Letter to the editor in response to 'Seasonality of the transmissibility of hand, foot and mouth disease: a modelling study in Xiamen City, China'

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We reviewed with interest Zhao's letter regarding our article exploring the approach of calculating the effective reproduction number (R_{eff}) [1]. We entirely agree with Zhao et al. that it is essential to calculate the R_{eff} by using the next generation matrix (NGM) approach. Actually, we also commonly used the NGM approach to calculate the reproduction number of other infectious diseases [2].

We did not provide the complex equation of R_{eff} from the NGM approach instead of a simplified equation in our study [1], because in Xiamen City, the values of f, daily br and daily dr were 0.0003 (0.03%), 2.46×10^{-5} and 1.24×10^{-5}, respectively, which were much lower than those of ω (1/5), γ (1/14) and γ' (1/21), respectively. We also calculated the values of R_{eff} by using the simplified equation we used and the two equations provided by Zhao et al., and we found that they were almost the same (Fig. 1).

Therefore, we agree to use an accurate approach to estimate the transmissibility of an infectious disease. However, a simplified equation would be easier to be performed by the primary public health department than a complex one.
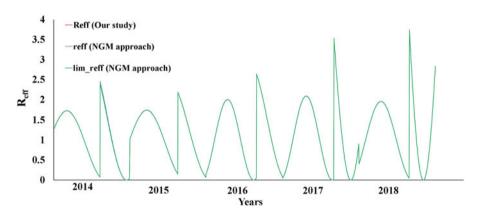

Fig. 1. The values of R_{eff} calculated by three equations in Xiamen City, 2014–2018.

References

1. **Huang Z et al.** (2019) Seasonality of the transmissibility of hand, foot and mouth disease: a modelling study in Xiamen City, China. *Epidemiology and Infection* **147**, e327.
2. **Cui J-A et al.** (2020) Global dynamics of an epidemiological model with acute and chronic HCV infections. *Applied Mathematics Letters* **103**, 106203.

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