HIV Testing and Diagnoses During the COVID-19 Pandemic in Melbourne, Australia

To the Editors:

To control the COVID-19 pandemic, Australia introduced stage 3 restrictions including the closure of nonessential services, stay at home orders, and social distancing rules on March 23, 2020. Some of these restrictions began to ease in early May. These restrictions may reduce the opportunity for sex with casual partners and, hence, reduce an individual's sexual risk.[1,2] This proposition is supported by substantial declines in presentations for HIV postexposure prophylaxis prescriptions during the COVID-19 lockdowns in several countries such as Australia and the United Kingdom.[3,4] We described the impact these restrictions may have had on HIV testing and diagnoses.

The Melbourne Sexual Health Centre (MSHC) is the largest public HIV/STI clinic in Victoria, Australia. MSHC remained open and provided free HIV testing during the lockdown period. We looked at the number of HIV tests and HIV diagnoses at MSHC in quarter 1 (January to March—as a proxy of prelockdown) and quarter 2 (April to June—as a proxy of postlockdown) in 2020, compared these with the number in the same quarter in 2019 by reporting the incidence rate ratio (IRR) and 95% confidence intervals (CIs) estimated by using the Poisson regression model. HIV positivity was defined as the number of newly diagnosed HIV cases divided by the number of HIV tests performed. The 95% CIs of the positivity was calculated using the exact binomial method. We further stratified individuals into Australian-born, overseas-born who arrived in Australia within 2 years (hereafter "recently arrived visitors"), or overseas-born who arrived in Australia more than 2 years previously (hereafter "migrants") as they have different risks of acquiring HIV.[5,6] Individuals who did not report the country of birth and/or the number of years in Australia were categorized as "unknown." All statistical analyses were conducted using Stata (version 14; College Station, TX). This study was approved by the Alfred Hospital Ethics Committee, Melbourne, Australia (301/20).

The number of HIV tests decreased significantly from 16,367 tests in 2019–11,270 tests in 2020 with a 31% reduction (IRR 0.69, 95% CI: 0.67 to 0.70) (Table 1). Comparing 2020 with 2019, a greater reduction was seen in quarter 2 (IRR 0.53, 95% CI: 0.51 to 0.55) than in quarter 1 (IRR 0.82, 95% CI: 0.80 to 0.85). The greatest reduction in the number of HIV tests was seen among recently arrived visitors (52% reduction) compared with Australian-born individuals (37% reduction) and migrants (30% reduction) (Table 1). The reduction among recently arrived visitors was likely because of border closures for all international visitors in March 2020.

The number of HIV diagnoses decreased from 36 cases in 2019 (34 cases were men who have sex with men) to 24 cases in 2020 (21 cases were men who have sex with men) although this reduction was not statistically significant (IRR = 0.67, 95% CI: 0.40 to 1.12) (Table 1). The greatest reduction in HIV diagnoses was seen in the first quarter, which was before the COVID-19 lockdown, (from 17 cases in 2019 to 9 cases in 2020; IRR = 0.53, 95% CI: 0.24 to 1.19) although it was not statistically significant.There was a negligible reduction in HIV diagnoses in the second quarter of 2020 (n = 15) compared with 2019 (n = 19). Similarly, we did not see any significant changes in the number of HIV diagnoses in other subgroups (ie, Australian-born, recently arrived visitors, and migrants).

Overall, HIV positivity in 2019 (0.22%, 95% CI: 0.15% to 0.30%) and 2020 (0.21%, 95% CI: 0.14% to 0.32%) were similar (P = 1.000). HIV positivity among recently arrived visitors increased in the second quarter from 0.15% (95% CI: 0.03% to 0.44%) in 2019 to 0.95% (95% CI: 0.38% to 1.94%) in 2020 (P = 0.006) although the number of HIV diagnoses was small (3 cases in 2019 and 7 cases in 2020). HIV positivity among other subgroups did not change significantly between 2019 and 2020.

The large reductions in the number of individuals receiving HIV testing were not associated with any significant change in HIV positivity during the lockdown period. Given that most cases of HIV at diagnosis in Australia are asymptomatic and acquired some time before testing, this suggests that a proportion of HIV diagnoses may be being missed because of reduced testing but reductions in transmission may also be occurring. The reduction of HIV testing might also be due to the reduced use of pre-exposure prophylaxis during the COVID-19 pandemic.[7,8] It is important to note that there was an increase in the number of HIV tests in the "unknown" group in 2020 compared with 2019, so the findings on the subgroup analyses should be interpreted with caution. As HIV testing and treatment are key HIV control strategies, so these findings are concerning and suggest the recent reductions in HIV transmission from "treatment as prevention" strategy are currently substantially impaired. It is possible that some reductions in HIV transmission may have occurred because some individuals have reduced their sexual risk.[2,7,9] If HIV control is to return to its previous effective level, then one of the many postpandemic tasks will be to increase HIV testing capacity to identify HIV cases missed during this period given that it is likely that sexual risk may rise quickly after this pandemic.

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E.P.F.C. conceived the study idea. E.P.F.C., J.J.O., and C.K.F. designed the study. E.P.F.C. performed the statistical analysis and wrote the first draft of the article. I.D. reviewed all new HIV cases diagnosed at the Melbourne Sexual Health Centre. All authors were involved in data interpretation, revised the article critically for important intellectual content, and approved the final version.

TABLE 1. The Quarterly Number of HIV Tests, New HIV Diagnoses, and HIV Positivity in 2019–2020, Stratified by Population

	All Individuals			Australian-Born			Migrants†			Recently Arrived Visitors‡			Unknown§		
No. of HIV Tests*	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**
Q1	8569	7083	0.82 (0.80 to 0.85)	3333	2504	0.75 (0.71 to 0.79)	2317	1941	0.84 (0.79 to 0.89)	2290	1317	0.58 (0.54 to 0.62)	629	1321	2.10 (1.91 to 2.31)
Q2	7798	4187	0.53 (0.51 to 0.55)	3071	1528	0.50 (0.47 to 0.53)	2155	1189	0.55 (0.51 to 0.59)	1986	739	0.37 (0.34 to 0.40)	586	731	1.25 (1.12 to 1.39)
Q1 – Q2	16,367	11,270	0.69 (0.67 to 0.70)	6404	4032	0.63 (0.61 to 0.65)	4472	3130	0.70 (0.67 to 0.73)	4276	2056	0.48 (0.46 to 0.51)	1215	2052	1.69 (1.57 to 1.81)

	All Individuals			Australian-Born			Migrants†			Recently Arrived Visitors‡			Unknown§		
No. of New HIV Diagnoses*	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**	**2019**	**2020**	**IRR (95% CI)**
Q1	17	9	0.53 (0.24 to 1.19)	5	6	1.20 (0.37 to 3.93)	4	0	—	7	3	0.43 (0.11 to 1.66)	3	0	—
Q2	19	15	0.79 (0.40 to 1.55)	7	4	0.57 (0.17 to 1.95)	7	4	0.57 (0.17 to 1.95)	3	7	2.33 (0.60 to 9.02)	2	0	—
Q1 – Q2	36	24	0.67 (0.40 to 1.12)	12	10	0.83 (0.36 to 1.93)	11	4	0.36 (0.12 to 1.14)	10	10	1.00 (0.42 to 2.40)	3	0	—

	All Individuals			Australian-Born			Migrants†			Recently Arrived Visitors‡			Unknown§		
HIV Positivity‖	**2019, %**	**2020, %**	***P***	**2019, %**	**2020, %**	***P***	**2019, %**	**2020, %**	***P***	**2019, %**	**2020, %**	***P***	**2019, %**	**2020, %**	***P***
Q1	0.20	0.13	0.327	0.15	0.24	0.546	0.17	0.00	0.131	0.31	0.23	0.755	0.48	0.00	—
Q2	0.24	0.36	0.282	0.23	0.26	0.761	0.32	0.34	1.000	0.15	0.95	0.006	0.34	0.00	—
Q1 – Q2	0.22	0.21	1.000	0.19	0.25	0.518	0.25	0.13	0.303	0.23	0.49	0.099	0.25	0.00	—

*IRR, incidence rate ratio estimated by the Poisson regression model for 2020 compared with 2019 (reference group).
†Migrants are defined as overseas-born individuals who arrived in Australia more than 2 years previously.
‡Recently arrived visitors are defined as overseas-born individuals who arrived in Australia within 2 years.
§Unknown is defined as individuals who did not report the country of birth and/or the number of years in Australia.
‖HIV positivity is defined as the number of new HIV diagnoses divided by the number of HIV tests performed, and P value is calculated by Fisher's exact test.
Q1, quarter 1 (from January to March); Q2, quarter 2 (from April to June).

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