



Philips Foundation Final Report - Ondas de Latinoamérica Project

Summary:

Ondas de Latinoamérica is a non-profit dedicated to improving emergency care in Latin America by training emergency medicine physicians to be leaders in point-of-care ultrasound (POCUS). POCUS enables physicians to make critical diagnosis and treatment decisions at the bedside; however, prior to the start of our educational intervention, there was limited access to this technology in Peru due to lack of education and training. We have been able to achieve our mission of training physician leaders in POCUS by implementing a novel multi-pronged approach using tele-ultrasound (Lumify with Reacts) to provide ongoing remote education and support, in addition to traditional hands-on education.¹ By employing a “train-the-trainers” model, we have been able to exponentially increase our impact, since all of our trainees work at large public hospitals with residency training sites. We expect our program graduates to become educational leaders for facilitating curricular change and integration of POCUS within graduate medical education in Peru and Latin America.

This project was first established in August of 2018 with the inaugural class of three emergency physician POCUS fellows from Lima, Peru. Our initial grant from the Philips Foundation began in November 2019, a few months after the start of the second class of four POCUS fellows. Part of our strategic expansion model has been to decentralize access to POCUS education by training physician leaders working in public, safety-net hospitals throughout Peru (and more recently in Costa Rica and Mexico). To date, 11 emergency medicine physicians from both urban and rural sites have completed the one-year POCUS fellowship training program. We are currently in the process of training an additional seven fellows from Peru, Mexico, and Costa Rica.

Our train-the-trainer model has proven to be an effective means of reaching a wider audience of emergency medicine physicians as evidenced by the accomplishments of our graduates. Our graduates have established POCUS training rotations at two of our sites in Lima for emergency medicine residents to learn firsthand how to apply POCUS applications within their clinical practice. To date, seven resident physicians from multiple sites throughout Peru have participated in the rotation. We are currently in the process of opening up the POCUS rotation to visiting residents from other countries, since access to free, quality education on POCUS remains limited for emergency medicine residents in Latin America.

Our graduates have also assumed leadership roles within the public healthcare system which has facilitated the enactment of policy changes needed to ensure the sustainability of the POCUS fellowship training program. Three of our graduates are now the directors of their

¹ Dreyfuss et al., “A Novel Multimodal Approach to Point-of-Care Ultrasound Education in Low-Resource Settings.”



emergency medicine departments. They have been able to secure the needed political buy-in from key stakeholders for the ongoing purchase and maintenance of the ultrasound equipment at their respective training sites needed to maintain our educational program. Our graduates have also been recognized as experts on POCUS as evidenced by their participation at both national and international conferences.

The coronavirus-19 (COVID-19) pandemic affected Peru disproportionately, resulting in the country having one of the highest COVID-19 mortality rates in the world. Similar to the rest of the world, we had to adapt to limitations in travel and shifting priorities within the healthcare system. Our graduates and fellows were able to utilize their knowledge of POCUS to better serve their patients. For example, due to a nationwide COVID-19 testing shortage, Dr. Vasquez designed and implemented a triage protocol utilizing POCUS to differentiate COVID-19 patients from other patients presenting with shortness of breath at one of the largest public health hospitals in Lima.

The overall impact of this educational intervention is challenging to quantify since it is a representation of all of the past and future patients treated by the physicians we have directly trained, as well as the subsequent physicians they will continue to train. Since the start of our grant with the Philips Foundation we have trained 9 physicians and are in the process of training an additional 5 physicians. We have opted to use the total number of ultrasound scans performed by our ultrasound fellows as a measure of the direct impact of patient lives touched by our educational program; however, we recognize that this number does not capture the multiple instances where our ultrasound fellows or graduates performed POCUS evaluations on patients outside of the scope of their fellowship requirement or following the completion of their fellowship. Therefore, we can infer that the total number of lives touched is likely much larger than what is represented by the included numbers. We can infer that the overall access and quality to care has improved due to the increased use of POCUS within the respective hospitals where we have trained healthcare personnel. As such, we have used the total number of annual patients seen within each of the emergency departments at each of the individual hospitals as an indicator of the total number of indirect lives touched. We have included more detailed data showcasing the total number of fellows and trainees whom have benefited from our educational intervention below. We can expect our future impact to continue to grow since our fellowship program will continue to train POCUS leaders who will in turn continue to train other emergency medicine physicians, thus we can expect our impact to continue to significantly increase in the subsequent years.

Impact Metrics:

Ondas de Latinoamérica	Lives touched (direct)	Impact Metric	Access to Care provided (indirect)	Impact Metric
2019	417	Number of ultrasounds performed and reviewed by Program Directors	337,600	Annual emergency room visits across hospital training sites
2020	868		374,000	
2021	816		430,000	

*Start of the Philips Foundation Grant



Impact:

Direct lives touched:

- **The number of ultrasound fellows trained on Point of Care Ultrasound (POCUS) (Physicians trained to perform, teach and lead in the emergency medicine ultrasound field): total of 9 ultrasound fellows since the start of the Philips Foundation Grant**
 - Year 2018-2019: 3 ultrasound fellows graduated
 - 2 from Hospital Nacional Dos de Mayo in Lima-Peru
 - 1 from Hospital Cayetano Heredia in Lima-Peru
 - Year 2019-2020*: 4 ultrasound fellows graduated
 - 1 from Hospital Nacional Dos de Mayo in Lima-Peru
 - 1 from Hospital Nacional Arzobispo Loayza in Lima-Peru
 - 1 from Hospital Nacional Adolfo Guevara in Cusco-Peru
 - 1 from Hospital III Iquitos in Iquitos-Peru
 - Year 2020-2021: 5 ultrasound fellows: 4 graduated, one continues training
 - 2 from Hospital Nacional Dos de Mayo in Lima-Peru
 - 1 from Hospital Nacional Arzobispo Loayza in Lima-Peru
 - 1 from Hospital 2 Moquegua in Moquegua-Peru
 - 1 from Hospital San Juan in San Jose-Costa Rica
 - Year 2021-2022: 7 ultrasound fellows- all in training
 - 2 from Hospital Nacional Dos de Mayo in Lima-Peru
 - 2 from Hospital Nacional Arzobispo Loayza in Lima-Peru
 - 1 from Hospital Nacional Hipolito Unanue in Lima-Peru
 - 1 from Hospital San Juan in San Jose- Costa Rica
 - 1 from Hospital Emilio VarelaLujan in Zacatecas- Mexico

- **The number of residents that have received education from our ultrasound fellows either through residency training, ultrasound elective, in person course or virtual course: total of # residents that have received ultrasound education as a result of Ondas de Latinoamerica POCUS fellows.**
 - Year 2018-2019
 - # of residents: 109
 - Year 2019-2020*
 - # of residents: 156
 - Year 2020-2021
 - # of residents: 271

- **The estimated number of patients that POCUS was used on related to this project in 2021 at all locations (estimate for Nov/Dec)**
 - Year 2019-2020*:

*Start of the Philips Foundation Grant



- Patient received ultrasound scans by fellows for clinical care = 868
- Year 2020-2021:
 - Patients who received COVID-19 ultrasound triage scans at Loayza = 1000
 - Patients who received ultrasound scans by fellows for clinical care = 816

Access to Care provided (Indirect impact):

- The population size each Hospital serves:
 - Hospital Nacional Dos De Mayo: 1.9 million
 - Hospital Nacional Arzobispo Loayza: 2 million
 - Hospital Hipolito Unanue: 2 million
 - Hospital Nacional Adolfo Guevara: 1.3 million
 - Hospital Iquitos III: 1 million
 - Hospital II Esalud Moquegua: 50,000
 - Hospital San Juan: 1.3 million
 - Hospital Emilio Varela Lujan: 550, 000
 - **Total = 10,100,000**
- The number of patients per year each Emergency Departments sees on average per Hospital:
 - Hospital Nacional Dos De Mayo: 90,000
 - Hospital Nacional Arzobispo Loayza: 70,000
 - Hospital Hipolito Unanue: 80,000 patients
 - Hospital Nacional Adolfo Guevara: 87,600
 - Hospital Iquitos III: 90, 000 patients
 - Hospital II Esalud Moquegua: 84, 000
 - Hospital San Juan: 130,000
 - Hospital Emilio Varela Lujan: 60,000
 - **Total = 691,600**

Project lifetime (we suspect this will continue to exponentially grow)

- Year 2021-2022
 - # of residents working with ultrasound fellow as faculty: 52 (Dos de Mayo) + 54 (Loayza)+ 60 (Costa Rica)+ 10 (Hipolito) + 2 (Cusco)+ 20 (Mexico)= 198
 - # residents in ultrasound elective: likely above 40 between both sites