

Wellcome Genome Campus | OC4_3-18_Challenges

[MUSIC PLAYING]

In the beginning, we faced different types of limitations because in that time, we needed to improve the number of genomes produced in here in our lab. And we didn't have enough time like staff to help us to do that or, for example, the machines. We had just one machine to produce these genomes.

So through the years and receiving more resources we could improve the capacity of our lab. So now we have more machines, a huge staff, and a good quality of people working with us also helping to produce these genomes.

And also, we established the FIOCRUZ genomic network that different labs in the institutions in different states of Brazil, help us also to produce these genomes. So it become better during the years. So now we have a good quality of staff and financial support also.

But now, we need to think how to keep it because the money is almost in the end. So how to keep the people, so we are trying to, we are facing these challenges but we are trying to solve it to keep people working and to keep the sequence homogeneous and a good quality of data here in Brazil.

So barriers of doing science or practicing science in resource-limited settings are plenty. And of course, sequencing during a pandemic when there are so many other barriers, were no different.

We had difficulties in access to reagents, supplies. There were worldwide shortages, and of course, shortages are much higher, or were much higher in countries like ours, Bangladesh. So often times, even if we wanted to sequence because of lack of certain reagents, we were not able to sequence or sequence at the right time.

Other shortages or barriers, of course, include financial barriers because we know that in countries like ours, where our policymakers have to balance many priorities, we don't have consistent funding for sequencing.

And we also know that because it was a global problem, a lot of the funding that from other countries, from foreign countries, that come into Bangladesh were interrupted because a lot of the richer or resource-rich settings were also affected.

So definitely, financially, it's always a problem. We have no consistent funding for sequencing SARS-CoV-2. For example, now, we are sequencing using our core funds of our non-profit organisation.

Otherwise, there have been barriers that we have been able to overcome. Barriers in bioinformatics, or barriers in data analysis, barriers in data storage, technical difficulties with our machines.

We are dependent on just one company who gives us technical support for our iSeq 100 and NextSeq 2000. And you can imagine, when we are dependent on one company, there can be several reasons to not be able to get the right service at the right time. Yeah, so there are barriers. We are just trying to go one step at a time and navigate so that we can produce as much data as possible that's beneficial for the public.

So given that we had already established the National Genomics Core in CDFD (Centre for DNA Fingerprinting and Diagnostics) before the pandemic hit, and this core housed three independent sequencing machines. And in fact, we are now adding a fourth one.

We were already well-equipped from the beginning in terms of infrastructure and manpower, so the core includes technicians, as well as equipment, which were already existing. Once the central government funding, in the form of INSACOG (India SARS-CoV-2 Genomics Consortium), set in from April 2021, which coincided with our major sequencing activity, expenses for reagents are also taken care of.

The only issue we faced, intermittently, was the lack of availability of reagents sequencing kits, which was due to the huge worldwide demand for these reagents, so this was more from due to lack of supply from the company rather than any difficulty we faced internally.

Resources, well one of the major limitations was supply chain. At some point we had the money. We couldn't even buy the reagent simply because Africa wasn't a priority for those producing reagents and then consumables.

So all over the continent, they were held back in the country that produced them. So I think supply chain was a big issue. And then secondly, I can mention the fact that the cost was a major limitation. Whereby, the cost for procuring reagents in Africa is four times the cost overseas, in Europe or in America. So I think those are the limitations.

We have enough facilities. Our facilities are great. As I told you, we have from the smallest sequencer to the biggest sequencing unit. So in terms of human resources, we have the know how.

Definitely, for us, to do the first sequence in Africa in 48 hours, it's clear that we have the skills. We mastered the technology. But the limiting factors were reagent, supply chains, and then of costs. Those are the major things. Access to reagents, supply chain, and costs. Let me put it that way.