SARS-CoV-2 Seroprevalence in Blood Donors

Three years of monitoring in nine provinces

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- To describe the Canadian Blood Services SARS-CoV-2 seroprevalence study
- To present monitoring data over the full course of the pandemic
- To show breakdown by demographics and social determinants of health



Who are blood donors?

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At least 17 years old Weigh at least 50kg*



Feeling well on the day (no recent COVID-19 or risk of COVID-19)



Meet donor eligibility criteria



At low risk of blood transmissible infection





Live in any major city, most smaller cities and many towns in any province except Quebec (not the territories)



*Some additional height/weight criteria for young donors

Laboratory Methods

April to December 2020



- Abbott Architect SARS-CoV-2 IgG assay (Nucleocapsid)
 - Sensitivity 92.7% and specificity 99.9%

January 2021 to December 2022

- Roche Elecsys ® Anti-SARS-CoV-2 S immunoassay (total Ig, Spike)
 - Sensitivity 98.8% and specificity 99.6% (semi-quantitative)
- Roche Elecsys[®] Anti-SARS-CoV-2 immunoassay (total Ig, Nucleocapsid)
 - Sensitivity 99.5% and specificity 99.8%





All positivity percentages were adjusted

- For age and gender of general population by raking
- For assay characteristics using the Rogan-Gladen equation

Data Variables

Age and Gender

Collected at registration to donate

Race/ethnicity

Blood donation screening question

Pampalon material and social deprivation scales

Residential neighbourhood variables Material deprivation- income, job security, education Social deprivation- living alone, single parent, separated/divorced/widowed







Sampling 2020 to 2022

			2020														
			March	April	Мау	June	July	August	September	October	November	December					
Seroprevalence ¹					14,541	51,963	21,594			16,811	17,049	16,961					
Correlates of																	
Immuity Study ²																	
	2021																
	January	February	March	April	Мау	June	July	August	September	October	November	December					
Seroprevalence ¹	34,921		16,873	3 16,931	17,001	16,884	8,457	9,109	9,363	9,627	9,018	16,816					
Correlates of Immuity Study ²																	

	2022																																					
	January		Februa		February		March		April			Мау		June			July			August			September			October		1	November		er	December		nber				
Seroprevalence ¹		32,505			28,616		26,02	7		29,7	787		3′	1,764			32,1	21			31,27	5		35,1	65			81,63	7		31,45	7		31,	080		3	32,698
Correlates of																																	Τ	Γ				
Immunity Study ²																																						





631,011 samples tested

Anti-N and Anti-S Percent Positive – April 2020 to December 2022





Nearly all donors were vaccinated in 2021





Vaccine-related seroprevalence by age group 2021



Anti-N Percent Positive by Age Group – January 2021 to December 2022





Anti-N Percent Positive by Region – January 2021 to December 2022





Anti-N Percent Positive in White and Racialized Donors January 2021 to December 2022





Anti-N Percent Positive by Material Deprivation Quintiles January 2021 to December 2022





Anti-N Percent Positive by Social Deprivation Quintiles January 2021 to December 2022





SARS-CoV-2 Seroprevalence Study CITF Modelling Data Secretariat CITF Public Secretariat Health Monthly **CBS Policy** Analysis PHAC Policy Reports - Clinic safety **Provincial Public Health**



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Data Linkage





Conclusion

- Anti-S seropositivity reflected high vaccine uptake
- SARS-CoV-2 seroprevalence due to infection was low until 2022 but despite vaccination increased rapidly when the Omicron variant dominated
- Infection related seroprevalence was higher in the western provinces
- Racialization and material deprivation are important predictors of higher infection rates
- Ongoing monitoring of seroprevalence is important for public health policies





Canadian Blood Services

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