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An integrated approach to controlling animal disease outbreaks in the GCC

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EXECUTIVE SUMMARY

Countries in the Gulf Cooperation Council (GCC)[1] are disproportionately vulnerable to zoonotic disease outbreaks, which can have a significant economic cost within the region and spread across borders. A central factor is that most GCC countries lack the institutional infrastructure needed to identify, respond to, and mitigate emerging threats. In 2019, about 17 percent of global zoonotic disease outbreaks occurred in the GCC region,[2] even though it is home to merely 0.6 percent of the global livestock population.[3]

There is significant value at stake. Worldwide, zoonotic diseases have generated approximately US$20 billion in direct costs in the decade before the COVID-19 pandemic, plus more than $200 billion of indirect losses, in areas such as commerce, travel, and the wider economy. Global connections are likely to exacerbate the issue.

Given the growing challenge, GCC policymakers should adopt an integrated, transdisciplinary, and cross-sectoral approach for predicting, detecting, controlling, and combating zoonotic diseases. This approach consists of five steps: design and activate an animal disease control institutional framework, develop the animal disease control infrastructure, adopt disease control technologies, cooperate across borders, and engage the private sector.

REGIONAL VULNERABILITIES TO ZOONOTIC DISEASES

Several aspects of the GCC make it vulnerable to the spread of zoonotic diseases. These include the desert climate, a deep-rooted herding heritage, and rituals involving millions of livestock sacrifices. What heightens the risk of these vulnerabilities is that most GCC states lack the required ecosystem to predict and detect animal disease outbreaks before they occur, nor have they the capacity to control and combat them after they have started to spread.

Exacerbating matters is the shortage of reliable quarantine facilities, diagnostic labs, and veterinary clinics across the region. Disease control centers are largely absent. Disease prediction, detection, and control measures are relatively outdated. Qualified personnel are increasingly scarce. Moreover, the minimal restrictions on the movement of animals across borders places an additional strain on an already overburdened system. Most important, the absence of detailed disease control plans, with clearly defined roles and accountabilities for each stakeholder, mean that the outbreaks that do occur potentially can spread.

The 2000 Rift Valley Fever outbreak in Saudi Arabia underscored these shortfalls. The disease, a virus that can transfer from livestock to humans, spread all the way to Yemen and resulted in nearly 900 human cases, more than 120 human deaths, and major losses in livestock populations.[4]

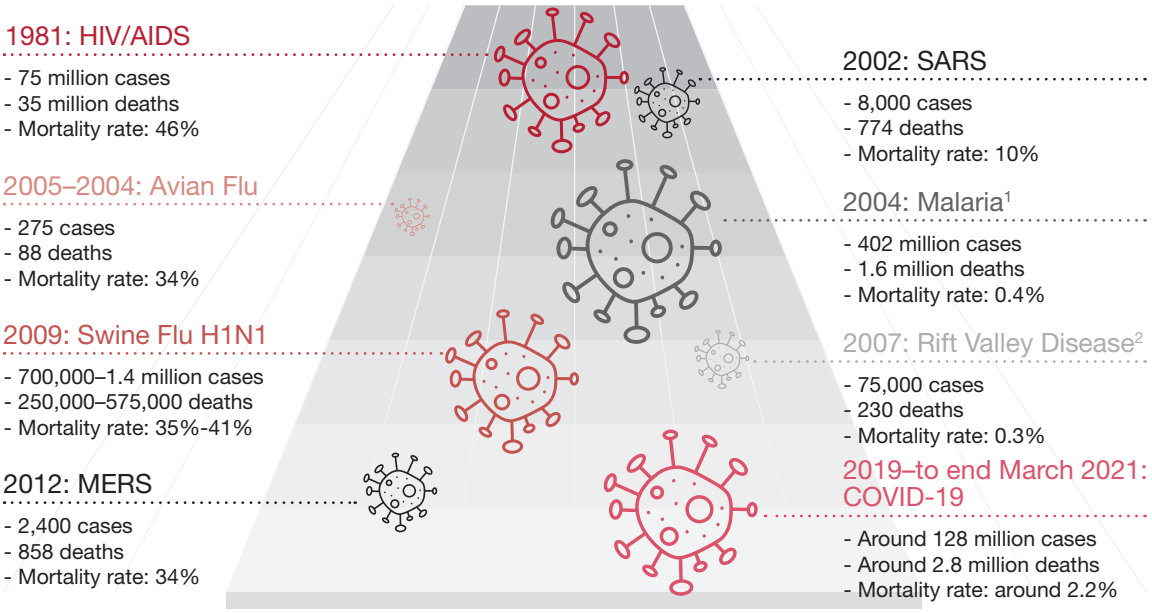
The lack of an ecosystem to predict and mitigate animal disease outbreaks means that the GCC contributes disproportionately to zoonotic diseases worldwide. In 2019, about 17 percent of global zoonotic disease outbreaks occurred in the GCC region, even though it is home to merely 0.6 percent of the global livestock population.

Global implications

As the COVID-19 pandemic illustrated, zoonotic diseases can have worldwide implications. They accounted for roughly 60 percent of existing human infectious diseases and up to 75 percent of emerging human pathogens,[5] leading to 2.5 billion cases of illness and 2.7 million deaths annually before the pandemic (*see Exhibit 1*).[6] In addition to their detrimental impact on humans, animal-borne diseases pose a substantial threat to food security, causing the loss of approximately 20 percent of global annual animal production.[7] Argentina's outbreak of foot and mouth disease in the early 2000s cost the country's meat exporters an estimated $250 million, along with up to 10,000 layoffs at slaughterhouses and farms.[8]

EXHIBIT 1

Recent zoonotic disease outbreaks



[1] As of 2004.
[2] Outbreak in Sudan.
Source: Strategy& analysis

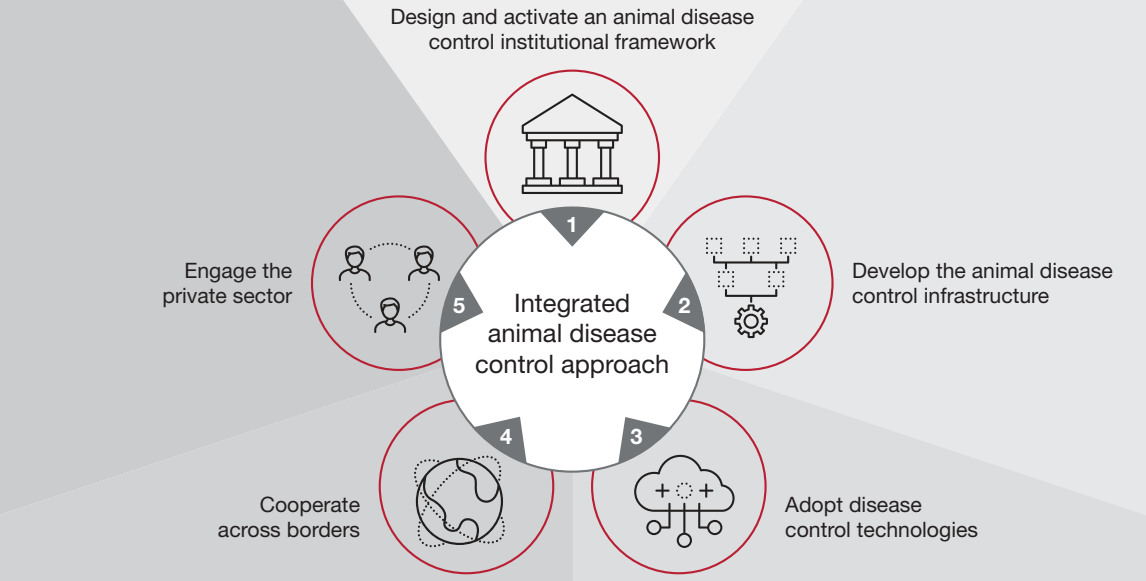
In the aggregate, zoonotic diseases generated approximately $20 billion in direct costs worldwide over the decade before the COVID-19 pandemic, plus more than $200 billion of indirect losses, in areas such as commerce, travel, and the wider economy.[9] With trends such as climate change, global travel and trade, and urbanization, the number and impact of zoonotic diseases could increase.

AN INTEGRATED APPROACH TO DISEASE CONTROL

Given the significant stakes, GCC governments should create an integrated, transdisciplinary, and cross-sectoral approach for predicting, detecting, controlling, and combating zoonotic diseases. This kind of integrated approach has five steps (*see Exhibit 2*).

EXHIBIT 2

An integrated approach to animal disease control



Source: Strategy&

1. Design and activate an animal disease control institutional framework

Agriculture ministries need to establish a dedicated animal disease control (ADC) body to develop and oversee the implementation of all animal health and welfare policies when outbreaks are not occurring, and to guide response efforts during outbreaks. The ADC body should be led by an autonomous chief veterinary officer (CVO) who can properly direct key stakeholders during response times. It should include consultative committees with other government entities to support the CVO in coordinating emergency planning, and managing emergency responses during outbreaks. To ensure ongoing cooperation from key stakeholders, the ADC body must sign collaboration agreements delineating the roles and responsibilities of each stakeholder during non-outbreak and outbreak periods.

2. Develop the animal disease control infrastructure

It is vital to develop an integrated infrastructure network of post-entry quarantine facilities, veterinary laboratories, veterinary clinics, and disease control centers. It is crucial to ensure these quarantine facilities are operated by highly qualified personnel who are equipped with up-to-date inspection and diagnosis equipment and abide by all required quarantine protocols and biosecurity standards because they are the first line of defense. The failure of a quarantine facility can have detrimental implications for a country. In 2008, Australia experienced an outbreak of equine influenza, which cost the country $335,000 a day during the initial response period.[10] In 2000, a parasitic mite infested New Zealand's beehives, which is expected to cost the country between NZ$400 million ($289 million) and NZ$900 million ($652 million) during the course of 35 years.[11]

Quarantine facilities should have at the very least proprietary labs capable of conducting basic tests. What is also required is an integrated network of accredited veterinary labs to detect, monitor, control, and combat infectious diseases early on. The network should include research labs, specialized diagnostic labs, and production facilities that can manufacture diagnostic kits and vaccines. A national laboratory should be tasked with validating the results of front-line diagnostic labs, handling high-risk pathogens, and coordinating emergency declarations within a country. Together, this network of labs forms the disease control backbone.

Given that the national quarantine system cannot provide an absolute barrier to animal diseases from other countries, ADC centers serve as the final line of defense. Permanent centers should be established in line with geographic livestock concentrations and entrusted to monitor the country's animal health situation, identify and investigate potential threats, and raise alarms in cases of outbreaks. In the event of an outbreak, temporary disease control centers are set up in affected areas, and rapid response teams deployed to provide an immediate disease control response. This approach was highly effective in controlling the spread of foot and mouth disease in the U.K. in 2001. After initial quarantine lab errors, this approach allowed Australia to eliminate equine influenza.

3. Adopt disease control technologies

Today, only 0.01 percent of potential zoonoses has been researched and identified.[12] These viruses remain dormant until they are activated, at which point all efforts are geared toward damage mitigation. Technological advancements in disease detection and control offer countries a unique opportunity to be one step ahead. For example, machine learning algorithms and epidemiology software offer a promising means to pinpoint the location of future outbreaks and the demographic groups at the highest risk of being infected. The implications of such technology would be significant in the GCC region.

Other technologies hold great promise in enabling governments to track diseases in the earliest stages. Risk-based surveillance systems can assess a disease's probability of entry, transmission, and establishment within a country. Disease detection drones can identify sick animals, and traceability systems can shorten disease containment time by accurately tracking the location of those animals.

As part of this effort, a national database is crucial to capture, store, and analyze information about animal health and diseases. Such a system enables the recognition of trends in animal health and raises outbreak alerts. It would also present decision makers with a platform to simulate complex disease outbreak events and help devise tailored outbreak responses.

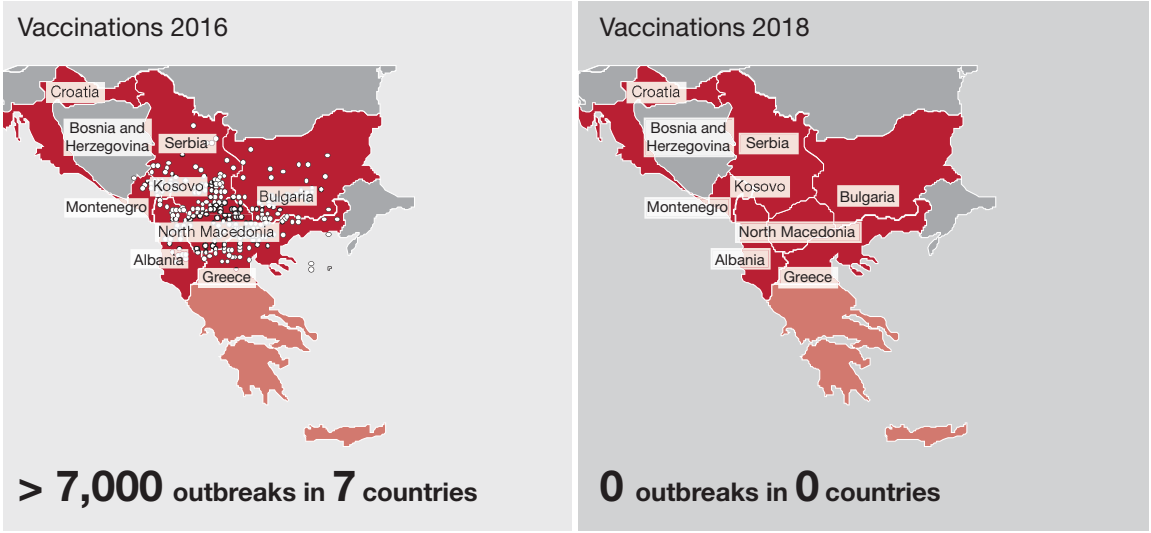
4. Cooperate across borders

Efforts within a country are a starting point. However, GCC states should strive to formulate cross-border disease control plans to unify such approaches across the region. Such cooperation can enable the early detection of outbreaks and prevent further spreading, and can make the most efficient use of available resources.

In 2016, cattle in south east Europe were affected by an outbreak of a virus known as lumpy skin disease. Collaboration among infected and non-infected countries was vital in eradicating the disease by 2018 and mitigating its relapse (*see Exhibit 3*). Such cooperation, among EU and non-EU member states, included vaccine grants, inter-country transfers of national vaccine stock, the deployment of EU veterinary emergency teams, and regional awareness campaigns.

EXHIBIT 3

EU-led eradication of lumpy skin disease from south east Europe



Source: "Lumpy skin disease (LSD): Overview of LSD occurrence and control in South-East Europe," European Commission, Standing Group of Experts on Lumpy Skin Disease in the South-East Europe region under the GF-TADs umbrella Eighth meeting (SGE LSD8), May 28, 2019, Paris, France (https://web.oie.int/RR-Europe/eng/Regprog/docs/docs/LSD8/SGE_LSD8_Paris_May_2019_overall.pdf)

Attempts to control diseases without the collaboration of neighboring countries, especially in border areas, pose a clear risk of worsening outbreaks. In 2014, after geopolitical conditions dramatically worsened in Venezuela, the country experienced a surge in malaria cases. In the next few years, the number of imported cases more than doubled in Brazil and tripled in Colombia, both of which share a border with Venezuela.

5. Engage the private sector

The effective control and combat of zoonotic disease outbreaks is often constrained by limited collaboration between the public and private sectors. Policymakers should engage the private sector and take advantage of its resources and business expertise to fill the planning and execution gaps, and to promote long-term sustainability. The public and private sectors should jointly develop and implement aspects of contingency and emergency plans, biosecurity strategies, guidelines, and measures, and, where possible, participate in response simulation exercises.

The strategic importance of the private sector was evident in 2002, when an outbreak of an avian condition known as Newcastle disease spread from privately owned chicken flocks in the U.S. to commercial poultry farms. A collaboration between government regulators and biotechnology equipment and reagent suppliers allowed a 10-fold increase in workload, ending this outbreak within 11 months of its initial detection, despite initial projections of a three-year disease control effort.[13]

To build this collaboration, GCC governments need legislation that promotes private-sector participation in animal disease control efforts, potentially through arrangements such as public–private partnerships.

> Policymakers should engage the private sector and take advantage of its resources and business expertise to fill the planning and execution gaps, and to promote long-term sustainability.

CONCLUSION

Countries in the GCC are at higher risk for animal disease outbreaks than other parts of the world, and they are also less prepared. As the COVID-19 outbreak illustrated, zoonotic diseases can be massively disruptive and carry global consequences in terms of human health and economic impact. The next outbreak is coming. GCC policymakers must build the right response mechanisms to anticipate and control it before that happens.

ENDNOTES

1. The GCC Countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

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