Four Pandemics: Lessons Learned, Lessons Lost

Poster #35

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PURPOSE

- In the past hundred years, the world has faced four distinctly different pandemics: the Spanish flu of 1918-1919, the SARS pandemic of 2003, the H1N1 or "swine flu" pandemic of 2012, and the ongoing COVID-19 pandemic. Each public health crisis exposed specific systemic shortfalls and provided public health lessons for future events.

- The Spanish flu revealed a nursing shortage and led to a great appreciation of nursing as a profession. SARS showed the importance of having frontline clinicians be able to work with regulators and those producing guidelines.

- H1N1 raised questions about the nature of a global organization such as the World Health Organization (WHO) in terms of the benefits and potential disadvantages of leading the fight against a long-term global public health threat. In the era of COVID-19, it seems apparent that we are learning about both the blessing and curse of social media.

- The authors did not include the Middle Eastern Respiratory Syndrome (MERS) among the pandemics although it is sometimes described as a pandemic. It began in 2014 and cases have been reported every year since then, but usually in a geographically limited area and never more than 500 per year.

METHODS

- This was a commentary. The authors used the PubMed database to search for keywords relating to Spanish flu, SARS, H1N1, and COVID-19 and reviewed primarily articles that discussed the management and public health ramifications of these pandemics.

- The information was synthesized and presented in light of what was learned in each pandemic that carried forward or failed to carry forward to aid us in future crises.

RESULTS

Table 1. A short summary of four pandemics over the past 100 years including the ongoing COVID-19 pandemic.

Epidemic	Year(s)	Deaths	Lessons Learned	Still to be Learned
Spanish flu	1918-1919	50 million	Nursing shortage	Pandemics are still possible and the world should be equipped to manage them
SARS	2003	800	Let frontline clinicians contribute to guidance	Offer more and better ways for clinicians and those with direct experience with the virus to contribute to guidance
H1N1	2009-2010	~500,000	WHO may not be able to manage a long-term global pandemic	Need to improve WHO's ability to cut through bureaucracy to get the right help to the right areas of the world as fast as possible
COVID-19	2019-2020	30,000 as of date of manuscript preparation	Social media is a blessing and curse	Need greater education of the public to help them learn about general health and how to interpret health-related information

- Each pandemic brought to light deficiencies and shortfalls in the healthcare system and the opportunity to create better systems to manage these emerging illnesses.

- Following the Spanish flu pandemic, educational pathways in the United States were set up to allow people to become licensed as a practical nurse and the clinical role of nurses was better defined.

- One lesson learned in SARS was the life-saving role of extracorporeal membrane oxygenation (ECMO) for patients with severe respiratory illness. In 2007, the International Health Regulations had gone into effect, which was an official attempt to codify lessons learned from SARS in terms of connecting front-line clinicians with politicians, regulators, and other public health authorities.

- The H1N1 pandemic highlighted limitations with the capabilities and authority of the WHO. While WHO has demonstrated great ability and dexterity in managing short-term health crises, the long-term management of a severe pandemic may exceed the competence and financial strength of any global organization.

- COVID-19 occurred in the post-television era where most people obtain news from online platforms. On one hand, social media allowed rapid dissemination of basic strategies to prevent COVID-19, however, misleading and false information also emerged. WHO labeled it an "infodemic" that paralleled the pandemic.

Table 2. Timeline for various viral outbreaks in humans

Russian Plague	Russian flu	Spanish flu	Asian flu	Hong Kong flu	HIV	SARS	Swine flu	MERS	Ebola
1770-1772	1889-1890	1918-1919	1957-1958	1968-1970	1981-	2002-2003	2009-2010	2012-	2014-2016

CONCLUSIONS

- Each of these four pandemics has had a devastating effect but has also left us with lessons to learn that may blunt or even prevent future disasters.

- The Spanish flu exposed a shortage of trained nurses that has since been largely remedied. The SARS epidemic drove home the fact that ECMO could be lifesaving in selected cases. Guidance is often urgently needed not just from experts but from front-line clinicians.

- In the H1N1 pandemic, the role of WHO in pandemic care was highlighted and certain key questions emerged about how well one global organization can manage a long-term pandemic.

- Today, in COVID-19 the role of "viral" media in the context of a viral pandemic will no doubt fuel many later studies.

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