The ability of national health systems to detect and respond to disease threats is the difference between containing an outbreak and facing a calamity. Strong systems for the monitoring and detection of diseases are crucial as they provide countries with the necessary mechanisms to effectively manage disease outbreaks. Yet in many African countries, which shoulder a disproportionate burden of disease, the systems required to enable decisive action are on the brink of collapse or are accessible only to some population groups.

The International Health Regulations (IHR)\(^i\) (2005) state that countries should be able to detect, assess, and respond to all incidents that may lead to public health emergencies of international concern (PHEICs) and report them to the World Health Organization (WHO, 2008).

\(^i\) The IHR are an international legal instrument that is binding on 196 countries across the globe, including all the Member States of WHO. Their aim is to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide.
Throughout this volume, a case has been made for the fact that an effective health system is comprised of many components. These include service delivery; health information; health workforce; medical products and technologies; financing; leadership and governance. These all need to function efficiently to ensure that diagnostics, drugs, vaccines, information, and other methods of prevention, care, or treatment are delivered on time, affordably and in sufficient quantities (WHO, 2017a). In addition to the above factors, the availability of a health workforce of sufficient numbers, motivation and skill – a workforce that is responsive and productive – is critical in offering good quality care. For this care to translate into universal health coverage, sound infrastructure, that is efficient and properly maintained, is required. Other factors to consider are the affordability of this care, and access to it for all, so that individuals seeking medical treatment are able to receive it without incurring financial devastation.

Towards the bigger picture of prevention and control of epidemics in Africa

Central to arguments in this volume is the understanding that health challenges do not exist outside of a socio-economic environment. An overarching theme is that in order to fully appreciate the prevalence of epidemics in Africa, and to build the systems that will counter the scourge definitively, a systematic and multifaceted approach is required. It is important to consider the foundational agents that create an environment conducive to diseases that can cause epidemics. These are captured systematically in this volume. The syndemics model of analysing disease pervasiveness recognises these diverse factors and proposes an all-encompassing approach to truly understanding disease. Furthermore, the book emphasises the crucial role that health systems play in determining the health outcomes in countries. Authors emphasise that weak and under-resourced health systems are typically found in African countries and are at the core of the dire state of health in Africa.

The introductory chapter contextualises the emergence of epidemics on the continent, arguing that the prevalence of disease and epidemics in Africa does not occur in isolation. The chapter points to some of the
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conditions that make certain populations more vulnerable to disease, such as urbanisation, poverty, low status and inequality. It stresses the importance of understanding the pathogenesis of diseases in order to determine the best possible methods for prevention, including vaccines and treatment. The ensuing chapters in the volume build on this foundation and provide examples of and lessons for understanding the structural and/or political-economic drivers of disease, for strengthening health systems, and for taking initiatives in pharmaceutical innovation.

The chapter also addresses one of Africa’s major health challenges of the future: zoonotic diseases, i.e. those transmitted between humans and animals. It argues that these emerging zoonotic diseases emphasise the need for the syndemic approach supported by authors throughout this volume. This syndemic approach is based on the idea that disease must be firmly situated within the socio-economic and environmental factors affecting a population, and that attempts to understand or counter disease are futile without this framework. The author shows how the 2014 outbreak of Ebola illustrates the value of this framework. She analyses Ebola in relation to the conditions that lead to vulnerability to disease, in this case infection resulting from contact with animals. This chapter shows the important role that animal clinicians also have in the fight against epidemics and the significance of an interconnected system of role-players and information sharing.

The authors in the book do well to unearth the structural drivers of disease in Africa and eloquently demonstrate how diseases and epidemics require deeper understanding for them to be managed. Where the diseases occur, and who the diseases affect, have implications for their management. The book examines three epidemic diseases (cholera, ebola, and malaria), their relationship to health systems in Africa, and the complex lessons that may be extracted from these experiences. The impact of political interference, collapse in governance, and neglect of essential services and infrastructure have been shown by authors to result in disastrous outbreaks of preventable diseases.

Health outcomes depend on a network of players, many of them in positions of power. Authors show that health is not only determined by the actions of a health department, but also by the departments responsible for water and sanitation; waste and environmental management; finance;
housing and human settlement; agriculture and so on. Neglect of services by any of these departments can breed conditions ripe for an epidemic. Furthermore, cross-border and regional collaboration has been shown to facilitate the capacity to manage persistent disease and epidemics. The requirements for the efficient implementation of strategies to strengthen health systems, in particular the building of efficient surveillance systems designed to detect outbreaks timeously, is discussed in the book.

The authors concede the desperate state of health systems in Africa; however, they also point to low-hanging fruit that can assist in improving health outcomes. Factors like a medical staff that can offer both a high level of skill and decisive management can result in the prevention of an outbreak. In delving into the Nigerian success story of Ebola containment, the book systematically presents the steps that were taken to prevent the disease from spreading; starting from Dr Adadevoh’s quick response and accurate diagnosis of the index patient, to the timely releasing of necessary funds, and the deployment of a health care workforce. Even though Nigeria’s health system was not particularly prepared for the outbreak, the timely and unambiguous response to the outbreak was the difference between Nigeria’s experience and that of Liberia, Guinea, and Sierra Leone.

Over the years, the persistent issue of epidemics in Africa has expanded to include more than infectious diseases. Non-communicable diseases, which present more chronically, are on the rise and are projected to continue on that trajectory – in many instances constituting or approximating epidemics. Authors show how this further burdens already weak and under-resourced health systems in Africa and argue that there is an urgent need to rethink long-term care within the African setting. Additionally, the way in which health professionals caring for long-term patients are managed, including enabling them to perform at their best without overwhelming them with administrative tasks, is crucial in determining the quality of care and epidemics preparedness.

The book also encourages consideration of the role of technological innovations in strengthening health systems. Innovation is a driver of economic growth and development and these impact on countries’ health systems. Importantly, African countries need to establish partnerships to develop research capacity to explore emerging technologies that have
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the potential to improve health outcomes. In many ways, financing and resources play a big role in determining whether strong health systems and indeed quality health care and epidemic preparedness can be achieved. Consequently the book also addresses the financing of health care in Africa and explores whether it is possible to have a reliable health insurance system that supports all sections of the population.

The continent’s population is expected to increase dramatically by 2030 which has major implications for health on the continent. The authors discuss these implications for disease and epidemics in Africa and offer ways of thinking about solutions. Essentially, this research is sounding a warning about the diseases of the present and future as population increase; urbanisation; climate change and deforestation change the African ecology and environment.

IMPLICATIONS FOR HEALTH SYSTEMS IN AFRICA

All components need to work in optimal alignment if a health system is to achieve positive health outcomes. From the initial infection of a pathogen reservoir to a patient needing treatment and care, there are various points in the progression of a disease at which interventions need to be implemented. Thus, to emphasise: health systems need to be able to intervene at any point in disease progression in order to mitigate the spread of the disease. To begin with, it has been shown how, in the absence of strong surveillance and response systems, infectious disease outbreaks can rapidly overwhelm a country’s health system. Therefore, national and regional surveillance of diseases that pose a risk for epidemic outbreaks are important for ensuring quick responses. In regions where zoonotic diseases are endemic, awareness of changes in environment, climate, and animal behaviour will assist in monitoring (and averting) potential outbreaks. Citizens in close proximity to known virus reservoirs should be made aware of the dangers associated with interacting with these reservoirs. Health campaigns around handling wild animals (using protective gear, etc.) and taking cognizance of animal migration patterns would help equip the health system to develop strategies to counter potential outbreaks of zoonotic disease.

In this regard, clinicians for animal as well as human health need to
share information and cooperate in identifying and preventing disease spillover. The sharing of information should go beyond national systems, as diseases spread rapidly across regions. The sharing of information will also help strengthen health systems as countries will have the necessary intelligence to prepare for disasters timeously. The living conditions of refugees, displaced populations, and victims of natural disasters should be improved, not only to protect human dignity but also to prevent conditions conducive to the rapid spread of disease.

Diagnostics, vaccines, and drugs need to be made available to counter diseases that pose the risk of epidemic outbreak. In 2018 an investigational vaccine called rVSV-ZEBOV, developed in the United States of America, which was shown to be safe and protective against the Zaire strain of the Ebola virus, was used in the Ebola outbreak in North Kivu in the Democratic Republic of Congo (WHO, 2018). However, because more research still needs to be conducted on it (WHO, 2018), the vaccine is unlicensed and could only be employed under the principles of ‘compassionate use’ or ‘expanded access’.ii The question has been legitimately posed as to why African countries, which shoulder much of the burden of disease, are not at the forefront of the research and development of such groundbreaking initiatives. Currently, research capacity in Africa is lacking. Building this capacity and creating an enabling environment for African scientists to conduct research needs to be prioritised. Further, once these medical technologies have been developed, they need to be able to reach the people who need them – in time and reliably. All these interventions, with the end goal of delivering quality health care to a country’s citizens, require a well-trained and motivated workforce, from capable scientists to skilled medical staff. Critically, good leadership and good governance, backed by adequate funding, need to be in place so that all aspects of the health system are well managed and can operate efficiently.

The key message of the book is that a robust and well-functioning health system is at the core of a country’s capacity to provide quality health

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ii Although several studies have shown that the vaccine is safe and protective against the Ebola virus, more scientific research is needed before the vaccine can be licensed. The vaccine is therefore being used on compassionate basis, to protect persons at highest risk of the Ebola outbreak, under a ‘ring vaccination’, which is the tracking of the epidemic, recruiting individuals at raised risk of infection due to their connection to a patient confirmed with the virus.
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care and to counter the threat of an epidemic. Urgent attention should therefore be given to strengthening health systems in Africa. In the long term, it would be far more productive to be proactive about mobilising resources to build a strong health system than mobilising in a panicked response to an outbreak. Alongside this, and equally important for the prevention and/or control of diseases, is the need to address the structural drivers of vulnerability to diseases. It is futile to treat patients who will return home to poor nutrition and inadequate water services which will expose them again to disease. Essentially, the ‘One Health’ approach, which is a multidisciplinary and transdisciplinary approach endorsed by the World Health Organization, should be implemented. One Health promotes bringing together multiple sectors to communicate and work together to achieve better public health outcomes. These various sectors are encouraged to collaborate in designing and implementing programmes, policies, legislation, and research (WHO, 2017b).

Fundamentally, the authors, who are from across sub-Saharan Africa, compel the reader to think more broadly about the current state of epidemics in Africa and indeed about the solutions. The recurring themes in the book, and the insights and lessons offered, all build to the conclusion that Africans need to be thinking about how to prevent diseases and outbreaks through building strong health systems and adopting a cohesive, inclusive, and transdisciplinary approach to health. The message comes from Africans themselves who are looking to better the continent with solutions relevant to Africa.

REFERENCES


