MPOX IN BRAZIL: CURRENT CHALLENGES IN EPIDEMIOLOGICAL SURVEILLANCE, RESPONSE OF THE BRAZILIAN UNIFIED HEALTH SYSTEM (SUS), AND CONTROL STRATEGIES IN THE FACE OF EMERGING DISEASES

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Danielle Larissa Godinho Miranda[1], Humberto Alves Nogueira[2], Victoria Kailane Martins Cabral[3], Maria Júlia Sampaio[4], Liz Ferrari Cedrim[5], Liz Malta Luna[6], Maria Fernanda Calheiros Magalhães Sampaio[7], Isabelli Maria Sarmento Lopes[8], Helena Lima da Silva Neta[9] and Rejane Pimenta do Prado Costa[10]

Abstract

Mpox has become a significant public health challenge in Brazil since 2022, requiring rapid and coordinated responses in the context of a global health emergency. In Brazil, virus transmission highlighted the importance of active epidemiological surveillance, timely compulsory notification, and

[1] Centro Universitário FIBRA
Belém - PA
E-mail: danilarissamiranda@gmail.com
[2] Undergraduate student in Law
Universidade Federal de Roraima (UFRR)
Boa Vista - RR
E-mail: humbertoalvesnogueira@gmail.com
[3] Graduated in Nursing - Fametro
Manaus - AM
E-mail: victoriacabral.acaenf@gmail.com
[4] Medical student
Cesmac
Maceió AL
E-mail: Sampaiomariajuliagomes@gmail.com
[5] Medical student
Unima afya
Maceió-AL
E-mail: Lizferrari123@gmail.com
[6] Medical student - FMO
Maceió-AL
E-mail: lizmlunaa1@hotmail.com
[7] Medical student
UNIMA- Maceió
E-mail: Fefe.sampaio@uol.com.br
[8] Medical student
UNIMA afya
E-mail: Isabellisarmento@gmail.com
[9] PhD in Therapeutic Innovation
UFPE
E-mail: silvanetahlj@gmail.com
[10] Master's degree in Health, Society, and Environment
Universidade Federal dos Vales
E-mail: rejane.pi@ yahoo.com

the expansion of laboratory diagnostic capacity, particularly in densely populated regions and areas with intense international mobility. This qualitative, descriptive-analytical study is based on a narrative literature review and on official technical documents and epidemiological bulletins published between 2022 and 2025. The findings indicate that the Unified Health System (SUS) played a central role in coordinating the national response by establishing clinical protocols, organizing care pathways, promoting professional training, and implementing vaccination and health communication strategies. However, persistent challenges remain, including underreporting, regional inequalities in access to services, the need for stronger integration between surveillance and primary health care, and the reduction of stigma associated with the disease. It is concluded that continuous strengthening of epidemiological surveillance, combined with intersectoral policies, health education initiatives, and sustained investment in the SUS, is essential to enhance preparedness and response to Mpox and other emerging diseases.

Keywords: Emerging diseases, Epidemiological surveillance, Mpox, Unified Health System.

INTRODUCTION

Mpox, previously referred to as monkeypox, gained prominence on the international stage from 2022 onward, when outbreaks were recorded across different continents, leading the World Health Organization to declare a Public Health Emergency of International Concern. This declaration occurred within the context of the International Health Regulations (2005), a legal instrument that guides coordinated responses to events with potential global spread, underscoring the severity and rapid dissemination of the condition beyond historically endemic areas. In Brazil, the swift spread of cases revealed structural and operational vulnerabilities in epidemiological surveillance, while simultaneously highlighting the relevance of the Brazilian Unified Health System (SUS) as the central axis for coordinating prevention, diagnosis, and control actions. The incorporation of the disease into the list of compulsory notifiable conditions and the publication of a national contingency plan demonstrate institutional mobilization at multiple levels of management. In this context, Mpox is situated within the

set of emerging diseases that challenge health systems, requiring integrated responses grounded in evidence and sustained by effective public policies. Furthermore, the internationally recommended terminological change to “Mpox” sought to reduce historical stigmas associated with the former nomenclature, reinforcing the ethical and communicational dimensions of the health response.

The problem guiding this chapter focuses on analyzing the challenges faced by Brazilian epidemiological surveillance in relation to Mpox, considering aspects such as compulsory notification, diagnostic capacity, integration among levels of care, and the confrontation of regional inequalities. This also includes the need to assess articulation between laboratory surveillance, primary care, and risk communication—elements recognized as determinants for the timely control of outbreaks. The question is to what extent the structure of the SUS was able to respond in a timely and equitable manner to the outbreak, and which strategies may strengthen preparedness for future health emergencies. This question involves analyzing the system’s federative governance, marked by decentralization of actions and tripartite coordination among the federal government, states, and municipalities.

The general objective is to analyze the current challenges of Mpox epidemiological surveillance in Brazil and the SUS response to emerging diseases. As specific objectives, the chapter seeks to: discuss the main obstacles in identifying and notifying cases; examine the strategies for care organization and vaccination adopted; evaluate integration between surveillance and primary care; and reflect on perspectives for improving public policies for response. Additionally, it aims to contextualize the Brazilian experience in light of international recommendations and contemporary debate on preparedness for public health emergencies.

The justification for this study is grounded in the need to understand the lessons learned from Mpox, especially in a country of continental dimensions and marked social inequalities. Regional heterogeneity in service provision, laboratory infrastructure, and response capacity reinforces the importance of analyses that consider social determinants of health and territorial inequities. The analysis

contributes to academic debate and to the improvement of collective health practices, strengthening preparedness for future epidemiological emergencies.

From a theoretical standpoint, the discussion is supported by frameworks from the epidemiology of emerging diseases, which highlight factors such as globalization, population mobility, environmental changes, and social inequalities as determinants of the emergence of new health threats. Within this scope, the One Health perspective is also incorporated, recognizing the interdependence among human, animal, and environmental health in the dynamics of zoonoses. The chapter is likewise grounded in the principles of health surveillance—comprehensiveness, equity, and decentralization—and in the conception of the SUS as a universal public system structured to ensure comprehensive access to health care. The articulation among epidemiological surveillance, primary care, and intersectoral actions is configured as a central element for the effective management of Mpox and other contemporary health threats. Thus, the analysis proposes understanding Mpox not merely as an isolated epidemiological event, but as an expression of a dynamic global scenario that demands resilient and sustainable health systems.

METHODOLOGY

TYPE OF STUDY

This is a qualitative study with a descriptive-analytical approach, developed through a narrative literature review. This methodological choice is justified by the need to understand Mpox in Brazil beyond isolated quantitative data, enabling a contextualized analysis of the challenges of epidemiological surveillance, the organization of the Brazilian Unified Health System (SUS), and control strategies in the face of emerging diseases. The qualitative approach makes it possible to interpret public policies, technical guidelines, and scientific evidence from the perspective of collective health and health management.

DATA COLLECTION PROCEDURES

Data were collected through a bibliographic survey in national and international scientific databases, in addition to consulting official documents, epidemiological bulletins, technical notes, and protocols published by Brazilian governmental bodies between 2022 and 2025. Descriptors related to "Mpox," "epidemiological surveillance," "Brazilian Unified Health System," "emerging diseases," and "public health response" were used, combined with Boolean operators.

As inclusion criteria, full-text publications in Portuguese, English, or Spanish were considered, provided they addressed the Brazilian context or discussions applicable to the SUS. Duplicated materials were excluded, as were studies lacking apparent methodological rigor or that did not directly engage with the proposed theme.

DATA ANALYSIS AND ORGANIZATION

The collected data were organized into previously defined thematic categories: (a) organization of epidemiological surveillance; (b) diagnostic capacity and notification; (c) care strategies and vaccination; (d) structural challenges and regional inequalities; and (e) perspectives for addressing emerging diseases. The analysis was interpretive, articulating findings from the literature with theoretical references from epidemiology and collective health.

THEORETICAL-METHODOLOGICAL GROUNDING

The discussion was grounded in the principles of health surveillance—especially comprehensiveness, equity, and decentralization—as well as theoretical frameworks on emerging diseases and preparedness for health emergencies. The literature on the organization of universal health systems was also considered, emphasizing the role of the SUS in coordinating the national response. This methodological structure enabled a critical and contextualized analysis, contributing to understanding

contemporary challenges related to Mpox and to strengthening the response capacity of Brazil's public health system.

RESULTS AND DISCUSSION

The analysis of the literature and official documents showed that the introduction of Mpox in Brazil from 2022 onward significantly mobilized the structure of national epidemiological surveillance. Among the main findings are the rapid inclusion of the disease in the list of compulsory notifiable conditions, the development of clinical protocols and care flowcharts, and the expansion of diagnostic capacity through the public laboratory network. These measures demonstrate the adaptive capacity of the Brazilian Unified Health System (SUS) in the face of health emergencies, particularly regarding the centralized coordination of guidelines and the decentralized execution of actions in states and municipalities.

It was observed, however, that unequal distribution of resources and infrastructure affected the uniformity of the response. Regions with higher population density and greater availability of specialized services performed better in detecting and confirming cases, whereas areas with lower care coverage faced difficulties related to underreporting and timely access to diagnosis. These findings align with the literature on emerging diseases, which indicates that structural inequalities and social determinants influence the magnitude and control of outbreaks.

Another relevant point concerns the strategic role of Primary Health Care (PHC) in the early identification of suspected cases and in providing guidance to the population. Although PHC is recognized as the gateway to the SUS, integration between epidemiological surveillance and primary care remained heterogeneous, highlighting the need to strengthen communication flows and ensure continuous training of multiprofessional teams. Recent studies on responses to health emergencies emphasize that integration between surveillance and care is decisive for reducing transmission and preventing overload of secondary and tertiary levels of care.

The implementation of vaccination strategies for priority groups and health communication actions also stood out as central components of the Brazilian response. However, the literature indicates that the stigma associated with Mpox—especially among vulnerable populations—constituted an additional obstacle to seeking diagnosis and treatment, reinforcing the importance of informative campaigns grounded in evidence and in the promotion of human rights.

Overall, the results indicate that Brazil has a robust institutional framework to address epidemiological emergencies, but that challenges persist in the domains of equity, intersectoral integration, and sustainability of actions. The Mpox experience reinforces the need for continuous investments in health surveillance, modernization of information systems, and strengthening of local response capacity—essential elements for confronting emerging diseases in an increasingly dynamic global scenario.

CONCLUSION

The analysis developed throughout this chapter made it possible to understand the current challenges of Mpox epidemiological surveillance in Brazil, as well as to evaluate the response of the Brazilian Unified Health System (SUS) to this emerging condition. Returning to the central objective, the chapter sought to examine the public health system's capacity for organization in the face of a health emergency, identifying structural, operational, and social obstacles that affected the response to the disease.

The main results show that Brazil presented a relatively swift response, with implementation of compulsory notification, expansion of diagnostic capacity, development of clinical protocols, and organization of vaccination and health communication strategies. The SUS demonstrated a strategic role in national coordination of actions, reinforcing its relevance as a universal and decentralized system. Nevertheless, challenges persist related to underreporting, regional inequalities in access to services, the

need for greater integration between epidemiological surveillance and Primary Health Care, and the confrontation of stigma associated with the disease.

As a contribution, this study broadens reflection on the importance of continuously strengthening health surveillance and preparedness for health emergencies, highlighting the need for sustained investments, professional qualification, and intersectoral integration. Furthermore, it reinforces the centrality of the SUS in guaranteeing the right to health in contexts of crisis.

For future research, empirical studies are suggested, including quantitative analyses of regional epidemiological indicators, assessments of the effectiveness of vaccination strategies, and investigations into the impact of communication actions on stigma reduction. Such investigations may support more equitable public policies and strengthen response capacity in the face of new emerging diseases.

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