

## Disease of influenza virus and SARS-CoV-2 coinfection: Flurona or Flucovid?

To the Editor,

Recently, the new term Flurona has emerged to describe coinfection of influenza virus and SARS-CoV-2, causing flu, and COVID-19, respectively.<sup>1</sup> This terminology, however, seems to suggest a recombinant virus with genes from both influenza virus and coronavirus, like Delmicron with gene fragments from SARS-CoV-2 variants Delta and Omicron. Indeed, Delmicron and Flurona were listed in parallel in the titles of some publications, and Flurona was hinted as “a new variant” in the header of some news reports.

Instead, we propose the more precise term Flucovid which is indicated by a disease having syndromes of both flu and COVID-19, such as fever, cough, fatigue, headache, shortness of breath, and loss of taste or smell, but not those of cold, for example, sneezing, running or stuffy nose, and sore throat (Figure 1). In general, the patients with Flucovid are tested positive for both influenza virus and SARS-CoV-2.

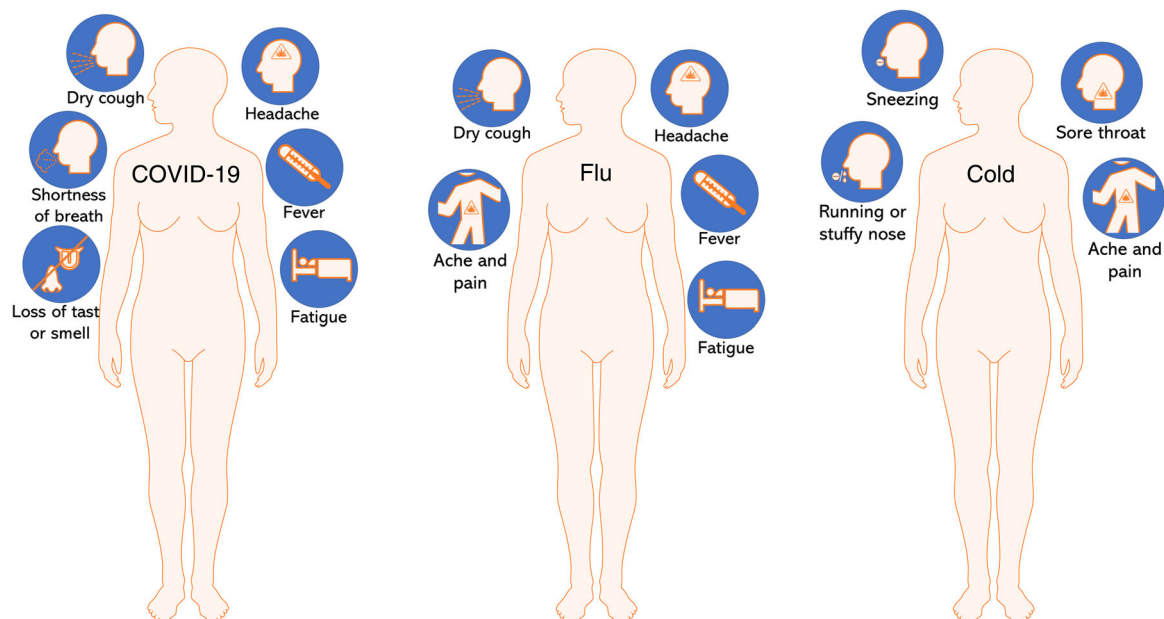
Results from a meta-analysis of 54 related publications indicated an overall proportion of coinfection with influenza viruses in SARS-CoV-2-positive patients of 0.7%.<sup>2</sup> An over 18-month period study with 17,011 adults with SARS-CoV-2 infection shows 1.3% of coinfection with influenza viruses.<sup>3</sup> However, the actual coinfection rate may be much higher in that some coinfecting patients may have

undetectable influenza virus at the time SARS-CoV-2 infection is diagnosed. This happens because the mean incubation and viral shedding times of influenza viruses (2 and 3 days, respectively) are much shorter than those of SARS-CoV-2 (6 and 17 days, respectively).<sup>2</sup>

The proportion of coinfection with influenza virus and SARS-CoV-2 among children (3.2%) was remarkably higher than that in adult patients (0.3%), indicating that children are more susceptible to the coinfection. The proportion of coinfection with influenza viruses among critically ill COVID-19 patients (2.2%) was higher than that in overall patients (0.6%), suggesting that coinfection with influenza viruses may aggravate the severity of COVID-19.<sup>2</sup>

Indeed, animal studies have shown that simultaneous, or sequential, coinfection by influenza A virus (IAV) and SARS-CoV-2 resulted in more severe weight loss and lung inflammatory damage, as well as increased tissue cytokine/chemokine expression than infection by either IAV or SARS-CoV-2 alone.<sup>4</sup> These findings suggest that coinfection of IAV and SARS-CoV-2 may also result in more severe disease in human as described above.

Treating Flucovid by combining such anti-influenza drugs as Tamiflu and such anti-COVID-19 drugs as Paxlovid is



**FIGURE 1** The main symptoms of COVID-19, flu and cold.


recommended. To prevent Fluicovid, both flu and COVID-19 vaccines are suggested to be administered simultaneously. It is also essential to develop a pan-flu-COVID-19 vaccine to combat current and future Fluicovid.<sup>5</sup>

#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

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