

“Ultrasound Is the New Stethoscope,” and Other Things I Learned from the UVA-Guatemala Initiative

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(l-r) Dr. Hector Medina and Dr. David Burt outside the Claude Moore Health Sciences Library.

Last fall, *UVA Connects* sat down with **David Burt, MD**, Associate Professor of Emergency Medicine and Director of the UVA-Guatemala Initiative (UVA-GI), to discuss the **UVA-Guatemala Initiative's** collaboration to design, build, and implement the **Information Access Portal** (IAP). The IAP is a digital hub by which Guatemalan healthcare providers and students can gain access to the latest in academic health information such as treatments, procedures, protocols, research, and therapies.

This winter, we had the pleasure of chatting with Burt and colleague **Hector Medina, MD**, a physician at Totonicapán Hospital in Guatemala and Professor of Biology and Surgery at the Universidad de San Carlos de Guatemala, Quetzaltenango Campus, to discuss recent successes with ultrasound and an electronic medical record (EMR).

UVA-GI's mission is "to promote the development of mutually beneficial and sustainable relationships between UVA and the peoples and communities of Guatemala." Partnership is the operating term here. These relationships build a network that persists from project to project. Over the past decade, UVA-GI has brought UVA students and faculty to Guatemala to work on projects that benefit the community in Guatemala.

Ultrasound Is the New Stethoscope

The collaboration UVA has with Totonicapán (Toto) Hospital has focused on how technology can make for better healthcare.

Like the IAP, another example of technology's impact is seen in UVA-GI's effort in bringing point-of-care ultrasound to the Totonicapán Hospital Emergency Department.

"Over the last 10 years in emergency medicine, ultrasound has become incredibly useful in the United States," says Burt. "It's the next stethoscope. It's used for obstetric emergencies, trauma, draining abscesses, looking at fluid in your lungs, and host of other situations."

In Totonicapán Hospital, where there is neither budget nor training for CAT scans, X-rays, or MRI, ultrasound can be a game-changing tool, "because it only requires a user and a portable machine," says Burt. "So, we asked ourselves: In a place like Toto Hospital, where priorities are on bandages and staff and antibiotics, how wonderful would it be to deliver technology like ultrasound?"

Last summer, UVA-GI did just that. It acquired an M-Turbo ultrasound machine and sent **James Moak, MD**, UVA Associate Professor of Emergency Medicine, to Guatemala to meet with Medina and other hospital staff to have a ceremony for a new ultrasound training collaboration.

Medina says, "We are now in the training phase. Because we don't have a radiologist on our staff, we have to teach our doctors how to use it. We have been using it for certain cases, but we need to get the full benefit of that machine."

UVA Medical Center residents and School of Medicine students who have ultrasound skills have been making the trip south as well to assist with the training. Burt explains that throughout the year, part of a resident's rotation is to have a focus on ultrasound education and outreach. "And they can fulfill that in Guatemala."

How has it worked so far?

- In October, **Dr. Carlos González**, one of the surgeons at Totonicapán Hospital, had a patient with a testicular hernia. Using the ultrasound, he was able to see that it wasn't strangulated which made surgery urgent but not emergent.
- A patient was told she needed gallbladder surgery because she had large gallstones. Upon examination with the tool, it was discovered she had no gallstones and no inflammation over her gallbladder. Surgery averted.
- An elderly woman had fallen down a few days earlier and was suffering from abdomen pain — a fast exam with the ultrasound showed that she did not have any internal bleeding — but did have an abscess that physicians were able to drain.

With every positive outcome, Burt, Medina, and the rest of the team are proving the partnership continues to have value for patients, for physicians, and for students.

Burt would like to expand ultrasound training via the Center for Telehealth. "We're calling it TMUSE — telemedicine-mediated ultrasound education. Instead of teaching someone face-to-face, it will be face-to-screen-to-face. It is our hope that we can use telemedicine to teach basic skills to lots of people."

For now, the focus of the ultrasound's use is in the emergency department however, because the hospital is small and the machine is portable, Medina and Burt look forward to using it in all departments as needs arise.

New EMR Increases Quality Care

"Without data, there can be no real progress in healthcare," says Burt. With quality data, physicians are able to review and determine if good care is being provided and how it can be improved in the future. With electronic records, it is easier to review large amounts of data and make an analysis.

Saber (Simple Accessible Basic Electronic Record) — which also means "to know" in Spanish — is Totonicapán Hospital Emergency Department's new *electronic medical record (EMR)*. In the United States, there are massively complex EMR systems available. Systems like Epic, Cerner, and MedHost are common. In Guatemala, says Medina, "There are not many EMRs, and there are none in the public hospitals."

Five years ago, Medina and visiting UVA medical students conducted interviews at various Guatemalan hospitals to determine why local care providers probably wouldn't use an EMR, why it wouldn't work, why they would dislike it, and why it might fail. "If we could understand these things, then maybe we could build something that would succeed," says Burt.

While those interviews were underway, another team of UVA students studied existing commercial EMRs and open-source products. The results were not promising: The commercial ones proved expensive and overbuilt; the free ones did not suit Toto's needs.

Burt, Medina, and the UVA-GI team had many barriers to overcome in getting this EMR launched. Totonicapán Hospital is "in survival mode every day: employee strikes, not enough medicine, wrong-size chest tube for children's surgery — there are so many assaults on a doctors' ability to provide good care. It's never-ending. Also, we needed to integrate nurses, but realize that — while the nurses are very good — they've never had formal exposure to computers. So, there's additional training with basic computer skills needed. And there's no money. And power supplies fluctuate and cause brown-outs, so the equipment has to have surge suppressors on them." From top to bottom, it was a challenge.

"We hired a systems engineer, Roberto de León," says Burt. "He didn't know anything about medical records or medicine, but he understands computer programs. With his help, we created the best of all worlds: a very simple, basic, unbreakable EMR system."

Medina adds, "Saber has been running for 18 months, which includes the trial period." In that time, he continues, "UVA-GI developed many versions of this EMR, using trial and error to make it better."

For the last year and a half, Saber has provided a mountain of data that did not previously exist. All emergency departments measure "door time" (when you come to the department), "triage time" (when you are triaged), and "doc time" (when the physician sees the patient). "Now we can track these three variables and see how they affect downstream care," says Burt. "We are starting to get all of this public health data that we did not have before. This is the key to quality improvement."

With Saber's success in Toto's emergency department, the team is hopeful that in the coming years it will be expanded to the rest of the hospital.

Thank you to Dr. Burt, Dr. Medina, and the entire UVA-GI team for continuing such a wonderful partnership. We look forward to tracking your successes with ultrasound, EMR data, and the many other projects coordinated by the UVA-Guatemala Initiative!

UVA-GI offers an array of opportunity for faculty, staff, residents, and students. If you're interested, check out details [on its website](#).