

Letter

Severe acute respiratory syndrome

Numbers do not tell whole story

EDITOR—Parry mentioned the recent rapid increase in the numbers of cases of severe acute respiratory syndrome (SARS) in Taiwan, making it the third worst affected area in the world, and asks whether the disease is under control.

The daily numbers of new cases of SARS in Taiwan up to 2 June have declined since mid-May (figure (top)). However, the delay caused by the incubation time as well as the time lag for diagnosis and reporting could result in subsequent under-reporting. To ascertain the true direction of the epidemic, we fitted an exponential curve with series autocorrelation in the error structure to the cumulative numbers of cases of SARS in Taiwan obtained from the same dataset from 12 March to 25 May figure (bottom).

From 12 March to 19 April the model fits very well, showing exponential growth. From 20 April to 13 May, when a series of hospital outbreaks occurred/ the data show wild variations and the predicted values consistently underestimate the true values.

Between 14 and 25 May the consistently downward trend of the real values shows that the increase in the cumulative number of cases of SARS is again exponential, albeit at a much slower rate. The stochastic variations from 20 April to 13 May, caused by a series of breakdowns in the health infrastructure, cannot be explained by a simple model. But the bottom figure offers definitive evidence that the growth of the epidemic is exponential but slowing down.

While the daily numbers in the top figure peak around 11-19 May—from the last major hospital cluster infections in the south of Taiwan during mid-May—the residuals in the bottom figure show a downward trend as early as 14 May.

This indicates that even with the last outbreak in a healthcare setting in the south, control measures had started to take effect. However, recent developments in Toronto warn about the possible consequence of a single misreporting, lest we let down our guard.

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Competing interests: None declared.

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Top: Numbers of cases of SARS in Taiwan by date of onset (up to 2 June 2003; data from Centre for Disease Control of Taiwan's website (www.cdc.gov.tw/sarsen)). Bottom: Residuals of true values minus predicted values of cumulative number of cases of SARS fitted by exponential model

