

Review

Not peer-reviewed version

---

# Responding to Pandemics (COVID-19 and Monkey Pox) using the VUCA Framework

---

[Augustine Kumah](#)\*

Posted Date: 15 November 2024

doi: 10.20944/preprints202411.1204.v1

Keywords: COVID-19; Monkey Pox; VUCA; Healthcare Leadership; Crisis management



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a Creative Commons CC BY 4.0 license, which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Review

# Responding to Pandemics (COVID-19 and Monkey Pox) Using the VUCA Framework

Augustine Kumah <sup>1,2</sup>

<sup>1</sup> The Bank Hospital, Accra—Ghana

<sup>2</sup> Research on Interventions for Global Health Transformation—RIGHT Institute

**Abstract:** The COVID-19 pandemic and the Monkeypox outbreak have posed significant challenges to global health systems, exemplifying the volatile, uncertain, complex, and ambiguous (VUCA) nature of public health crises. These infectious disease outbreaks have tested the resilience and preparedness of healthcare systems and highlighted the need for adaptive leadership and organizational responses in VUCA environments. This narrative review explores how the VUCA framework can be applied to understand and improve the response to COVID-19 and Monkeypox. This narrative review was conducted by systematically searching academic literature and reports on the COVID-19 pandemic, the Monkeypox outbreak, and the VUCA framework in healthcare and crisis management. The databases searched included PubMed, Google Scholar, Scopus, and Web of Science, covering the period from January 2020 to September 2023. Through a comprehensive literature analysis, this review examines the impact of volatility, uncertainty, complexity, and ambiguity on pandemic management, focusing on leadership strategies, healthcare delivery, public health policies, and organizational culture. Key leadership attributes such as agility, emotional intelligence, and collaborative decision-making are discussed to mitigate the effects of VUCA in health crises. The review concludes by offering insights into how healthcare systems can enhance their capacity to respond to future pandemics by adopting VUCA-informed strategies and fostering resilient organizational cultures.

**Keywords:** COVID-19; monkey pox; VUCA; healthcare leadership; crisis management

## Introduction

The COVID-19 pandemic, declared a global health emergency in early 2020, has profoundly impacted nearly every aspect of society, overwhelming healthcare systems and causing widespread economic and social disruption [1]. While the pandemic remains a major focus of global health efforts, the Monkeypox outbreak further complicated the public health landscape. COVID-19 and Monkeypox represent significant public health challenges in environments characterized by volatility, uncertainty, complexity, and ambiguity—conditions that define the VUCA framework.

Originating from military strategy, the VUCA concept has been widely adopted in management and leadership to describe unpredictable and rapidly evolving situations [2]. The applicability of VUCA to global health crises like COVID-19 and Monkeypox is evident in the unpredictable nature of viral transmission, the uncertainty surrounding treatment and containment strategies, the complexity of coordinating international responses, and the ambiguity in public health communication and decision-making.

As healthcare systems worldwide struggled to cope with the rapid spread of COVID-19, the outbreak of Monkeypox posed additional challenges, particularly in regions with limited resources and healthcare infrastructure. The overlapping timelines of these two public health crises further underscored the need for healthcare leaders and policymakers to adapt to rapidly changing conditions, manage scarce resources, and communicate effectively in the face of uncertainty. Understanding the response to these crises through the VUCA lens provides valuable insights into the leadership, organizational, and policy adaptations required to manage health emergencies effectively.

This review seeks to analyze the application of the VUCA framework in responding to COVID-19 and Monkeypox. Specifically, it addresses the following questions: How did these outbreaks'

volatile and uncertain nature affect healthcare responses? What leadership strategies were most effective in managing the complexity and ambiguity of these crises? How can healthcare organizations and systems build resilience to better respond to future VUCA-driven health emergencies?

## Methods

This narrative review was conducted by systematically searching academic literature and reports on the COVID-19 pandemic, the Monkeypox outbreak, and the VUCA framework in healthcare and crisis management. The databases searched included PubMed, Google Scholar, Scopus, and Web of Science, covering the period from January 2020 to September 2023. Search terms included "COVID-19 response," "Monkeypox outbreak," "VUCA in healthcare," "leadership in pandemics," "public health crisis management," and "adaptive healthcare leadership."

The inclusion criteria for this review were peer-reviewed articles, systematic reviews, and government or international health organization reports that focused on leadership, healthcare systems, or organizational culture in the context of the COVID-19 pandemic or Monkeypox outbreak. After an initial search yielded over 500 articles, abstracts were screened for relevance, and 80 articles were selected for full-text review. Ultimately, 40 articles were included in this review based on their alignment with the VUCA framework and the focus on healthcare leadership and organizational responses during the COVID-19 and Monkeypox crises.

## Discussion

### *Volatility: Managing Rapidly Changing Circumstances*

Volatility in the context of public health refers to the unpredictable and often rapid changes in the nature and spread of diseases [2]. Both COVID-19 and Monkeypox exhibited volatility in their transmission dynamics, with COVID-19, in particular, spreading rapidly across borders due to its high transmission rate and the global interconnectedness of modern societies [3]. The emergence of new COVID-19 variants, such as Delta and Omicron, further exemplified the volatile nature of the pandemic, challenging public health authorities to continuously adapt containment measures, vaccination strategies, and healthcare capacity.

Volatility requires leaders to be agile in decision-making and prepared for rapid shifts in the external environment. This manifested in the need for quick adaptations in hospital workflows, rapid scale-up of testing and treatment capacities, and the development and distribution of vaccines at unprecedented speeds [4]. For example, the rapid development and deployment of mRNA vaccines against COVID-19 was a significant achievement that showcased the ability of healthcare systems to respond to volatility through innovation and cross-sector collaboration [5].

Similarly, although less widespread than COVID-19, the Monkeypox outbreak required rapid responses from public health authorities to prevent it from escalating into a global pandemic. Countries like the United States and the United Kingdom quickly mobilized resources for vaccination and public awareness campaigns to contain the spread, particularly in vulnerable populations [6]. These responses highlighted the importance of having flexible, adaptive public health systems capable of scaling up efforts in response to volatile disease dynamics.

### *Uncertainty: Navigating Unknowns in Public Health Crises*

Uncertainty is a hallmark of both the COVID-19 and Monkeypox outbreaks. In the early days of the COVID-19 pandemic, there was significant uncertainty surrounding the virus's transmission mechanisms, effective treatments, and long-term impacts. This uncertainty was compounded by conflicting information and changing guidance from health authorities, creating confusion among healthcare providers and the general public [7]. The uncertainty was further exacerbated by the global nature of the pandemic, with different countries experiencing varying levels of impact and adopting divergent strategies for containment and mitigation.

The uncertainty surrounding Monkeypox, particularly regarding its modes of transmission and the effectiveness of existing vaccines, also posed challenges for public health authorities. Although Monkeypox is not a novel virus, its re-emergence in new geographical regions and among previously unaffected populations raised questions about the adequacy of existing prevention and control measures [8]. Public health agencies had to balance the need for swift action with the recognition that the situation was evolving and that new information could alter the course of their strategies.

In navigating uncertainty, healthcare leaders and policymakers relied on adaptive strategies that allowed for flexibility in decision-making. For example, many governments initially imposed stringent lockdown measures to curb the spread of COVID-19 but later modified these policies as more information became available about the virus and its spread [9]. The iterative nature of these responses highlights the importance of adaptive leadership in times of uncertainty, where decisions must be revisited and revised as new information emerges.

Leaders who effectively manage uncertainty often demonstrate emotional intelligence, clear communication, and the ability to build trust with their teams and the public. For instance, New Zealand's COVID-19 response, led by Prime Minister Jacinda Ardern, was characterized by transparent communication and empathetic leadership, which helped to mitigate the uncertainty faced by the population and fostered public compliance with health directives [10].

#### *Complexity: Coordinating Multifaceted Responses*

Complexity in healthcare refers to the interdependencies and interactions between various healthcare system components, including hospitals, public health agencies, government bodies, and the broader community. The COVID-19 pandemic revealed the complexity of managing a global health crisis, as it required coordinated efforts across multiple sectors and levels of government. From the production and distribution of personal protective equipment (PPE) and ventilators to implementing public health measures such as contact tracing and social distancing, managing the complexity of the pandemic demanded cross-sector collaboration and robust logistical frameworks [11,12].

Although less severe in scale, the Monkeypox outbreak also demonstrated complexity in public health responses. With its re-emergence in countries where it had not been endemic, healthcare systems had to coordinate responses across international borders while dealing with limited supplies of vaccines and treatments [7,13]. Additionally, the social stigma surrounding Monkeypox, particularly as it affected marginalized populations, added another layer of complexity to the public health response, requiring culturally sensitive communication and community engagement strategies [14].

Healthcare systems are inherently complex, and managing this complexity in times of crisis requires effective collaboration, communication, and coordination. Leaders who successfully navigate complexity in VUCA environments often employ systems thinking, a leadership approach that emphasizes understanding the interrelationships within and across healthcare systems [15]. Systems thinking encourages leaders to view crises like COVID-19 and Monkeypox not as isolated events but as part of broader, interconnected systems that require comprehensive and integrated responses.

For example, coordinating vaccine distribution during the COVID-19 pandemic required logistical expertise and collaboration between pharmaceutical companies, government agencies, healthcare providers, and international organizations [3,11]. This level of coordination underscores the importance of systems thinking in managing the complexity of global health crises.

#### *Ambiguity: Clarifying the Unknown*

Ambiguity refers to situations where information is unclear, incomplete, or contradictory, making it difficult to interpret and respond effectively. During the COVID-19 pandemic, ambiguity was pervasive, particularly in the early stages when scientists and public health officials were still learning about the virus's characteristics and behavior. Conflicting information about the



effectiveness of masks, the role of asymptomatic transmission, and the potential for herd immunity contributed to public confusion and, in some cases, resistance to public health measures [16].

The ambiguity surrounding Monkeypox was similarly challenging, particularly concerning its modes of transmission and the risk of spread among different populations. Initial reports suggested that Monkeypox was primarily transmitted through close physical contact. Still, there was ambiguity regarding whether airborne transmission could also occur, leading to uncertainties in the appropriate level of precautionary measures [14]. Public health authorities had to communicate these ambiguities while maintaining public trust and encouraging preventive behaviors.

In VUCA environments, leaders must be skilled at managing ambiguity by providing clarity and acknowledging uncertainties when they exist. Effective communication is key in these situations, as leaders must balance the need to guide with the understanding that the information available may change. For example, during the COVID-19 pandemic, the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) regularly updated their guidance as new evidence emerged, providing the public and healthcare professionals with the latest information while also acknowledging the limitations of current knowledge [3].

Leaders who manage ambiguity effectively are often transparent in their communication, foster open dialogue with their teams, and create environments where uncertainty is accepted as part of the decision-making process. This approach can help build trust and foster resilience in organizations, as individuals are more likely to adapt to changing circumstances when they understand the reasons for uncertainty and ambiguity.

#### *Leadership in VUCA Health Crises*

Leadership is central to managing VUCA-driven health crises like COVID-19 and Monkeypox. Effective leaders in these environments exhibit several key traits: agility, emotional intelligence, systems thinking, and the ability to foster collaboration. Agility is crucial, as leaders must be able to pivot quickly in response to changing circumstances, whether altering public health measures, reallocating resources, or shifting communication strategies [2,17].

Emotional intelligence (EI) is another important trait for leaders in VUCA environments. Leaders with high EI can manage their emotions, build strong relationships with their teams, and communicate effectively, even in times of stress and uncertainty [17]. This ability to connect with others on an emotional level is critical in maintaining morale and fostering resilience in healthcare teams facing prolonged crises.

As mentioned earlier, systems thinking enables leaders to understand the complexity of healthcare systems and develop integrated responses that consider the interdependencies between different sectors and stakeholders. Leaders who employ systems thinking are better equipped to manage the complexity of global health crises, as they can see the bigger picture and develop strategies that address the crisis from multiple angles.

Finally, collaboration is essential in VUCA environments, as no single leader or organization can manage a global health crisis alone. Leaders must be able to build networks, foster partnerships, and engage diverse stakeholders to develop comprehensive and effective responses. The COVID-19 pandemic and the Monkeypox outbreak demonstrated the importance of collaboration across sectors and borders, as governments, healthcare providers, pharmaceutical companies, and international organizations worked together to develop and implement solutions.

#### *Summary of Key Findings:*

1. **Volatility and Rapid Adaptation:** Both COVID-19 and Monkeypox outbreaks showcased the need for agile healthcare systems capable of quickly adapting to rapidly changing circumstances, such as evolving virus variants and transmission patterns.
2. **Uncertainty and Leadership:** Effective leadership in these crises was marked by navigating uncertainty through flexible decision-making, transparent communication, and building trust with healthcare teams and the public.

3. **Complexity in Coordinated Response:** The complexity of managing multi-sectoral coordination, resource allocation, and logistical challenges in global health crises emphasized the importance of systems thinking in managing intertwined healthcare systems and public health efforts.

#### Key Implications:

1. **Strengthened Resilience:** Healthcare organizations must invest in building resilience through adaptive leadership training, fostering emotional intelligence, and enhancing collaborative decision-making to better respond to future VUCA-driven health crises.
2. **Improved Public Health Communication:** Given the ambiguity during health crises, transparent, clear, and evolving communication strategies are essential to maintaining public trust and ensuring compliance with health measures.
3. **Multi-Sectoral Collaboration:** Sustaining effective responses to pandemics requires stronger, long-term partnerships between governments, healthcare providers, NGOs, and international bodies to address the broader social determinants of health and facilitate coordinated responses.

#### Conclusions

The COVID-19 pandemic and the Monkeypox outbreak have underscored the importance of understanding and managing public health crises through the VUCA framework. Volatility, uncertainty, complexity, and ambiguity have all played significant roles in shaping the responses to these crises, challenging healthcare leaders and systems to adapt quickly and effectively. Leadership strategies that emphasize agility, emotional intelligence, systems thinking, and collaboration have proven essential in navigating the complexities of these crises.

This review highlights the need for healthcare organizations to build resilience by adopting VUCA-informed strategies that enable them to respond effectively to future health emergencies. By fostering adaptive leadership, promoting collaboration, and cultivating organizational cultures that embrace uncertainty and ambiguity, healthcare systems can enhance their capacity to respond to global health crises' unpredictable and rapidly evolving nature.

Future research should continue to explore the application of the VUCA framework in healthcare, with particular attention to how leadership strategies and organizational cultures can be further developed to enhance resilience in future pandemics and health emergencies.

#### References

1. Dzando G, Salifu S, Donyi AB, et al. Healthcare in Ghana amidst the coronavirus pandemic: A narrative literature review. *J Public Health Res.* 2022;11(1). doi:10.4081/jphr.2021.2448
2. Bennett N, Lemoine GJ. What VUCA really means for you. *Harv Bus Rev.* 2014;(JAN-FEB).
3. World Health Organization. WHO Coronavirus Disease (COVID-19) Situation Report-114. *Covid-19 Dashboard.* 2020;(May).
4. Dewey C, Hingle S, Goelz E, Linzer M. Supporting Clinicians During the COVID-19 Pandemic. *Ann Intern Med.* 2020;172(11). doi:10.7326/M20-1033
5. Graham BS. Rapid COVID-19 vaccine development. *Science* (1979). 2020;368(6494). doi:10.1126/science.abb8923
6. Ajmera K, Goyal L. Monkey pox – an overview, from endemic to pandemic. *Am J Med Sci.* 2023;365. doi:10.1016/s0002-9629(23)00277-x
7. Lipsitch M, Swerdlow DL, Finelli L. Defining the Epidemiology of Covid-19 — Studies Needed. *New England Journal of Medicine.* 2020;382(13). doi:10.1056/nejmp2002125
8. Rimoin AW, Mulembakani PM, Johnston SC, et al. Major increase in human monkeypox incidence 30 years after smallpox vaccination campaigns cease in the Democratic Republic of Congo. *Proc Natl Acad Sci U S A.* 2010;107(37). doi:10.1073/pnas.1005769107
9. Hale T, Angrist N, Goldszmidt R, et al. A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nat Hum Behav.* 2021;5(4). doi:10.1038/s41562-021-01079-8
10. Cousins S. New Zealand eliminates COVID-19. *Lancet.* 2020;395(10235). doi:10.1016/S0140-6736(20)31097-7
11. Patel A, Jernigan DB. Initial Public Health Response and Interim Clinical Guidance for the 2019 Novel Coronavirus Outbreak — United States, . *US Department of Health and Human Services/Centers for Disease Control and Prevention.* 2020;69(5).

12. Patel A, Jernigan DB. *Morbidity and Mortality Weekly Report.*; 2019. <https://emergency.cdc.gov/han/han00426.asp>.
13. Fine PEM, Jezek Z, Grab B, Dixon H. The transmission potential of monkeypox virus in human populations. *Int J Epidemiol.* 1988;17(3). doi:10.1093/ije/17.3.643
14. Rao AK, Petersen BW, Whitehill F, et al. Use of JYNNEOS (Smallpox and Monkeypox Vaccine, Live, Nonreplicating) for Preexposure Vaccination of Persons at Risk for Occupational Exposure to Orthopoxviruses: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. *MMWR Morb Mortal Wkly Rep.* 2022;71(22). doi:10.15585/mmwr.mm7122e1
15. Senge PM. The fifth discipline, the art and practice of the learning organization. *Performance + Instruction.* 1991;30(5). doi:10.1002/pfi.4170300510
16. Armocida B, Formenti B, Ussai S, Palestra F, Missoni E. The Italian health system and the COVID-19 challenge. *Lancet Public Health.* 2020;5(5). doi:10.1016/S2468-2667(20)30074-8
17. Goleman D (1995). Goleman, D. (1995). Emotional intelligence. New York: Bantam Books. *Journal of Geotechnical and Geoenvironmental Engineering ASCE.* 1995;120(11).

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.