

Strengthening health system resilience

Lessons from Nigeria's COVID-19 pandemic governance strategies

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The African Health Observatory - Platform on Health Systems and Policies (AHOP) is a regional partnership that promotes evidence-informed policy-making. AHOP is hosted by the WHO Regional Office for Africa through the integrated African Health Observatory and is a network of centres of excellence from across the continent, leveraging existing national and regional collaborations. National Centres currently include the College of Health Sciences, Addis Ababa University, Ethiopia; KEMRI Wellcome Trust, Kenya; the Health Policy Research Group, University of Nigeria; the School of Public Health, University of Rwanda; and Institut Pasteur de Dakar, Senegal. AHOP draws on support from a technical consortium including the European Observatory on Health Systems and Policies (EURO-OBS), the London School of Economics and Political Science (LSE) and the Bill & Melinda Gates Foundation (BMGF). AHOP joins a cohort of regional health systems Observatories including the European Observatory and the Asia-Pacific Observatory (APO) who have shared their learning to inform the development of the AHOP approach.

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Abbreviations

Africa CDC	Africa Centres for Disease Control and Prevention
AU	African Union
AVADAR	Auto-Visual Acute Flaccid Paralysis Detection and Reporting
CACOVID	Coalition Against COVID-19
CEPI	Coalition of Epidemic Preparedness and Innovation
COVID-19	Coronavirus disease 2019
CPG	Coronavirus Preparedness Group
FCT	Federal Capital Territory (Abuja)
FMINO	Federal Ministry of Information and National Orientation
FMoH	Federal Ministry of Health
HiAP	Health in All Policies
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
JEE	Joint External Evaluation
LGA	local government area
LMIC	low- and middle-income countries
MDA	ministries, departments and agencies
NAFDAC	National Agency for Food and Drug Administration and Control

NCDC	Nigeria Centre for Disease Control and Prevention
NCRC	National COVID-19 Response Centre
NGO	nongovernmental organization
NIMR	Nigerian Institute of Medical Research
NIPRD	National Institute for Pharmaceutical Research and Development
NPHCDA	National Primary Health Care Development Agency
NPRP	National Pandemic Response Plan
PCR	polymerase chain reaction
PEI	Polio Eradication Initiative
PHEOC	Public Health Emergency Operations Centre
PSC	Presidential Steering Committee
PTF	Presidential Task Force
RCCE	risk communication and community engagement
SDGs	Sustainable Development Goals
SORMAS	Surveillance Outbreak Response Management and Analysis System
UHC	universal health coverage
UNICEF	United Nations Children's Fund

The Nigerian health system lacks everyday resilience and resilience to shocks: The system struggled to maintain essential health services while responding to the Coronavirus disease 2019 (COVID-19) outbreak. Structures created to manage Ebola and other disease outbreaks helped but have not been sustained.

Multisectoral collaboration was crucial to the COVID-19 response but was not institutionalized: Strategic, multisectoral collaboration helped mitigate poor preparedness but these collaborative mechanisms were not formalized or retained.

Well planned health system governance structures facilitated national and subnational responses to COVID-19: The centralized coordination body in the Presidency, with similar structures at subnational levels, enhanced political commitment to strengthening emergency public health response capacity at all levels of government.

Lessons from COVID-19 have strengthened capacity at the national level but less so at subnational levels: States were not included in pandemic strategic decision-making. Institutionalizing Public Health Emergency Operation Centres (PHEOCs) at the subnational levels could improve their functional management capacity.

Continued investment in COVID-19 surveillance capacity is needed: Evidence production, enhanced communications infrastructure, and integrated disease surveillance systems enabled knowledge sharing on COVID-19 and other diseases. Policy frameworks, structures, and investment are needed to sustain these services.

Comprehensive health sector reforms could help build resilience: Reforms involving key stakeholders at national and subnational levels could help mainstream Health in All Policies (HiAP). Implementing reforms in the upcoming National Strategic Health Development Plan 3 could strengthen health system governance.

The issue

Resilient health systems are critical to achieving good health outcomes before, during, and after public health emergencies. One of the key foundations of resilient health systems is governance, characterized by strong leadership, good coordination, and responsive decision-making. This brief identifies and analyses health system governance strategies used in Nigeria to prepare for, and respond to, the COVID-19 pandemic. It highlights lessons learned and policy implications for strengthening future health system resilience.

The findings

- Effective interagency collaboration and coordination were crucial to the successful implementation of the COVID-19 response in Nigeria. However, these efforts have not been institutionalized.
- Disease surveillance capacity at national and subnational levels was enhanced and proved effective.
- Lessons from the COVID-19 pandemic have strengthened functional management capacity at the national level, but less so at subnational (state and local government) levels, where delayed responses remain an issue. State governments had limited involvement in strategic decision-making, resulting in limited capacity to prepare and respond to health emergencies.
- Strategic, operational, and tactical coordination were achieved in the short term, but strategic coordination was not sustained. Failure to sustain strategic coordination structures like the Presidential Steering Committee (PSC) threatens resilience and future response capacity.
- Policy frameworks and structures to foster organizational learning and a learning culture remain absent, resulting in inconsistent response strategies and missed opportunities for knowledge sharing and future innovation.
- Without improved governance structures, future emergency response efforts could experience delays and inefficiencies, fragmented communication, inequitable distribution of resources, reduced community engagement, policy barriers, and missed opportunities for prevention and preparedness.

Policy implications

- In line with the recommendations of the Lancet Nigeria Commission and the Presidential Health Sector Reform Committee, there is an overarching need to mainstream HiAP.
- Funding and capacity-building are required to ensure that the country's research and surveillance capabilities remain effective for the timely detection and real-time reporting of disease outbreaks.
- Variations in state-level capacity require a bespoke approach of technical assistance and financial support.
- More active subnational involvement is required in strategic decision-making and operational planning, which could be achieved through decentralized decision-making structures and backed by adequate funding and capacity-building from subnational stakeholders.
- Maintenance and consolidation of strategic coordination structures – for example, establishing a dedicated agency to coordinate multisectoral collaboration and ensure distributed leadership and decision-making – are essential to building health system resilience and better responding to public health emergencies in the African Region.

Recent infectious disease outbreaks (including Ebola, COVID-19, Lassa fever, and yellow fever) have threatened and further weakened already fragile health systems globally, especially those in the World Health Organization (WHO) African Region (Nnaji et al., 2021). Vaccine-preventable diseases abound in Africa, given that many countries struggle to vaccinate children due to weak routine immunization systems and despite the availability of cost-effective vaccines (Abubakar et al., 2022).

The COVID-19 pandemic further highlighted the weaknesses in the Nigerian health system (Nnaji et al., 2021), particularly in maintaining access to essential health services (Okeke et al., 2022). It also inflicted a severe financial blow on the Nigerian and global economies (Pak et al., 2020). The pandemic underscored how vulnerabilities in health systems can profoundly impact health outcomes, economic progress, trust in governments, and social cohesion (OECD, 2020).

COVID-19 control efforts concentrated on public health measures to flatten the epidemic curve and reduce the number of patients requiring emergency medical treatment. These measures aimed to enhance the health system's capacity to treat COVID-19 and related health issues while minimizing disruptions to other essential health services. Additionally, these efforts sought to opportunistically strengthen the health system to achieve universal health coverage (UHC) and other health targets of the Sustainable Development Goals (SDGs) (WHO, 2021b).

Responses and resilience to COVID-19 varied significantly across the African Region. Case numbers in Botswana and South Africa were still rising in mid-2021, while neighbouring Mozambique and Zambia were reversing the epidemic curve (Ihekweazu & Agogo, 2020). Exploring which health system responses contributed to epidemic containment can help identify best practices for countries to adopt or adapt when preparing for and coping with future disease outbreaks in the region.

What is health system resilience?

Health system resilience is defined as the ability of a health system to “effectively prevent, prepare for, detect, adapt to, respond to and recover from public health threats while ensuring the maintenance of quality essential and routine health services in all contexts” (WHO, 2023b). It corresponds to the capacity to respond to pandemics and other shocks capable of causing systemic disruption. Shocks are defined as acute disruptions of health system functioning, such as epidemics and emergencies (Kagwanja et al., 2020). Weak health systems in many low- and middle-income countries in Africa struggle to contain pandemics and maintain essential health services (Karamagi et al., 2022). This affects progress towards national and global targets, notably the SDGs and UHC health targets.

Resilience is a much debated and evolving term. Resilient health systems can effectively respond to public health emergencies while protecting themselves and the human populations they serve from the impact of those emergencies (Kruk et al., 2015). Resilient health systems can bear everyday shocks and are well prepared to adapt and adjust in the face of overwhelming emergencies. They are, therefore, critical to achieving good health outcomes before, during, and after disasters (Bayntun, 2012). The five elements of a resilient health system are: (i) an awareness of the strengths and weaknesses of its building blocks; (ii) awareness of its vulnerabilities and level of exposure to various hazards and risks; (iii) the ability to respond to an array of public health issues that may occur before or during a disaster; (iv) an ability to quickly and effectively adapt to changing situations; and (v) the ability to regulate itself (Kruk et al., 2015).

The concept of resilience is frequently used in relation to health systems' preparedness and response to disease outbreaks (Sagan et al., 2021) and over time, has become closely linked to public health emergencies (Gilson et al., 2017). More recently, the definition has evolved to encompass health systems strengthening efforts, notably the ability to detect, isolate and respond to threats while maintaining core functions (Kruk et al., 2015, 2017; Fridell et al., 2020; Nzinga et al., 2021; Sagan et al., 2021). Systems able to respond to threats and maintain everyday services are said to have a double “resilience dividend” (Rodin, 2014).

Achieving double resilience that ensures sustained adaptations beyond a crisis requires long-term investments in the health system (Sagan et al., 2021). WHO comprehensively defines this double dividend as health systems being able to “effectively prevent, prepare for, detect, adapt to, respond to and recover from public health threats while ensuring the maintenance of quality essential and routine health services in all contexts, including in fragile, conflict, and violence settings” (Wise, 2023).

Health system governance as a component of resilience

Financial resources, service delivery, and governance strategies build resilience (Greer et al., 2020; Sagan et al., 2021). In this brief, the focus is on the contribution of governance strategies. Governance is one of the key foundations of strong health systems and the cornerstone of well managed organizations (Siddiqi et al., 2009). Effective health system governance is marked by responsiveness and accountability, transparent policy processes, active citizen participation, and the government’s ability to plan, manage, and regulate policy and service delivery efficiently (Brinkerhoff & Bossert, 2014). Moreover, individuals, bureaucracies, political structures, and supportive institutional and contextual factors underpin the development of resilient health systems (Balabanova et al., 2013).

Effective health system responses to public health emergencies rely on good coordination of actors and actions at all levels and across different sectors (Sagan et al., 2021). Responses to the COVID-19 pandemic required strong leadership and responsive decision-making to align the priorities of different stakeholders. Many countries declared a state of emergency and/or enacted emergency legislation to achieve this response (Adesanya, 2020; Greer et al., 2020; Ihekweazu & Agogo, 2020; WHO, 2021b, 2021d). In Nigeria’s federal system, explicit efforts were made to embed multisectoral and intersectoral approaches and stakeholder engagement in the design of COVID-19 containment and coordination strategies. However, levels of resilience and the strength of governance strategies varied across states in Nigeria, with adaptation and implementation of public health countermeasures differing across states.

What does this policy brief aim to achieve?

This brief identifies and analyses health system governance strategies used in Nigeria to prepare for and respond to the COVID-19 pandemic. It highlights lessons learned and policy implications for strengthening future health system resilience. It is written for policy-makers, programme managers, development partners, and other stakeholders who play key roles during and after public health emergencies.

Objectives

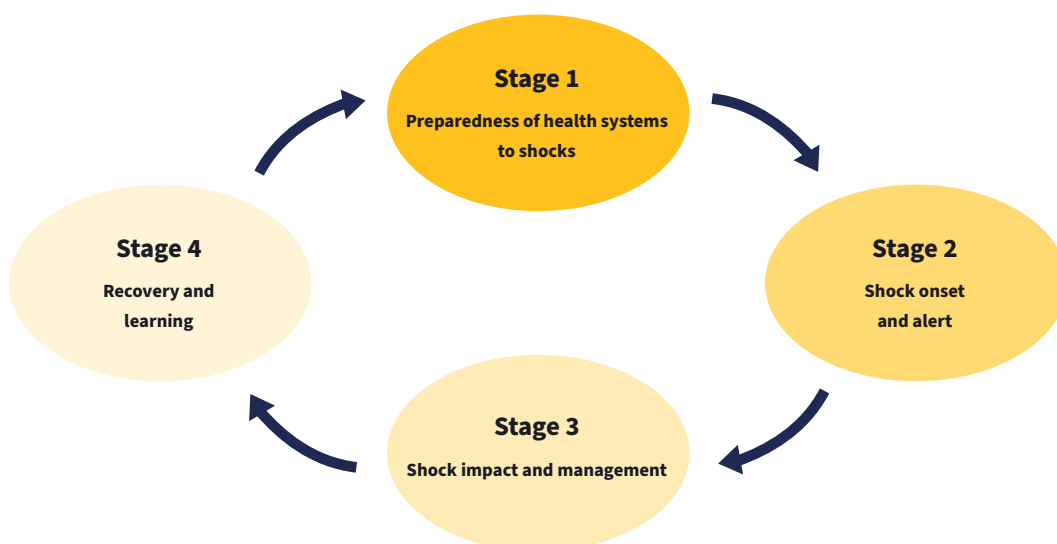
1. Assess how the health system governance responses to COVID-19 contributed to strengthening the Nigerian health system and influenced its resilience.
2. Identify the specific health system resilience-enhancing and resilience-constraining governance strategies.
3. Summarize the policy implications and potential opportunities to enhance Nigeria’s health system resilience.

Methods

A synthesis of secondary data from the literature underpins the brief. A review was conducted of published documents (including government reports, research publications and media reports) that specify governance strategies for health systems' response to disease outbreaks in Nigeria. The governance strategies for disease outbreaks were assessed for the four stages of shock – preparing for shocks, responding to shock, managing its impact, and evaluating lessons learnt in future responses. Peer-reviewed publications detailing the experiences of other African countries during the pandemic were also reviewed, as available.

While acknowledging other robust health system resilience frameworks (Balde et al., 2022; WHO, 2023b), this brief uses a framework of resilience-enhancing governance strategies to examine the preparedness of the governance function of Nigeria's health system – federal, state and local government levels – to withstand and adapt to the impact of the COVID-19 pandemic (Thomas et al., 2020). This framework explicitly identifies five strategies for enhancing resilience in the governance function of the health system and suggests assessment areas for each strategy (see Table 1). It offers a specific and operational definition that focuses on the four critical stages of shock (Fig. 1). The framework allows for the identification of the implications of weak health systems' governance capability for the capacity to prepare for and effectively respond to future health emergencies.

Figure 1: The four critical stages of shock.



Source: Thomas et al., 2020.

Table 1. Resilience-strengthening governance strategies and examples of assessment areas

Strategy	Assessment areas
Effective and participatory leadership with strong vision and communication	<ul style="list-style-type: none"> Set of contingency plans and protocols, emergency legislation Functional management capacity for governance Stakeholder participation and engagement Leadership/steering and clear chain of command Accountability of government agencies Effective governance structures (transparency, accountability, stakeholder involvement) Clear and feasible plan for response measures Setting strategic direction Established public trust in response agencies Effective communication

Table 1. continued

Strategy	Assessment areas
Coordination of activities across government and key stakeholders	Collaboration between sectors Agreements with relevant actors (e.g., international agencies, non-State providers, NGOs)
Organizational learning culture that is responsive to crises	Innovative organizational culture, culture of learning Use of feedback and analysis in informing decision-making Mechanisms to assess, audit and learn from response to shock and implement change
Effective information systems and flows	Flow of information between stakeholders, data-sharing mechanisms Flow of data, information and analysis into decision-making and evaluation Mechanisms of timely dissemination of guidelines and protocols Communication infrastructure (hard: phone, Wi-Fi; soft: press, community, NGOs) Existence of data collection and linkage systems
Surveillance enabling timely detection of shocks and their impact	Epidemiological surveillance and early warning systems Existence of mechanisms to identify change in need and access to services

Source: Thomas et al., 2020, p. 16: Table 1: Examples of assessment areas grouped by resilience-enhancing strategy.

Administrative structure

Nigeria functions under a federal system of government comprising three levels: national, state, and local government areas/ councils (LGAs). The country is divided into 36 states and the Federal Capital Territory (FCT) in Abuja, and contains 774 LGAs overall. These 774 LGAs are further divided into 9565 wards. Communities/villages make up the wards. The states and FCT are grouped into six non-administrative geopolitical zones: the south-south, the south-east, the south-west, the north-east, the north-west, and the north central zones.

In Nigeria's three-tier federal administrative system, each level is notionally autonomous in resource management. Health falls under the concurrent legislative list in the Constitution, which enables federal, state, and local governments to take on different, – and potentially overlapping – roles in policy-making, regulation and service delivery. The lack of a precise division of roles and responsibilities results in considerable ambiguity in health system management (Kombe et al., 2009). Although the National Health Act (2014) articulates the functions of the Federal Ministry of Health (FMOH), there is no clear distinction between the functions of the State Ministry of Health and the Local Government Health Authority.

Historically, primary health care has been the responsibility of local governments, with state governments providing logistical support such as personnel training, financial assistance, planning, and operations. However, the 2016 Primary Health Care Under One Roof policy integrates Nigeria's primary health care services into one single management body with the principle of “three ones” – one management body, one plan, and one monitoring and evaluation system (NPHCDA, 2015). Hence, primary health care is everybody's business (FMOH, 2016).

Epidemic and pandemic response

Nigeria has experienced numerous disease outbreaks. The Ebola outbreak was imported to Nigeria in 2014 and spread in Lagos and Port Harcourt, with about 25 million persons at risk. A total of 20 cases and eight deaths were recorded, indicating effective containment and control of the outbreak (Oluabunwo et al., 2016). This was possible because the Nigerian Ebola Emergency Operations Centre and incident management system were activated promptly, resources rapidly mobilized and deployed, and control measures coordinated by a multidisciplinary team and five response teams (Oluabunwo et al., 2016). The Open Data Kit and Form Hub technology were deployed with Dashboard technology and ArcGIS mapping for contact tracing, case identification and investigation, case management, and strategic response planning (Tom-Aba et al., 2015).

Lassa fever, which is endemic in Nigeria, was declared an emergency by the Nigeria Centre for Disease Control (NCDC) in 2019 owing to very high mortality rates following exposure to the virus (Dan-Nwafor et al., 2019; Okoro et al., 2020). This declaration strengthened disease surveillance and laboratory systems for emergency response (Dan-Nwafor et al., 2019). Clinical guidelines were also reviewed to emphasize adherence to infection prevention and control.

The COVID-19 pandemic imposed multiple shocks on Nigeria's national health infrastructure, with Nigeria being ranked the most COVID-19-impacted country in West Africa (Ndiaye et al., 2023). As of 19 July 2023, there were 266 675 confirmed cases of COVID-19 and 3155 deaths. From the first vaccination date of 5 March 2021 to 26 July 2023, a total of 127 697 675 vaccine doses had been administered, translating to 61.95 vaccine doses per 100 population. Of these, 89 908 623 received at least one dose and 77 382 677 persons were vaccinated with a complete primary series (WHO, 2022, 2023a).

Before the COVID-19 outbreak, Nigeria's epidemic preparedness was rated using a standardized set of indicators, the Joint External Evaluation (JEE) tools, which assess countries' capacities to prevent, detect and respond to public health risks. The assessment examines capacities across 19 technical areas of International Health Regulations (IHR), organized into four main themes: 'Prevent' (7 technical areas, 15 indicators); 'Detect' (4 technical areas, 13 indicators); 'Respond' (5 technical areas, 14 indicators); and Points

of Entry (PoE) along with other IHR hazards (3 technical areas, 6 indicators). The capacities are evaluated on a scale ranging from level one, indicating no capacity, to level five, which represents sustainable capacity (Talisuna et al., 2005). The country averaged 1.9 in the prevent category, 2.6 in the detect category and 1.5 in the respond category (WHO, 2017a), while Ghana scored 2.3, 2.5 and 1.9 respectively in a similar evaluation (WHO, 2017b). Although there was an increase in the epidemic preparedness rating in the 2 years following the initial review, the score was still very low, implying that the country was ill-prepared to handle epidemics (Offiong, 2020). However, once the COVID-19 pandemic was declared a public health emergency of international concern, the Government of Nigeria responded rapidly by putting in place health system responses to control transmission, reduce morbidity and mortality, and protect and care for vulnerable populations (Dixit et al., 2020). The promptness of the response was stimulated by the country's recognition of its vulnerability to epidemics and its experience with Ebola. However, the country still lacked adequate capacity at the time of the outbreak, judging by international standards (Offiong, 2020).

Resilience-strengthening governance strategies

This section presents findings from literature reviews of the governance strategies in place at the various stages of shock during the COVID-19 pandemic in Nigeria: preparedness, shock onset and alert, shock impact and management, and recovery and learning.

Table 2: Assessment of resilience-strengthening and constraining governance strategies at various stages of shock during the COVID-19 pandemic in Nigeria

Assessment criteria	Stage of shock			
	1. Preparedness	2. Shock onset and alert	3. Shock impact and management	4. Recovery and learning
1. Effective and participatory leadership with strong vision and communication				
Set of contingency plans and protocols, and emergency legislation	Medium: disease-specific plans and protocols only	Strong: National Pandemic Response Plan was developed	No evidence of change	
Functional management capacity for governance	Weak: exists at federal level only-NCDC	Strong: functional NCRC		No evidence of change or sustainability
Stakeholder participation and engagement	Weak: federal level only	Medium: federal and state levels only	No evidence of change or sustainability	
Leadership/steering and a clear chain of command	Weak: no chain of command	Medium: clearer chain of command at the federal level	No evidence of change or sustainability	
Accountability of government agencies	Weak: exists only on paper	Weak: exists only on paper	Weak: exists only on paper	Weak: exists only on paper
Effective governance structures	Weak: ineffective structures	Medium: stakeholder involvement		No evidence of change or sustainability
Clear and feasible plan for response measures	Medium: provisional protocols and guidelines developed	Strong: multisector response plan developed by NCRC		No evidence of change
Setting strategic direction	Medium: activation of a CPG and interministerial technical working group	Strong: PSC		No evidence of change
Established public trust in response agencies	Non-existent			
Effective communication	Weak: absence of a communication strategy	Weak: absence of a communication strategy	Strong: development of RCCE strategy; multimedia campaigns; role models	No evidence of change

Table 2. continued

Assessment criteria	Stage of shock			
	1. Preparedness	2. Shock onset and alert	3. Shock impact and management	4. Recovery and learning
2. Coordination of activities across governments and key stakeholders				
Collaboration between sectors	Strong: inter-ministerial technical working group	Strong: public sector collaboration with organized private sector coalition CACOVID; strengthened engagement of health sector with Nigeria Civil Aviation Authority	Strong: multisector CEPI involving NIMR, NIPRD and NAFDAC; multidisciplinary Ministerial Expert Advisory Committee on COVID-19	Weak: lack of sustainability of collaboratives
Agreements with relevant actors	Non-existent			
3. Organizational learning culture that is responsive to crises				
Innovative organizational culture, culture of learning	Strong: lessons from previous epidemics	Strong: decentralization of EOCs was modelled after PEI; co-option of experts from PEI; adoption of community feedback model of Ebola	Strong: adoption of effective communication strategies used during the Ebola outbreak	No evidence of sustainability
Use of feedback and analysis in informing decision-making	Non-existent	Strong: mitigation strategies were informed by country risk assessment and evidence of effectiveness	Strong: expansion of testing sites based on data from the pattern of community transmission	No evidence of sustainability
Mechanisms to assess, audit, and learn from response to shock and implement change	Weak: due to defunct Expert Review Committee on Polio Eradication	Strong: COVID-19 mitigation team	Strong: COVID-19 mitigation team	No evidence of sustainability
4. Effective information systems and flows				
Flow of information between stakeholders, data-sharing mechanisms	Strong: integration of data collection systems into the country's health information system	Strong: NCDC microsite for COVID-19; toll free lines; press briefings	Strong: NCDC microsite for COVID-19; SMS-based interactive chat box; press briefings; Twitter	Weak: only the NCDC website and Twitter are functional
Flow of data, information and analysis into decision-making and evaluation	No evidence of its existence			
Mechanisms of timely dissemination of guidelines and protocols	Weak: NCDC website	Strong: NCDC microsite for COVID-19; press briefings; Twitter	Strong: NCDC microsite for COVID-19; SMS-based interactive chat box; press briefings; Twitter	Weak: only the NCDC website and Twitter are functional
Communication infrastructure	Weak: not available or functional at subnational levels, except in Lagos State	Weak: not available or functional at subnational levels		Weak: not available or functional at subnational levels
Existence of data collection and linkage systems	Strong: SORMAS and Mobile Strengthening Epidemic Response System—users			The state of functionality of both systems cannot be ascertained

Table 2 continued

Assessment criteria	Stage of shock			
	1. Preparedness	2. Shock onset and alert	3. Shock impact and management	4. Recovery and learning
5. Surveillance enabling timely detection of shocks and their impact				
Epidemiological surveillance and early warning systems	Weak: passive system of surveillance of the IDSR	Medium: intensified and active case detection through screening of travellers at ports of entry	Strong: contact tracing; community surveillance using the AVADAR approach and informants	Strong: adoption of integrated and unified surveillance strategy to monitor other epidemic-prone diseases
Existence of mechanisms to identify change in need and access to services	Weak: IDSR does not identify the change in need and access to services	Weak: IDSR does not identify the change in need and access to services	Medium: daily review of hospital records in Lagos State only	There is no evidence that the daily review is sustained.

Index: **AVADAR**: Auto-Visual Acute Flaccid Paralysis Detection and Reporting; **CACOVID**: Coalition Against COVID-19; **CEPI**: Coalition of Epidemic Preparedness and Innovation; **CPG**: Coronavirus Preparedness Group; **EOP**: Emergency Operation Centres; **IDSR**: Integrated Disease Surveillance and Response; **NAFDAC**: National Agency for Food and Drug Administration and Control; **NCDC**: Nigerian Centre for Disease Control; **NCRC**: National COVID-19 Response Centre; **NIMR**: Nigerian Institute of Medical Research; **NIPRD**: National Institute for Pharmaceutical Research and Development; **NGO**: nongovernmental organization; **PEI**: Polio Eradication Initiative; **RCCE**: risk communication and community engagement; **SORMAS**: Surveillance Outbreak Response Management and Analysis System.

1. Effective and participatory leadership with a strong vision and communication

- **Set of contingency plans and protocols, and emergency legislation**
- **Functional management capacity for governance**
- **Stakeholder participation and engagement**
- **Leadership/steering and clear chain of command**
- **Accountability of government agencies**
- **Effective governance structures**
- **Clear and feasible plan for response measures**
- **Setting strategic direction**
- **Established public trust in response agencies**
- **Effective communication**

Preparedness

Before the COVID-19 pandemic, the NCDC was already monitoring infectious disease outbreaks and coordinating control measures within the country. The NCDC is a parastatal of the FMOH that was legally established in November 2018 with a mandate to “lead preparedness, detection, and response to infectious disease outbreaks and public health emergencies”. Its 4-year (2017–2021) strategic mission was to “protect the health of Nigerians through evidence-based prevention, integrated disease surveillance and response activities using a ‘One Health’ approach guided by research and led by a skilled workforce”. In 2022, NCDC conducted an end-term review of the implementation of the 2017–2021 strategy, and learnings informed the development of the new 5-year strategy (2023–2027).

Following the first JEE of Nigeria’s epidemic preparedness in 2017, the National Action Plan for Health Security was developed under the leadership of the NCDC to strengthen Nigeria’s IHR core capacities and close the identified gaps (WHO, 2017a). The 5-year strategic plan – developed in collaboration with relevant ministries, departments, and agencies (MDAs) – serves as the primary road map for multisectoral action in preventing, detecting and responding to public health threats. It hinges on the principles of ‘One Health’ and details the procedures, people, and resources (including estimated costs) required to implement prioritized activities across the 19 technical areas of the IHR over 2 years (2018–2019). The 2023 JEE conducted in August 2023 marked a significant improvement in Nigeria’s health security, with a commendable rise in its score from 39% in 2017 to 54% (Ibukun and Biose, 2023).

As soon as there was international awareness of the COVID-19 outbreak in China, the NCDC activated governance structures and other measures to curb an imminent epidemic (Dan-Nwafor et al., 2020). The Coronavirus Preparedness Group (CPG) was established in January 2020 within the NCDC to activate an incident management system that would ensure effectiveness in the country's future emergency preparedness (Ajisegiri, Odusanya, & Joshi, 2020; Amzat et al., 2020). The inter-ministerial technical working group was inaugurated in the FMOH on 31 January 2020 to expedite intersectoral preparedness and action in the event of an outbreak in the country (Dan-Nwafor et al., 2020).

Provisional protocols and guidelines for managing COVID-19 cases were developed and disseminated to all health facilities at the national and state levels where implementation took place. In addition, the Nigeria Pandemic Influenza Preparedness and Response Plan was reviewed to accommodate an imminent COVID-19 outbreak (Dan-Nwafor et al., 2020). Compared to previous epidemics, these activities were considered timely because Nigeria harnessed the prior gains and experiences of preparations and strategies put in place for the Ebola outbreak in 2014 and the frequent Lassa fever outbreaks of the past decade (Abayomi et al., 2021).

Compared to the preparedness of other African countries, a modelling study ranked Nigeria – along with Angola, Ethiopia, Ghana, Kenya, Sudan, and Tanzania – as moderate risk and highly vulnerable but with varying capacities for response (Gilbert et al., 2020).

Shock onset and alert

The first index case of COVID-19 in Nigeria was reported on 27 February 2020. Within 2 weeks of the detection of this first case of COVID-19 in Nigeria, the Presidential Task Force (PTF) on COVID-19 was constituted to coordinate a multistakeholder response to the pandemic (Dan-Nwafor et al., 2020; Oleribe et al., 2020). The PTF, which was renamed the Presidential Steering Committee (PSC) on 1 April 2021, was chaired by the Secretary to the Government of the Federation (SGF), with membership from various MDAs. The PTF developed the National COVID-19 Multisectoral Pandemic Response Plan as the blueprint for the response efforts. It coordinated funding and governance for the public health response, managed resource mobilization, and provided social welfare support, thereby establishing the framework for containment measures and economic reopening. This high-level multisectoral coordination by the PTF helped mitigate the pandemic's impact through early intervention and strong collaborative partnerships with bilateral, multilateral, and private sector organizations (Bolu et al., 2022).

A National COVID-19 Response Centre (NCRC) was established to provide strategic guidance and resources to enable a coordinated national response across multiple sectors and actors, and to ensure that the mandate of the PSC was achieved. In collaboration with government and nongovernment stakeholders, the PSC mapped out a phased Multisector Response Plan to the COVID-19 pandemic for an immediate short-term response. The COVID-19 response plan comprised health sector and non-health sector-specific strategies and made provisions for all 36 states and the FCT to align towards achieving the goals of the plan (PTF Secretariat, 2020).

The FMOH and its agencies coordinated health sector-specific strategies, namely the National Primary Health Care Development Agency (NPHCDA) and the NCDC. The FMOH was primarily responsible for Port Health Services and isolation and treatment centres. The NPHCDA was primarily responsible for coordinating case detection and triage at the PHC level. The NCDC was responsible for research, surveillance, contact tracing, laboratory services and the coordination of the National Emergency Operation Centre, which was established before the first index case of COVID-19 in Nigeria (Dixit et al., 2020).

Subsequently, a long-term National Pandemic Response Plan (NPRP) was developed to guide Nigeria's response to current and future disease outbreaks. The Plan was accompanied by guidelines and protocols for early warning, infection prevention and control, quarantine of travellers, and management of logistics and supplies, including donated items (WHO, 2018).

Studies of Latin American countries with comparable low health system capacities, such as Brazil, Chile, Colombia, Ecuador, and Peru, examined governance issues during this phase of the shock cycle. These studies found that the countries promptly enacted strict COVID-19 containment and mitigation measures and gradually expanded their health system capacity. However, their efforts were hampered by pre-existing health system weaknesses (Benítez et al., 2020). In higher-income countries such as Germany and the Czech Republic, strategic and comprehensive governance approaches during this stage of the shock cycle contributed to mitigating the consequences of the crisis (Barzylowych et al., 2020).

Shock impact and management

As the pandemic lingered, it became apparent that to detect more cases, manage them effectively, and curb the spread of the virus, testing had to increase. Laboratory testing facilities were decentralized as community testing and contact tracing also commenced, which helped reduce the risk of exposure (Afolabi & Ilesanmi, 2021). The NCDC accredited some private facilities to diagnose and treat COVID-19 cases to relieve the burden on public facilities and also went ahead and closed non-accredited health facilities to prevent virus transmission caused by the inadequate capacity to manage the infection (Ezigbo and Ifijeh, 2020).

Laboratory testing for COVID-19 is one of the health pillars for the multisectoral response in Nigeria (FGoN, 2020). In anticipation of the spike from the third wave of COVID-19, which commenced in August 2021, the Minister of Health instructed all states to reactivate their isolation centres. The Federal Government deployed rapid testing kits to all official entry points to prevent the disease from being imported into the country. There was also a scale-up of local oxygen capacity by the FMOH to avoid shortages in case of increased demand. The Federal Government also proposed the establishment of oxygen plants across all 36 states and championed more vaccines from overseas pharmaceutical companies to increase availability. Plans were also made to start a vaccine-producing company in Nigeria with support from prominent Nigerians in the private sector (Ezigbo & Ifijeh, 2020; Afolabi & Ilesanmi, 2021).

The strategies for risk communication and community engagement (RCCE) were adopted from lessons learnt during the Ebola outbreak. News agencies actively participated in educating the public on COVID-19 risks and prevention strategies, sometimes engaging celebrities as agents of change. The FMOH and NCDC used their social media channels as levers to continuously update their audiences on the COVID-19 situation, and on how to identify and report suspected cases. Sponsored posters and handbills were used to disseminate information. Mobile phone networks configured caller tunes that communicated COVID-19 risks and prevention strategies to clients (Akinmayowa & Amzat, 2020).

Recovery and learning

Nigeria has gone through four waves of the COVID-19 pandemic, and some of the processes that were instituted at the onset of the pandemic have been institutionalized through the development of policies, strategic plans, and guidelines to ensure that the health system is better prepared to respond to future pandemics. The NPRP (2020) will continue to guide the country's response to disease outbreaks. The isolation centres and oxygen plants that were established across the 36 states of the country continue to serve the quarantine and intensive care functions. However, the PSC, which is supposed to lead the multistakeholder response, is no longer active, though it is unclear whether it has been officially disbanded. This has implications for the sustainability of the multistakeholder response. Although the initial tenure of the PSC was extended from 1 April to 31 December 2021, media reports show that the committee carried on working until December 2022 (Are, 2022). However, there are no explicit long-term plans for sustained multisectoral coordination for health emergencies.

2. Coordination of activities across government and key stakeholders

- **Collaboration between sectors**

- **Agreements with relevant actors**

Preparedness

Prior to the first case of COVID-19 in Nigeria, the CPG (which is a national-level agency) collaborated with state governments to activate PHEOCs at the subnational levels. Linkages were also established between the state PHEOCs and the national Incident Coordination Centre (Ihekweazu & Agogo, 2020).

The FMoH inaugurated an inter-ministerial technical working group comprising stakeholders from across Nigeria's MDAs to enhance intersectoral action for a more coordinated disease outbreak response in the event of a COVID-19 epidemic in Nigeria (Dan-Nwafor et al., 2020). The stakeholders were drawn from the FMoH, NCDC, NPHCDA, Federal Ministry of Agriculture and Rural Development, Ministry of Defence, Office of the National Security Adviser, National Environmental Standards and Regulations Enforcement Agency, and the Nigerian Nuclear Regulatory Authority, among others.

Shock onset and alert

Following the detection of the first case of COVID-19 in the country, the CPG transitioned into a multisector PHEOC to coordinate the national response (Dan-Nwafor et al., 2020). State-level PHEOCs were also activated in all 36 states and the FCT to monitor and respond to infectious disease outbreaks at subnational levels (Oyebanji et al., 2021). The rapid response teams were deployed from the NCDC at the national level to the states to provide technical support to subnational governments and agencies for effective response to the COVID-19 outbreak (FMINO, 2021).

As soon as the PSC was set up, it began coordinating all the MDAs and organizations involved in the response to the pandemic by aligning their activities towards containment and mitigation of the COVID-19 outbreak. In collaboration with the organized private sector Coalition Against COVID-19 (CACOVID), significant funds were raised to support public health responses to COVID-19 in Nigeria (Dan-Nwafor et al., 2020).

Furthermore, in accordance with the guidelines of the International Civil Aviation Organization, as stipulated in the Collaborative Arrangement for the Prevention and Management of Public Health Events in Civil Aviation, the Nigeria Civil Aviation Authority worked closely with the FMoH to ensure prompt screening of all incoming travellers (Nuhu, 2020).

Shock impact and management

To eradicate the virus, the Federal Government established the Coalition of Epidemic Preparedness and Innovation (CEPI) to coordinate the activities of three agencies responsible for conducting pharmaceutical and clinical research on COVID-19 prevention and treatment (Amzat et al., 2020). These agencies comprised the Nigerian Institute of Medical Research (NIMR), the Nigerian Institute of Pharmaceutical Research and Development (NIPRD), and the National Agency for Food and Drug Administration (NAFDAC).

As the pandemic progressed in Nigeria, the need to study its evolution and development to inform a more effective response was amplified and a Ministerial Expert Advisory Committee on COVID-19 was set up for this purpose. The committee comprised technical experts in virology, public health, infectious diseases, and diagnostics (FMINO, 2020).

Recovery and learning

Although COVID-19 is no longer a public health emergency of international concern (Wise, 2023), the coordination of the public health response to disease outbreaks continues to be sustained through the functions of the NCDC, which provides technical and financial support to the state PHEOCs. However, future sustainability of the subnational coordination structure will depend on the commitment of state governments (Saleh et al., 2022).

Other collaborations across public sectors, between the public and private sectors, and across disciplines have not been sustained. This can be attributed to the lack of a legal framework to institutionalize these collaboratives, and lack of sustainable funding to maintain activities.

The level of deliberate multisectoral and intersectoral collaborative design at the beginning of the pandemic was innovative, and although the collaboration potentially had high transaction costs, lessons learnt suggest that they will need to be revived to deal with future health shocks. The nature of the impact of COVID-19 required a whole-of-society approach to its response and has implications for Nigeria's HiAP reform. This was evident during the lockdown period where other key sectors (especially education, food/agriculture, and finance) were impacted in Nigeria, and across Africa, with knock-on effects on the health sector, especially for communicable and noncommunicable diseases (Formenti et al., 2022).

The WHO mapping of multisectoral and intersectoral actions for health and well-being in the European Region (WHO, 2018) suggests that such collaborations are usually triggered when the health system is unable to address health and well-being challenges of its own. Collaborations are facilitated by clear mandates, sufficient resources, capacity, data and evidence. They are sustained by adequately addressing challenges and barriers, key among which are lack of political will, lack of resources and coordination, and conflicting interests and power imbalances between sectors (WHO, 2018).

3. Organizational learning culture that is responsive to crises

- **Innovative organizational culture, or culture of learning**
- **Use of feedback and analysis in informing decision-making**
- **Mechanisms to assess, audit, and learn from response to shock and implement change**

Preparedness

Due to its prior success in managing epidemics, Nigeria was among the first countries to recognize the risk of COVID-19 and implement non-pharmaceutical measures to control community transmission and prevent the importation of new cases (Mbachu et al., 2023; Dan-Nwafor et al., 2020). These measures included: (i) the development of a community response and preparedness plan, (ii) commencement of screening at points of entry, (iii) adoption of innovative approaches for disease surveillance, and (iv) partnerships for enhanced access to vaccines and technologies.

The community response and preparedness plan for COVID-19 in Nigeria was shaped by lessons learned from the polio eradication initiative. This initiative engages communities through their leaders and gatekeepers, which is crucial in ensuring high compliance rates with interventions and fostering community ownership of the communication process (Mbachu et al., 2023; Etteh, Adoga & Ogbaga, 2020; Bologna et al., 2021; Kalbarczyk et al., 2021). Additionally, the Federal Government's decisions to implement screening procedures at points of entry, enhance media sensitization, and offer free laboratory testing for symptomatic patients were influenced by lessons learned from the 2014 Ebola response (Mbachu et al., 2023; Ebenso & Otu, 2020).

Across Africa, a range of innovative initiatives have been implemented to mitigate the effects of COVID-19, offering valuable strategies for future disease control and emergency response. Key innovations, promoted collaboratively by the Africa Centres for Disease Control and Prevention (Africa CDC) and its partners, include digital health platforms for surveillance, the development and use of genomic-based pathogen surveillance, building new partnerships to enhance access to diagnostics and vaccines, and the promotion of the pooled procurement of medical supplies. Additionally, efforts were made to boost in-continent manufacturing of diagnostics to address supply-side challenges encountered during the pandemic (Inzaule et al., 2021).

Shock onset and alert

Soon after Nigeria recorded its first index case of COVID-19, the Federal Government established a COVID-19 mitigation team to coordinate a multisectoral health system response. This decision was driven by the recognition that the pandemic had disrupted

even the most stable health systems globally (Etteh, Adoga, & Ogbaga, 2020), coupled with the fact that Nigeria had been listed as “one of the probable hotspots for the transmission of COVID-19 in the African continent” (Ayenigbara, 2020; Ayenigbara et al., 2020).

The decentralized state-level PHEOCs for COVID-19 were modelled after the PHEOCs that were activated in the last months of Nigeria’s polio eradication initiative (Ajisegiri, Odusanya, & Joshi, 2020). Staff from the polio eradication initiative were enlisted to assist with COVID-19 response coordination, contact tracing, case investigation, risk communication, community engagement and disease surveillance. This support was vital for pandemic control during the community transmission phase.

Similarly, a community feedback model employed by the International Red Cross in a number of sub-Saharan African countries (Burundi, Cameroon, Côte d’Ivoire, Madagascar, Sierra Leone, South Sudan, and Zimbabwe) during the Ebola crises was adapted at the national, regional, and local levels for collecting and feeding back community perspectives on COVID-19, which was used for decision-making (Erlach et al., 2021).

Shock impact and management

About 2 months after the detection of the index case in Nigeria, the nation’s laboratory testing capacity was still very low. The NCDC repurposed the HIV (molecular laboratories) and TB testing (Gene Xpert machines) platforms to test for the SARS-CoV-2 virus. As a result, COVID-19 testing centres multiplied and daily testing rose from 2500 to 15 000 with improved turnaround time of 24–48 hours (Al-Mustapha et al., 2021). Testing site expansion was based on a trend of community transmission: “As evidence of community transmission emerged, the need to expand testing capacity further in order to gain an accurate picture of case incidence figures became imperative, leading the NCDC to publish a national strategy for the expansion of COVID-19 testing capacity” (Adesanya, 2020).

Recovery and learning

Although Nigeria demonstrated a culture of learning and use of feedback to inform decisions during the COVID-19 pandemic, there is limited evidence that these are being sustained as the country recovers from the pandemic. The COVID-19 mitigation team has not evolved into a permanent structure for strengthening the health system.

4. Effective information systems and flows

- **Flow of information between stakeholders, and data-sharing mechanisms**
- **Flow of data, information and analysis into decision-making and evaluation**
- **Mechanisms of timely dissemination of guidelines and protocols**
- **Communication infrastructure**
- **Existence of data collection and linkage systems**

Preparedness

As part of preparations to combat the COVID-19 pandemic, the Surveillance Outbreak Response Management and Analysis System (SORMAS) and the Mobile Strengthening Epidemic Response System were developed for the timely reporting of suspected and confirmed cases, respectively (Adesanya, 2020). SORMAS was built to combine in-memory database (IMDB) technology with mobile device management software that allows for interactive data analysis. It can be used on smartphones and tablets for real-time bidirectional data exchange (Fähnrich et al., 2015). The SORMAS tool was promptly adopted by the NCDC for information exchange (including data reporting between field officers and PHEOCs), automated status reports, contact tracing, and Global Positioning System (GPS) tracking of cases.

Furthermore, the health information system dashboard was revamped into a single integrated view to eliminate unnecessary fragmentation, duplication, and overlap. In the revised system, the roles of different reporting/collating agencies at the national and state levels are clearly defined (Adesanya, 2020). Prior to the first case of COVID-19 in Nigeria, the NCDC published daily updates

on the global progression and impact of the pandemic on their website. On 22 January 2020 the first public health advisory on self-protection in the event of a COVID-19 outbreak was provided to Nigerian citizens, together with subsequent updates, on the NCDC website (Dan-Nwafor et al., 2020; Ihekweazu & Agogo, 2020).

Shock onset and alert

Several strategies were adopted to ensure data transparency and dissemination of up-to-date and correct information at the onset of the COVID-19 pandemic. These strategies included: (i) a dedicated microsite on the NCDC website for reporting the COVID-19 situation; (ii) publication of public health advisories on the NCDC website; (iii) toll-free 24-hour hotlines for accessing information on risk assessment and prevention, and state helplines for reporting suspected cases of the infection; and (iv) periodic press briefings on the evolution of the pandemic and in-country response strategies (Dan-Nwafor et al., 2020).

Moreover, COVID-19 risk communication and health education campaigns on preventive strategies were escalated on all available social media platforms in the country (Akinmayowa & Amzat, 2020; Amzat et al., 2020). The National Orientation Agency, nongovernmental organizations (NGOs) and some faith-based organizations organized COVID-19 sensitization campaigns across the country.

Shock impact and management

As the pandemic progressed, various hashtags were used to sustain public engagement on social media. A couple of notable themes were #Takeresponsibility and #Mask-upNaija. Messages were also translated into the major local languages to reach a wider audience (Amzat et al., 2020). Daily situation reports on COVID-19 testing, infection, and mortality were posted on the COVID-19 microsite.

To deal with the infodemic about COVID-19 in the country, the Nigeria Health Watch (a health advocacy NGO) partnered with Meedan (a not-for-profit technology company) to package and disseminate counter-information through traditional and electronic media platforms (Nigeria Health Watch, 2020). At the time, the regional infodemic was also being addressed by the Africa Infodemic Response Alliance, using an infodemic management framework (WHO, 2023a).

The NCDC kept up efforts to disseminate timely information. With the support of the United Nations Children's Fund (UNICEF), a short message service (SMS)-based interactive chatbot known as U-Report was launched through an innovative mobile monitoring platform. Information in the chatbot could be accessed during the pandemic on all mobile networks in Nigeria by messaging "coronavirus" to a code (UNICEF Nigeria, 2020).

Recovery and learning

The COVID-19 microsite has remained active with up-to-date information about the pandemic. Similar microsites were created for other diseases of public health importance, and these sites have remained active with up-to-date information on the trends of these diseases. Information from primary data is needed to determine the extent to which other information systems and flows are being sustained.

5. Surveillance enabling timely detection of shocks and their impact

- **Epidemiological surveillance and early warning systems**
- **Existence of mechanisms to identify change in need and access to services**

Preparedness

Prior to the COVID-19 pandemic, Nigeria had a coordinated disease surveillance and notification system in place. This system required immediate reporting of 12 epidemic-prone diseases and six diseases targeted for elimination and eradication, along with monthly reporting of 22 other significant public health diseases. The Integrated Disease Surveillance and Response (IDSR) strategy was adopted in Nigeria in January 2001, and the implementation of this approach in monitoring disease outbreaks was described as well coordinated and efficient (Isere et al., 2015; Wolfe et al., 2021). However, this system was estimated to be poor at the beginning of COVID-19 in 2020, with implications for underreporting of COVID-19 outcomes and deaths (Ohia et al., 2020). Case detection was partly done through a 'passive' system of identifying symptomatic cases and reporting them to the health facility, and/or monitoring health facility records.

When COVID-19 emerged, temperature screening was introduced for international travellers entering the country by air in January 2020, prior to the detection of Nigeria's index case and soon after the outbreak in China. In addition, all passengers arriving from China were mandated to undergo polymerase chain reaction (PCR) screening for COVID-19. Furthermore, an intersectoral committee (comprising stakeholders in the transport, health, aviation, and security sectors) was set up at about the same time (in January 2020) by the Federal Government to scale up surveillance efforts in the country's five international airports, and the Coronavirus Incident Management System was activated (Ehanire, 2020).

Shock onset and alert

Shortly after COVID-19 was declared a public health emergency of international concern, the Federal Airports Authority of Nigeria issued a provisional quarantine protocol for travellers arriving in the country. The guidelines mandated that all airline passengers take a COVID-19 PCR test within 4 days (96 hours) of their return to Nigeria; tests conducted more than 96 hours prior to departure were deemed invalid. Additionally, all travellers, including diplomats and children under 10, were required to register on an online national travel portal to track the laboratory results of their COVID-19 tests (Nuhu, 2020). Domestic airports also resumed temperature checks on all passengers to intensify case detection.

Shock impact and management

In a bid to manage the impact of increased COVID-19 transmission, additional measures were introduced to effectively monitor the rate of imported cases and in-country community transmission. International travel was restricted to airports in Lagos and Abuja in order to ensure effective surveillance (Elusoji, 2020).

In Lagos State, which accounted for approximately half of COVID-19 infections in the first wave of the pandemic in Nigeria, surveillance teams were mobilized to help investigate and trace patients who presented with COVID-19 symptoms at health care facilities, and to alert the State COVID-19 team. Hospital records were reviewed on a daily basis by the so-called fresh eyes of the surveillance teams to seek out clients who may have presented with suspicious symptoms but were missed by hospital staff. The surveillance team was deployed in the 37 localities of Lagos State, across a total of 1408 health facilities (WHO, 2020).

Following the second wave of the outbreak in Nigeria, the existing mobile-based Auto-Visual Acute Flaccid Paralysis Detection and Reporting (AVADAR) system was leveraged to strengthen community surveillance of COVID-19. With the support of WHO, the government engaged over 600 trained AVADAR informants across the 731 political wards in 11 high-risk northern states to conduct house-to-house COVID-19 surveillance and reporting of suspected cases, as well as community sensitization and contact tracing (WHO, 2021). The adoption of AVADAR contributed to real-time reporting of suspected cases from communities and fostered early detection and response to COVID-19. Furthermore, the use of local AVADAR informants contributed to the cultural sensitivity of surveillance and reporting at the community level (WHO, 2021). However, the shifting of resources towards COVID-19 pandemic

response resulted in the crowding-out of essential maternal and child health services (Okeke et al, 2022).

Recovery and learning

The rigorous surveillance standard that was set by the COVID-19 response was leveraged to boost surveillance of other diseases in Nigeria. In southern Nigeria specifically, health workers (disease and surveillance notification officers) adopted a unified surveillance strategy to monitor other priority diseases that are endemic-prone, while aggressively searching for COVID-19 cases. This integrated surveillance approach has significantly increased case detection rates for measles and yellow fever in the Region (WHO, 2020).

Conclusions and policy implications

Table 3: Key conclusions and policy implications

Conclusions	Policy implications
Effective interagency collaboration and coordination were crucial to the successful implementation of the COVID-19 response in Nigeria. However, this approach has not been institutionalized.	In line with the Lancet Nigeria Commission and Presidential Health Sector Reform Committee recommendations, there is an overarching need to mainstream HiAP.
Disease surveillance capacity at national and subnational levels was enhanced and proved effective.	Funding and capacity-building are required to ensure that the country's surveillance capabilities remain effective for the timely detection and real-time reporting of disease outbreaks.
Lessons from the COVID-19 pandemic have strengthened functional management capacity at the national level, but less so at subnational levels, where delayed responses remain an issue. State governments had limited involvement in strategic decision-making, resulting in limited capacity to prepare and respond to health emergencies.	Variations in state-level capacity require a bespoke approach of technical assistance and financial support. More active subnational involvement in strategic decision-making and operational planning is required.
Strategic, operational, and tactical coordination were achieved in the short term, but strategic coordination was not sustained. Failure to sustain strategic coordination structures like the PSC threatens resilience and future response capacity. Future emergency response efforts could experience delays and inefficiencies, fragmented communication, inequitable distribution of resources, reduced community engagement, policy barriers, and missed opportunities for prevention and preparedness.	Maintenance and the consolidation of strategic coordination structures are essential to building health system resilience and better responding to public health emergencies in the African Region.
Policy frameworks and structures to sustain organizational learning and a learning culture remain absent, resulting in inconsistent response strategies and missed opportunities for knowledge sharing and future innovation.	Establishing learning structures that promote knowledge sharing, dialogue, collective decision-making, evidence-based practices and accountability within organizations will help build resilience.

Multisectoral collaboration was crucial but has not been institutionalized

Effective interagency collaboration and coordination were crucial to the successful implementation of the COVID-19 response in Nigeria. The pandemic response required complex solutions, which led to the involvement and participation of various agencies (actors and sectors) with a range of mandates and organizational cultures. Although it was impractical to attempt to harmonize the statutory mandates of the various organizations and agencies – particularly considering the dynamic nature of the health system – it was vital to identify commonalities across agencies and strengthen mechanisms for participatory and inclusive decision-making. Moreover, the interagency collaboration approach emphasized data-driven performance and strategic reviews, which were necessary for enhancing resilience capacities through relationship building, problem solving and learning.

However, multisectoral collaboration has not been institutionalized in Nigeria. Based on learning from the COVID-19 response, this failure to establish formalized mechanisms to promote cross-sectoral collaboration could hamper future health emergency management, resulting in delayed and inefficient response efforts, fragmented communication, inequitable distribution of resources, reduced community engagement, policy barriers and missed opportunities for prevention and preparedness.

The evidence suggests that to achieve resilience Nigeria must move beyond the health sector, through the planned HiAP reform. A recent Lancet Commission article on Nigeria outlines several recommendations towards this goal, summarized as follows (Abubakar et al., 2022):

1. leveraging existing governance structures at all levels for the prioritization of health
2. harmonization of cross-sector policies, standards and accountability
3. resource prioritization across health and non-health sectors to actualize the HiAP mandate.

These recommendations need to be updated on account of these recent lessons. Updates might include practical solutions such as the establishment of a dedicated department or agency to coordinate multisectoral collaboration and ensure distributed leadership and decision-making. This will secure the participation and commitment of varied sectors and foster sustainability.

Nigeria's experience is mirrored in other countries in the Region – including Ethiopia, Kenya, Rwanda and Senegal – which also benefited from cross-sectoral collaboration strategies, such that “their ministries of health did not solely take on the burden or responsibility for pandemic health outcomes and could draw on wide expertise, resources, and capacity” (WHO, 2021c).

Regional experience underscores the importance of multisectoral collaboration. Africa's early and collective response to the COVID-19 pandemic successfully increased diagnostic capacity from two to 43 countries between February and April 2020 (Ondoa et al., 2020). This effort was spearheaded by the Africa Task Force for Novel Coronavirus, a coalition involving the African Union (AU), AU Member States, the WHO Regional Office for Africa, and other stakeholders, led by the Africa CDC. Under this initiative, Nigeria (and other African countries like Ethiopia [Ondoa et al., 2020]) benefited from the training of expert staff from reference laboratories, following which the NCDC on 16 May 2020 activated 26 COVID-19 testing sites.

Lessons from COVID-19 have strengthened functional management capacity at the national level, but less so at subnational levels

Responding to COVID-19 has strengthened the functional management capacity of the national health system, specifically the NCDC, to govern disease outbreaks. Approaches adopted during the COVID-19 response – for example, activation of PHEOCs; infection prevention and control protocols; and risk communication plans – have now been institutionalized at national and subnational levels for disease outbreak preparedness and response and have been used in response to the recurrent Lassa fever outbreak.

However, at the subnational levels (state and local government) functional management capacity is still weak. The tendency for the subnational levels to lag behind the national level in capacity to respond to public health emergencies is well documented. Evidence shows that low- and middle-income countries (LMICs) in the West African subregion that had under-resourced subnational health systems with minimal capacities for multisectoral coordination and collaboration fared much worse during the Ebola outbreak (Martin et al., 2022). Countries with more developed health security capabilities at the district level demonstrated more resilience during the COVID-19 pandemic by maintaining access to essential health services (Martin et al., 2022).

Institutionalizing the PHEOCs at the subnational levels has the potential to improve capacity to prepare for, detect, and coordinate public health emergency responses. However, this requires adequate commitments from state governments to strengthen capacity at this level through the provision of sustainable financial and technical support to the centres. The observed variations in state-level capacity require a bespoke approach of technical assistance and financial support.

Strategic, operational, and tactical coordination were achieved, but strategic coordination was not sustained

Nigeria was one of the few countries in the African Region that achieved the desired three levels of coordination (strategic, operational and tactical) for the COVID-19 response. These coordination mechanisms were crucial for slowing the pandemic in the Region (Oyugi, 2022). However, the strategic coordination structure – that is, the PSC – was not sustained. The PSC was an innovation in the Nigerian context that enabled the formation of new collaborations and partnerships for epidemic response between the primary coordinating agencies (FMOH and NCDC) and other non-health agencies. This failure to sustain strategic

coordinating structures like the PSC is a threat to resilience in Nigeria and in the Region more generally. The maintenance and consolidation of COVID-19 capacities is one of five pillars in a recently proposed framework for transitioning towards resilient health systems to better respond to public health emergencies in the Region (Balde et al., 2022).

State-level engagement in strategic decision-making needs to be increased and strengthened

The limited involvement of state governments in strategic decisions made for Nigeria's health system response to COVID-19 delayed the pandemic response at the subnational level. Active involvement of states in operational coordination had demonstrably good effects.

A culture of learning from previous successes was evident in the COVID-19 response, although it was not institutionalized

Lessons from the control of previous epidemics contributed to strengthening the country's preparedness and response to COVID-19. But the absence of policy frameworks and structures to sustain organizational learning and culture may result in inconsistent response strategies and missed opportunities for knowledge sharing and innovation in future.

To enhance the Nigerian health system's ability to effectively respond to emergencies, it is essential to establish policies and embed learning structures that promote knowledge sharing, dialogues, collective decision-making, evidence-based practices, and accountability within organizations (Alonazi, 2021).

Efforts made to improve the surveillance system after the Ebola outbreak enhanced disease surveillance capacity for COVID-19 at national and subnational levels

Nigeria has over time developed its surveillance and laboratory capabilities to detect disease outbreaks, and this needs to be sustained. Of the three categories of IHR core capacities (prevent, detect, and respond), Nigeria had more than limited capacity in the detect category only (Dixit et al., 2020). Sustained funding and capacity-building are required to ensure that the country's surveillance capabilities remain effective for the timely detection and real-time reporting of disease outbreaks (Saleh et al., 2022). Adopting and scaling up the AVADAR structure across the country could strengthen community surveillance.

Although Nigeria was able to successfully contain COVID-19 and Ebola, it has not been as successful in the control of recurrent epidemics such as Lassa fever or endemic diseases such as malaria. Evidence shows that the trade-off for the containment of COVID-19 was a crowding-out of essential maternal and child health services because resources were shifted towards the pandemic response. Hence the need to strengthen the health system to be able to effectively control recurrent epidemics.

Evidence suggests that more comprehensive reforms are needed to make the health system as responsive to everyday shocks as it is to public health emergencies

The National Health Policy (2016) and the National Strategic Health Development Plan II (2018) developed mechanisms and processes for the involvement of stakeholders in health, which need to be adapted to public health emergencies. The Presidential Health Sector Reform Committee provided guidance on the nature of the reforms needed. Those recommendations should be updated, considering further learning, and leveraged to inform the development of National Strategic Health Development Plan III.

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