

# Real-time modelling of a pandemic influenza outbreak

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## Plain English summary

### Modelling of a pandemic influenza outbreak

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## Plain English summary

In the event of an outbreak of pandemic influenza in England, Public Health England (PHE) has the role of providing up-to-the-moment epidemic assessments to policy-makers. To do this, PHE has to make sense of epidemic surveillance data, which are typically incomplete, biased and/or contaminated, and use them to make statements about the present epidemic situation and its likely future path, including an estimation of the burden placed on the NHS and an assessment of the efficacy of proposed interventions.

This is the role of real-time epidemic modelling. A mathematical representation of the ongoing epidemic is developed and used in combination with available epidemic data to produce estimates of key epidemic features and the epidemic trajectory.

The work in this project has enhanced PHE's capacity for carrying out real-time modelling by:

1. Adapting an existing epidemic model to produce region-specific epidemic forecasts, increasing its utility to policy-makers. Hypotheses regarding how to most appropriately encapsulate transmission of disease within and between regions were assessed both on their fit to data and on their ease of implementation.
2. Developing algorithms, building on the latest developments in statistical computation to allow epidemic analyses to be updated in a timely fashion as the epidemic unfolds.
3. Establishing a system for analysis of a future pandemic in accordance with data scheduled to be available under PHE's strategy for pandemic surveillance, incorporating software and training of key PHE staff.

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