

Point Of Care Ultrasound (POCUS) is saving lives

Achai Bulabek, a South Sudanese doctor, describes her journey towards working with MSF and the many vital uses of point of care ultrasound (POCUS) in medicine.

Ultrasound is a valuable antenatal tool, but Médecins Sans Frontières / Doctors Without Borders (MSF) is using an innovative portable version of this machine to save lives in humanitarian crises.

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Innovation:
 “We are able to save many lives using this tiny, portable machine”

I graduated from medical school at Ahfad University for Women in 2015, I did my internship for one year in Sudan and then came back to my homeland to serve my community. I first worked as a medical doctor at a teaching hospital in Abyei. There were many personal challenges during that eight-month period so in 2017, I applied for the position of clinical officer with MSF – working at their hospital in Agok, also in Abyei.

MSF’s hospital in Agok is the biggest in the region and it is well equipped to provide health services to the community, especially in emergencies. Many patients are referred to us from different hospitals inside and outside Agok, including the towns of Mayom, Abyei and Abiemnum.

Before POCUS

We have simple laboratory investigations available, and before the point-of-care ultrasound – also known as POCUS – training began in February 2017, we had just one ultrasound machine in the maternity ward. This machine could only be used when a medical doctor who was a trained expert in ultrasound was present. So we had many challenges especially in the emergency room, surgical department and close monitoring unit (CMU), where many patients urgently need ultrasonography to reach a proper diagnosis and case management.

Ultrasound machines tend to be bulky and expensive. However, “point-of-care” means the new ultrasound machines are portable enough to be used wherever we are treating the patient. These patients include those with fractures, heart failure, pneumothorax and acute abdominal conditions.

We used to rely on clinical history and physical findings to decide on management. Sometimes, we would have to take the risk of a laparotomy to confirm and treat especially acute abdominal presentations (e.g. with the possibility of acute appendicitis or intestinal obstruction). At other times, we had to send some patients home when their case was beyond our capacity.



Figure 1. At the first international training ever to be held on POCUS, participants from MSF’s projects in South Sudan are pictured carrying out a mock examination using the portable ultrasound machine. (MSF©)

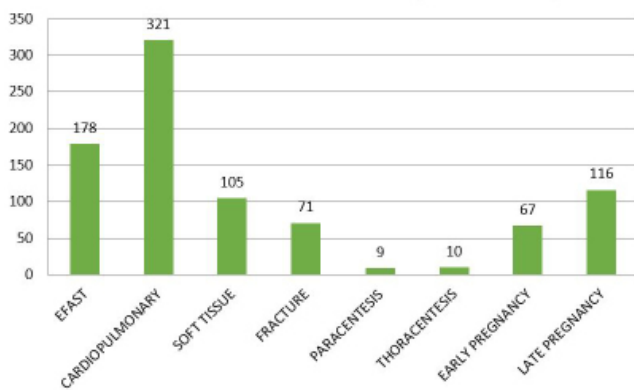


Figure 2. Distribution of 877 POCUS exams performed by South Sudanese MSF staff in 2018 (MSF ©)

First international POCUS “training of the trainers” held in Juba

In 2018, 887 examinations were completed using this portable diagnostic ultrasound tool in three of MSF’s project locations; Aweil, Agok and Malakal. Last December, the first international training for POCUS was held in Juba. The purpose was to train local MSF colleagues to be leaders in using POCUS, with the objective of having these new leaders returning to their projects equipped with skills and knowledge to train additional staff.

Ultrasound, in addition to obstetric use, enhances the quality of care given to patients with a range of surgical and medical conditions by informing diagnosis and treatment plans. Perhaps most impressively, in countries with large-scale on-going humanitarian crises, non-medical staff can be trained to use POCUS, which limits the need for specialised international staff. See Figure 1.

Making immediate decisions

Since we have started using the new ultrasound equipment, something has changed for the better in the hospital and for the community; the staff have developed new skills and the quality of care has improved. I will share a few cases where ultrasound has already made a big difference:

Earlier this year, when we were still undergoing POCUS training, I was called to perform an ultrasound scan on a small boy of around nine years old. He presented with a history of trauma and abdominal pain for one day. The scan, which took only seven minutes, showed free fluid in his abdomen and a ruptured spleen. The decision to undergo a laparotomy and surgery to remove the spleen was made immediately, at his bedside, within fifteen minutes. .

During the same month, one of my colleagues was called to the Tuberculosis (TB) ward to scan a man aged 30-35 years. He was known to have pulmonary TB and had been

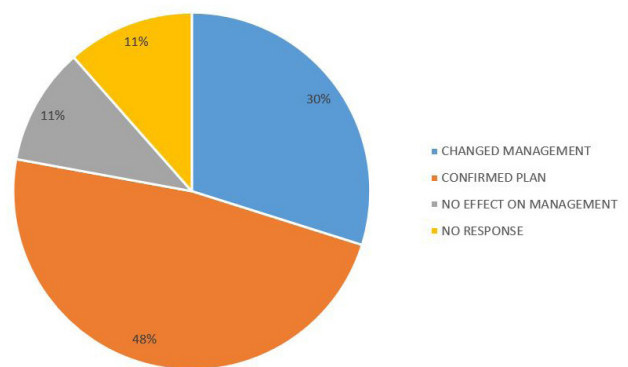


Figure 3. POCUS self-reported effect on management in 2018 – MSF projects Agok, Aweil, Malakal (n=877) (MSF ©)

taking medication for several weeks, but was showing no improvement. He was breathless and hypoxic. The ultrasound scanning showed that besides the patient’s lungs being filled with fluid, there was a huge collection of fluid around his heart, suggesting “cardiac tamponade”. Based on these findings, we urgently undertook a procedure to remove the fluid from the pericardium and the pleural cavity. In less than two hours the patient was stabilised.

Finally, this month, I was called into the emergency room to scan a young boy aged around seven years who had suspected pneumonia. He had a history of coughing and fever, plus pain in the right side of his chest for one week following a minor fall. On examination, the boy had reduced breath sounds and dullness on the lower right part of his chest. So, I did a quick cardiopulmonary ultrasound and it showed a pleural effusion. Using the ultrasound to guide us, we inserted a pleural drain in the operating theatre and aspirated pus which. Drained within less than 10 minutes.

A life-saving technique

These examples show how useful and effective POCUS is in the MSF hospital in Agok. It is a life-saving technique for the patients, quicker, and supports decision-making for the staff. In addition, it is less costly and is replacing x-ray and other imaging scans. See Figures 2 and 3.

Despite all the workload in Agok, with many complicated cases, my colleagues and I are able to save many lives using this tiny portable ultrasound machine. We are now easily diagnosing many conditions, which once needed more complex imaging techniques, especially in the surgical department.

Finally, this simple machine has changed my own future plan to now include an ultrasound specialisation to enrich my skills and knowledge. Hopefully, one day, I will be a great sonographer.