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Planning for uncertainty: a European approach to informing responses to the severity of influenza epidemics and pandemics

Angus Nicoll [a]

a. Influenza Programme, European Centre for Disease Prevention and Control, Tomtebodavagen 11A, Stockholm, 17183, Sweden (e-mail: angus.nicoll@ecdc.europa.eu).

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The internationally accepted definition of a pandemic is straightforward and well known: “an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people”.[1] However, as Doshi reminds us, for any modern influenza pandemic, with many available powerful countermeasures, it is the detailed description that is crucial in determining proportionate responses, not the definition.[2]

Because of the inherent unpredictability of influenza viruses, preparing for and responding to epidemics and pandemics will always be an uncertain business.[3] Annual epidemics and irregular pandemics have several important characteristics that summary terms such as *mild*, *moderate* and *severe* gloss over.[2] For example, even the “moderate” or “mild” pandemic of 2009 was severe in its impact on many intensive care units and in its initial pressures on primary care services.[4,5]

Data and analyses that inform on the relevant features in the early course of pandemics and epidemics become available continuously. Initial analyses can be misleading and the pattern of infection and disease can also change over time. In the 2009 pandemic, the European Centre for Disease Prevention and Control (ECDC) used updatable published risk assessments to organize this information, comment on its implications for the response and identify the most important areas of uncertainty.[6] This approach was based on a list of “known unknowns” of pandemics, part of a pre-planned “surveillance in a pandemic” strategy.[7]

As recommended by the report adopted by the 64th World Health Assembly,[3] ECDC has further developed this approach applying it as a matrix (Table 1) to annual seasonal epidemics, starting with the 2010–2011 season. With powerful countermeasures increasingly available – public health interventions, antivirals, vaccines and higher-level intensive care – the matrix relates more to response than to conventional measures, such as transmission and infection fatality

rates. Important as these are, they are rarely available in an accurate form early on, whereas the initial impressions of impact on services often appear rapidly. In the 2009 pandemic, the experience and reports of predominantly mild illness (but with some very severe cases) received from New York City and Melbourne, once verified, were highly informative in determining the proportionate European response.[8] The risk assessments are undertaken by ECDC staff drawing on both European experience (from the European Influenza Surveillance Network) and whatever verifiable epidemic intelligence is available.[9] For seasonal epidemics the information will be presented visually using internationally recognizable red, amber and green colours (Table 1 and Table 2). Red signals situations in which the evidence suggests action is justifiable, and amber signals those in which precautionary approaches may be needed. Europe has a particular advantage in that seasonal epidemics tend to progress from west to east, so that early experience and virology can be especially helpful in preparing countries for what they will experience later.[10] Variants on this approach have been used since the 2007–08 season, beginning with the appearance of oseltamivir-resistant viruses in Norway (Table 3) Though concerned with responses, the severity matrix cannot prescribe actions. The ECDC's mandate is to offer scientific information, guidance and options, not to make recommendations. Decisions on risk management are made by its individual Member States and collectively by European Union bodies, such as the Health Security Committee. Capacity, preparation and disease intensity vary across countries; so what can be coped with in one setting may be stressful in another. Hence, the severity matrix will alert Member States as to what *may* give them problems and will suggest options for action. One of the general lessons learned from the pandemic, as indicated by evaluations undertaken in Europe (listed on the ECDC web site), is that interventions that were not exercised beforehand did not work well. This explains why the ECDC uses interpandemic influenza as a practice ground for pandemic preparation, although it also merits public health action in its own right.[3, 11]

Table 1. Seriousness matrix for pandemic influenza in Europe, 2009
html, 3kb

Table 2. Seriousness matrix for seasonal influenza in Europe, December 2010
html, 3kb

Table 3. Instances in which early experience with influenza in European countries has informed the response elsewhere
html, 3kb

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