

**Nancy:** It's 2012, and the rainy season in Sierra Leone. Adama Kamara, 26, is pregnant and in labor. She lives in the jungle, far from any cities, in the central, mountainous part of the country. This is her third pregnancy, but she is still childless. Both her previous babies have died.

After several days in painful labor, Adama and her husband decide to travel to Masanga, the nearest hospital. It's a long journey over the mountains on a motor bike, but they have no choice.

**Alex:** Patients, they start their labor at home, and they find out that they start to bleed or they cannot deliver. And before they are able to go to the hospital, they need to convince their husband or their community, it's possible that they need to collect money from different sources to be able to travel to the hospital, and that process takes time.

**Nancy:** Once they arrive, the doctor on call does an ultrasound.

Adama's baby is dead. Even worse, the baby is partially outside of Adama's uterus. The only choice is a cesarean section. Any surgery can mean blood loss, but Adama has already lost a lot of blood.

**Alex:** Blood needs to be prepared, and there's not always blood available in the hospital.

**Nancy:** In this case, not only was there no blood available, Adama's husband couldn't donate because he was the wrong blood type. And he couldn't call his relatives in their village to get them to come donate because there was no mobile phone coverage.

So he got on his motorbike and headed out on the long journey back to the village.

**Alex:** Relatives need to come to the hospital, they need to be screened before a cesarean section can be done. And after all these steps, the bleeding continues, and you're running out of time.

**Nancy:** The Masanga doctor decides he can't wait until Adama's husband gets back. He has to operate now. It's clear from the ultrasound and the subsequent surgery that the baby inside Adama had been dead for more than a day. Now the only hope is to save her life.

QUEUE podcast music.

**Nancy:** I'm Nancy Bazilchuk, and you're listening to 63 Degrees North, an original podcast from NTNU, the Norwegian University of Science and Technology.

Have you ever felt like the problems facing the planet are so overwhelming, partly because there is little we, as individuals can do?

What if you could actually do something to address a big problem, like inequities in health care?

Not just by giving money to the Red Cross or to Doctors without Borders — even though that is important — but what if you had the skills to help people — and more than just help people, but train people so they can help themselves?

Today I'm going to tell you the story of a young doctor who went to Sierra Leone to combat malaria deaths and came back with the realization that maybe he could help this small West African country in a different way.

We've all heard the proverb, "Give a man a fish and he'll eat for a day. Teach him to fish and he'll eat for a lifetime." In this case, the skill being taught is surgery. Lifesaving surgery — like cesarean sections, the surgery that was *only* available to Adama after she travelled for hours with her husband through the mountains on a motorbike in search of help.

Training actual surgeons, though — that takes years. So the young doctor and a Dutch colleague — who we heard at the top of the podcast — took a different road.

To say it has been bumpy would be an understatement.

There was a major Ebola outbreak in 2014-2016, just after the program got established. There was resistance from the government, which was afraid that this new type of healthcare provider wouldn't be good enough.

There was resistance from Sierra Leone's few doctors, who didn't think anyone other than trained doctors should be performing surgeries. There was the Covid pandemic.

And there are the simple challenges of working in a sub Saharan country, where everything from traffic accidents to endemic diseases like Lassa fever and malaria can be fatal.

This is their story. And the story of the people they worked with to bring safe, lifesaving surgery to people in rural Sierra Leone—Community Health Officers.

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**Nancy:** It's the summer of 2007. The young doctor and his mentor are having coffee in the canteen at St Olavs Hospital in Trondheim. Both have worked internationally

on medical crises. One, Brynjulf Ystgaard, 56, is an experienced surgeon who has spent years volunteering for the Red Cross.

The other is

**Håkon:** Håkon Bolkan. I'm an associate professor of Global Health at NTNU and consultant on abdominal surgeon at St. Olavs Hospital.

**Nancy:** At time, Håkon was just 34, and had done some international work. Both are committed to using their medical knowledge and skills to help people beyond Norway's borders.

But in their conversation, they realize how often the help they provide is related to crises. Medical teams parachute in, help and then leave.

The long-term pressing medical problems facing lesser developed countries don't disappear, even if the emergency aid provided by outside doctors has helped saved lives.

Pandemics and deadly tropical diseases are a huge problem, of course— but what of routine medical procedures, like emergency surgical care, such as cesarean sections, for which there will always be a constant need — and without which, patients — and their babies — can die?

**Håkon:**

My job then was to create a home-based treatment program for malaria. The children that were dying, they had never seen healthcare facilities. They were dying in their homes. But my passion was in surgery, and I started to reflect maybe this can be done to train lower level caregivers to do surgery. And then we discovered that this was done actually in East Africa in quite a few countries. And this gave the inspiration to start a training program in Sierra Leone to train clinical officers to do surgical operations.

**Nancy:** A clinical officer, or a community health officer, is someone who is trained to diagnose and manage common maternal, child health and other medical conditions. So there *were* trained health care workers in Sierra Leone already, Håkon knew. Why not give them high quality surgical training?

At the same time, Håkon had met a Danish doctor in Sierra Leone who was working to rehabilitate Masanga, a former leprosy hospital in a remote part of central Sierra Leone. Much of Sierra Leone's health care infrastructure was destroyed during the country's civil war, from 1991 -2002, with Masanga Hospital no exception. But by 2008, international help and the move of a tropical medicine doctor from Holland to Masanga had helped it grow to become a 100 bed hospital. A Norwegian group was also involved with supporting the rebuilding of the hospital. When Håkon reached

out, they agreed to support a surgical training initiative. So now the idea had a home. And the surgeons gave their program a name, CapaCare, for building **Capacity** in Health **Care**.

Now all they needed was money. Fortunately for Håkon, he had a secret weapon here.

**Håkon:**

The first big fundraising event was actually that my wife and me got married and instead of presents and porcelain and such things, we said that we want help to establish a surgical training program in Sierra Leone. So we had a big wedding, invited a lot of people. And that was the start of our fundraising activity.

**Nancy:** That first round of fundraising helped start the funding snowball rolling, so to speak, and by January 2011, Håkon had a new Dutch colleague, Alex van Duinen, who we heard at the top of the podcast – and who was the doctor who tried to save Adama's life.

Alex was the chief medical officer at Masanga Hospital and agreed to be CapaCare's first coordinator. Together, they enrolled the program's first two students. The training would include two years of hands-on work at Masanga and three other district hospitals, followed by a one-year residency at Connaught Hospital, the country's main tertiary referral hospital in Freetown, Sierra Leone's capital.

In September, 2012, just nine months after the program began, I had the chance to meet one of those students, a community health officer named Emmanuel Tommy. Tommy had come to Norway as part of the CapaCare surgical training. Here's what he told me about his decision.

**Emmanuel:** It has been very challenging, and even to take the decision because looking at our doctors, they don't want us to do this kind of training. They don't want us to help them in the field of training and saving the lives of our people.

It was difficult. I was even thinking of my future, I have to ask a lot of questions. What is what is my future if I take this training, and even colleagues, my colleagues who are sceptical, man, you see how these people, some of them are very hostile to us. And you want to take on this challenge, this training has never happened. There has been a lot of resistance from them. Now you want to take up this, and I say Yes.

In the first place, I want to be part of people who can write history in this country. It's a sacrifice. I have to take that sacrifice to see and I believe by taking that sacrifice, in the spirit of goodwill and then helping my people, I think the future will be bright for me.

**Nancy:** As you can hear, Emmanuel and his colleagues had some sense of what lay ahead. Even with Sierra Leone's great need for trained medical personnel, there was a major roadblock, which Emmanuel alluded to: the government.

Because as much as the Sierra Leone government recognized that they had an unmet need, government officials had a lot of questions. They worried that the care provided by the Community Health Officers might be substandard, because they weren't doctors. So Håkon realized he had to prove that the training was good.

**Håkon:**

First we started the program, and then it became clear that this is actually a big natural experiment that we're doing on a nationwide level. And if we are going to do this in a responsible way, then we need to document it properly and we need to evaluate it properly.

**Nancy:** Suddenly Håkon found himself doing a PhD to provide this documentation. What CapaCare is offering what something called task sharing, or, in the words of the World Health Organization, "the rational redistribution of tasks among health workforce teams. Specific tasks are moved, where appropriate, from highly qualified health worker to health workers with shorter training and fewer qualifications... to make more efficient use of the available human resources for health."

In the case of Sierra Leone, there simply aren't enough medical doctors to cover the country's needs. In 2012, right around the time that CapaCare got started, there were only 10 Sierra Leonean surgeons practicing in the hospitals that had been surveyed, or 1 specialist surgeon for 700 000 people. By comparison, in 2021, the US had 1 surgeon for every 13263 people.

**Håkon:**

So my research was about initially establishing what is the need for surgery in Sierra Leone. What is the unmet need? So we visited all the hospitals in the country. We mapped every operation theater. We visited all the facilities, hospitals, private clinics.

**Håkon:**

And we calculated that around 95% of the needed operations were not done in Sierra Leone. This research was important to use towards the Ministry of Health, to donors, to others to say, look, this is the need.

**Nancy:** So that was the first step. But Håkon's research also showed that, for women like Adama,

**Håkon:** ...women in rural areas had least access to emergency surgical care. And it became obvious that we need to focus on rural areas. ...

Doctors, they're not willing to go there. There are poor schools there, living conditions are totally different, but still, there is a district hospital there.

**Nancy:** During the first five years, as he did his research and the trained community health officers joined the workforce, Håkon was also able to document that the nationwide rate of Cesarean sections doubled, from 2 to 4 per cent, because of the community health officers.

**Håkon:**

Within five years, they performed between 25 and 30% of the C sections nationwide. And we could also see that all the other groups, the specialists, the medical doctors, they continued as before. So this was additional c-sections.

**Nancy:** At the same time, Alex, the program director for CapaCare at Masanga Hospital, decided to follow up on Håkon's research on top of his work at Masanga. As part of his medical training in Holland, Alex had worked in Malawi, in East Africa, where task-sharing is well established. He had seen how this could help increase the amount of health care provided to the country. So he and Håkon wanted clear proof that the community health officer training was working well.

**Alex:** So the main question was, is it, is it safe to let non-doctors perform cesarean sections? And our main outcome was maternal deaths.

**Nancy:** The key thing about Alex's study was that it was a prospective study, where the researchers decide ahead of time which data to include before they collect it. That makes it a very strong study. And in this kind of study, they can determine how much data they need to collect to be able to identify statistically significant results. In this case...

**Alex:** We found out that we needed about 1,200 women to be included. So that was a big amount of women that needs to be included to be able to give a good answer to this question. At that time there were nine hospitals where we had our graduates, so in those hospitals, c-sections were done both by medical doctors and by non-medical doctors. And in those nine hospitals, we were actually able to include more than 1,200 women.

**Nancy:** I think it's hard to appreciate just how difficult this data collection was. Sierra Leone's road network is limited and travel can be difficult during the rainy season. The whole eastern half of the country is wrinkled crazy quilt of tropical forests and mountains. All in all, it's a pretty amazing accomplishment. Alex did this work with the help of three trained nurses.

**Alex:** And we found that in the group that was done by the non-doctors was about one third, over 400. And there was one maternal death in that group.

**Nancy:** The other two-thirds of the c-sections in these women were done by doctors where....

**Alex:** there were about 15 maternal deaths. And there were some differences between the groups.

**Nancy:** It's important to note here that sometimes the doctors might get more complex surgeries because they had more training than the community health officers.

**Alex:** But in the end of the day, we can conclude that it is safe and that they are non-inferior, as we call it, to the medical doctor. So that was the main conclusion the research project.

**Nancy:** In the midst of all this, in 2014, Ebola came to Sierra Leone and the neighboring countries of Guinea and Liberia.

You probably have heard of it. It's terrifying and awful.

You initially develop a fever and other symptoms, but in the end you can bleed profusely. About half of people who get the disease die from it.

By the time the outbreak was over in June 2016, more than 11,000 people had died and 29,000 people had been infected.

But how would that affect the delivery of health care in Sierra Leone? Håkon decided to answer this question to document how hospital systems in lesser developed countries respond to epidemics like Ebola.

He found that hospital admissions dropped by 50 percent during the outbreak — presumably because the health care system was occupied by addressing the outbreak, as well as patients not wanting to go to the hospital because of fear of infection.

But the volume of c-sections? That didn't drop! The community health officers responded to women in need.

Providing these life-saving services came at a cost to the CapaCare community, however.

First, Joseph Heindilo Ngegba died from Ebola in August 2014. Samuel Batty died from Ebola in December that same year. They both were infected because they, like

many, many other healthcare professionals in Sierra Leone and across the globe, continued to help the sick, in spite of the risk.

Ngegba himself wrote on CapaCare's blog of the stress of working, with Ebola as a constant threat.

"The Ebola epidemic is having a negative impact on my daily life, with regards to my work in the wards, and the surgeries we perform, because you don't know if the people you are working with have been exposed or not," he wrote. "It's really stressful...The attitude of people towards the Ebola outbreak is negative, because most people don't believe there is Ebola. They think health workers are killing their people."

And Batty, who came to Norway during the outbreak for additional surgical training in September that year, said: "Health care workers have to help in the fight. We have to be cautious not to contract the disease, but we are at war with this disease and we want to do our part.."

Part of the challenge is that many of these diseases have symptoms that are similar to malaria: fever, aches and pains.

That was the situation in 2019, when tragedy struck again.

**Alex:**

Wouter Nolet was the program coordinator for Capa Care during that time, and he was working hard to make sure the training was going well. But part of working as a program coordinator is to work in the hospital because that's where the practical training happened. So he was clinically active, working in the hospital and also doing maternal healthcare. And one of the patients that he assisted needed a cesarean section and he was participating in a surgery.

Later, that patient died, we found out that this patient had Lassa fever.

**Nancy:** Lassa fever is much like Ebola, but is endemic in Sierra Leone. It's always there, lurking.

**Alex:** More people got sick. Woulter, he got so badly sick that he needed to be transported back to the Netherlands. And that was the time we realized that these cases were actually related. Then it was too late and he died in the Netherlands.

**Nancy:** The Capa Care community was devastated by the loss.

**Håkon:**



It's painful in a way that it's difficult to talk about it. And also, me personally, chairing the organization and going many, many rounds — , were we able to, did we do enough to make sure that we reduce the risk of this potentially happening?

**Håkon:**

We went through those weeks and our systems over and over, again, also with his family. Did we do enough to make sure that we reduce the risk of this potentially happening?

**Nancy:** Håkon said that the tremendous support from everyone involved in the CapaCare family helped.

**Håkon:**

We are in this together, our trainees and those on the ground. We were such a huge group. That gave a lot of comfort and strength, that being able to be together.

**Håkon:**

We know every single one of those that we are training and those that participate in training, they give a lot of themselves. And, I think if you want to do something important, you want to be close to people, that does not come without a risk of losing someone. And Sierra Leone, or West Africa is a dangerous place at least for us to work in. And we have discussed it also. Is it worth it? Well, if we think that every human life is worth equally, this program has definitely saved a lot more lives than it has taken.

**Nancy:** Now, more than 10 years on, CapaCare continues to evolve and change. For one thing, they've opening a branch in Liberia. There, the focus will be a little different.

**Alex:**

There's much more focus on training medical doctors and training specialists. We have been asked by the Ministry of Health to focus on that. So the project in Liberia is to support rural rotations for residents in surgery and obstetrics. We are based in a rural hospital about six, seven hours from the capitol.

**Nancy:** And now, after having trained more than 80 graduates, the nature of CapaCare in Sierra Leone is also changing.

**Alex :**

We have been running this project now since 2011, but we are also looking into the future. And we have been asked by the Ministry of Health to merge our program into, uh, one of the educational institutions, the Makani School of Clinical Sciences...which is under the Ministry of Health. And in that way it can be more

sustainable. So our focus is shifting from only running this program also to support the school so that in the end of the day, they can run it by themselves.

**Nancy:** That may help with a problem that has faced the CapaCare graduates since the program first began in 2011.

**Håkon:** The legal protection is very weak. And that's a problem. Because if you are doing surgery anywhere in the world, and even more so in a country like Sierra Leone, you work with risks all the time. And there's always risk of people dying.

**Nancy:** Of course, in the case of surgery, the person may have died anyway. But it can be easy to blame the person who does the surgery. A doctor may have legal protection from prosecution, but the legal situation for the community health officers trained by CapaCare remains murky.

**Håkon Bolkan:**

if I sleep poorly during the night, it's because of that, because we have created something and actually put people now that on one hand, do a great job, very motivated, they go to places where others with the same capacities don't want to go. And they put themselves at an extreme risk. Some of those have run into the trouble. They haven't been a full-blown trial yet. But they talk about this as, I'm scared.

**Nancy:** I managed to interview Emmanuel again, after more than a decade. This time, we talked digitally, using Zoom. When we talked, he in between patients, and preparing to do surgery on a woman who had a very large ovarian cyst. And he's not only doing surgery, CapaCare students come to his hospital — where he trains them! He agreed with Håkon's assessment of the problem.

**Emmanuel:** That is the most disheartening thing that we would not be recognized officially by the ministry. But they know what we're doing.

**Emmanuel** We hope that we'll get the government to actually see what we are doing more and then recognize or have placed us where we belong.

**Nancy:** Håkon and Alex think their agreement to merge formally with the Makani School of Clinical Science may help solve this problem.

**Alex:**

Part of the agreement with the Ministry of Health is that the regulatory is one of the things that are spelled out in this agreement. So we use it as an option to push for regulation, not only for the ones that we have trained, but also for the ones that are trained currently, and those that will be trained in the future as well.

**Nancy:** Despite feeling frustrated with the government's inaction on official recognition of the CapaCare graduates and their skills, Emmanuel still feels the satisfaction of being able to make a difference.

**Emmanuel:** When I see these babies growing up, you know, I'm very excited. I always reflect, if I was not there to deliver this baby, this baby would've died. And that would be a very big loss to the society, to the community. Perhaps this child is gonna grow up to be a very influential person. They would've lost that opportunity. That child would've lost that opportunity to give back to this country. So I always feel very much satisfied. I feel excited whenever I deliver those babies.

**Nancy:** But what of Adama, the woman who needed an emergency c-section while her husband travelled back to their village to recruit blood donors?

After the surgery, Adama's condition worsened. Her blood pressure dropped, her heart rate spiked, and she shivered as her temperature spiked. Her husband arrived that evening, after the surgery had been performed.

Amazingly, he'd been able to find a family member who was able to donate blood.

But before the blood was ready, Adama died.

The next morning, her husband transported her back to the village on the back of his motorbike. It was the only way he could bring her home.

Childbirth is a dangerous thing, no matter where you are in the world.

And yet, things are changing in Sierra Leone, in no small part because of the work of CapaCare's trained Community Health officers and the new program at the Makani School of Clinical Sciences.

Sierra Leone has long been described as the most dangerous place in the world to give birth. But new numbers released by the United Nations program UNICEF in February this year show that deaths in pregnancy and childbirth in Sierra Leone have plunged [74 per cent](#) since 2000.

That means that far, far fewer Sierra Leonean women will suffer Adama's terrible fate.

### **QUEUE podcast music**

**Nancy:** I'm Nancy Bazilchuk, and you've been listening to 63 Degrees North, an original podcast from NTNU, the Norwegian University of Science and Technology. Our guests on today's show were Håkon Bolkan, Alex van Duinen and Emmanuel

Tommy. If you want to know more about CapaCare or to donate to their work, check out their website at [capacare.org](http://capacare.org). And if you want to see some of the academic articles described in this podcast, check out our show notes. Editorial help and sound design by Historiebruket. Thanks for listening.