

COVID-19 and emergency planning

As COVID-19 continues to spread worldwide, George Winter discusses emergency strategies, lessons from past epidemics and the vital role that healthcare managers can play in shaping responses to infectious diseases in today's global society.

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Introduction

On 9 January 2020 the World Health Organization (WHO) reported a cluster of patients with pneumonia who were infected with a novel coronavirus (COVID-19) in Wuhan, China (WHO, 2020a). On 30 January the WHO declared the subsequent outbreak a Public Health Emergency of International Concern (WHO, 2020b). As of 9 March, there were 109 577 confirmed cases globally, with 3123 deaths in China and 686 deaths outside China (WHO, 2020c), although these numbers change daily. The latest figures can be accessed at <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/>

COVID-19 is related to, but different from, the severe acute respiratory syndrome (SARS) coronavirus and Middle East respiratory syndrome (MERS) coronavirus, the main outbreaks of which occurred in 2003 and 2015 respectively. It has an estimated mean incubation period of 6.4 days, ranging from 2.1 to 11.1 days (Backer et al, 2020). Transmission is human-to-human (Li et al, 2020). Although an intermediary animal host may have had a role in initiating transmission – bats may be implicated – the animal host's identity remains unconfirmed (WHO, 2020c).

A global challenge

The outbreak of contagious disease in such a globally connected world requires governments, public health and healthcare systems to work together to facilitate surveillance, early detection, isolation and case management in order to contain COVID-19 as effectively as possible. This also involves contact tracing of infected persons to prevent onward spread and the sharing of all data with the WHO (WHO, 2020d).

With the constant movement of people within and across continents, this is a large scale and challenging task in which healthcare managers have a vital role to play. The WHO has advised that managers ensure that administrative and cleaning staff must be properly trained and briefed on signs and symptoms of the disease. The appropriate personal protective equipment should also be supplied (WHO, 2020d).

Thermal scanning to detect fever has been deployed at airports, but research has estimated that as many as 46% of infected travellers will go undetected using this method (Quilty et al, 2020). Public health decision making must therefore anticipate the continued spread of COVID-19 into the UK.

Technology and the emergency response

Hospital managers may have noted that in September 2019 Public Health England published its strategy for dealing with infectious disease threats in the 21st century (Public Health England, 2019). This strategy highlights the ease with which global travel enables infectious diseases to spread rapidly across countries. However, it also acknowledges that the development of new technologies could allow more effective detection and control of these diseases. For example, rapid communication channels provide the tools to share information and advice promptly, while research methods such as genome sequencing enhance the accuracy of investigations into new diseases (Public Health England, 2019).

These developments have been considered by public health organisations. For example, Northern Ireland's infectious disease outbreak plan not only identifies the roles and

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responsibilities of the key organisations and individuals in an emergency, but also covers management, communication, investigation and control procedures (Public Health Agency, 2018). Meanwhile, online communication has allowed NHS England to issue nearly contemporaneous COVID-19 updates and to widely distribute emergency preparedness, resilience and response advice (NHS England, 2019).

The speed with which newly developed technologies have enhanced our ability to detect and control outbreaks of contagious diseases has been demonstrated in the response to COVID-19. Reusken et al (2020) used modelling studies to correctly estimate the risk of the virus entering Europe as high, with the UK, France and Germany at a particularly high risk. Meanwhile, by 29 January 2020 – just 20 days after the WHO reported the initial outbreak in Wuhan – 38 laboratories across 24 European Union and European Economic Area countries had diagnostic tests available. Since mid-February, these tests have been available in all countries in these blocs.

Across the world, biomedical scientists are developing and testing throat swabs as a fast and effective means of detecting COVID-19. This is a standard method of virus detection which allows accurate distinction between COVID-19 and other respiratory viruses. It will also allow some viruses to be fully sequenced, enabling the origin of COVID-19 and its evolution as it moves through humans to be investigated.

The mortality rate of COVID-19 was initially thought to be around 2% (Institute of Biomedical Science, 2020), but as of 3 March this estimate was raised to 3.4% by the Director-General of the WHO (WHO, 2020e). This is a health emergency. However, the mortality rate of COVID-19 is still considerably lower than that of SARS (9.6%) and MERS (34.4%) (Institute of Biomedical Science, 2020). Awareness of these relative mortality rates enables healthcare managers to both reassure patients and healthcare staff while promoting the need for continued vigilance.

Lessons from the past

Weinstein (2004) emphasised that effective emergency planning depends on learning lessons from the past, citing the 2003 global outbreak of SARS, which led to some 8000 cases and almost 800 deaths in 27 countries, ‘representing every continent.’ Drawing on the experience of Toronto, Canada, in dealing with SARS, Weinstein (2004) identified the need for healthcare systems to be able to manage a sudden influx of patients (surge capacity), particularly to allow for up to 100 contacts of each identified case to be evaluated.

With the COVID-19 outbreak unfolding, healthcare managers should also consider how hospital resources could be placed under strain throughout the year as individuals return to the UK after attending mass-participation events. For example, this year’s Hajj in Saudi Arabia will be held from 28 July to 2 August. The Hajj attracts up to 3 million people, with 25 000 travelling from the UK (Atabani et al, 2016). This led to challenges during the MERS outbreak as the influx of Hajj pilgrims returning to the UK coincided with an influenza outbreak. As a result, many were managed as possible MERS patients but were later discovered to have influenza. Although the additional financial costs of this overlap were relatively low, it put significant strain on staff time and isolation room availability (Veater et al, 2017). It is therefore important to plan not only for significant international events over the coming months, but also for the possible complications of overlapping outbreaks of common viruses.

However, public health vigilance at a local level is also crucial to disease containment. Incomplete surveillance and unrecognised cases in a single Toronto hospital resulted in a second wave of SARS in 2003 (Weinstein, 2004). Meanwhile, the fact that over 300 000 phone calls were made to the SARS hotline between 15 March and 24 June 2003 highlights the importance of setting up extra channels of communication between the public and healthcare providers during an outbreak (Weinstein, 2004).

Conclusions

The unpredictable nature of the COVID-19 outbreak underlines the need for healthcare managers to maintain vigilance and to be flexible in responding to changing circumstances. Connection across countries and continents has never been so rapid. While this facilitates

the international spread of COVID-19, it also allows faster and more effective strategies to contain and treat the virus to be implemented. Healthcare professionals and public health authorities must support evidence-based measures to address COVID-19 and draw on lessons from past outbreaks.

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