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Changes in HIV preexposure prophylaxis prescribing in Australian clinical services following COVID-19 restrictions

The first case of COVID-19 in Australia was diagnosed on 25 January 2020 [1]. In response, the Australian Federal and State governments implemented staged restrictions, including international and state border closures and physical distancing requirements in public spaces. Between 23 and 26 March, nonessential services, including gyms, restaurants and places of worship were closed, and, on 29 March, the government urged Australians to stay at home other than for essential reasons (i.e. care giving, exercise, and to access healthcare, food and supplies). Data from one large sexual health clinic in Melbourne showed a rapid decline in postexposure prophylaxis (PEP) dispensing following implementation of restrictions [2]. A survey of gay and bisexual men (GBM) accessing preexposure prophylaxis (PrEP) from the same clinic found that among 178 GBM reporting daily PrEP use in January to February 2020, 23% subsequently reported PrEP cessation in May (during restrictions) and 5% switched to on-demand PrEP, with participants reporting no longer engaging in casual sex and reduced number of sexual partners [3]. Although these data suggest that some GBM have reduced their PrEP use, findings are limited by self-report and it is not yet known whether these data reflect broader community trends beyond this single site.

We extracted PrEP prescribing data from 42 primary care and sexual health services across Australia participating in the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of Blood-borne Viruses and Sexually Transmitted Infections (ACCESS) [4]. Specialized data extraction software installed at participating services extracts and links patient data across clinics over time [5]. We compared trends in weekly PrEP prescribing before (1 January 2019 to 31 March 2020) and after (1 April 2020 to 30 June 2020) the implementation of restrictions using segmented linear regression. We estimated the immediate drop in PrEP prescriptions following restrictions by comparing the predicted number of weekly PrEP prescriptions in the week starting 1 April 2020 (first week in the time-series following implementation of all restrictions) based on prerestrictions and during-restrictions trends. The ACCESS study was approved by the Alfred Hospital Ethics Committee (project 248/17).

Between 1 January 2019 and 30 June 2020, 52 596 PrEP prescriptions among 19 876 individuals (96.3% male individuals) were recorded at ACCESS clinics. Between 1

January 2019 and 31 March 2020 (prerestrictions period), there was an average of 718 PrEP prescriptions per week across the network. During this period, the weekly number of PrEP prescriptions was stable, with an estimated decline of 0.2 prescriptions per week ($P = 0.734$). PrEP prescriptions declined by an estimated 236 at the week following implementation of restrictions, representing an immediate 33.3% decline in prescriptions ($P < 0.001$). Between 1 April 2020 and 30 June 2020 (during-restrictions period), the average number of PrEP prescriptions per week was 543 (a 24.4% decline compared with the prerestrictions period overall). We then observed a nonsignificant increase of 10.6 prescriptions per week during the restrictions period ($P = 0.178$) (Fig. 1).

In New South Wales and Victoria (representing 77% of PrEP prescriptions in the study), the largest absolute declines in PrEP prescribing were observed. In Victoria, estimated weekly PrEP prescriptions fell from 294 to 188 (36% decline; $P < 0.001$); in New South Wales, estimated weekly prescriptions fell from 250 to 165 (33.9% decline; $P = 0.002$). Declines were also observed in the Australian Capital Territory (32–17; 46.9% reduction; $P = 0.001$), South Australia (50–35; 30.5% reduction; $P = 0.005$), and Tasmania (17–9; 47.1% reduction; $P = 0.002$) with no change in Western Australia ($P = 0.806$) and Queensland ($P = 0.404$).

Declines in PrEP prescribing may be due to decreased sexual activity among PrEP users or decreased attendance at clinical services, although seeking medical care was exempt from COVID-19 restrictions and many clinics provided telehealth consultations. A recent online survey found that among 940 Australian GBM, the mean number of sexual partners decreased more than 12-fold after participants first reported becoming ‘concerned’ about COVID-19. Further, only 16% of respondents who reported having casual sex prior to COVID-19 continued to do so following the implementation of restrictions [6].

Rapid changes in PrEP use among GBM, alongside changes in sexual behaviour mediated by the implementation of social restrictions, may have salient implications for the transmission of HIV and other sexually transmitted infections. Although we did not detect a continuing decline in PrEP prescribing during restrictions, ongoing community transmission of COVID-19 across multiple

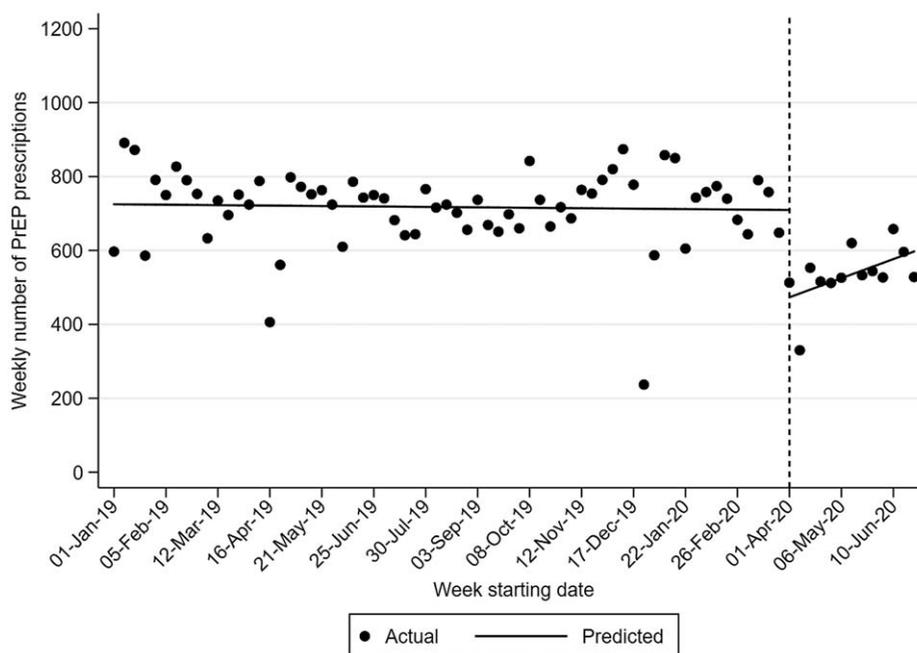


Fig. 1. Weekly preexposure prophylaxis prescriptions across 42 Australian services from January 2019 to June 2020, with segmented linear regression trends for prerestrictions (1 January 2019 to 31 March 2020)* and during-restrictions (1 April 2020 to 30 June 2020) periods. PrEP = preexposure prophylaxis. *Data point for week starting 24 December 2019 includes 8 days (24–31 December 2019).

Australian states suggests sustained and potentially additional restrictions are likely, with the state of Victoria already returning to lockdown status for the second time in late July. Reduced sexual activity may help interrupt community transmission of HIV and STIs. However, if sexual activity begins to return to pre-COVID-19 levels without a congruous and timely rebound in testing and PrEP use, this may create potential for increased transmission. Ongoing behavioural and epidemiological surveillance during the COVID-19 pandemic will be important in monitoring the effects of COVID-19 on HIV and STI diagnoses.

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Successful treatment of disseminated *Mycobacterium simiae* infection in a patient with advanced HIV

A 39-year-old South American man with HIV presented with a 6-week history of generalized weakness, fever, cough, night sweats and significant weight loss after prolonged cessation of antiretroviral therapy (ART) for over 24 months. He was diagnosed with HIV in 2001 and maintained a suppressed viral load until ART cessation. He had spent over 18 months of the previous 2 years in Colombia. Three weeks following recommencement of his previous ART regimen of tenofovir disoproxil fumarate/emtricitabine/rilpivirine (TDF/FTC/RPV, 300 mg/200 mg/25 mg once daily), his symptoms worsened prompting hospital admission. On examination, he was cachectic and febrile, with signs consistent with right sided bronchial pneumonia and a palpable abdominal mass in the left upper quadrant.

CD4⁺ T-cell count was 34 cells/ μ l and HIV viral load was 32 000 copies/ml on admission. Computerized tomography (CT) scan of chest and abdomen revealed multilobar bronchopneumonia with diffuse retroperitoneal and mesenteric lymphadenopathy and a prominent mesenteric

calcified mass. Sputum samples and retroperitoneal lymph node biopsies were positive for acid fast bacilli on microscopy and a *Mycobacterium tuberculosis* PCR was negative, prompting a diagnosis of advanced HIV with disseminated mycobacterial infection. Investigations did not reveal other opportunistic infections. He commenced empiric treatment for *Mycobacterium avium complex* and ART was changed to FTC/TDF (200 mg/300 mg once a day) and dolutegravir (DTG, 50 mg once a day) to manage drug–drug interactions with the treatment for MAC. The mycobacterium was subsequently identified as *Mycobacterium simiae* on PCR and culture. His mycobacterial treatment was amended to include clofazimine 50 mg once/day, moxifloxacin 400 mg once/day, azithromycin 500 mg once/day and amikacin 1200 mg once a day in addition to FTC/TDF and DTG with initial improvement in symptoms. Six weeks into treatment, he presented with worsening abdominal pain and distension. Abdominal CT scan showed worsening lymphadenopathy and an increase in the size of the mesenteric mass. A diagnosis of immune reconstitution inflammatory syndrome (IRIS) was made