In 2010, the World Health Organization (WHO) conducted a survey on the availability of medical devices and imaging equipment in low- and middle income countries, finding that Ethiopia was among the countries most in need of improved access to these important diagnostic tools. In 2013, led by Emory faculty member Dr. Aarti Sekhar, residents and faculty from the Emory Department of Radiology and Imaging Sciences were invited to Ethiopia to conduct a needs assessment of the Department of Radiology at Addis Ababa University (AAU) and its affiliate, Black Lion Hospital. The team reached the same conclusion as the WHO survey: to save lives, the country was in need of updated imaging tools and skilled medical workers to effectively utilize them.

Dr. Sekhar is the co-director of the Emory Radiology Global Health Initiative, an elective offered to radiology residents at the Emory University School of Medicine. Through a partnership with the Radiology Department of AAU, Emory residents in this elective have the opportunity to practice radiology in low-resource settings. The needs assessment was one such experience made possible by the Emory Global Health Initiative and the Emory Global Health Residency Scholars Program (GHRSP), sponsored by the Emory University School of Medicine.

One of the key findings from the needs assessment was that when physicians at AAU were presented with thoracic masses, their current imaging options made it difficult to differentiate between diseases such as tuberculosis and lung cancer. And similar to the experiences of other low-income environments, Ethiopia was experiencing a paradigm shift from a heavy burden of infectious diseases to increasing numbers of chronic diseases (such as cancers), due to contributing factors of smoking and westernized diets. These elements all contributed to a higher-than-average mortality for Ethiopians diagnosed with thoracic masses.

In Ethiopia, when masses were identified through the best imaging option available – a chest x-ray - most were treated as tuberculosis. But treatment for tuberculosis in a patient who instead had lung cancer resulted in high mortality rates. Black Lion surgeons instead needed the ability to more accurately diagnose thoracic masses before deciding on a treatment plan.

Enter Dr. Sekhar and the Emory School of Medicine. With the recognized need for increased diagnostic accuracy, Dr. Sekhar and her team of faculty and residents set out to “introduce a method of providing definitive diagnosis of thoracic masses locally that would be practical and sustainable, and...
would contribute to earlier treatment in the AAU patient population.”

As a possible solution, the team proposed the CT-guided FNA (Fine Needle Aspiration) technique. To perform this technique, a physician uses a thin needle and a syringe to withdraw tissue or fluid from an organ or suspected tumor mass. The needle is guided by a physician using a computed tomography (CT) scan. While the procedure is widely used in higher-income countries, it had not yet been used in Ethiopia due to a lack of training for local physicians.

To propose a sustainable standard of CT-guided FNAs to Black Lion surgeons, Dr. Sekhar and her team were restricted to using technology and resources already available in Ethiopia. Black Lion only had a 4-slice CT scanner with no “CT Fluoroscopy” capability, a technology often used to perform the procedure, and the technique observed by several of the Ethiopian radiologists during previous training in Germany. Dr. Sekhar showed her Ethiopian colleagues how they could perform the procedure without CT Fluoroscopy. Also, the “introducer” needles needed to obtain multiple passes into the lesion were not available in Ethiopia. However, there was an abundance of spinal needles that would allow at least single passes into the lesions.

Designing and conducting a two-week CT-guided biopsy course in 2013, Dr. Sekhar and the Emory team trained Black Lion attendings on how to perform a lung biopsy using the CT scanner and spinal needles. The Emory team and their Ethiopian colleagues discovered it was actually quite easy to perform a biopsy without CT fluoroscopy and while only using the spinal needles, due to the larger, more advanced tumors commonly found in Ethiopia.

Employing the philosophy, “watch one, do one, teach one,” Dr. Sekhar structured the AAU training so that AAU medical attendings could not only observe the CT-guided FNA procedure being performed, but also practice the technique to obtain confidence from hands-on experience. AAU attendings were then asked to teach the techniques to residents, fully experiencing the complete learning cycle.

Dr. Sekhar and her team also developed standard operating procedures for the CT-guided biopsy technique and posted them prominently in Black Lion’s CT suites, to ensure standard practice was maintained going forward.

When asked about the sustainability of this training, Dr. Sekhar explained that the need and desire for this biopsy knowledge came from the Ethiopian thoracic surgeons and radiologists themselves, who recognized a limitation in their training and wanted the ability to perform biopsies on thoracic masses in order to better diagnose and treat patients. Additionally, the surgeons and radiologists were eager to learn about the CT-guided FNA technique so that they could use their knowledge to provide services at both public and private hospitals, expanding the number of patients they could help. Dr. Sekhar stressed the importance of constant communication between the surgeons and radiologists, facilitating a mutually beneficial professional relationship for the evaluation of biopsy samples in a timely manner.

“Observing the procedure doesn’t teach people and give them confidence. They need hands-on experience.”

Following the AAU doctors’ excitement and confidence brought by access to a new resource, Dr. Sekhar believes structural and logistical changes are necessary to ensure the continuation of successful CT-guided biopsies. “Sustainability requires the economy and infrastructure to have the ability to support changes to the medical system in Ethiopia.”

According to Dr. Sekhar, “knowing how to perform a CT-guided biopsy with confidence can be a truly empowering experience for a doctor, one that can be used to benefit patients in Ethiopia.” Training more doctors to have the ability to perform CT-guided biopsies will allow more Ethiopians to have access to proper diagnoses, thereby increasing survival rates.

So with a little ingenuity and a lot of problem-solving, the partnership between Emory’s and AAU’s Radiology departments were able to design CT-guided FNA procedures using locally available resources, which allowed Ethiopian doctors to better diagnose, and thus better treat, their patients. Dr. Sekhar and the Emory Global Health Initiative have future trips to Addis Ababa planned and will continue to strengthen the bond between Emory and AAU in their combined efforts to improve the lives of Ethiopians.