Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

COVID-19 in Latin America

Several problems undermine the preparedness of countries in Latin America to face the spread of COVID-19. Talha Burki reports.

Coronavirus disease 2019 (COVID-19) has arrived late in South America. On February 25, 2020, Brazil was the first nation in the region to report the disease. Within weeks, countries across the continent had closed their borders and enforced lockdowns. As of April 14, Latin America has registered more than 65 000 cases of COVID-19. Ecuador, in particular, has been badly affected, with reports of corpses left abandoned on the streets. Pandemic preparedness varies across the region and several countries are particularly vulnerable to a destructive outbreak. For example, Guatemala and Haiti have little more than 100 ventilators between them. Mexico has high rates of hypertension, obesity, and diabetes, all of which are risk factors for severe disease after infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

"It is a very difficult situation", explains Alfonso Rodríguez-Morales, Colombian Association of Infectious Diseases, Colombia. "Obviously the healthcare systems are not trained for coronavirus; we had a little extra time to get ready for the arrival of the disease but some places are really going to struggle." Thus far, Brazil has recorded the largest number of cases—more than 23 000, as of April 13. The country has a good public healthcare system, and it is experienced in dealing with epidemics. The past few years have seen serious outbreaks of chikungunya, dengue, yellow fever, and Zika.

There is also the issue of the favelas, home to around 13 million Brazilians. In the favelas, conditions are crowded and access to clean water is limited. In such circumstances, social distancing and hand-washing are virtually impossible. "The recommendations for preventing infection are based on assumptions that do not apply in the favelas", said Clare Wenham, Assistant Professor of Global Health Policy, London School of Economics and Political Science, UK. "It is hard to see how they will be able to prevent infection or control the virus once it has been let loose." The outlook is similar for slums elsewhere on the continent.

Healthcare in Brazil is the responsibility of the municipalities. This includes pandemic preparedness. It means that matters such as the provision of personal protective equipment, rules on social distancing, and testing arrangements vary. But it also limits the influence of President Jair Bolsonaro, which could work in the country's favour. Bolsonaro has repeatedly minimised the threat of COVID-19 and undermined efforts to enforce social distancing.

After Bolsonaro returned from an official trip to the USA in early March, 24 members of his delegation tested positive for SARS-CoV-2. Instead of going into quarantine, the president attended a public rally. In late March, he issued orders preventing the states from restricting people's movements and removing the requirement for churches to comply with health regulations. Both moves were quickly overturned by the courts. "You have mixed messages in Brazil", said Wenham. "The president is encouraging people to go out and resume their normal lives, while the mayors and governors are stressing the importance of maintaining quarantine".

Bolsonaro is not the only leader whose behaviour has caused concern. In February 2020, Mexico's president Andrés Manuel López Obrado described COVID-19 as "not even as bad as the flu". He subsequently urged Mexicans to visit restaurants and diners. Daniel Ortega, president of Nicaragua since 2007, has not been seen in public since March 12. In his absence, his wife and vice-president Rosario Murillo has co-ordinated the response to the pandemic. She has declined to close schools and shops. Nicaragua is the only nation in Central America to have kept its borders open. Even the local football league has not been suspended. Nicaragua has only registered nine cases of COVID-19, a number experts find implausible and might reflect lack of testing. "We have concerns for the lack of social distancing, the convening of mass gatherings. We have concerns about the testing, contact tracing, the reporting of cases. We also have concerns about what we see as inadequate infection prevention and control", commented Carissa Etienne, director of PAHO, in a virtual press conference.

Experts are more optimistic about Cuba. "Cuba is one of the best prepared locations anywhere in the world to deal with an outbreak", said Wenham. "They have a very strong, integrated healthcare system which can respond the moment an infectious disease is detected." The contrast with Venezuela is stark. "The situation in Venezuela is critical; when coronavirus hits, it is going to be impossible to contain", said Tamara Taraciuk Broner, Human Rights Watch, Buenos Aires, Argentina. "Even in hospitals, there are not the facilities for hand-washing with soap."

Aside from a brief interruption in 2016, the Venezuelan government has not published epidemiological data for several years. The healthcare system has all but collapsed. The once-impressive laboratory system has been looted. Some 5 million Venezuelans have fled. "There is an ongoing humanitarian

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crisis, an access to food crisis, the surveillance system is not running properly, there is very limited diagnostic capacity and very limited access to healthcare", said Rodríguez-Morales. "Now things are going to become even more complicated for Venezuela with COVID-19." It is impossible to know how many cases the country has already seen, though the official tally is 171.

Rodríguez-Morales worries about testing capacity across the region. "In a country like Colombia, we will need to run 500 tests per day", he told *The Lancet Infectious Diseases*. Brazil has the advantage of a sizeable biotech industry. But it is not clear whether this will be enough to meet the expected demand. The health ministry predicts that by the peak of epidemic, Brazil will have to process 30 000–50 000 tests per day. Its current capacity is 6700 tests per day. Diagnostics are mostly centralised in Latin America. "Tests are run by the national institutes of health; very few countries run regional, local, or university laboratories", explains Rodríguez-Morales. "But they are going to have to find ways to increase capacity, and in some places that will be a difficult and complicated task".

An ongoing dengue outbreak, which infected more than 3 million people in the Americas last year, further complicates matters. It is too early to tell how SARS-CoV-2 and dengue virus infection will interact with one another. In any case, addressing two epidemics is a major task. "Brazil has an excellent public health system, but it cannot cope with competing crises", said Wenham. Cases of COVID-19 and dengue are likely to peak at the same time. There are also questions over how vector control can be effectively managed during a lockdown. "We could easily end up in a situation where there is a surge of all vector-borne diseases", said Wenham.

In addition to these problems, Latin America has some of the most overcrowded prisons in the world. Thousands of prisoners have yet to face trial. Brazil alone has incarcerated 773 000 people, one-third of whom are in a pretrial detention. Rates of tuberculosis among prisoners in the country are 35 times higher than in the general population. Haiti's detention facilities have an occupancy rate of 450%. Countries such as Argentina, Brazil, and Chile are taking steps to reduce their prison populations in light of the pending epidemic. Nonetheless, the prospects for South America's prisoners are bleak.

The coming weeks will show if Latin America can cope with the increase in cases of COVID-19, but it is expected that the death toll will be high.

Talha Burki

Infectious disease surveillance update

For more on **Ebola in DRC** see https://promedmail.org/promed-post/?id=7211186

For more on **Influenza H9N2 in China** see http://outbreaknewstoday.com/h9n2-avian-influenza-case-reported-in-guangdong-china-child-25084/

For more on **yellow fever in Ethiopia** see https://apps.who.int/iris/bitstream/handle/10665/331692/OEW14-300305042020.pdf

For more on **measles in DRC** see http://outbreaknewstoday.com/drc-measles-cases-top-42000-in-2020/

Ebola virus in DR Congo

On April 10, a new confirmed case of Ebola virus disease was reported in DR Congo after 52 days with no new cases. The case was a 26-year-old man from Beni, one of the most affected provinces. The country was days from having the end of the Ebola outbreak declared, 42 days after the last patient left an Ebola Treatment Centre. The end of the outbreak is declared when a country goes 42 days without a new case. Since the outbreak began in August 2018, there have been 3454 cases including 2264 deaths.

Avian influenza H9N2 in China

Between March 27 and April 2, a human case of influenza H9N2 was reported in the Guangdong Province, China. The case was a 3-year-old girl from Zhuhai. This year, three cases have been reported, a total of 30 cases since the first reported cases in December 2015. Exposure to the virus is usually from contact with poultry or a contaminated environment.

Yellow fever in Ethiopia

On Mar 3, the Ethiopian Public Health Institute reported three suspected yellow fever cases from the same household in Ener Enor woreda, an administrative district in Gurage Zone in the Southern Nations, Nationalities, and Peoples' Region. Two of the cases tested positive through national testing through a RT-PCR and the results were confirmed by plaque reduction neutralisation testing at the regional reference laboratory in Uganda on March 28. Following the confirmation of the results, an investigation was conducted and 85 suspected cases were identified with two further cases being confirmed, six presumptive positive cases and 77 suspected cases as of April 4. The vaccination campaign has started for the affected and surrounding villages.

Measles in DR Congo

The 2019 measles outbreak in DR Congo has continued into 2020. In the first 12 weeks of 2020, 42 143 cases of measles have been reported including 527 deaths. Since the beginning of the outbreak in December 2018, there has been a total of 353 551 cases including 6558 deaths. Most of the cases are children aged under 5 years old (62·3%). The outbreak is active in western and southern provinces in the Health Zones of Mongala, South and North Ubangi, Equateur, Maindombe, Kongo Central, Kasai, Kwilu and Sankuru. Health Zones in the Eastern province have been affected including North and South Kivu, Tanganyika and Haut Ulele.

Ruth Zwizwai