.

### Challenges

PODEMOS faces several unique challenges relating to its operations. Owing to the interprofessional nature of the organization, it can be difficult to keep different professional schools and organizations aligned especially during periods of leadership transition. Difficulties with interprofessional collaboration have occurred with the Ohio State College of Dentistry, which recently withdrew from PODEMOS due to safety concerns regarding operating in Honduras. Consequently, PODEMOS has worked extensively with the El Progreso city government to recruit local dentists and dental students to continue providing dental care. Similarly, a temporary change in the College of Pharmacy curriculum at Ohio State led to a curricular elective involving participation in a PODEMOS brigade being discontinued, which resulted in decreased pharmacy student participation. PODEMOS addressed these concerns by recruiting outside pharmacists and working to establish a new curricular elective within the College of Pharmacy.

As mentioned, safety concerns exist when visiting the greater El Progreso area. Travel to the country is advised against by the US State Department, which lists the country under a level 3 travel advisory. In addition, the political climate has recently become more volatile forcing PODEMOS to develop various contingencies. In 2017 a brigade was canceled due to political unrest

and this past year, trip participants arrived at the airport half a day earlier than usual to avoid driving through a protest. In order to ensure the safety of PODEMOS members, the organization partners with the Honduran military, which provides several personnel for security each day of the brigade.

PODEMOS also faces similar challenges to other international healthcare brigades. Patient turnout fluctuates for each brigade for both the acute and chronic care services, making it difficult to reliably plan for an appropriate number of physicians and medications. Attempts to address this issue by sending city hall members to the communities prior to visits have been met with mixed success. Like many other programs, PODEMOS also struggles with sustainable funding.

**Table 1.** Summer 2020 Trip Expenses

Item	Cost per Person (USD)	Total Cost for 30 People (USD)
Personal		
Flight tickets	600	18000
Insurance	37	1110
Transportation	100	3000
Immunizations	100	3000
Food	200	6000
Lodging	250	7500
Exit Fee	37.5	1125
Miscellaneous	30	900
Group		
Medications		6000
Additional Clinic Supplies		500
Lab Tests		5500
Cell Phone		50
Translators		500
Transportation, Security		150
Taxes, International Fees, Miscellaneous		1000
<b>Grand total</b>	<b>1354.5</b>	<b>54335</b>

*The first half of the table indicates individual expenses and the total individual cost for 30 participants, while the second half displays expenses relevant to the larger group. Please note that there is significant seasonal variation associated with the cost of flights, and an estimate is used for the purposes of this table.*

As a small organization, it can be difficult to obtain donations or gifts-in-kind as many large healthcare companies prefer to donate to charities serving in the US or have long-standing partnerships with other, larger international healthcare charities.

Main sources of funding for PODEMOS include donations through the Ohio State Wexner Medical Center, \$4,000 per year through the Medical Alumni Society Grant, and trip fees, which amount to \$550 per person. Major expenses for each trip include medication orders (\$6,000) and laboratory testing (\$5,500). A sample breakdown of costs for the Summer 2020 trip is depicted in Table 1.

## Conclusion

PODEMOS is a student-led international medical brigade dedicated to providing high quality care for rural communities near El Progreso, Honduras. Since its inception in 2008 by the students at The Ohio State University School of Medicine, PODEMOS has served thousands of people through its acute care brigades and ensured longitudinal care for 136 patients in its chronic care program. Both aspects of our organization are made possible by the generous work of an inter-professional team of volunteer providers and students. To better serve its patient population, future initiatives for PODEMOS include collaborating with other health science colleges, expanding geographically around El Progreso, and implementing more sustainable fundraising initiatives. These steps are all focused on accomplishing the goal of PODEMOS, reflected in the Spanish meaning of the name, “we can,” to empower patients to take control of their own health and well-being.

## Disclosures

The authors have no conflicts of interest to disclose.

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