



Antiviral drugs may affect the performance of sewage-treatment plants, which use microbiologically 'activated sludge'. (Photograph - Shutterstock)

Background

In order to make sound decisions, policy-makers need to know how deadly a pandemic influenza virus is, and how fast it spreads. For the latter, in the UK, the system relies on modelling confirmed clinical cases, although this only measures cases in which people visit their doctor. It takes up to two weeks to obtain confirmed results, and so information is out of date by the time it is needed. One possible policy reaction is the widespread use of antiviral medications, but this may mean that high concentrations of powerful drugs are released into waste water. In turn, this may cause undesired effects in the environment, and might hasten the generation of antiviral resistance. Antiviral drugs may also affect the performance of sewage-treatment plants, which use microbiologically 'activated sludge'. Thus, the flu treatment could itself endanger health because the effectiveness of the sewage treatment is compromised.

Research and Monitoring by CEH

Research at CEH seeks to determine the basis for a real-time, unbiased assessment of the number of influenza-infected people within a population. Unlike seasonal influenza, pandemic influenza virus can have more severe physiological effects, which can lead to the release of the virus into faeces. Viruses can be transported into the sewage-treatment system, where they can be quantified, thereby providing a rapid and cost-effective method of determining the extent of infection within populations in real time. Year-round monitoring of other gastrointestinal viruses could also help estimate the prevalence of other serious diseases in the community. CEH's methods could provide better evidence for policy-makers at local and national levels, and allow better targeting of treatment and greater restraint in the use of antivirals - thus limiting potential dangers.

Much of CEH's research is carried out in partnership with, or funded in conjunction with, other organisations.