

# Venezuela's public health crisis: a regional emergency



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The economic crisis in Venezuela has eroded the country's health-care infrastructure and threatened the public health of its people. Shortages in medications, health supplies, interruptions of basic utilities at health-care facilities, and the emigration of health-care workers have led to a progressive decline in the operational capacity of health care. The effect of the crisis on public health has been difficult to quantify since the Venezuelan Ministry of Health stopped publishing crucial public health statistics in 2016. We prepared a synthesis of health information, beyond what is available from other sources, and scholarly discussion of engagement strategies for the international community. Data were identified through searches in MEDLINE, PubMed, and the grey literature, through references from relevant articles, and governmental and non-governmental reports, and publicly available databases. Articles published in English and Spanish until Dec 1, 2018, were included. Over the past decade, public health measures in Venezuela have substantially declined. From 2012 to 2016, infant deaths increased by 63% and maternal mortality more than doubled. Since 2016, outbreaks of the vaccine-preventable diseases measles and diphtheria have spread throughout the region. From 2016 to 2017, Venezuela had the largest rate of increase of malaria in the world, and in 2015, tuberculosis rates were the highest in the country in 40 years. Between 2017 and 2018, most patients who were infected with HIV interrupted therapy because of a lack of medications. The Venezuelan economic crisis has shattered the health-care system and resulted in rising morbidity and mortality. Outbreaks and expanding epidemics of infectious diseases associated with declines in basic public health services are threatening the health of the country and the region.

## Introduction

Venezuela was one of the most prosperous countries in South America in the late 20th century; however, the ongoing economic crisis has reversed these gains and threatens the nation's health and stability. After his election in 1998, Hugo Chávez enacted constitutional reforms that guaranteed free health care for all citizens and dramatically scaled up social programmes and subsidies for food and energy, which aimed to address severe societal inequalities. Social spending as a share of GDP increased from 28% to 40% between 2000 and 2013, and was funded largely by profits from petroleum exports, which accounts for more than 90% of exports and most of government revenue.<sup>1</sup> The government borrowed against future oil exports and public debt rose from 28% to 58% of GDP from 2000 to 2012 while external financing became increasingly limited.<sup>1</sup> Venezuela began reporting substantial budget deficits in 2006, averaging 3·6% of GDP between 2006 and 2016, and the government announced plans to restructure debt in 2017.<sup>1</sup> Several other factors contributed to the economic crisis, including price and currency controls, and reductions in private production and failure of expropriated enterprises, both of which resulted in production declines and increased dependency on imports.<sup>1,2</sup> Shortages of basic goods began in 2014 and contributed to inflation, which began in 2013 and accelerated steeply in 2017, and is forecasted to exceed 1000000% in 2018 (figure 1).<sup>5</sup> Although the government has blamed the crisis on US sanctions, which have included exceptions to the purchase of food and medicines and focused on addressing corruption by key officials, economic deterioration preceded sanctions.<sup>6</sup>

There is no apparent near-term resolution to Venezuela's economic crisis. The volatile political context further complicates the situation: President Nicolás Maduro is

unpopular, has gradually consolidated political power, and has implemented policies to repress political opposition.<sup>1</sup> Under Maduro's Government, there have been systematic human rights abuses, including excessive use of force against protestors, arbitrary detention, torture, attacks and restrictions on democratic space, and violations of the universal rights to health and food.<sup>7</sup> In regard to health, the government has refused to release epidemiological data required to assess the magnitude of the situation, its consequences, and how best to respond. During the first 3 months of 2018, there were 287 protests by patients and health professionals demanding better working conditions and access to treatments and medicines.<sup>8</sup> When health-care workers or organisations have protested, attempted to discuss the situation or release health data, the government has responded with threats and sanctions, used force to repress protests, arrested doctors, and placed armed groups at hospitals to prevent the media and others from gathering evidence.<sup>7</sup> As a result, more than 3·4 million Venezuelan people have fled the country and are currently displaced in the region.<sup>9</sup> Until last year, most of the humanitarian response funding was directed towards countries receiving Venezuelan migrants. In late 2018 the UN announced US\$9·2 million in health and nutrition aid for Venezuela, the first UN emergency funding for Venezuela, and an indication of government recognition of the crisis and the potential for scaling up the international humanitarian response. We summarise the available information on the health situation in Venezuela, with the aim of characterising needs and humanitarian response priorities. One of the most important limitations to this analysis is access to information—there are little recent and reliable nationally representative data available, making it difficult to get an accurate picture of the status of the health systems and changes in key indicators of population health during the past several years.

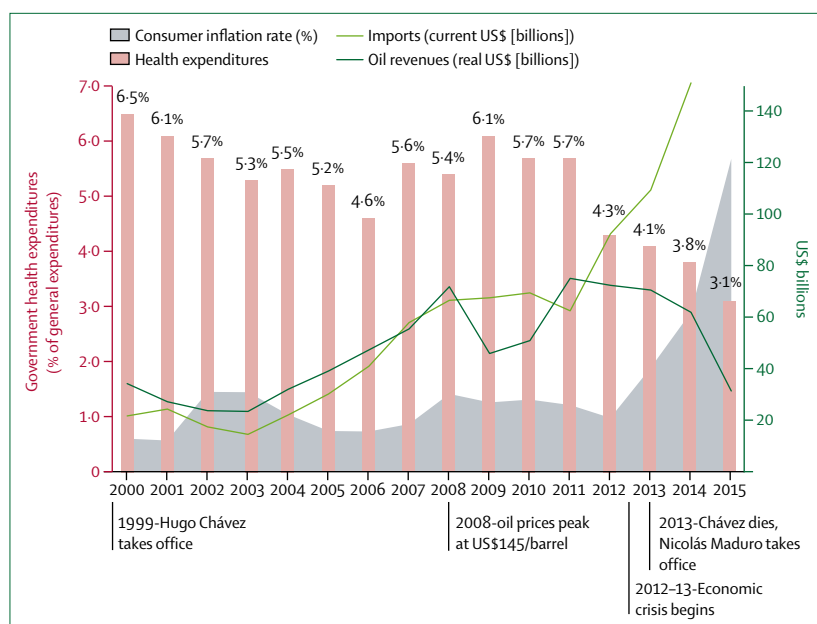
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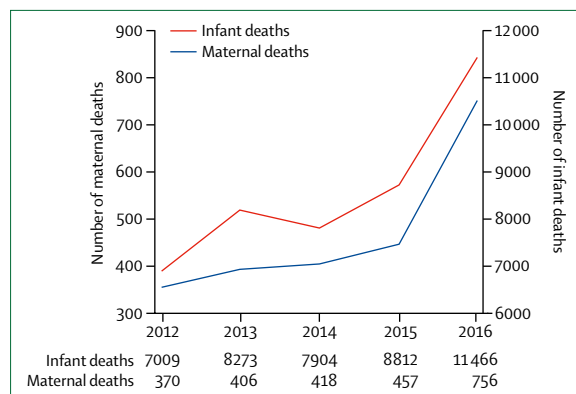
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**Figure 1: Timeline of government health expenditures, annual consumer price inflation, imports, and oil export revenue, 2000–17**

Data are from World Bank health, import and inflation indicators;<sup>3</sup> Energy Information Administration oil revenue data.<sup>4</sup>



**Figure 2: Maternal and infant mortality in Venezuela, 2012–16<sup>14–16</sup>**

### Healthcare infrastructure

Since 2012, Venezuela's health system has had a progressive loss of operational capacity that began to intensify in 2017.<sup>10</sup> The health system decline, which is due to a combination of factors, including the shortage of medicines and basic health products, lack of utilities (eg, water), and emigration of health personnel, has affected access to health care and medication throughout the country as well as the capacity of emergency services and outbreak response.<sup>2</sup> Findings from the 2018 Annual National Hospital Survey,<sup>11</sup> which was done by a political opposition group and medical non-governmental organisation, included 137 hospitals in 22 states and showed a deterioration of services as compared with preceding years, and that basic services, such as laboratories,

imaging, and pharmacies, are not regularly available in many hospitals. 94% of radiology services and 100% of laboratory testing were intermittently functioning or non-functional, and over half of the wards (in 53% of hospitals) and hospital beds (in 40% of hospitals) were not consistently available for patient care; 20% of operating rooms and intensive care units were completely non-functional. Most hospitals reported shortages in water (79%), medications (88%), and surgical supplies (79%).<sup>11</sup> Patients are asked to provide their own basic medical supplies, such as syringes and scalpels, and insufficient provision of food in hospitals requires their families to provide meals during hospital stays. Inflation and lack of availability of medicines has led to the creation of a black market and many people still cannot afford purchase costs.<sup>2</sup> These conditions are decimating the health-care workforce in Venezuela. Even before the height of the crisis, it was estimated that a third of registered physicians (22 000/66 138 in the country in 2014) had left Venezuela.<sup>12</sup> Emigration of doctors has affected the specialties of neonatology, anaesthesiology, intensive care, and emergency care the most. Migration of other health professionals, including nurses, laboratory technicians, and others also negatively affects health system capacity. A national survey in May 2018, of 1469 physicians found that 1432 (98%) strongly agreed the health-care crisis was the worst in 30 years; 1403 (96%) reported inadequate salaries; and 1056 (72%) strongly agreed that the working conditions in public hospitals violated physician ethics and human rights.<sup>13</sup>

### Maternal and infant mortality

The latest official data published by the Venezuelan Ministry of Health on maternal and child mortality was in 2016. Since then, there has been no official reporting but the trends observed at the time were alarming. Between 2015 and 2016, infant deaths increased by 30·1% and maternal deaths by 65·4% (figure 2). Infants deaths were 63·6% higher in 2016 than they were in 2012, and maternal deaths more than doubled in that period (figure 2)<sup>14</sup> UNICEF data also indicate an increase in infant mortality rates; in 2012 the infant mortality rate was 14·6 per 1000 livebirths, compared with 25·7 per 1000 livebirths in 2017.<sup>17</sup> A demographic analysis<sup>18</sup> using multiple sources of national data found that infant mortality rates began increasing in 2009, with the greatest rise after 2011. The 2016 infant mortality rate was estimated to be 21·1 deaths per 1000 livebirths—similar to levels observed in the late 1990s.<sup>18</sup> By contrast with other countries in the region, which have had slow but consistent declines in mortality in the past two decades,<sup>19</sup> the population mortality rate for Venezuela increased from 450 per 100 000 in 2004 to 537 per 100 000 in 2014.<sup>20</sup> National mortality data have not been publicly available since 2014, but the health systems collapse, ongoing infectious disease outbreaks, and declines in maternal

and child nutrition status suggest that the situation is dire.<sup>12,21</sup>

Surveillance data obtained from Hospital Raúl Leoni Otero (Bolívar, Venezuela) highlight the health crisis. Infant mortality at the hospital more than doubled since 2016. Neonatal mortality increased by 54% between 2016 and 2018 (29.4 vs 45.4 deaths per 1000 births) and infant mortality more than doubled (36.2 vs 78.7 deaths per 1000 births, based on surveillance data for Jan 1 to April 15, 2018, compared with all of 2016 [Hospital Raúl Leoni Otero, unpublished]). Between 2016 and 2017, admissions for malaria rose by 71% and for diarrhoea by 27%, and the hospital treated more cases of measles and diphtheria in 2017 than it did in 2016 related to the national outbreaks. Dramatic increases in case fatality ratios (CFRs) for diarrhoea (1.1% in 2016 vs 6.9% in 2018), malaria (1.6% in 2016 vs 8.6% in 2018) and other conditions are the result of the hospital's struggle to maintain operation in the face of blackouts, intermittent water services, and severe shortages of medications and medical supplies.<sup>22</sup>

### Vaccine-preventable diseases

The collapse of the public health infrastructure in Venezuela is most obvious in the resurgence of vaccine-preventable diseases (figure 3). Ongoing outbreaks of diphtheria began in 2016 and measles in 2017. Since the beginning of the diphtheria outbreak in July 2016, to January 2019, there were 2512 suspected cases (1559 confirmed cases) and 270 deaths; the CFR among confirmed cases was 18% in 2016, 13% in 2017, and 20% in 2018. The outbreak encompasses all states and the Capital District, with cases in all age groups, although the highest incidence rate is in children younger than 15 years.<sup>23</sup> The first measles cases were confirmed in June 2017, and by January 2019, 9101 cases had been reported in Venezuela (6395 confirmed cases) including 76 deaths; the national incidence rate was estimated at 17.8 per 100 000.<sup>24</sup> Transmission is ongoing in all states and the Capital District and is highest in the states of Delta Amacuro and Amazonas and the Capital District. Indigenous populations are especially susceptible, with 499 confirmed cases and 64 deaths.<sup>24</sup> Between 2017 and 2018, the Pan American Health Organization (PAHO) provided nearly 7 million doses of measles vaccines and 9 million doses of diphtheria vaccines in Venezuela. In mid-2018, the Venezuelan Government announced vaccination campaigns that were planned to target 9 million people, including 4 million measles and rubella vaccinations and 2.3 million diphtheria vaccinations for children.<sup>26</sup> Despite these efforts, the Venezuela measles outbreak spread to neighbouring countries in the region, with cases reported in Brazil, Colombia, Ecuador, Peru, Chile, and Argentina. In 2016, and 2017, only four confirmed measles cases were reported in these five countries, whereas until January 2019, the confirmed case count soared to 10 557 (figure 4), mostly concentrated in Brazil. Nearly all measles cases shared the

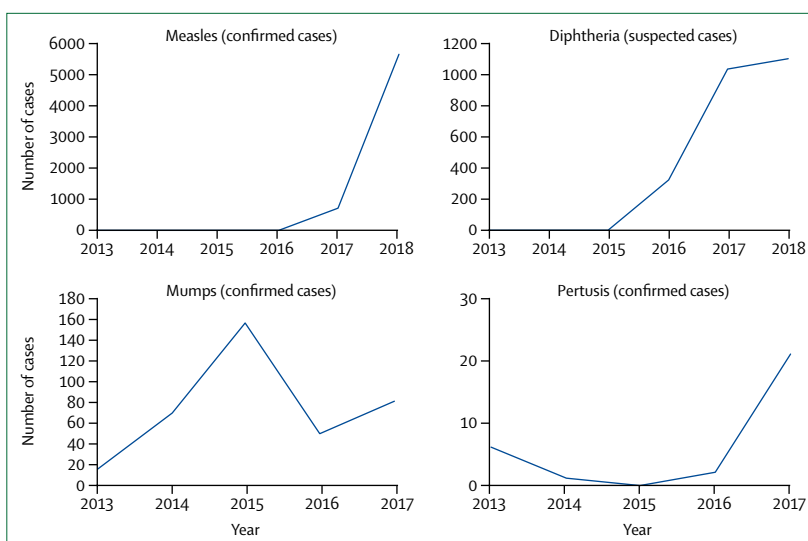


Figure 3: Trends in vaccine-preventable diseases in Venezuela<sup>23–25</sup>

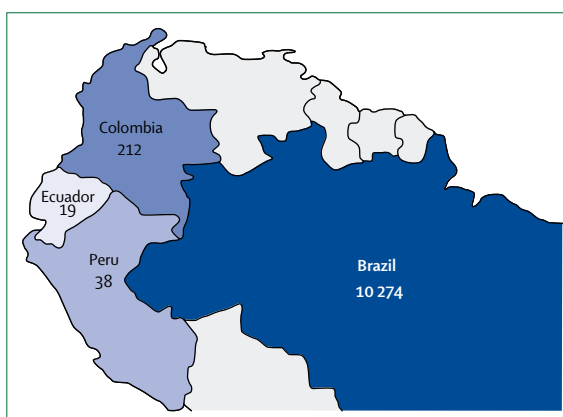


Figure 4: Confirmed measles cases in countries neighbouring Venezuela, 2018. The measles outbreak began in 2017, with 6395 confirmed cases reported in Venezuela until November 2018. Only one measles case was reported in all of Brazil, Colombia, Peru, and Ecuador in 2016 and 2017.<sup>24</sup>

genotype of the virus that was identified in Venezuela in 2017.<sup>24</sup> In Colombia, nearly all the cases occurred in people who had travelled to Venezuela.

### Malaria

Malaria rates have been increasing in Venezuela since 2012 and have soared in the past several years (figure 5).<sup>27,28</sup> From 2016 to 2017, Venezuela had the largest rate of increase of malaria in the world (69%) with 414 527 cases in 2017 alone.<sup>28</sup> Malaria is epidemic in nine states, and transmission in urban areas; a particularly dramatic increase has been documented in Anzoátegui State, where the number of malaria cases increased by 1341% between 2016 and 2017.<sup>27</sup> Several factors have contributed to the spread of malaria, which is most commonly caused by *Plasmodium vivax* (77%) and *Plasmodium falciparum* (17%).<sup>27</sup> In the most severely affected states of Bolívar and Amazonas, illegal and

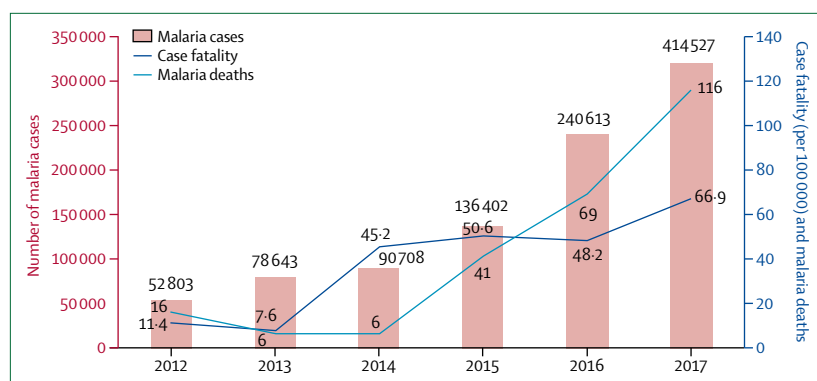


Figure 5: Malaria in Venezuela, 2012–2017<sup>27,28</sup>

unregulated mining activities have resulted in the formation of standing bodies of water that serve as mosquito breeding grounds.<sup>12</sup> The reduction of vector control activities and distribution of insecticide-treated bed nets have further exacerbated transmission.<sup>12</sup> Additionally, medication shortages have reduced treatment access and led to the creation of a black market for antimalarials, which are unaffordable for many people. Exceedingly high slide positivity rates (59% in Bolivar and 44% in Amazonas) in 2018 highlight diagnostic delays and have resulted in an increase of almost nine times in CFRs from 2013 to 2017 (0.8% vs 6.7%), with 406 deaths from malaria in 2017.<sup>12,27</sup> Similar to vaccine-preventable diseases, Venezuela's malaria epidemic has crossed international borders, with refugees and migrants with malaria often arriving in Brazil and other parts of Latin America, leading to an increase in malaria cases in other countries in the region.<sup>27</sup>

### HIV and sexual reproductive health

The latest available epidemiologic data on HIV reported by the Venezuelan Ministry of Health is from 2016, when there were an estimated 120 000 people infected with HIV in Venezuela.<sup>12,14</sup> Since 2010, new HIV diagnoses have increased by 24%, with 6500 new diagnoses in 2016, although this figure might be low because of a shortage of diagnostic tests for suspected cases.<sup>12</sup> Delayed diagnosis and poor clinical management are increasing, with 70% of new patients diagnosed with AIDS in 2016, compared with 53% in 2012.<sup>14</sup> In 2016, 59% of HIV-infected patients had access to antiretroviral therapy (ART), but only 7% were virologically suppressed; less than half (48%) of pregnant women who were HIV positive had access to ART or prophylaxis to prevent mother-to-child transmission.<sup>12</sup> The HIV mortality rate was 38% higher in 2015 (8.03 per 100 000) than it was a decade earlier (5.80 per 100 000 in 2006).<sup>12</sup> More recent mortality estimates are unavailable, but since 2015, the situation has worsened because of major gaps in diagnostic and treatment capabilities.<sup>12</sup> Crucial laboratory tests for monitoring HIV-infected patients (CD4 cell count and viral load) have been unavailable since late

2017, and there are no reagents to use to do confirmatory tests for HIV diagnoses. None of the 339 blood banks in institutions associated with the national health system have reagents to test blood products, and HIV testing among neonatal exposures has declined by 50% since 2014. Ongoing ART shortages have led to treatment interruptions, which increase the risk of drug resistance. Testing for drug resistance has been unavailable since 2016.<sup>12</sup> Of the 79 467 patients with HIV registered to receive antiretroviral treatment, PAHO estimates that 69 308 (87%) are not receiving it, although the actual numbers are difficult to calculate because of a lack of testing, high mortality, and the probability that some patients have emigrated to receive treatment. 15 of 25 antiretroviral medications purchased by the government have been unavailable for more than 9 months and medications to treat opportunistic infections and coinfections are seldom available.<sup>12</sup> ART disruptions and limitations to access compromise treatment effectiveness, enhance the potential for the development of drug resistance, and increase the risk of onward HIV transmission, all of which are important public health concerns.

Additionally, there are widespread shortages of basic contraception. Condoms, birth control pills, and intra-uterine devices have not been available at public hospitals since 2015.<sup>29</sup> Pharmacy shortages have led to the creation of a contraception black market, in which a month supply of birth control pills, for example, costs 14 times the minimum monthly income.<sup>29</sup> Venezuela had among the highest teenage pregnancy rates in Latin America before the economic collapse, and maternal mortality in 2015 was 40% higher than the regional average.<sup>30</sup> According to the director of Asociacion Civil de Planificacion Familiar, Venezuela's largest network of family planning clinics, the number of patients presenting with complications from clandestine abortions has increased, as has the number of women seeking permanent sterilisation.<sup>29</sup>

### Tuberculosis

Between 2014 and 2017, tuberculosis cases increased by almost 68% (6063 cases vs 10 185) and cases of multidrug resistant (MDR) tuberculosis doubled (39 vs 79 cases); the 2017 tuberculosis incidence rate (32.4 per 100 000) was the highest in Venezuela in 40 years.<sup>12</sup> Several factors have contributed to setbacks in tuberculosis control, including a reduction in assessments for tuberculosis among people with respiratory symptoms due to the general decline of the health system, and more specifically, interruptions to the water supply, that compromise biosafety procedures; scarcity of reagents for GeneXpert testing; poor culture capabilities due to a lack of eggs; and inadequate transportation systems for patient samples.<sup>12</sup> Although shortages in first-line and second-line medications for tuberculosis have not been officially reported, physicians working in Venezuela indicate that access to treatment in regional health centres is poor,

### Panel: The health needs of Venezuelan people at the Colombian and Brazilian borders

In July and August, 2018, we visited communities along the Brazil–Colombia border to assess public health issues related to the massive exodus of Venezuelans. We did observational and qualitative assessments, through interviewing key informants and reviewing available data from surveillance systems and health facilities. Despite notable differences between the Venezuelan borders with Colombia and Brazil, the strain on the health-care system was evident in both countries. Colombia has received the largest number of migrants by far, estimated at more than 1·1 million people as of mid-2018.<sup>31</sup> In addition to Venezuelans intending to stay in Colombia, there are many people that cross the border on a day trip from Colombia to engage in commerce or eat at soup kitchens, while others are in transit to other countries, primarily Peru and Ecuador. Colombian people, who fled to Venezuela to escape Colombia's internal conflict, and are now returning with hopes of improving their situation. Families go to Cucuta, Colombia (on the Venezuelan border) to receive vaccinations that are unavailable in Venezuela, to seek prenatal care and give birth, and to purchase medicines and seek medical services that are no longer accessible in Venezuela. The emergency department in Cucuta's tertiary hospital struggles to cope with the number of patients, and is incurring large debt as it struggles to provide life-saving care. Health services for conditions that are not life-threatening are only available for a fee at Colombia's health facilities—meaning that treatment for many common illnesses and more complex health conditions is out of reach for most Venezuelan people in Colombia.

Although fewer Venezuelan people have arrived in Brazil (58 850 as of July, 2018), the geographic isolation and poor economic opportunities in the receiving state of Roraima amplifies the negative effect on refugees and migrants. The public health system is under pressure to contain a rapidly expanding measles outbreak that originated in Venezuela and to address other public health priorities, such as the increasing demand for health services and maintaining adequate vaccination coverage levels. In the first 6 months of 2018, there were more cases of tuberculosis among Venezuelan people than there were from 2013 to 2017; the number of Venezuelan patients infected with HIV receiving care at the outpatient clinic tripled; malaria cases doubled compared with the same period in 2017; and health-care use among Venezuelan people expanded so quickly that hospitals in the region are experiencing unprecedented shortages of antibiotics and basic medical supplies.

Visits to hospitals in the border areas of Colombia and Brazil highlight the dire situation in Venezuela. In Brazil, the HIV and oncology wards were at capacity treating Venezuelan refugees and migrants with advanced, and in some cases end-stage, disease who had not received appropriate therapy in Venezuela. The neonatal intensive care unit had run out of incubators because of increased demand from Venezuelan women who arrived late in pregnancy, often malnourished and without any previous prenatal care.

and patients need to travel to large urban centres for treatment.

### Addressing Venezuela's public health crisis and its spread in the region

There is clear and compelling evidence that the Venezuelan public health crisis has become a regional health threat (panel). Estimating the excess mortality associated with the crisis in Venezuela is difficult given the suppression of health data. Indigenous populations are particularly at risk, accounting for almost 90% of all measles-associated deaths in Venezuela during the current outbreak, which began in 2017.<sup>32</sup> Neighbouring countries are under strain to contain infectious disease outbreaks and to respond to the massive exodus of Venezuelan people seeking food, protection, and health care.<sup>9</sup> Given the large scale migration of Venezuelan people from their troubled homeland, these transnational public health issues are not unexpected, but they do lend urgency to the need for regional responses to Venezuela's crisis. Efforts to provide humanitarian relief have been complicated by the government's reluctance to acknowledge the extent of the crisis, although President Maduro's request for UN assistance might signal a welcome change.<sup>33</sup>

Civil society organisations have played a crucial role advocating for change, facilitating logistics for the distribution of medications and other supplies, and supporting susceptible populations. As regards HIV, for example, partnerships between non-profit organisations such as AID for AIDS, activists, and private pharmaceutical companies have been instrumental in informing PAHO's strategy and have helped meet gaps in ART coverage.<sup>34</sup> In late 2018, following pressure from various advocacy groups, the Global Fund to Fight AIDS, Tuberculosis, and Malaria agreed to donate US\$5 million to PAHO for the purchase of medications and testing supplies, and the UN approved US\$9·2 million in emergency funding.<sup>33</sup> These important steps led to exceptional funding for an upper middle-income country in crisis that is normally ineligible to receive such funds and established mechanisms for purchasing generically priced medications, and distributing and monitoring aid. These changes will hopefully encourage other donors to finance the purchase of much needed supplies and medicines. However, increasing the availability of medicines and medical supplies alone will not address the complex and long-term issues of a decaying infrastructure with insufficient functionality and the exodus of health professionals. These realities will probably cripple Venezuela's health system for decades



and require long term strategies to scale up training programmes and promote retention of the health-care workforce.

In the short term, several steps are needed to reduce the health toll of the crisis. First, the government must facilitate a coordinated humanitarian response, with engagement of international workers to address priority health issues. Second, as part of the health response, the government must accept more assistance from international donors, PAHO, and other health organisations to restore public health infrastructure and medical supply chains and improve disease surveillance. Third, because infants and children are especially susceptible groups, efforts to improve immunisation coverage must be sustained and expanded within Venezuela and bordering areas, in particular for measles, given the scale of the ongoing outbreak. Fourth, the international donor community, including the Global Fund, the World Bank and humanitarian donors, should be encouraged to continue and expand efforts to support prevention, treatment, and health care for Venezuelan people, in Venezuela and in countries hosting large numbers of Venezuelan migrants. These organisations might need to take a fundamental role in the oversight of the distribution of aid to guarantee that it reaches those who need it because of fears of corruption. Venezuela was once among the most prosperous countries in South America—now is the time for collective acknowledgment of the crisis and a coordinated humanitarian response that avoids further unnecessary suffering and stabilises population health.

#### Contributors

SD and KRP led the research and writing of the manuscript; FRG, JSC and PS critically reviewed the manuscript; CB participated in study conception and funding and critically reviewed the manuscript.

#### Declaration of interests

We declare no competing interests.

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