



## Letter to the Editor

**Response to comment on article by Jit et al. “The cost effectiveness of rotavirus vaccination: Comparative analyses for five European countries and transferability in Europe”**
**Keywords:**

Rotavirus

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We thank the author for his interesting and useful comments.

The comment about winter bed pressures and the risk of nosocomial infection due to overlapping influenza and RSV epidemics is a valid point, although unlikely to materially affect the conclusions of the analysis. It is true that we consider the incidence of nosocomial rotavirus infection, but not the higher risk of infection with influenza or RSV that hospitalised rotavirus patients may incur compared to those in the community, and the fact that they may need to be readmitted indirectly due to their initial admission for rotavirus. However, some analysts have implicitly or explicitly considered the point that patients with influenza or RSV are at greater risk of rotavirus infection [1]. It is foreseeable that future health economic analyses may incorporate evaluation of different interventions and diseases in the same individuals simultaneously, to a greater extent than is currently the case. It seems, however, that the data demands for this kind of analysis will be high, and in our opinion, the additional complexity would not be an influential issue for the problem at hand.

Regarding the issue raised about capacity and seasonal peaks, in economic evaluations only opportunity costs should be taken into account. These are the costs of the next best alternative use of resources. In practice, economists usually take market prices, charges and tariffs to be proxies for these opportunity costs. In a self-regulating market, prices of goods and services are expected to adjust to the margin at which the resources used to produce these goods and services are not used for the production of something else, something less profitable (or less likely to maximise society's utility).

More specifically, the bed-day costs employed in the analysis (which are highly country/health care system-specific) are more likely to be estimated correctly in health care systems operating at capacity (such as paediatric wards during peak periods) rather than in systems or periods where there is excess capacity. In the former situation there is an alternative opportunity for the bed-day and the clinician time to be used, while in the latter there may not be to the same extent. If a non-market regulated system is operating at insufficient capacity during predictable periods of the year, then this should be a reason for government to increase capacity, and to pay more for that increase in capacity. Our analysis implicitly assumes that capacity is revised from time to time to adjust to changing demands on the health care system. This may entail both expan-

sions and reductions in capacity. Indeed, in some of the countries in our analysis, the advent of novel childhood vaccines (especially for infections with seasonal peaks, such as rotavirus, influenza and pneumococcal conjugate vaccines) may lead to reductions of beds in some wards in order to free resources for alternative uses in other wards, or other parts of the health care system.

A related point is that to capture fully the implications of the timing of the rotavirus season would require a transmission dynamic model (see for example [2,3]), since vaccination is likely to alter the seasonality of rotavirus as well as the overall incidence. Ideally such a model would also look at the impact of vaccination on the seasonality of co-circulating organisms.

The last comment made in the letter, that rotavirus vaccination may have additional financial implications at the hospital level due to the UK's system of hospital funding, is a useful note but is beyond the scope of this analysis.

## References

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