

## The influenza season during COVID-19 pandemic: The storm that never came

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With over 110 million individuals infected and almost 2.5 million deaths globally, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has taken a huge toll<sup>1</sup>. The pressure on healthcare systems has never been greater, with 419,856 United Kingdom (UK) hospitalisations and 121,674 deaths since March 2020 due to COVID-19<sup>2</sup>, as well as a huge backlog of postponed screening and elective work. A major challenge has been to ensure the protection of vulnerable populations in society, including pregnant women.

As a clinically vulnerable population, pregnant women are more likely to require intensive care due to COVID-19, compared to non-pregnant women<sup>3</sup>. Some studies have suggested that, compared with non-pregnant women with COVID-19, pregnant women with COVID-19 are more likely to die (1.2 versus 1.5 per 1,000 cases, respectively; aRR 1.7; 95% CI 1.2–2.4)<sup>4</sup>, while others found that the risk of death is similar<sup>5</sup>.

With the increased demand for healthcare services, concerns began to arise around the potential impact of the concurrent influenza season on pregnant women and its burden on healthcare services. Data from Public Health England reported that individuals co-infected with SARS-CoV-2 and influenza between January and April 2020 were at greater risk of death than those infected with SARS-CoV-2 alone<sup>6</sup>. Thus, it was concluded, particular efforts should be made to protect pregnant women against influenza during infectious peaks of the COVID-19 pandemic.

As a result, in anticipation of the approaching 2020-2021 winter influenza season in the UK, testing capacity was increased and flu vaccination programmes reinforced, particularly for vulnerable populations. The World Health Organization's 'Flu Awareness Campaign 2020' encouraged vulnerable individuals to take the vaccine to reduce the strain on healthcare systems likely to be already under immense pressure due to COVID-19<sup>7</sup>.

In order to aid countries preparing for this storm, predictions regarding the activity and impact of influenza were made, based on the earlier experience of countries in the Southern Hemisphere. CDC data from Australia, South Africa and Chile showed that the number of specimens tested for influenza and the proportion positive for influenza declined significantly in comparison to previous years<sup>8</sup>. Across all three countries between April and July 2020, 51 influenza positive specimens were detected from a total of 83,307 specimens (0.06%). In contrast, in the same three countries during the same period in 2017–2019, 24,512 positive specimens were detected among 178,690 tested (13.7%)<sup>8</sup>. This corresponds to an unprecedented 228-fold decrease in flu diagnoses in the same time period. This dramatic fall is likely to be due to COVID-19 mitigation measures including improved hygiene practices, mask wearing and limited inter-personal contact.

Although there are no robust data from UK national bodies on the incidence of influenza in pregnant women, Google trend searches in the UK during the annual influenza season indicate a possible decline in cases. As a rule, searches around the topic of 'flu symptoms in pregnancy' tend to follow the flu season closely (Figure 1). Comparing the number of such searches in November 2020 with those in November 2019 identified a 60% decrease. This may suggest a reduced prevalence of influenza among the UK population during this year's flu season<sup>9</sup>.

Potential explanations for the significant fall in cases of flu in the Southern hemisphere and apparently in the UK include an increase in the uptake of flu vaccination in line with public health advice, or COVID-related improved hygiene measures, social distancing measures and travels bans<sup>8</sup>. However, in England, despite the drive to vaccinate vulnerable individuals, including pregnant women, there was no significant increase in the uptake of flu vaccination by pregnant women this winter. Provisional GP surveillance data from Public Health England reported that the uptake rate for the seasonal influenza vaccine in pregnant women in 2020-2021 was 43.7% by end of January 2021, with the trend in uptake almost identical to that in the 2019-2020 flu season. The comparable rates of uptake of the influenza vaccine suggests that the much lower rate of influenza cases this season is likely attributable to reduced transmission due to the social distancing and hygiene measures employed to reduce the spread of COVID-19<sup>10</sup>.

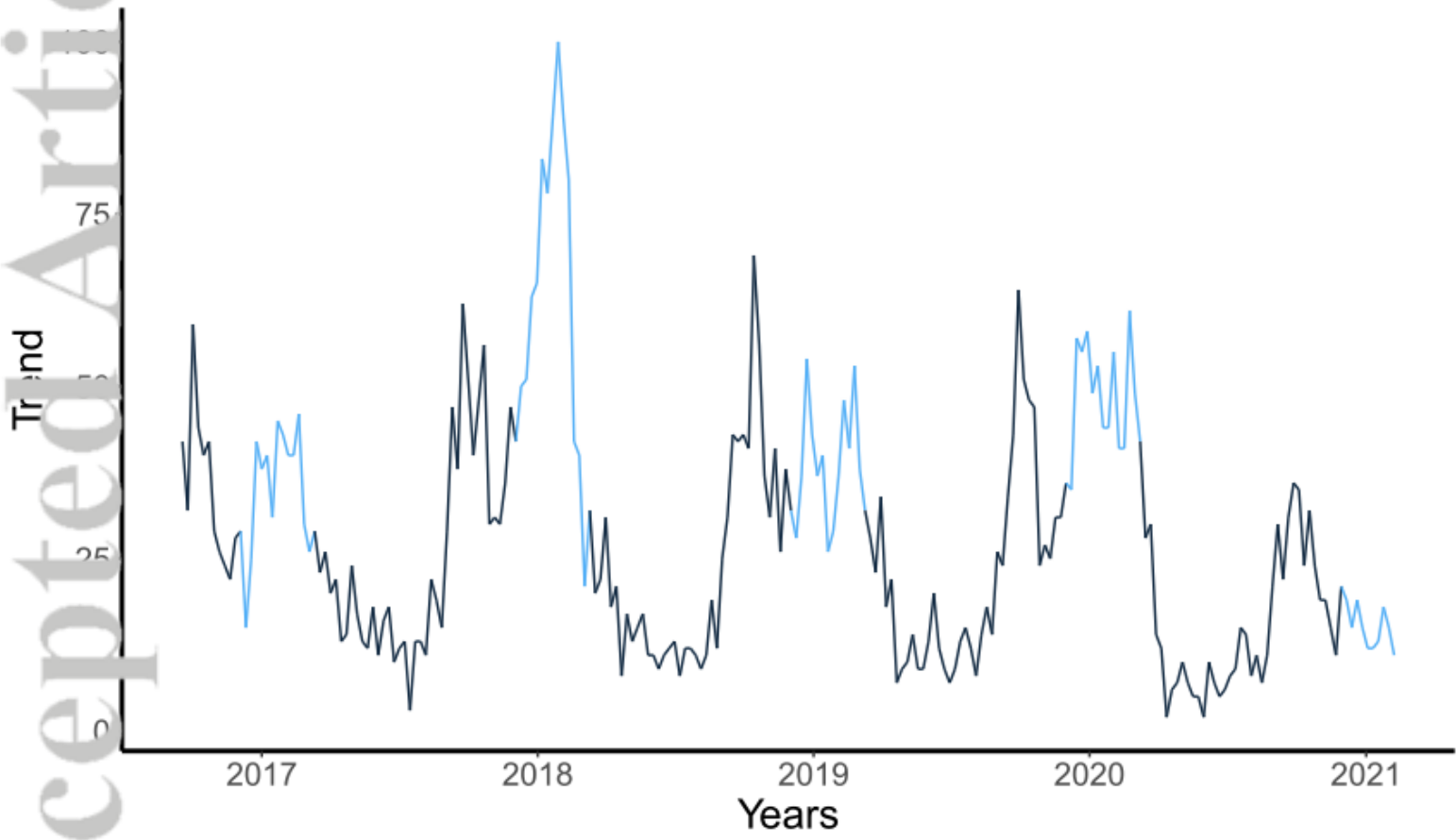
Because of the absence of good data, it has been necessary to make inferences that suggest that the prevalence of influenza in pregnant women in the UK was far lower in the 2020-2021 season than in previous years, similar to the pattern observed in national data in the Southern hemisphere. UK vaccination data from the last two seasons suggest that the public health message to pregnant women that flu vaccination was particularly important this year has had no impact. Three lessons can be drawn from this experience. First, better data around influenza infection rates, segmented according to demographic data including pregnancy status, are needed in order to inform public health policy. Second, hygiene and social distancing measures are effective in dramatically reducing transmission of influenza, in both pregnant and non-pregnant populations. And thirdly, new tactics are needed to effectively deliver the public health message around vaccination to pregnant women.

## References:

1. WHO Coronavirus Disease (COVID-19) Dashboard [Internet]. [cited 2021 Feb 13]. Available from: <https://covid19.who.int>
2. Official UK Coronavirus Dashboard [Internet]. [cited 2021 Feb 13]. Available from: <https://coronavirus.data.gov.uk/details/healthcare>
3. Allotey J, Stallings E, Bonet M, Yap M, Chatterjee S, Kew T, Debenham L, Llavall AC, Dixit A, Zhou D, Balaji R, Lee SI, Qiu X, Yuan M, Coomar D, van Wely M, van Leeuwen E, Kostova E, Kunst H, Khalil A, Tiberi S, Brizuela V, Broutet N, Kara E, Kim CR, Thorson A, Oladapo OT, Mofenson L, Zamora J, Thangaratinam S; for PregCOV-19 Living Systematic Review Consortium. Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis. *BMJ*. 2020 Sep 1;370:m3320.
4. Zambrano LD. Update: Characteristics of Symptomatic Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–October 3, 2020. *MMWR Morb Mortal Wkly Rep* [Internet]. 2020 [cited 2021 Feb 14];69. Available from: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e3.htm>
5. Ellington S. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–June 7, 2020. *MMWR Morb Mortal Wkly Rep* [Internet]. 2020 [cited 2021 Feb 14];69. Available from: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6925a1.htm>
6. Stowe J, Tessier E, Zhao H, Guy R, Muller-Pebody B, Zambon M, Andrews N, Ramsay M, Lopez Bernal J. Interactions between SARS-CoV-2 and Influenza and the impact of coinfection on disease severity: A test negative design. *medRxiv*. 2020 Sep 22;2020.09.18.20189647.
7. Flu Awareness Campaign 2020 [Internet]. [cited 2021 Feb 14]. Available from: <https://www.euro.who.int/en/media-centre/events/events/2020/10/flu-awareness-campaign-2020>
8. Olsen SJ, Azziz-Baumgartner E, Budd AP, Brammer L, Sullivan S, Pineda RF, Cohen C, Fry AM. Decreased Influenza Activity During the COVID-19 Pandemic — United States, Australia, Chile, and South Africa, 2020. 2020;69(37):5.
9. Google Trends [Internet]. Google Trends. [cited 2021 Feb 14]. Available from: <https://trends.google.com/trends/explore?date=today%205-y&geo=GB&q=flu%20symptoms%20in%20pregnancy>
10. Decreased Influenza Activity During the COVID-19 Pandemic — United States, Australia, Chile, and South Africa, 2020 [Internet]. Centres for Disease Control and Prevention; 2020 [cited 14 February 2021]. Available from: <https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6937a6-H.pdf>

## FIGURE LEGENDS

**Figure 1.** Influenza and pregnancy related search queries in the United States of America during the last 5 years. Blue lines indicate the flu season of each year. The flu and pregnancy related queries are at an all-time low in 2021.



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