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POLICY BRIEFING

Drug distribution strategies in an epidemic

"If there are not enough drugs to treat every patient, what is the best strategy for distribution?"

The Institute for Emerging Infections investigates topics relevant to the emergence and control of future epidemics of infectious disease. The viruses we study include Hepatitis C, Influenza (including both seasonal and pandemic 'flu) and HIV.

Background

We are currently looking at an important question about stockpiles of anti-viral drugs. These stockpiles are, of necessity, finite in size. So the question is, "should such a stockpile be used sparingly or aggressively?" That is, which strategy results in fewer infections? We have built a model for the control of influenza which shows that *aggressive treatment can exhaust a stockpile before the end of an outbreak but still lead to a smaller number of cases overall*. Details of this modelling work are overleaf.

Recommendations

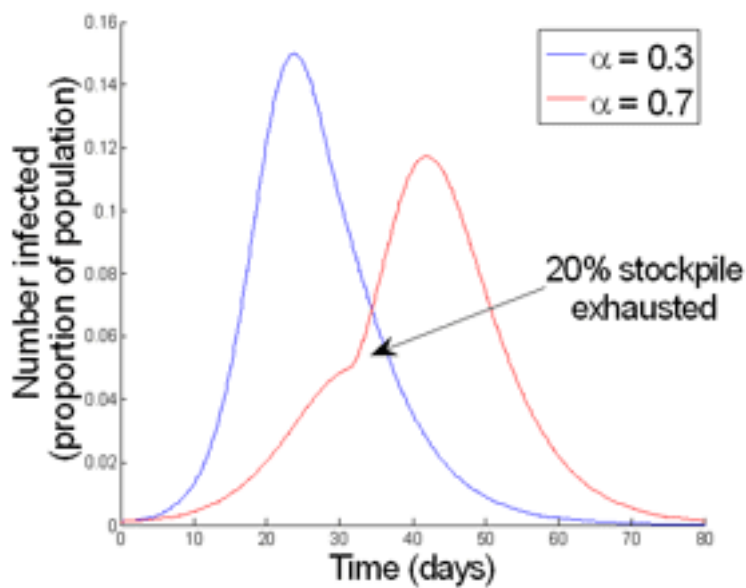
The implications of this finding are as follows.

Government should:

- ◆ Hit early and hit hard with anti-viral drugs.
- ◆ Make sure that planning and logistics are ready to go. Influenza outbreaks can spread with frightening rapidity, so getting the anti-viral drugs sent out fast to the right people is as important as owning the stockpile.
- ◆ Think hard about the ethical considerations around prioritizing certain groups. From the narrow perspective of disease control, treatment should be targeted at those most likely to infect others. These individuals may or may not be the very old, the very young, key workers etc. This is a difficult but essential policy question that needs to be addressed well before any outbreak.

Modelling details

Because anti-viral drugs for Influenza can shorten the duration of infectiousness in individuals their widespread use slows the spread of infection in the community. The graph below shows epidemic curves, predicted by this influenza model, when only 30% of infected people receive drugs (blue curve) and when 70% receive drugs (red curve). The situation modeled is that there are enough drugs in a stockpile to dispense full courses of therapy to 20% of the entire population. Although the aggressive 70% policy exhausts the stockpile before the epidemic has run its course, overall fewer people are infected.



CONTACT INFORMATION

James Martin 21st Century School

www.21school.ox.ac.uk

info@21school.ox.ac.uk

+44 (0) 1865 287430