

WEBINAR TRANSCRIPTION:

Knowledge democratization: Can Latin America and the Caribbean be enabled to produce its own diagnostic tests and other devices to face COVID-19?

Presented by Jose Gómez-Marquez

May 4, 2020

Social Protection and Health
Division Inter-American
Development Bank
www.iadb.org/es/salud - scl-sph@iadb.org

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INTRODUCTION: Ferdinando Regalia

Minute 00:00:06

Good morning to all of you, it is a pleasure to be with you today. My name is Ferdinando Regalia, I am the head of the Social Protection and Health Division of the Inter-American Development Bank. I want to welcome you to this fifth conference of a series of talks with experts that we have organized on very important topics for the management of the COVID-19 pandemic thanks to our Criteria Network.

In the last week we have had the opportunity to talk about the impact of non-pharmaceutical interventions to flatten the curve and also exchange experiences between experts from the region and experts from Germany, China and South Korea.

Today we are going to learn about how Latin America and the Caribbean can prepare to produce diagnostic tests for COVID detection and also to build key devices for the response to this pandemic.

As you all know, the issue of PCR, rapid and serological tests is at the center of a very large debate on tools to manage the COVID pandemic and also on the whole issue of exit strategies for widespread isolation measures. In this context, we have invited a brilliant innovator, Professor Jose Gómez Márquez, who is co-director of the Little Devices Lab at MIT. It is an honor to have your presence and I want first of all to explain what the Little Devices Lab is.

The Little Devices Lab aims to democratize knowledge and empower healthcare professionals and patients to innovate and create the healthcare technologies that are needed at an affordable price. Jose is also the creator of the first MIT course on Accessible Medical Device Hardware. It also leads the MEDIKit platform that enables doctors and nurses in developing countries to invent their own medical technologies. He is also a co-founder of Maker-Health which provides training and resources for medical professionals and nurses for the design and construction of prototypes. Jose has acted as an advisor for different countries and has won many knowledge awards for his innovative initiatives.

Now I pass the word to my colleague Diana Pinto. Diana is a Lead Health Specialist in the Division at the IDB and will be moderating this session. Thank you very much and welcome to all.

Diana Pinto

Minute 00:03:48

Thank you very much Ferdinando, thank you very much to Jose, thank you very much to all the participants. I wanted to clarify that this particular session is going to have a slightly more informal format because I am going to be asking Jose a series of questions.

Before starting, I would especially like to recommend that you send us your questions and share examples of innovative solutions that you know in your country. Please send them by chat to everyone. Questions are also welcome, but we especially want to take advantage of Jose's expertise to provide us with his insights on these innovative solutions at the end of the seminar.

Well Jose, welcome. We are so glad to have you here. I wanted to tell you the following:

It turns out that it was hardly announced here in the United States, where I am located, that we all had to use masks, obviously I said: "I am going to order my masks" and it turns out that the same day the measure was in place there was not one. So, the second option was: "well, I'm going to make my own mask". I researched various sites, specs, and the conclusion I came to after looking at thousands of examples was that kitchen cleaners in my house could be helpful. I grabbed my mom's old scissors, what I had on hand, a few threads and well here is the result.

Jose Gómez Márquez

Minute 00:05:44

You are a maker! Diana

Diana Pinto

Minute 00:05:46

What I am getting at here is that masks are a very simple and straightforward example. It is very easy to make them. And you can make them with just about any type of material. One of the main reasons behind today's discussion is to look at – particularly when we are talking about COVID-19 tests and devices needed in the region – we wanted to find out: what is going on? What can we do locally? We have discovered that some of the inputs are not

currently available, so how can we become innovative and become self-sufficient as a region?

Today we are going to try to focus on tests so it that vain my question is: could you give us a very brief introduction regarding the tests that are currently available, as far as diagnosing COVID and monitoring it goes? This is how we will get our discussion off to a start and then we will look at possible changes.

Jose Gómez Márquez

Minute 00:07:09

Honestly, what is interesting about today's discussion is that it brings me back to about ten years ago to one of the first projects that was supported by the IDB, and it was how to encourage and foster local solutions. And people were saying: "Yes that is great for very rural areas but nobody is going to be making their own masks in Boston." And look where we are now.

When it comes to diagnostic tests there are basically three different types. At least this is what we are seeing in the news. The warhorses are the PCR tests. How do these work? We take a sample, the RNA and what we are looking for is that piece of RNA and (therefore) we use a machine. You could use another type. So, what we do is we take some other chemicals that are called primers and then what we do is we create a template. If we know what that template is, it is very easy to produce it. So, if you find this piece of RNA and you bring it into the template, when you do that it multiplies because the amount of the virus is very small. So, when you amplify it, it is almost like a photocopier. That little strand of RNA – well and let me go back and correct something – you amplify the DNA so we convert the RNA into DNA and then that gives us a clue. It provides us with a pattern and that is something we can see in the machine.

That technology, fundamentally, is quite old and it is understood quite well. So, if people say: "ok this is the test", it is this diagnostic test we are talking about.

The second test, and these are somewhat debatable right now, are the antibody tests. What we are doing is that we are looking for an antibody that might be very similar to a pregnancy test, for example, or the ELISA, which is a small test tube type of test. We are seeking a color change if the antigen that we get from the Coronavirus is present. When the virus enters the body, what happens is that it adheres to the cells and it starts to reproduce. So that is what we are looking for. Antibodies serve to tell us if it was there. But there is a debate around this regarding how sensitive it is. Unlike Ebola, where the viral count was large, Coronavirus does

not necessarily have that.

The third test is a serological test. What we are looking for here, is what our own bodies are producing against Coronavirus, so some antibodies. We are looking for other mechanisms to detect them. This might come in the form of a test tube, a vial, the color may change or a format that is very similar to that of a very quick pregnancy test.

Fundamentally, that is what we have. There are more but those are more esoteric and those are not the subject for today's discussion.

Diana Pinto

Minute 00:11:53

That was a rather clear explanation and that brings us to the next question. Would there be enough tests in Latin America now that we are considering the need to test everybody? Is there capacity for labs to produce their own?

Jose Gómez Márquez

Minute 00:12:25

Generally speaking, no. And I think that is one of the reasons why we are having today's discussion. If the labs could take care of this it would be different. The labs simply do not have the kits they need to do this. We have seen some of the supply channels break down. One of the key steps is to extract the RNA. Even in Europe and the United States the manufacturers of these chemicals simply cannot keep up with the demand. We have seen e-mails from the Massachusetts General Hospital, which is one of the largest hospitals here, saying: "please if you have any of these kits in the lab, we will take care of that. We never thought that would happen. These are the issues we are up against.

There are governments that can purchase those machines and can at least have an initial supply of these reagents. But it is a reliable signal of demand. So traditionally if we do this with commercial inputs we are going to be lagging behind. I think that that is where things stand right now.

Diana Pinto

Minute 00:14:05

So, imagining that we are up against these obstacles why is it so difficult to develop these PCR tests and antigen tests in Latin America? So, my first question would be: are we talking about technological barriers? Is it that we don't know how to make them? Is there some formula that we could copy, like the mask that I made?

Jose Gómez Márquez

Minute 00:14:40

That is what we are working on right now. The good news is yes, it can be done. This is not a technical issue. There are some certain technical obstacles. How do we get there? As I said before, let's first talk about the PCR, the molecular tests. They need enzymes. They need reagents. And these enzymes are not produced in Latin America. They are produced in other locations, at least the enzymes and the reagents used by the machines that are generally used. It is like taking an ice cream cone that was made in Ohio and sending it by plane to Paraguay. I mean it can be done, but it is just not done. It becomes very expensive. Transportation is often more expensive than the protein itself. So, there is a very big distribution issue.

We have been working for more than a decade looking for evidence as to what the barriers are. Local manufacturing, in my opinion, is entirely feasible. The sequence of a known virus, we can very easily produce the templates for the primers that are going to seek out the virus and amplify it. There is a range of options of producing enzymes. These are manufactured not in a traditional factory. They are manufactured in cells. In many cases that already exists in Latin America. But they are much easier to grow there. It is like back in the 70s when we were sold GMO rice and it ended up working out better than what we had. There were some political issues around it. But what I am getting at is that this is something that can clearly be done in Latin America.

So, if these types of enzymes could be produced locally, in order to run these machines following the test protocols would be a way out of traditional paradigms. I grew up in Honduras and we would just import everything. In this case it is not that the machines or the teams are going to come in. We have to use our imagination to figure out how to literally grow these biological recorders.

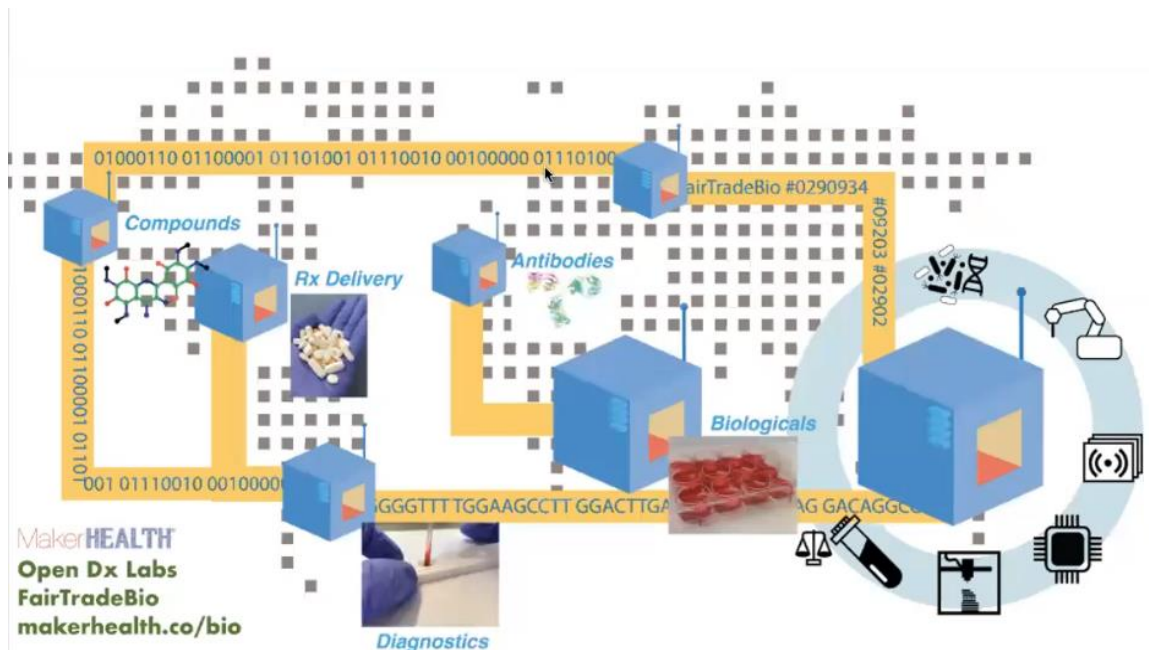
Diana Pinto

Minute 00:18:07

Who then can trigger the manufacturing of these enzymes in Latin America?

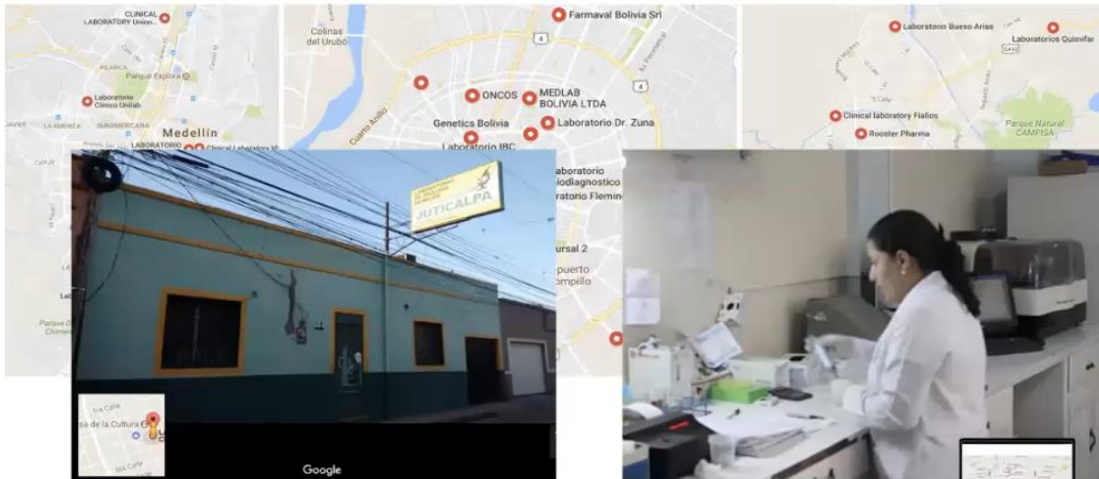
Jose Gómez Márquez

Minute 00:18:22



We created this concept of global bio foundries. So, these are biological foundries that can be created anywhere. These are being pushed forward by different technologies that are trends. These are not technologies that belong to a single manufacturer, rather this is something that can be made much easier and gives us the ability to produce antibodies, biological enzymes, like these, and ultimately arrive at the diagnostic test. We are not talking about research centers that are in anyway similar to those in Europe or the United States. We are looking at what we call open diagnostics.

Laboratorio: Mom and Pop Biotech



Open Diagnostics: Mom and Pop Biotech

Minute 00:19:27

These are open, transparent and it is what I call the Mom and Pop Biotech. If I go to El Salvador, Honduras, Colombia, any of those countries, any city there, there is a network there that does not exist in the United States of very small labs, clean, they have skilled staff, people who know what they are doing with desire to learn and that is all you need.



Distribution and density of Laboratory Networks

Minute 00:20:23

We have conducted many studies and you can look at this in Advanced Healthcare Materials if you are interested in the paper. I will send the link. But you see in different countries distribution is widespread. You can see the distribution of labs in Brazil, as well as the density of labs vis-à-vis the population. Even here to the right, even the smallest cities have these types of labs and they can do the work. Why? Because these people never learned, well we never got them in the bad habit of only being able to use these machines. It is rather how to use these protocols and now they have the opportunity to learn how to follow 21st century protocols. A few decades ago, they were looking at how to detect tuberculosis. There is no reason what so ever that we cannot teach them how to produce an equal line series of cells and conduct these types of tests

Diana Pinto

Minute 00:21:19

Supposing that some of these initiatives could be launched locally. In those small laboratories you were talking about, what would be the regulatory challenges? What obstacles might be in place as we try to implement this in our countries?

Jose Gómez Márquez

Minute 00:21:53

Before I get into the regulatory side of this, first we need to encourage a culture of experimentation. As a Honduran, I do not believe that either the US or Europe have a monopoly on experimentation. They have truly democratized many of these protocols and if we simply remove that culture of procuring to the local distributor of Roche or GSK or any other. If we can eliminate those, we can share these technologies in a more transparent way. And then, based on this, if we democratize the protocols, we have a population that has been educated and is familiar with the systems; that can do this as part of the community, to validate these different tests. If we were to encompass this in a legal framework, I think there is great precedent for something like this happening in the past. I will give you two examples: the oral rehydration solution, which has saved many more lives than these machines by hydrating children with diarrhea. You can purchase this solution, here it is called Pedialyte – I am not sure what the brand name is in Central America, but I am sure there is a similar brand – or you can look at the recipe OMS and here it would be completely reliable. And in fact, if we share the protocol, not the product, that is what really saved so many lives because everyone knew how to do it. And if it didn't work than somebody said, ok, this didn't work.

Diana Pinto

Minute 00:23:46

It is not the same.

Jose Gómez Márquez

Minute 00:23:47

The second example is the visual inspection using vinegar, for example, for certain cancers, cervical cancer, for example. That was a method that was advocated for a very long time ago, in the 1990s by a John Hopkins researcher and an Indian counterpart. And then these studies were published around 2000. It took about ten years for other global health entities to recognize that as a valid option. Now the beautiful part here is that if you go into the history about what was happening in the 90s, you will find books from Colombia, in French, from African countries and in South America, all of these different medical journals where these protocols were also adopted and they were able to validate them and approve them locally.

And so, these are the kind of things we want to do. We want to work with local governments, right now, there is no monopoly when discovering a solution. There is a lot about this we don't know. We know a lot, perhaps, but if you look at some of the main documents that are coming out and the main research work, what you realize is that we are all running in this marathon. And we are going to be in it for a long time and we are going to learn a lot along the way.

Diana Pinto

Minute 00:25:54

Well, here is a question I am thinking about. Perhaps this is something you can share insight on. I mean someone has to take the lead. For example, when this information on oral rehydration solutions was published it had to go through a certain entity. So, once it is tested and approved and others can say: "ok we can go along with this and start to train our medical professionals and then we can have people learn to make this on their own." And then, eventually, there was adoption but who is leading these efforts? Have you seen anything in other countries, for example a Ministry for Innovation? In other words, how could there be more driving of these solutions. Perhaps this will link me into my second question and maybe I can ask it now and you can answer it directly if you want, but how do you guarantee the quality of these innovations because, at the end of the day, lives are at risk.

Jose Gómez Márquez

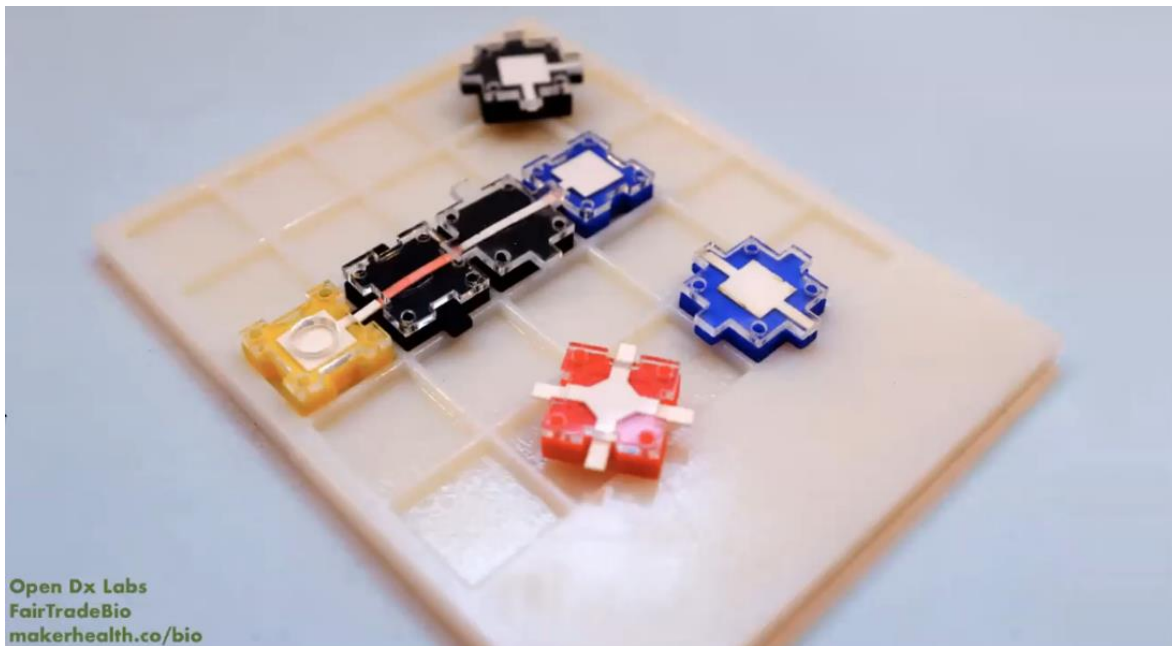
Minute 00:27:12

Let me work backwards. I will start with your last question. Perhaps I will also take this down a more positive route and I will talk about how we are sharing information and what is happening. Let's talk about quality. If I am not mistaken, in January the WHO already had tests and they published this. It was adopted and then taken to the market and there were kits that were put together that were easier to handle, we all know that story. In the United States, the CDC said: "hold on, we are going to develop our own". Why? Because we want to ensure quality. And that has always been the argument put forth, quality. What we realized, and this goes for everyone, is that those initial tests actually didn't work. There were mistakes.

So, the same way that major organizations or major commercial systems don't have a monopoly on discovering a solution for this, they also don't have a monopoly on doing quality checks. And so how can I ensure that that sort of lab, in the middle of nowhere in Honduras,

is doing the right thing. Well, there is a certification process to ensure that the staff is doing what they need to do. It seems (there is) sort of a flash certification process that we are seeing around the world. People who have never taken a sample with a swab learned to do it. They don't need to do a PhD to learn how to take a sample.

Now number two. I think that we are very used to having quality systems for manufacturing and those are very different from the quality control systems for local production. And so, when we are talking about local manufacturing, what we need to do is also democratize assessment protocols. So, if I am producing enzymes, I am not simply going to go and grab a tube and say: "looks fair to me, let's give it a go". Instead we also need to teach how to take that enzyme, how to put it in a jar, how to have it sequenced somewhere else, in order to have a control tracing mechanism. And there are a lot of different protocols that carry out a kind of verification.



Minute 00:30:07

And then (there is) one more thing. Instead of only endorsing the quality of different substances, we also need to recognize that a lot of the flaws come from the manual component of the experiment. So, we have done a few things. I will give you an example, we have developed this system called Ampli. Instead of having trial tubes and test tubes to cause reactions we have designed this system. They make it a modular reaction. So, I no longer need to ask someone to give me three microliters of PBS of this antibody and mix it with this and then add it to another nanoparticle solution with gold; not at all. Now what I can say is: "I need a yellow block, two black ones, one blue one and place the sample on it. And if the

blue one is not working you swap it for the red one; but again, all of this with transparency. We can have a conversation with these individuals where they understand why red worked better than blue, for example.

Diana Pinto

Minute 00:31:23

I am sorry to cut you off, but basically I guess what I am seeing is that, as you know most of our countries have their own version of tamales and soups and so essentially what we say is: "if you don't have raisins then use olives, if you don't have cassava just throw in a potato". Is that what you are saying.

Jose Gómez Márquez

Minute 00:31:44

Yes. This is the kind of methodology that we call design for hack. Perhaps what this means in some places is that if you have nothing to tie it with reach for your nearest wire or cord. I know that, for me for example, olives are a huge deal so if there are no olives for my recipe then we are not eating tonight. But what we are saying is that we can swap these things out and so instead of taking my approach we are saying that, you know what, we will use capers and that will be fine.

In Honduras we were talking to a group, last week, and we were telling them that if they did not have this specific thing, they needed then they can use this instead. And that is not something you are not getting from a commercial body. This is, of course, because the incentive is to sell the entire kit. So, what we have done is debunk that myth and put together processes so that different people can build their equipment.



Minute 00:32:55

So, this is a system here that helps cultivate and grow these enzymes, as I was saying before. And we have sent this to different parts of the world.



Open Dx Labs
FairTradeBio
makerhealth.co/bio

Diffusion by Fedex and WhatsApp



Minute 00:33:04

And then here we have staff members in an Ecuadorian group, for example. This is pre-Coronavirus. We were working with these different hospitals supporting their work. And let me go back to what I said earlier. We did not make this up. If you go back to labs in your Ministries of Health, they are already producing chemicals and solutions. And these different countries don't have a CDC. What they have are people who are hungry for knowledge. So that was for the second question.

To go back to your first question is how we multiply these efforts. What has worked for us has been creating an actual partnership relationship with the different professionals who are working on Coronavirus and we have been able to talk directly to these hospital staff members. We have talked to them through Zoom or WhatsApp even. And we have built teams within those hospitals in order to train them quickly. We are now currently working in this way with other bodies. Not because you can but rather what we have seen is that this is not the time to start testing around with nanoparticles and saying: "Oh this was nice. How do we publish this result? How do we do this next thing?" When that is necessary, research centers and academic centers are great for that very activity. But right now, what I believe (is that) we need is to talk to the lab head who does not know what to do because there are a thousand samples. And they are saying: "you know what? Give me anything that you think works and we will figure this out together. Because what I need right now is not to reinvent the wheel. I need to try and address the backlog." These are the people who have the biggest drive right now to see these protocols through.

Now, what we also need are local leaders, leaders who will support us and who have faith in their own employees' ability because without that we can't make it. We have tried it before but we need those key components. So, we need officials and authorities who are willing to gear and take that step. And we also need those other people who are willing to do the work, all with transparency, of course.

Diana Pinto

Minute 00:35:47

I know that this is not the right time to think about nanoparticles - that is what I think you said in your example. I am learning. But it seems that this is also a time when we are seeing a lot of creativity and a lot of innovation. So, there is a window of opportunity that is opening up.

Jose Gómez Márquez

Minute 00:36:11

Totally.

Diana Pinto

Minute 00:36:11

And I guess, to wrap up our interview, I am wondering if in about four minutes you can talk to us about other areas where you have seen innovation or key supplies for addressing the Coronavirus.

Jose Gómez Márquez

Minute 00:36:28

Yes, you know, this is a time of a pandemic and so I will be candid, just so to make sure that my message is clear. When I say that this is not the right time to start testing around with nanoparticles, again it is not the right time for that. In Boston we are guilty of that as well. Sometimes we are looking for academic ideas because they are beautiful and that is what I am referring to. And so naturally, as we care for these patients, we are seeing a lot of new

ideas and we are seeing a lot of creativity and all of that is very inspiring.



Maker-Health

Minute 00:37:15

For example, we have a set of initiatives in different hospitals. And I don't know if you can see it here, but everyone you see on the slide, there is not a single scientist or engineer here or someone with technical expertise. These are all medical professionals who care for patients. They are doctors and nurses or paramedics. And so, they go into a place where they have all the different supplies, they need to create what they need, to make it. And so, they have hammers and tools and other medical supplies. And that is what we are doing. This is what we do at Maker-Health, we recognize that instead of us coming to solve people's problems, the most effective approach has been to give these individuals the necessary equipment and supplies and the instruction to follow. And they are going to find local solutions because their motivation is caring for those patients.

And I will give you an example here again. This is Rose, one of the key nurses in this initiative. This is a hospital in Iowa and they are not only making masks but they are also making PPEs to help patients who are being transported from one room to the next. They are doing inventory of equipment to see how much is being used. They are finding ways to have respiratory equipment to be built as well. And that is with the equipment that they already have in the storage closet and with the supplies. And if they are missing some sort of

connector or tube then they are able to 3D print it. But sometimes they don't even need to go to those lengths. With a bit of guidance, you can even go to your local hardware store, again, we go back to this main idea, which is you figure out a solution and find a way to get it approved, and we support these initiatives.

The truth is that in the last thirty days, I think there have been about 25 different projects that have come out of this place. But we have seen everything coming out of other parts of the world, like the masks in Italy or the ventilator equipment from Spain. And as a matter of fact, this morning I got an e-mail from a magazine, where there were average people who were building their own antibody tests without asking anyone for permission. So, this is an important starting point. I see it not only as an opportunity for governments to truly step up and support local innovation, which is really driven by one thing, wanting to care for others and wanting to cure others and not necessarily to publish.

But I think this is also a time, which calls for humility. I remember, ten years ago in Managua and other parts of Nicaragua, we saw that nurses were shy in telling us that they had to wash their gloves because they had the same ones few times a week. And sometimes it is not something we think about but that is what we are seeing is happening now with some of the PPEs and the masks in the United States. This I believe is going to be a beautiful opportunity because it will help us acknowledge what our countries are doing, how we can help support those efforts and how to provide support for this to be shared because I am eagerly awaiting to see what comes next.

Diana Pinto

Minute 00:41:02

I know that you are eagerly waiting to hear what is happening and what is going to come next. So, I have a few examples actually from our chat.

Let me start with Peru. I am seeing that there are kits for molecular diagnostics that are being produced and there are Peruvian entities that are working on a number of these. And one of these entities was able to make a molecular kit.

Let's see, here I am also seeing that this is a biologist from San Marco, who is the leader of this initiative. And there is another example. Perhaps it is the same one but it is from Peru and it has to do with molecular tests.

In Colombia, for example, I am seeing that there is a challenge called "RetroPro", which is an

initiative to protect medical professionals and health workers. And this is volunteer-based. And the idea is to make 6,000 full facial masks so that there could be proper care for patients and prevent infection. There are other efforts to sterilize and to produce and other steps to protect health workers.

So, there are two examples of what is currently happening in developing these technologies.

Jose Gómez Márquez

Minute 00:42:40

Great! I love that.

Diana Pinto

Minute 00:42:41

And let me see, I think I have another one here. This is one from Colombia. They have an initiative called “Higher detection more lives saved”. And it is financing and supporting the implementation of scaling and industrializing different solutions, in order to, once again, reboot the economy.

And so, these are examples we are getting from our audience.

Jose Gómez Márquez

Minute 00:43:21

You know, I think it would be very interesting – and I love what I heard what is happening in Peru and in Colombia, of course, where they are joining a lot of other initiatives and make these PPEs – to see how we can work together so we can bring these things out to everyone else. For example, how can we help the entity in Peru to get an award to see who can replicate this protocol at the highest rate? Because what we know about molecular tests is that they are, in their very essence, ‘democratizeable’. They can be democratized and they can be put at the reach of everyone else. And I think what we are also going to be seeing right now is going to be an alternative process to what we have traditionally seen in scalability. I know that people like to talk about scalability all the time but I think in the United States and in other places I think we have made thousands of masks because a lot of people have decided to make masks

themselves and I think we can do the same thing with the tests.

I would love to hear more.

Diana Pinto

Minute 00:44:40

There is a question that I just got here and I think it is a key question on initiatives. Mario is asking: What new threats and vulnerabilities could come from these “do-it-yourself” methodologies, some of what you have been talking about? So, for example, that is something that would affect those who are making these tests. What threats and vulnerabilities do we need to keep an eye out for?

Jose Gómez Márquez

Minute 00:45:22

You mean if I learn, for example, what they are doing in Peru? Is that the question?

Diana Pinto

Minute 00:45:30

Yes, generally speaking, with these techniques, when it comes to “do-it-yourself” processes? That is what the question focuses on

Jose Gómez Márquez

Minute 00:45:40

Well, here is what I think. I think a community of practitioners is probably the most fundamental component here. If that could be created then they could all take care of themselves. The FBI, a long time ago, I think that was many years ago, launched an initiative on what would happen, for example, if everyone can do CRISPR tests at home. Well, that is already here. Unfortunately, we have very little experience over the last few years but when it comes to national protocols that question always comes up. That is something I have to answer every week. They ask me: What happens if everyone learns how to use nebulizers? And I say: “well we have been doing

these things for ten years and nothing has happened.” Nothing has happened because I believe that in transparency people feel more comfortable because they know how it works. What is important is to look at what happens if we take a test like the Peruvian one, for instance, or Roche’s, or any other one, and those are given to someone else as if it were some sort of magic potion and it needs to be secret and no one should share this information. That is where the danger comes in. And this is kind of what happened with the CDC where there was full faith placed on these tests that ended up being flawed and had defects.

I believe that transparency can be the source of protection. The democratization process in itself protects us. Now, I will give you a more sort of a daily life example. We all have either a grandmother or an older family member that use walkers. And sometimes, I think they take tennis balls and they will put them on the legs. And how long has that been going on? I have seen this since I was a kid. Everyone does it. Now, of course we can find scenarios in which, say there is wasting of the tennis ball and then grandma falls down, but it is a tennis ball. We know how it works and we know how you can have it degrade over time. But it is still out in the open and that is better.

Diana Pinto

Minute 00:48:24

Thank you. We have another experience here from Costa Rica. They are saying that last week the National Technological Innovation Center, called the INCIENSA, or two of these government agencies announced that they were going to get their own diagnostic tests home grown and they were going to help build kits like the once that were better known. And it is interesting because here is an example of a government agency taking the lead. It sounds like something that should be followed up on and monitored. There will be a lot to be learned from that.

There is another example from Spain, where they are saying that artificial intelligence company Biometrics Box in cooperation with the Basque Health Agency is putting together a sound library in the hospital to find a way to diagnose Coronavirus from people’s voices, those who have recovered and those who are still sick.

Jose Gómez Márquez

Minute 00:49:45

I love those.

Diana Pinto

Minute 00:49:45

And they put together an algorithm for looking for correlations between these markers in people's voices and the presence or absence of the disease.

And so, these are technologies that are really as advanced as they come, truly cutting edge. So, I was wondering if you could react to these different initiatives.

Jose Gómez Márquez

Minute 00:50:17

I love what is happening in Costa Rica and I think that they hit the nail on the head. How can we look at the distribution channels that are not under pressure and how do we make the most of it? And that is perhaps something we can learn from them. They did not specify what kinds of tests they are doing but it would be recognizing that right now it is very easy to conduct molecular tests. I was talking to one of my staff members yesterday about how these primers are designed and as we prepare to do this I was asking: "Fundamentally, what is the difference between what was made in Nebraska and the one they are producing in Seattle? Which one is best?" And he laughed because he said: "You know what? No one is pounding their chest and saying that they are the king because they designed this primer." And that was the conversation we were having. I went on my browser last night and pulled these up – this is all a computer process – and I was able to get four of the different models up on my screen that I could look at.

I would encourage the Costa Rican group not only to talk about how they put it together but also to de-mystify how you can do it because usually if this is just presented as some incredible thing then people are afraid to try it themselves. But if you Diana show me, for example, how to make some 'arroz con pollo' and I make that recipe here I am not inventing anything. I am following the recipe. Now if I traded your raisins for my olives, then sure I am putting in my own little thing but I am still replicating what you created. If these big companies come to Latin America to try to sell us ice, like they have done over the last 30 years, I would love for all of these different labs to be able to pull out ice from their own fridge and say: "Hey, been there, done that." So, thank you for sharing those initiatives. It is all very interesting.

Diana Pinto

Minute 00:52:52

We have many more examples that I think will be very important to see later in the chat, I will share it with you Jose, because there are initiatives in Guatemala, in Argentina. The truth is that I believe that it is not a new concept and it is a need that is certainly emerging. Well, I'll share my chicken rice recipe with you at some point too.

Jose Gómez Márquez

Minute 00:53:22

Yes, please (laughs...).

Diana Pinto

Minute 00:53:23

To finish, you have given us some valuable ideas, Jose, thank you very much. I believe that you have allowed many of our colleagues in the region to be inspired and think a little more about this issue and who can assume that leadership, for example, as we have already seen in Costa Rica, Argentina and other countries. So, Jose, if you want to give us some closing words because unfortunately, although the subject is fascinating, we are running out of time.

Jose Gómez Márquez

Minute 00:54:22

Obviously, we are at your service, I want to hear about all these ideas, I want you to send us emails - I put my email there - without hesitation. Eventually we can talk on WhatsApp to really see how we set up these local teams, many of them are already running; how we share ideas; how we share equipment and technologies. As there are many here in the chat who I think are already doing this locally, particularly with the testing part, I want to urge you to realize that Latin America and the Caribbean unfortunately have a history of literally giving the blood of our patients to foreign researchers who then add value to those samples and then sell us those antibodies, sell us those tests. If people are afraid of brain drain, I urge you to think about specimen leakage, because if we stay with those specimens, if we stay under their control and foster local science from nurses to lab technicians, we are going to do great things since technology has already been democratized. That's all, thank you very much.

Diana Pinto

Minute 00:55:50

Well thanks to you Jose, again to our audience. We hope that you can subsequently access the webinars and we will soon announce what is coming in the Criteria Network, which, as you know, is attentive to answering priority issues for this pandemic that affects us all, but we hope to go ahead with great optimism and tenacity. Thank you all.



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