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Accessing needed sexual health services during the COVID-19 pandemic in British Columbia, Canada: a survey of sexual health service clients

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ABSTRACT

Objectives We assessed COVID-19 pandemic impacts on accessing needed sexual health services, and acceptability of alternative service delivery models, among sexual health service clients in British Columbia (BC), Canada.

Methods We administered an online survey on 21 July–4 August 2020 to clients using a provincial STI clinic or internet-based testing service, GetCheckedOnline, in the year prior to March 2020. We used logistic regression to identify factors associated with having unmet sexual health needs (ie, not accessing needed services) during March–July 2020 and the likelihood of using various alternative service models, if available.

Results Of 1198 survey respondents, 706 (59%) reported needing any sexual health service since March 2020; of these 706, 365 (52%) did not access needed services and 458 (66%) had avoided or delayed accessing services. GetCheckedOnline users (univariate OR (uOR)=0.62; 95% CI 0.43 to 0.88) or clients with more urgent needs (eg, treatment for new STI, uOR 0.40 (95% CI 0.21 to 0.7)) had lower odds of unmet sexual health needs. The most common factors reported for avoiding or delaying access were public messaging against seeking non-urgent healthcare (234/662, 35%), concern about getting COVID-19 while at (214/662, 32%) or travelling to (147/662, 22%) a clinic or lab and closure of usual place of accessing services (178/662, 27%). All factors were positively associated with having unmet sexual health needs, with public messaging showing the strongest effect (adjusted OR=4.27 (95% CI 2.88 to 6.42)). Likelihood of using alternative sexual health service models was high overall, with the most appealing options being home self-collection kits (634/706, 90%), receiving test kits or antibiotics at home (592/700, 85%) and express testing (565/706, 80%).

Conclusions Of BC sexual health service clients needing services during March–July 2020, many had unmet needs. Offering alternative service delivery methods may help to improve access during and beyond the COVID-19 pandemic.

BACKGROUND

Decreases in tests and diagnoses of sexually transmitted and blood-borne infections (STBBIs) seen in many jurisdictions during the COVID-19 pandemic have not been fully explained.[1–3] During the first wave of COVID-19 cases in March–May 2020 in British Columbia (BC), Canada, provincial syphilis and HIV tests and reported diagnoses decreased,[4 5] a pattern also observed for STBBI testing through GetCheckedOnline, BC's internet-based STBBI testing service (H Pedersen, personal communication, 2020). Elsewhere at the time there were reports of decreased or changed use of sexual health services for testing, HIV pre-exposure prophylaxis (PrEP) or emergency contraception.[6–8] Common hypotheses attributed these trends to reduced service demands as a result of changes in sexual behaviours among individuals (eg, fewer casual partners)[7 8] or closure of sexual health services and/or diversion of staff to support COVID-19 related work.[1 6 9] In a recent survey conducted by our team, one-third of BC sexual health service clients reported decreases in partner numbers during the initial phases of the pandemic, which may be consistent with reduced demand for sexual health services.[10] In this paper, we analysed the same survey data to understand the perceived need for and access to sexual health services during the initial phases of BC's COVID-19 pandemic.

Sexual health services are available at multiple access points in BC's universal healthcare system at no or low cost, including dedicated sexual health clinics, primary care services, walk-in clinics and emergency rooms. In March 2020, many dedicated sexual health clinics in the province either closed or reduced their available services, with most clinics prioritising essential services for in-person care (eg, for symptomatic clients or treatment services).[11–14] As elsewhere, sexual health services in BC may have been considered non-essential,[15] impacted by additional protocols or measures taken to minimise staff risk,[16] or redeployed staff resources for COVID-19 contact tracing.[9] As a result of the pandemic, sexual health providers in BC started to place greater emphasis on alternative models of service delivery, including telemedicine or virtual health.[17 18] However, in-person visits are still necessary, for example, postexposure prophylaxis for high-risk sexual exposures, injectable medications and

provider-collected specimens for diagnostic testing.[18] By summer 2020, BC was in the process of 're-starting' and resuming health services previously put on hold.[19] Some sexual health services began to resume in-clinic, non-urgent services dependent on the availability of clinical staff and ability to meet physical distancing requirements.[11]

Our primary objective was to understand the impact of the COVID-19 pandemic on access to needed sexual health services. We aimed to characterise existing service clients who did not access needed services during the initial phases (March–July 2020) of BC's COVID-19 pandemic and to assess the effect of pandemic-related factors on service access. We hypothesised that pandemic-related barriers to service access included: service closure/restriction; perceived stigma related to having sex during the pandemic outside of household members; public messaging to avoid non-essential health services; and worry about exposure to COVID-19 if accessing health services. We also hypothesised that being a GetCheckedOnline client would be associated with accessing needed sexual health services by reducing the need for in-person clinic visits for testing. Our secondary objective was to understand the acceptability of alternative models of sexual health service delivery. Our overarching goal was to inform service provision during the COVID-19 pandemic and the ongoing adaptation of sexual health services.

METHODS

Design and setting

As previously described,[10] we conducted a cross-sectional online survey of sexual health service clients between 21 July and 4 August 2020 during gradual lifting of public health measures following the initial wave of COVID-19 cases in BC (online supplemental figure 1). Using previously established methods,[20] we recruited participants from a high-volume provincial STI clinic (>10 000 clients per year) in Vancouver, BC, operated by BC Centre for Disease Control (BCCDC). Starting in mid-March 2020, non-urgent services such as routine STI testing or vaccinations were no longer available at the clinic, a situation largely unchanged by the time of the survey with the exception of taking on new HIV PrEP patients in July.[21] Additionally, we recruited clients from GetCheckedOnline.com, also operated by BCCDC and available in eight communities across BC, with 66% of clients residing in the Greater Vancouver region and over 11 000 tests conducted in 2019. In brief, GetCheckedOnline allows users to get tested for STBBIs (chlamydia, gonorrhoea, syphilis, HIV and hepatitis C) without visiting a clinic. Clients create an online account, complete a risk assessment to inform test recommendations, print or download a lab requisition and take it to a laboratory for specimen collection.[22] Results are provided online (if negative) or over the phone to arrange appropriate follow-up (if positive or indeterminate). There were no restrictions on GetCheckedOnline use during the COVID-19 pandemic. Clients of these two services overlap; in 2016, 30% of GetCheckedOnline clients had also tested at the provincial STI clinic.[20]

Survey development

Survey items were adapted from literature and prior research[20 23] and developed with input from service providers, and our community advisory board comprised of agency representatives and members of communities affected by STBBI. The final survey contained 33 items in total (one per page, online supplemental material) and used adaptive questioning to minimise the number of items for completion. Participants could review, edit and save answers. The survey was available in English only.

We included questions related to need for sexual health services during the pandemic and interest in alternative sexual health services distinct from in-person clinic visits. Participants were asked if, since the start of the pandemic, they wanted or needed to: (1) get tested for STIs or (2) access sexual health services for another reason (eg, contraception or PrEP). Participants were then asked whether they had accessed the service(s) or not. We asked questions to assess whether our hypothesised factors described previously led participants to avoid or delay seeking services during the pandemic and included Likert scale questions about likelihood of use of a variety of alternative methods of sexual health service delivery (eg, video visits with providers, home specimen self-collection kits).

Recruitment and data collection

During registration or account creation, STI clinic and GetCheckedOnline clients are asked to consent to be contacted for research and approximately 21% and 26% consent, respectively.[20] We emailed a study participation invitation to all consenting clients 16 years and older who had visited the STI clinic or tested using GetCheckedOnline in the year prior to the pandemic (from 15 March 2019 to 17 March 2020). The invitation contained a generic recruitment message with a link to an online survey and described additional eligibility criteria: ability to complete surveys in English and not having completed the survey previously. Participants were offered an opportunity to enter into a draw for a $C200 gift card. The initial recruitment email was sent on 21 July 2020, with three follow-up reminders before survey closure on 4 August 2020. Data were collected using REDCap, with no personal identifiers collected. The email address was not tracked for survey submission.

Analysis

Data from all submitted questionnaires were imported into R V.3.52 for analysis. Characteristics of the overall sample have been previously reported.[10] For analyses of this paper, we included participants who reported needing an STI test and/or another sexual health service since March 2020. Our primary outcome of interest was having an unmet service need, defined as not accessing testing and/or another sexual health service. We estimated univariate ORs and 95% CIs using binary logistic regression to identify characteristics associated with the primary outcome. To measure the effect of each hypothesised barrier on the primary outcome, we used multiple multivariable logistic regressions to estimate adjusted ORs (aORs) and 95% CI, adjusting for potential confounders identified through use of a causal diagram.

Our secondary outcomes were the likelihood of using alternative sexual health service delivery models, for which we collapsed these Likert scale questions into binary responses: very likely/likely versus other (neutral/unlikely/very unlikely). We conducted a second bivariate analysis using logistic regression between these secondary outcomes and an explanatory variable of avoiding or delaying accessing sexual health services, defined as reporting at least one factor leading the participant to avoid or delay seeking testing or sexual healthcare during the COVID-19 pandemic.

RESULTS

Recruitment outcomes

Overall 4212 clients were invited to participate, of which 1518 (36%) started and 1198 (28%) submitted the survey. The response rate among GetCheckedOnline clients (2618 invited, 851 (33%)

submitted) was higher than for the STI clinic clients (1594 invited, 347 (22%) submitted). Fifty-nine per cent (706/1198) of survey participants reported wanting or needing to access a sexual health service since the beginning of the pandemic. More GetCheckedOnline clients (521/851 (61%)) reported needing sexual health services than the STI clinic clients (185/347 (53%)).

Of the 706 participants reporting a sexual health need that comprised our final analytic sample, the median age was 32 years, with 47% identifying as men, 47% women and 5% non-binary, gender-fluid or other gender (online supplemental table 1). Half (56%) of the sample identified as gay/lesbian, bisexual, queer, pansexual or another sexual minority (of which 59% identified as men, 32% as women and 9% identified as non-binary, gender-fluid or other gender). The majority of participants were white (72%), with 4% identifying as Indigenous (First Nation, Métis or Inuit) and 23% as another racialised minority. Most participants (87%) had greater than high school education, and 45% noted greater difficulty meeting their own or their household's financial needs during the pandemic. Most participants were users of GetCheckedOnline (77%, 545/706).

Access to needed sexual health services

Of those who reported wanting or needing to access one or more sexual health services, 341/706 (48%) accessed the service while 365/706 (52%, 95% CI 48% to 55%) did not and were defined as having an unmet sexual health need. Significant findings from our univariate logistic regression on characteristics associated with having an unmet sexual health need are presented in table 1, with the full analysis available in online supplemental table 1.

Having an unmet sexual health need was more likely among participants identifying as a woman and participants needing routine testing, and less likely among men having sex with men only, participants needing birth control, HIV PrEP or STI treatment, participants comfortable accessing in-person services and GetCheckedOnline users. Worry about getting COVID-19 during the first wave in BC was common in our sample as was perceived stigma about sex; however, neither factor was associated with having an unmet sexual health need.

Among those with complete data, 67% (441/662) indicated avoiding or delaying accessing sexual health services during the pandemic. The most common factors for avoiding or delaying access were public messaging against seeking non-urgent healthcare (234/662, 35%), concern about getting COVID-19 while at (214/662, 32%) or travelling to (147/662, 22%) a clinic or lab and closure of usual place of accessing services (178/662, 27%; table 2). All factors were positively associated with having an unmet sexual health need, including worry about being judged by a healthcare provider for having sex during the pandemic. Public messaging against seeking non-urgent healthcare showed the strongest effect on having sexual health needs unmet. Participants reporting one or more factors for avoiding or delaying

Table 1 Sociodemographic and other factors significantly associated with having unmet sexual health needs

Variable	Total with sexual health need n=706	At least one need unmet n=365	All needs met n=341	Unadjusted OR (95% CI)
Gender identity				
Man	332/704 (47%)	158/364 (43%)	174/340 (51%)	Ref
Woman	334/704 (47%)	185/364 (51%)	149/340 (44%)	**1.37 (1.01 to 1.86)**
Non-binary/gender-fluid/other	38/704 (5%)	21/364 (6%)	17/340 (5%)	1.36 (0.69 to 2.70)
Gender of sex partners prior to the pandemic				
Men who have sex with women only	103/693 (15%)	64/359 (18%)	39/334 (12%)	Ref
Men who have sex with men and women	28/693 (4%)	16/359 (4%)	12/334 (4%)	0.81 (0.35 to 1.93)
Men who have sex with men only	187/693 (27%)	71/359 (20%)	116/334 (35%)	**0.37 (0.23 to 0.61)**
Women who have sex with men only	242/693 (35%)	127/359 (35%)	115/334 (34%)	0.67 (0.42 to 1.07)
Women who have sex with men and women	73/693 (11%)	49/359 (14%)	24/334 (7%)	1.24 (0.67 to 2.35)
Women who have sex with women only	6/693 (1%)	3/359 (1%)	3/334 (1%)	0.61 (0.11 to 3.43)
Other	54/693 (8%)	29/359 (8%)	25/334 (7%)	0.71 (0.36 to 1.38)
Type of sexual health service need				
Testing for a new, specific reason (eg, symptoms)	183/706 (26%)	79/365 (22%)	104/341 (30%)	1.27 (0.79 to 2.04)
Testing as per usual testing routine	403/706 (57%)	241/365 (66%)	162/341 (48%)	**2.48 (1.64 to 3.79)**
Speak with a healthcare provider about a sexual health concern	149/692 (22%)	87/355 (25%)	62/337 (18%)	1.44 (1.00 to 2.08)
Access birth control	95/692 (14%)	34/355 (10%)	61/337 (18%)	**0.48 (0.30 to 0.75)**
Access to HIV pre-exposure prophylaxis	68/692 (10%)	21/355 (6%)	47/337 (14%)	**0.39 (0.22 to 0.66)**
Access treatment for a new STI	45/692 (7%)	14/355 (4%)	31/337 (9%)	**0.40 (0.21 to 0.76)**
Access treatment for ongoing symptoms (eg, warts)	36/692 (5%)	17/355 (5%)	19/337 (6%)	0.84 (0.43 to 1.65)
Get a pregnancy test	25/692 (4%)	9/355 (3%)	16/337 (5%)	0.52 (0.22 to 1.17)
Access to condoms	31/692 (4%)	16/355 (5%)	15/337 (4%)	1.01 (0.49 to 2.10)
Access to harm reduction supplies	7/692 (1%)	5/355 (1%)	2/337 (1%)	2.39 (0.51 to 16.79)
Comfortable accessing in-person sexual health and testing services during the COVID-19 pandemic				
Strongly agree/agree	418/700 (60%)	152/363 (42%)	266/337 (79%)	**0.19 (0.14 to 0.27)**
Neither/disagree/strongly disagree	282/700 (40%)	211/363 (58%)	71/337 (21%)	Ref
GetCheckedOnline user	545/706 (77%)	267/365 (73%)	278/341 (82%)	**0.62 (0.43 to 0.88)**

Denominators for each variable exclude missing values. Column percentages were calculated excluding missing values per variable.
Bold: 95% CI excludes 1.

Table 2 Association between factors for avoiding or delaying seeking testing or sexual healthcare during the COVID-19 pandemic and unmet sexual health needs

Factor	Total with sexual health need n=662*	At least one need unmet n=345	All needs met n=317	Unadjusted OR (95% CI)	Adjusted† OR (95% CI)
Any factor	441/662 (67%)	310/345 (90%)	131/317 (41%)	**12.58 (8.40 to 19.29)**	**10.38 (6.63 to 16.64)**
Public messaging that was not supposed to seek non-urgent healthcare	234 (35%)	181 (52%)	53 (17%)	**5.50 (3.85 to 7.96)**	**4.27 (2.88 to 6.42)**
Concern about getting COVID-19 while at a clinic/lab	214 (32%)	160 (46%)	54 (17%)	**4.21 (2.95 to 6.08)**	**2.63 (1.73 to 4.04)**
Place usually go for testing/care was closed or had reduced services	178 (27%)	119 (34%)	59 (19%)	**2.30 (1.61 to 3.31)**	**2.52 (1.68 to 3.82)**
Concerned about getting COVID-19 while travelling to a clinic/lab	147 (22%)	112 (32%)	35 (11%)	**3.87 (2.58 to 5.95)**	**2.21 (1.38 to 3.58)**
Worried that healthcare provider might judge me for having sex during the COVID-19 pandemic	82 (12%)	59 (17%)	23 (7%)	**2.64 (1.61 to 4.46)**	**2.56 (1.47 to 4.57)**
Didn't know where to access services	77 (12%)	55 (16%)	22 (7%)	**2.54 (1.53 to 4.35)**	**2.46 (1.38 to 4.48)**
Live/close contact with someone at risk of COVID-19	36 (5%)	28 (8%)	8 (3%)	**3.41 (1.60 to 8.13)**	**2.64 (1.11 to 6.92)**

Bold: 95% CI excludes 1.
*Excluding individuals with missing data for any variable included in adjusted models.
†Adjusted for age, gender, sexual orientation (behaviour), race/ethnicity, education, comfort accessing in-person services, and being a GetCheckedOnline user.

access had about 10 times the odds of having an unmet sexual health need, compared with those reporting none.

Interest in alternative sexual health service delivery methods

Likelihood of using alternative models to in-person sexual health services if available was high among participants (table 3). The most appealing options were home self-collection kits (ie, receiving kits for specimen self-collection and mailing the specimens to a lab; 634/706, 90%), receiving test kits or antibiotics at home (592/700, 85%) and express testing (ie, phone/video triage to specimen collection only at a clinic site; 565/706, 80%). Likelihood of using most services was not associated with avoiding or delaying seeking sexual health services during the pandemic, with the exception of a text messaging service providing STI results. Likelihood of use did not differ between STI clinic and GetCheckedOnline clients, with the exception of phone calls with providers to discuss sexual health, text messaging for reminders and express testing, where odds were higher for STI clinic clients (online supplemental table 2).

DISCUSSION

Our study suggests that reductions in STBBI testing in BC during the initial phases of the COVID-19 pandemic are in part related to avoiding or delaying use of needed sexual health services in this time period. Among our sample of sexual health service clients reporting needing STBBI testing or another service during March–July 2020, over half (52%) reported not accessing care and two-thirds (66%) reported delaying or avoiding seeking needed sexual healthcare as a result of the pandemic. Our study adds to literature regarding client experiences of barriers to accessing sexual healthcare during the initial phases of the COVID-19 pandemic. All of our hypothesised barriers to accessing care were associated with unmet sexual health service needs.

While closure or reduction of usual services was an important factor impeding access, more common factors for delaying or avoiding care were public messaging to avoid non-essential healthcare and concern about getting COVID-19 while at a clinic or lab. However, we found that participants with potentially

Table 3 Acceptability of alternative models to in-person sexual health services and association with avoiding/delaying seeking testing or sexual healthcare during the COVID-19 pandemic

Variable	Total with sexual health need n=706	At least one factor leading to avoiding/delaying seeking testing or sexual healthcare n=458	No factors reported n=231	Unadjusted OR (95% CI)
Likelihood of using the following services (very likely/likely vs other)				
Home self-collection kits for testing	634/706 (90%)	417/458 (91%)	202/231 (87%)	1.46 (0.86 to 2.41)
Receiving test kits or antibiotics at home, in plain packaging	592/700 (85%)	390/454 (86%)	188/230 (82%)	1.36 (0.88 to 2.08)
Express testing service, where after a phone/video assessment go to a clinic to have specimens collected	565/706 (80%)	361/458 (79%)	189/231 (82%)	0.83 (0.55 to 1.23)
Text messaging service that provides STI results	530/700 (76%)	360/457 (79%)	159/227 (70%)	**1.59 (1.10 to 2.28)**
Phone call with a sexual healthcare provider to discuss sexual health	481/704 (68%)	312/458 (68%)	160/230 (70%)	0.93 (0.66 to 1.31)
Sending a picture of a rash or lesion to a healthcare provider	461/702 (66%)	308/457 (67%)	145/229 (63%)	1.20 (0.86 to 1.67)
Text messaging service for reminders (eg, medications, appointments)	473/701 (67%)	307/455 (67%)	152/229 (66%)	1.05 (0.75 to 1.47)
Video visit with a sexual healthcare provider to discuss sexual health	405/703 (58%)	269/457 (59%)	130/230 (57%)	1.10 (0.80 to 1.52)
Texting with a sexual healthcare provider to discuss sexual health	374/699 (54%)	253/455 (56%)	110/228 (48%)	1.34 (0.98 to 1.85)

Denominators for each variable exclude missing values. Column percentages were calculated excluding missing values per variable.
Bold: 95% CI excludes 1.

more time-sensitive issues such as needing contraception, HIV PrEP or STI treatment had lower odds of having unmet service needs. These findings suggest clients may have weighed the potential harm of not accessing needed services against their risk of acquiring COVID-19 infection and deferring services that they perceived as non-urgent. Deferring asymptomatic STBBI screening has been noted among sexual health service clients in Australia and among men who have sex with men in the USA and has been recommended as a short-term strategy for reducing in-person clinic visits during the pandemic.[18 24] While it has been proposed that the impact of service closures during the pandemic may be greatest for those most disadvantaged, exacerbating existing health inequities,[25 26] in our study, most sociodemographic measures were not associated with unmet sexual health needs. We did find a significantly greater proportion of clients with unmet sexual health needs were women compared with men, and a lower proportion were men who have sex with men compared with men who have sex with women only. However, the composition of our sample was likely skewed towards individuals with resources to access health services, being predominantly white, with higher education and having sufficient digital and English literacy to complete an email survey.

Timely access to sexual healthcare is a well-recognised determinant of sexual health and STBBI prevention and control. It is concerning that many individuals who accessed sexual health services prior to the pandemic have avoided or delayed sexual healthcare they perceived as needed during the initial phases of the COVID-19 pandemic in BC. Possible outcomes of these delays include unintended pregnancies related to reduced access to contraception, the consequences of delayed diagnosis and treatment of STBBI leading to secondary transmission or morbidity related to complications of untreated bacterial STIs (eg, neurosyphilis and pelvic inflammatory disease). These findings reinforce the importance of maintaining sufficient access to in-person sexual health services from the outset of a pandemic. GetCheckedOnline users were less likely to have unmet sexual health needs, suggesting that internet-based STBBI testing services with reduced need for in-person care can mitigate access barriers during the COVID-19 pandemic. We found high acceptability of potential alternative models for delivering sexual health services among participants in our survey, with options for testing and treatment that avoid or minimise time in clinics being most acceptable (home self-collection or testing kits and express testing services). Our study reinforces recommendations to develop alternative methods for sexual health services delivery during the COVID-19 pandemic to minimise in-person interactions, including expansion of telemedicine and virtual care,[17 18 27] scale-up of existing services such as GetCheckedOnline and implementation of new options found most acceptable. We note, however, that this is an added rationale for these services, given their established role in overcoming the many existing barriers to accessing sexual healthcare prior to the pandemic, such as those that originally led to the development of GetCheckedOnline.[20 22]

We surveyed existing sexual health service clients in BC about their perceived need for sexual health services, aiming to reflect a sexually active population where sexual health needs may likely arise during the COVID-19 pandemic. As such, our findings may not be generalisable to individuals not previously engaged in sexual healthcare, or to jurisdictions where the availability of sexual health services during the initial phases of the pandemic may have differed. Another limitation of our study is our inability to examine whether access changed in relation to different pandemic phases, as our survey questions did not differentiate between the two initial phases of BC's pandemic. By the time of our survey in late July/early August 2020, public health restrictions had eased and some sexual health services had reopened or loosened restrictions. Finally, we did not collect information to allow us to compare the characteristics of STI clinic and GetCheckedOnline clients who did and did not consent to be contacted for research or participate in the study and as such cannot describe potential recruitment biases. A prior study conducted by our team using the same recruitment methods did find sociodemographic differences between consenting and non-consenting clients in these two samples, yet few differences between participants and non-participants.[20]

In conclusion, our study contributes to the growing body of evidence regarding the unintended consequences of the COVID-19 pandemic on access to needed sexual health services.[28] Access delays can have serious individual and public health impacts, and we echo others in highlighting the importance of maintaining sexual health access during the COVID-19 pandemic.[29] Ongoing research is needed to monitor access over time given the protracted nature of the pandemic, to more carefully examine access issues among women and to assess the long-term impact of deferred access to and closures of sexual health services. Rapid deployment and scale-up of alternatives to in-person sexual healthcare should also be an important part of the pandemic response, which are justified by addressing COVID-19 specific access barriers and by effecting long-lasting service changes that may address barriers pre-dating—and persisting beyond—the pandemic.

Key messages

- ⇒ Of clients of sexual health services in British Columbia identifying a need for sexual health services since the start of the COVID-19 pandemic, many did not access services, which may be influenced by perceived urgency of need.
- ⇒ The most common factors behind avoiding or delaying access to services include messaging to avoid non-essential healthcare, concern about getting COVID-19 while at a clinic or laboratory and service closures.
- ⇒ Users of internet-based STI testing (GetCheckedOnline) were less likely to report unmet sexual health needs, suggesting the service may mitigate access barriers during the pandemic.
- ⇒ Alternative models of sexual healthcare that reduce potential in-person exposures including home self-collection or test kits and express testing are highly acceptable.

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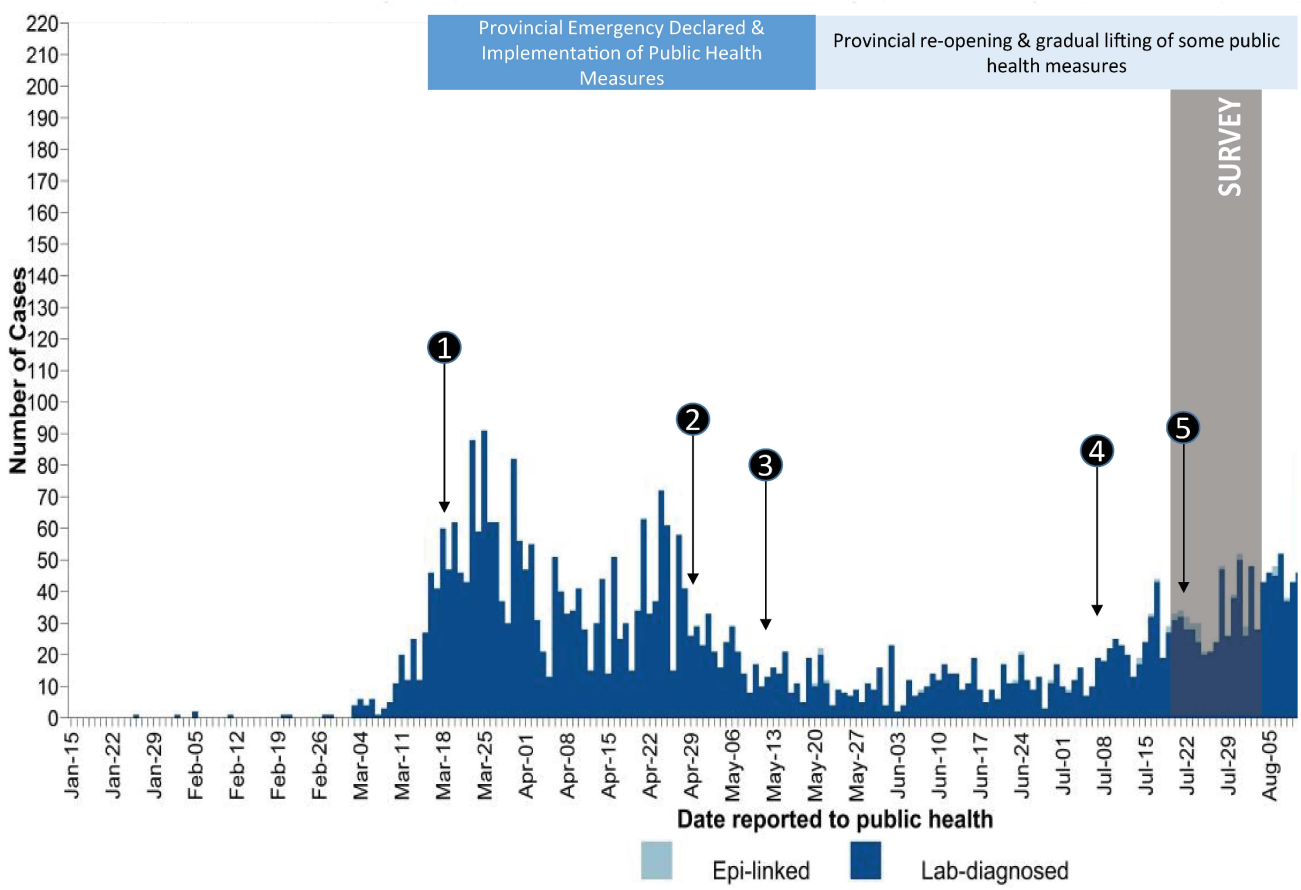
Provincial Emergency Declared & Implementation of Public Health Measures
Provincial re-opening & gradual lifting of some public health measures
SURVEY
Number of Cases
Date reported to public health
Epi-linked
Lab-diagnosed
1
2
3
4
5

Supplemental Table 1: Sexual health service needs among survey participants

Variable	Total with sexual health need N=706	At least one need unmet N=365	All needs met N=341	Unadjusted Odds Ratio [95% Confidence Interval]
Age: median [inter-quartile range]	32 [26-39]	31 [26-38]	32 [26.75-39]	0.99 (0.98-1.00)
Gender identity[1]				
Man	332/704 (47%)	158/364 (43%)	174/340 (51%)	Ref
Woman	334/704 (47%)	185/364 (51%)	149/340 (44%)	**1.37 (1.01-1.86)**
Non-binary / Genderfluid / Other	38/704 (5%)	21/364 (6%)	17/340 (5%)	1.36 (0.69-2.70)
Sexual identity				
Straight (heterosexual)	311/704 (44%)	166/363 (46%)	145/341 (43%)	Ref
Sexual minority (e.g., gay, lesbian, homosexual, queer, pansexual)	393/704 (56%)	197/363 (54%)	196/341 (57%)	0.88 (0.65-1.18)
Gender of sex partners prior to the pandemic				
Men who have sex with women only	103/693 (15%)	64/359 (18%)	39/334 (12%)	Ref
Men who have sex with men and women	28/693 (4%)	16/359 (4%)	12/334 (4%)	0.81 (0.35-1.93)
Men who have sex with men only	187/693 (27%)	71/359 (20%)	116/334 (35%)	**0.37 (0.23-0.61)**
Women who have sex with men only	242/693 (35%)	127/359 (35%)	115/334 (34%)	0.67 (0.42-1.07)
Women who have sex with men and women	73/693 (11%)	49/359 (14%)	24/334 (7%)	1.24 (0.67-2.35)
Women who have sex with women only	6/693 (1%)	3/359 (1%)	3/334 (1%)	0.61 (0.11-3.43)
Other	54/693 (8%)	29/359 (8%)	25/334 (7%)	0.71 (0.36-1.38)
Race/ethnicity				
Indigenous[2]	31/697 (4%)	21/362 (6%)	10/335 (3%)	1.93 (0.91-4.36)
Racialized minority, non-Indigenous	163/697 (23%)	79/362 (22%)	84/335 (25%)	0.87 (0.61-1.23)
White	503/697 (72%)	262/362 (72%)	241/335 (72%)	Ref
Education				
High school or less	88/702 (13%)	46/364 (13%)	42/338 (12%)	1.02 (0.65-1.60)
Post-secondary or more	614/702 (87%)	318/364 (87%)	296/338 (88%)	Ref

[1] In a separate question, 23/697 (3%) of participants identified as transgender, have lived experience as trans, or a history of gender transition

[2] 2/28 (7%) of Indigenous participants identified as Two-Spirit.

Variable	Total with sexual health need N=706	At least one need unmet N=365	All needs met N=341	Unadjusted Odds Ratio [95% Confidence Interval]
Employment status prior to pandemic				
Employed full-time (30+ hours/week)	461/701 (66%)	232/363 (64%)	229/338 (68%)	1.08 (0.62-1.15)
Not employed full-time	240/701 (34%)	131/363 (36%)	109/338 (32%)	Ref
Yearly income prior to the pandemic				
< $20,000	141/683 (21%)	81/360 (23%)	60/323 (19%)	1.27 (0.88-1.85)
$20,000 or more	542/683 (79%)	279/360 (78%)	263/323 (81%)	Ref
Greater difficulty meeting own/household's financial needs during pandemic	311/694 (45%)	167/358 (47%)	144/336 (43%)	1.17 (0.86-1.57)
Type of sexual health service need				
Testing for a new, specific reason (e.g., symptoms)	183/706 (26%)	79/365 (22%)	104/341 (30%)	1.27 (0.79-2.04)
Testing as per usual testing routine	403/706 (57%)	241/365 (66%)	162/341 (48%)	**2.48 (1.64-3.79)**
Speak with a health care provider about a sexual health concern	149/692 (22%)	87/355 (25%)	62/337 (18%)	1.44 (1.00-2.08)
Access birth control	95/692 (14%)	34/355 (10%)	61/337 (18%)	**0.48 (0.30-0.75)**
Access to HIV pre-exposure prophylaxis	68/692 (10%)	21/355 (6%)	47/337 (14%)	**0.39 (0.22-0.66)**
Access treatment for a new STI	45/692 (7%)	14/355 (4%)	31/337 (9%)	**0.40 (0.21-0.76)**
Access treatment for ongoing symptoms (e.g., warts)	36/692 (5%)	17/355 (5%)	19/337 (6%)	0.84 (0.43-1.65)
Get a pregnancy test	25/692 (4%)	9/355 (3%)	16/337 (5%)	0.52 (0.22-1.17)
Access to condoms	31/692 (4%)	16/355 (5%)	15/337 (4%)	1.01 (0.49-2.10)
Access to harm reduction supplies	7/692 (1%)	5/355 (1%)	2/337 (1%)	2.39 (0.51-16.79)
Worry about getting COVID-19 during Phase 1				
Not at all worried	60/705 (9%)	31/364 (9%)	29/341 (9%)	Ref
Somewhat worried	332/705 (47%)	163/364 (45%)	169/341 (50%)	0.90 (0.52-1.57)
Very worried	196/705 (28%)	108/364 (30%)	88/341 (26%)	1.15 (0.64-2.05)
Extremely worried	117/705 (17%)	62/364 (17%)	55/341 (16%)	1.05 (0.56-1.97)
Worry about getting COVID-19 during Phase 2				
Less worried	87/704 (12%)	47/364 (13%)	40/340 (12%)	1.16 (0.72-1.87)

Variable	Total with sexual health need N=706	At least one need unmet N=365	All needs met N=341	Unadjusted Odds Ratio [95% Confidence Interval]
No change	310/704 (44%)	156/364 (43%)	154/340 (45%)	Ref
More worried	307/704 (44%)	161/364 (44%)	146/340 (43%)	1.09 (0.79-1.49)
Comfortable accessing in-person sexual health and testing services during the COVID-19 pandemic				
Strongly agree / agree	418/700 (60%)	152/363 (42%)	266/337 (79%)	**0.19 (0.14-0.27)**
Neither / disagree / strongly disagree	282/700 (40%)	211/363 (58%)	71/337 (21%)	Ref
Feel ashamed if people knew about my sex life / others will judge me for having sex during the pandemic				
Strongly agree / agree	326/703 (46%)	166/362 (46%)	160/341 (47%)	0.96 (0.71-1.29)
Neither / disagree / strongly disagree	377/703 (54%)	196/362 (54%)	181/341 (53%)	Ref
GetCheckedOnline user	545/706 (77%)	267/365 (73%)	278/341 (82%)	**0.62 (0.43-0.88)**

*Reference level: Other, including Very Unlikely, Unlikely, and Neither Likely nor Unlikely
BOLD: 95% confidence interval excludes 1
Denominators for each variable exclude missing values. Column percentages were calculated excluding missing values per variable.

Supplemental Table 2: Acceptability of alternative models to in-person sexual health services and association with being a GetCheckedOnline (vs. STI clinic) client

Variable	Total with sexual health need N=706	STI clinic client N=185	GetCheckedOnline client N=521	Unadjusted Odds Ratio* [95% Confidence Interval]
Likelihood of using the following services (very likely/likely vs other):				
Home self-collection kits for testing	634/706 (90%)	164/185 (89%)	470/521 (90%)	1.18 (0.68-2.00)
Receiving test kits or antibiotics at home, in plain packaging	592/700 (85%)	161/185 (87%)	431/515 (84%)	0.76 (0.46-1.23)
Express testing service, where after a phone/video assessment go to clinic to have specimens collected	565/706 (80%)	160/185 (86%)	405/521 (78%)	**0.55 (0.33-0.86)**
Text messaging service that provides STI results	530/700 (76%)	145/184 (79%)	385/516 (75%)	0.79 (0.52-1.18)
Phone call with sexual health care provider to discuss sexual health	481/704 (68%)	140/183 (77%)	341/521 (65%)	**0.58 (0.39-0.85)**
Sending a picture of a rash or lesion to a health care provider	461/702 (66%)	128/185 (69%)	333/517 (64%)	0.81 (0.56-1.15)
Text messaging service for reminders (e.g., medications, appointments)	473/701 (67%)	136/185 (74%)	337/516 (65%)	**0.68 (0.46-0.98)**
Video visit with sexual health care providers to discuss sexual health	405/703 (58%)	111/185 (60%)	294/518 (57%)	0.88 (0.62-1.23)
Texting with a sexual health care provider to discuss sexual health	374/699 (54%)	104/184 (57%)	270/515 (52%)	0.85 (0.60-1.19)

*Reference level: Other, including Very Unlikely, Unlikely, and Neither Likely nor Unlikely
BOLD: 95% confidence interval excludes 1
Denominators for each variable exclude missing values. Column percentages were calculated excluding missing values per variable.

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Supplemental Document 1: Sex in the Time of COVID-19 Survey Instrument

PART 1 of 3: Sex in the time of COVID-19

Thank you for participating! We'd like to start by asking whether COVID-19 has had an impact on your sex life.

1. **At the beginning of the COVID-19 pandemic (March 2020), were you…?**
   (1) Single (2) In a monogamous relationship with one person (3) In an open relationship with one person (4) In a monogamous relationship with more than one person (5) In an open relationship with more than one person (6) Other type of relationship (7) Prefer not to answer

2. **In the year prior to the COVID-19 pandemic, who did you have sex with? (Check all that apply)**
   (1) Men (inclusive of trans men) (2) Women (inclusive of trans women) (3) Non-binary people (4) No one

3. **Since the beginning of the COVID-19 pandemic in BC (March 2020), how many sex partners have you had?**
   (1) 0 (2) 1 (3) 2-3 (4) 4-5 (5) 6-9 (6) 10 or more (7) Prefer not to say

   3a. If any: **How would you describe these sex partners?** (Check all that apply)
   (1) Person(s) I have sex with regularly (2) New sexual partner (3) Casual partner/hookup (4) Group sex (5) None of the above (6) Prefer not to say

   3b.i. If 1 partner: **Do you live with this partner?**
   (1) Yes (2) No (3) Prefer not to say

   3b.ii If any, and more than 1 partner: **Do you live with any of these sex partners?**
   (1) Yes, all of them (2) Yes, some of them (3) No, none of them (4) Prefer not to say

4. **This next question asks you about the first phase or first few months after the COVID-19 pandemic began in BC (March to mid-May 2020). Did any of the following change for you, compared to before the pandemic began?**

	Decreased	No change	Increased	Not applicable
Interest in sex	( )	( )	( )	( )
Use of pornography	( )	( )	( )	( )
Number of sexual partners	( )	( )	( )	( )
Opportunities to have sex	( )	( )	( )	( )
Use of dating/hook-up apps to connect online with other people	( )	( )	( )	( )
Your use of dating/hook-up apps to meet other people in person	( )	( )	( )	( )
Use of condoms	( )	( )	( )	( )
Use of marijuana	( )	( )	( )	( )
Taking PrEP	( )	( )	( )	( )
Use of other recreational drugs	( )	( )	( )	( )
Use of alcohol	( )	( )	( )	( )
Sex work	( )	( )	( )	( )

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5. **Now we'd like you to think about the months after the first phase of the COVID-19 pandemic, when services began opening again (mid-May to present). Compared to the <u>first phase</u> (March to mid-May) of the COVID-19 pandemic have any of the following changed for you?**

	Decreased	No change	Increased	Not applicable
Interest in sex	( )	( )	( )	( )
Use of pornography	( )	( )	( )	( )
Number of sexual partners	( )	( )	( )	( )
Opportunities to have sex	( )	( )	( )	( )
Use of dating/hook-up apps to connect online with other people	( )	( )	( )	( )
Use of dating/hook-up apps to meet other people in person	( )	( )	( )	( )
Use of condoms	( )	( )	( )	( )
Taking PrEP	( )	( )	( )	( )
Use of marijuana	( )	( )	( )	( )
Use of other recreational drugs	( )	( )	( )	( )
Use of alcohol	( )	( )	( )	( )
Sex work	( )	( )	( )	( )

6. **In the first few months after the pandemic began (March to mid-May 2020), how worried were you about getting COVID-19?**
(1) Not at all worried (2) Somewhat worried (3) Very worried (4) Extremely worried (5) Prefer not to say

7. **Today, how has your worry about getting COVID-19 changed, compared to the months after the pandemic began (March to mid-May 2020)?**
(1) I am more worried (2) My level of worry hasn't changed (3) I am less worried (4) Prefer not to say

8. **In the first few months after the pandemic began (March to mid-May 2020), how worried were you about the chance of being exposed to COVID-19 during sexual encounters?**
(1) Not at all worried (2) Somewhat worried (3) Very worried (4) Extremely worried (5) Prefer not to say

9. **Today, how has your worry about being exposed to COVID-19 during sexual encounters changed, compared to the months after the pandemic began (March to mid-May 2020)?** (1) I am more worried (2) My level of worry hasn't changed (3) I am less worried (4) Prefer not to say

10. **Have you looked for, or received, information from any of the following sources about the risk of being exposed to COVID-19 infection during sexual encounters?** (check all that apply)
(1) By searching online (2) Through social media (Facebook, Twitter, etc) (3) Through news media (TV, radio, newspapers) (4) From a public health agency website (e.g., the BC Centre for Disease Control website) (5) From a community-based organization (6) From friends or family (7) From a relationship/sexual partner (8) From a healthcare provider (9) Other, please specify: _____ (10) Have not looked for or received information about COVID-19 and sex

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11. **There are a number of strategies that people may be using to reduce their risk of getting COVID-19 infection during sexual encounters or passing to their partner(s). Since the beginning of the pandemic, have you done any of the following to reduce your risk?** (Check all that apply)

- Not having sex
- More masturbating / sex with yourself
- Limiting sex to a person/people you live with
- Limiting sex to a small number of regular partners ("a bubble")
- Having online or virtual sex
- Reducing your number of casual sex partners
- Asking your sex partner if they are experiencing COVID-19 symptoms
- Asking your sex partner about the precautions they are taking to reduce their risk of COVID-19
- Avoiding having sex if you're feeling unwell or have symptoms of COVID-19
- Avoiding kissing or saliva exchange/contact
- Avoiding rimming
- Wearing a face mask during sex
- Avoiding sexual positions with close face to face contact
- Avoiding group sex
- Washing your hands with soap and water, before and after sex
- Washing any shared sex toys with soap and water, before and after sex
- Other, please describe:_____
- None of the above

PART 2 of 3: Need for sexual health services during COVID-19

The next section of the survey shifts to questions about your use of sexual health services before and after the start of the COVID-19 pandemic in BC (March 2020.

12. **How often did you usually get tested for sexually transmitted infections (STIs), before the beginning of the pandemic?**
(1) Have only tested once (2) Every few years (3) Once a year (4) Twice a year (5) A few times per year (e.g. every 3-4 months) (6) Once a month (7) No set pattern (8) Prefer not to say

13. **In the year prior to the COVID-19 pandemic, did you get tested for STIs through any of the following services?** (Check all that apply)
(1) BCCDC Clinic at 655 West 12th Ave (2) Bute Street clinic at Qmunity (3) GetCheckedOnline (4) Health Initiative for Men clinic (5) Options for Sexual Health Clinic (6) Island Sexual Health Clinic (7) Other clinic, please describe: ____ (8) Did not need to get tested (9) Prefer not to say

14. **Since the beginning of the COVID-19 pandemic, have you wanted or needed to get tested for STIs?**
(1) Yes, for a new, specific reason (e.g., symptoms, after a specific event, new partner, partner with STI)
(2) Yes, according to my usual testing routine (e.g., due for an STI test)
(3) No

14a. (If 1, 2 to Q14) **Did you get tested for STIs at this time?**
(1) Yes (2) No; *skip to Q15*

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14b. (If 1 to Q14a.) **Where did you get tested?**
(1) BCCDC Clinic at 655 West 12th Ave (2) Through GetCheckedOnline (3) Health Initiative for Men clinic
(4) Options for Sexual Health Clinic (5) Island Sexual Health Clinic (6) Family doctor or nurse practitioner
(7) Walk-in clinic (8) Other, please describe: _____

15. Since the beginning of the COVID-19 pandemic, have you wanted or needed to access sexual health services for any reason besides STI testing? (Check all that apply)
(1) Speak with a health care provider about a sexual health concern (e.g., symptoms, questions)
(2) Speak with a health care provider about a mental health concern
(3) Access birth control
(4) Get a pregnancy test
(5) Access treatment for a new STI (e.g., syphilis, chlamydia, gonorrhea)
(6) Access to treatment for on-going symptoms (e.g., warts, herpes)
(7) Access to Pre-exposure prophylaxis (PrEP)
(8) Access to condoms
(9) Access to harm reduction supplies
(10)Other, describe: _____
(11)No need to access sexual health services

15a. (If 1-10 to Q15) **Did you get these sexual health services you needed at this time?**
(1) Yes (2) No; *skip to Q16*

15b. (If 1 to 15a) **Where did you get this sexual health service?**
(1) BCCDC Clinic at 655 West 12th Ave (2) Health Initiative for Men clinic (3) Options for Sexual Health Clinic (4) Island Sexual Health Clinic (5) Family doctor or nurse practitioner (6) Walk-in clinic (7) Other, please describe: _____

16. (If wanted or needed to access testing or sexual health services in Q14 and/or Q15) **Did any of the following factors lead you to <u>avoid or delay</u> seeking testing or sexual health care during the COVID-19 pandemic?** (Check all that apply)

- I didn't know where to access sexual health or STI testing services
- I was concerned about getting COVID-19 while travelling to a clinic or lab
- I was concerned about getting COVID-19 while at a clinic or lab
- I was worried that a healthcare provider might judge me for having sex during COVID
- I live or am in close contact with someone at risk of COVID-19 (e.g., senior, immunocompromised)
- The place I usually go to for testing/care was closed or had reduced services because of COVID-19
- There was public messaging that I was not supposed to seek healthcare that wasn't urgent
- Other reason, please describe:_____
- I didn't avoid or delay seeking testing or sexual health care
- Prefer not to say

17. (If in Q13 did not test through GCO) **GetCheckedOnline is a free online testing service for HIV and other sexually transmitted infections (e.g., syphilis, chlamydia, gonorrhea, hepatitis C) in BC created by the BC Centre for Disease Control.**

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GetCheckedOnline lets you skip a visit to a clinic by getting tested by printing a lab form from a website or downloading an electronic version on your phone, that you then take to a lab, and then get your results online or by phone.

Before today, did you know about GetCheckedOnline?
(1) Yes (2) No (3) Not sure

17a. (If Yes to Q17) **Have you ever been tested through GetCheckedOnline?**
(1) Yes (2) No (3) Not sure

18. How much do you agree or disagree with the statements below, based on how you are feeling right now?

- I am able to get the sexual health care I need during the COVID-19 pandemic
- I am comfortable accessing in-person sexual health and testing services during the COVID-19 pandemic
- I would feel ashamed if people knew about my sex life during the COVID-19 pandemic
- My satisfaction with my sex life has not changed during the COVID-19 pandemic
- Other people will judge me for having sex during the COVID-19 pandemic
- I prefer to get tested through GetCheckedOnline because of the COVID-19 pandemic
- I am, or I will soon be, having sex with more people than I was earlier in the COVID-19 pandemic

R: (for each item): (1) Strongly agree (2) Agree (3) Neither agree nor disagree (4) Disagree (5) Strongly disagree

19. How likely or unlikely would you be to use the following sexual health services, if available?

- **Video visit with a sexual health care provider to discuss your sexual health**
- **Phone call with a sexual health care provider to discuss your sexual health**
- **Texting with a sexual health care provider to discuss your sexual health**
- **Text messaging service that provides STI test results**
- **Text messaging service that provides reminders (e.g., to take medication, for appointments)**
- **Receiving test kits or antibiotics at home by mail (in plain packaging)**
- **Sending a picture of a rash or lesion to a sexual health care provider**

(1) Very likely (2) Likely (3) Neither Likely nor unlikely (4) Unlikely (5) Very unlikely

20. Suppose you could get tested through a self-collection kit, where you could collect your own specimens at home and return them to a clinic or lab for testing. How likely or unlikely would you be to use this service?
(1) Very likely (2) Likely (3) Neither likely nor unlikely (4) Unlikely (5) Very unlikely

20a. (If 1 or 2 to Q20) **What samples could you self-collect, if detailed instructions were provided?** (Check all that apply)
(1) Prick your finger to provide a few drops of blood (2) Pee into a container (urine) (3) swab your throat (4) swab your bum (rectum) (5) swab your vagina /front hole (6) I would not self-collect any of the above

20b. How would you most prefer to receive the self-collection kit?
(1) By mail (2) By picking the kit up at a clinic (3) By picking the kit up at a lab (4) no preference

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21. Suppose there was an "express testing" service, where after an initial assessment by phone or video, you could go to a clinic to have specimens collected by a health care provider. How likely or unlikely would you be to use this service?
(1) Very likely (2) Likely (3) Neither Likely nor unlikely (4) Unlikely (5) Very unlikely

Part 3 of 3: About you

This next section will ask some questions about you. The information will help us to learn more about the people who have used the sexual health services offered by the BC Centre for Disease Control and help us to see how different groups of people may have been affected by the COVID-19 pandemic.

22. What are the first three characters of your postal code?
[open text box] _____

23. How old are you?
_____ years old

24. What is your gender identity?
(1) Man (2) Woman (3) Non-binary (4) Genderfluid (5) Other, please specify: _____ (6) Prefer not to say

25. Do you identify as transgender, have lived experience as trans, or have a history of gender transition?
(1) Yes (2) No (3) Prefer not to say

26. What best describes your sexual identity?
(1) Straight (heterosexual) (2) Gay/lesbian (homosexual) (3) Bisexual (4) Queer (5) Pansexual (6) Other, specify ___ (7) Prefer not to say

27. Which of these do you identify with? (Check all that apply)
(1) Arab, West Asian (e.g. Iranian, Afghan) (2) Black (e.g., African, Afro-Caribbean, African Canadian) (3) East Asian (e.g. Chinese, Japanese, Korean) (4) Indigenous (First Nations, Inuit, Métis) (5) Latin American (6) South Asian (e.g. East Indian, Pakistani, Sri Lankan) (7) Southeast Asian (Filipino, Vietnamese, Thai) (8) White (9) Other, please describe: _____ (11) Prefer not to say

27a. If you identify as Indigenous, do you identify as Two-Spirit?
(1) Yes (2) No (3) Prefer not to say

28. What is the highest level of education that you have completed?
(1) None, elementary or some high school (2) High school or equivalent (3) Post-secondary school (e.g., certificate, diploma) (4) Bachelor's degree (5) Graduate degree (Master's, PhD, MD, etc.) (6) Prefer not to say

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29. **What was your employment status before the beginning of the COVID-19 pandemic?** (Check all that apply)
    (1) Employed full-time (30+ hours/week) (2) Employed part-time (<30 hours/week) (3) Self-employed (e.g., professional, contractor, business owner) (4) On government assistance (e.g., E.I.) (5) On disability (e.g., long term disability, disability pension, PWD) (6) Student (7) Retired (8) Unemployed (9) Unable to work (10) Prefer not to say

30. **What was your income (before tax) in 2019?**
    (1) <$20,000 (2) $20,000-$39,999 (3) $40,000-$59,999 (4) $60,000-$79,999 (5) $80,000 or more (6) Prefer not to say

31. **Since the beginning of the COVID-19 pandemic (March 2020), how has it been for you or your household to meet its financial needs?**
    (1) Much more difficult (2) Somewhat more difficult (3) Neither more difficult nor easier (4) Somewhat easier (5 Much easier (6) I don't know (7) Prefer not to answer

32. **In the first few months after the pandemic began (March to mid-May 2020), how would you have rated your mental health?**
    (1) Excellent (2) Very good (3) Good (4) Fair (5) Poor

33. **Today, compared to the months after the pandemic began (March to mid-May 2020), would you say that your mental health has:**
    (1) Worsened by a lot (2) Worsened by a little (3) Stayed about the same (4) Improved by a little (5) Improved by a lot (6) Prefer not to say

END SURVEY PAGE

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