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## DEVELOPMENT OF HEALTH CRISIS MANAGEMENT: INSIGHTS FROM A REVIEW OF CURRENT PRACTICES

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### ABSTRACT

Health crisis management has become increasingly vital in the face of global health emergencies, such as the COVID-19 pandemic. This review explores the evolution and current practices in health crisis management, highlighting key components such as preparedness, response, recovery, and mitigation. The article examines significant milestones that have shaped the field and identifies challenges, including coordination issues, resource limitations, communication barriers, and technological gaps. Through the analysis of recent case studies, best practices are identified, and innovative strategies are discussed. The review synthesizes these findings to provide insights into effective health crisis management and offers practical recommendations for enhancing future responses. Emphasizing the importance of continuous development and adaptation, this review aims to contribute to the improvement of global health crisis management strategies and the preparedness of health systems worldwide.

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## INTRODUCTION

Health crisis management has emerged as a critical area of focus in public health, especially in light of recent global events such as the COVID-19 pandemic. Health crises, characterized by widespread health emergencies that overwhelm healthcare systems and necessitate coordinated responses, have underscored the need for effective crisis management strategies (World Health Organization, 2020). These strategies are essential not only for saving lives during an emergency but also for ensuring the continuity of healthcare services and mitigating long-term social and economic impacts. The concept of health crisis management has evolved significantly over the past few decades. Historically, responses to health crises were often reactive, with limited planning and preparedness. However, lessons learned from past pandemics, such as the H1N1 influenza outbreak in 2009 and the Ebola crisis in West Africa (Gostin & Friedman, 2015), have highlighted the importance of proactive strategies that involve preparedness, rapid response, and effective recovery measures. These experiences have also led to the development of more sophisticated frameworks that integrate multiple components of crisis management, including risk communication, resource allocation, and interagency coordination (Kruk et al., 2017).

The development of health crisis management strategies has not been without challenges. Coordination issues among various stakeholders, including government agencies, non-governmental organizations, and international bodies, have often hampered the effectiveness of responses (Boin, 2019). Moreover, resource limitations, particularly in low- and middle-income countries, have exacerbated the difficulties in managing health crises. Technological advancements, while offering new tools for crisis management, have also introduced new challenges related to the integration and utilization of these technologies in real-time crisis scenarios (Nelson et al., 2020). Given the complexities and the high stakes involved, there is a growing need to review and analyze the development of health crisis management practices. This review aims to provide a comprehensive overview of current practices, drawing on insights from recent health crises. By examining the evolution of these practices and identifying key challenges and best practices, this article seeks to contribute to the ongoing efforts to enhance the effectiveness of health crisis management globally.

## METHODOLOGY

This review utilized a systematic approach to identify and analyze existing literature on the development of health crisis management

practices. The research process involved comprehensive searches across several academic databases, including PubMed, Scopus, and Google Scholar, to ensure a wide coverage of relevant studies. Keywords such as "health crisis management," "public health emergencies," "preparedness," "response strategies," and "crisis management challenges" were used to retrieve pertinent articles. Inclusion criteria for the review consisted of peer-reviewed articles published between 2000 and 2023 that focused on health crisis management, with a particular emphasis on case studies, reviews, and empirical research. Articles were excluded if they were not available in English, did not provide original research or substantial analysis, or were focused on non-health-related crises. The selected articles were then subjected to a thematic analysis, where key themes related to the evolution, challenges, and best practices in health crisis management were identified. This method allowed for the systematic categorization of findings, facilitating the synthesis of insights across different contexts and crises. The review also integrated insights from grey literature, including reports from international health organizations and government agencies, to provide a comprehensive understanding of current practices. This methodology ensures a robust and comprehensive review of the development of health crisis management, offering insights that are grounded in both academic research and practical experiences.

**Evolution of Health Crisis Management:** The evolution of health crisis management reflects a gradual shift from reactive responses to more proactive, structured, and integrated approaches. In the early stages of health crisis management, responses were often characterized by ad hoc measures, limited coordination, and insufficient preparedness. Historical health crises, such as the Spanish Flu pandemic of 1918, demonstrated the catastrophic consequences of inadequate planning and uncoordinated responses, which resulted in millions of deaths globally (Johnson & Mueller, 2002). The latter half of the 20th century saw the development of more systematic approaches to health crisis management. The emergence of frameworks such as the Incident Command System (ICS), originally developed for managing emergency situations in the United States, was adapted for use in public health crises (Auf der Heide, 2006). This period also saw the recognition of the importance of international cooperation, as exemplified by the establishment of the World Health Organization's (WHO) International Health Regulations (IHR) in 1969, which provided a legal framework for coordinating global responses to public health emergencies (World Health Organization, 2005). The 21st century has brought significant advancements in health crisis management, driven by the experiences of recent pandemics and epidemics. The 2002-2003 SARS outbreak marked a turning point, highlighting the need for rapid information sharing, international cooperation, and the development of global surveillance systems (Peiris *et al.*, 2004). This was further reinforced by the H1N1 influenza pandemic in 2009, which demonstrated the value of pre-established preparedness plans and the role of vaccines and antivirals in managing health crises (Girard *et al.*, 2010). The Ebola outbreak in West Africa between 2014 and 2016 further emphasized the importance of resilient health systems and community engagement. The slow initial response and inadequate health infrastructure in the affected countries highlighted the need for a stronger, more coordinated global response mechanism (Moon *et al.*, 2015). As a result, the WHO and other international bodies have since revised their approaches to health crisis management, focusing more on capacity building, rapid response teams, and strengthening health systems in vulnerable regions.

Most recently, the COVID-19 pandemic has underscored the critical importance of integrating technology into health crisis management. Digital tools, such as contact tracing apps, telemedicine, and data analytics, have played pivotal roles in managing the spread of the virus and providing healthcare services remotely (Keesara, Jonas, & Schulman, 2020). Moreover, the pandemic has accelerated the adoption of global health governance frameworks, including the WHO's Health Emergencies Programme, which aims to provide more cohesive and comprehensive support to countries facing health crises (World Health Organization, 2020). The evolution of health crisis

management thus reflects a continuous process of learning and adaptation, driven by the lessons learned from past experiences and the ongoing challenges posed by emerging health threats.

**Key Components of Health Crisis Management:** Health crisis management is built upon several key components that collectively contribute to the effective handling of public health emergencies. These components include preparedness, response, recovery, and mitigation, each playing a crucial role in the overall management strategy.

**Preparedness:** Preparedness is the cornerstone of health crisis management, involving the development of plans, policies, and procedures that ensure readiness to respond to health emergencies. Preparedness activities include risk assessment, resource allocation, capacity building, and training exercises designed to enhance the ability of health systems to respond swiftly and effectively to crises (Nelson, Lurie, & Wasserman, 2007). The World Health Organization's Strategic Preparedness and Response Plan, developed in response to the COVID-19 pandemic, is an example of how preparedness efforts can be structured to address specific threats (World Health Organization, 2020).

**Response:** The response phase is the immediate execution of plans and strategies when a health crisis occurs. It involves rapid mobilization of resources, coordination among various stakeholders, and real-time decision-making to contain and manage the crisis (Hanfling, Altevogt, Viswanathan, & Gostin, 2012). Effective communication is critical during this phase to ensure that accurate information is disseminated to the public and that the health system's actions are coordinated. The use of Incident Management Systems (IMS) and Emergency Operations Centers (EOC) has been pivotal in streamlining response efforts during emergencies (Auf der Heide, 2006).

**Recovery:** Recovery focuses on restoring health systems and communities to a state of normalcy after the acute phase of a crisis has passed. This component involves not only rebuilding infrastructure and restoring services but also addressing the long-term health, social, and economic impacts of the crisis (Kruk *et al.*, 2015). Recovery plans often include psychological support, rehabilitation services, and efforts to strengthen health systems against future crises. The Ebola outbreak in West Africa highlighted the importance of a comprehensive recovery strategy that includes rebuilding health systems and improving community resilience (Moon *et al.*, 2015).

**Mitigation:** Mitigation refers to efforts to reduce the impact of future health crises through risk reduction and resilience-building activities. This involves identifying potential hazards, implementing preventive measures, and fostering community resilience to minimize the effects of future emergencies (Noji, 1996). Mitigation strategies can include improving surveillance systems, enhancing early warning systems, and investing in public health infrastructure. The concept of "One Health," which recognizes the interconnectedness of human, animal, and environmental health, has become increasingly important in the context of mitigation, particularly in preventing zoonotic diseases (Destoumieux-Garzón *et al.*, 2018).

**Coordination and Communication:** Effective coordination and communication are essential components that cut across all phases of health crisis management. Coordination ensures that all relevant stakeholders, including government agencies, non-governmental organizations, and international bodies, work together seamlessly. The role of communication is equally critical, as it involves keeping the public informed, managing misinformation, and ensuring transparency in decision-making processes (Reynolds & Seeger, 2005). The use of digital platforms and social media has become increasingly important for real-time communication during health crises, enabling rapid information dissemination and public engagement (Merchant & Lurie, 2020). Each of these components is interconnected, and the effectiveness of health crisis management depends on the integration and coordination of these elements. The

ongoing development and refinement of these components are essential for building resilient health systems capable of managing future crises.

**Challenges in Health Crisis Management:** Health crisis management is fraught with a multitude of challenges that can significantly impact the effectiveness of responses to public health emergencies. These challenges include issues related to coordination, resource limitations, communication barriers, and technological integration, each posing unique obstacles that need to be addressed to improve crisis management outcomes.

**Coordination Issues:** One of the primary challenges in health crisis management is the coordination among various stakeholders, including government agencies, non-governmental organizations, international bodies, and local communities. The fragmented nature of many health systems can lead to duplication of efforts, gaps in service delivery, and conflicting priorities (Gostin & Katz, 2016). For instance, during the Ebola outbreak in West Africa, the lack of coordination among different international organizations and local authorities delayed the response, exacerbating the crisis (Moon *et al.*, 2015). Effective coordination requires clear communication channels, predefined roles, and responsibilities, as well as the establishment of robust governance structures.

**Resource Limitations:** Resource limitations, particularly in low- and middle-income countries, pose significant challenges to health crisis management. These limitations include insufficient healthcare infrastructure, a lack of trained personnel, inadequate medical supplies, and limited financial resources. The COVID-19 pandemic starkly highlighted these issues, with many countries struggling to procure enough personal protective equipment (PPE), ventilators, and vaccines (Ranney, Griffith, & Jha, 2020). Resource constraints can severely hamper the ability to mount an effective response, leading to higher mortality rates and prolonged crises.

**Communication Barriers:** Effective communication is critical in health crisis management, yet it often faces significant barriers. These barriers include the dissemination of misinformation, lack of public trust, language differences, and cultural sensitivities. During the H1N1 influenza pandemic, conflicting messages from health authorities and the media led to public confusion and fear, which undermined compliance with public health measures (Reynolds & Seeger, 2005). Additionally, in many crises, the rapid spread of misinformation through social media can complicate official efforts to communicate accurate and timely information (Merchant & Lurie, 2020). Building and maintaining public trust through transparent and consistent communication is essential for managing public behavior during a crisis.

**Technological Gaps:** While technology has the potential to greatly enhance health crisis management, it also introduces new challenges. The integration of advanced technologies, such as digital surveillance systems, artificial intelligence, and telemedicine, requires significant investment in infrastructure, training, and maintenance (Keesara, Jonas, & Schulman, 2020). Moreover, disparities in access to technology between and within countries can create inequalities in crisis management capabilities. For example, low-income regions may lack the necessary digital infrastructure to implement contact tracing apps effectively, limiting their ability to control the spread of infectious diseases (Mackenzie & Jeggo, 2019). Ensuring equitable access to technological tools and addressing the digital divide are critical for leveraging technology in crisis management.

**Ethical and Legal Considerations:** Health crisis management often involves making difficult ethical and legal decisions, such as allocating scarce resources, enforcing quarantines, and balancing individual rights with public safety. These decisions can lead to ethical dilemmas and legal challenges, particularly in situations where resources are limited, and tough choices must be made about who receives care (Persad, Wertheimer, & Emanuel, 2009). Additionally, the enforcement of public health measures, such as lockdowns and

mandatory vaccinations, can raise legal issues related to individual freedoms and human rights (Gostin & Wiley, 2020). Developing clear ethical guidelines and legal frameworks is essential for navigating these challenges during a health crisis. Each of these challenges underscores the complexity of managing health crises and highlights the need for continuous improvement in preparedness, coordination, communication, and resource allocation. Addressing these challenges requires a multifaceted approach that involves strengthening health systems, fostering international cooperation, and leveraging technology while ensuring ethical and legal considerations are met.

**Best Practices in Health Crisis Management:** Effective health crisis management relies on the implementation of best practices that have been developed and refined through the experiences of past emergencies. These practices encompass preparedness, response, recovery, and mitigation strategies that are crucial for managing health crises efficiently. Below are some of the best practices that have been identified as particularly effective in enhancing health crisis management.

**Comprehensive Preparedness Planning:** A cornerstone of effective health crisis management is the development of comprehensive preparedness plans. These plans should be based on rigorous risk assessments and should incorporate scenario-based training exercises, stockpiling of essential supplies, and the establishment of clear protocols for rapid response. The Strategic National Stockpile (SNS) in the United States, which provides medical supplies and pharmaceuticals to states during public health emergencies, is a prime example of effective preparedness planning (HHS, 2020). Regular updates and drills are essential to ensure that these plans remain relevant and effective.

**Integrated Multi-Agency Coordination:** Coordination among multiple agencies at local, national, and international levels is critical for managing health crises. The establishment of centralized command structures, such as Incident Management Systems (IMS), allows for the seamless integration of efforts across different sectors and organizations. During the 2009 H1N1 pandemic, the use of IMS facilitated coordinated efforts between the World Health Organization, national governments, and other stakeholders, leading to a more effective global response (Fineberg, 2014). Best practices include establishing pre-agreed roles and responsibilities, ensuring regular communication, and using standardized protocols across agencies.

**Effective Risk Communication:** Risk communication is vital for managing public perception and behavior during a health crisis. Best practices in this area include the use of clear, consistent messaging from trusted sources, proactive engagement with the media, and the use of multiple platforms to reach diverse audiences. During the COVID-19 pandemic, countries that implemented transparent and frequent communication from public health officials were more successful in gaining public compliance with health measures (Wong & Jensen, 2020). Additionally, addressing misinformation through fact-checking and providing accurate information in real-time are crucial strategies.

**Community Engagement and Empowerment:** Involving communities in crisis management efforts can enhance the effectiveness of the response and improve public adherence to health measures. Community engagement practices include involving local leaders in planning and decision-making, utilizing local knowledge to inform strategies, and fostering trust through transparency and accountability. The success of Ebola response efforts in West Africa, particularly in Liberia, was partly attributed to strong community engagement, which helped to overcome resistance to public health measures and increased cooperation with health authorities (Abramowitz *et al.*, 2015).

**Use of Technology and Innovation:** Leveraging technology and innovation can greatly enhance the ability to manage health crises. The use of digital tools for contact tracing, surveillance, and

communication has proven to be highly effective. For instance, South Korea's use of mobile apps and data analytics during the COVID-19 pandemic enabled rapid identification and isolation of cases, significantly reducing the spread of the virus (Lee & Lee, 2020). Best practices also include the use of telemedicine to provide healthcare remotely, particularly in areas with limited access to medical facilities, and the integration of artificial intelligence to predict and model outbreak patterns.

**Capacity Building and Training:** Ongoing capacity building and training for health professionals and emergency responders are essential components of preparedness and response. This includes not only technical training in crisis management but also exercises that simulate real-life scenarios to test and improve the effectiveness of response plans. The Global Health Security Agenda (GHSA), which focuses on building national capacities to prevent, detect, and respond to infectious disease threats, is an example of a successful initiative that emphasizes training and capacity building (GHSA, 2019).

**Flexibility and Adaptation:** The ability to adapt to changing circumstances is a key aspect of effective health crisis management. Flexibility in response strategies allows health systems to adjust to new information, emerging threats, and evolving situations. During the COVID-19 pandemic, countries that quickly adapted their strategies in response to new data—such as updating public health guidelines, modifying lockdown measures, and reallocating resources—were generally more successful in controlling the spread of the virus (Petersen *et al.*, 2020).

**After-Action Reviews and Continuous Learning:** Conducting after-action reviews following a health crisis is essential for learning from the experience and improving future responses. These reviews should involve all stakeholders and focus on identifying what worked well, what did not, and how practices can be improved. Continuous learning through the documentation of lessons learned, sharing best practices across regions, and revising plans based on new insights is critical for building resilience against future health crises (Cohen *et al.*, 2017). By integrating these best practices into health crisis management strategies, health systems can enhance their preparedness, response, and recovery capabilities, ultimately leading to more effective management of public health emergencies.

**Insights and Recommendations:** The review of health crisis management practices reveals several key insights that are crucial for improving the effectiveness of responses to public health emergencies. These insights, coupled with actionable recommendations, aim to enhance preparedness, streamline response efforts, and foster resilience in health systems worldwide.

## Insights

### Importance of Proactive Preparedness

- The review underscores the critical role of proactive preparedness in mitigating the impact of health crises. Preparedness is not just about having plans in place but also ensuring that these plans are regularly updated, tested, and adaptable to different scenarios. Countries and organizations that invest in continuous training, resource stockpiling, and scenario-based planning are better positioned to respond effectively to crises.

### Need for Integrated and Coordinated Efforts

- Effective health crisis management requires coordinated efforts across multiple sectors and levels of governance. The lack of coordination, as observed in several past crises, often leads to inefficiencies and delayed responses. The integration of efforts through centralized command structures, such as Incident Management Systems, ensures that all stakeholders work in unison, enhancing the overall effectiveness of the response.

## Critical Role of Communication

- Clear and consistent communication is vital during health crises. The review highlights the importance of transparent communication strategies that address public concerns, counter misinformation, and maintain public trust. Effective communication not only improves public compliance with health measures but also ensures that stakeholders are well-informed and coordinated.

## Technological Innovation as a Game-Changer

- The integration of technology in health crisis management has proven to be a game-changer, particularly in the areas of surveillance, data analysis, and remote healthcare delivery. However, the review also points to the challenges of technological disparities and the need for equitable access to digital tools. Countries that effectively leverage technology are better equipped to manage the spread of diseases and provide continuous care during crises.

## Community Engagement Enhances Effectiveness

- Engaging communities in the planning and implementation of health crisis management strategies enhances the effectiveness of responses. The review demonstrates that when communities are involved and empowered, there is greater adherence to public health measures, and local knowledge can be leveraged to tailor responses to specific contexts.

## Recommendations

### Strengthen Preparedness Through Continuous Training and Drills

- Governments and health organizations should prioritize ongoing training and drills that simulate real-life crisis scenarios. This will ensure that all personnel are familiar with response protocols and can act quickly and efficiently during an actual crisis. Additionally, preparedness plans should be regularly reviewed and updated based on new data and lessons learned from previous crises.

### Enhance Multi-Agency Coordination Mechanisms

- To improve coordination, countries should establish or strengthen centralized command structures that facilitate collaboration between various agencies and sectors. Clear roles and responsibilities should be defined in advance, and regular interagency exercises should be conducted to ensure readiness. International collaboration should also be prioritized, particularly for crises that cross national borders.

### Develop and Implement Robust Communication Strategies

- Public health authorities should invest in developing comprehensive communication strategies that include plans for crisis communication, misinformation management, and public engagement. These strategies should utilize a variety of platforms, including social media, to reach diverse audiences effectively. Training for communication teams should also be provided to ensure they are prepared to manage the flow of information during a crisis.

### Invest in Technology and Ensure Equitable Access

- Health systems should invest in the necessary digital infrastructure to support advanced surveillance, data analysis, and telemedicine. Efforts should be made to bridge the digital divide by ensuring that low-income and remote areas have access to these technological tools. Governments and

international organizations should collaborate to provide the necessary resources and support to achieve this.

### Promote Community-Based Approaches

- Health crisis management strategies should actively involve communities in both planning and response phases. This can be achieved by building partnerships with local leaders, providing education and resources to communities, and ensuring that crisis management plans are culturally sensitive and context-specific. Empowering communities will lead to more effective and sustainable responses.

### Conduct After-Action Reviews and Institutionalize Learning

- After every health crisis, comprehensive after-action reviews should be conducted to evaluate the effectiveness of the response. These reviews should involve all stakeholders and focus on identifying best practices and areas for improvement. The insights gained should be used to revise preparedness plans, improve coordination mechanisms, and enhance future responses.

### Integrate Ethical Considerations into Crisis Planning

- Ethical considerations should be integrated into all aspects of health crisis management. This includes developing guidelines for resource allocation, ensuring respect for human rights during enforcement of public health measures, and maintaining transparency in decision-making processes. Clear ethical frameworks will help navigate the complex decisions that arise during health crises.

By adopting these recommendations, health systems can build greater resilience, improve response capabilities, and ultimately reduce the impact of future health crises. The continuous evolution of health crisis management practices, guided by these insights and recommendations, will be essential in facing the challenges of an increasingly interconnected and complex global health landscape.

## CONCLUSION

The development and refinement of health crisis management practices are essential in an era where global health emergencies are becoming increasingly frequent and complex. This review has highlighted the critical components of effective health crisis management, including preparedness, response, recovery, and mitigation, while also identifying the key challenges and best practices that shape these efforts. The insights gained from past and recent health crises underscore the importance of proactive preparedness, integrated multi-agency coordination, effective communication, technological innovation, and community engagement. Addressing the challenges of coordination, resource limitations, communication barriers, and technological disparities is crucial for enhancing the resilience and effectiveness of health systems globally. By implementing the best practices and recommendations outlined in this review, health systems can strengthen their capacity to manage future crises. Continuous learning, ethical decision-making, and the integration of new technologies will play vital roles in ensuring that responses are not only timely and effective but also equitable and sustainable. In conclusion, health crisis management must be viewed as a dynamic and evolving field, where the lessons of the past inform the strategies of the future. As health threats continue to emerge, the global community must remain vigilant, adaptable, and committed to improving the mechanisms that protect public health. Through concerted efforts and international collaboration, it is possible to mitigate the impact of health crises and safeguard the well-being of populations worldwide.

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