

# The bubble operating theatre

In Kabala hospital, Sierra Leone, MSF has been trialling an innovative mobile surgical space that could revolutionise the way our medical teams conduct surgery in conflict zones and in the aftermath of emergencies.

The bubble operating theatre is a portable surgical unit equipped with an air filter that provides sterile conditions for surgery. Quick to assemble, the bubble OT is easily deployed and is designed for repeated use.

**Dr Sonia Guinovart**, MSF obstetrics and gynaecology advisor, explains the advantages – and the challenges – of using this structure.

“MSF began working in Kabala district hospital in 2016, with a particular focus on the health of mothers and children. Sierra Leone has the highest infant mortality rate in the world, and with the country still struggling to rebuild its health system after the west Africa Ebola epidemic, MSF needed to assist.

At the time we started working in Kabala, the operating theatre was undergoing renovation. It was vital that we could carry on conducting surgeries, so we decided to use the bubble operating theatre.

MSF had already deployed it in Syria and in the Philippines, so it wasn't a complete unknown.

**Between April and November 2016, we performed a total of 90 surgeries inside the bubble OT – an average of one every three days. Seventy-three of these were caesarean sections, but we also did more complex surgeries, including uterine ruptures, hysterectomies etc...”**

## SPACE

“The space inside is quite limited. It's just nine metres square, so along with the patient, we could only have four members of staff inside at any one time: two surgeons, an anaesthetist and a nurse.

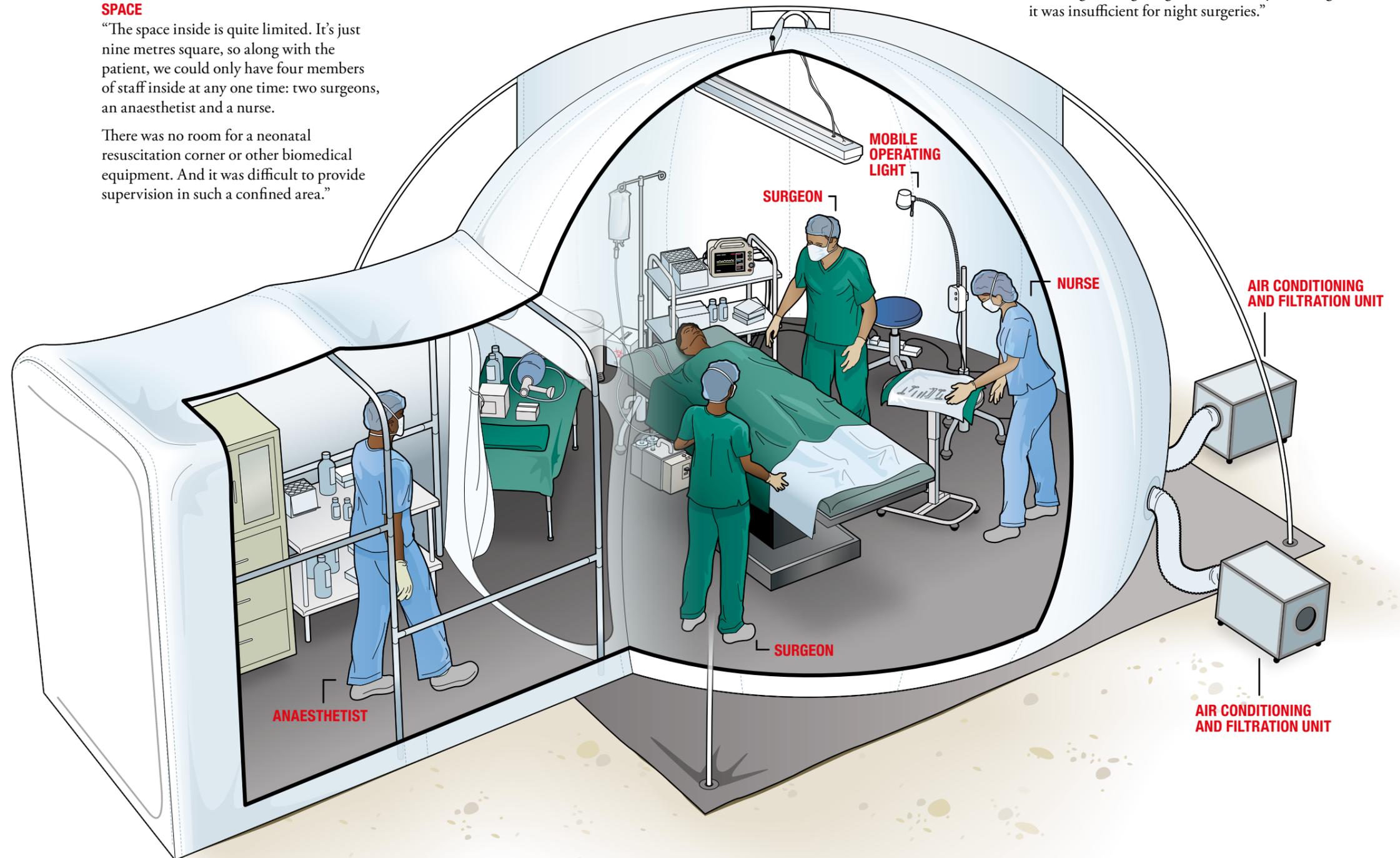
There was no room for a neonatal resuscitation corner or other biomedical equipment. And it was difficult to provide supervision in such a confined area.”

## DOORS

“The bubble OT has doors with zips, rather than swing doors, which meant that the surgical team had to scrub up outside, and that there always had to be someone ready to unzip the doors to let team members in or out. Most of the time that's merely a nuisance, but if you're in the middle of an emergency and you need to rush in and out, it's a bigger problem.”

## LIGHTING

Light is provided by a large fluorescent bulb, supported by a hook, which hangs from the top centre of the bubble. A mobile operating light, plugged into an extension cable connected to the power supply within the bubble, provides additional illumination. “Although the lighting was fine for daytime surgeries, it was insufficient for night surgeries.”



## TEMPERATURE

“The temperature inside the bubble OT was quite extreme. Despite having two air conditioning machines, the teams still found the heat difficult to deal with, especially when surgeries were longer or more complicated than expected.”

## EMERGENCIES

“The bubble OT is easy and fast to set up and use. It's a fantastic tool and ideal as a temporary measure in emergencies when other surgical spaces are not available. However, it provides plenty of extra challenges, and some adjustments need to be made to make it more user-friendly.”