

Supplementary Material for Coleman et al. Are healthcare personnel at higher risk of seasonal influenza than other working adults?

Supplementary Table S1

Association between workplace (healthcare versus non-healthcare) and PCR-confirmed influenza infection only; Toronto, ON 2010/11-2012/13

	aOR ¹ (95% CI)	p-value
HCP (vs non-HCP)	1.33 (0.58, 3.03)	0.50
Age, per 10 years	0.82 (0.64, 1.01)	0.13
Season participated		
2010/11	Referent	
2011/12	1.12 (0.51, 2.44)	0.78
2012/13	2.57 (1.28, 5.19)	0.008
Number of children <6 yrs in household	1.11 (0.68, 1.80)	0.68
Influenza vaccination status		
Not vaccinated	Referent	
Vaccinated, current season	0.43 (0.25, 0.73)	0.002
Corrective eyewear		
None	Referent	
Contacts	4.59 (1.91, 11.0)	0.001
Glasses sometimes (reading or distance)	2.40 (1.19, 4.87)	0.015
Glasses always	2.68 (1.15, 6.28)	0.023
Smoking status		
Never	Referent	
Former	1.22 (0.67, 2.21)	0.52
Current (occasional or daily)	0.80 (0.33, 1.96)	0.62
Workspace		
Single person office	Referent	
Shared office/workspace	1.57 (0.80, 3.08)	0.19

aOR: adjusted odds ratio; PCR: polymerase chain reaction; HCP: healthcare personnel; CI: confidence interval; yrs=years

¹Odds ratios and p values for multivariable analysis are shown for the focal variable (HCP vs non-HCP) and explanatory variables with $p \leq 0.20$ in the multivariable analysis. Estimates are adjusted for other variables in this column as well as site/hospital, sex, number of children 6-15 years, and number of adults in household, nail biting, handwashing, hours of sleep, weekly hours of work, and use of public transit.

Supplementary Table S2

Association between type of work (non-healthcare vs healthcare personnel with and without patient contact) and influenza infection; Toronto, ON 2010/11-2012/13

	aOR ¹ (95% CI)	p-value
Non-HCP	Referent	
HCP, direct patient contact	1.13 (0.51, 2.49)	0.76
HCP, no patient contact	1.38 (0.67, 2.88)	0.38
Age, per 10 years	0.73 (0.58, 0.90)	0.005
Season participated	Referent	
2010/11	0.92 (0.48, 1.77)	0.81
2011/12	2.01 (1.09, 3.68)	0.024
2012/13		
Children <6 years old, number	1.33 (0.89, 1.99)	0.16
Not vaccinated	Referent	
Vaccinated, current season	0.27 (0.17, 0.44)	<0.001
Corrective eyewear	Referent	
No	2.90 (1.31, 6.43)	0.009
Contacts	2.32 (1.29, 4.18)	0.005
Sometimes (reading or distance)	2.81 (1.36, 5.81)	0.005
Always		
Smoking status	Referent	
Never	1.61 (0.97, 2.66)	0.06
Former	0.91 (0.41, 2.01)	0.82
Current (occasional or daily)		
Workspace	Referent	
Single person office	1.95 (1.08, 3.52)	0.026
Shared office/workspace		

aOR: adjusted odds ratio; HCP: healthcare personnel; CI: confidence interval; yrs=years

¹Odds ratios and p values for multivariable analysis are shown for the focal variable (HCP vs non-HCP) and explanatory variables with $p \leq 0.20$ in the multivariable analysis. Estimates are adjusted for other variables in this column as well as: season, swab(s) submitted, blood volunteered, site/hospital, sex, number of children <6 years, number of children 6-15 years, number of adult housemates, nail biting, handwashing frequency, hours of sleep, smoking status, hours of work, and use of public transit.

Supplementary information: Selection and Recruitment of Participants

Non-healthcare personnel (non-HCP)

Non-HCP were recruited from 20 participating office based non-healthcare employers in downtown Toronto, Canada including banks/credit unions, investment, management, and insurance companies, legal firms, university personnel, and governmental and non-governmental organizations. At participating employers, as at hospitals, flyers, intranet postings, email notices, information sessions, and information tables were used to recruit participants.

Non-HCP were not eligible if they worked in any healthcare setting or if they had daily occupational face-to-face contact with numerous children or adults (e.g., teachers, daycare workers, sales clerks, cafeteria staff). There were no exclusions based on non-occupational contact with children or adults and no exclusions based on job description. We did not collect data on particular occupation.

Although we excluded adults with occupational face-to-face contact with numerous children or adults, the combination of heterogeneity of occupations, and lack of evidence regarding risk factors for influenza in healthy working adults meant that it was not possible to select workers such that their occupational risk was randomly assorted and representative of the population of workers who were not HCP. Because, in our view, the epidemiology of influenza and a single previous study suggested that working in healthcare would not pose a risk for infection by influenza, we attempted to bias our non-HCP in favour of identifying an occupational risk associated with healthcare, which would strengthen the conclusion if, indeed, we did not identify a risk associated with healthcare.

We also deliberately selected employers in downtown Toronto where our hospitals were located such that exposure to public transit would be expected to be similar between groups because of some evidence for other respiratory diseases that frequent use of public transit increased the risk for infection.

It is possible that unmeasured confounders exist: adults who work in office settings that do not expose them to large numbers of children and adults may have systematically different non-occupational risks of influenza than other types of workers. However, we think it unlikely that people whose occupation exposes them to numerous children or adults would systematically take particular care to avoid exposure to infection in other areas of their life.

Healthcare personnel (HCP)

HCP were recruited from six downtown Toronto, Canada acute care hospitals using a number of techniques including flyers, intranet postings, email notices, information sessions, and information tables. Targeted recruitment of healthcare personnel was used to ensure that 30% of healthcare workers enrolled worked directly with patients with acute respiratory symptoms and/or infections, 30% worked higher risk wards (e.g., intensive care, emergency), and 20% performed or assisted with procedures that generate droplets/aerosols (e.g., intubation).