Dr. Patricia Garcia
Behind the Mask
January 15, 2024

Barr: Good morning. Today is January 15, 2024. My name is Gabrielle Barr. I'm the archivist at the Office of NIH History and Stetten Museum. Today I have the pleasure of speaking with Dr. Patricia Garcia. Dr. Garcia is currently a professor at the School of Public Health at the Cayetano Heredia University in Lima, Peru. She's also an affiliate professor in Global Health at the University of Washington [in Seattle], and she is a former Fogarty [International Center at NIH] trainee. Dr. Garcia served as Peru's Minister of Health from 2016 through 2017, was the first woman to lead the Peruvian National Institute of Health and was the first Peruvian to be elected to the United States National Academy of Medicine. Today, Dr. Garcia will be speaking with me about some of her COVID-19 efforts. Thank you very much for being with me.

Garcia: It's a pleasure to be here. Thank you.

Barr: Absolutely. We're so excited to have you and your perspective. My colleagues at Fogarty said I had to talk to you. I'm very happy to have this opportunity. Early in the pandemic, you raised concerns about COVID-19 causing indigenous communities to rely completely on native food sources and the impact of climate change, which they had to contend with simultaneously. Will you discuss the situation, particularly from the Peruvian vantage point and some of your studies that you've done and continue to be doing?

Garcia: Yeah. Our team at Cayetano Heredia University has been working with indigenous populations in Peru for some time, focusing on the effects of climate change on their nutrition and overall way of life. These communities maintain a delicate balance with their environment, and any disruption can put them at high risk. Additionally, they often face discrimination and social exclusion, exacerbating their vulnerability.

This research is part of a broader project involving collaborators from Canada and Africa, aiming to compare the experiences of indigenous groups in the three countries. In Peru, we have been working with the Shawi community in the jungle. During the COVID-19 pandemic, the Shawis demonstrated remarkable resilience by self-isolating in the forest to avoid exposure to the virus. While this strategy helped protect them from infections, it also posed risks, particularly because their economy relies on trade. Despite these challenges, the Shawi community fared better than many others during the pandemic.

However, it is crucial to assess the long-term impacts of COVID-19 on indigenous populations in Peru. We are currently evaluating the effectiveness of government policies aimed at these communities to determine what worked, what didn't, and what lessons can be applied to future pandemics.

During the pandemic, the jungle region faced challenges with endemic diseases like malaria and dengue, which required medical attention. In some cases, people had to leave their communities to receive treatment because local health facilities were inadequate or nonexistent. However, I am not aware of any cases where members of these indigenous communities became extremely ill after interacting with the outside population. The mortality rate due to COVID-19 in these communities was very low, possibly because they are generally composed of younger individuals with fewer chronic diseases.

Barr: Definitely. Very interesting. It'll be great to see what comes out of it. You introduced the SOLIDARITY clinical trial, affiliated with the World Health Organization, which evaluated hydroxychloroquine, lopinavir/ritonavir associated or not with interferon, remdesivir compared to standard therapy, as well as many other drugs. What has been your role in getting Peru involved in this global trial?

Garcia: The first COVID-19 case in Peru was reported on March 6th. By the 15th, the country had gone into full lockdown—schools were closed, and people were confined to their homes. Early in the pandemic, I learned about the SOLIDARITY trial, a WHO initiative involving multiple countries to identify effective COVID-19 treatments. I immediately reached out to my contacts and suggested, "Why don't you include Latin America? Why don't you include Peru in this?" Fortunately, they listened. I offered to connect them with the Peruvian Minister of Health, as WHO wanted to collaborate with governments. This led to a conversation with the Minister, who eventually asked me, alongside Dr. Eduardo Gotuzzo, a renowned infectious diseases specialist, to lead the trial in Peru.

Organizing and managing the trial was incredibly challenging—something I hadn't fully anticipated. It was the first time I had to lead during a pandemic, and coordinating such a large-scale effort was daunting. However, the dedication of Peruvian physicians, who were on the front lines battling this disease, was inspiring. They were eager to find treatments that could work and were committed to trying new approaches.

We successfully recruited 11 hospitals from across the country to participate in the trial. It was a remarkable experience, and we achieved high recruitment rates. However, one significant challenge arose: despite the government's support for the trial, they issued guidelines allowing physicians to use a variety of drugs (not proven to work) on hospitalized patients, in other words nothing was evidence based. This created difficulties in patient recruitment, as many doctors, in their desperation to save lives, were hesitant to enroll patients in a trial where some might not receive "active treatment". The reality was that, at the time, we didn't know which, if any, of the drugs would be effective.

Barr: Yeah, it's very interesting. Remdesivir has been spoken a lot about a possibility for those with severe COVID-19. But the SOLIDARITY trial showed little to no effect. Can you speak a little bit more about that finding?

Garcia: One of the major challenges we faced with COVID-19 was that by the time patients were arriving at the hospitals, they were extremely sick—almost at the point of needing a ventilator. A significant issue, not just in Peru but across Latin America, was the severe shortage of ventilators and intensive care units (ICUs). The pandemic revealed how under-equipped we were, and there was no way to acquire more ventilators because the entire world was in need. Patients who were being hospitalized were in critical condition, and we initially hoped that remdesivir would be the breakthrough treatment.

However, what we found was that remdesivir had no significant effect on patients who were so sick that they needed immediate ventilation. The drug showed only a very small benefit in preventing the progression to death or ventilation in those who didn't yet require it. Essentially, it wasn't as effective as we needed it to be for the critically ill patients we were treating.

Another challenge with remdesivir is that it must be administered intravenously, and it's very expensive. The only remdesivir available in Peru was what we received through the trial—we never obtained more. Ultimately, we proved that it wasn't effective. But even more, for patients who didn't require ventilation, the difference in hospitalization duration was minimal, only about one day. The reduction in mortality for patients who received remdesivir was 11.9%, compared to around 13% for those who didn't receive it—a difference that was statistically insignificant. The SOLIDARITY trial shattered the initial hope that remdesivir would be a miracle drug—it simply wasn't.

Barr: Was it a problem getting other drugs and what are some of the current drugs that SOLIDARITY is looking at?

Garcia: First of all, we are no longer active in the SOLIDARITY trial. However, one of the positive outcomes, as I mentioned before, was the evaluation of remdesivir. There was widespread concern about how expensive it would be and how we, as a country, could secure it. Unfortunately, it didn't prove to be effective.

Another important aspect of the trial was the testing of hydroxychloroquine, which was being widely used everywhere in Peru and Latin America at the time. The trial quickly demonstrated that hydroxychloroquine was not effective against COVID-19. This finding was extremely helpful because it led not only our government but also several others around the world and in our region, where it was widely used, to stop using it. As a result, we avoided the complications and costs associated with using a drug that has other important medical uses beyond COVID.

Barr: One of the big studies you were involved with was designing and administering a randomized clinical trial to compare the efficacy of ivermectin versus a placebo to negativize nasopharyngeal PCR in patients with early COVID-19 in Peru. Will you share a little bit about the objectives of this study as well as how it was implemented?

Garcia: Yes, ivermectin is a very popular drug in Peru and across Latin America because it's an antiparasitic that you can buy over the counter at any pharmacy. There were two key events that led to its widespread use against COVID-19. First, an article—later discredited due to false data—claimed that ivermectin was effective against COVID. And second another article which showed some in vitro activity against the virus, but which had a very misleading title. As we know, these things quickly spread on social media. Once the idea that ivermectin was effective against COVID took hold, everyone in Latin America started using it, long before similar trends emerged in the U.S. or Europe. During the first wave, ivermectin became extremely popular in our region, despite the lack of clinical evidence supporting its efficacy.

Unfortunately, in countries like mine, there is little investment in research. To conduct studies, I usually have to compete internationally for grants. But during COVID, there was no opportunity for countries to apply for international funds, and there was no time to do so either. However, some private groups in Peru wanted to contribute, and I managed to secure a donation. With this funding, we designed a clinical trial to evaluate the effect of ivermectin versus placebo in patients during the early stages of COVID. The idea was to catch patients within the first three or four days of illness, administer ivermectin for three days, and then assess its impact on viral load and any secondary effects, such as the progression of the disease, hospitalization, or death.

We had high hopes for this study, but it faced many challenges, particularly regarding human subject issues. The biggest challenge, however, was that by the time we started the trial, most people in the country were already taking ivermectin!!!! (no need of prescriptions!!) —often sourced from the black market or veterinary products—and were using it daily as a prophylactic, sometimes even with their breakfast, or multiple times a day after any potential exposure. This made it very difficult to recruit patients who hadn't already been on ivermectin.

Ultimately, our study found no difference in PCR positivity between those treated with ivermectin and those given a placebo, suggesting no benefit from using the drug. The trial was small, which is one of the limitations, but it highlighted the need for more collaborative research efforts, like the SOLIDARITY trial. If we could have formed global research groups that shared protocols, assured funding and conducted large-scale studies together, we could have obtained more reliable results in a shorter time frame, giving us answers sooner.

Despite the challenges, at the end our Ivermectin study was crucial because it led us to recommend that the government stop using ivermectin. At that time, the government was even distributing COVID treatment packages door-to-door that included ivermectin. However, I believe the study could have been more impactful with a collaborative research approach. While Europe and parts of Africa managed some level of coordination, Latin America was largely left to fend for itself during the pandemic.

Barr: Will you discuss the study you were a part of that assessed the use of the UCL-Ventura Wayrachi CPAP device in hospitalized patients with COVID-19 in Peru from July 2020 through September 2020? Why was this an important to study to conduct and what were your findings?

Garcia: As I was saying before, availability of intensive care services was really limited in most of our countries. In Peru, during the pandemic, we realized that we had very few intensivists, very few ICUs, and not enough ventilators. At the beginning of the pandemic, we had fewer than 300 ventilators for a country of 30 million people. Can you imagine that? People were getting sick, and there was a waiting list for ventilators. Although the country had the funds to buy more, there were simply none available; everything was locked down, and countries were keeping their own supplies.

We were struggling to manage the high number of critically ill patients who needed ventilators. The question was, what could be done? I was chairing a commission for the Ministry of Health at the time, focused on innovations for COVID-19. We discovered that some groups, specifically the University College of London (UCL), had been studying a type of noninvasive respiratory support called CPAP. This system is commonly used for people who snore at night or have chronic obstructive pulmonary disease (COPD). UCL had designed a system that was much cheaper than a ventilator and didn't require as much oxygen—another resource everyone was fighting for. The best part was that UCL made all the instructions for building these devices publicly available, so other countries could produce them.
I contacted the team at UCL through my global health network. They had already tested and were using the system in London. At the same time, I learned that some young engineers working in mining here in Peru had created a local version using those instructions. They called it Wayrachi.

I put together a proposal and suggested that this could be a viable alternative. We received support from the UK Embassy to bring in the necessary tubing for an initial trial. I spoke with the Ministry of Health about conducting a feasibility study, which we did in two hospitals. We used the devices on patients who needed ventilation but couldn't get a ventilator. What we found was encouraging: 80% of the patients could tolerate the CPAP, and of those, 60% survived. These were patients who otherwise might have died. The CPAP either helped them recover or kept them stable long enough for a ventilator to become available.

We accomplished this in a relatively short time and then started training physicians across the country on how to use these devices. The engineers donated some of the devices, and the government eventually purchased more. I believe this initiative significantly helped address the shortage of ventilators, especially in the early days of the pandemic. It was incredibly moving to know that we were able to offer hope to people who otherwise might have been left waiting to die.

Barr: That's an incredible workaround.

Garcia: Actually, it wasn't just me. It was a group effort. It felt like truly global work, with everyone coming together. Even people outside the health field, like those mining engineers, were concerned about how they could help. And of course, all the physicians who participated in the feasibility trial played a crucial role. It was something that was really needed, and I feel good knowing we were able to make it happen.

Barr: Definitely. Will you discuss your role in evaluating the safety and efficacy of convalescent plasma among hospitalized patients with COVID-19 in Peru? What were some of the challenges you and your colleagues encountered?

Garcia: I got involved with this early in the pandemic. There was an infodemic—an overabundance of information, including misinformation—about how COVID-19 could be cured by transfusing plasma from people who had recovered from the disease. It was everywhere in the news, and everyone wanted to try it.

A group of clinicians and researchers, including myself, were really concerned about this. We knew this wasn't something that could be done openly without regulations. So, we sat down with the Ministry of Health and the department responsible for blood donations and safety. Together, we created the national regulations for hospitals that wanted to try convalescent plasma. We also limited who could legally perform these transfusions and developed a communication strategy to ensure the public understood the risks involved.

After establishing the rules, we thought, "Why don't we try it here?" So, we proposed a randomized clinical trial to evaluate the safety of convalescent plasma. Funding was a challenge, but we managed to secure a small grant from the Canadian Embassy after knocking on many doors. The biggest hurdle was conducting this study in a country with no strong culture of blood donation, which is one of Peru's major issues. We had to create a system for donations and promote a sense of solidarity to encourage people to donate.

We eventually collected convalescent plasma from different donors and began the trials in hospitals. It was a labor-intensive process, and ultimately, we found no significant effect of convalescent plasma. Another challenge was the emergence of a second wave with a different variant, which rendered the plasma from the first wave less effective.

The silver lining was that our study contributed to a larger meta-analysis involving 33 clinical trials and about 14,000 people. The meta-analysis found no evidence that convalescent plasma was effective. The process was expensive, time-consuming, and carried risks. However, our efforts led to the establishment of national guidelines, which will be useful if convalescent plasma is considered for treating other diseases in the future.

Barr: That's a really good thing. Will you speak about your work looking at the repercussions of the COVID-19 pandemic on people living with HIV in Latin America and the Caribbean? What do you think will be some of the long–term effects for those living with HIV and how have the lessons from HIV—which is a disease that you've worked with a lot during your career—been applied to the COVID-19 pandemic?

Garcia: Yes. I'm an infectious diseases doctor who works in public health because I believe that's where you can have the greatest impact. My career began during the HIV pandemic, and I've continued working and observing developments since then. It was particularly important for me to understand what happened at the intersection of COVID-19 and HIV in Peru and Latin America.

One of the first things we noticed was the scarcity of data—most of what we had were small studies and case reports regarding HIV and COVID-19. It became clear that, like with other chronic diseases, there was a significant gap in the care of HIV patients during the pandemic. In many areas, services, medications, and antiretroviral therapy were interrupted. Two other critical issues emerged: the impact of COVID-19 on the mental health of HIV patients and the socioeconomic effects of the pandemic. We know that COVID-19 has affected mental health across the general population, but the impact on HIV patients has likely been much more severe. The disruption in the cascade of care is something that now needs to be thoroughly evaluated, including the potential rise in viral resistance due to interrupted treatment.

However, I must acknowledge that in some countries, ministries of health implemented innovative alternatives to continue care. Telemedicine was one approach, but another was the direct delivery of antiretrovirals to patients' homes, sometimes providing them with six months' worth of medication. These were new strategies, driven by the pandemic, as there was previously a somewhat paternalistic view that HIV patients were not reliable enough for such practices. It will be interesting to see how these approaches have impacted, or not, things like resistance and the overall clinical well-being of patients post-pandemic.

When it comes to lessons learned, community engagement has been critical. This was true during the HIV pandemic, and it has proven invaluable during COVID-19. Community engagement has helped ensure that patients receive their medications, remain isolated when necessary, and have access to support networks. Another lesson is the importance of leveraging all components of the healthcare system. For example, in Cuba, HIV isolation centers were quickly repurposed into COVID-19 management and isolation centers. The key is to make the most of what you have. Finally, involving civil society has been crucial in various places. These three elements—community, civil society, and fully utilizing healthcare systems—are lessons we've carried from the HIV pandemic into the fight against COVID-19, and I hope we continue to apply them in the future.

Barr: Can you speak as well about your work with diagnostics during the pandemic?

Garcia: One of the biggest challenges the world faced was ensuring accurate diagnosis of COVID-19. Initially, diagnosis was done using PCR (polymerase chain reaction), but PCR is an expensive test that requires well-equipped laboratories and specific reagents. Speaking from my experience and the experience of most of Latin America, we didn't have strong molecular testing capacity. And by the time the pandemic reached us—after Asia, Europe, and the U.S.—there were no reagents available. Even if you had the money, obtaining the necessary reagents was nearly impossible, making it very difficult to diagnose cases.

Early in the pandemic, rapid serologic tests were released, but there was a lack of understanding about how to use them effectively and what they were good for. This was a challenge not only in Latin America but also in Africa and other parts of the world.

Together with Dr. Rosanna Peeling from the London School of Hygiene and Tropical Medicine and other colleagues, we decided to review the available evidence on serologic tests. We wanted to clarify how these tests could be used effectively. We published an article in The Lancet aimed at explaining the proper use of serologic tests.

For example, in Peru, serologic tests became popular because they were low cost and easy to administer—just one drop of blood, 20 minutes, and you see the results. But people didn't understand that a positive serologic test didn't necessarily mean they were currently infected; it could indicate a past infection. They also didn't realize that a negative result didn't rule out an active infection. This misunderstanding wasn't limited to the general population; healthcare providers were also confused. In Peru, these tests could be bought on the black market, and people used them as a way to feel reassured after a risky interaction. If the test was negative, they assumed they didn't have COVID-19, but many were still infected and spreading the virus to their families.

Our goal was to clarify these issues—when and how to use the tests, what they can and cannot do—in a way that providers could understand and then communicate effectively to others.

Barr: That's interesting. So in a 2021 article, you and your co-authors wrote about the need for large–scale, multicenter, adaptive platform trials to better understand and treat long COVID as well as evaluate remedies for specific symptoms. How have your views on addressing long COVID changed since 2021? And what are the demographics of long COVID in different parts of the world? I know a lot from the U.S. perspective, but it's interesting to hear internationally.

Garcia: As you mentioned, we wrote this relatively early, in 2021, because we were already beginning to see cases of long COVID. Long COVID is still somewhat of a black box—there's a lot we don't know about it. We don't fully understand how many of the symptoms are truly associated with COVID, why they occur, or how to address them. In the U.S. and other northern countries, it's estimated that in the short term—three to six months—up to 57% of COVID patients may experience long COVID. However, these percentages tend to decrease over time.

My views have not changed, I believe there is a need to better understand and treat long COVID. We don't have robust data from most parts of the world. In Peru and Africa, there have been efforts to conduct studies, and we wanted to initiate a study across Latin America as well. But, to be honest, this is still pending. With this article, we hoped to promote a global effort for surveillance, research, and collaboration to better understand and manage long COVID. While there are some studies happening in different parts of the world, we still lack the comprehensive, collaborative research that's needed. I hope that through the WHO, as there are some ongoing discussions, this can eventually happen.

Barr: Definitely. That brings us to our next question. Will you discuss your efforts at looking at funding for COVID-19 research in low– and middle–income countries around the world, how you and others have tried to shed light on this issue, and what you feel the priorities of the scientific community should be in this regard? There are a lot of opinions on this issue.

Garcia: Well, as I mentioned, during the pandemic, instead of having a truly global collaborative effort, everyone was working independently with their own resources. Even though this was a global issue and we were all facing the same problem, funding for research initiatives in Low resource settings was incredibly difficult to secure. It would have been much more effective to approach this as a collaborative effort, like the SOLIDARITY trial.

Early in the pandemic, I wasn't alone in recognizing this issue. I received a call from colleagues around the world about creating a coalition, which eventually became the COVID-19 Clinical Research Coalition. This group, primarily from low- and middle-income countries, began discussing how we could support each other and make our voices heard.

One of the first things we noticed was the disproportionate support for COVID-19 research in the Global North, with almost nothing for the Global South. We made it clear that only 5.5% of all research funds were going towards COVID-19 research in low-resource settings. Most of the networks were concentrated in Europe, the U.S., and similar regions, highlighting significant inequities. We started this coalition as a platform for advocacy and knowledge-sharing: "What are you doing? Why don't we share problems and solutions for ethical research in our countries?" We formed working groups and sought funding, but securing financial support was difficult. However, we emphasized the need for global investment in clinical research capacities in low-resource settings—capacities that should be maintained during peacetime and be ready to mobilize during emergencies and pandemics. It's far more effective to have existing infrastructure that can be adapted as needed, rather than starting from scratch in the middle of a crisis.

Running the SOLIDARITY trial, for example, was very challenging, and now, with interest in COVID-19 waning, it's even more difficult to maintain momentum. So, we decided to evolve the COVID-19 Clinical Research Coalition into what we now call CERCLE (Coalition for Equitable Research in Low-Resource Settings). We recently launched CERCLE in São Paulo at a meeting of GloPID-R, a group of funders focused on making funding more rational and coordinated. While they represent the funders, we are the researchers.

CERCLE is now focused on ensuring that the global research response to infectious diseases is driven by the needs of low-resource settings. I believe this is the right approach. We need to build real networks that include low-resource settings and address problems relevant to those countries. This is an investment that pays off during emergencies, when those resources and networks can be quickly mobilized for a more efficient response.

I'm currently part of the advisory board of CERCLE, representing one of the voices from Latin America. The board also includes members from Asia, Africa, Europe, and the U.S. Our goal is to prepare ourselves and build this coalition so that research can be equitable. We all share vulnerabilities, and that is the essence of global health—we share vulnerabilities and should strive to share solutions. But for this to happen, there must be investment in countries that currently lack the necessary capacities. This isn't about paternalistic solutions; we need to empower our countries and work together—from the bottom up, from the top down, and from all sides. It's a collective effort.

Barr: Definitely. How did your training and interactions with the Fogarty International Center throughout the years prepare you for tackling the pandemic?

Garcia: Well, I think I've been not just lucky, but privileged to have had the opportunity to receive a scholarship that allowed me to train in the U.S. I trained in internal medicine, infectious diseases, and eventually, I saw the light and transitioned into public health. I always wanted to return to my country because there's so much need here, and that's why I work here. My experience, not only through the training provided by Fogarty but also the support through its grants, has allowed me to build networks—first with my mentors, then with colleagues at my level, and eventually with my mentees, many of whom have also been part of Fogarty programs. Right now, I'm collaborating with my first mentee, who is now an Associate Professor at Yale University.

The opportunity Fogarty provided has been life-changing for me, and I believe it has also impacted many people around me because I've been able to use these networks to advance important work. During COVID, this was particularly crucial. I knew people from UCL and other parts of the world, even in the context of the Clinical Research Coalition. It was like, "Who do you know in Africa? Oh, I know these people who were also part of Fogarty." It's not just about the training; it's about the additional funding, the networking, being part of something bigger, and creating capacity. Fogarty created capacity for me, and now I'm doing the same for others. That's a huge difference. I'm very thankful to Fogarty, and I hope it continues forever because it's leaving a legacy for a truly global world. Fogarty is creating global health citizens, and that's incredibly important.

Barr: Is there anything else? We're running out of time. Is there anything else that you'd like to share about your COVID-19 research in the past few months, what you hope to do, or any other experiences we haven't covered yet?

Garcia: Well, one final thought is that it's very challenging to work on anything related to COVID right now because governments, funders, and people in general just want to move on from this dark chapter. Yet here in Peru, we're going through a sixth wave. It's not as lethal, but we're still seeing some deaths. It's crucial that we push to learn from what COVID has taught us. That's why we're continuing to work on lessons learned, particularly for indigenous populations, and exploring the impact on HIV. What damage has been done? How can we make our health services more resilient? That's our focus.

Another critical area is preparation for the future. I'm involved in advocating for the pandemic treaty, a vital global document that should guide how countries prepare and respond, ensuring we don't see the same inequities we witnessed during COVID—like in vaccine distribution and access to supplies. Despite all the talk of solidarity during the pandemic, we didn't see much of it in practice. I'm part of the advocacy efforts for the pandemic treaty, pushing to ensure the voices of low-resource settings are heard. I'm also committed to building research capacity in these settings to address our own needs and be ready for a global response.

Lastly, I'm focused on how Latin America, with all its inequalities, political instability, and cultural challenges, can do better next time. These are the issues we're working on as a group. I think it's essential. We may want to forget about COVID, but it would be foolish to do so. We need to learn the lessons and be ready for the future.

Barr: Well, thank you so much for all the work that you've done and continue to do, and I wish you and everybody all the best. Thank you again for speaking with me.

Garcia: Thank you very much, Gabrielle. Thank you.

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