

## **Proceedings of a Virtual Seminar**

### **Lessons learned from the epidemiology and control of the COVID-19 pandemic in the Americas: the perspective of field epidemiologists**

**Participants:** Maritza A. González (Host), Franklyn Edwin Prieto Alvarado, Wanderson Kleber de Oliveira, Xiomara Badilla Vargas, Melissa Marzán Rodríguez, Patrick Dély, Jacques Boncy, Ronald Skewes Ramm, Víctor Cárdenas, and Marjorie Pollack (Moderator).

#### **Abstract**

On December 12, 2022, a panel seminar organized by the American Journal of Field Epidemiology (AJFE) was held with the enthusiastic support of the National Institute of Health of Colombia. More than 200 professionals from Colombia, Peru, Brazil, El Salvador, Canada, the USA, Ecuador, Costa Rica, Chile, and Mexico participated. The panelists, moderated by Dr. Marjorie Pollack, member of the AJFE Editorial Board and associate editor of ProMED, presented the epidemiological characteristics of the pandemic in Colombia, Brazil, Costa Rica, Puerto Rico, Haiti, and the Dominican Republic, as well as the public health response with which it was responded to mitigate and control it. The panelists emphasized the value of the preparation provided by the existence of field epidemiology training programs, the existence of a response plan, of establishing good communication with decision makers to make them collectively. The Costa Rican experience of using epidemiology to facilitate the provision of health services to patients with COVID-19 was shared. Likewise, the panelists emphasized that the misinformation, spread on the internet and some other means, had a negative impact, and the experience of educating those working for the news media was shared. It was commented that greater agility is needed to respond early to events that could lead to a pandemic. The panelists added the pandemic highlighted, more than ever before, the importance of having appropriate communication strategies to inform the public.

**Key words:** COVID-19, pandemic, public health surveillance, Americas

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## Introduction

On December 12, 2022, under the auspices of the National Institute of Health (INS) of Colombia, our journal held a virtual seminar titled "Lessons learned from the epidemiology and control of the COVID-19 pandemic in the American continent: the perspectives of field epidemiologists." with the participation of more than 200 professionals from Colombia itself, other countries of the region, and countries beyond. Speakers were invited to briefly present the descriptive epidemiology and control of the pandemic in their respective countries, and answer questions about their presentations, as well as take part in a panel discussion.



*Dr. Maritza A. González, FETP Colombia and REDSUR coordinator welcomed the participants*

Dr. Maritza A. González, coordinator at the INS of the Colombian FETP, graduate of the same program and coordinator of the South American Network of Field Epidemiology (REDSUR) welcomed the participants to the virtual seminar. The seminar used the INS subscription to the Zoom platform and with the support of INS staff, among them Dayner Vacca, who obtained a list of attendees and helped with moderation, specifically consolidating the questions. In addition, the INS made a recording of the

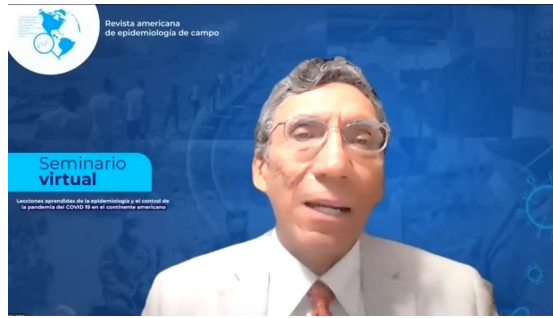
seminar, which is available at this link: <https://1drv.ms/u/s!AroOY5x3QmBy12QWDawitXsduJdY> The meeting included simultaneous translation between English and Spanish provided by translators hired by the INS.

Dr. González, on behalf of the INS, explained that the event was important for the surveillance of COVID-19 and for field epidemiology, and introduced the seminar moderator, Dr. Marjorie Pollack, an internist who graduated from the US program, the Epidemic Intelligence Service. Dr. Pollack is currently assistant editor of the emerging disease monitoring program (PROMED) and among her various assignments while working at the CDC was being the first FETP resident consultant in Peru.



*Dr. Marjorie Pollack, assistant editor of PROMED, moderated the seminar*

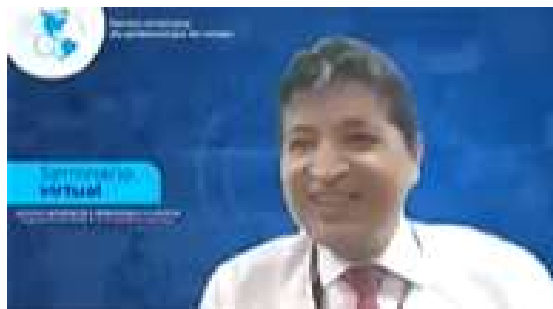
Dr. Víctor Cárdenas, editor of the American Journal of Field Epidemiology made a brief presentation of the journal, acknowledging in particular the role of Dr. González in achieving the successful organization of the seminar, and recalled that the objective of the seminar was to share factual information on the epidemiology of the pandemic and reflect on the lessons learned from its epidemiology and control so as not to repeat mistakes in the future in the face of new pandemics, inviting the speakers to publish their presentations in the journal alongside the proceedings of the event.



*Dr. Víctor Cárdenas, thanking Dr. González for organizing the event and the participants for attending.*

The following speakers presented at the seminar: Dr. Franklyn Edwin Prieto Alvarado (Colombia), Dr. Wanderson Kleber de Oliveira (Brazil), Dr. Xiomara Badilla Vargas (Costa Rica), Dr. Melissa Marzán Rodríguez (Puerto Rico ), Drs. Patrick Dély and Jacques Boncy (Haiti), and Dr. Ronald Skewes Ramm (Dominican Republic).

The first speaker was Dr. Franklyn Prieto, who is a graduate of the FETP of Colombia and is currently deputy director of Surveillance and Risk Analysis at the INS, and recalled that public health surveillance must be understood as an essential public health function, as instrument for service management and development of health policies for the entire population at all subnational levels, guaranteeing security with a vision of a single health, and that to the extent that it meets these requirements it becomes an essential service as it is any other as can be thought of utilities such as electricity, water, roads or transportation.

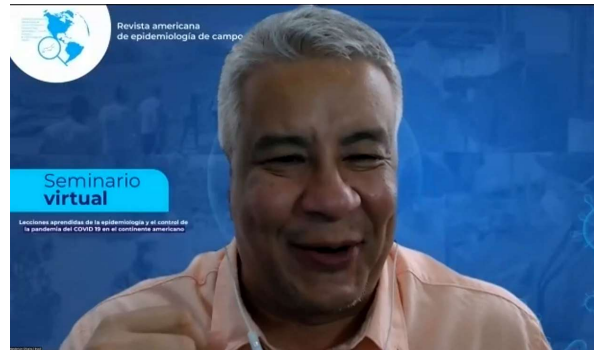


*Dr. Franklyn Prieto, subdirector for Surveillance and Risk Analysis at INS speaking about the COVID-19 pandemic in Colombia*

“Information provided by public health surveillance during the pandemic such as mathematical modeling or case mapping, or genomic information on SARS-CoV-2 variants provided useful information for

decision making” Dr. Prieto stated, adding that the information collected by the COVID-19 surveillance system in Colombia was useful and that it has the advantage of being open and digitally available. Regarding the training of resources in field epidemiology, Dr. Prieto recognized the role of the FETPs in the response to the pandemic and mentioned that the demand to which they were exposed reduced the mental health of the people assigned to surveillance tasks. and response and advocated for improving the training of epidemiologists in risk management. To a question about the achievements of the predictions at the beginning of the pandemic, Dr. Prieto replied that the uncertainty that existed at the beginning was such that perhaps there was a lot of exaggeration of the risk and that in any case it served to adopt policies of social distancing to curb the pandemic, but that timely generated information must be used to make the modeling more useful. Another question asked Dr. Prieto about the way in which INS kept the open data private: he said that certain elements of the records were masked whenever the identity of the people could be disclosed in some way. He also answered a question about using the lessons learned during past pandemics (e.g., HIV, or cholera) and replied that sometimes one does not realize the wealth of accumulated experience and knowledge the institutions have accrued.

It was the turn for Dr. Kleber de Oliveira, a graduate of the FETP of Brazil, later becoming director of the FETP, who has obtained postgraduate degrees in epidemiology and public health and was its director and served as vice minister during the first months of the COVID-19 pandemic. He started his presentation with the remark that “it all starts with preparation of the human resources.”



*Dr. Wanderson Kleber de Oliveira, was vice-minister of Health during the first months of the pandemic, speaking about the the epidemiology and response in Brazil*

He said "although there was a centuries-old tradition of outbreak response and field research in Brazil, it was not until the year 2000 that this was systematized in the Ministry of Health with the creation of the FETP (Programa de Treinamento em Epidemiologia Aplicada aos Serviços do Sistema Único de Saúde da Secretaria de Vigilância em Saúde) which, since its creation, had carried out 370 field investigations of epidemic outbreaks in Brazil. The second element of the preparation was the creation of strategic information centers for surveillance and response, the dissemination of information, which in compliance with the 2005 International Health Regulation designates national and subnational focal points for epidemic response.

At the beginning of 2020, before any cases of COVID-19 were reported in Brazil, surveillance was activated, and the Emergency Operations Center declared an state of alert engaging in reviewing data from China and implementing a national response plan. The first case was confirmed in a case on January 27 in Belo Horizonte in a person who came from China. On February 3, a national emergency was declared with the objective of controlling transmission to gain time in obtaining equipment and materials. An operation to repatriate Brazilians in China was also set up. 121 cases had been reported as of March 12, 2020 when the first death from COVID-19 was reported. The first measures of social distancing and other non-pharmacological measures, fundamentally the restriction on transportation, resulted in a flattening of the epidemic curve. In a following line graph, Dr. Kleber de Oliveira showed

that in mid-March 2020, when the existence of a state of community transmission was declared, and “the transmission could not be stopped.”

At the end of the first semester of 2020, 1.5 million cases and 64 thousand deaths had been reported. In the same graph, it showed that at the end of 2020, 7.7 million confirmed cases and almost 200,000 deaths from COVID-19 had been reported.

The following line graph showed the increase in mortality, but not as much an increase in morbidity due to the occurrence of the gamma variant of SARS-CoV-2, with 11.5 million cases and 557 thousand deaths in the first half of 2021, adding to 14 million cases and 423 thousand cases at the end of 2021. The following graph shows that in 2022 there were many more cases and fewer deaths: 10.5 million cases and 54 thousand deaths in the first semester that added up to 15 million cases and 71 thousand deaths by the end of the 48 week of 2020.

Dr. Kleber de Oliveira showed in a following line graph the incidence and mortality rates per week and noting the rates for week 48 of each year for comparison, and presented information on the predominant variants: the classic, gamma, delta, omicron, and omicron variants, which are consistent with the changes observed in Colombia, Chile and Argentina. He added that not only the genetic changes of the agent but also the behavior of human beings is important: among 214 million Brazilians there are still 34 million without a single dose of vaccine against SARS-CoV-2. He pointed out that in order to reach 70% coverage, 202 million more doses need to be applied at the end of 2022.

To summarize, Dr. Kleber de Oliveira reflected on the successes and failures, recommendations and knowledge gaps as follows: “the distinction between a pandemic and public health emergency situation of international concern needs further elaboration.” In addition, he said, “it should be considered that there are epidemiological and operational distinctions” in the use of those terms, and that the “recognition of pandemics is better understood when there are jumps between species”, as Dr. Prieto discussed in his presentation on one health. Another lesson learned is “the need to communicate well

with decision makers by making them part of a collective exercise”. This is important to be learned by field epidemiologists.

The first question for Dr. Kleber de Oliveira came from the moderator, Dr. Pollack, who asked about the management of the political situation during the course of the epidemic. Dr. Kleber de Oliveira said that now as a result of the elections, President Lula is doing diplomacy to take office in January 2023. He noted that “The problem with the politicization of the pandemic is that it prevents a coordinated response at the national level, creating the inability to communicate in a homogeneous way with all levels of management of public health services. For example, during the pandemic we had four ministers of health!” Dr. Pollack commented in this regard, that in the US there were similar challenges. The second question asked about how the pandemic in Brazil fares in relation to the pandemic in other countries. Dr. Kleber replied that differences in reporting should be considered, for example, in case definitions: in Brazil, suspect cases are reported. He added that based on such fundamental differences, “perhaps it is more important to look at the trends and use triangulation techniques based on different sources of the information and be careful with the comparisons.” He added: “There are many things to learn, and the data needs to be made accessible, which was stopped in Brazil, for which the press began to fill that void left by what the public health services should have done.”



*Dr. Xiomara Badilla, Costa Rican Social Security Fund (Caja) public health surveillance officer, talking about the pandemic*

Dr. Xiomara Badilla Vargas, head of Epidemiological Surveillance of the Costa Rican Social Security Fund (CCSS), graduate and later director of the FETP of Costa Rica, in her turn presented the Costa



Rican experience in response to the pandemic. She began her presentation with an overview of Costa Rica, as a small Central American country, inhabited by five million people, demographically post-transitional with a barrel population distribution, slightly fewer children than young adults, and with a unique health care system that guarantees universal access to services, under the guidance of the Ministry of Health (MoH). The MoH provided the standards and regulations through the pandemic, which are flexible since, for example, the definition of cases was modified 26 times, then in combination with the role of the CCSS, allowed as a whole, a better management of the services.

As in other countries, the first case of COVID-19 occurred in an international traveler in March 2020. Dr. Badilla commented that in Costa Rica there was already preparation and experience in managing the 2009 H<sub>1</sub>N<sub>1</sub> pandemic influenza, using sentinel surveillance sites, for example. Social distancing measures were implemented that maintained a low level of transmission for six months and made it possible to better prepare patient care, for example, the conversion of intensive care beds for COVID-19. The lethality among admitted COVID-19 patients remained by August 2020 at 1%, the lowest on the continent. The government's support through the Proteger program was key, by granting supplemental income for 4 months to more than 300,000 workers and business owners that closed due to the pandemic.

Dr. Badilla elaborated on the way in which epidemiology was applied into health services management, by creating indicators such as the maximum attack rate that would keep hospital occupancy within the limits of existing capacity and other indicators that were disaggregated by regions and cantons allowing decisions at the local level, as illustrated in the presentation of Dr. Badilla by series of maps and graphs.

77% of deaths from COVID-19 occurred in people 60+ years of age. Also, most had as comorbidities chronic diseases. Indicators of hospital occupancy by severity category were used and in collaboration with academic centers to obtain the effective reproductive number or  $R_t$  was continuously evaluated and the analysis of the impact of non-pharmacological interventions, known as operation 'hammer',

followed by the relaxation of these measures. In addition, the surveillance data made it possible to assess the progress of the vaccination program.

Among the lessons learned, Dr. Badilla highlighted the following. First, the need for an articulation between those in the technical and political branches of government in order to take decisions to appropriately carry out emergency response such as these. Second, due to the work done with the FETPs in the past 20 years, there was a network of trained human resources. Third, in agreement with what Dr. Prieto mentioned, once the initial uncertainty was left behind, then the predictions by the models were very close to the observed values. Fourth, that universal access to health services in Costa Rica, made it possible to provide the health services required by the population, let's say in PCR diagnostic tests, and improve the management of services, including the availability of hospital beds. Finally, she concluded that the management based on epidemiological data made it possible to limit the impact of the pandemic.

To start with the question and answer session, Dr. Pollack asked Dr. Badilla if Costa Rica had difficulties obtaining the vaccines, to which Dr. Badilla replied that Costa Rica was one of the first countries that signed an agreement with one of the producers, Pfizer, and that made it possible to ensure the supply of the vaccine for a large proportion of the population and the vaccine was administered according to risk-groups by December 2020. More recently, Dr. Badilla added, “there have been more difficulties in delivering vaccinations to children and young adults, more for reasons of acceptability promoted by anti-vaccination groups, and to fight misinformation, educational campaigns have been carried out.”

A second question for Dr. Badilla inquired about the availability of intensive care beds and consequently the low fatality rate of COVID-19 in Costa Rica. Dr. Badilla explained “that the information available through the daily monitoring of the indicators contributed to double the capacity of available hospitals, including the creation of a reference unit set up in record time, which made it possible to accommodate the demand as the pandemic developed. The predictions also allowed us to relax social distancing. The

most important thing was the interrelationship between hospital management and community epidemiology.”



*Dr. Melissa Marzán Rodríguez, epidemiologist with the Puerto Rico Department of Health presenting on the COVID-19 pandemic and pandemic response in the island*

Dr. Melissa Marzán Rodríguez, in her role as epidemiologist for Puerto Rico’s Department of Health, presented a review of the lessons learned. Dr. Marzán presented an updated epidemic curve up to December 11, 2022 and stated that “at least 1,109,469 unique confirmed and probable cases of COVID-19 had been reported, with an attack rate of 35%.” The curve annotated in its timeline five epidemic waves. The introduction of cases was in March 2020, but the first wave of that year would reach its peak in December just before the vaccine was available. In April 2021 there was a second wave associated with the alpha variant. Subsequently, between August and September 2021, a third wave associated with the delta variant was shown, followed by the fourth wave at the beginning of 2022 associated with the omicron BA.1 variant and finally, she said “since April of this year, the different omicron variants (BA. 2, BA.2.12, BA.4 and BA.5) have meant that, despite the variations that have occurred, the transmission of SARS-CoV-2 in Puerto Rico remains at a high level.”

Using a line graph Dr. Marzán demonstrated the type of monitoring the occupancy of general and intensive care beds by COVID-19 patients, and the graph clearly five waves are seen that coincide with those described above. Dr. Marzán highlighted that the highest bed occupation by COVID-19 was seen at the beginning of 2022 which was associated with the omicron variant. Similarly, the line graph of mortality also showed the same increases associated with the different variants, with three increasingly

larger waves in 2020 representing higher numbers of deaths. She added that “the increase in mortality associated with omicron BA.1 was abrupt and of shorter duration.” The age distribution of the 5,412 deaths from COVID-19 in Puerto Rico shows that 81% of them occurred among people aged 60+. Dr. Marzán pointed out that “such evidence led to focus actions and resources on this age group.”

The epidemiologist of Puerto Rico pointed out that “on the Island, the community transmission indicators prepared by the CDC have been used since the beginning of 2022 and currently the island has a level of transmission considered moderate in terms of severity measured by the occupancy of hospital beds and deaths.”

The continuing monitoring and analysis of public health surveillance data to which the COVID-19 pandemic we have become used to as epidemiologists during these three years should make us appreciate more the surveillance systems in place that generate these data. Public health surveillance has been active in the 78 municipalities, in addition to special surveillance systems in place at schools, ports of entry, facilities such as shelters, hospitals, as well as mortality and genomic surveillance, and a special system in place in support of employers. In addition, there is a special surveillance system based on the home testing established in December 2021 to find out about the results and to isolate in their own homes those persons who test positive. The experience of home testing has been successful with more than 30 thousand participants. In addition, the Department of Health has established testing centers, for distribution of home tests, and Test-and-Treat centers with the purpose of avoiding losses to follow-up, so after taking the test, those testing positive were evaluated by a doctor and start treatment with antivirals.

“COVID-19 has been trending on the mass media for the past three years, so we have carried out massive educational campaigns to meet the information needs,” said Dr. Marzán. In addition to the development of materials for the public, “the case data has been available 24/7” and an ongoing effort to meet the training needs of health personnel have been maintained. Such activities contributed to the

successful introduction of vaccination against SARS-CoV-2, for which almost 8 million doses were administered, to achieve 80% coverage for the primary series and 55% for booster doses, although only 7% have received the bivalent vaccine. Dr. Marzán explained that the health education programs on the subject of vaccination have been especially directed at the elderly and with chronic diseases or obesity. Also, as part of the response to the pandemic, public policies have been adopted to regulate public gatherings, the use of masks, the closing and opening of schools, and requirements were established to document vaccination in passports and to enforce vaccination policies. Finally, Dr. Marzán mentioned that the early rise of influenza and respiratory syncytial virus at the time of COVID-19 since September 2022 highlights the importance of learning to communicate risks.

The participants asked Dr. Marzán what influence natural disasters had on the management of the pandemic. She recalled that at the end of 2019 there were earthquakes in the south of the island and that they occurred again in May 2020 in the midst of the pandemic. She explained that it was a challenge since “during an earthquake people are safe outside their homes, but because of the pandemic we were asking them to stay home.” She added that to deal with those challenges, a successful approach consisted in working with grassroots community organizations to communicate the risks of COVID-19. In 2022 they experienced a hurricane that left many people homeless and many more without power for several weeks. Those affected were housed in places where COVID-19 can easily spread, so protocols for masking and testing were established. At about the same time, the public health alert for monkeypox was issued. They were able to respond more quickly to these emergencies, emphasized the epidemiologist from Puerto Rico, who concluded by saying that “it must be recognized that this will continue to happen and capacity must be created within the health department to respond to the multiple health emergencies that can arrive.”

Dr. Pollack repeated to Dr. Marzán the question asked to Dr. Kleber de Oliveira, and given that Puerto Rico is an associate state of the United States, she asked what was the influence of the politicization of the pandemic? In the opinion of Dr. Marzán, especially during 2020, there was no politicization of the

pandemic in Puerto Rico: non-pharmacological measures, the closure of schools and non-essential workplaces, or remote work were universally adopted, or the use of masks. “Very strong work was done with community organizations,” she said. More recently, however, anti-vaccine groups have undermined public support, “creating doubt and misinformation.” Dr. Marzán added that everything we do in epidemiology has political significance and although we do not learn it or it is not taught properly, which is a lesson to be learned, the epidemiologist must know how to advocate and generate public policy.”



*Dr. Patrick Dély, who led the pandemic response in Haiti, speaks about the epidemiology and the response to the COVID-19 pandemic*

Dr. Patrick Dély, who until recently was the director of Haiti's FETP, made a joint presentation with Dr. Jacques Boncy, who served for many years as director of the Haitian Public Health Laboratory. Dr. Dély reminded the audience that Haiti has a population of 12 million and shares the island with the Dominican Republic. He said that the first case of COVID-19 appeared on March 19, 2020. Until November 2022, Dr. Dély added, 33,874 cases had been confirmed, 5,682 hospital admissions and 860 deaths, for a mortality of 2.5%. Cases of the disease occurred throughout the country, apparently affecting more densely populated areas. Fewer than a dozen cases per day are currently reported in the country.

Dr. Dély pointed out that while higher morbidity was observed among young adults, mortality was concentrated in older people, of both sexes but with a slight predominance among men. He added that hospitalization due to COVID-19 never exceeded 50% of the available beds and that it was practically 0% at the time of the presentation.

He presented in a series of histograms and frequency polygons the number of suspected and confirmed cases of COVID-19 per week in one axis, combined with a line graph with the percentage of positivity by PCR on the other axis. The graphs portrayed the evolution of the pandemic between 2020 and 2022. In the graphs he showed several waves that were due, he said, to the variants of SARS-CoV-2 and to elaborate on this, Dr. Dély gave the floor to Dr. Jacques Boncy who stated that "after the introduction of the virus in February 2020, a positivity of more than 60% of the collected specimens, was observed, and after the first two waves, each of the subsequent waves was due to a new variant."



*Dr. Jacques Boncy presenting the results of public health surveillance including genomic surveillance to track the pandemic in Haiti*

The histograms of isolates by week showed the first wave occurred in March and Dr. Boncy said "it was due to the alpha variant B.1.478, which also predominated during the second wave from December 2020 to January 2021." He added: "The introduction of the gamma variant P1 or B.1. caused the third wave in May to July 2021, while the fourth wave that occurred in December 2021 to January 2022 was associated with the delta variant B.1.612.2." He said that "there has been a lot of morbidity from the omicron BA.1 variant which is due to a longer duration of positivity. The cases due to omicron and its different variants, although they cause a lot of morbidity, produce a disease of less severity and lethality." Dr. Boncy shared the results of studies carried out among people at risk of HIV infection and, regardless of having a positive or negative HIV status, there was an upward trend in the proportion with antibodies against SARS-CoV-2 since 2020, reaching above 60%, which, he added "can perhaps be extrapolated to the general population." Dr. Boncy emphasized that an effective response to this

pandemic required installed laboratory capacity, which Haiti had since and made possible to detect when COVID-19 started and then monitor changes in the agent. Dr. Boncy remarked that such capacity was strengthened by investments made in public health surveillance and testing capacity of laboratories for influenza as part of the network established by the WHO and its regional reference laboratories at CDC which allowed the country to obtain surveillance equipment and training. He stressed “we were able to quickly adapt to [such capacity] to the surveillance of COVID-19.” The second lesson learned, from the point of view of the public health laboratory, has to do with procurement of supplies, Dr. Boncy said “getting the supplies was extremely difficult. It was important to networking with other laboratories, especially for genetic sequencing work. In our case, we work with the WHO, PAHO, FioCruz in Brazil, the Gorgas Institute in Panama, among others. Maintaining alliances between the public and private sectors is very important, since many laboratories are private.” Finally, Dr. Boncy concluded that “the scientific component of public health surveillance is very important to analyze and interpret data correctly, about trends and other patterns of occurrence, and to do the necessary research.”

Dr. Dély recapped on the lessons learned through these three years of the pandemic: “in the first place,” he said, “we were prepared in advance to the introduction of the virus in the country, as well as governance, the organization of the surveillance system and the formation of working teams.” He added: “The Haitian government formed taskforces that led to the formulation and publication of a working response plan even before the arrival of the pandemic.” He stated that “The experience with avian influenza came in handy for it.” Screening was done to identify the first cases and their contacts were studied. “Having taken unusual measures led to mitigating the impact of the pandemic,” he added. The preparation and coordinated work, the synergy between different sectors and viral surveillance were key to the impact that was had in a highly vulnerable country. Sites where transmission was occurring were identified and multidisciplinary teams were dispatched to limit the spread.” The challenges we face include according to Dr. Dély, improving: “1) the leadership of the Ministry of Public Health, 2) health education for large sectors of the population that still do not believe in vaccination, 3)



vaccination coverage, which is still less than 2%, 4) cooperation between the public and private sectors, 5) screening and diagnostic capacity and 6) understanding through studies of why the catastrophic levels that the pandemic was expected to produce in the country were not observed, for example the number of deaths was less than 1,000 people.”

Dr. Pollack began the round of questions for the presenters from Haiti, acknowledging the value of having provided detailed results of laboratory surveillance, asking “why there were no good vaccination results and whether they had received vaccine donations?” Dr. Dély said that vaccines donated by the US and COVAX had been received, but the problem was rather due to vaccination refusal, and that continues to be a challenge for control. In another question, the speakers were invited to explain the fact that mortality was so low, given that according to the serological survey presented, more than 50% of the population had been infected. Dr. Dély offered as explanations that Haiti's population is younger than other countries, meaning that “most of the people who got infected had a mild illness, without even needing to seek medical attention.” Dr. Boncy added that most of the population lives in rural areas, probably with housing with good ventilation and this is different from what is seen in big cities. He added that traditional medicines are used when the diseases are not serious, and care is not sought in clinics or hospitals. Dr. Boncy added that this phenomenon has already been seen in West Africa, where relative low mortality from COVID-19 has been seen, and this is a hypothesis to be explored. Dr. Pollack relied on a question from the audience about the existence of studies carried out in Haiti to document excess mortality associated with the pandemic, to which Dr. Dély replied that such a topic of research is among the existing challenges and that it deserves be studied.



*El Dr. Skewes participó en el seminario dando un informe del impacto y respuesta a la pandemia de COVID en la RD*

Dr. Ronald Skewes Ramm, a graduate of the FETP of the Dominican Republic and currently Director of the General Directorate of Epidemiology of the Ministry of Public Health and Social Assistance, then presented on the epidemiology and control of COVID-19 in the Dominican Republic. He began his presentation by noting the difficulties that exist when there is an emerging disease, "for which there is no knowledge base, no evidence and therefore there is great uncertainty as well as a need for information to the public" said Dr. Skewes. Social distancing measures worked to maintain a relatively stable incidence from the start of case reporting in the Dominican Republic until July when, as a result of the elections, such measures were relaxed. The line graph of cases per week combined with specimen positivity for SARS-CoV-2 shows a decreasing trend with successive waves, with the exception of the wave associated with the omicron variant in early 2022. The data oriented by place of residence, he said, show that transmission does not remain uniform, but that there came to be interruption of transmission in a good part of the municipalities. When the isolates of the different variants are plotted in bars by week, changes in the circulating strains are observed, for example, "recently it is the omicron strain X.BB.1.5 that is predominating in the Dominican Republic," said Dr. Skewes.

To reduce uncertainty, Dr. Skewes said, one, as an epidemiologist, has to provide information. We did this through the daily COVID-19 Bulletins, as well as internal communications for decision-makers, special ones for the tourism sector which is important for the Dominican Republic, weekly bulletins, and

of course presentations prepared according to demand. In addition, this is combined with field research, such as the serological studies done in 2021 and 2022 to see what proportion of the population was immune. It was clear to us that scientific evidence must be provided to inform decision making. "When it was observed that more than 90% of the population aged 18 and over had antibodies, it allowed the country to start a process of opening up."

Another way to reduce uncertainty said Dr. Skewes, was to create digital platforms on the internet from 2020 to make data available including its geo-referencing. Although there was an expectation that academia would collaborate in the analysis of the data, there was no such success.

Among the lessons to be learned from the pandemic is the selection of the indicators to be used. Our experience indicates that perhaps those that measure trend are the most important, whether it is the weekly incidence per 100,000 or the percentage of hospital occupancy. There was pressure from the press or other media to use indicators that were not stable, such as daily positivity. The press or other media sometimes misinterpret that the change in use of an indicator is to hide something. Which ones need to be studied to indicate the time within the course of the pandemic when a given indicator is most useful. Also, there is uncertainty about the effectiveness of public health measures, school and non-essential job closures, or other social distancing in the pandemic. With respect to mathematical modelling, what we needed were predictive models since many models (results) offered were short predictions, hence matching what was already happening.

Public health communication is one of the most critical aspects of the pandemic response," Dr. Skewes stressed. Information must be presented in a simple way that the public can understand. For example, Dr. Skewes said, press conferences were held that were both informative and educational, explaining to journalists how the indicators are calculated and interpreted. A way had to be found to coordinate and communicate with all levels of the health sector and the government in general, including health service providers, which in the case of the Dominican Republic is not the Ministry of Public Health and

Social Assistance, but the National Health Service. It is better to have this coordination with the different entities before there is a crisis or emergency, it was an advantage in our case to have these meetings already established on a regular basis. Digital platforms can help us provide this information to the other participants in the surveillance systems to facilitate communication. "The pandemic showed us the cross-sectoral nature of the implications of the recommendations one makes in public health" said Dr. Skewes.

Dr. Skewes concluded by saying that "countering uncertainty and combating misinformation and false reporting requires good communication, facilitating that communication with the information available on the platforms, and that the information that is communicated is of quality, which depends on technical capacity." He added that it is important to have well-trained human resources, "The response to the pandemic rests on the shoulders of those who have been trained in field epidemiology," he added. Finally, he said that it must be documented, so that others can learn from it, "that is something I learned when I did my FETP."

Dr. Pollack relayed to Dr. Skewes a question asked about the effectiveness of public health communication during the pandemic, to which the epidemiologist from the Dominican Republic replied that he recalled a study done in Germany that compared the effectiveness of communication against other public health measures and the importance of communication was greater than that of other actions.

Dr. Pollack asked him about the impact of tourism as a factor that one would think would increase transmission. Dr. Skewes said that at the beginning of the pandemic there was a lot of communication with the national liaison centers about the arrival of suspected cases either upon arrival or return from tourist destinations in the Dominican Republic. I might add that there was no apparent effect of tourism judging by the variations according to the volume of visitors, for example, that in popular destination areas such as Punta Cana resulting in more cases.

## Panel Discussion

After the presentations of each panelist, the following questions were asked to all the speakers. The first question was about the need for changes to the International Health Regulations to speed up WHO's response and allow them to study an epidemic on the spot before it can spread to the rest of the world, as happened with COVID-19. Dr. Prieto replied that "at the most recent WHO Assembly, changes have been proposed to speed up notification and response. It is proposed that external commissions can study together with nationals, because part of China's resistance was that other countries should evaluate the health of China's population. Finally, it is proposed that networks be built and that diagnostic resources be made available in all countries".

On the issue of collaboration, Dr. Skewes added that "academic public health institutions should be involved in all these processes."

Dr. Marzán noted that there are still language barriers that prevent the immediate distribution of scientific information to all regions of the world as there is a considerable delay between the generation of information and its translation and making it accessible in all regions. Dr. Marzán considered that during the pandemic this process was more agile, but its dissemination among the communities must have contributed to the so-called "infodemic" and in future epidemics this should be taken into account.

Participants were asked if the COVID-19 case definition was sensitive enough to be effective through isolation and quarantine, and if confirmation by epidemiological linkage would have been useful. Dr. Marzán answered that "it is true the saying that looking back you always have 20/20 visual acuity, and using more epidemiological criteria helps. This is the case with monkeypox where the epidemiologic criterion has added value to the clinical criterion."

The next question to the panel was “what do you think was done right and what was done wrong in the response to the pandemic?” Dr. Skewes replied that because of the pandemic we have learned to leave our desks and labs and have had to communicate with different audiences and that is something that is important and added "I think we have learned something very important. Communicating has reduced the impact of misinformation." Dr. Dély added that in Haiti we have seen that disinformation can be achieved by working with journalists and other people working in the media, who helped to promote this disinformation, and by focusing on orienting and educating journalists in turn has helped to improve acceptance for example of accepting the designation of hospitals dedicated to COVID-19, as they feared it would put the community at risk.

In Puerto Rico, Dr. Marzán added that "in the pandemic many people had the opportunity to train in field epidemiology." Dr. Pollack interjected that in some ways this answer answered the next question which was “whether you consider that FETP trainees had an important place in the response to the pandemic?” Dr. Dély said that "the first response was to establish COVID-19 public health surveillance by Frontline and Advanced FETP graduates, primarily at borders and among reported cases and their contacts. This has not brought home the importance of building a critical mass of field epidemiologists." He added, "However, we must address the need to create a career path for these trained field epidemiologists to remain in the system. We must also achieve independence for these institutions that carry out public health surveillance, so that they are not at the mercy of the vagaries of politics." Dr. Prieto added that aspects of risk management must be included in the curriculum, as epidemiological competencies are not sufficient to organize a response. "Second," he said, "our programs must have the capacity to share with other countries." Dr. Prieto pointed out that these competencies that must be filled include management skills, that they can manage a field device, how to elaborate a budget, how to establish a logistical route, how to plan the steps of a process, how to establish quality control. Plus the ability to do tabletop simulations."

## Closing

Dr. Prieto closed the webinar by thanking Dr. Pollack for moderating the event. He also thanked the organizers, Dr. Maritza González and Dr. Víctor Cárdenas and the Editorial Board of the Journal, mentioning the concerns of the participants so that this type of reflections could be topics in the journal. He thanked the other panelists from Costa Rica, Brazil, Puerto Rico, Haiti and the Dominican Republic, the participants from Colombia, Peru, Brazil, El Salvador, Canada, USA, Ecuador, Costa Rica, Chile and Mexico, as well as the CDC and TEPHINET.

