Surge capacity and practice management challenges of Canadian family physicians during COVID-19: a qualitative study

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# Abstract

**Background** Planning for surge capacity, that is, the ability of a health service to expand beyond normal capacity and meet an increased demand for clinical care, is an essential component of public health emergency preparedness. During the COVID-19 pandemic, family physicians (FPs) were called upon to provide surge capacity in settings such as hospital units and emergency departments while also maintaining their primary care responsibilities. Most research reports on projection models, hospital settings, or the use of virtual care, with limited focus on the firsthand experiences of FPs in this role. To address this gap, this study examines the experiences of FPs and their roles in supporting surge capacity during the COVID-19 pandemic.

**Methods** As part of a mixed methods, multiple case study, we conducted semi-structured interviews with FPs between October 2020 and June 2021 across four Canadian provinces (British Columbia, Ontario, Nova Scotia, New-foundland and Labrador). During the interviews, FPs were asked about the roles they assumed during the different stages of the pandemic and the factors that impacted their ability to fulfil these roles. Interviews were transcribed verbatim and a thematic analysis approach was employed to identify recurring themes.

**Results** We interviewed a total of 68 FPs across the four provinces and identified two overarching themes: (1) mechanisms used to create surge capacity by FPs, and (2) key considerations for an organized surge capacity program. During the pandemic, surge capacity was achieved by extending FP working hours, expanding the FP workforce, and redeploying FPs to new roles and settings. The effective implementation of FP surge capacity requires organized communication and coordination mechanisms, policies to clarify scope of practice during redeployment, training and mentorship related to new redeployment roles, FPs holding hospital privileges, and policies that help to preserve primary care capacity.

**Conclusions** FPs make critical contributions to surge capacity but require structured support to balance their redeployment roles with their ongoing primary care responsibilities. Ensuring adequate coverage for their practices and employing strong communication and coordination mechanisms are essential for maintaining high-quality care and managing the strain on FPs and the health system during public health emergencies.

Keywords Primary care, Family physician, Surge capacity, Redeployment, Workforce, COVID-19, Qualitative research

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## Background

Planning for surge capacity is a critical component of pandemic and health disaster preparedness [1-3]. Surge capacity refers to the ability of a health service to expand beyond normal capacity to meet an increased demand for clinical care [1, 4]. During the first waves of the COVID-19 pandemic, primary care providers in many countries, including Canada, contributed to surge capacity [5-7].

In Canada, primary care is generally delivered by family physicians (FPs) who are independent business owners or sub-contractors in provincially-run health systems with universal health insurance programs. At the provincial level, FPs work in a variety of funding and practice models that have resulted from over two decades of incremental, voluntary reforms [8]. Payment reforms have introduced modifications and/or alternatives to feefor-service models, often linked to formal patient enrolment; however, the majority of FPs in Canada are paid by fee-for-service. Practice model reforms have led to the creation of larger numbers of FPs in group practices, expansion of interdisciplinary teams and the number of health professionals involved in teams, networks of practices, and the adoption of technologies such as electronic medical records.

Given the breadth of their training and their wide scope of practice, FPs are called upon to provide surge capacity in many settings, including hospital units and emergency departments [9-12]. Canadian and international pandemic preparedness documents also highlight the importance of maintaining continuity of critical primary care operations, including the delivery of routine preventative care and chronic disease management during a public health crisis or pandemic [13-15]. These conflicting priorities create unique challenges for the FP workforce, requiring them to balance the immediate demands of contributing to surge capacity with the ongoing need to provide continuous, comprehensive care to their patients.

Existing research on FP contributions to surge capacity is limited, with most studies focusing on the use of simulation models to project FP availability, redeployment as it pertains specifically to hospital settings, or the adoption of virtual care as a method to reduce the number of patients seen in-person [16–19]. To address this gap, we conducted qualitative interviews to explore the experiences of FPs across four Canadian provinces during the COVID-19 pandemic. Unlike many narrative summaries that focus on single sites or provide expert opinions on primary care's role in surge capacity [6, 11, 16, 20], our study aims to provide empirical evidence to inform primary care's role in pandemic preparedness [21] and identifies strategies for strengthening primary care provider contributions to surge capacity during pandemics and other health emergencies.

#### Methods

As part of a larger mixed methods multiple case study [22], we conducted qualitative interviews with FPs in four Canadian provinces between October 2020 and June 2021. We used a pragmatic approach and a qualitative descriptive design [23]. Eligible FPs held a license to practice in any of the following four health services regions: the Vancouver Coastal region in British Columbia (BC), the Ontario (ON) Health West region, the province of Nova Scotia (NS), or the Eastern Health region of Newfoundland and Labrador (NL).

#### Recruitment

We included FPs in comprehensive and focused practices, including those who worked in community-based clinics, hospitals, hospices, and long-term care homes. We excluded trainees or FPs working in exclusively nonclinical roles (e.g., academic, research, or administrative). Research assistants in each province used publicly available online sources, including faculty lists, regional family practice lists, privileging lists, and physician search portals managed by provincial medical regulators to send study invitations to FPs. We publicized the study through postings in medical organizations' newsletters and on social media. Where permitted by ethics boards, we also used snowball sampling. We used maximum variation sampling [23] and included FPs across a wide range of characteristics, including participant gender, practice and compensation model (e.g., fee-for-service, alternative payment plans, etc.), practice location (e.g., rural, urban, etc.), and academic and hospital affiliation. We continued to recruit FPs until we reached data sufficiency (i.e., had sufficient data to support high quality analysis and interpretation of the data) [24]. We determined data sufficiency by consulting with research assistants in each province who were involved in conducting interviews, as well as a review of field notes and summaries of participant characteristics.

## Data collection

In each interview, we asked participants about the roles they assumed during different stages of the pandemic and the factors that impacted their ability to fulfil these roles, including in the event of emergency departments and hospitals being overwhelmed by COVID-19 cases (see Appendix 1). In addition, at each stage, we also probed about FPs' roles at different facilities. We also gathered data on demographic and practice characteristics. We pre-tested the chronology (i.e., description of different stages of the pandemic response) and interview questions with FPs on the research team to ensure that questions were understandable and relevant. We tailored the interview guide to account for the regional differences in health systems and pandemic stage and response. In each region, a single interviewer (either an investigator or research assistant) conducted each interview. We conducted interviews by Zoom (Zoom Video Communications Inc.) or by telephone, depending on participant preference. We audio-recorded interviews and transcribed verbatim. Interviewers created field notes to aid in data analysis.

## Data analysis

Using thematic analysis [24, 25], two members of the research team in each province independently read two to three transcripts from their region to identify key words and ideas to create a preliminary coding template. Each team then used their template to code a set of four transcripts (one from each province). In a series of cross-provincial meetings, we compared coding and refined label definitions to form a unified coding template; we resolved conflicts through discussion and consensus. Each regional team then used the unified template to code all transcripts and field notes from their region. We used NVivo software (QSR International) to code the data and generate node reports. We then reviewed the node reports related to redeployment to identify key ideas and concepts (i.e., themes) from the data, sorted the quotations along these themes, and discussed the meanings and relationships between the themes [26]. We used counts and proportions to summarize participants' demographic and practice characteristics.

#### **Rigour and positionality**

We took several steps to promote methodological rigor [23, 25, 26], including using trained interviewers, pretesting interview questions, documenting processes, and confirming meaning with participants during interviews. We identify negative cases and use illustrative quotes and rich description to provide context and meaning.

We are an interdisciplinary research team with expertise in family medicine, primary care nursing, health services and policy research, epidemiology, social work, and anthropology. Our team included current and former administrators in academic and hospital-based family medicine departments who provided practical expertise in data collection and interpretation. We encouraged reflection and discussed findings and manuscript drafts to arrive at a description and interpretation of findings that reflects the data and our collective perspectives.

#### **Ethical considerations**

We received ethics approval from the research ethics boards at Simon Fraser University, the University of British Columbia, Western University, Nova Scotia Health, and the Health Research Ethics Board of Newfoundland and Labrador. We obtained informed consent from participants before scheduling interviews.

## Results

Our sample of 68 FPs included 41 women, 46 FPs who were paid through alternate payment plans (i.e., non-fee-for-service), and 20 FPs who worked in a rural community (Table 1). On average, participants had almost 17 years of experience practicing as an FP.

We identified two overarching themes: (1) mechanisms used to create surge capacity by FPs, and (2) key considerations for an organized surge capacity program (Table 2). These themes were found across all four provinces in the study. We did not find differences in themes by gender or practice type.

## Mechanisms used to create surge capacity by FPs

Participants across all regions in our study described three general mechanisms employed to increase workforce capacity: (1) increasing work hours, (2) increasing the pool of working physicians, and (3) redeployment. The three approaches were used alone and in combination.

#### Increasing work hours

Many participants who worked full-time described increasing their existing work hours: "you saw a lot of people coming out of the woodwork to just start picking up extra shifts all the time" [ON11]. A participant noted that she would be willing to work more hours each week: "I could probably add an extra day or two just giving immunizations or whatever role they could see for me in the next six months for sure. I would be happy to work a Saturday or a Sunday" [ON17]. However, not all FPs were willing to work extra hours; as a participant explained, he was already busy with existing work commitments: "I just have said no because I'm so busy" [ON19]. Other participants suggested that FPs who were in part-time or temporary positions without regular patients could work additional hours: "family doctors that don't have practices—so people who are locuming or people who work the walk-in clinics, or people that aren't attached to people that they're responsible for every day" [NS06].

## Increasing the pool of working physicians

Participants described different mechanisms to increase the pool of working FPs. They noted how

	British Columbia n = 15 n (%)	Ontario n = 20 n (%)	Nova Scotia n=21 n (%)	Newfoundland and labrador n = 12 n (%)	Total n=68 n (%)
Gender <sup>a</sup>					
Man	4 (26.7)	10 (50)	9 (42.9)	4 (33.3)	27 (39.7)
Woman	11 (73.3)	10 (50)	12 (57.1)	8 (66.7)	41 (60.3)
Practice type					
Fee-for-service	6 (40)	4 (20)	7 (33.3)	5 (41.7)	22 (32.4)
Alternative payment plan <sup>b</sup>	9 (60)	16 (80)	14 (66.7)	7 (58.3)	46 (67.6)
Hospital affiliation					
No	3 (20)	5 (25)	6 (28.6)	5 (41.7)	19 (27.9)
Yes	12 (80)	15 (75)	15 (71.4)	7 (58.3)	49 (72.1)
Community size <sup>c</sup>					
Rural	0 (0)	9 (45)	8 (38.1)	3 (25)	20 (29.4)
Small urban	0 (0)	1 (5)	0 (0)	0 (0)	1 (1.5)
Urban	15 (100)	8 (40)	13 (61.9)	8 (66.7)	44 (64.7)
Mix	0 (0)	2 (10)	0 (0)	1 (8.3)	3 (4.4)
Years in practice (mean)	16.9	18.7	15.4	16.3	16.9

## Table 1 Characteristics of study participants

<sup>a</sup> Gender was asked as an open-ended question

<sup>b</sup> Alternate payment includes all non-fee-for-service or enhanced fee-for-service payment types

<sup>c</sup> Rural =  $\leq$  10,000 population, small urban = 10,000–99,999 population, urban =  $\geq$  100,0000

Table 2 Summary of major themes and sub-themes

#### Redeployment

Theme 1: Mechanisms used to create surge capacity by FPs

- Increasing work hours
- Increasing the pool of working physicians
- Redeployment

# Theme 2: Key considerations for an organized surge capacity program

- Effective communication and coordination
- Working within scope of practice
- Training and mentorship
- Hospital privileges
- Preserving primary care capacity

retired colleagues returned to work to assist with workforce capacity when there was a need: "I have two physicians who retired that basically came out and took on active roles" [NS19] and "there's a few retired docs... they picked up a lot of shifts" [ON11]. Medical trainees were also used to bolster the number of available physicians: "Our residents could be...pulled into the hospitals too, and re-deployed" [ON08]. In rural communities, participants noted that they did not have a pool of physicians to draw upon since FPs were already working in multiple settings: "... the only reason our hospitals function is because of the family physicians that we have. There's nowhere to mobilize them to because they're already doing everything... There's nowhere to pull from" [NS21]. Given the breadth of their scope of practice, participants described how they were asked to work in many settings to assist with the pandemic response, including acute care, emergency departments, COVID-19 assessment centres, and vaccination sites. FPs were asked to redeploy to a new setting (e.g., mass testing centre) or spend more time working in one of their existing work settings (e.g., emergency department). Across all regions, participants noted that "we had docs that worked at the testing centres" [BC11], "many family docs have volunteered their time in these COVID assessment units" [ON03], and "family physicians ...were at the assessment *centre*" [NL10]. In many instances, participants explained how they assumed responsibility for long-term care and other congregate living care centres: "we could cover the nursing homes" [ON02]. They were also asked to help in emergency departments and in hospital settings: "our hospital definitely reached out ... to see if family docs could provide backup to [emergency], the hospitalist service..." [ON12], and "the hospital-based [work] would be emergency room and in-patient units" [NL01]. In addition, participants described how they were enlisted to care for COVID-positive patients who did not require intensive care: "family medicine ...we're best positioned to provide the non-emergent care for people who are presumed positive or are positive" [NS02]. Participants in some communities were asked to organize and staff field hospitals: "the hospital certainly reached out for people to help in terms of the field hospital" [ON10] and "they were asking for volunteers to go and tour the field hospitals in case we needed to work there" [BC12]. In some locations, incoming long-term care patients were housed in transition units to ensure that new patients did not spread the virus in long-term care facilities and many participants assumed the responsibility of caring for patients in these settings:

There's a lot of ALC [alternate level care] patients stuck in hospital ... And family docs could be wellsuited to act as hospitalists, potentially, for some of those patients who no longer require hospitalization and are more of a nursing home level of care but can't get a nursing home bed. [ON04]

Similarly, another FP cared for mental health patients who were moved out of hospital settings to prevent nosocomial exposure to COVID-19 and to make more room in hospital for COVID-19 patients: "I was asked to be redeployed to take care of some patients who were ... long-term mental health patients that were shifted from [hospital] to this small residential house" [BC03]. FPs also "volunteered to immunize" [BC11] and "become part of the vaccination clinics" [ON19].

## Key considerations for an organized surge capacity program

Participants described five key considerations for an organized surge capacity program: (1) effective communication and coordination, (2) working within scope of practice, (3) training and mentorship, (4) hospital privileges, and (5) preserving primary care capacity.

#### Effective communication and coordination

Participants highlighted the lack of a functioning system to communicate and coordinate requests for redeployments, leading to confusion and inefficiencies. Many participants described a mismatch between the perceived need for FPs and the actual progression of the pandemic in their region: "they [hospital administrators] come to you with all these serious 'Oh, it's going to be dire'… I might get redeployed, I might go to some place where there's COVID, … and then... crickets" [BC06]. The timing of requests for FPs to redeploy did not seem to match the need for their services:

I have offered to be on lists for a nursing home. ...I used to be an emergency doctor so I was even on a list to be a substitute emergency doctor ...but I was never needed. ... now I'm on a list to be a provider of immunizations if they need me.... [ON17] Similarly, another participant reported: "I did volunteer to be at one of the influenza-like testing centres but was never called upon" [NS17]. Some participants noted that they did not receive any acknowledgement regarding their offer to help: "We've all signed up to do the vaccination campaign, but nobody's even gotten a letter back" [NS16]. The lack of organization made participants aware of the need for a better system to assess needs and organize the redeployment of FPs: ".... there's just people collecting names and email addresses and the people who were doing that didn't really ask questions that I think would be effective in helping to redeploy me..." [BC06].

## Working within scope of practice

FPs, especially those with additional training or experience in particular areas such as anaesthesia or emergency care, were asked to expand their usual scope of practice. Participants highlighted the need to assign FPs to positions and duties that matched their actual current skills and knowledge:

[W]e were ready to be asked to [provide]a much more higher level of patient care in the hospital. ... We said, 'Yes, we're willing and we're ready to do that with the understanding that, we're not ICU [intensive care unit] doctors'. ... So, having a reasonable level of expectation of what we can provide. [NS05]

Many noted that they no longer had the skills to provide emergency or in-patient care because many years had passed since they had carried out those roles:

[T]here's no way I could go out and help out in the ICU [intensive care unit]... 30 years ago I could have done that, 25 years ago probably, when I was still working in emergency rooms... But not now. I don't have the skills. I don't have the knowledge of what's happened over the past 25 years, the new drugs that's used there, all of those things. [NL09]

For many participants, uncertainties about what they would be asked to do—and whether they had the requisite skills to carry out the tasks—was a source of considerable consternation. When considering the possibility of being redeployed to in-patient care, participants said: *"I haven't done hospital work in a decade and it was very nerve-racking"* [BC13] and *"I'd be quite nervous about caring for a critically ill patient and harming them"* [BC11]. Participants expressed the importance of reassigning FPs to areas within their scope of practice:

I think you have to work within your scope of practice and within your comfort level. So, I think if you're comfortable managing acute issues then you should do that ... asking me to work in an emergency department and intubating someone wouldn't be a reasonable or safe role for me because I have never intubated anybody since medical school.... But managing the ...lower [acuity] stuff—the lacerations and the coughs and colds and the basic stuff—would be very reasonable .... [NS22]

Similarly, a participant in NL suggested: "Now, you can't really go in as a family doctor to the ICU, so that would need to be the role of the intensivist. Certainly, the respiratory assessment clinics ...would be a very good role for family physicians" [NL01]. Participants noted the need for a mechanism to identify and assign duties to FPs based on their skills and preferences, particularly given the fact that FPs' experiences varied considerably based on where they worked. An FP in BC who did not feel that the redeployment was well-organized recalled:

I'm not somebody you want to send to the emergency room to work because I hate it. It gives me anxiety. But I do love long-term care ... I don't see an infrastructure for organizing the skillsets and availability of doctors. [BC06]

In contrast, two FPs in ON recounted being asked about their skills and comfort levels in certain roles: "We filled out competency lists for what we felt we could do in the hospital ... so we filled all that out, sent it back to the hospital ... [as] part of your privileges" [ON09] and "our chief of staff put out a bit of a field inventory...to get everyone to outline the skills they feel they have if they had to go into a position in [the emergency department] or in a hospital ward..." [ON12]. These efforts to account for their competencies, skillsets, and preferences provided these participants with reassurance regarding the redeployment process.

#### Training and mentorship

Participants highlighted the need for education and training to facilitate redeployment. A participant suggested that, while FPs are trained in a broad scope of practice, many may need additional training to enable them to redeploy to a hospital or emergency department setting:

I think family physicians are equipped with the training and skillset, when they've gone to school.... Granted, they may need an update or a refresher or a little bit of practice before being sent into that situation, because not many family physicians would have been doing that in a number of years. [NL02]

Another noted that having a mentor whom they could consult would also be beneficial:

If you wanted me to go back into a hospital to work in that sort of environment, I would be happy to do that with an experienced intensivist or internist or respiratory physician as somebody to, one, have a kind of COVID crash course in but, two, to be able to refer back to. [NS17]

Other participants expressed the need for a better understanding of the responsibilities they would be expected to assume in order to ensure that their training and the timing of the training matched the type of care required. For example, participants recounted misjudging the type of training that FPs in rural communities would likely need: "I provided web-based training ... to get my colleagues trained on ventilator management. Now that we look back ... we spent a lot of time teaching and educating people on stuff; I don't think we needed to" [ON14]. Similarly, another participant recalled: "we were doing a lot of training around [intubation] because we were expecting potentially having a lot of sick people on ventilators at that time ... And what we would do if there were lots of people coding in the hospital. So, a lot of time was spent on that..." [ON02]. Participants also highlighted the need for continuing professional development, beyond the current pandemic, to ensure that FPs maintain skills in the longer term to facilitate potential redeployment in the future:

I guess for family doctors to feel comfortable seeing more urgent acute issues, they have to feel comfortable in order to do that, even if they're forced into it. So, that would be ongoing training, CME [continuing medical education] ... modules and updates on things they might not see very often in practice that could become relevant. [NS11]

## Hospital privileges

Participants explained that having privileges at a regional hospital was closely linked with requests and opportunities to redeploy. Hospital privileges refer to the formal permission to admit and see patients in a hospital or emergency department and refer patients for hospital-based diagnostic services, or those that belong to a primary care network [20]. A participant noted that assisting in the hospital was a general expectation of FPs with hospital privileges: "...because all of our physicians are health authority contracted or privileged physicians, [they] were being, kind of readied or warned for redeployment as well" [BC12]. Having privileges meant that the hospital or regional health authorities were able to contact them - something that they could not do with unaffiliated, community-based FPs whose email addresses are not publicly listed or collated:

There were opportunities to fill out redeployment forms. It was voluntary ... those things are also coming to me because of my hospital privileges... I'm not sure how a community family physician would get them ...most family doctors have no hospital affiliation. [BC08]

FPs with privileges also tend to be familiar with hospital operations and, therefore, are much easier to redeploy: "So, caring for COVID patients in a hospital would not be a big stretch as much as it would be for somebody ...who doesn't have hospital privileges. ... So, it would be a bit difficult for many family doctors to take on roles of caring for sick in-patients" [NL01]. A participant lamented that his lack of hospital privileges excluded him from pandemic roles:

They've asked for family doctors' support with care but they restricted it primarily to people who already had privileges and since I didn't, they basically kept me on a list saying, 'Yeah, if we need people who don't have privileges, we'll let you know.' ... but people who have privileges are often the ones who are busier to begin with. [ON15]

He went on to say that the reliance on FPs with privileges "cuts out a fair number of other people who I think would be more than happy to help out" [ON15], particularly in roles outside hospital settings, such as community-based assessment or vaccination clinics. Another participant noted that FPs without connections to regional organizations (e.g., community-based, fee-forservice) may have greater availability to contribute to surge capacity when patient visit volumes fall: "But if you have underemployed family physicians during that time, that'd be a great way to utilize that skillset" [BC13].

## Preserving primary care capacity

Many participants were concerned with how redeployment would affect FPs' capacity to provide routine primary care. As a result, a number of participants declined new roles because they were concerned about how their own practices would be covered: "the only caveat to that [redeployment] is like, then who looks after your regular patients?" [BC14]. Given the uncertainty of how long the pandemic would last, and in turn, how long FPs would be asked to be redeployed or assume additional roles, participants worried about their ability to meet the needs of their own patients:

... if I'd been into a role that was going to be longer term, then obviously, who would look after my own patients would have been something that would have needed to be sorted out. Because I feel I've got a commitment to them as a family physician that they

## get to see me, even if it is just for their birth control. I am their family doctor. [NS17]

Another participant worried about the negative impact that providing prolonged surge capacity could have on FPs' well-being and mental health, noting the connection between FP mental health and maintaining primary care capacity:

...my colleagues... they've all stepped up... we were providing seven days a week; is that sustainable? There's a cost to that. And the cost is your own health, your own family time. And I think we've gotten to the point where we are recognizing that we, ourselves, are burned out. And if you are burned out, well, then you're no good to your community. [NS19]

Participants were also cognizant of the potential risk of spreading COVID-19 to patients in their own practices if they were also working in high-risk environments such as long-term care facilities or emergency departments. Falling ill or having to isolate would mean that FPs were also not available to their own patients:

The complexity of having that family doctor go to help a retirement home or a nursing home that's in outbreak, you know, the cross-contamination, the worries, ... if I get COVID, my whole practice is gone and I don't have someone to look after it for two weeks, three weeks, or four weeks if I'm ill. [ON07]

Participants also noted that the redeployment of staff from their clinics further reduced the ability to provide routine care: "most of our nursing staff were redeployed and it is really a nursing-run clinic, so that had a major impact. ...So essentially, we were reduced to a very skeleton crew ..." [BC05] and "we have a number of nurses who are redeployed to vaccination clinics, so we're continuing to work short-staffed now" [BC13].

## Discussion

Through qualitative interviews, FPs described three primary mechanisms that were used, often in combination, to increase surge capacity: (1) practicing physicians working more hours, (2) increasing the pool of available FPs, and (3) redeploying to a different setting or program. While similar mechanisms have been reported in other countries and among other health care professionals [5, 7, 19, 20, 27–29], our study is among the first to describe the strategies used exclusively among FPs. While other studies have focussed on redeployment to emergency departments and hospital units, we highlight the broad range of institutional and community-based settings where FPs were asked to work, including mass testing and vaccination centres, alternate level of care units, and long-term care facilities. Our findings build on prior research describing FPs providing coverage to colleagues' practices and serving in leadership positions in pandemic response coordination [20, 30]. Primary care nurses in Canada reported a similar range of redeployment strategies, settings, and experiences [31].

In contrast to many other redeployed health care workers, FPs retained responsibilities for their own patients when they were redeployed to other settings [17, 19-21]. Hospital-based specialists were redeployed when demand for services in their own units decreased due to the cancellation or postponement of elective procedures [7, 19]. Primary care nurses who were redeployed to a different setting were not expected to continue to provide care for practice patients [30] and, as a result, many FPs noted that the reassignment of nurses from primary care limited the capacity of practices to provide essential services such as preventative care, chronic disease management, and palliative care [32, 33]. Redeployment constrained the availability of these health professionals to patients, which, in turn, exacerbated FP workloads, as FPs were expected to provide services (such as palliative care and home visits) usually delivered by other providers [32] while continuing to manage patients whose conditions could otherwise be treated by specialists [34].

FPs in the study have highlighted the need to ensure coverage for their patients, a challenge which is made more complex when FPs (or primary care nurses) are asked to work in settings, such as long-term care facilities and testing centres, where the risk of infection (and subsequent quarantine) is high. The risk of spreading infection between high-risk settings and family practices [32, 35] and to their family members [36, 37] was among the primary reasons why FPs refused redeployment to acute care settings in the height of the pandemic in other countries, particularly when FPs had limited access to personal protective equipment [17, 19, 38–46]. The need to limit infection risk is magnified in rural communities where there are a limited number of FPs and other health care workers [12, 33, 47].

Many countries, including the regions in our study, addressed surge capacity needs while preserving primary care capacity by increasing the number of workers available to fulfill pandemic related roles by expanding scope of practice of other health professionals [48, 49], streamlining licensure [50], or permitting non-health professionals (e.g., veterinarians, community workers, and volunteers) to perform specific tasks [7, 14, 15, 27, 51–53]. During the vaccination rollout (beginning in early 2021 in Canada) the provinces in our study limited the role of FPs in mass vaccination campaigns in an attempt to preserve primary care workforce capacity. Instead, they expanded

internationally trained health workers [54–56]. Echoing the international literature, FPs in this study were concerned about working outside their scope of practice when redeployed [20, 52]. Participants stressed the need to base redeployment locations on FPs' skills and preferences. Regulatory organizations in Canada and internationally have noted that, while redeployed workers may be asked to expand their usual scope of practice, they should not be asked to complete work which they do not feel qualified or safe to perform. A better understanding of the specific roles and tasks that FPs will perform clarifies education needs and ensures that resources are not directed to training that is not needed. Just-in-time training and education, an operational approach that delivers training specific to current needs in real-time to minimize the gap between training and implementation [57], have been highlighted as an integral support for physical and psychological safety when health care workers are reassigned to new settings or asked to perform tasks outside their usual scope of practice [13, 14, 20, 46, 52]. In addition, our participants emphasized the need for continuing education to help FPs maintain or develop skills, which is essential to support their redeployment and expand the potential pool of FPs available to provide surge capacity during a future public health crisis [12, 30, 58].

Hospital privileges served as both a facilitator and barrier to FP-driven surge capacity. Hospital privileges provided the means by which regional organizations (i.e., regional health authorities or acute care facilities) could identify available FPs, communicate with them, and assess skills and preferences. In Canada, where family practices are largely privately owned and operated independent businesses [6, 21, 59], hospital privileges or academic affiliations (or more precisely, the connection they provide between FPs and the health system) provide an infrastructure through which FP surge capacity can be coordinated. At the same time, reliance on physicians with hospital privileges or academic affiliations limits the pool of FPs who can contribute to surge capacity and excludes the growing number of community-based FPs who do not provide hospitalist services or work in emergency departments, as well as locums, new graduates, and retired physicians. Unaffiliated FPs working in community-based, fee-for service practices may have the capacity and be willing to contribute to surge capacity, especially to offset the negative impacts of decreased patient volumes [8]. Findings from our larger project and the international literature have consistently found that hospital privileges and academic affiliations facilitated bi-directional communication [21, 30, 60] and personal protective equipment distribution [6, 17, 20, 37, 46], thereby facilitating a more organized and integrated approach towards FP contributions to surge capacity.

## Implications for practice and policy

The findings from this study identify practical supports to facilitate FP surge capacity. FPs need information about the roles they are expected to perform, scope of practice guidance, and duration of redeployment. Mechanisms, such as hospital privileges or communication infrastructure (e.g., email lists), are needed to disseminate information; identify the pool of FPs available to contribute to surge capacity; gather information on FP skills and preferences; match FPs to redeployment assignments, and limit redeployments when there is a high-risk of crosscontamination. Just-in-time and continuing professional education are needed to orient FPs to new settings, tasks, and clinical practice, and to maintain a pool of FPs available to provide surge capacity, respectively. Additionally, FPs need access to appropriate personal protective equipment and mental health supports to protect and promote personal and psychological safety when redeployed. Regulatory policies that expand the pool of workers available to address surge capacity are also needed during pandemics (and other health emergencies) to preserve primary care capacity.

#### Limitations

We conducted interviews between October 2020 and June 2021 in four Canadian provinces; therefore, our data may not reflect experiences during later stages of the pandemic or in other regions. Although we used maximum variation sampling and a variety of recruitment approaches, we may not have fully captured some physician perspectives (e.g., solo practitioners), and our sample may overrepresent certain groups (e.g., women, those in rural communities). As with all studies based on self-reported data, our study may suffer from social desirability and recall bias [61, 62]. For example, participants may have been hesitant to appear unwilling to respond to patient or system needs; however, trained interviewers used consistent probes and open-ended questions to enhance participant recollections and solicit detailed descriptions of experiences.

## Conclusions

During the COVID-19 pandemic, four provinces in Canada created FP-related surge capacity by having existing FPs work additional hours, increasing the pool of FPs available to work, and redeploying FPs. To facilitate FP surge capacity, mechanisms are needed to communicate with and coordinate FPs. Just-in-time and ongoing professional education are needed to support redeployed FPs as well as to maintain a pool of FPs available to support surge capacity. Policies that expand the scope of practice and number of workers who can contribute to surge capacity help preserve the ability of FPs to continue to deliver necessary primary care.

#### Abbreviations

- Family Physicians FPs
- BC **British** Columbia
- ON Ontario NS
- Nova Scotia
- Newfoundland and Labrador NL ICU
- Intensive Care Unit

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#### Author contributions

MM wrote the original draft; MM, DR, JL, LH, LM, EGM, PG, SS, SJW, TJF, JBB critically edited and reviewed the manuscript; MM, LH, EGM, JL acquired funding and supervised the project; MM, LH, LM, SS, EGM, JL, DR oversaw administration of the project; MM, DR, LH, LM, EGM, JL, SS carried out steps involved in the methodology of the project. All authors have read and approved the final manuscript.

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#### Availability of data and materials

The datasets analysed during this study are not publicly available due to the need to maintain participant confidentiality; however, a portion of these data may be available from the corresponding author on reasonable request.

## Declarations

#### Ethics approval and consent to participate

We obtained approval from the research ethics boards at Simon Fraser University and the University of British Columbia (through the harmonised research ethics platform provided by Research Ethics British Columbia), the Health Research Ethics Board of Newfoundland and Labrador, Nova Scotia Health, and Western University. Participants provided informed consent before interviews were scheduled. All methods in this study were performed in accordance with the relevant ethical guidelines and regulations.

## **Consent for publication**

Not applicable.

#### Competing interests

The authors declare no competing interests.

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