

## SYNOPSIS

05/28/2020

# Review of “Influenza vaccine does not increase the risk of coronavirus or other non-influenza respiratory viruses: retrospective analysis from Canada, 2010-11 to 2016-17”

**Article citation:** Skowronski DM, Zou M, Clarke Q, Chambers C, Dickinson JA, Sabaiduc S, et al. Influenza vaccine does not increase the risk of coronavirus or other non-influenza respiratory viruses: retrospective analysis from Canada, 2010-11 to 2016-17. Clin Infect Dis. 2020 May 22 [Epub ahead of print]. Available from: <https://doi.org/10.1093/cid/ciaa626>

## One-Minute Summary

- This study addresses the speculation that influenza vaccination may increase the risk of Coronavirus Disease 2019 (COVID-19) by examining the **relationship between influenza vaccination and the risk of non-influenza respiratory viruses (NIRV), including seasonal coronaviruses, in Canada** from the 2010-11 season through the 2016-17 season.
- During the study, there were 4,281 influenza, 2,565 NIRV and 3,841 pan-negative specimens (negative for influenza and NIRV) and 175 co-infections. The median age was similar for influenza, coronavirus and combined NIRV cases or test-negative controls (34-37 years).
- Among NIRV detections (n=2,565), the most common was enterovirus/rhinovirus (25.1%), followed by coronavirus (22.2%), respiratory syncytial virus (20.4%), human metapneumovirus (15.2%), parainfluenza (12.3%), adenovirus (4.4%) and bocavirus (0.2%).
- Impact of influenza vaccine on influenza cases:
  - The adjusted odds ratio (aOR) for **influenza vaccination among influenza cases when compared to test-negative controls was 0.55** (95% confidence interval [CI]: 0.50-0.61) and similar when compared to pan-negative controls (aOR = 0.58, 95% CI: 0.52-0.65) or NIRV-positive controls (aOR = 0.51, 95% CI: 0.45-0.58).
  - Influenza vaccine effect against influenza did not differ between children (<20-years-old) (aOR = 0.56, 95% CI: 0.44-0.70) and adults (≥20-years-old) (aOR = 0.55, 95% CI: 0.49-0.61).
- Impact of influenza vaccine on coronavirus cases:
  - The aOR for **influenza vaccination among coronavirus cases compared to coronavirus test-negative controls was 1.04** (95% CI: 0.85–1.28) and similar when compared to pan-negative controls (aOR = 1.09, 95% CI: 0.89-1.34) or NIRV-positive controls (aOR = 0.98, 95% CI: 0.79-1.22).
  - Influenza vaccine effect against coronavirus did not differ between children (aOR = 0.74, 95% CI: 0.42-1.32) and adult (aOR = 1.11, 95% CI: 0.89-1.38).
- The influenza vaccine reduced risk of influenza by >40% while having no impact on the risk of infection from NIRV or seasonal coronavirus.

## Additional Information

- The authors used datasets from the Canadian Sentinel Practitioner Surveillance Network (SPSN) to assess the association between influenza vaccine and NIRV risk, using a test-negative design (TND) analysis.
- Study participants included: 1) patients tested for influenza and NIRV; 2) patients from Alberta, British Columbia, Ontario or Quebec; 3) specimens collected from November through April; 4) patients  $\geq 1$  year old; and 5) patients who presented within 7 days of influenza like illness (i.e., fever and cough plus  $\geq 1$  of arthralgia, myalgia, prostration or sore throat) symptom onset.
- Among coronavirus detections (n=570), the most common was OC43 (40.4%), followed by NL63 (19.6%), 229E (15.4%), 229E/NL63 combined targets (14.2%), HKU1 (9.3%) and coronavirus co-infections (1.1%).
- The authors note that “valid TND estimates require that etiologies against which [the] vaccine is effective are specifically excluded from the test-negative control group and this applies also when exploring vaccine effects on non-vaccine target pathogens”. Additionally, they highlight the implications of this methodological issue for further examination of influenza vaccine effects against COVID-19.
- This conclusion and additional analyses performed in this study, refute the findings by [Wolff \(2020\)](#) that indicated influenza vaccination increases the risk of seasonal coronavirus. The authors emphasize that addressing such speculation is important to maintain influenza vaccine coverage through the ongoing COVID-19 pandemic.

## PHO Reviewer's Comments

- None

## Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Influenza vaccine does not increase the risk of coronavirus or other non-influenza respiratory viruses: retrospective analysis from Canada, 2010-11 to 2016-17”. Toronto, ON: Queen’s Printer for Ontario; 2020.

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