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Protocol for the Development of a Primary Care Pandemic Plan Informed by In-depth Policy Analysis and Qualitative Case Studies with Family Physicians Across Canada during COVID-19

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Keywords:	PRIMARY CARE, COVID-19, QUALITATIVE RESEARCH

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TITLE PAGE

Title Protocol for the Development of a Primary Care Pandemic Plan Informed by In-depth Policy Analysis and Qualitative Case Studies with Family Physicians across Canada During COVID-19

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ABSTRACT

Introduction Given the recurrent risk of respiratory illness-based pandemics, and the important roles family physicians play during public health emergencies, the development of pandemic plans for primary care are imperative. Existing pandemic plans in Canada, however, do not adequately incorporate family physicians' roles and perspectives. This policy and planning oversight has become increasingly evident with the emergence of the novel coronavirus disease, COVID-19, pandemic. This study is designed to inform the development of pandemic plans for primary care through evidence from four provinces in Canada: British Columbia, Newfoundland and Labrador, Nova Scotia, and Ontario.

Methods and analysis We will employ a multiple case study of regions in four provinces. Each case consists of a mixed-methods design comprised of: (1) a chronology of family physician roles in the COVID-19 pandemic response; (2) a provincial policy analysis; and (3) qualitative interviews with family physicians. Relevant policy and guidance documents will be identified through targeted, snowball, and general search strategies. Additionally, these policy documents will be analysed to identify gaps and/or emphases in existing policies and policy responses. Interviews will explore family physicians' proposed, actual, and potential roles during the pandemic, the facilitators and barriers they have encountered throughout, and the influence of gender on their professional roles. Data will be thematically analysed using a content analysis framework, first at the regional level and then through cross-case analyses.

Ethics and dissemination Approval for this study has been granted by research ethics boards in each study province. Findings will be disseminated via conferences and peer-reviewed publications. Evidence and lessons learned will be used to develop tools for government ministries, public health units, and family physicians for improved pandemic response plans for primary care.

Keywords Qualitative Research; Research Design; Physicians, Primary Care; Physicians, Family; Pandemics; COVID-19

Strengths and Limitations

- Our interdisciplinary research team includes experienced primary care researchers, family physicians and public health experts, allowing us to draw upon their expert knowledge in the development of study tools and the interpretation and dissemination of findings.
- The use of a multiple-case study approach will aid in making distinctions between localised issues specific to a single case and cross-cutting themes present across health regions.
- While maximum variation sampling will facilitate the recruitment of participants along a wide variety of characteristics in the selected regions and provinces, the transferability of findings may be limited by provincial variation in primary care and health policy in Canada.
- We anticipate this study will highlight gaps in current pandemic response plans and identify promising practices and key facilitators to incorporate in future pandemic response plans for family physicians.

INTRODUCTION

Family physicians have an important role to play during a pandemic, with responsibilities including sentinel surveillance, screening, testing, health education, monitoring individuals and providing follow-up care, contributing to hospital and emergency room surge capacity, and providing vaccinations.[1–5] In addition, family physicians are expected to continue providing routine primary care to individuals through their community-based practices.[4–6] Community members who are particularly reliant on primary care to maintain their health under normal circumstances may have increased care needs during and following a pandemic.[7]

There are attributes of family practice that call for clear, well-considered pandemic preparedness plans specific to primary care. Family physicians may be the first point of contact in a community-based outbreak. This requires that family physicians deal with new diseases when there is limited information about those diseases, such as their means of transmission, effective prevention practices, and therapeutic options.[8] Family physicians must also minimise the potential risk of transmission to other community members, staff, and trainees in their clinics, as well as themselves and their families.[9]

In December 2019, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which causes COVID-19 appeared in China. On 30 January 2020, the World Health Organisation determined COVID-19 to be a public health emergency of international concern, and on 11 March 2020 they declared a pandemic.[10]

Canada confirmed its first presumptive case of COVID-19 on 25 January 2020.[11] Since then, the pandemic has been experienced differently across and within provinces. Nationally, there have been two distinct ‘waves’ of COVID-19 cases to date. The first ‘wave’, from April to June, peaked in May at nearly 70 new daily cases per million people; the second ‘wave’, which started in September 2020, has seen cases increase nationally to nearly 120 new daily cases per million people in November.[12] While some provinces have, to varying degrees, followed the national trend (e.g., British Columbia, Ontario, Quebec), others have avoided large first (e.g., Manitoba, Saskatchewan) or second (e.g., Newfoundland and Labrador, Nova Scotia) waves.[12]

Healthcare delivery in Canada is within the jurisdiction of individual provinces, while the federal government has responsibilities for general public health guidance. Much of primary care across Canada is publicly funded through provincial health insurance while care is delivered through family physicians operating as private businesses.[13] Such provincial control facilitates contextualised responses while reinforcing provincially-varied experiences of a pandemic. This primary care model makes communication and coordination with practices challenging – particularly where physicians are not formally linked with regional or institutional networks.

In the early months of the COVID-19 pandemic in Canada, some family physicians were hesitant to screen community members in their clinics due to inadequate supplies of the appropriate personal protective equipment (PPE), improperly equipped examination rooms, and concerns regarding proper cleaning during clinic hours.[15] Eventually, designated COVID-19 assessment centres [16,17] and community-based PPE distribution [14] and government control of supply chains [18] were implemented to address some of these concerns.

The prolonged nature of physical distancing and ‘stay-at-home’ orders have disrupted community primary care visits. Fewer community members sought primary care – either delaying or forgoing routine visits – and few individuals were willing to have an in-person visit.[19] For fee-for-service practices, the decrease in service volumes reduced revenues, leaving some practices struggling to pay fixed overhead costs.[15,20–22]

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4 Prior to the pandemic, virtual and telehealth services were only minimally offered by
5 family physicians in Canada.[23] In response to the pandemic, synchronous virtual care has been
6 adopted widely, facilitated by the introduction or modification of billing codes.[24] Because the
7 need for virtual visits emerged so quickly, some physicians and community members have
8 encountered barriers to adapting to this change due to a variety of factors such as technology and
9 platform concerns, a lack of prior training in virtual clinical assessments and care, access to
10 internet and private spaces, and the health literacy of individuals seeking care.[25]

11 Many family physicians also work in a variety of other healthcare settings that are
12 directly affected by or involved in the pandemic response (e.g., hospitals, long-term care homes,
13 non-profit community services).[15] Family physicians with institutional affiliations (e.g.,
14 hospital privileges) may be expected to add to surge capacity in these institutions, while other
15 physicians may be redeployed to assessment and testing centres or to provide care beyond their
16 traditional scope of practice.[26]

17
18 Outbreaks of COVID-19 in long-term care facilities prompted orders for residential
19 caregivers to work in a single setting in some provinces,[27–29] though it is unclear how these
20 orders will affect the roles of physicians as the pandemic proceeds. Family physicians, in
21 particular those working in rural communities who provided care to multiple settings prior to the
22 pandemic, may be particularly hard-pressed to operate community-based practices while meeting
23 their obligations to hospitals and long-term care homes if they are limited to a single setting.

24 Finally, given that women make up a growing proportion of the family physician
25 workforce,[30] and as caregiving roles evolve, pandemic plans struggled to incorporate gender
26 considerations. Family physicians may care for children or older relatives and may therefore be
27 unable or unwilling to participate in some or all pandemic roles due to a lack of care support,
28 isolation protocols following exposure, and their desire to minimise exposure risk to their loved
29 ones.
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32 In the absence of clearly defined pandemic plans for primary care, it is uncertain how
33 family physicians have informed their care provision and role fulfilment during the current
34 pandemic. With multiple sources of information providing updates and guidance as the pandemic
35 unfolds, it is possible that family physicians may hold varied and potentially competing views on
36 their responsibilities. Further, with minimal recent experience with primary care provision during
37 a pandemic, policymakers have limited evidence of family physicians' professional and personal
38 experiences with implementing the policies envisioned for them and their communities of care.
39 As deployment of primary care and COVID-19 are provincial responsibilities, Canada offers a
40 strong opportunity to conduct case studies comparing approaches and outcomes to inform future
41 pandemic planning in primary care.
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44 In this study, we will draw upon the experiences of family physicians throughout the
45 COVID-19 pandemic to guide the ongoing response to COVID-19 and develop primary care
46 response plans for future pandemics. We anticipate this study will highlight gaps in current
47 pandemic response plans; identify variation along traits such as urban/rural location, affiliation
48 with regional organisational structures, funding models, and gender; and illustrate promising
49 practices and key facilitators. The findings will help ensure physicians are supported to fulfil
50 their roles during a pandemic and that community members' access to primary care is minimally
51 disrupted throughout all stages of a pandemic.
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53 Objectives

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3 This research seeks to understand the formal and informal roles of family physicians during a
4 pandemic, and the facilitators and barriers family physicians encounter in fulfilling those roles.
5 Specifically, our objectives are:

- 6 1. to describe the proposed, actual, and potential roles of family physicians during different
7 stages of the COVID-19 pandemic;
- 8 2. to describe the facilitators and barriers to the proposed, actual, and potential family
9 physician roles during different stages of the COVID-19 pandemic;
- 10 3. to describe gender differences in the roles, facilitators, and barriers of family physicians
11 during different stages of the COVID-19 pandemic; and
- 12 4. to compare and contrast the proposed, actual, and potential roles of family physicians and
13 the facilitators and barriers to these family physician roles across four Canadian
14 provinces.
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17 “Roles” in this context refers to specific tasks and/or responsibilities that family physicians are
18 asked or required to perform during the stages of the pandemic. These roles are expected to cease
19 once the pandemic is over and 'normal' operations resume.
20

21 **METHODS**

22 **Overall Study design**

23
24 This study is comprised of multiple mixed methods case studies,[31] with each case examining
25 the pandemic response of family physicians in one of four regions of Canada: the Vancouver
26 Coastal Health region in British Columbia, the Eastern Health Region of Newfoundland and
27 Labrador, the province of Nova Scotia, and Ontario Health West Region.
28

29 Vancouver Coastal Health is one of five regional health authorities in British Columbia,
30 providing care to a quarter of the provincial populace (1.25 million individuals) through primary,
31 residential, and acute care, public health, mental health, and substance use programmes.[32] The
32 Eastern Health Region is the largest of four regional health authorities in Newfoundland and
33 Labrador, providing a full spectrum of health services to over half of the province’s residents
34 (more than 300,000 community members).[33] Nova Scotia Health provides a range of
35 healthcare through hospitals, health centres, and community-based programmes to all (nearly one
36 million) residents of the province of Nova Scotia, as well as some specialised services for
37 Atlantic Canadians.[34] The Ontario Health West region includes the areas served by the four
38 westernmost Local Health Integration Networks, which are responsible for coordination of
39 primary, home, and community care, community health centres, hospitals, long-term care, and
40 mental health and addictions support for roughly 2.6 million residents.[35] The newly formed
41 Ontario Health West agency is coordinating the COVID-19 response in the region.[36] These
42 regions, while pragmatically representing the locations of our pre-existing research team, have
43 variation in their numbers of COVID-19 cases and deaths, include urban and rural communities,
44 links to acute care, and represent varied regional structures and primary care funding and
45 practice models.
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49 Each case study will consist of a mixed-methods design, including: (1) a chronology of
50 family physician roles in the COVID-19 pandemic response; (2) a provincial policy analysis; and
51 (3) qualitative interviews with family physicians. We will compare and contrast findings across
52 cases in order to identify comprehensive themes, shared lessons learned, and promising
53 practices.
54

55 **Chronology**

Approach

Each provincial team will compile a chronology to describe key milestones in the COVID-19 pandemic and family physicians' roles and responsibilities in each pandemic stage. We will also identify policies that influenced how family physicians performed pandemic-related roles. A comprehensive document review of grey literature including federal, provincial, and regional health policy documents, government briefings and news reports, and policies and communications from health professional organisations (e.g., provincial colleges of physicians and surgeons and colleges of family medicine, Canadian Medical Association, College of Family Physicians of Canada), will be used to inform the chronology and a policy analysis.

Relevant documents will be identified using a combination of targeted and general search strategies. Through our targeted search, we will review government, public health and health professional organisation, health institution, and medical school websites throughout all four regions. These targeted websites will facilitate snowball searches of linked and/or referenced websites, documents, and resources. As part of a general search, we will conduct ongoing online searches using the following terms and logic: province or region name or abbreviation (e.g., "BC" or "British Columbia" or "VCH" or "Vancouver Coastal Health"); and "covid" or "COVID-19" or "coronavirus"; and "primary care" or "family physician" or "family doctor" or "general practitioner".

In the chronology, we will note the progression of the pandemic (e.g., number of cases, number of deaths); declarations, actions, and ministerial orders (e.g., declarations of a pandemic and/or public health emergency, closures, stay-at-home orders, essential work definitions, re-openings); and directives, supports, programmes, and guidance for community members, institutions, and healthcare workers. While the primary focus for each provincial study team will be their selected health region, we will also document pivotal milestones and policies at the provincial, national, and international levels to provide the appropriate context for the chronologies.

Chronologies will be verified by public health, family physicians, and primary care professionals in each region to ensure completeness, establish face validity, and identify missing events or data sources. Provided that the project will take place throughout the current COVID-19 pandemic, the document review will be ongoing and verification will occur at multiple points in the study.

We will use the chronologies to identify the distinct stages in the pandemic response in each region and the proposed roles of family physicians outlined in pandemic plans and guiding documents. The chronology will be used as a common frame of reference in the qualitative interviews, helping to create an initial portrait of the actual role and reveal facilitators and barriers encountered by family physicians.

Policy analysis

The document search, criteria, and review used to develop the regional chronologies will also form the basis for provincial policy analyses that will characterise the policies that have influenced family physicians throughout the pandemic. These analyses will identify gaps and emphases within pre-existing policies and supports and those that emerged in response to COVID-19.

To be included in the policy analysis, a policy must relate (directly or indirectly) to the roles of family physicians and/or primary care practices at any point during the COVID-19 pandemic. Policies may be pre-existing, a modification of existing policy, or new policy in

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3 response to the COVID-19 pandemic. The policy may apply to any sites where family physicians
4 routinely work, including office-based care, long-term care, hospitals, home, or walk-in clinics,
5 but must pertain specifically to family physicians or their practice staff and to activities at all
6 locations (rather than a single location).
7

8 Each policy from the chronology document review will be assessed for inclusion and
9 coded according to the following:

- 10 • the jurisdiction targeted by the policy (e.g., region, province, national, international, or
11 other);
- 12 • the reported start and end date (where applicable) of the policy;
- 13 • the pandemic stage when the policy was issued;
- 14 • a summary of the policy, including a description of the corresponding family physician
15 role to which the policy relates;
- 16 • the type of organisation issuing the policy (e.g., government, public health agency,
17 medical professional association, health region/institution) and the level at which the
18 organisation operates (e.g., international, national, provincial, regional);
- 19 • the level of the policy's application (e.g., international, national (i.e., to all Canadian
20 residents), provincial (i.e., to all resident of a province) etc.); and
- 21 • the type of policy instrument: 'do nothing', 'exhortation', 'expenditure', 'regulation', and
22 'public ownership'.^[37]

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25 Each policy will be coded using a Qualtrics (SAP Software Solutions) survey. An initial set of
26 twenty policies (five from each case) will be selected randomly and completed by all coders to
27 identify additional codes, coding categories, to clarify instructions, ensure consistent application
28 of procedures, and resolve any coding disputes. Frequencies and cross-tabulations will be
29 derived to describe the types of policy instruments issued in each jurisdiction, by different
30 organisations, and to support the different roles of family physicians.
31

32 **Qualitative interviews**

33
34 Following the development and verification of initial provincial chronologies and in parallel with
35 the policy analysis, we will conduct semi-structured qualitative interviews with family
36 physicians working in each study region. Interviews will be 45 to 60 minutes in length and, due
37 to the ongoing COVID-19 pandemic, will be conducted by Zoom (Zoom Video Communications
38 Inc.) or telephone, depending on participant preference. With the permission of participants,
39 interviews will be audio-recorded and transcribed verbatim and notes will be taken for analysis.
40

41 For each interview, participants will be provided a copy of the region-specific chronology
42 and we will ask that they describe for each pandemic stage: the facilitators and barriers they
43 experienced in performing the proposed roles outlined in the chronology; their actual role and the
44 facilitators and barriers they encountered in its fulfilment; the potential roles that family
45 physicians could have filled at each stage of the pandemic, as well as the facilitators and barriers
46 to fulfilment; and how their gender influences their proposed, actual, and potential roles as
47 family physicians during the pandemic. Interviews will involve background questions on
48 participants' gender, years of practice, work settings, clinic roles, and the demographics of their
49 practice populations.
50

51 Given the dynamic nature of the pandemic and the evolving roles of family physicians,
52 and that data collection will be ongoing as the pandemic persists, each participant will be asked
53 if we may contact them for a potential second interview of a similar format.
54

55 Study sample and recruitment
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3 Consistent with maximum variation sampling,[38] we will recruit family physicians along a wide
4 range of characteristics, such as family physicians with and without an academic appointment, of
5 different genders, from different primary care funding and practice models, with and without
6 team/regional health authority affiliations, and with varied community demographics. We
7 anticipate recruiting approximately 24 to 30 physicians in each region (around 120 overall);
8 however, we will continue recruiting until we have sufficient data to allow for rigorous analysis
9 and to accurately represent the experiences of family physicians with shared characteristics as
10 noted above (i.e., saturation).
11

12 To be included in the study, family physicians must have been licensed to practice in
13 2020 and be either clinically active or eligible to be clinically active in the applicable region of
14 the study province during the pandemic. Eligibility to be clinically active is intended to include
15 participants who may have changed their work plans in response to the pandemic (e.g., return
16 from parental, medical, or other types of leave or travel). We will include family physicians who
17 work solely in institutional settings, including long-term care facilities and hospitals.
18

19 We will exclude post-graduate medical residents, as well as international medical
20 graduates permitted to practice solely during the pandemic since the latter's roles may be
21 influenced by educational or licensing policies. Physicians in solely academic, research, or
22 administrative roles will also be excluded.
23

24 To recruit family physicians, a research assistant will email or fax a study invitation to
25 prospective participants providing information about the study and requesting their participation
26 in an interview. Family physicians will be identified through faculty lists, lists of teams and
27 practices (e.g., family health teams, community health centres), privileging lists, and provincial
28 College of Physicians and Surgeons' physician search portals. Due to provincial variance in
29 access to lists of family physicians, we will also advertise through professional organisations'
30 newsletters, social media posts, and employ third-party recruitment (i.e., snowballing). In the
31 case of snowballing, we will encourage participants to share our study and contact information
32 with their professional networks, allowing interested physicians to initiate contact with the study
33 team to obtain further details, confirm eligibility, and schedule an interview.
34
35

36 Analysis

37 The interview recordings will be transcribed verbatim, proofread, and validated for accuracy
38 with the participants as necessary. Field notes will also be taken during interviews by the
39 researchers. All data will be thematically analysed for themes related to the research objectives
40 using a content analysis framework. Employing a comparative analysis approach, at least two
41 members of the research team will independently read each transcript and the interviewer's
42 corresponding notes to identify key themes and develop a robust coding framework around
43 which further analysis will be structured.[39,40] A codebook will be developed to list and define
44 all codes, to aid in the consistency of their application.
45
46

47 Through subsequent iterations of the coding process, we will move from more descriptive
48 to more analytic codes, developing broader conceptual themes from the interview data. The
49 researchers will determine codes for all data and harmonise the key themes. Analysis of
50 transcripts will then be conducted using NVivo 12 (QSR International) software for qualitative
51 data analysis.[39,40] Descriptive statistics will be extracted from the demographic data and used
52 to summarise the characteristics of the study participants.
53

54 Cross-case analysis

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3 As results from each regional case – including chronology, policy analysis and interviews –
4 emerge, we will compare and contrast findings across cases to identify comprehensive themes,
5 shared lessons learned, and promising practices. The use of a multiple-case study approach
6 facilitates the distinction between localised issues specific to a single case and cross-cutting
7 themes present across multiple health regions.[31] Given the differences in primary healthcare
8 systems across Canadian provinces, cross-case analyses will also allow us to examine plausible
9 or rival explanations by contrasting responses and exploring varying contextual conditions in the
10 four cases.
11

12 **Study rigour**

14 To enhance the rigour of this multiple-case study, we will draw upon evidence gathered in the
15 chronology, policy analysis, and qualitative interviews which will be conducted using consistent
16 methods across all four cases.[31,41] We will prepare interview guides and pre-test questions,
17 document our interviewing and transcription protocols, use experienced interviewers, and
18 member-check with the participants during interviews. Further, our interdisciplinary team
19 includes family physicians and public health experts, allowing us to draw on prior expert
20 knowledge in the development of our research tools and the interpretation of our results.[31]
21

22 The research will also be conducted and presented in accordance with the consolidated
23 criteria for reporting qualitative research (COREQ).[42] We will keep detailed records of the
24 interviews (i.e., audio recordings, transcripts), field notes, drafts of the coding template, and
25 document coding disagreements and their resolutions. We will look for negative cases and
26 encourage and document self-reflection among all members of the research team. In our
27 dissemination of findings, we will provide thick descriptions[43] and use illustrative quotes.
28

29 **Patient or public involvement**

30 Neither patients nor the public have been involved in the development of this research.
31

32 **ETHICS AND DISSEMINATION**

33 **Ethics approval**

34 We have obtained approval from the research ethics boards at Simon Fraser University and the
35 University of British Columbia (through harmonised Research Ethics of British Columbia), the
36 Health Research Ethics Board of Newfoundland and Labrador, Nova Scotia Health, and the
37 University of Western Ontario.
38

39 **Informed consent**

40 The research coordinator will contact interested participants by email or fax, provide them with
41 study information and the study consent form, and ask them to complete and return the form. The
42 research coordinator and principal investigator in each region are available to answer any
43 questions and will only proceed with an interview once written consent has been received.
44 Individuals may refuse to participate, refuse to answer any questions, or withdraw from the study
45 at any point up until their data have been combined with other participants' for analysis.
46 Participants do not waive any legal rights by signing the consent form.
47

48 **Confidentiality**

49 All measures will be taken to reduce the risk of a privacy breach and maintain participant
50 confidentiality. Audio recordings will be kept on secure storage provided by the affiliated
51

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3 academic institutions until they have been transcribed and the transcripts verified by the
4 interviewer and/or participant.

5 Participants' full name and contact information will be used to schedule their interview
6 and additional demographic information, such as gender and type of practice will be used to
7 ensure variation in interview participants, however this information will be kept separate from
8 audio files and transcribed interviews by using unique participant codes. The master list of
9 participants' names and their unique codes will be kept separate from study data and will not be
10 shared with other regional study teams. All other identifying information that may be mentioned
11 will be obscured during the transcription process. Participants' names will not be used in any
12 published findings.
13
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15 **Knowledge translation**

16
17 In alignment with an integrated knowledge translation model,[44] this project was motivated by
18 conversations with physicians and health system administrators during the early stages of the
19 pandemic. Family physicians voiced questions and concerns about implementing guidelines from
20 local public health organisations and emphasised the necessity of a coordinated pandemic
21 response plan for primary care. To maintain this integration of knowledge users throughout the
22 study, and to ensure that our data collection, analysis, and dissemination is reflective of family
23 physicians' perspectives and information needs, our team includes community-based family
24 physicians as co-investigators and collaborators within each region.
25

26 We will disseminate our findings throughout the twelve-month project. Emergent
27 findings will be shared through the communication channels (e.g., websites, newsletters) of the
28 four principal investigators and through our study team's knowledge user and collaborator
29 partners. Results will provide government ministries, public health units, other health
30 organisations, and family physicians with evidence and tools to better inform their ongoing and
31 future pandemic responses. We will prepare articles for publication in peer-reviewed open-access
32 journals, write op-eds, conduct media interviews, participate in online discussions (e.g.
33 healthydebate.ca), and employ social media. We will also share findings through regional,
34 national, and international conferences both virtually and in-person, once current pandemic-
35 related travel restrictions are lifted.
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38 Although, there are many other healthcare providers in primary healthcare, this study
39 focuses on family physicians because physician-led practices remain the most prevalent form of
40 primary healthcare organisation in Canada. Similarly, we recognise that our project is a single,
41 albeit important, step in the creation of primary care pandemic preparedness plans which will
42 ultimately require the engagement of a broader range of health professionals, and government,
43 professional, and regional organisations.
44

45
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REFERENCES

1. Mazowita G. Role for primary care in epidemic surge capacity. *Can Fam Physician*. 2006;52:951.
2. Vancouver Coastal Health. The Regional Pandemic Outbreak Response Plan. Vancouver: Vancouver Coastal Health; 2018 Sep. Available from: <https://sneezesdiseases.com/assets/uploads/1578342909B2QYPNFREK5cN5EDsglaGYPKRX9A.pdf>
3. Public Health Agency of Canada. COVID-19 pandemic guidance for the health care sector. 2020 [cited 2020 Nov 6]. Available from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/covid-19-pandemic-guidance-health-care-sector.html#a322>
4. Ministry of Health. Planning Guide for Respiratory Pathogen Season. Toronto: Government of Ontario; 2019 Oct. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/flu/docs/planning_guide_rps.pdf
5. Public Health Agency of Canada. Canadian pandemic influenza preparedness: planning guidance for the health sector. 2018. Available from: http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2019/19-06/publications.gc.ca/collections/collection_2019/aspc-phac/HP40-144-2018-eng.pdf
6. Harvey BJ. The issue of public health. *Can Fam Physician*. 2009;55:1057.
7. Runkle JD, Brock-Martin A, Karmaus W, Svendsen ER. Secondary Surge Capacity: A Framework for Understanding Long-Term Access to Primary Care for Medically Vulnerable Populations in Disaster Recovery. *Am J Public Health*. 2012;102:e24–32.
8. Hogg W, Huston P, Martin C, Saginur R, Newbury A, Vilis E, et al. Promoting best practices for control of respiratory infections. *Can Fam Physician*. 2006;52:1110–6.
9. Provincial Infection Control Network of British Columbia. Infection Prevention and Control Guidelines for Providing Healthcare to Clients Living in the Community. Vancouver: Provincial Health Services Authority; 2014 Jun. Available from: https://www.picnet.ca/wp-content/uploads/PICNet_Home_and_Community_Care_Guidelines_2014_.pdf
10. World Health Organisation. Timeline of WHO’s response to COVID-19. World Health Organ. 2020 [cited 2020 Nov 10]. Available from: <https://www.who.int/news/item/29-06-2020-covidtimeline>
11. Nasser S, Blum B. Canada’s 1st ‘presumptive’ case of coronavirus found in Toronto. *CBC News*. 2020 Jan 25 [cited 2020 Nov 10]; Available from: <https://www.cbc.ca/news/canada/toronto/canada-1st-case-coronavirus-toronto-1.5440760>

12. Provincial Health Service Authority. BCCDC COVID-19 Canadian and Global Epidemiology. 2020 [cited 2020 Nov 17]. Available from: https://bccdc.shinyapps.io/covid19_global_epi_app/
13. Hutchison B, Levesque J-F, Strumpf E, Coyle N. Primary Health Care in Canada: Systems in Motion. *Milbank Q*. 2011;89:256–88.
14. Shah M, Ho J, Zhong A, Fung M, Elia M, Dang J, et al. In a Time of Need: A Grassroots Initiative in Response to PPE Shortage in the COVID-19 Pandemic. *Healthc Q*. 2020;23:9–15.
15. Lemire F, Slade S. Reflections on family practice and the pandemic first wave. *Can Fam Physician*. 2020;66:468.
16. Butler C. Here’s what it’s like inside London’s first COVID-19 assessment centre. *CBC News*. 2020 Mar 17 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/london/london-ontario-covid-19-assessment-1.5500499>
17. Daflos P. Metro Vancouver cities identifying facilities for makeshift hospitals and COVID-19 testing sites. *CTV News*. 2020 Mar 26; Available from: <https://bc.ctvnews.ca/metro-vancouver-cities-identifying-facilities-for-makeshift-hospitals-and-covid-19-testing-sites-1.4870503>
18. Hunter J, Bailey I. B.C. assumes power to take over supply chains amid COVID-19. *Globe Mail*. Online. Victoria and Vancouver; 2020 Mar 26 [cited 2020 Oct 11]; Available from: <https://www.theglobeandmail.com/canada/british-columbia/article-bc-assumes-power-to-take-over-supply-chains-amid-covid-19/>
19. Daflos P. ‘The lights are on’: B.C. doctors encourage cautious public to seek medical care when needed. *CTV News*. 2020 Apr 7 [cited 2020 Nov 10]; Available from: <https://bc.ctvnews.ca/the-lights-are-on-b-c-doctors-encourage-cautious-public-to-see-medical-care-when-needed-1.4887569>
20. Pimlott N. Hope in a global pandemic. *Can Fam Physician*. The College of Family Physicians of Canada; 2020;66:312.
21. Farooqui S. Doctors’ association says help from government not enough to survive COVID-19. *CBC News*. 2020 Apr 19 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/toronto/covid-ontario-doctors-1.5537919>
22. Quinn M. N.L. arranges financial relief for doctors signing up to fight COVID-19. *CBC News*. 2020 Apr 15 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/newfoundland-labrador/covid19-newfoundland-doctors-pay-1.5531536>
23. Bhatia RS, Falk W. Modernizing Canada’s Healthcare System Through the Virtualization of Services. *CD Howe Inst E-Brief*. 2018 [cited 2020 Nov 17]; Available from: <https://www.ssrn.com/abstract=3184876>

- 1
2
3 24. CIHI. Physician billing codes in response to COVID-19. *Can. Inst. Health Inf.* 2020 [cited
4 2020 Nov 17]. Available from: [https://www.cihi.ca/en/physician-billing-codes-in-response-to-](https://www.cihi.ca/en/physician-billing-codes-in-response-to-covid-19)
5 covid-19
6
- 7 25. Glauser W. Virtual care is here to stay, but major challenges remain. *Can Med Assoc J.*
8 2020;192:E868-9.
9
- 10 26. Oetter HM. COVID-19: Important update regarding scope of practice. *Coll. Physicians Surg.*
11 Br. Columbia. 2020 [cited 2020 Oct 9]. Available from: [https://www.cpsbc.ca/files/pdf/2020-03-](https://www.cpsbc.ca/files/pdf/2020-03-30-COVID-19-Update-regarding-scope-of-practice.pdf)
12 30-COVID-19-Update-regarding-scope-of-practice.pdf
13
14
- 15 27. Lysyshyn M. Recommendations to reduce the risk of COVID-19 in licensed residential care
16 facilities (other than Long-Term Care Facilities for seniors). Vancouver Coastal Health; 2020
17 [cited 2020 Oct 22]. Available from:
18 [https://sneezediseases.com/assets/uploads/1587064011T3cj0AB3hl0pbFIRTSoa1MdP7RFY.pd](https://sneezediseases.com/assets/uploads/1587064011T3cj0AB3hl0pbFIRTSoa1MdP7RFY.pdf)
19 f
20
21
- 22 28. Minister of Public Safety and Solicitor General. Order of the Minister of Public Safety and
23 Solicitor General, Emergency Program Act - Ministerial Order No. M105. Government of
24 British Columbia; 2020 [cited 2020 Oct 1]. Available from:
25 [https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/gdx/orders-april-10/ep_act_order_m105-2020_single_site.pdf)
26 preparedness-response-recovery/gdx/orders-april-10/ep_act_order_m105-2020_single_site.pdf
27
28
- 29 29. CBC News. Ontario to stop caregivers from working at multiple long-term care homes as
30 COVID-19 spreads like 'wildfire'. *CBC News.* 2020 Apr 14 [cited 2020 Nov 3]; Available from:
31 [https://www.cbc.ca/news/canada/toronto/ontario-to-stop-caregivers-from-working-at-multiple-](https://www.cbc.ca/news/canada/toronto/ontario-to-stop-caregivers-from-working-at-multiple-long-term-care-homes-as-covid-19-spreads-like-wildfire-1.5531920)
32 long-term-care-homes-as-covid-19-spreads-like-wildfire-1.5531920
33
- 34 30. Hedden L, Barer ML, Cardiff K, McGrail KM, Law MR, Bourgeault IL. The implications of
35 the feminization of the primary care physician workforce on service supply: a systematic review.
36 *Hum Resour Health.* 2014 [cited 2020 Nov 3];12. Available from: [https://human-resources-](https://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-12-32)
37 health.biomedcentral.com/articles/10.1186/1478-4491-12-32
38
39
- 40 31. Yin RK. Case study research: design and methods. 5th ed. Los Angeles: SAGE Publications;
41 2014.
42
- 43 32. Vancouver Coastal Health. About us. *Vanc. Coast. Health.* 2020 [cited 2020 Nov 17].
44 Available from: <http://www.vch.ca/about-us>
45
- 46 33. Eastern Health. About Us. *East. Health Nfld. Labrador.* 2019 [cited 2020 Nov 17]. Available
47 from: <http://www.easternhealth.ca/AboutEH.aspx>
48
49
- 50 34. Nova Scotia Health Authority. About Us. 2020 [cited 2020 Nov 24]. Available from:
51 <http://www.nshealth.ca/about-us>
52
- 53 35. Government of Ontario. Ontario Taking Next Steps to Integrate Health Care System. 2019
54 [cited 2020 Dec 4]. Available from: [https://news.ontario.ca/en/release/54585/ontario-taking-](https://news.ontario.ca/en/release/54585/ontario-taking-next-steps-to-integrate-health-care-system)
55 next-steps-to-integrate-health-care-system
56
57

- 1
2
3 36. Ontario Health. New Health System COVID-19 Response Structure. Government of Ontario;
4 2020 [cited 2020 Dec 4]. Available from:
5 https://www.wrh.on.ca/uploads/Coronavirus/MEMO_New_Health_Response_Structure.pdf
6
7
8 37. Deber RB, Mah CL. Case Studies in Canadian Health Policy and Management. 2nd ed.
9 Toronto: University Of Toronto Press; 2014.
10
11 38. Creswell JW. Research design: qualitative, quantitative, and mixed methods approaches. 4th
12 ed. Thousand Oaks: SAGE Publications; 2014.
13
14 39. Berg BL. Qualitative research methods for the social sciences. 2nd ed. Boston: Allyn and
15 Bacon; 1995.
16
17 40. Guest G. Applied thematic analysis. Thousand Oaks: SAGE Publications; 2012.
18
19 41. Creswell JW. Qualitative inquiry and research design: choosing among five approaches. 3rd
20 ed. Los Angeles: SAGE Publications; 2013.
21
22 42. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research
23 (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care.*
24 2007;19:349–57.
25
26 43. Green J, Thorogood N. Qualitative Methods for Health Research. 4th ed. London: SAGE
27 Publications; 2018.
28
29 44. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge
30 translation: Time for a map? *J Contin Educ Health Prof.* 2006;26:13–24.
31
32
33
34
35
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37
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TITLE PAGE

Title Development of a Primary Care Pandemic Plan Informed by In-depth Policy Analysis and Interviews with Family Physicians across Canada During COVID-19: A Qualitative Case Study Protocol

Authors

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ABSTRACT

Introduction Given the recurrent risk of respiratory illness-based pandemics, and the important roles family physicians play during public health emergencies, the development of pandemic plans for primary care are imperative. Existing pandemic plans in Canada, however, do not adequately incorporate family physicians' roles and perspectives. This policy and planning oversight has become increasingly evident with the emergence of the novel coronavirus disease, COVID-19, pandemic. This study is designed to inform the development of pandemic plans for primary care through evidence from four provinces in Canada: British Columbia, Newfoundland and Labrador, Nova Scotia, and Ontario.

Methods and analysis We will employ a multiple case study of regions in four provinces. Each case consists of a mixed-methods design comprised of: (1) a chronology of family physician roles in the COVID-19 pandemic response; (2) a provincial policy analysis; and (3) qualitative interviews with family physicians. Relevant policy and guidance documents will be identified through targeted, snowball, and general search strategies. Additionally, these policy documents will be analysed to identify gaps and/or emphases in existing policies and policy responses. Interviews will explore family physicians' proposed, actual, and potential roles during the pandemic, the facilitators and barriers they have encountered throughout, and the influence of gender on their professional roles. Data will be thematically analysed using a content analysis framework, first at the regional level and then through cross-case analyses.

Ethics and dissemination Approval for this study has been granted by Research Ethics of British Columbia, the Health Research Ethics Board of Newfoundland and Labrador, Nova Scotia Health Authority Research Ethics Board, and Western University Research Ethics Board. Findings will be disseminated via conferences and peer-reviewed publications. Evidence and lessons learned will be used to develop tools for government ministries, public health units, and family physicians for improved pandemic response plans for primary care.

Keywords Qualitative Research; Research Design; Physicians, Primary Care; Physicians, Family; Pandemics; COVID-19

Strengths and Limitations

- Our interdisciplinary research team includes experienced primary care researchers, family physicians and public health experts, allowing us to draw upon their expert knowledge in the development of study tools and the interpretation and dissemination of findings.
- The use of a multiple-case study approach will aid in making distinctions between localised issues specific to a single case and cross-cutting themes present across health regions.
- While maximum variation sampling will facilitate the recruitment of participants along a wide variety of characteristics in the selected regions and provinces, the transferability of findings may be limited by provincial variation in primary care and health policy in Canada.
- We anticipate this study will highlight gaps in current pandemic response plans and identify promising practices and key facilitators to incorporate in future pandemic response plans for family physicians.

INTRODUCTION

Family physicians have an important role to play during a pandemic, with responsibilities including sentinel surveillance, screening, testing, health education, monitoring individuals and providing follow-up care, contributing to hospital and emergency room surge capacity, and providing vaccinations.[1–5] Additionally, family physicians are expected to continue providing routine primary care to individuals through their community-based practices.[4–6] Community members who are particularly reliant on primary care to maintain their health under normal circumstances may have increased care needs during and following a pandemic.[7]

There are attributes of family practice that call for clear, well-considered pandemic preparedness plans specific to primary care. Family physicians may be the first point of contact in a community-based outbreak. This requires that family physicians deal with new diseases when there is limited information about those diseases, such as their means of transmission, effective prevention practices, and therapeutic options.[8] Family physicians must also minimise the potential risk of transmission to other community members, staff, and trainees in their clinics, as well as themselves and their families.[9]

In December 2019, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which causes COVID-19 appeared in China. On 30 January 2020, the World Health Organisation determined COVID-19 to be a public health emergency of international concern, and on 11 March 2020 they declared a pandemic.[10]

Canada confirmed its first presumptive case of COVID-19 on 25 January 2020.[11] Since then, the pandemic has been experienced differently across and within provinces. Nationally, there have been two distinct ‘waves’ of COVID-19 cases to date. The first ‘wave’, from April to June, peaked in May at nearly 70 new daily cases per million people; the second ‘wave’, which started in September 2020, has seen cases increase nationally to nearly 120 new daily cases per million people in November.[12] While some provinces have, to varying degrees, followed the national trend (e.g., British Columbia, Ontario, Quebec), others have avoided large first (e.g., Manitoba, Saskatchewan) or second (e.g., Newfoundland and Labrador, Nova Scotia) waves.[12]

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Healthcare delivery in Canada is within the jurisdiction of individual provinces, while the federal government has responsibilities for general public health guidance. Much of primary care across Canada is publicly funded through provincial health insurance while care is delivered through family physicians operating as private businesses.[13] Such provincial control facilitates contextualised responses while reinforcing provincially-varied experiences of a pandemic. This primary care model makes communication and coordination with practices challenging – particularly where physicians are not formally linked with regional or institutional networks.

In the early months of the COVID-19 pandemic in Canada, some family physicians were hesitant to screen community members in their clinics due to inadequate supplies of the appropriate personal protective equipment (PPE), improperly equipped examination rooms, and concerns regarding proper cleaning during clinic hours.[14] Eventually, designated COVID-19 assessment centres,[15,16] community-based PPE distribution,[17] and government control of supply chains [18] were implemented to address some of these concerns.

The prolonged nature of physical distancing and ‘stay-at-home’ orders have disrupted community primary care visits. Fewer community members sought primary care – either delaying or forgoing routine visits – and few individuals were willing to have in-person visits.[19] For fee-for-service practices, the decrease in service volumes reduced revenues, leaving some practices struggling to pay fixed overhead costs.[14,20–22]

Prior to the pandemic, virtual and telehealth services were only minimally offered by family physicians in Canada.[23] In response to the pandemic, synchronous virtual care has been adopted widely, facilitated by the introduction or modification of billing codes.[24] Because the need for virtual visits emerged so quickly, some physicians and community members have encountered barriers to adapting to this change due to a variety of factors such as technology and platform concerns, a lack of prior training in virtual clinical assessments and care, access to internet and private spaces, and the health literacy of individuals seeking care.[25]

Many family physicians also work in a variety of other healthcare settings that are directly affected by or involved in the pandemic response (e.g., hospitals, long-term care homes, non-profit community services).[14] Family physicians with institutional affiliations (e.g., hospital privileges) may be expected to add to surge capacity in these institutions, while other physicians may be redeployed to assessment and testing centres or to provide care beyond their traditional scope of practice.[26]

Outbreaks of COVID-19 in long-term care facilities prompted orders for residential caregivers to work in a single setting in some provinces,[27–29] though it is unclear how these orders will affect the roles of physicians as the pandemic proceeds. Family physicians, in particular those working in rural communities who provided care to multiple settings prior to the pandemic, may be particularly hard-pressed to operate community-based practices while meeting their obligations to hospitals and long-term care homes if they are limited to a single setting.

Finally, given that women make up a growing proportion of the family physician workforce,[30] and as caregiving roles evolve, pandemic plans struggled to incorporate gender considerations. Family physicians may care for children or older relatives and may therefore be unable or unwilling to participate in some or all pandemic roles due to a lack of care support, isolation protocols following exposure, and their desire to minimise exposure risk to their loved ones.

In the absence of clearly defined pandemic plans for primary care, it is uncertain how family physicians have informed their care provision and role fulfilment during the current pandemic. With multiple sources of information providing updates and guidance as the pandemic

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3 unfolds, it is possible that family physicians may hold varied and potentially competing views on
4 their responsibilities. Further, with minimal recent experience with primary care provision during
5 a pandemic, policymakers have limited evidence of family physicians' professional and personal
6 experiences with implementing the policies envisioned for them and their communities of care.
7 As deployment of primary care and COVID-19 are provincial responsibilities, Canada offers a
8 strong opportunity to conduct case studies comparing approaches and outcomes to inform future
9 pandemic planning in primary care.
10

11 In this study, we will draw upon the experiences of family physicians throughout the
12 COVID-19 pandemic to guide the ongoing response to COVID-19 and develop primary care
13 response plans for future pandemics. We anticipate this study will highlight gaps in current
14 pandemic response plans; identify variation along traits such as urban/rural location, affiliation
15 with regional organisational structures, funding models, and gender; and illustrate promising
16 practices and key facilitators. The findings will help ensure physicians are supported to fulfil
17 their roles during a pandemic and that community members' access to primary care is minimally
18 disrupted throughout all stages of a pandemic.
19
20

21 Objectives

22 This research seeks to understand the formal and informal roles of family physicians during a
23 pandemic, and the facilitators and barriers family physicians encounter in fulfilling those roles.
24 Specifically, our objectives are to:
25

- 26 1. describe the proposed, actual, and potential roles of family physicians during different
27 stages of the COVID-19 pandemic;
- 28 2. describe the facilitators and barriers to the proposed, actual, and potential family
29 physician roles during different stages of the COVID-19 pandemic;
- 30 3. describe gender differences in the roles, facilitators, and barriers of family physicians
31 during different stages of the COVID-19 pandemic; and
- 32 4. compare and contrast the proposed, actual, and potential roles of family physicians and
33 the facilitators and barriers to these family physician roles across four Canadian
34 provinces.
35

36 "Roles" in this context refers to specific tasks and/or responsibilities that family physicians are
37 asked or required to perform during the stages of the pandemic. These roles are expected to cease
38 once the pandemic is over and 'normal' operations resume.
39
40

41 METHODS

42 Overall Study design

43 This study is comprised of multiple mixed methods case studies,[31] with each case examining
44 the pandemic response of family physicians in one of four regions of Canada: the Vancouver
45 Coastal Health region in British Columbia, the Eastern Health Region of Newfoundland and
46 Labrador, the province of Nova Scotia, and Ontario Health West Region.
47
48

49 Vancouver Coastal Health is one of five regional health authorities in British Columbia,
50 providing care to a quarter of the provincial populace (1.25 million individuals) through primary,
51 residential, and acute care, public health, mental health, and substance use programmes.[32] The
52 Eastern Health Region is the largest of four regional health authorities in Newfoundland and
53 Labrador, providing a full spectrum of health services to over half of the province's residents
54 (more than 300,000 community members).[33] Nova Scotia Health provides a range of
55 healthcare through hospitals, health centres, and community-based programmes to all (nearly one
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million) residents of the province of Nova Scotia, as well as some specialised services for Atlantic Canadians.[34] The Ontario Health West region includes the areas served by the four westernmost Local Health Integration Networks, which are responsible for coordination of primary, home, and community care, community health centres, hospitals, long-term care, and mental health and addictions support for roughly 2.6 million residents.[35] The newly formed Ontario Health West agency is coordinating the COVID-19 response in the region.[36] These regions, while pragmatically representing the locations of our pre-existing research team, have variation in their numbers of COVID-19 cases and deaths, include urban and rural communities, links to acute care, and represent varied regional structures and primary care funding and practice models that are characteristic of primary care models and reforms implemented across Canada.

Each case study will consist of a mixed-methods design, including: (1) a chronology of family physician roles in the COVID-19 pandemic response; (2) a provincial policy analysis; and (3) qualitative interviews with family physicians. We will compare and contrast findings across cases in order to identify comprehensive themes, shared lessons learned, and promising practices.

Chronology

Approach

Each provincial team will compile a chronology to describe key milestones in the COVID-19 pandemic and family physicians' roles and responsibilities in each pandemic stage. We will also identify policies that influenced how family physicians performed pandemic-related roles. A comprehensive document review of grey literature including federal, provincial, and regional health policy documents, government briefings and news reports, and policies and communications from health professional organisations (e.g., provincial colleges of physicians and surgeons and colleges of family medicine, Canadian Medical Association, College of Family Physicians of Canada), will be used to inform the chronology and a policy analysis.

Relevant documents will be identified using a combination of targeted and general search strategies. Through our targeted search, we will review government, public health and health professional organisation, health institution, and medical school websites throughout all four regions. These targeted websites will facilitate snowball searches of linked and/or referenced websites, documents, and resources. As part of a general search, we will conduct ongoing online searches using the following terms and logic: province or region name or abbreviation (e.g., "BC" or "British Columbia" or "VCH" or "Vancouver Coastal Health"); and "covid" or "COVID-19" or "coronavirus"; and "primary care" or "family physician" or "family doctor" or "general practitioner".

In the chronology, we will note the progression of the pandemic (e.g., number of cases, number of deaths); declarations, actions, and ministerial orders (e.g., declarations of a pandemic and/or public health emergency, closures, stay-at-home orders, essential work definitions, re-openings); and directives, supports, programmes, and guidance for community members, institutions, and healthcare workers. While the primary focus for each provincial study team will be their selected health region, we will also document pivotal milestones and policies at the provincial, national, and international levels to provide the appropriate context for the chronologies.

Chronologies will be verified by public health, family physicians, and primary care professionals in each region to ensure completeness, establish face validity, and identify missing

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3 events or data sources. Provided that the project will take place throughout the current COVID-
4 19 pandemic, the document review will be ongoing and verification will occur at multiple points
5 in the study.

6 We will use the chronologies to identify the distinct stages in the pandemic response in
7 each region and the proposed roles of family physicians outlined in pandemic plans and guiding
8 documents. The chronology will be used as a common frame of reference in the qualitative
9 interviews, helping to create an initial portrait of the actual role and reveal facilitators and
10 barriers encountered by family physicians.
11

12 **Policy analysis**

13 The document search, criteria, and review used to develop the regional chronologies will also
14 form the basis for provincial policy analyses that will characterise the policies that have
15 influenced family physicians throughout the pandemic. These analyses will identify gaps and
16 emphases within pre-existing policies and supports and those that emerged in response to
17 COVID-19.
18

19 To be included in the policy analysis, a policy must relate (directly or indirectly) to the
20 roles of family physicians and/or primary care practices at any point during the COVID-19
21 pandemic. Policies may be pre-existing, a modification of existing policy, or new policy in
22 response to the COVID-19 pandemic. The policy may apply to any sites where family physicians
23 routinely work, including office-based care, long-term care, hospitals, home, or walk-in clinics,
24 but must pertain specifically to family physicians or their practice staff and to activities at all
25 locations (rather than a single location).
26

27 Each policy from the chronology document review will be assessed for inclusion and
28 coded according to the following:
29

- 30 • the jurisdiction targeted by the policy (e.g., region, province, national, international, or
31 other);
- 32 • the reported start and end date (where applicable) of the policy;
- 33 • the pandemic stage when the policy was issued;
- 34 • a summary of the policy, including a description of the corresponding family physician
35 role to which the policy relates;
- 36 • the type of organisation issuing the policy (e.g., government, public health agency,
37 medical professional association, health region/institution) and the level at which the
38 organisation operates (e.g., international, national, provincial, regional);
- 39 • the level of the policy's application (e.g., international, national (i.e., to all Canadian
40 residents), provincial (i.e., to all resident of a province) etc.); and
- 41 • the type of policy instrument: 'do nothing', 'exhortation', 'expenditure', 'regulation', and
42 'public ownership'.^[37]
43

44 Each policy will be coded using a Qualtrics (SAP Software Solutions) survey. An initial set of
45 twenty policies (five from each case) will be selected randomly and completed by all coders to
46 identify additional codes, coding categories, to clarify instructions, ensure consistent application
47 of procedures, and resolve any coding disputes. Frequencies and cross-tabulations will be
48 derived to describe the types of policy instruments issued in each jurisdiction, by different
49 organisations, and to support the different roles of family physicians.
50

51 **Qualitative interviews**

52 Following the development and verification of initial provincial chronologies and in parallel with
53 the policy analysis, we will conduct semi-structured qualitative interviews with family
54

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3 physicians working in each study region. Interviews will be 45 to 60 minutes in length and, due
4 to the ongoing COVID-19 pandemic, will be conducted by Zoom (Zoom Video Communications
5 Inc.) or telephone, depending on participant preference. With the permission of participants,
6 interviews will be audio-recorded and transcribed verbatim and notes will be taken for analysis.
7

8 For each interview, participants will be provided a copy of the region-specific chronology
9 and we will ask that they describe for each pandemic stage: the facilitators and barriers they
10 experienced in performing the proposed roles outlined in the chronology; their actual role and the
11 facilitators and barriers they encountered in its fulfilment; the potential roles that family
12 physicians could have filled at each stage of the pandemic, as well as the facilitators and barriers
13 to fulfilment; and how their gender influences their proposed, actual, and potential roles as
14 family physicians during the pandemic. Interviews will involve background questions on
15 participants' gender, years of practice, work settings, clinic roles, and the demographics of their
16 practice populations.
17

18 Given the dynamic nature of the pandemic and the evolving roles of family physicians,
19 and that data collection will be ongoing as the pandemic persists, each participant will be asked
20 if we may contact them for a potential second interview of a similar format.
21

22 Study sample and recruitment

23
24 Consistent with maximum variation sampling,[38] we will recruit family physicians along a wide
25 range of characteristics, such as family physicians with and without an academic appointment, of
26 different genders, from different primary care funding and practice models, with and without
27 team/regional health authority affiliations, and with varied community demographics. We
28 anticipate recruiting approximately 24 to 30 physicians in each region (around 120 overall);
29 however, we will continue recruiting until we have sufficient data to allow for rigorous analysis
30 and to accurately represent the experiences of family physicians with shared characteristics as
31 noted above (i.e., saturation).
32

33 To be included in the study, family physicians must have been licensed to practice in
34 2020 and be either clinically active or eligible to be clinically active in the applicable region of
35 the study province during the pandemic. Eligibility to be clinically active is intended to include
36 participants who may have changed their work plans in response to the pandemic (e.g., return
37 from parental, medical, or other types of leave or travel). We will include family physicians who
38 work solely in institutional settings, including long-term care facilities and hospitals.
39

40 We will exclude post-graduate medical residents, as well as international medical
41 graduates permitted to practice solely during the pandemic since the latter's roles may be
42 influenced by educational or licensing policies. Physicians in solely academic, research, or
43 administrative roles will also be excluded.
44

45 To recruit family physicians, a research assistant will email or fax a study invitation to
46 prospective participants providing information about the study and requesting their participation
47 in an interview. Family physicians will be identified through faculty lists, lists of teams and
48 practices (e.g., family health teams, community health centres), privileging lists, and provincial
49 College of Physicians and Surgeons' physician search portals. Due to provincial variance in
50 access to lists of family physicians, we will also advertise through professional organisations'
51 newsletters, social media posts, and employ third-party recruitment (i.e., snowballing). In the
52 case of snowballing, we will encourage participants to share our study and contact information
53 with their professional networks, allowing interested physicians to initiate contact with the study
54 team to obtain further details, confirm eligibility, and schedule an interview.
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Analysis

The interview recordings will be transcribed verbatim, proofread, and validated for accuracy with the participants as necessary. Field notes will also be taken during interviews by the researchers. All data will be thematically analysed for themes related to the research objectives using a content analysis framework. Employing a comparative analysis approach, at least two members of the research team will independently read each transcript and the interviewer's corresponding notes to identify key themes and develop a robust coding framework around which further analysis will be structured.[39,40] A codebook will be developed to list and define all codes, to aid in the consistency of their application.

Through subsequent iterations of the coding process, we will move from more descriptive to more analytic codes, developing broader conceptual themes from the interview data. The researchers will determine codes for all data and harmonise the key themes. Analysis of transcripts will then be conducted using NVivo 12 (QSR International) software for qualitative data analysis.[39,40] Descriptive statistics will be extracted from the demographic data and used to summarise the characteristics of the study participants.

Cross-case analysis

As results from each regional case – including chronology, policy analysis and interviews – emerge, we will compare and contrast findings across cases to identify comprehensive themes, shared lessons learned, and promising practices. The use of a multiple-case study approach facilitates the distinction between localised issues specific to a single case and cross-cutting themes present across multiple health regions.[31] Given the differences in primary healthcare systems across Canadian provinces, cross-case analyses will also allow us to examine plausible or rival explanations by contrasting responses and exploring varying contextual conditions in the four cases.

Study rigour

To enhance the rigour of this multiple-case study, we will draw upon evidence gathered in the chronology, policy analysis, and qualitative interviews which will be conducted using consistent methods across all four cases.[31,41] We will prepare interview guides and pre-test questions, document our interviewing and transcription protocols, use experienced interviewers, and member-check with the participants during interviews. Further, our interdisciplinary team includes family physicians and public health experts, allowing us to draw on prior expert knowledge in the development of our research tools and the interpretation of our results.[31]

The research will also be conducted and presented in accordance with the consolidated criteria for reporting qualitative research (COREQ).[42] We will keep detailed records of the interviews (i.e., audio recordings, transcripts), field notes, drafts of the coding template, and document coding disagreements and their resolutions. We will look for negative cases and encourage and document self-reflection among all members of the research team. In our dissemination of findings, we will provide thick descriptions[43] and use illustrative quotes.

Patient or public involvement

Neither patients nor the public have been involved in the development of this research.

ETHICS AND DISSEMINATION

Ethics approval

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3 We have obtained approval from the research ethics boards at Simon Fraser University and the
4 University of British Columbia (through harmonised Research Ethics of British Columbia), the
5 Health Research Ethics Board of Newfoundland and Labrador, Nova Scotia Health, and the
6 University of Western Ontario.
7

8 **Informed consent**

9

10 The research coordinator will contact interested participants by email or fax, provide them with
11 study information and the study consent form, and ask them to complete and return the form. The
12 research coordinator and principal investigator in each region are available to answer any
13 questions and will only proceed with an interview once written consent has been received.
14 Individuals may refuse to participate, refuse to answer any questions, or withdraw from the study
15 at any point up until their data have been combined with other participants' for analysis.
16 Participants do not waive any legal rights by signing the consent form.
17

18 **Confidentiality**

19

20 All measures will be taken to reduce the risk of a privacy breach and maintain participant
21 confidentiality. Audio recordings will be kept on secure storage provided by the affiliated
22 academic institutions until they have been transcribed and the transcripts verified by the
23 interviewer and/or participant.
24

25 Participants' full name and contact information will be used to schedule their interview
26 and additional demographic information, such as gender and type of practice will be used to
27 ensure variation in interview participants, however this information will be kept separate from
28 audio files and transcribed interviews by using unique participant codes. The master list of
29 participants' names and their unique codes will be kept separate from study data and will not be
30 shared with other regional study teams. All other identifying information that may be mentioned
31 will be obscured during the transcription process. Participants' names will not be used in any
32 published findings.
33

34 **Knowledge translation**

35

36 In alignment with an integrated knowledge translation model,[44] this project was motivated by
37 conversations with physicians and health system administrators during the early stages of the
38 pandemic. Family physicians voiced questions and concerns about implementing guidelines from
39 local public health organisations and emphasised the necessity of a coordinated pandemic
40 response plan for primary care. To maintain this integration of knowledge users throughout the
41 study, and to ensure that our data collection, analysis, and dissemination is reflective of family
42 physicians' perspectives and information needs, our team includes community-based family
43 physicians as co-investigators and collaborators within each region.
44

45 We will disseminate our findings throughout the twelve-month project. Emergent
46 findings will be shared through the communication channels (e.g., websites, newsletters) of the
47 four principal investigators and through our study team's knowledge user and collaborator
48 partners. Results will provide government ministries, public health units, other health
49 organisations, and family physicians with evidence and tools to better inform their ongoing and
50 future pandemic responses. We will prepare articles for publication in peer-reviewed open-access
51 journals, write op-eds, conduct media interviews, participate in online discussions (e.g.
52 healthydebate.ca), and employ social media. We will also share findings through regional,
53 national, and international conferences both virtually and in-person, once current pandemic-
54 related travel restrictions are lifted.
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4 Although, there are many other healthcare providers in primary healthcare, this study
5 focuses on family physicians because physician-led practices remain the most prevalent form of
6 primary healthcare organisation in Canada. Similarly, we recognise that our project is a single,
7 albeit important, step in the creation of primary care pandemic preparedness plans which will
8 ultimately require the engagement of a broader range of health professionals, and government,
9 professional, and regional organisations.
10

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18 Primary Care study.
19
20

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24 EGM, LM, DR, RB, TL, EV, SLS, RM, MM, TRF, EW, JBB, PSG, BR, GS, JW;
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26 TL, EV, SLS, RM, MM, TRF, EW, JBB, PSG, BR, GS, JW; Supervision: MM, LH, EGM, JL;
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29
30

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33
34

35 **Competing interests** None declared.
36
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38 **Ethics approval** This study has been approved by the Western University Research Ethics
39 Board (Project ID 116315), Nova Scotia Health Authority Research Ethics Board (File No.
40 1026085), Research Ethics British Columbia (No. H20-02998), and Health Research Ethics
41 Board of Newfoundland and Labrador (No. 2020.251).
42
43

44 **Patient consent for publication** Not required.
45

46 **Provenance and peer review** Not commissioned; externally peer reviewed.
47

48 **Data availability** Datasets have not yet been generated or analysed for this study and are
49 therefore not available.
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REFERENCES

1. Mazowita G. Role for primary care in epidemic surge capacity. *Can Fam Physician*. 2006;52:951.
2. Vancouver Coastal Health. The Regional Pandemic Outbreak Response Plan. Vancouver: Vancouver Coastal Health; 2018 Sep. Available from: <https://sneezediseases.com/assets/uploads/1578342909B2QYPNFREK5cN5EDsglaGYPKRX9A.pdf>
3. Public Health Agency of Canada. COVID-19 pandemic guidance for the health care sector. 2020 [cited 2020 Nov 6]. Available from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/covid-19-pandemic-guidance-health-care-sector.html#a322>
4. Ministry of Health. Planning Guide for Respiratory Pathogen Season. Toronto: Government of Ontario; 2019 Oct. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/flu/docs/planning_guide_rps.pdf
5. Public Health Agency of Canada. Canadian pandemic influenza preparedness: planning guidance for the health sector. 2018. Available from: http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2019/19-06/publications.gc.ca/collections/collection_2019/aspc-phac/HP40-144-2018-eng.pdf
6. Harvey BJ. The issue of public health. *Can Fam Physician*. 2009;55:1057.
7. Runkle JD, Brock-Martin A, Karmaus W, Svendsen ER. Secondary Surge Capacity: A Framework for Understanding Long-Term Access to Primary Care for Medically Vulnerable Populations in Disaster Recovery. *Am J Public Health*. 2012;102:e24–32.
8. Hogg W, Huston P, Martin C, Saginur R, Newbury A, Vilis E, et al. Promoting best practices for control of respiratory infections. *Can Fam Physician*. 2006;52:1110–6.
9. Provincial Infection Control Network of British Columbia. Infection Prevention and Control Guidelines for Providing Healthcare to Clients Living in the Community. Vancouver: Provincial Health Services Authority; 2014 Jun. Available from: https://www.picnet.ca/wp-content/uploads/PICNet_Home_and_Community_Care_Guidelines_2014_.pdf
10. World Health Organisation. Timeline of WHO’s response to COVID-19. World Health Organ. 2020 [cited 2020 Nov 10]. Available from: <https://www.who.int/news/item/29-06-2020-covidtimeline>
11. Nasser S, Blum B. Canada’s 1st ‘presumptive’ case of coronavirus found in Toronto. *CBC News*. 2020 Jan 25 [cited 2020 Nov 10]; Available from: <https://www.cbc.ca/news/canada/toronto/canada-1st-case-coronavirus-toronto-1.5440760>

12. Provincial Health Service Authority. BCCDC COVID-19 Canadian and Global Epidemiology. 2020 [cited 2020 Nov 17]. Available from: https://bccdc.shinyapps.io/covid19_global_epi_app/
13. Hutchison B, Levesque J-F, Strumpf E, Coyle N. Primary Health Care in Canada: Systems in Motion. *Milbank Q*. 2011;89:256–88.
14. Lemire F, Slade S. Reflections on family practice and the pandemic first wave. *Can Fam Physician*. 2020;66:468.
15. Butler C. Here’s what it’s like inside London’s first COVID-19 assessment centre. *CBC News*. 2020 Mar 17 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/london/london-ontario-covid-19-assessment-1.5500499>
16. Daflos P. Metro Vancouver cities identifying facilities for makeshift hospitals and COVID-19 testing sites. *CTV News*. 2020 Mar 26; Available from: <https://bc.ctvnews.ca/metro-vancouver-cities-identifying-facilities-for-makeshift-hospitals-and-covid-19-testing-sites-1.4870503>
17. Shah M, Ho J, Zhong A, Fung M, Elia M, Dang J, et al. In a Time of Need: A Grassroots Initiative in Response to PPE Shortage in the COVID-19 Pandemic. *Healthc Q*. 2020;23:9–15.
18. Hunter J, Bailey I. B.C. assumes power to take over supply chains amid COVID-19. *Globe Mail*. Online. Victoria and Vancouver; 2020 Mar 26 [cited 2020 Oct 11]; Available from: <https://www.theglobeandmail.com/canada/british-columbia/article-bc-assumes-power-to-take-over-supply-chains-amid-covid-19/>
19. Daflos P. ‘The lights are on’: B.C. doctors encourage cautious public to seek medical care when needed. *CTV News*. 2020 Apr 7 [cited 2020 Nov 10]; Available from: <https://bc.ctvnews.ca/the-lights-are-on-b-c-doctors-encourage-cautious-public-to-see-medical-care-when-needed-1.4887569>
20. Pimlott N. Hope in a global pandemic. *Can Fam Physician*. The College of Family Physicians of Canada; 2020;66:312.
21. Farooqui S. Doctors’ association says help from government not enough to survive COVID-19. *CBC News*. 2020 Apr 19 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/toronto/covid-ontario-doctors-1.5537919>
22. Quinn M. N.L. arranges financial relief for doctors signing up to fight COVID-19. *CBC News*. 2020 Apr 15 [cited 2020 Nov 3]; Available from: <https://www.cbc.ca/news/canada/newfoundland-labrador/covid19-newfoundland-doctors-pay-1.5531536>
23. Bhatia RS, Falk W. Modernizing Canada’s Healthcare System Through the Virtualization of Services. *CD Howe Inst E-Brief*. 2018 [cited 2020 Nov 17]; Available from: <https://www.ssrn.com/abstract=3184876>

- 1
2
3 24. CIHI. Physician billing codes in response to COVID-19. *Can. Inst. Health Inf.* 2020 [cited
4 2020 Nov 17]. Available from: [https://www.cihi.ca/en/physician-billing-codes-in-response-to-](https://www.cihi.ca/en/physician-billing-codes-in-response-to-covid-19)
5 covid-19
6
- 7 25. Glauser W. Virtual care is here to stay, but major challenges remain. *Can Med Assoc J.*
8 2020;192:E868-9.
9
- 10 26. Oetter HM. COVID-19: Important update regarding scope of practice. *Coll. Physicians Surg.*
11 *Br. Columbia.* 2020 [cited 2020 Oct 9]. Available from: [https://www.cpsbc.ca/files/pdf/2020-03-](https://www.cpsbc.ca/files/pdf/2020-03-30-COVID-19-Update-regarding-scope-of-practice.pdf)
12 30-COVID-19-Update-regarding-scope-of-practice.pdf
13
14
- 15 27. Lysyshyn M. Recommendations to reduce the risk of COVID-19 in licensed residential care
16 facilities (other than Long-Term Care Facilities for seniors). Vancouver Coastal Health; 2020
17 [cited 2020 Oct 22]. Available from:
18 [https://sneezediseases.com/assets/uploads/1587064011T3cj0AB3hl0pbFIRTSoa1MdP7RFY.pd](https://sneezediseases.com/assets/uploads/1587064011T3cj0AB3hl0pbFIRTSoa1MdP7RFY.pdf)
19 [f](https://sneezediseases.com/assets/uploads/1587064011T3cj0AB3hl0pbFIRTSoa1MdP7RFY.pdf)
20
21
- 22 28. Minister of Public Safety and Solicitor General. Order of the Minister of Public Safety and
23 Solicitor General, Emergency Program Act - Ministerial Order No. M105. Government of
24 British Columbia; 2020 [cited 2020 Oct 1]. Available from:
25 [https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-](https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/gdx/orders-april-10/ep_act_order_m105-2020_single_site.pdf)
26 preparedness-response-recovery/gdx/orders-april-10/ep_act_order_m105-2020_single_site.pdf
27
28
- 29 29. CBC News. Ontario to stop caregivers from working at multiple long-term care homes as
30 COVID-19 spreads like 'wildfire'. *CBC News.* 2020 Apr 14 [cited 2020 Nov 3]; Available from:
31 [https://www.cbc.ca/news/canada/toronto/ontario-to-stop-caregivers-from-working-at-multiple-](https://www.cbc.ca/news/canada/toronto/ontario-to-stop-caregivers-from-working-at-multiple-long-term-care-homes-as-covid-19-spreads-like-wildfire-1.5531920)
32 long-term-care-homes-as-covid-19-spreads-like-wildfire-1.5531920
33
- 34 30. Hedden L, Barer ML, Cardiff K, McGrail KM, Law MR, Bourgeault IL. The implications of
35 the feminization of the primary care physician workforce on service supply: a systematic review.
36 *Hum Resour Health.* 2014 [cited 2020 Nov 3];12. Available from: [https://human-resources-](https://human-resources-health.biomedcentral.com/articles/10.1186/1478-4491-12-32)
37 health.biomedcentral.com/articles/10.1186/1478-4491-12-32
38
39
- 40 31. Yin RK. *Case study research: design and methods.* 5th ed. Los Angeles: SAGE Publications;
41 2014.
42
- 43 32. Vancouver Coastal Health. About us. *Vanc. Coast. Health.* 2020 [cited 2020 Nov 17].
44 Available from: <http://www.vch.ca/about-us>
45
- 46 33. Eastern Health. About Us. *East. Health Nfld. Labrador.* 2019 [cited 2020 Nov 17]. Available
47 from: <http://www.easternhealth.ca/AboutEH.aspx>
48
49
- 50 34. Nova Scotia Health Authority. About Us. 2020 [cited 2020 Nov 24]. Available from:
51 <http://www.nshealth.ca/about-us>
52
- 53 35. Government of Ontario. Ontario Taking Next Steps to Integrate Health Care System. 2019
54 [cited 2020 Dec 4]. Available from: [https://news.ontario.ca/en/release/54585/ontario-taking-](https://news.ontario.ca/en/release/54585/ontario-taking-next-steps-to-integrate-health-care-system)
55 next-steps-to-integrate-health-care-system
56
57

- 1
2
3 36. Ontario Health. New Health System COVID-19 Response Structure. Government of Ontario;
4 2020 [cited 2020 Dec 4]. Available from:
5 https://www.wrh.on.ca/uploads/Coronavirus/MEMO_New_Health_Response_Structure.pdf
6
7
8 37. Deber RB, Mah CL. Case Studies in Canadian Health Policy and Management. 2nd ed.
9 Toronto: University Of Toronto Press; 2014.
10
11 38. Creswell JW. Research design: qualitative, quantitative, and mixed methods approaches. 4th
12 ed. Thousand Oaks: SAGE Publications; 2014.
13
14 39. Berg BL. Qualitative research methods for the social sciences. 2nd ed. Boston: Allyn and
15 Bacon; 1995.
16
17 40. Guest G. Applied thematic analysis. Thousand Oaks: SAGE Publications; 2012.
18
19 41. Creswell JW. Qualitative inquiry and research design: choosing among five approaches. 3rd
20 ed. Los Angeles: SAGE Publications; 2013.
21
22 42. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research
23 (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*.
24 2007;19:349–57.
25
26 43. Green J, Thorogood N. Qualitative Methods for Health Research. 4th ed. London: SAGE
27 Publications; 2018.
28
29 44. Graham ID, Logan J, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge
30 translation: Time for a map? *J Contin Educ Health Prof*. 2006;26:13–24.
31
32
33
34
35
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38
39
40
41
42
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