Pay to skip the line: The political economy of digital testing services for HIV and other sexually transmitted infections

Kinnon R. MacKinnon, Eric Mykhalovskiy, Catherine Worthington, Oralia Gomez-Ramírez, Mark Gilbert, & Daniel Grace

January 2021

Social Science & Medicine 268 (2021) 113571

Contents lists available at ScienceDirect

Social Science & Medicine

journal homepage: http://www.elsevier.com/locate/socscimed

Pay to skip the line: The political economy of digital testing services for HIV and other sexually transmitted infections

Kinnon R. MacKinnon [a,b], Eric Mykhalovskiy [c], Catherine Worthington [d], Oralia Gómez-Ramírez [e,f], Mark Gilbert [e,f], Daniel Grace [a,*]

[a] Dalla Lana School of Public Health, University of Toronto, 155 College Street, Toronto, ON, M5T 3M7, Canada
[b] School of Social Work, York University, 4700 Keele Street, Toronto, ON, M3J 1P3, Canada
[c] Department of Sociology, York University, 4700 Keele Street, Toronto, ON, M3J 1P3, Canada
[d] School of Public Health & Social Policy, University of Victoria, Victoria, BC, V8W 2Y2, Canada
[e] BC Centre for Disease Control, 655 W 112nd Ave, Vancouver, BC, V5Z 4R4, Canada
[f] School of Population and Public Health, The University of British Columbia, Vancouver, BC, V6T 1Z3, Canada

ARTICLE INFO

Keywords:
Institutional ethnography
HIV/STI
Political economy of healthcare
Private contracting
Healthcare disparities
Medical diagnostics
Digital healthcare
Private laboratories

ABSTRACT

The value of digital healthcare has been lauded in Canada at local, provincial, and national levels. Digital medicine is purported to enhance patient access to care while promising cost savings. Using institutional ethnography, we examined the potential for publicly funded digital testing for HIV and other sexually transmitted infections (STI) in Ontario, Canada. Our analyses draw from 23 stakeholder interviews with healthcare professionals conducted between 2019 and 2020, and textual analyses of government documents and private, for-profit digital healthcare websites. We uncovered a "two-tiered" system whereby private digital STI testing services enable people with economic resources to "pay to skip the line" queuing at public clinics and proceed directly to provide samples for diagnostics at local private medical labs. In Ontario, private lab corporations compete for fee-for-service contracts with government, which in turn organises opportunities for market growth when more patient samples are collected vis-à-vis digital testing. However, we also found that some infectious disease specimens (e.g., HIV) are re-routed for analysis at government public health laboratories, who may be unable to manage the increase in testing volume associated with digital STI testing due to state budget constraints. Our findings on public-private laboratory funding disparities thus discredit the claims that digital healthcare necessarily generates cost savings, or that it enhances patients' access to care. We conclude that divergent state funding relations together with the creeping privatisation of healthcare within this "universal" system coordinate the conditions through which private corporations capitalise from digital STI testing, compounding patient access inequities. We also stress that our findings bring forth large scale implications given the context of the global COVID-19 pandemic, the rapid diffusion of digital healthcare, together with significant novel coronavirus testing activities initiated by private industry.

1. Introduction

Over the past decade, the ubiquity of *smart* devices, coupled with technological advancements, has offered patients digital alternatives to traditional clinic-based face-to-face care. Digital healthcare integrates medical knowledge and practice with technology, purporting to optimise the diagnosis and treatment of diseases (Lupton, 2014). The potential to improve patient access to healthcare and reduce costs are chief among the promises of digital care (Fox et al., 2005; Graham et al., 2016; Government of Canada, 2018; Turner et al., 2019). Furthermore, with a rapidly shifting healthcare landscape due to the global COVID-19 pandemic, digital options such as "virtual medicine", which utilise text messages, e-mails, and video conferencing to connect providers with patients at home, are jockeying to become "the new normal" in healthcare (Canadian Medical Association, 2020; Keesara et al., 2020; MacLeod, 2020).

Digital testing for HIV and other sexually transmitted infections (STI) falls within the realm of digital healthcare. In one model of digital STI testing, patients are screened for STIs online rather than face-to-face by a provider and are provided requisition forms to have medical samples

* Corresponding author.
E-mail address: Daniel.Grace@utoronto.ca (D. Grace).

https://doi.org/10.1016/j.socscimed.2020.113571
Received in revised form 27 November 2020; Accepted 30 November 2020
Available online 3 December 2020

collected at a local laboratory. Digital STI testing is associated with cost-efficiencies (Cleary & O'Sullivan, 2017; Turner et al., 2019), reductions in barriers to testing for young people (Lormier et al., 2014), and gay, bisexual, and other men who have sex with men who may require more frequent testing due to STI burden (Knight et al., 2019). Improving access to STI testing for underserved populations is an important goal of digital STI testing services. Less is known, however, about the complex social, political, and economic relations shaping digital STI testing in specific jurisdictions. In this article, we investigate the potential implementation of a publicly funded digital STI testing service in Ontario, Canada - a liberal democracy with a universal healthcare system - unravelling, in the process, divergence in how public health and private medical laboratories are funded.

Our analysis draws from data collected for the *GetCheckedOnline* Ontario Context study. At present, *GetCheckedOnline* is a publicly funded digital STI testing service that virtually extends face-to-face testing services at BC Centre for Disease Control STI clinics to residents of eight cities in British Columbia (BC), Canada. After creating an online account, *GetCheckedOnline* users answer demographic and behavioural questionnaires on which testing recommendations are made for HIV, gonorrhea, chlamydia, syphilis, and hepatitis C. Users are provided with information about risks and benefits of STI testing, simulating a traditional, clinic-based, face-to-face informed consent process. Following these steps, a digital requisition for lab work is provided to the user, who takes the requisition to a participating laboratory for specimen collection. In a previous qualitative study of *GetCheckedOnline* in BC, gay, bisexual, and other men who have sex with men indicated that this model is non-invasive, confidential, and convenient (Knight et al., 2019). Our study seeks to identify structural, contextual, and health equity considerations associated with implementing *GetCheckedOnline* for gay, bisexual, and other men who have sex with men in the Canadian province of Ontario.

We provide a contextual case study of the possibilities to diffuse a service like *GetCheckedOnline* to Ontario, in the process uncovering political-economic funding relations organising laboratory diagnostics required to collect and analyse patient samples. The transfer of *GetCheckedOnline* from BC to Ontario requires careful consideration of contextual factors that may shape the form and success of the intervention, given that Canada, as a federalist nation, has distinct provincial healthcare systems governed by local policies, legislation, and discrete economic budgets. Drawing upon institutional ethnographic research, we employed in-depth interviews with stakeholder participants and textual analysis of government documents and pertinent websites advertising digital testing and laboratory services. As it is critical to analyse the political-economic context and place when introducing new health services (Bambra et al., 2019), we first outline the target healthcare system through which we explored the potential for digital STI testing.

1.1. Context: Canada's universal healthcare system and creeping privatisation

In 1957, the Government of Canada established the *Hospital Insurance and Diagnostic Services Act*, triggering the first public health insurance plans and universal access to hospital-based laboratory services (Minister of Health, 2015). However, with time, concerns arose that additional charges for health services made by doctors and hospitals comprised a "two-tiered system" and limited universal access to care, and thus, the *Canada Health Act* was legislated in 1984 (Minister of Health, 2015). The *Canada Health Act* outlines five key principles governing Canada's public health insurance system: equity, public administration, portability, universality, and accessibility (Canada Health Act, 1984). Today, a single-payer health insurance plan ("medicare") provides Canadian residents across the country of ten provinces and three territories with "universal" access to medically necessary physician and hospital services. While each Canadian province and territory has jurisdiction with respect to the delivery and administration of healthcare, they must meet the *Canada Health Act*'s five criteria in order to receive federal Canada Health Transfers (cash transfers) that help fund provincial healthcare. The province of Ontario is the most populated Canadian province, and it receives the largest Canada Health Transfer (Government of Canada, 2020). For 2020–2021, the federal government's Canada Health Transfers totalled approximately $41,870M CAD, of which Ontario received $16,271M CAD (Government of Canada, 2020). Still, Canada's "single-payer" medicare system has been described as a "complex" patchwork of "fragmented" systems varying considerably across the country, with ongoing concerns of "creeping privatisation" presenting a risk to the public system (Ivers et al., 2018; Lewis, 2015; Owens, 2019).

The privatisation of healthcare is a contentious subject which elicits strong public opinion, political debates, and legal battles in Canada (CBC News, 2020; Dufrense et al., 2014; Owens, 2019). A 2019 survey commissioned by the Canadian Medical Association polled 2005 Canadian participants and found that a majority of Canadians worry the growth of "virtual care" could "open the door to privatisation of health care" (Vogel, 2019, p. E952). Although Canada's liberal democratic system may lean toward market solutions to address many of its population's needs, so-called "universal" healthcare remains a treasured national commitment which Dufresne et al. (2014) argue is etched into the Canadian national identity.

Despite robust public funding and the presence of the *Canada Health Act*, systemic healthcare access inequities have been identified. As one example, the absence of a national Pharmacare plan means that economically-disadvantaged residents are unable to afford pharmaceutical interventions (Grace et al., 2019). Similarly, dental, vision, and physical therapy are additional health services that are funded through private health insurance plans, largely provided by employers or paid for out-of-pocket. While medical diagnostics are universally available through a variable mix of hospital, public, and private laboratories all organised within the public purse, Canada's reliance on for-profit laboratory corporations has spurred controversies (Holloway et al., 2019; Naugler, 2014; Sutherland, 2012).

For further context, the same time that our study launched in Spring 2019, the Ontario provincial government announced two pertinent political-economic decisions. First, the Ontario *People's Healthcare Act* was legislated. Stating that "the people of Ontario and their government … are committed to a sustainable, digitally-enabled, publicly funded health care system built to last", the passing of this new provincial legislation prioritised digital healthcare within the healthcare system of Ontario (2019). The legislation explicitly codified placing patients at the centre of "connected" care and "modernizing" healthcare (Ontario Ministry of Health, 2019). Second, the province announced that Toronto Public Health - the largest public health unit in Ontario serving three million people - would be defunded by a total of approximately $1B CAD over the next ten years (City of Toronto, 2020; Crawley, 2019). Elsewhere we have discussed how logics of austerity in healthcare encourage local stakeholders to conduct health economics analyses to demonstrate cost savings in relation to digital testing (MacKinnon et al., 2020). Here, we consider the tensions and complex political-economic relations with respect to digital STI testing in a jurisdiction which emphasises "digitally-enabled" healthcare while at the same time divesting from public health (Ontario, 2019).

1.2. Public and private activities organise digital STI testing technologies

Scholarship indicates that some of the first private "e-clinics" which allowed British patients in the United Kingdom to purchase healthcare services outside of the National Health Service (NHS) were rolled out in the late 1990s (Anonymous, 1999; Fox et al., 2005). Taken to the domain of STI testing, digital services have been implemented and shown to be acceptable to patients and healthcare providers in multiple countries around the world, including the United States, the United

Kingdom, and in certain regions of Canada (Gilbert et al., 2019; Knight et al., 2017; Lormier et al., 2014). However, there exists wide variation in how these services work and how they are funded and made available. Importantly, digital STI testing is available within the NHS as a potential solution to address state budget cuts (Cleary & O'Sullivan, 2017). In Canada, one publicly funded digital STI testing service was introduced by a local public health organization in the province of Ontario in 2011 (Mann et al., 2013), but this service is no longer available (MacKinnon et al., 2020). As discussed above, *GetCheckedOnline* is currently publicly funded in select regions of BC, Canada. Other digital STI testing models offered by both private companies or public health organisations in the United States give patients the option of ordering online self-collection kits whereby medical samples can be self-tested at home or mailed directly to a lab for analysis. When evaluated, however, privately purchased home test kits produced significant false negatives, while mail-in urine specimens results went unreturned (Owens et al., 2010).

Healthcare system disruptions due to COVID-19 have shaped wider diffusion of digital healthcare into the United States and Canada, facilitated by new healthcare legislation and physician payment structures (Bakhtiar et al., 2020; Keesara et al., 2020). In early 2020, Ontario created new temporary "virtual care billing codes" in response to COVID-19, as well as permanent billing codes, which enable physicians to bill the public system for video visits (Ontario Ministry of Health, 2020). Responding to constrained healthcare system pandemic conditions, the American Medical Association – along with over 70 other medical associations – requested that the United States Congress make payment for digital health services a permanent fixture of the Medicare public insurance system (Murphy, 2020).

The importance of diagnostics to the healthcare system and patient care is bolstered by estimates that 60–80% of medical decisions are facilitated by laboratory test results (Sikaris, 2017; Sutherland, 2011). Diagnostics are specifically significant to digital STI testing. For example, when the results of a positive chlamydia test are sent to a provider, they must next decide which pharmaceutical treatment to prescribe the patient. In many of the Canadian provinces, for-profit laboratory corporations are contracted to perform diagnostic services.

1.3. Private labs: deploying a duopoly in the Canadian medical diagnostics market

Across the most populated regions of Canada, private corporations operate "community" (non-hospital) labs. Although some Canadian provinces have turned to a public provision model, private labs are contracted by the provinces of BC, Manitoba, Saskatchewan, Ontario, and Quebec to provide people with outpatient diagnostics. The integration of private laboratories into the public healthcare system began in 1958 in response to "hospital funding shortfalls", according to the private Canadian lab corporation, LifeLabs (2020a). However, it has also been argued that for-profit lab networks were jointly organised through symbiotic alliances between physicians and private insurance companies (Ontario Coalition for Lab Reform, 2020). Crucially, the "community lab" label may render invisible the private control and decision-making over these services (Sutherland, 2020).

The two largest private medical laboratories - Dynacare and LifeLabs - comprise a duopoly in the Canadian medical diagnostics market (Global News, 2017). Both Dynacare and LifeLabs report a long history of economic market activities such as acquiring, being acquired by, or merging with, other private laboratory corporations (Dynacare, 2020; LifeLabs, 2020a). For example, American LabCorp acquired and became a major shareholder of Dynacare in 2002 (Dynacare, 2020). LabCorp is publicly traded on the New York Stock Exchange and in 2018 reported revenues of $11.3B USD ($15.9B CAD) (Bloomberg, 2019). LifeLabs is "indirectly owned" by the Ontario Municipal Employee Retirement System (OMERS) Administration Corporation - a $109B pension fund serving over 500,000 Ontario government employees (OMERS, 2013; Sutherland, 2020). The marketisation of for-profit and publicly traded healthcare services has been critiqued, as higher profit margins are shown to positively correlate with reductions in quality of care (Harrington et al., 2017). Further, in part due to global competitive market activity in medical diagnostics there have been calls for the Canadian government to ensure patient safety through better regulating commercial laboratories and the actual tests administered by labs (Holloway et al., 2019).

In Ontario, these corporations provide a vast majority of the outpatient lab services funded by the province (Sutherland, 2011; Reid, 2017). Although the Ontario Association of Medical Laboratories lists six privately owned labs "that perform over 95% of all diagnostic testing for patients outside of hospitals", in 2015–2016, the Ontario Ministry of Health paid LifeLabs $404.1M and Dynacare $195.7M - representing over 93% of the total cost of outpatient labs (Reid, 2017). The Ontario Coalition for Lab Reform refers to the two largest corporate labs' control over provincial medical diagnostics as a "legal private cartel" (Pierroz, 2018). Diagnostics happening in the Ontario laboratory system can be accounted for as follows: for-profit laboratories perform 46% of lab services, hospitals conduct 47%, while the additional 7% occur in physician offices and Public Health Ontario labs (Reid, 2017).

Private labs generate revenue in ways that are often hidden from patients and the public (Sutherland, 2012). To illustrate, when a patient provides samples at one of these labs, they present a requisition form and a provincial health insurance card. What happens next – the diagnostics, the administration, and payment for services - is organised out of the patient's purview. Although patients are serviced by laboratories, the labs technically have only one primary "customer" (governments). According to Sutherland (2012), governments make accessing information on private laboratories difficult due to various legislative Acts (e.g., Section 17(1) of *Ontario Freedom of Information and Protection of Privacy Act*, 1990 permits the provincial government to withhold confidential information that may negatively impact business). Still, it is crucial to discuss some of the literature on healthcare contracting to clarify why governments engage in business with the private sector.

2. Literature review: the "untapped potential" of private healthcare contracts?

Like in other liberal democracies, the design, development, and delivery of universal healthcare in Canada often involves some private, for-profit activities. The literature on for-profit contracting in healthcare offers clarity surrounding how, and why, for-profit laboratories are woven into the healthcare system of Ontario, across many Canadian provinces, and in other liberal democratic states, such as Australia and the United Kingdom (Sutherland, 2012). In 2003, the World Health Assembly formally recognised the "untapped potential" of private contracting in public health to improve health system performance (World Health Organisation [WHO], 2020). Applying market logics, fundamental assumptions made by advocates of this approach are that the performance, effectiveness, and transparency of public healthcare systems improve with private industry investments (WHO, 2020).

Due in part to decades of chronic underfunding and public healthcare de-listing, the state's dependence on private contracts has grown within the Canadian health and social care system (Whiteside, 2011); however, critiques have been raised based on failed promises of cost savings. In examining contracts between government and private industry to provide hospital services, in one instance, savings of only 1% were uncovered - or 5% if the hospital privatised some clinical services, which may represent a violation of the *Canada Health Act* (Whiteside, 2011, p. 265). In another example, diagnostics are regarded as "among the most privatised of Canada's essential medical services" yet the extent to which contracting private laboratory corporations generates economic value for the provincial governments has been questioned (Sutherland, 2012, p. e166).

Although intended to improve performance, accountability, and risk allocation, healthcare contracting is highly complex, and contracting

within a public or mixed public-private healthcare system is contentious (Goddard, 2015; Guy, 2019; Petsoulas et al., 2011). The regulation of competition within healthcare is especially challenging. Guy (2019) distinguishes between competition *within the market* (e.g., patients choosing from a variety of public or private digital STI testing options), and competition *for the market* (e.g., procurement involving private bidding for lab service provider contracts with government). This process through which private vendors compete for contracts is understood to facilitate cost savings, which benefits governments and the tax-paying public in turn. However, in the area of STI testing in the United Kingdom, Clarke and Carlin (2015) raise concerns that competitive procurement activities and the state's prioritisation of cost savings over quality of care jeopardises patient access to testing, particularly for men who have sex with men.

In Canada, request for proposals (RFP) are posted publicly online to procure private medical diagnostic services (see: https://buyandsell.gc.ca/). When the RFP is posted publicly an organised, competitive process is initiated which ostensibly permits the state to draw comparisons between laboratory service providers prior to finalising a fee-for-service contract. The RFP begins a sequence of activities, coordinating a standardised institutional process of government decision-making on a range of dimensions such as the price paid per tests and the length of the business relationship between the government and the private laboratory. Fee-for-service contracts then authorise private labs to bill the government based on the volume of medical diagnostics performed, while the state sets the price paid per test. Importantly, although the provincial government stipulates a funding cap which attempts to limit overbilling, previous audits found illegitimate billings, and concluded that between 2009 and 2013 "community" (private) lab service providers in Ontario may have overbilled by $25M (Office of the Auditor General, 2017, p. 409). While Loozen (2015) argues that governments need to strictly promote and regulate competition in healthcare to correct market failures, and to ensure public health and social welfare, these efforts have not been successful in Ontario. In 1993 when the Ontario government legislated a funding ceiling on fee-for-service payments to limit the market growth and power of private labs, the labs responded by reducing services to patients, closing lab sites, and with mergers and acquisitions to increase profits (Ontario Coalition for Lab Reform, 2020). Said differently, questions abound surrounding what the RFP and the funding cap actually accomplish in healthcare contracting.

Our empirical investigation extends this scholarship through a focused study of a complex set of funding relations between the state and laboratory diagnostic services, at the nexus of digital STI testing.

3. Methods

3.1. Institutional ethnography

Developed by Marxist feminist scholar Dorothy E. Smith (1999; 2001; 2005), institutional ethnography explores institutional practices taking place at such sites as government, the professions, and the corporate sector, through which ruling relations are organised. Institutional ethnographers are particularly interested in the roles that texts and textual processes play in such relations. From this perspective, texts are "material objects that carry messages" and are wide-ranging; they can include video recordings, written language on paper or computer screens, photographs, and visual displays such as charts and graphs (Smith and Turner, 2014, p. 5). Institutional ethnographers are particularly interested in texts that have a replicable form - texts whose standardised character means that the same text can be read by different people in different places and at different times (Smith and Turner, 2014). According to Smith (2001) texts help coordinate people's activities across multiple settings and are therefore central to contemporary large-scale ruling relations. Institutional ethnography has utility for examining how new digital health technologies organise care (Campbell and Rankin, 2017) and population-specific healthcare access barriers (Grace, 2019; MacKinnon et al., 2020).

Institutional ethnographic analysis is iterative and focused on drawing critical "*accounts* of things happening" (Rankin, 2007, p. 4, emphasis in original). Unlike many mainstream qualitative approaches whereby subjective experiences are studied, institutional ethnographers talk with people as an entry point to draw connections between texts and institutional practices (Walby, 2013). Governing institutional practices, not people's ideas or experiences, is the unit of analysis. With respect to analytic methods, tracing talk to texts is one dynamic method used to explicate how ruling relations are governed (Grace, 2013). This iterative analytic process, referred to as talk-text-talk, involves interviewing key stakeholders from diverse institutional settings, and connecting people's work knowledge to ruling texts. This process of selective interviewing, and reading and re-reading texts, is repeated until the fundamental innerworkings of the system under study are understood.

3.2. Data collection and analysis: tracing talk to ruling texts

University of Toronto research ethics board approved this study. Data collection and analysis were conducted between June 2019 and April 2020. To carry out the talk-text-talk procedures, we interviewed people who held professional positions in a range of institutional settings such as public health clinics, governmental public health and community sexual health agencies, public health laboratories, private digital healthcare services, and private laboratories, among others. Stakeholder participants ($n = 23$) were public health physicians, nurses, laboratory diagnosticians, project managers, executive directors, policymakers, and health professions regulators. Three participants occupied multiple social locations, speaking about their everyday professional work as well as their personal experiences accessing STI/HIV testing as gay-identified patients. Two of the interviews were conducted over the telephone and all others occurred in person. Interviews lasted between 35 and 70 min and were semi-structured, audio-recorded, and transcribed verbatim.

Institutional ethnography provides an analytic framework to investigate ruling relations as they are organised by texts. Consistent with the tracing talk to texts iterative data collection and analytic method, a systematic process of reading, re-reading and indexing interview transcripts, alongside indexing institutional texts enabled the explication of ruling relations. Indexing is an analytic tool used to map "linked practices" between people and texts, making discoverable linkages between social relations and institutional practices (Rankin, 2017). NVivo software was used to index and analyse interviews and texts.

Interview topics reflected individual participants' specific work knowledges and led us to selectively index and analyse texts. When talking with physicians and nurses about digital STI testing and frontline care with gay, bisexual, and other men who have sex with men, they directed us to review private digital testing services and their relationship to the *Canada Health Act*. Across most interviews, participants discussed Ontario's 2019 public health divestment announcement and the anticipated material consequences on gay, bisexual, and other men who have sex with men's access to STI testing. This led us to analyse the Ontario *People's Healthcare Act*. Each of the new texts discovered as pertinent to the organisation of STI testing and laboratory services, including laboratory and digital testing service websites, were analysed to examine coordinated institutional activities and funding relations. In addition to the aforementioned *Acts*, texts included for analysis were: LifeLabs and Dynacare websites, and private industry websites offering digital STI testing services to patients for a fee. Talking with different stakeholders and analysing key texts facilitated a deeper understanding of current provincial political-economic ruling relations of laboratory services and the on-going project of privatising healthcare in Ontario.

4. Results

The current political-economic landscape of austerity demonstrated

by public health de-funding, and the government's goal of digitally "modernizing" healthcare was salient in interviews. For instance, some participants identified that *GetCheckedOnline*, or a similar digital STI testing model, could be leveraged to address provincial public health funding shortages given that by not requiring face-to-face visits for testing, healthcare staffing costs could be minimised. It was also suggested a digital testing service may improve access to testing for gay, bisexual, and other men who have sex with men who confront barriers to face-to-face care. However, participants affiliated with public health labs expressed concerns that a digital STI testing service could place stress on the laboratory system if the number of diagnostic tests performed increases.

4.1. *"Pay to skip the line": private digital STI testing services in a "universal" healthcare system*

Private digital STI testing is currently available in Ontario and in other Canadian provinces. A sexual health nurse explained how private digital STI testing services provide patients with the option to "pay to skip the line":

I've seen alternative STI testing models where you had to go online or you'd to a private clinic, and a lot of them have a fee associated with it.… In my eyes it really violates the Canadian Health Act …. One [private digital STI testing service] that's running … there's a $40 fee to go online and do it. And then there are other kind of incidental fees that might occur … I don't think you should pay to skip the line …. Everyone has to have an equal opportunity to access the same healthcare …. So if you have 40 bucks and I don't, we don't have an equal opportunity … That sets a really dangerous precedent for the whole healthcare system - that if something's overburdened …. Just create a private system … That's how a two-tiered system starts.

Following the talk-text-talk analytic method, we examined the website for this private digital service that the participant discussed, as well as the *Canada Health Act* (Canada Health Act, 1984). Like the public *GetCheckedOnline* model, users access STI testing after completing an online assessment, rather than visiting a provider face-to-face in a public clinic, and results are provided to patients through an online portal. However, it diverges from *GetCheckedOnline* due to its private funding. After reviewing the *Act* itself it became clear that two central pillars of this federal legislation – *universality* and *accessibility* – may be compromised when digital services are accessible to only those who have the financial means to "pay to skip the line" happening in "overburdened" public clinics.

A family physician who specialises in HIV care similarly drew attention to the availability of private virtual medicine "platforms" for video conferencing between patients and medical providers. He explained: "The thing that made me think most about it [digital STI testing], is this sort of growth [of] online healthcare in general [because] we have platforms like *Maple* … it's a national online platform." To understand further the political-economic ruling relations of private digital testing, we investigated the *Maple* technology, analysing its functions and textual descriptors presented on its website.

Maple is a private Canadian virtual healthcare service offering patients online diagnoses, prescriptions, STI screening, and lab work orders "starting at $49.00" (Maple, 2020). After analysing *Maple*'s website text pertinent to medical diagnostics, we identified that patients are encouraged to "skip the waiting room" and to connect with Canadian physicians in "minutes" to access "lab test requisitions" (Maple, 2020). By paying for "lab work" using *Maple*'s online platform, a patient is digitally connected with a physician who sends a requisition form. What happens after the virtual appointment is not unlike traditional outpatient laboratory visits covered by provincial health insurance: the patient takes the lab work requisition form to "any lab" located in the community (e.g., LifeLabs or Dynacare) to provide samples for testing – diagnostic services funded by "provincial health coverage" (Maple, 2020). Under the pricing tab, a question appears: "Why do I have to pay if I'm Canadian?" (Maple, 2020). This question is answered by explaining that online medical services are not typically funded by provincial health insurance. We also found under the site's business tab that *Maple*'s services may be covered by private employer-sponsored extended health insurance, and that virtual care is associated with a "strong return on investment" (Maple, 2020). We traced this promise to a self-authored article in which *Maple* declares 2019 a "record year" - raising $14.5M CAD by growing its "customer base" to over 400,000 Canadians, together with investments from the Royal Bank of Canada, and Munich-based venture capital firm Acton Capital (Maple, 2019).

Contrasting with *Maple*'s record year, some participants discussed funding shortages created by the province's 2019 decision to divest from public health, and that a publicly funded digital STI testing service could "filter out" patients from overburdened public clinic waiting rooms. A nurse explained:

So if I had a [digital] option … I could say [to patients] "you can go to this website, you can go through the screening and print this [lab requisition form] and go to whatever lab you want" … I think it may also streamline some of the processes in that it might filter out some of the folks that are otherwise filling our [public health clinic] waiting room six days a week …. I mean I know a lot of the labs are private, so I guess it would get [testing] off the public [health] sphere.

This participant anticipated the material consequences of digital STI testing to healthcare providers, patients, and within public health clinics themselves, suggesting that a digital testing "option" would re-direct patients from busy clinics to laboratory collections facilities. Noting that "a lot of the labs are private", the participant additionally exposed the complexity surrounding how for-profit laboratories are involved in Canada's public system. We thus investigated the innerworkings of how diagnostic services are funded and organised by provincial government.

4.2. *Fee-for-service or fixed budget: how funding mechanisms "squeeze" public health labs*

Given how outpatient diagnostics are organised, a publicly funded digital STI testing service would, in theory, direct patients to provide their samples for testing in private labs. However, we discovered divergence in laboratory services funding relations which are important to consider. In Ontario, three types of laboratories are involved in the diagnosing of medical samples: (1) in-patient hospital laboratories which are managed by an overall global hospital budget; (2) for-profit, outpatient laboratories that generate revenue from the province based on the volume of tests performed; and (3) public health laboratories that operate on a fixed budget set by the province. Our analysis explicates further how for-profit laboratory corporations are involved in providing publicly funded diagnostics, and how they derive revenue from the public system.

Competitive market relations shape the process through which for-profit laboratories enter into business with government. An information technology project manager at a private lab explained how they "compete" for contracts initiated by the provinces through the RFP, and how this in turn affects the laboratory business model of "economising" and technologically "automating" testing:

They [provincial government] put out an RFP and you [labs] bid on that … LifeLabs, Dynacare … even hospitals … Hospitals could generate revenue, right, if they have a lab. Then you have maybe a three-year contract, for a period of a number of years. And when that is over the RFP is re-posted and [labs] bid again. And that's all part of the fair process so you can't have a monopoly … So there would be a dollar value in that contract … They [the provinces] post an RFP [and] they lower that cost per test. They put the squeeze on the private industry to make it more competitive. Let's say it used to be $1 per test then after three years they make it 90 cents per test, then 85 cents per test, like that. The labs continually look for ways to economise so that they can respond to these bids and be cost effective. Labs are constantly looking for ways to economise, right, so we're automating … Now there's

artificial intelligence, business logic …

As described by the participant above, to foster "competition" and "fair process" – key dimensions of economic market relations in liberal democratic states – the province drives down the price per unit (fee-for-service) and labs compete for the contract using the RFP process. The RFP is a textual device used by government to ostensibly coordinate "fair" competition, and to prevent "a monopoly". To remain competitive in the bidding process, private labs must apply "business logics" and "automate" to decrease costs. Still, by tracing this participant's talk of "competition" and the "squeeze" on lab corporations to a 2017 Auditor General's report, we found inconsistencies. The report states that "while technological advancements have led to significant *automation* and *cost reduction* for many tests, the [Ontario] Ministry has *not made any major updates to its price list* … since 1999" and that under the fee-for-service agreement, the province of Ontario overpaid private laboratories by approximately $39M CAD in 2015/2016 (Office of the Auditor General, 2017, p. 376, emphasis added).

Contrasting the fee-for-service revenue-generating contract governing for-profit laboratory activities, the provincial public health laboratories operate on a "fixed budget". When asked about introducing *GetCheckedOnline* in Ontario, a physician who works in both hospital and public health labs explained the relationships between funding and laboratory testing operations:

The public health lab runs on a fixed budget. No matter what the volume of tests they get in different areas, they still have to manage it within that same budget. If this [*GetCheckedOnline*] is going to drive up testing significantly, that needs to be addressed. Ahead of time … At the public health lab [funding] goes directly government to public health lab. Whenever they [public health lab] need to introduce a new test or change a methodology, whatever, it becomes very difficult …

This participant's description of how the public health lab is funded starkly contrasts private laboratories' fee-for-service contracting in which an increase in testing volume yields higher revenue. The fixed budget funding model and the pathway whereby a government-determined lump sum flows to the public health labs creates an environment in which introducing a "new test" or "methodology" is fiscally challenging. A tension point emerged here with respect to the public laboratory system's ability to fiscally support a potential increase in testing ignited by digital services.

The same participant elaborated further using the example of HIV specifically:

No lab - hospital, community lab/private lab - can do that testing [HIV diagnostics] other than Public Health [Ontario] Lab … So LifeLabs collects the blood, but the sample would go to public health lab for testing. Dynacare would do the same. The public health lab, we currently do about 1200 screening HIV tests per day. How much increase would come [from digital STI testing]?.. The cost of the supplies or the reagents would be the biggest issue. The cost of an HIV test is only a few dollars. But if [testing demand] went up, I don't know, if you get another 100 a day, at $300 a day, 365 days a year, it slowly adds up to a significant amount.

This process of re-routing HIV samples to public health labs was verified by reviewing a text authored by the provincial government which states that some infectious disease samples are sent directly to the public health labs for testing, or to "confirm test results for community or hospital laboratories by re-testing specimens (Office of the Auditor General, 2017, p. 375).

5. Discussion

Our focused case study of the potential diffusion of *GetCheckedOnline* – or a similar digital STI testing service – into Ontario unravelled political-economic and healthcare access equity issues which warrant consideration prior to future implementation. For instance, our study draws attention to tensions between the organisation of funding for diagnostics, and the Ontario's *People's Healthcare Act* which in 2019 espoused an explicit goal for "digitally-enabled, publicly funded health care" (Ontario, 2019). Despite the state's commitment to "publicly funded" digital healthcare, our examination of parallel funding relations in the domain of laboratory services tells a different story, as noted above. One participant who works in public health labs explained that a digital service like *GetCheckedOnline* could "drive up testing significantly" and stressed the public health laboratories' inability to scale their fixed budget if demand for HIV diagnostics increases. This concern is substantiated by conclusions that digital STI testing models are indeed associated with increased testing frequency and volume in other jurisdictions (Gilbert et al., 2019; Turner et al., 2019). The feasibility for a publicly funded digital STI testing service like *GetCheckedOnline* in Ontario thus relies upon renewed diagnostics governance and robust public health funding. Instead, what has been observed within the Canadian laboratory community is that utilisation of diagnostics has increased, while funding for laboratory services remains stable or budgets reduced (Naugler, 2014). This observation has held especially true today with COVID-19 outbreaks in Canada, wherein both private and public health labs struggle to manage the "bottleneck" of public and private employer demand for novel coronavirus testing (Brend, 2020). Our findings thus underscore a paradox. If not paired with bolstered state funding, "digitally-enabled, publicly funded" STI testing may overwhelm the Public Health Ontario laboratory system – a system already suffering the effects of public health divestment compounded by the COVID-19 pandemic.

Our analyses serve to explicate the socio-material and economic consequences of laboratory services funding relations, providing another example of the pitfalls of healthcare contracting and creeping privatisation within a liberal democratic "universal" healthcare system. Given the disparate funding relations for private and public health lab services, there is a risk that digital STI testing technologies may establish a new express revenue source for private lab corporations who can "automate" and otherwise engineer a conveyor belt to collect medical samples, while billing the government fee-for-service, amplifying the privatisation of healthcare in the province. Given that the government has in fact not lowered prices paid for diagnostics to match costs saved through automation, our analyses show that the RFP procurement process, together with fee-for-service contracting, is ineffective and may instead coordinate the conditions that give rise to private capital growth and the power of private labs in Ontario.

Through a standardised RFP competition, fee-for-service vendor contracts are awarded to private labs which provide them distinct economic and administrative advantages when compared to the public health labs' funding relations. Yet our findings diminish the promise that competition in healthcare contracting necessarily engenders cost savings, and they also expose the coordination of a duopoly in the lab sector. For instance, a participant from a private laboratory discussed how the RFP triggers "competition" to prevent "a monopoly" in outpatient diagnostics. We conclude, instead, that the RFP competition is distinctly symbolic, given that only two corporate labs maintain over 90% of government spending on outpatient lab services (Sutherland, 2020). The textually-mediated process of "competing" for vendor contracts obscures what actually happens in medical diagnostics, and hides from the public view some of the particular risks associated with healthcare contracting. For instance, 42 local lab facilities were closed in the province of Manitoba where Dynacare operates as "a monopoly", which resulted in constrained patient access to diagnostics in the region (Brohman, 2018). Although the private labs' "monopoly" has been discussed (Sutherland, 2020; Brohman, 2018), we instead note the presence of *two* large private laboratory corporations – LifeLabs and Dynacare – rallying for market control in Ontario, and in Canada broadly, thus comprising a duopoly. Further, our conclusion that the "competitive" RFP process is largely symbolic is consistent with a study that found fee-for-service contracts with private industry produced "cost escalation" in 11 countries' universal healthcare systems (Reich et al., 2016, p. 814). Importantly, based on these analyses and our explication

of laboratory funding relations, implementing digital STI testing in Ontario could compound overpayments made to private labs (assuming wide patient uptake).

Further, due to marketisation and privatisation processes in Canadian healthcare, private companies are enabled to generate revenue from people who have the resources to "pay to skip the line" using for-profit digital alternatives. Through these private digital testing services (e.g., *Maple*), patients "skip the waiting room", receiving lab requisition forms digitally which are then used to provide samples for publicly insured diagnostics at for-profit laboratories.

These findings also bring to light two significant questions. *First, which other private sector corporations are positioned to increase profits by virtue of existing local funding relations and the on-going privatisation of healthcare? Second, are we bearing witness to another watershed moment whereby public health divestment coupled with the COVID-19 pandemic produce the perfect conditions for the integration of (or contracts with) privatised digital healthcare corporations within Canada's universal healthcare system?* We note the historical emergence of private laboratories alongside the creation of the Canada's public hospital system due to "hospital funding shortfalls" (LifeLabs, 2020a). Crucially, *Maple* recently announced a $75M CAD investment made by Canada's largest private sector retail employer – Loblaw Companies/Shoppers Drug Mart Incorporated – whose president stated "We know that the future of healthcare is digitally enabled", while at the same time referencing COVID-19's impact (Loblaw Companies Limited, 2020). The creation of new video conferencing physician billing codes in Ontario, the United States, and beyond, also provide some indication of the direction the healthcare system is heading.

That said, our results must be explicitly discussed in relation to social and economic shifts in the contemporary COVID-19 pandemic era, at a time when physical spaces are highly regulated by public health and state governments. Shaped largely by widespread social distancing protocols, face-to-face healthcare services have been disrupted, making digital alternatives increasingly "marketable" given the material conditions of public healthcare, and growing patient and provider interest in digital healthcare (Lupton, 2014; Vogel, 2019). While the diffusion of digital care into the public system would mitigate what participants identified as a "two-tiered system" in Ontario, wherein only people with economic means can access private digital STI testing, there are certainly private industry stakeholders poised to benefit financially from wider demand for these platforms and competitive market activity. To demonstrate, share value of Dynacare's parent company – LabCorp – jumped from $171 USD to over $200 USD following the announcement of the "first" digital COVID-19 test in July 2020 (Business Wire, 2020; Yahoo! Finance, 2020). At the same time, LifeLabs introduced *WorkClear* – a COVID-19 testing model "to help Canadian companies bring employees safely back to work …" (LifeLabs, 2020b). In the context of COVID-19, private industry may be further economically incentivised to offer digital services that enable patients and employers to "pay to skip" public clinic lines growing in length due to social distancing protocols, and which are infused with discourses of pandemic "risk" (Gee and Skovdal, 2018). By example, *Maple* now advertises to "skip the germy waiting room" (Maple, 2020).

Our findings also discredit the claim that digital healthcare unequivocally improves access to care, considering that we found private industry capitalising on patient demands for digital/virtual STI testing. Yet as participants stressed, not everyone can "pay to skip the line", and this may conflict with pillars of the *Canada Health Act* - accessibility and universality. By contrast, a *publicly* funded digital STI testing service in Ontario, like *GetCheckedOnline*, could ameliorate this parallel public/private digital STI testing landscape. However, as we have shown, implementing STI diagnostics through a mixed public-*private* laboratory system has alerted us to funding disparities which could be mitigated by alternative organisations of the *GetCheckedOnline* Ontario testing model. For example, patients could order online self-collection kits and send their specimens directly to the public health lab for analysis and receive results digitally. This approach would also allow for the public health lab to better anticipate any increased demands for diagnostics, as the number of self-testing kits requested could be internally monitored. Owens et al. (2009) found that mail-in STI test kits offered by public health yielded accurate results. Of note, our ongoing research studies the acceptability of *GetCheckedOnline* to gay, bisexual, and other men who have sex with men and sexual healthcare providers in Ontario, especially in relation to other testing options (e.g., home self-collection; mail-in test kits; video conferencing), and in the context of COVID-19. Finally, we underscore the critical importance of delivering digital healthcare in Ontario that follow closely the *Canada Health Act* – namely *universality* and *accessibility* – and which can enable more equitable access to STI testing for populations with greater burden including gay, bisexual, and other men who have sex with men.

Author statement

The author team worked collaboratively on this analysis. KRM conduced the primary ethnographic data collection, analysis, and drafting of the manuscript. All co-authors reviewed the study findings and provided conceptual and substantive feedback on the manuscript. MG, CW, and DG, secured the research funding. DG designed the study and supervised KRM.

Acknowledgements

We wish to acknowledge each of the participants who shared their knowledge of HIV and STI testing services, laboratory diagnostics, and of gay, bisexual, and other men who have sex with men's digital testing access needs in Ontario. We additionally appreciate our community advisory board, and all our broader *GetCheckedOnline* Implementation Science team members who have provided significant guidance and expertise through all stages of this study. We also extend gratitude to our research coordinator, Mr. Praney Anand, for his significant work on our team. Finally, we thank the reviewers' and editors' - Drs. Panter-Brick and Eggerman– for their time and thoughtful feedback on our manuscript. This study was funded by a Canadian Institutes of Health Research Team Grant: HIV/AIDS Community-Based Research, #155387. Daniel Grace is supported by his Canada Research Chair in Sexual and Gender Minority Health.

References

Anonymous, 1999. Britain's first internet pharmacy opens. Pharmaceut. J. 263 (7073), 849.

Bakhtiar, M., Elbuluk, N., Lipoff, J.B., 2020. The digital divide: how COVID-19's telemedicine expansion could exacerbate disparities. J. Am. Acad. Dermatol. https://doi.org/10.1016/j.jaad.2020.07.043.

Bambra, C., Smith, K.E., Pearce, J., 2019. Scaling up: the politics of health and place. Soc. Sci. Med. 232, 36–42.

Bloomberg., February 7, 2019. LabCorp Announces 2018 Fourth Quarter and Full Year Results and Provides 2019 Guidance. *Bloomberg*. Retrieved. https://www.bloomberg.com/press-releases/2019-02-07/labcorp-announces-2018-fourth-quarter-and-full-year-results-and-provides-2019-guidance. (Accessed 17 June 2020).

Brend, Y., September 30, 2020. U.S. Television Productions Stalled in Vancouver by Bottleneck in COVID-19 Testing. CBC News. Retrieved. https://www.cbc.ca/news/canada/british-columbia/us-tv-film-production-stalled-covid-back-log-test-slow-overwhelmed-1.5744908. (Accessed 5 October 2020).

Brohman, E., March 22, 2018. 'It's Created a Monopoly': MLA Calls on Province to Ensure Dynacare Has Competition for Lab Services. CBC News. Retrieved. https://www.cbc.ca/news/canada/manitoba/manitoba-dynacare-petition-1.4585482. (Accessed 3 April 2020).

Business Wire, July 7, 2020. LabCorp launches first digital COVID-19 service that improves the doctor and patient experience. Retrieved. https://www.businesswire.com/news/home/20200707005475/en/LabCorp-Launches-First-Digital-COVID-19-Service-That-Improves-the-Doctor-and-Patient-Experience. (Accessed 21 September 2020).

Campbell, M.L., Rankin, J.M., 2017. Nurses and electronic health records in a Canadian hospital: examining the social organisation and programmed use of digitised nursing knowledge. Sociol. Health Illness 39 (3), 365–379.

Canada Health Act, 1984. The Canada health act. Retrieved. https://laws-lois.justice.gc.ca/eng/acts/c-6/. (Accessed 17 June 2020).

Canadian Medical Association, 2020. How to Set up Virtual Care in Your Practice. Retrieved. https://www.cma.ca/how-set-virtual-care-your-practice. (Accessed 20 September 2020).
City of Toronto, 2020. Toronto Public Health. Retrieved. https://www.toronto.ca/city-government/accountability-operations-customer-service/city-administration/staff-directory-divisions-and-customer-service/toronto-public-health/. (Accessed 18 June 2020).
Clarke, J., Carlin, E., 2015. Sexual health is another commissioning crisis. Br. Med. J. 350, p5149.
Cleary, M., O'Sullivan, J., 2017. London sexual health transformation programme. Sex. Transm. Infect. 93 (Suppl. 1), A64–65.
Crawley, M., April 29, 2019. Crunching the Toronto Public Health Funding Numbers. *CBC News*. Retrieved. https://www.cbc.ca/news/canada/toronto/doug-ford-public-health-funding-1.5110806. (Accessed 13 April 2020).
Dufresne, Y., Jeram, S., Pelletier, A., 2014. The true north strong and free healthcare? Nationalism and attitudes toward private healthcare options in Canada. Can. J. Polit. Sci. 47 (3), 569–595.
Dynacare, 2020. Our History. Retrieved. https://www.dynacare.ca/about-us/our-history.aspx. (Accessed 20 April 2020).
Fox, N., Ward, K., O'Rourke, A., 2005. The birth of the e-clinic. Continuity or transformation in the UK governance of pharmaceutical consumption? Soc. Sci. Med. 61, 1474–1484.
Gee, S., Skovdal, M., 2018. Public discourses of ebola contagion and courtesy stigma: the real risk to international heath care workers returning home from the West Africa Ebola outbreak? Qual. Health Res. 28 (9), 1499–1508.
Gilbert, M., Salway, T., Haag, D., Eliot, E., Fairley, C.K., Krajden, M., et al., 2019. A Cohort Study Comparing Frequency of Testing for Sexually Transmitted and Blood-Borne Infections between Clients of an Internet-Based Testing Program and of Sexually Transmitted Infection Clinics in Vancouver, Canada. Sexually Transmitted Infections. https://doi.org/10.1136/sextrans-2019-054071.
Global News, December 19, 2017. *Medical Labs Need New Deal, More Competition* [News Video]. Retrieved. https://globalnews.ca/video/3926010/medical-labs-need-new-deal-more-competition. (Accessed 1 October 2020).
Goddard, M., 2015. Competition in healthcare: good, bad, or ugly? Int. J. Health Pol. Manag. 4 (9), 567–569. https://doi.org/10.15171/IJHPM.2015.144.
Government of Canada, 2018. Notice: health Canada's approach to digital health technologies. Retrieved. https://www.canada.ca/en/health-canada/services/drugs-health-products/medical-devices/activities/announcements/notice-digital-health-technologies.html. (Accessed 17 June 2020).
Government of Canada, 2020. Major Federal Transfers. Retrieved. https://www.canada.ca/en/department-finance/programs/federal-transfers/major-federal-transfers.html. (Accessed 20 May 2020).
Grace, D., 2013. Transnational institutional ethnography: tracing text and talk beyond state boundaries. Int. J. Qual. Methods 12 (1), 587–605.
Grace, D., 2019. Institutional ethnography as a critical research strategy: access, engagement, and implications for HIV/AIDS research. In: Mykhalovskiy, E., Namaste, V. (Eds.), Thinking Differently about HIV/AIDS: Contributions from Critical Social Science. UBC Press, Vancouver.
Grace, D., Gaspar, M., Rosenes, R., Grewal, R., Burchell, A.N., Grennan, T., Salit, I.E., 2019. Economic barriers, evidentiary gaps, and ethical conundrums: a qualitative study of physicians' challenges recommending HPV vaccination to older gay, bisexual, and other men who have sex with men. Int. J. Equity Health 18 (159). https://doi.org/10.1186/s12939-019-1067-2.
Graham, G.N., Ostrowski, M.L., Sabina, A.B., 2016. Population health-based approaches to utilizing digital technology: a strategy for equity. J. Publ. Health Pol. 37 (S2), S154–S166.
Guy, M., 2019. Between 'going private' and 'NHS privatisation': patient choice, competition reforms and the relationship between the NHS and private healthcare in England. Leg. Stud. 39, 479–498.
Harrington, C., Jacobsen, F.F., Panos, J., Pollock, A., Sutaria, S., Szebehely, M., 2017. Marketization in long-term care: a cross-country comparison of large for-profit nursing home chains. Health Serv. Insights 10. https://doi.org/10.1177/1178632917710533.
Holloway, K., Miller, F.A., Rousseau, F., Gutierrez, A., Hogarth, S., 2019. Health Canada needs to act on laboratory-developed diagnostics. Can. Med. Assoc. J. 191, E1067–1069.
Ivers, N., Brown, A.D., Detsky, A.S., 2018. Lessons from the Canadian experience with single-payer health insurance: just comfortable enough with the status quo. JAMA Internal medicine 178 (9), 1250–1255.
Keesara, S., Jonas, A., Schulman, K., 2020. Covid-19 and health care's digital revolution. N. Engl. J. Med. 382, e82. https://doi.org/10.1056/NEJMp2005835.
Knight, R.E., Chabot, C., Carson, A., Thomson, K., Haag, D., et al., 2019. Qualitative analysis of the experiences of gay, bisexual and other men who have sex with men who use GetCheckedOnline.com: a comprehensive internet-based diagnostic service for HIV and other STIs. Sex. Transm. Infect. 95 (2), 145–150.
Knight, R., Karamouzian, M., Salway, S., Gilbert, M., Shoveller, J., 2017. Online interventions to address HIV and other sexually transmitted and blood-borne infections among young gay, bisexual, and other men who have sex with men: a systematic review. J. Int. AIDS Soc. 20 (3), e25017 https://doi.org/10.1002/jia2.25017.
Lewis, S., 2015. A system in name only – access, variation, and reform in Canada's provinces. N. Engl. J. Med. 372, 497–500.
LifeLabs, 2020a. Our History. Retrieved. https://www.lifelabs.com/about-us/about-lifelabs/our-history/. (Accessed 20 April 2020).
LifeLabs, 2020b. LifeLabs Launches COVID-19 WorkClear Program Helping Canadian Employers Get Back to Work. July 15, Retrieved. https://www.lifelabs.com/lifelabs-launches-covid-19-workclear-program-helping-canadian-employers-get-back-to-work/. (Accessed 5 October 2020).
Lormier, K., Patterson, S.P., McDaid, L., 2014. The views of general practitioners and practice nurses towards the barriers and facilitators of proactive, internet-based chlamydia screening for reaching young heterosexual men. BMC Fam. Pract. 15 (1), 127.
Loblaw Companies Limited, September 15, 2020. Shoppers drug mart to expand Canadians' access to virtual care through $75 million investment in Maple. Retrieved. https://www.newswire.ca/news-releases/shoppers-drug-mart-to-expand-canadians-access-to-virtual-care-through-75-million-investment-in-maple-800337221.html. (Accessed 21 September 2020).
Loozen, E.M.H., 2015. Public healthcare interests require strict competition enforcement. Health Pol. 119, 882–888.
Lupton, D., 2014. Apps as artefacts: towards a critical perspective on mobile health and medical apps. Societies 4, 606–622.
MacLeod, M., May 14, 2020. New normal: are virtual doctor's appointments here to stay? Retrieved. https://www.ctvnews.ca/health/coronavirus/new-normal-are-virtual-doctor-s-appointments-here-to-stay-1.4939255. (Accessed 23 September 2020).
MacKinnon, K.R., Gómez-Ramírez, O., Worthington, C., Gilbert, M., Grace, D., 2020. An Institutional Ethnography of Political and Legislative Factors Shaping Online Sexual Health Service Implementation in Ontario, Canada. Critical Public Health.
MacKinnon, K.R., Grace, D., Ng, S.L., Sicchia, S., Ross, L.E., 2020. "I don't think they thought I was ready": how pre-transition assessments create care inequities for trans people with complex mental health issues in Canada. Int. J. Ment. Health 49 (1), 56–80.
Mann, T.A., Uddin, Z., Hendriks, A., Bouchard, C.J., 2013. Get tested why not? A novel approach to internet-based chlamydia and gonorrhea testing in Canada. Can. J. Public Health 104 (3), e205–e209.
Maple, September 18, 2019. Canada's leading telemedicine provider, Maple, announces $14.5 million in funding following record year. Retrieved. https://www.newswire.ca/news-releases/canada-s-leading-telemedicine-provider-maple-announces-14-5-million-in-funding-following-record-year-859193562.html. (Accessed 16 June 2020).
Maple, 2020. Maple. Retrieved. https://www.getmaple.ca/. (Accessed 17 June 2020).
Minister of Health, 2015. Canada Health Act: Annual Report 2015-2015. Retrieved. https://www.canada.ca/en/health-canada/services/health-care-system/reports-publications/canada-health-act-annual-reports/report-2014-2015.html. (Accessed 23 September 2020).
Murphy, J., July 17, 2020. Will this new legislation permanently change how you practice medicine?. MDLinx. Retrieved. https://www.mdlinx.com/article/will-this-new-legislation-permanently-change-how-you-practice-medicine/6t6jUttcfYvVychLn5B4rQ. (Accessed 18 September 2020).
Naugler, C., 2014. A perspective on laboratory utilization management from Canada. Clin. Chim. Acta 427, 142–144.
Ontario Ministry of Health., March 25, 2020. Keeping health care providers informed of payment, policy or program changes. Retrieved. http://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/4000/bul4750.aspx. (Accessed 20 September 2020).
Ontario Ministry of Health, April 18, 2019. Ontario passes legislation that puts patients at the centre of an integrated health care system. Retrieved. https://news.ontario.ca/mohltc/en/2019/04/ontario-passes-legislation-that-puts-patients-at-the-centre-of-an-integrated-health-care-system.html. (Accessed 13 April 2020).
OMERS., October 1, 2013. LifeLabs Medical Laboratory Services Completes Purchase of CML Healthcare Inc. Investing News. Retrieved. https://www.omers.com/News/Investing-News/2013/LifeLabs-Medical-Laboratory-Services-Completes. (Accessed 28 May 2020).
Office of the Auditor General of Ontario, 2017. Chapter 3: Reports of Value-For-Money Audits. 2017 Annual Report. Retrieved. http://www.auditor.on.ca/en/content/annualreports/arbyyear/ar2017.html. (Accessed 6 April 2020).
Ontario, 2019. The People's Health Care Act, S.O. 2019, C. 5- Bill 74. Retrieved. https://www.ontario.ca/laws/statute/s19005. (Accessed 17 June 2020).
Ontario Coalition for Lab Reform, 2020. Medical Laboratory Testing in Ontario: A History. Retrieved. http://labreform.ca/medical-laboratory-testing-in-ontario-timeline/. (Accessed 20 September 2020).
Owens, B., 2019. Coupons for health care a sign of creeping privatization? Can. Med. Assoc. J. 191 (49), E1364. https://doi.org/10.1503/cmaj.l095822.
Owens, S.L., Arora, N., Quinn, N., Peeling, R.W., Holmes, K.K., Graydos, C., 2009. Utilising the internet to test for sexually transmitted infections: results of a survey and accuracy testing. Sex. Transm. Infect. 86, 112–116.
Petsoulas, C., Allen, P., Hughes, D., Vincent-Jones, P., Roberts, J., 2011. The use of standard contracts in the English national health service: a case study analysis. Soc. Sci. Med. 73 (2), 185–192. https://doi.org/10.1016/j.socscimed.2011.05.021.
Pierroz, C., February 1, 2018. Province set to give private medical laboratory cartel secret $3.7 billion, six year deal. Retrieved. http://labreform.ca/author/cpierroz/. (Accessed 24 September 2020).
Rankin, J., 2017. Conducting analysis in institutional ethnography: guidance and cautions. Int. J. Qual. Methods 16, 1–11. https://doi.org/10.1177/1609406917734472.
Reid, S., December 18, 2017. There's a Lot We Don't Know about Ontario's Private Medical Labs. TVO. Retrieved. https://www.tvo.org/article/theres-a-lot-we-dont-know-about-ontarios-private-medical-labs. (Accessed 22 May 2020).
Reich, M.R., Harris, J., Ikegami, N., Maeda, A., Cashin, C., Araujo, E.C., Takemi, K., Evans, T.G., 2016. Moving towards universal health coverage: lessons from 11 country studies. Lancet 387, 811–816.
Sikaris, K.A., 2017. Enhancing the clinical value of medical laboratory testing. Clin. Biochem. Rev. 38 (3), 107–114.

Smith, D.E., 2005. Institutional Ethnography: A Sociology for People. Rowman Altamira, Oxford, UK.
Smith, D.E., 2001. Texts and the ontology of organizations and institutions. Stud. Cult. Org. Soc. 7 (2), 159–198. https://doi.org/10.1080/10245280108523557.
Smith, D.E., 1999. Writing the Social: Critique, Theory, and Investigations. University of Toronto Press, Toronto.
Smith, D.E., Turner, S.M., 2014. Introduction. In: Smith, D.E., M Turner, S. (Eds.), Incorporating Texts into Institutional Ethnographies. University of Toronto Press, Toronto.
Sutherland, R., 2020. Medical laboratories: for-profit delivery and the disintegration of public health care. In: Mykhalovskiy, E., Choiniere, J., Armstrong, P., Armstrong, H. (Eds.), Health Matters: Evidence, Critical Social Science, and Health Care in Canada. University of Toronto Press, Toronto.
Sutherland, R., 2011. Private labs: a cautionary tale. Can. Nurse 107 (6), 40.
Sutherland, R., 2012. The effects of for-profit laboratories on the accountability, integration, and cost of Canadian health care services. Open Med. 6 (4), e166–170.
Turner, K.M.E., Looker, K.J., Syred, J., Zienkiewicz, A., Baraitser, P., 2019. Online testing for sexually transmitted infections: a whole system approach to predicting value. PloS One 14 (2), 1–14.
Vogel, L., 2019. Canadians expect easier online access to health care: CMA survey. Can. Med. Assoc. J. 191 (34), E952. https://doi.org/10.1503/cmaj.109-5809.
Walby, K., 2013. Institutional ethnography and data analysis: making sense of data dialogues. Int. J. Soc. Res. Methodol. 16 (2), 141–154.
Whiteside, H., 2011. Unhealthy policy: the political economy of Canadian public-private partnership hospitals. Health Sociol. Rev. 20 (3), 258–268.
World Health Organisation, 2020. Contracting and Health: the Bulletin Interview with Dr David Evans. Retrieved. https://www.who.int/bulletin/volumes/84/11/06-101106/en/. (Accessed 16 September 2020).
Yahoo! Finance, 2020. Laboratory corporation of America holdings (LH). NYSE – nasdaq real time price. Retrieved. https://ca.finance.yahoo.com/quote/lh?ltr=1. (Accessed 24 September 2020).