

## Pandemic infectious diseases: the future is now

Dr Kieran Walsh

For pandemic infectious diseases, the future is now. Over the past twenty years there have been innumerable outbreaks of serious infectious diseases across the planet. There have been outbreaks of Ebola, swine flu, Zika, SARS, MERS, bird flu and norovirus – to name but a few. The more serious outbreaks have cost thousands of lives and have devastated public health infrastructure in affected countries. The future of frequent and regular global infectious disease outbreaks is upon us.

But until recently our responses to these outbreaks has remained trapped in the past. Our attempts to educate healthcare professionals about these diseases have not been able to keep pace with rapidly evolving pandemics. When we evaluate new drugs or vaccines, we have used trial designs that assume that we have lots of time and sophisticated health systems in which to do the evaluation. We have dedicated educational and research resources quickly during outbreaks but then taken our foot of the pedal when the outbreak is over. We have searched hard for a “silver bullet” that might cure certain infections and paid insufficient attention to supportive treatments that might help patients to fight off the infection on their own. Finally we have sometimes reacted so quickly that regulatory systems in affected countries have not been able to cope with a flurry of applications for research studies of new antimicrobial drugs. Thus far the world’s response has been inadequate and “stop-start”.

So can we do better? And if so, how? According to the recent paper published by Rojek and Horby, there are a range of things that we can do better. (1) The authors start by pointing out the progress that was made during the recent outbreak of Ebola in West Africa and then come up with new potential solutions that they feel should be tried in the future. They ponder on the suitability and acceptability of randomisation in settings of “high mortality and community distrust”. They discuss a number of different potential trial designs that might be more suitable in the context of an outbreak. There is unlikely to be one single trial design that is suitable for all outbreaks; however the authors praise the “aim of having off-the-shelf, operationally tested trial designs available at the onset of cases.”

We emphasize two tenets of medical diagnostics: rare medical entities, such as botulism, must be kept in mind when evaluating a patient with not-so-rare symptomatology; and obtaining a thorough environmental history (such as exposure to soil) is crucial, as it will assist the clinician in navigating through the muddy waters of the evaluation process.

This should enable clinicians and researchers to hit the ground running at the start of an outbreak. The authors also suggest that research doesn't just have to happen during an outbreak. Influenza occurs all the time and so research can be carried out on a continuous basis. Not all the research findings from seasonal influenza will be applicable to pandemic influenza – but some findings will be and it would be wise to use areas of overlap where we can. There is also the issue of the education of doctors and other healthcare professionals both before and during an outbreak. Infectious disease specialists need to know about pandemic agents; however the greater challenge is educating generalists in primary and secondary care. These generalists will be the first responders – they need to know when to suspect, how to assess and when and where to refer and report. There are large numbers of these generalists and so it is a continuous challenge to educate them. In this regard e-learning has a real role to play (2). E-learning on pandemic agents can be accessed by generalists as and when it is suitable for them. E-learning is also scalable – large numbers of doctors can access the content.

Infectious disease pandemics are inherently unpredictable. However the one thing that we can say for certain is that there will be more of them and that they will occur most years for the foreseeable future. And that we will need new methods of research and education to overcome them.

#### About the author

Dr Kieran Walsh works for BMJ Learning and BMJ Best Practice – these resources help healthcare professionals stay updated on a range of clinical areas (including infectious diseases).

## References

1. Rojek AM, Horby PW. Offering patients more: how the West Africa Ebola outbreak can shape innovation in therapeutic research for emerging and epidemic infections. *Philos Trans R Soc Lond B Biol Sci.* 2017 May 26;372(1721).
2. Walsh K. E-learning for general practitioners: lessons from the recent literature. *Work based learning in primary care.* 2004 Dec 1;2(4):305-14.