











# BMJ Open Examining experiences and system impacts of publicly funded episodic virtual care: protocol for a cross-provincial mixed methods study

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## ABSTRACT

**Introduction** Health systems are under pressure as one in five Canadians have no regular place for primary care, with many experiencing substantial travel times and delays in accessing care. In the context of these urgent needs, platforms for virtual care offer immediate access to care in 'walk-in' style format, with limited continuity for ongoing health needs or coordination with other health services. We refer to these services as episodic virtual care (EVC), to distinguish them from virtual services offered in longitudinal primary care. The governments of Nova Scotia (NS) and New Brunswick (NB) both offer publicly funded EVC and offer a unique opportunity for research. The overarching goal of this work is to learn from the implementation of EVC in NS and NB to understand experiences and system impacts, including

1. What are patient perceptions and experiences of EVC and how do these differ by patient characteristics?
2. What are the characteristics of patients who use EVC and of clinicians who deliver it?
3. What are the system impacts of EVC?

**Methods and analysis** We will use a cross-sectional survey conducted through an online questionnaire to explore patient perceptions and experiences with EVC. We will also examine how these differ based on the type of care needed, age, gender, residence (urban or rural), immigration and language preference. We will use linked administrative data and quasi-experimental analysis to assess the impacts of EVC on visits to community-based primary care (including in-person walk-in clinics), emergency department visits, prescriptions and referrals for other health services like laboratory testing, imaging and consulting specialist physicians.

**Ethics and dissemination** This proposal has been reviewed and received approval from the Nova Scotia Health Research Ethics Board. Findings will identify the impacts and trade-offs in the deployment of EVC, which will inform primary care planning. In addition to traditional academic publications and information provided to primary care patients/the public, this study will inform decision-makers across multiple jurisdictions as they contend with the challenge of meeting patients' immediate care needs

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study combines cross-sectional patient survey data with longitudinal, population-based, quantitative data from two provinces to address a clear knowledge gap.
- ⇒ We are not able to access data on services paid for out of pocket and so can only examine publicly funded services.
- ⇒ Online questionnaire recruitment may disproportionately exclude people who are older, less comfortable with technology, who cannot respond in English or French and who live in places with limited internet access, who may also experience challenges accessing virtual care.

for access to primary care, while seeking to improve coordination and integration of systems as a whole.

## INTRODUCTION

Primary care systems are under pressure as currently one in five Canadians have no regular place for primary care, and people face substantial delays and travel time accessing care.<sup>1</sup> Corporations have responded to patients' immediate needs for access by offering virtual services that mirror 'walk-in' style clinics, in that they offer immediate access, but with limited continuity of care for ongoing conditions and coordination with other health services.<sup>2-5</sup> We refer to these services as episodic virtual care (EVC) to distinguish them from virtual services offered in the context of longitudinal primary care (ie, an individual or team of clinicians with access to patient records and an ongoing relationship). EVC can include video, phone, or text-based consultations with a primary care clinician, typically a family physician (FP) or



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nurse practitioner (NP). It can be delivered in a browser or app, using text messages, voice, and/or video, with the option to upload photos and download prescriptions.

Availability of EVC expanded rapidly during the pandemic, yet how EVC fits into the current primary care landscape is uncertain in Canada and internationally.<sup>3–6</sup> In most Canadian jurisdictions, administrative health data cannot definitively distinguish EVC services from other virtual primary care services billed to provincial public insurers in the context of longitudinal care.<sup>2,7</sup> Data on services delivered via corporate platforms such as TELUS and Maple have not been accessible for external research.<sup>5</sup> The limited available evidence<sup>2,4,6</sup> points to potential tensions and tradeoffs, weighing generally positive patient experiences<sup>4,8–10</sup> and ease of access<sup>3,4,10,11</sup> against potential barriers to quality of care and care coordination, which may lead to fragmented health services and potentially unnecessary service use. It is not clear how EVC is impacting system-wide care capacity.<sup>2,4</sup>

The Canadian provinces of Nova Scotia (NS) and New Brunswick (NB) offer a unique opportunity to study the deployment of EVC. Both provinces' virtual primary care services operate on the Maple platform (<https://www.getmaple.ca/>) and are funded through provincial health budgets, but the provinces differ in how these services are staffed (balance of NPs and FPs), how clinicians are paid and how health records connect to other parts of the health system, making these highly informative policy examples. In NS, patients without a regular place of care on the 'Need a Family Practice Registry' have unlimited access to Virtual Care Nova Scotia (VCNS) offered through the Maple platform. This was first piloted starting in May 2021 in the Northern and Western Zones, then rolled out province-wide in December 2021. Beginning in November 2023, two free visits were offered to all NS residents, but those not on the 'Need a Family Practice Registry' are required to pay privately to Maple for subsequent visits. In NB, all residents eligible for provincial health insurance have had free access to eVisitNB since January 2022, including people with a regular place of care.

There is substantial variability in deployment strategies by province.<sup>3,6</sup> In contrast to opportunistic delivery of EVC by for-profit companies in other provinces, EVC in NS and NB has been deliberately deployed by government service planners to address access needs. Existing evaluation of these platforms is limited to a brief satisfaction survey delivered to users. We will build on this with an in-depth survey of EVC user experiences and general population perceptions of EVC, in combination with an analysis of administrative data to examine system-wide impacts of EVC.

### Patient experiences

Studies examining patient experiences of virtual care with their regular care provider generally report very high satisfaction.<sup>12–14</sup> An Ontario-based study on integrated longitudinal virtual care compared satisfaction between

patients with an existing primary care clinician and previously unattached patients meeting a new primary care clinician, finding high satisfaction and strong trust in the primary care clinician in both groups.<sup>15</sup> Similarly, an NS study found no difference in patients' perceptions of FPs' propensity for 'patient-centeredness' between those accessing virtual care and those accessing in-person care.<sup>16</sup>

In contrast, patient experiences with EVC, where they have no previous relationship with the clinician, have been much less studied. A national poll of 1800 Canadians conducted by the Canadian Medical Association in May 2020 found that among the 20% of respondents who did not have a regular FP, 8% reported using a virtual health provider and 77% were satisfied or very satisfied with their encounter(s).<sup>17</sup> An earlier observational study conducted in BC in 2013/2014 reported very high satisfaction and patient-assessed quality with EVC,<sup>7</sup> but the study was limited to a highly selected population choosing to use the service prior to widespread adoption. Most recently, a national survey conducted by OurCare in 2022 with 9279 participants found that 58% of respondents were not at all or not very willing to use virtual walk-in services if owned by a for-profit company,<sup>1</sup> but user experiences of these services were not explored. In studies of virtual care broadly, patient experiences vary by the type of care needed and the patient's demographic characteristics (eg, age, sex, gender, urban/rural residence, income, immigration status, length of tenure in Canada and language preference)<sup>9,10,18</sup>; whether similar patterns are observed for EVC is unknown.

### Patient and clinician characteristics

Information about the characteristics of patients and clinicians who use or provide EVC remains limited. An Ontario study developed a list of virtual walk-in clinics by searching business names linking to administrative data and found that virtual walk-in patients had fewer comorbidities and had used healthcare services less frequently than the general Ontarian population.<sup>2</sup> An earlier observational study conducted in British Columbia in 2013/2014 found that people who used virtual care tended to be younger and have fewer comorbidities, and that people in lower income neighbourhoods were less likely to receive virtual care from a physician they had seen previously.<sup>7</sup> Given the growing inequities in primary care access,<sup>19,20</sup> understanding who is and is not using EVC is of added importance.<sup>19,20</sup> EVC may help bridge access gaps for people facing added barriers to care due to costs of transportation, the ability to take time off work, or caregiving responsibilities, among other factors.<sup>4</sup> However, if those in greatest need of care lack access to technology, struggle with platform navigation, cannot access care in a preferred language,<sup>4,21</sup> or if their needs cannot be met without longitudinal or in-person care,<sup>2</sup> EVC has the potential to further entrench inequities (including sex-based and gender-based inequities, as both shape primary care need and access patterns).<sup>22,23</sup>

More information is also needed about the characteristics of clinicians delivering EVC, as this can influence its impacts on primary care capacity. While a 2021 national survey found that 94% of physicians in Canada deliver virtual care,<sup>24</sup> less is known about the subset of FPs and NPs participating in EVC. EVC may create opportunities for clinicians to deliver care flexibly, even during times when they are not available for in-person care. It could also help address geographical imbalances in care need and supply, as clinicians can deliver services to patients in other geographical locations. However, if virtual platforms are staffed by clinicians who would otherwise practise in comprehensive office-based primary care, and if care delivery is less efficient through EVC, it may reduce overall capacity rather than enhance it.

### System impacts

Given the advantages associated with longitudinal primary care,<sup>25</sup> concerns have arisen regarding the efficiency, costs and, in some cases, safety of EVC,<sup>26</sup> particularly when there is limited information exchange with other parts of the healthcare system.<sup>3 4</sup> EVC clinicians often do not have access to previous medical history while providing care.<sup>5</sup> Virtual care providers typically do not share consultation notes with patients' regular primary care clinician, unless specifically requested by the patient.<sup>27</sup> This has the potential to introduce inefficiencies and potential safety concerns in care delivery, affecting both virtual clinicians and those in longitudinal practice.<sup>3 4</sup> In Ontario, virtual walk-in patients were more likely to visit the emergency department compared with patients with other virtual visits.<sup>2</sup> To our knowledge, no research examining system impacts of EVC exists in other Canadian jurisdictions.

### Goal and research questions

The goal of this work is to learn from the implementation of EVC in NS and NB to explore perceptions, experiences and system impacts within and across provinces. Research questions are as follows:

1. What are patient perceptions and experiences of EVC and how do these differ by:
  - reason for accessing care and other patient characteristics (eg, age, sex, gender, urban/rural residence, income, tenure in Canada and language preference)?
  - province and between patients with and without a regular source of primary care?
2. What are the characteristics of patients who use EVC?
  - How do patients who use EVC compare with those who are eligible but do not use it?
  - How have patterns of service use evolved over time?
3. What are the system impacts of EVC?
  - How has deployment of EVC shaped visit volume in community primary care (in person or virtual visits with longitudinal providers), emergency department visits, prescriptions and referrals for diagnostic imaging, labs and specialists?

### METHODS AND ANALYSIS

We will use a cross-sectional survey to explore patient experiences and perceptions of EVC (objective 1). Additionally, we will integrate survey and administrative health data to investigate who is using EVC services and what clinicians are involved in delivering them (objective 2), and use administrative health data and a quasi-experimental design to assess potential system impacts of EVC (objective 3). Collection of survey data began in January 2025 and analysis of survey and administrative data is anticipated to begin in spring 2025. Preparation of research products and dissemination activities will occur throughout 2026, and the project will conclude in March 2027.

#### Objective 1: patient perceptions and experiences of EVC

We will use a cross-sectional survey to describe the perceptions of the general population on EVC, and the experiences of EVC users. This study will be carried out in NS and NB including two subpopulations:

- A population-based panel (estimated sample size of 1200 between the two provinces). This will provide a statistically representative sample of NS and NB residents, which is important to understand broad perceptions and experiences. The population-based panel uses quota sampling to increase representation across demographic cohorts (gender, age and education level) and will include people who have and have not used EVC.
- In addition, we will oversample people who have used VCNS and eVisitNB within the preceding 12 months by sending study information by email through Maple, the VCSN and eVisitNB vendor.

The survey will be conducted through an online questionnaire. Response options are given on a Likert scale, or using exclusive or exhaustive answers as applicable. The survey instrument uses complex branching to achieve specificity in the questions being asked. Topics include access to healthcare in general, health needs, experiences of EVC (for users only), choice to use or not use EVC based on other access opportunities, perceptions of EVC, advantages and disadvantages of virtual services, experiences of discrimination within healthcare and demographic questions. Existing health systems surveys were reviewed to support a more direct comparison of results between studies where possible and broaden the applicability of the results.<sup>15–17</sup> The survey will be pilot tested on a random subset of the panel (50–100 people).

We will weight survey responses according to latest Census estimates in Atlantic Canada, for sex (female/male), age (age brackets: 18–29, 30–49, 50–64, 65+), and education (highest-level achieved: high school or below, college or trade school, university degree).

Responses will be analysed using descriptive statistics to report patient experiences and perceptions of EVC, and a combination of descriptive statistics and logistic and multinomial regression to compare experience and perceptions of patients by various patient characteristics



**Table 1** Patient characteristics and data sources

Patient characteristics	NS data source	NB data source
Administrative sex*	Insured Patient Registry	Citizen data
Age group	Insured Patient Registry	Citizen data
Chronic conditions (indicators for conditions and multimorbidity)	Canadian Chronic Disease Surveillance System Algorithms	Canadian Chronic Disease Surveillance System submitted records
Health services zone of residence	Insured Patient Registry	Insured Patient Registry
Neighbourhood income quintile	Insured Patient Registry	Citizen data
Immigration status and tenure	Immigration Refugees and Citizenship Canada permanent resident data (linkage planned)	Immigration Refugees and Citizenship Canada permanent resident and transition data

\*Data sources contain binary variables labelled 'sex' collected as part of health insurance administration. Whether these align with sex at birth, legal sex or gender cannot be determined.  
NB, New Brunswick; NS, Nova Scotia.

(age, sex, gender, urban/rural residence, income, immigration and language preference). Descriptive statistics will include frequencies and percentages for all types of responses (exclusive, exhaustive and Likert), as well as mean Likert scores. Regression analysis will explore differences in experiences by reason for accessing care (a new health issue, a chronic/ongoing issue/to renew a prescription), and other patient characteristics (age, sex, gender, urban/rural residence, income, immigration and language preference), by reason for visit, and between patients with and without a regular source of primary care.

### Objective 2: patient and clinician characteristics

Using health administrative data, we will compare characteristics of patients who use EVC to those who were eligible but did not use virtual care within each province (table 1). In NS, this will include patients on the Need a Family Practice Registry who did and did not use VCNS between 1 April 2022 (at which point it had been available province-wide since December 2021) and 31 March 2024. We will also compare characteristics of all Nova Scotians registered for health insurance but not on the Need a Family Practice Registry who did and did not use one or two free VCNS visits between 1 November 2023 and 31 March 2024. In NB, this will include all insured residents who did and did not use eVisit NB between 1 April 2022 and 31 March 2024. We will calculate standardised mean differences focusing on differences greater than 10% (0.1).<sup>28</sup>

VCNS and eVisitNB platform data will be used to observe clinician credentials (FP or NP), whether within or out of province, location of residence (health services zone if within province), hours worked and visit volume. We will produce summary statistics to compare staffing between the two provinces. It will not be possible to directly link clinicians between VCNS and eVisitNB and provincial billing data. To relate services on the platform to total community-based primary care capacity, we will describe EVC visit volume as a percentage of total primary

care visit volume, based on FP billings (excluding hospital and emergency department) and NP shadow billing. We will use VCNS and eVisitNB platform data to calculate visits per clinician hour over time and across provinces, as refinements have been made to the platform that may support more efficient service delivery over time.

### Objective 3: system impacts of EVC

Analysis to address objective 3 will include two main approaches: (1) we will conduct a population-level *difference-in-differences (DiD) analysis* and (2) an inverse propensity-weighted cohort design to examine *visit-level impacts* of virtual care.

*DiD*: analysing health system changes since the onset of the COVID-19 pandemic, including EVC, is complicated by the fact that rates of relevant outcomes of interest, including community primary care visits, emergency department visits, laboratory testing and imaging, and referrals to other services, were shaped month to month by levels of COVID-19 transmission as well as public health responses to manage infection, resulting in dramatically fluctuating levels of service use, particularly during early months of the pandemic.<sup>29</sup> However, the fact that EVC was only initially available to a subset of people in NS provides the opportunity for people not on the 'Need a Family Practice' registry to act as a non-equivalent control group to estimate the impacts of EVC on outcomes of interest, while accounting for other factors influencing healthcare use at that time (table 2).

The study population will include people continuously registered for provincial health insurance between 1 April 2020 and 31 March 2024 in either NS or NB. We will obtain data for a 2-year period prior to 1 April 2020 to identify prevalent chronic conditions. Both provinces experienced an influx of new residents since 2020 and many new arrivals have been without a regular place of primary care. As we cannot capture the preintervention health services use of movers to the province, they will be excluded from this analysis—but would still be eligible for participation in the survey under objective 1. We will

**Table 2** Outcomes of interest and data sources in NS and NB

Outcome*	NS data source	NB data source
Community-based physician visits (including walk-in clinic visits)	MSI physician billings from family physicians/general practitioners in community-based service locations and NP shadow billing	NB physician billing from family physicians/general practitioners in community-based service locations and NP shadow billing
Emergency department visits	Record in National Ambulatory Care Reporting System (NACRS) or Nova Scotia Health emergency department records (not all facilities report to NACRS)	Horizon and Vitalité Emergency Department Data (health authorities that collectively cover all of NB)
Hospitalisations	Discharge Abstract Database	Discharge Abstract Database
Prescriptions dispensed	Drug Information System (all ages)	NB Drug Plan (ages 65+/social assistance only)
Referred service use—requisitions	VCNS visit records	eVisitNB visit records
Referred service use—specialist referrals	VCNS visit records	eVisitNB visit records
Referred services use—medical and surgical specialists visits	MSI Physician Billings	NB Physician Billings
Prescriptions dispensed (antibiotics, chronic disease management)	Drug Information System	Drug Information System

\*Expressed as rates for DiD and as binary variables (any service within 7 or 30 days) for visit-level analysis. DiD, difference-in-differences; NB, New Brunswick; NS, Nova Scotia; VCNS, Virtual Care Nova Scotia.

compare changes before and after implementation using a DiD design for three study cohorts:

- ▶ VCNS pilot: NS residents registered on the Need a Family Practice Registry, residing in the Northern and Western health zones before and after the implementation of VCNS on 1 May 2021.
- ▶ VCNS full implementation: NS residents registered on the Need a Family Practice Registry, residing in the Central and Eastern health zones, before and after the expansion of VCNS on 1 December 2021.
- ▶ eVisitNB full implementation: all NB residents, before and after province-wide implementation of eVisitNB in January 2022.

In all analyses, the comparison cohort will be NS residents with continuous provincial health insurance coverage who were not on the Need a Family Practice Registry during the study period, and therefore were not eligible to use EVC. This is a non-equivalent comparison cohort and we anticipate people not on the Need a Family Practice Registry will differ from the study cohorts across all measurable patient characteristics (table 1). However, this comparison will make it possible to account for temporal changes in service utilisation experienced by all Maritime residents, as the preintervention period includes changes in service delivery due to the COVID-19 pandemic.

We will plot monthly uptake of EVC service use and outcomes across cohorts over the entire study period (1 April 2020 to 31 March 2024). Trends prior to implementation and update of the services will inform subsequent analysis. To estimate system impacts attributable to EVC, we will compare changes in outcomes (table 2) following implementation for each study cohort to the comparison

cohort, conditional on observable confounders. This analysis meets key assumptions for DiD analysis, including the absence of anticipatory effects prior to implementation of these policy changes and the fact that there was a single time point at which people gained access. However, given that the data between NS and NB are not poolable, conventional DiD estimation methods are not applicable. As such, we will employ an approach specifically developed for unpooled DiD regression with covariates. For each comparison and outcome, we will calculate preintervention and postintervention conditional and unconditional means and variances across covariates (table 1). The unpooled DiD approach that accounts for differences in variances between samples is implemented in Stata and will permit the estimation of effects and SEs.<sup>30</sup> It will also be possible to further stratify analysis to determine if impacts vary by patient administrative sex, complexity or other characteristics.

*Visit-level impacts:* in addition to population-level impacts, we will use propensity-weighted analysis to compare how service use following VCNS/eVisitNB visits compares to in-person walk-in clinic visits and virtual visits with a longitudinal community-based primary care clinician (table 3).<sup>31</sup>

In each province, we will include insured people with an eligible visit (EVC, in-person walk-in or virtual visit with clinician seen previously) in 2023/2024, a period with full implementation of both VCNS and eVisitNB. If people had more than one visit, we will select an index visit randomly. We will derive propensity scores from logistic regression models for each province and comparison. Models will include patient characteristics in table 1 as well as diagnosis and month and day (weekday/weekend)

**Table 3** Visit-level comparisons

	NS	NB
In-person walk-in clinic visits	Standard office visit (03.03) billed at 13MSU (the ME=CARE modifier that permits a higher billing level can only be used with access to the medical record)	Code 3, units 28, with walk-in clinics as the service location
Virtual visits with community-based primary care clinician the patient had seen previously	Standard office visits (03.03, 03.03a and 03.03x) with the Me=VTOR modifier	Claims with service location '19' to indicate virtual care (a previous code 859 was discontinued in May 2020 and so is not relevant to the study period)

NB, New Brunswick; NS, Nova Scotia.

of visit. We will compare the distribution of propensity scores between groups to confirm common support and inspect for extreme values. We will calculate weights equal to the inverse probability of receiving EVC, and weighted cohorts will be compared with respect to outcomes in [table 2](#).<sup>32</sup> We will also conduct analysis restricted to each of the 10 most common diagnoses assigned to visits on each platform, excluding general signs and symptoms and prescription refills. We expect this may likely include mental health, acute nasopharyngitis (common cold), cystitis, and cellulitis based on related analysis in Ontario<sup>2</sup> but this will be confirmed as part of analysis under objective 2.

### Limitations and plans to mitigate them

#### Survey sampling bias

Online questionnaire recruitment may exclude people who are older, less comfortable with technology, and who live in places with more limited internet access.<sup>33 34</sup> Quota sampling and weighted analysis may mitigate this to some extent, but the study population may still be biased towards people who are more comfortable both with online surveys and online healthcare within age, gender and education strata used in weighting.

Participation is voluntary and it is possible that we will hear more from those with more extreme or negative perspectives, as people with a neutral or positive experience may not take the time to respond. While this cannot be controlled through survey design, we will be conscious of this potential bias when interpreting and disseminating our findings.

#### Use of non-equivalent comparison group for DID analysis

In DiD analysis, the comparison cohort will be NS residents who were not on the Need a Family Practice Registry during the study period and therefore were not eligible to use EVC at time of initial implementation. We considered other comparison groups. If we compared people eligible for EVC who used EVC services with those who did not, by design, people who used EVC had a healthcare need in the postimplementation period. Additionally, we would need to consider the selection effects that influence their decision to access EVC. The choice of Nova Scotians who are not eligible for EVC as a comparison cohort will allow us to control for other factors influencing in service use

in context of the ongoing impacts of COVID-19, without introducing these sources of bias. In addition to this main analysis, within NS, we will compare people on the Need a Family Practice in Northern and Western regions following pilot implementation in May 2021 to people in Central and Eastern regions through to when they gained access in November 2021. Though a strong comparison, this is limited by a short time period to observe any effects.

### Patient and public engagement

This project aligns with the definition of patient-oriented research articulated under Canada's Strategy for Patient Oriented Research as a continuum of research that focuses on patient-identified priorities, engages patients as partners and improves patient outcomes.<sup>35</sup> This project also aligns directly with recommendations of the 36-member NS OurCare priorities panel, which highlighted virtual care as an option that is particularly helpful in rural communities (<https://www.ourcare.ca/prioritiespanels>). Members of the Canadian Primary Care Research Network Patient Advisory are being consulted at each stage of project development and patient partners reviewed all patient-facing research materials.

### ETHICS AND DISSEMINATION

#### Ethics

Research ethics approval for this protocol was received from Nova Scotia Health (REB # 1030932 and 1030703) for research activities in both NS and NB. Informed consent will be required to complete the survey.

#### Dissemination

This work engages knowledge users as active participants in the research process<sup>36</sup> and these relationships provide important avenues for mobilising knowledge generated through this research. We will make relevant findings available to people in service planning roles. Findings on public perception and patient experiences of EVC will be most directly relevant to decision-makers within NS Health and the NB Department of Health focusing on EVC, as well as their partners at Maple. Findings about system impacts will be relevant to policy-makers, system planners and providers nationally. For these groups, we will prepare summaries of initial findings for each

objective and circulate them to our team's network in provincial governments, health authorities and professional associations.

We will build on past experience disseminating findings to primary care patients/the public through popular media, including op-eds, media releases and interviews around the time of publication of key research products. We also plan traditional academic dissemination to meet a very clear gap in academic research on the topic of EVC both in Canada and internationally.

All provinces are grappling with the challenge of ensuring equitable and timely access to primary care, and meeting the immediate needs of the one in five people without a regular primary care clinician.<sup>1</sup> EVC may contribute to meeting these needs, but service planners currently lack essential information. This real-world policy experiment aims to understand both the impacts and potential trade-offs associated with the deployment of EVC, offering valuable insights for primary care planning.

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**Contributors** MRL originally conceived the study, wrote the first draft of the introduction and objective 2 and 3 methods. SW wrote the first draft of objective 1 methods. JE, TM, AG, NA, RHC, SD, FG, EH, LH, TK, LL-S, EGM, RM-M, DR and JS provided feedback for revisions to the interview guides, screening questionnaire and the draft protocol, and approved the final version for submission. MRL is the guarantor of this work, accepting full responsibility for the conduct of the study.

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