

Prevalence of SARS-CoV-2 Antibodies among Federally Incarcerated Women

All incarcerated women offenders who provided a valid dried blood spot (DBS) sample were positive for SARS-CoV-2 antibodies.

Why we did this study

In collaboration with Public Health Agency of Canada (PHAC) and the University of Ottawa, Correctional Service Canada (CSC) conducted the 2022 National Health Survey. One of the study objectives was to determine the prevalence of SARS-CoV-2 antibodies and whether they are derived from immunization or infection among federally incarcerated women.

What we did

Institutional Health Services staff approached eligible offenders to participate in the National Health Survey, which consisted of two parts: 1) a self-report questionnaire, and 2) a dried blood spot (DBS) sample to test for infectious diseases. To participate, offenders must have provided consent, been able to participate in French or English, and been continuously incarcerated in a federal prison for at least six months prior to the start of the study. Offenders did not have to participate in the DBS collection to be included in the questionnaire portion of the survey. The DBS samples were collected between September 2022 and January 2023 and were mailed to PHAC for analysis of SARS-CoV-2 antibodies. Findings were sent to CSC's Research Branch for linkage with questionnaire data. In total, 88 incarcerated women across the five regions provided DBS samples (71.5% of all women who participated in the 2022 National Health Survey).

What we found

Overall, six women had inconclusive results due to DBS samples providing an insufficient quantity for the assay. As such, these participants were excluded in the DBS analyses, resulting in 40 Indigenous and 42 non-Indigenous women included in the final sample ($N = 82$). None of the women offenders were negative for SARS-CoV-2 antibodies. Positivity rates were broken down into two reactivity patterns: natural infection or natural infection and vaccination ($n = 53$, 64.6%), and probable vaccine induced immunity ($n = 29$, 34.9%)¹. Table 1 displays positivity results by self-identified Indigenous status (i.e., Indigenous vs. non-Indigenous women).

Table 1. Reactivity Patterns Among Indigenous and non-Indigenous Women Offenders

Reactivity Patterns	Indigenous ($N = 40$)	Non-Indigenous ($N = 42$)	Total ($N = 82$)
	n (%) [95% CI]	n (%) [95% CI]	n (%) [95% CI]
Positive: Natural infection OR natural infection and vaccination	27 (67.5%) [50.9, 81.4]	26 (61.9%) [45.6, 76.4]	53 (64.6%) [53.3, 74.9]
Positive: Probable vaccine induced immunity	13 (32.5%) [18.6, 49.1]	16 (38.1%) [23.6, 54.4]	29 (35.3%) [25.1, 46.7]

Note. CI = Confidence Interval. 'Positive: Probable natural infection alone' group is merged with the 'Positive: Natural infection OR natural infection and vaccination' group. Due to rounding, percentages across reactivity categories may not add up to 100%.

What it means

All women with a valid DBS sample tested positive for SARS-CoV-2 antibodies as of January 2023, which is slightly higher than the positivity rate of Canada's general adult population as of August 2022 (98.1%²). Additionally, Indigenous and non-Indigenous women showed comparable reactivity patterns for SARS-CoV-2 antibodies, which is promising, given that Indigenous women typically have higher positivity rates for other infectious diseases³. Very few cases were conclusively found to be positive due to probable natural infection alone, which indicates that in most instances of SARS-CoV-2 antibodies were likely due to the vaccine or a combination of the vaccine and natural infection.

For more information

Please e-mail the [Research Branch](#) or contact us by phone at (613) 995-3975. You can also visit the [Research Publications](#) section for a full list of reports and one-page summaries.

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¹ The categories of 'Natural infection OR natural infection and vaccination' and 'Probable natural infection alone' are two different categories. The former indicates positive SARS-CoV-2 antibodies but cannot distinguish whether the antibodies are due to natural infection alone, or a combination of infection and vaccination. The latter indicates positive SARS-CoV-2 antibodies from only natural infection. In other words, these participants are likely not vaccinated against COVID-19 but were infected with the virus at some point in time. Notably, due to small cell counts ($n < 5$), 'Positive: Probable natural infection alone' group is merged with the 'Positive: Natural infection OR natural infection and vaccination' group.

² Statistics Canada. (2023). *Between April and August 2022, 98% of Canadians had antibodies against COVID-19 and 54% had antibodies from a previous infection.* Retrieved from: <https://www150.statcan.gc.ca/n1/daily-quotidien/230327/dq230327b-eng.htm>

³ Zakaria, D., Thompson, J. M., Jarvis, A., & Borgatta, F. (2010). *Summary of emerging findings from the 2007 National Inmate Infectious Diseases and Risk-Behaviours Survey.* Correctional Service Canada.