The importance of mass casualty training in the context of the war in Ukraine: an interview with Professor Johan von Schreeb

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Johan von Schreeb is Professor of Global Disaster Medicine in the Department of Global Public Health at the Karolinska Institutet in Sweden, and leads the Centre for Research on Health Care in Disasters, a WHO collaborating centre that runs courses in global disaster medicine. Most recently, he has been rolling out mass casualty training in Ukraine and neighbouring countries.

I am a medical doctor trained in general surgery. I've done several missions around the world over the last 35 years, starting with Médecins Sans Frontières (MSF) in Afghanistan, dealing with natural disasters as well as conflicts.

From 2014, I was WHO's Emergency Medical Team Coordinator, which included providing trauma-care support in Mosul, Iraq, in 2016–2017, and conducting trauma-care trainings in the active conflict zones of Donetsk, eastern Ukraine, in 2017 and Yemen in 2018. In 2021, I continued to support WHO in Lebanon following the explosion in Beirut, and conducted trainings on mass casualty management in Iraq.

My role started as a trauma surgeon, but as time has gone on, I have taken on more of a coordinating position, trying to get all the different emergency actors together, working with ministries of health in affected countries, ensuring that standards are applied and making sure staff on the ground get appropriate training.

WHO asked me to coordinate international assistance to Ukraine, focusing on trauma and rehabilitation. The context has been quite complex. On the one hand, you have a well functioning health system, with something like 1600 hospitals spread around the country,

employing thousands of skilled surgeons. But on the other hand, these surgeons are not really used to dealing with the types of injuries that we are now seeing in this conflict, which creates a real challenge for the health system.

So, my role is to try to support the Ministry of Health, the surgeons and the hospitals with our team of international experts, but to do that in a respectful way. We try to cover the gaps, to add additional knowledge and to put into practice our expertise in managing casualty surges.

As I mentioned, health staff are not used to dealing with the types and numbers of injuries that you get in war situations. Many conflict-related injuries can lead to heavy bleeding, so time is the crucial factor. Everyone involved in what we call the trauma pathway needs to know what they are doing to get the patient stabilized as quickly as possible. Those on the spot, close to the injured person, need to immediately try to stop the bleeding by applying pressure, or by using a tourniquet if it's an injured limb. Then, the most important thing is to transport the patient as fast as possible to a hospital where they can surgically stop the bleeding; otherwise, the patient is likely to die.

We simulate a range of injuries on around 60 artificial patients and then take our trainees through how to effectively manage the patient flow. This starts with initial patient assessments – checking airways, breathing, circulation, disability and exposure – which most emergency physicians already know. However, doing this in a trauma setting and with many patients at once can be a real challenge.

We also consider how the emergency room needs to be prepared to receive large numbers of patients and teach the trainees how to triage, or sort the patients with a colour-coding system, depending on the severity of their injuries and their priority for surgery. Obviously, those requiring resuscitation or with critical injuries are considered code red and taken into the emergency room as soon as possible, so they can rapidly get the care they need to hopefully save their lives.

WHO's Emergency Medical Teams have been in existence for over 10 years, so we have a lot of accumulated knowledge and experience from a range of emergency situations. We also have academic experts who work with WHO to publish papers and update protocols, to make sure that what we teach is really up to date. It's thanks to all this combined experience and expertise that WHO is able to develop good

guidelines and good minimum standards, and to implement everything in a systematic way while involving staff in the affected countries.

It's important to stress that what we teach has to be adapted to the particular context – you cannot do the same type of training in Ukraine as you would in Somalia, South Sudan, or Afghanistan, for instance. Prior to the conflict, Ukraine had a strong health system, with many skilled doctors and nurses and a lot of hospitals. Sadly, several facilities have since been subject to bombing and are destroyed.

At the moment, it's often a real challenge to get close to where the wounded patients are, as they are usually in insecure areas of active conflict that are hard to access. Despite this, the Ukrainian health system is managing well to deal with injured patients, either at the site of injury or by transporting them for surgery elsewhere.

Even so, there are gaps in knowledge and resources which we are trying to fill. For instance, we are seeing very complicated injuries, such as open fractures and nasty wounds from flying shrapnel that are really difficult to manage, so we've brought in orthoplastic surgery specialists to work alongside local surgeons. We're also seeing many children with fractured limbs, so have introduced a type of metal system that allows surgeons to stabilize fractures from the outside.

A particularly important part of this gap-filling has been to ensure there is a functioning blood bank, because with heavily bleeding patients you need around 10 times more blood than you would expect for a normal trauma patient.

So, while there are some gaps to be filled, training Ukrainian surgeons and health-care staff to continue this work will help them develop their skills in areas that you only get in mass casualty situations.

In addition to the hands-on training, which has so far involved 200 participants, we've been doing a twice-weekly webinar on damage control surgery, which has been attended by over 450 participants each time from all over Ukraine.

Students on all our courses have been very attentive and keen to learn, because they know the mass casualty situations we simulate are something they could very easily have to deal with in real life. Indeed, yesterday, we ran a workshop on mass casualty management in a hospital which 3 weeks ago had to deal with 100 injured patients

because of a bombing. So, for many, dealing with mass casualties is already a sad and stark reality.

Surgeons nowadays tend to be specialized in 1 area of expertise. This training means they broaden their skills and knowledge to manage a range of different types of injuries, which is beneficial to the national health system when surge capacity is needed. It also means they could consider joining international emergency medical teams to be deployed to other mass casualty situations around the world as needed, and train up the next generation of surgeons in the process.

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