Health care provider experiences with an electronic patient portal in cancer care: A qualitative study

by

Sarah Jane Quinn
BN, Mount Royal University, 2019

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We acknowledge and respect the Lək̓ʷəŋən (Songhees and Xʷsepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək̓ʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

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Abstract

Online patient portals offer individuals a secure website and/or mobile app to view their health information and appointment schedules, enter data into their record, and communicate instantly with their health care team. In November 2022, Alberta Health Services launched a new province-wide electronic health record, Connect Care (Epic), with a tethered patient portal, MyAHS Connect, across all Cancer Care Alberta sites. For this descriptive-qualitative study, I aimed to answer the following question: What are the effects of an online patient portal on the health care team's work in the oncology setting in Alberta? The group of interest for this study was nurses, however clerical staff and medical oncologists were also recruited. From July to October 2024, I conducted semi-structured interviews with 12 registered nurses, 2 medical oncologists, and 1 clerk, recording and transcribing each interview. Data was analyzed using thematic analysis. The theoretical underpinning of this study was a technology-in-practice sociomaterial perspective, originating from actor-network theory. Three main themes were identified: the invisibility of nurses' responsibility of supporting patient portal use, access to the portal shapes a new type of patient, and MyAHS Connect is as good as the networks of care provision in which it is embedded. This is the first study I am aware of evaluating health care provider experiences in Alberta with MyAHS Connect. This study includes recommendations on how health care providers can work at the intersection of the electronic health record (EHR) and patient portal as well as suggestions for future research. Ultimately, patient access to the portal changed the ways that health care providers are working but the degree of this change was highly influenced by patient use of the portal, staff's use of the EHR, and the greater system context.

Key words: Patient portal, electronic health record, nursing, oncology, qualitative, Canada, Alberta Health Services, actor-network theory

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List of Abbreviations

Abbreviation	**Unabbreviated**
AHS	Alberta Health Services
ANT	Actor-Network Theory
CCA	Cancer Care Alberta
CSCN	Cancer Strategic Clinical Network
CRU	Clinical Research Unit
EHR	Electronic Health Record
ePROMs	Electronic Patient Reported Outcome Measures
ESAS-r	Edmonton Symptom Assessment System Revised
GoA	Government of Alberta
MAC	MyAHS Connect
MSR	MySymptom Report
PROMs	Patient Reported Outcome Measures
RN	Registered Nurse
TSH	Thyroid-Stimulating Hormone
US	United States

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Dedication

For any individual who works with cancer patients and their families. The work you do every day is valuable. I am proud to work with you.

Chapter 1: Introduction

Based on my clinical observations as a registered nurse in the ambulatory oncology setting, electronic patient portals significantly impact the way that patients and the health care team interact with the health care system and one another. In November 2022, Alberta Health Services (AHS) launched a new electronic health record (EHR), Connect Care, across all Cancer Care Alberta (formerly known as Cancer Control Alberta) sites (AHS, 2024a). Connect Care, created by the Epic Systems Corporation, includes a provider EHR and a tethered patient portal called MyAHS Connect, also known as MyChart (AHS, n.d.-a). MyAHS Connect is a passionate topic of conversation among the health care team at my work site, a large urban cancer centre in Alberta. I have witnessed a wide range of responses to the portal from both patients and staff regarding its uptake, ease of use, and features. I have also observed a disconnect in practice between health care providers and patients who utilize MyAHS Connect. In my experience, the health care providers have not been provided with the time or training required to understand how the portal functions, how patients are utilizing it, and how patients' treatment experiences are altered due to its existence. As MyAHS Connect is newer to the province, there is a need to explore how it is impacting the oncology health care team. This study utilized a descriptive qualitative methodology (Sandelowski, 2010), informed by a technology-in-practice sociomaterial theoretical perspective (Timmermans & Berg, 2003; Petrovskaya, 2023) to answer the question: What are the effects of an online patient portal on the health care team's work in the oncology setting in Alberta? The findings from this study will inform health care providers and the greater organization they are a part of (Cancer Care Alberta) about current practices with the aim to help them envision and adapt their practice to provide patients with better education and support, in congruence with patient use of electronic patient portals. Chapter 1 through 3 of this thesis will provide a background of the literature from recent years on this topic, describe the theoretical underpinning of the study, and detail the utilized methodology and methods for the study.

Background

A patient portal is a secure website where people can access their health information and have the option to manage components of their care (Ontario Health, 2023). The information found on portals may include lab results, diagnostic imaging reports, current and past medications, immunizations, and upcoming and previous appointments (Petrovskaya et al., 2023; Santos et al., 2021). Additional portal features outside of information viewing may include requesting and managing appointments, directly messaging with the health care team, requesting medication refills, and adding one's own health information directly into the chart (Benjamins et al., 2021). Patient portals are often linked to an electronic health record (EHR) which are controlled and managed by a health care organization or a jurisdiction and accessed by health care professionals via a provider portal (Antonio et al., 2020).

A qualitative research study by Santos et al. (2021) on patient portals in Alberta was conducted in the oncology setting in anticipation of MyAHS Connect (aka MyChart by Epic) launching across the province. Of the eleven participants in the study, one had used MyAHS Connect whereas 10 patients used Alberta's other portal launched by the provincial government in 2019 (Santos et al. 2021; more on this below). Thus, since a new clinical information system Connect Care (including MyAHS Connect) launched in November 2022 across all Cancer Care Alberta sites, there was a need for additional qualitative research on this topic to get a fuller picture of portal experiences.

Chapter 2: Literature Review

Research exploring patient portals (sometimes referred to as personal health records, and patient-accessible health records) is expanding as different portals are launching and/or increasing in uptake and then being accessed by unique populations across different health care settings. Overall, a common finding in the review literature on this topic was the actual or perceived patient benefits of electronic portals such as promoting self-management, patient centred care, and improving health outcomes (Benjamins et al., 2021; Brands et al., 2022; Carini et al., 2021; Coughlin et al., 2018; Damen et al., 2022; Risling et al., 2017, Suresh et al., 2025). These reported outcomes often stemmed from patients' convenient and timely access to their laboratory and imaging test results (Petrovskaya et al., 2023). Another common observation of patient portal research is an emphasis on certain populations being studied. Three recent reviews of the current literature showed that patient portal researchers often study patients with chronic health conditions, diabetes being one of the most common (Antonio et al., 2020; Brands et al., 2022). Also noteworthy of the current portal research that these authors discussed is that some primary patient portal research does not indicate which specific portal features are available and being studied. This may threaten the transferability of some patient portal research to areas using different portals with varying features.

Patient Portals in Alberta

Alberta Health Services (AHS), the province's integrated health care authority, has launched the Connect Care electronic health record (EHR) across the province from 2019 to 2024 (AHS 2024a). About 1,300 disconnected EHRs across Alberta were estimated to be replaced with Connect Care (AHS, 2019). As previously mentioned, Connect Care and the MyAHS Connect portal launched on November 6th, 2022, at all cancer centres in Alberta.

Important to note, however, is that prior to Connect Care, the Government of Alberta (GoA) launched a provincial patient portal in March 2019 called MyHealth Records (GoA, 2023). Prior to the AHS' launch of Connect Care, MyHealth Records account allowed all residents of Alberta 14 years and older to view some of their health information pulled from the "legacy" view-only provincial Netcare portal (GoA, 2023). Since 2020, MyHealth Records (on the GoA webpage) houses both Alberta's patient portals: MyAHS Connect, tethered to the Connect Care EHR at the AHS sites, as well as the GoA's My Personal Records, which pulls data from Alberta's Netcare portal (GoA, 2021). Although My Personal Records offers several overlapping features with MyAHS Connect, it is arguably less interactive as it is *untethered* to an electronic health record, meaning users cannot view their appointments, message their health care team directly, or fill in pre-visit questionnaires for ambulatory appointments (which is an important function from the Cancer Care Alberta organizational perspective) as they are able to on MyAHS Connect as it is tethered to Connect Care (AHS, n.d.-b). This further exemplifies the need for this study to examine specific MyAHS Connect portal features.

Signing up for a MyHealth Records account is a multi-step process: people must be at least 14 years of age, have an Alberta ID card, register for a My Alberta Digital ID from the Government of Alberta website, and then use a verification code mailed or texted to them to set up their MyHealth Records account (GoA, n.d.). Santos et al. (2021) reported the confusion Alberta cancer patients participating in their study experienced with multiple portals, terminology, and a convoluted sign-up process. In my personal interactions with patients, the sign-up process has been voiced as a large disincentive for them to utilize MyAHS Connect if they do not already have an existing verified MyHealth Records account. However it is important to note, the option to have an activation code texted is new as of October 2024 (AHS, 2024b), so at the time of data collection for both Santos et al. (2021) as well as our study, all Albertans wanting a verified Alberta.ca account to create portal accounts had to wait for a mailed activation code.

Patient Portal Research in Alberta

Overall, patient portal research in Alberta is gradually emerging. As previously mentioned, Santos et al. (2021) qualitatively researched the experience of cancer patients who were early users or non-users of Alberta patient portals, prior to MyAHS Connect (MAC) being available across Cancer Care Alberta sites.

Another group of researchers from both the University of Alberta and AHS surveyed and interviewed patients and providers in 5 family practice or speciality medicine clinics that were piloting the MyChart patient portal across Alberta prior to province wide implementation (Avdagovska et al., 2020a; Graham et al., 2020). The survey study found that MyChart users reported increased patient satisfaction, a decrease in clinic appointment no-shows, and more than half of participants reported that access to results could have saved them an appointment to review results (Graham et al., 2020). The qualitative study of patients and staff from clinics utilizing the pilot version of MyChart found that health care providers spoke fondly of the scheduling, proxy access, and direct messaging features, but expressed concerns about information overload for patients and the time and education required to teach patients about the system (Avdagovska et al., 2020a). Avdagovska et al. (2020b) also reported the checkered history of the two-portal context in Alberta in their historical research study, speaking to the concurrent development of patient portals created by GoA's Alberta Health (MyHealth Records) and Alberta Health Services (MyChart, eventually renamed to MyAHS Connect). Both Avdagovska et al. (2020a, 2020b) articles highlight that MyChart was the first technology in

Alberta to allow patients to designate someone to be a proxy-user of their portal and access their account on their behalf.

Another concept that has been studied in Alberta and is of organizational significance to ambulatory oncology in Alberta is Patient Reported Outcome Measures (PROMs) (Watson et al., 2021, 2023, 2024). In clinical practice, PROMs are included in pre-visit questionnaires. PROMs are any standardized validated tool given to each patient to report their symptoms (Watson et al., 2021). Since the launch of Connect Care across the province, patients now are entering their patient-reported outcomes by completing the patient-reported outcome measures (PROMs) in the MyAHS Connect portal. The Watson et al. (2021, 2023, 2024) studies contain data collected prior to Connect Care and MyAHS Connect launch. Watson et al. (2021) highlights how PROMs data has the capacity to benefit patient clinic visits as well as inform staffing decisions and provincially available resources for cancer patients. Watson et al. (2023, 2024) detail how the PROMs pre-visit questionnaire used in Cancer Care Alberta has evolved and been validated. Thus, it was interesting to consider with my research how PROMs entered electronically by oncology patients via MyAHS Connect prior to clinic visits are now being utilized in practice by health care providers.

Patient Reported Outcome Measures (PROMs)

As mentioned in the previous section, PROMs are commonly studied in the literature, and they are often closely associated with patient portals. Gandrup et al. (2020) completed a systematic review to examine anticipated and actual benefits of using EHRs to collect PROMs for patients with long-term conditions. Seven of the ten included studies in their review were from an oncology setting. Also, two of the included studies examined the patient portal MyChart by Epic. Half of studies looked at patients filling out PROMs pre-appointment and the other half looked at patients filling out PROMs *between* appointments. Interestingly, despite improved health outcomes being anticipated, the actual benefits found in the studies from reporting PROMs were related to quality of care such as: improved communication, detection of errors or potential problems, increased patient management and empowerment (Gandrup et al., 2020). Warrington et al. (2019) in their systematic review of electronic symptom reporting platforms in oncology in the UK found that it was not possible to link patient reported outcomes to system features due to the inconsistent methods used to evaluate each system.

More recently, a group of Australian researchers sought to understand how electronic-PROMs (ePROMs) improve health outcomes in the oncology setting (Sivanandan et al., 2021). Many patients in the studies included in this review felt that their ePROMs was a communication tool especially if physicians reviewed them, and some patients found it easier to fill in the questions in their own home environment versus the unfamiliar clinic environment. However, some patients also expressed feeling as though routine monitoring of ePROMs is a reminder to them of their illness. The authors suggest that monitoring of symptoms is more beneficial for patients when it includes interventions addressing the symptoms. Examining staff perspectives on ePROM integration into the EHR, this study found that physicians feared an increased workload if they were expected to review all alerts generated by patient reporting. Staff also reported concerns with alerts capturing ongoing/chronic patient concerns, not new and emerging concerns, leading to an increase in alerts and thus workload to sort through which alerts are for acute issues (Sivanandan et al., 2021).

MyAHS Connect Portal Functionalities

Alberta Health Services (n.d.-b) has a document detailing all the features of MyAHS Connect. This includes allowing users to view test results and indicate their preference to be notified of test result release into the portal via email and/or push notifications. Also, users can view and request edits to their: current medication list, allergies, health issues, immunizations, and medical history. Additionally, users can view previous and future appointments, request and cancel appointments, access visit summaries, request proxy-access to their portal, and request prescription refills. Communication with the health care team is facilitated through the ability to send and receive messages from the health care team, complete pre-visit questionnaires (PROMs), and upload images directly into one's own health record using the messaging feature. MyAHS Connect also has a mobile app called MyChart where patients access portal on their mobile device (AHS, n.d.-b). Important to note, telephone appointments are not conducted through MAC. The health care team calls patients from a desk telephone then documents the encounter in the Connect Care EHR. MAC users do not automatically have access to their health care team's progress notes on MAC. When documenting a note on Connect Care, the author of that note must choose to share it to the patient's MAC portal, otherwise the note remains un-released to the patient.

Cancer in Alberta

It is estimated that 1 in 2 Albertans will be diagnosed with cancer in their lifetime, with at least 1 in 5 dying from cancer (AHS Cancer Strategic Clinical Network [CSCN], 2022). The incidence, or number of new cancer cases in Alberta, is expected to increase by 56% from the years 2020 to 2040 (AHS CSCN, 2022, p. 8). With advancements in cancer treatments, people are living with cancer much longer, thus increasing cancer prevalence. It is estimated that from 2019 to 2040, the 5-year prevalence will increase from 70,687 to 131,660 cases (AHS CSCN, 2022, p. 9). Cancer deaths are also projected to increase by 49% by 2040; it is estimated that

9,849 Albertans will die from cancer in 2040. Thus, the needs for research of oncology patient tools such as portals is extremely relevant and necessary.

Cancer as a Chronic Disease and Cancer Self-Management

Living with cancer is complex and requires significant self-management. Some challenges for patients living with cancer include coordinating appointments, attending treatments, managing multiple side effects, not being able to work or do other activities, and learning the complexities of the health care system (Luoh et al., 2021). Cancer is now recognized as a chronic disease (Howell et al., 2021). Traditionally, cancer was managed using an acute-care framework, where health care professionals were responsible for most aspects of care (Howell et al., 2021). However, with cancer treatment advancing longevity and cancer rates increasing, it is no longer possible for health care staff in oncology settings to provide an acute model of care for the number of patients they are treating. Howell et al. (2021) points out that there has been a large cultural shift in oncology to deliver personalized care, and this needs to be complemented with providing patients the tools to increase their self-management to ultimately improve outcomes for patients. Considering cancer as a chronic disease and the benefits of increasing patient self-management, understanding patient's experiences with their online portals and how this may impact self-management is important.

Health Information Seeking, eHealth Literacy, and eHealth Equity

Nearly all cancer patients I have worked with, including their support people, have utilized the internet for some purpose during their cancer treatment. The phenomenon of online health-information seeking is rapidly increasing as patients are using it to research their diagnosis, treatments, find support, and confirm if their oncologist's advice is accurate (Heiman et al., 2018). Internet use requires some degree of ehealth literacy including multiple skills such as “traditional, health, information, scientific, media, and computer literacy” (Heiman et al., p. 1844). eHealth literacy is essential to consider when examining patient portal use as patients need to utilize multiple skills to set up and access a portal and interpret the information on the portal. eHealth literacy is thus interrelated with ehealth equity as some argue that portals offer ehealth literate patients an advantage over patients whose limited ehealth literacy could create barriers to portal use. Current research on the use and effects of digital technologies by patients offers an important insight about the crucial link between health (and ehealth) literacy and the social determinants including a person’s socioeconomic status and education.

In a scoping review on ehealth equity related to patient portals done by Antonio et al. (2019), the authors observe that responsibility of portal use is traditionally placed onto the users/ patients and not the greater system. This is demonstrated in the language utilized in the literature such as barriers and facilitators which are always related to patient factors, not factors at the level of the greater system responsible for implementing the portal (Antonio et al., 2019). They argued that portals being offered in one language creates a significant ehealth equity concern to be considered and that patient concerns with portal security may also decrease the equity of these systems. They also highlight how certain populations are missing from ehealth equity research such as Indigenous peoples, LGBTQIA+ populations, and people with cognitive, physical, and visual disabilities (Antonio et al., 2019). A full in-depth literature review on ehealth equity is beyond the scope of this proposed research project. However, it is important to understand how patient portals and ehealth equity are intertwined.

Patients’ Experiences with Portals and Communication with the Health Care Team

Even though patients were not recruited for this study, it was important to explore the existing literature on patient perspectives of this technology to inform my interview questions with health care providers. In an umbrella review of current patient portal systematic reviews, patient characteristics associated with high portal use were white race, being less than 65 years old, higher income, having private insurance, and needing to access the health care system more frequently (Antonio et al., 2020). Findings related to patients' experiences with portals varied; despite some positive outcomes, barriers and difficulties with patient portal use are also evident.

In numerous health care settings, multiple challenges exist for patients in relation to portals - difficulties with access, being unsure how to interpret the information on the portal, anxiety, and information seeking to make sense of results (Petrovskaya, 2023; Santos et al., 2021). Patients also have an emotional response when viewing their test results online. Zhang et al. (2020) found that 84% of patients felt positive viewing normal results, whereas only 45% felt positive when viewing abnormal results. Patients' level of understanding about whether results warranted follow-up also plays a role in anxiety levels (Petrovskaya et. al., 2023). Some cancer patients hesitate to view their scan results as soon as they are released into the portal due to fear of then having to wait until seeing the physician to discuss an abnormal result (Baun et al., 2020). Commonly, patients feel confusion with interpreting results and seek additional information by using the internet, contacting family, calling the clinic, scheduling an appointment, or sending a secure message through the portal (Petrovskaya et al., 2023). In a literature review, Coughlin et al. (2018) also reported that patient anxiety seemed to stem from misunderstanding of results or finding out results prior to discussing them with their physician.

In the Santos et al. (2021) study specific to patient portals in Alberta in oncology care, a main finding was patient confusion around portals. Some patients were not aware of the portals, and confusion regarding signing up and using the portals was commonly reported (Santos et al.). They also found that patients' relationships with their health care provider was of significance and that patients relied on their providers to help them interpret the information they read on their portals, and ease their anxieties related to this information. Many patients still preferred in-person interactions with their provider (Santos et al.). These researchers also noted how portals are commonly described in the literature in a positive matter, including how they improve patient empowerment through access to increased information. However, the findings in Santos et al. do not reflect this exact narrative, with patients expressing more challenges with interpreting the health information, versus expressing feelings of empowerment from information access.

Despite challenges reported by patients regarding portal use, positive perspectives with portal use included convenience, improved communication with physicians, reduced anxiety with increased knowledge, increased independence, and improved care between multiple patient providers such as decreased duplication of tests (Petrovskaya et al., 2023). Portals also have the potential to increase safety as patients may catch and then report errors in their chart (Antonio et al., 2020). Risling et al. (2017) found in their scoping review that portal use does result in increased engagement, self-management, and knowledge among patients. Improvement in clinical outcomes related to portal use varied; there is little evidence to support metabolic changes, but some evidence to support lowered hemoglobin A1c and medication adherence (Antonio et al., 2020). In a systematic review, Brands et al. (2022) found no substantial improvement in clinical outcomes, but a higher rate of improvement in patient reported experiences such as patient involvement.

Patient portals offer patients a new electronic method of secure communication with their health care team. In a recent study conducted in the United States (US) examining the frequency of patients accessing their patient portals and perceived patient-centred communication, Zaidi et al. (2022) found that increased access of patient portals was associated with a significantly higher rating of perceived patient centred communication. In another US study of the patient portal MyChart by Epic, it was found that secure messaging between patients and their providers was increasing in use, but both parties desired “rules for engagement” (Sieck et al., 2017, Offer Patient Training on Appropriate Portal Use section, para. 1). Patients expressed concerns about taking too much of their providers time and being unsure what issues were appropriate to communicate through the portal (Sieck et al., 2017).

In a scoping review examining health care provider and patient perspectives on patient viewing test results through online portals, Petrovskaya et al. (2023) found that patients hesitated to send direct messages due to their perception of health care provider high workloads. On the other hand, direct messages helped patients avoid appointments for issues that could be discussed through the portal (Petrovskaya et al.). Patient preferences for electronic messaging with providers include a less than 24 hour response time, as much detail as possible related to the initial question, statements of support, encouraging patients to participate in the decision making, and “social talk” to increase personalization (Alpert et al., 2021, p. 1382). In addition to electronic messaging, patients’ ability to view test results also impacts their communication with the health care team.

In a recent study completed in the United States, Steitz et al. (2023) explained how the 21st Century Cures Act mandated test results being immediately released. The Cures Act does not specify if patients need to be informed of results via a notification as soon as they are available. Steitz et al. examined a medical centre where patients have to opt-in to be notified about test results. The researchers found that letting patients choose to be notified of results decreased the amount of patients pre-viewing this information prior to their providers and decreased patient messaging to providers regarding results. Steitz et al. (2023) suggest that this may offer a compromise of supporting patient autonomy while potentially decreasing patient distress in viewing test results.

Health Care Providers' Perspectives on Patient Portals

This section will review physicians' perspectives on patient portals broadly, in the oncology settings, and then specifically nurses' experiences with portals in the oncology settings. There appears to be a lack of literature focusing on clerical workers in the oncology settings that use patient portals which factored into our decision to include them in our study.

Physicians' Perspectives on Patient Portals in Non-oncology Practice Settings

Overall, studies that focus on health care provider perspectives on portals typically focus on electronic communication with patients and patients viewing their test results. In the Sieck et al. (2017) study, physicians in the US expressed frustration around patients using portals to send direct messages about inappropriate topics (such as acute symptoms) and not providing enough context in their message for providers to make decisions based on a singular message. Health care providers' perspectives on portals have been shown to impact patient portal uptake and use. In the Damen et al.'s (2022) scoping review focused on patients with varied diagnoses using portals to manage their own medical data, they observed that physicians' likelihood to encourage portal use was linked to their own beliefs about how reliable and useful patient-entered data is. Damen et al. (2022) reported that contributing to physicians' portal perspectives is a lack of understanding of portal benefits, beliefs that patients are unmotivated or incapable of entering this information themselves, or the belief that reviewing patient entered information will increase clinic workloads. Similarly, Antonio et al. (2020) reported in their umbrella review that physicians doubted the accuracy of patient-entered information via portals, feared portal information increased patient anxiety, suspected change in workflow, and had issues regarding lack of support for portal use in the form of training and resources.

One study specifically looked at how radiologists felt about patients accessing their reports prior to reviewing them with their respective physicians. Choi et al. (2022) studied patient access to radiology reports at 3 institutions in the United States through Epic's MyChart. Seventy-six percent of radiologists surveyed in the study felt that patients' access to their reports did not change their role as a radiologist, however only 14% of radiology exams were reviewed via the portal at the time of this study. Only 30% of radiologists reported concerns that patients will feel anxious reading their reports or misinterpreting them (Choi et al., 2022). This article was not specific to radiology report review in the oncology setting.

Physicians' Perspectives on Patient Portals in Oncology Settings

Overall, physicians working with oncology patients seem to express more concerns and considerations for safe portal use in oncology practice settings compared to physicians in non-oncology practice settings. Oncologists are especially concerned with patient access to test results online prior to seeing their oncologists due to the sensitivity of the information (Petrovskaya et al., 2023). In a study of outpatient oncologists in the US pre-portal implementation, 51% felt that patients should not have access to their laboratory results online, however this sentiment decreased to 32% post implementation (Rodriguez et al., 2011). But oncologists still reported that they were not comfortable with patients having an immediate, real-time access to test results due to concerns with patients' inability to interpret the results (Rodriguez et al., 2011). A recent review also reported oncology health care provider apprehensions with patients viewing their results and offered suggestions to mitigate this such as institutions implementing AI tools to simplify medical language in reports and striving for all patient appointments to be within 48 hours following imaging tests (Ribeiro et al., 2024).

In another recent study, Lam et al. (2024) recruited a sample of 65 nurse practitioners and physician assistants across the United States who work in neuro-oncology to complete an online cross-sectional survey with quantitative and qualitative questions. Fifty-eight percent of providers reported that patients contacted them at least once per months outside of clinic appointments to clarify something on their online health record. Fifty-four percent of providers agreed that not all lab results should be immediately released. Ninety-seven percent agreed that some patients suffered "substantial distress" from viewing health results online prior to a clinic appointment (Lam et al., 2024, p. 2). In their responses to qualitative questions, nineteen providers went on to describe this distress patients experience reviewing results online and 17 suggested a delayed release of laboratory tests. Qualitative responses aligned with quantitative responses as per authors (Lam et al., 2024).

A study in the oncology setting by Geerts et al. (2019) examined opinions of patients and their hematologists regarding patient portals at a cancer centre *not* currently using a portal. Physicians were supportive of the portal but expressed worries related to patient anxiety and how to help patients understand the information they will be reading on the portal. Findings were mixed regarding whether physicians felt that results should be shared in plain language on portals versus in medical language. Authors acknowledged the importance of health care providers being a part of portal implementation and encouraged portal customization as much as possible (Geerts et al., 2019). In a qualitative study conducted in the United States by Alpert et al. (2018) oncologists expressed feeling unaware of portal functionalities and rollout process. Oncologists in their study felt strongly that face-to-face was the preferrable method for communication, especially regarding sensitive topics such as scan results. Oncologists did agree however that patients knowing results beforehand made in-person visits more productive since patients did not have to spend time digesting the information (Alpert et al., 2018).

In Iceland, Fridriksdottir et al. (2023) conducted interviews with health care providers working with cancer patients on chemotherapy utilizing a portal to enter PROMs, access educational resources, and communicate with their health care team. Overall, the researchers found health care providers felt positively about the system in terms of communication, monitoring, and providing education. Staff did report some confusion on who was responsible for monitoring and acting on the PROMs. They suggested creating a question for patients in their PROMs questionnaire to ask if they would like to be contacted via phone by a health care provider. Overall, health care providers wanted very clear expectations on who was responsible for what regarding the portal workload (Fridriksdottir et al., 2023).

In a recently published review of patient portal in oncology, Suresh et al. (2025) examined how these portals impact oncology care for both patients and their care providers. The authors specifically wanted to find out how portals are being used in oncology and their impact on health outcomes. They found that cancer patients are the highest users of portal systems and use the portals in unique ways compared to non-oncology patients. Secure messaging was a primary portal feature used by oncology patients. Patients in the US also have the right to access their clinicians' notes so this feature was also one of the most highly utilized. The review found that oncologists' opinions on releasing sensitive test results to patients was mixed, and some patients also echoed that they would not want to receive a cancer diagnosis through the portal and that results can be confusing and easily misinterpreted. Despite this, both patients and oncologists felt that blood work results should be released to patients through their portal. Data linking oncology patient portal use to health outcomes was more mixed and identified as an area requiring further research (Suresh et al., 2025).

Nurses’ Perspectives on Patient Portals

One study specifically examined oncology nurses’ perspectives on portals in the United States (Gerber et al., 2017); other researchers (Laccetti et al., 2016; Rodriguez et al., 2011; Steitz et al., 2020) examined nurses as part of the health care team, also in US settings. Research on nurses’ perspectives in oncology focuses heavily on workflow and communication with patients via the portal or telephone. In the Rodriguez et al. (2011) study, they evaluated nursing and oncologist perspectives following the implementation of portal use to view lab results. The authors also analyzed nursing phone calls to see if any noticeable change in workload was observed post-portal implementation. No changes to nurses’ phone call workload were observed in the study after implementation of the portal (Rodriguez et al., 2011). These researchers found that nurses overall supported patient access to lab results but still were unsure about patients’ ability to interpret results.

Steitz et al. (2020) examined how health care providers in a breast cancer setting were communicating with patients and the extent of this workload. They acknowledged that technology played a huge role in care coordination and that the coordination was largely invisible work. Of all secure messaging threads via EHR studied, nurses were involved in 98% of them. The authors acknowledged that a substantial amount of electronic messaging is required for care coordination in the oncology outpatient setting to coordinate cancer treatments. Nurses’ role in addressing patient messages sent in from portals was also recognized in Laccetti et al.’s (2016) study, who found that physicians only responded to 5% of patient messages whereas most of the messages were handled by nurses in their oncology setting.

Gerber et al. (2017) examined nursing work in an outpatient oncology setting at a cancer centre in the United States. Nurses expressed concerns with the portal altering and increasing their workloads, safety concerns as patients reported medical emergencies via the portal, and how the portal highlights differences in oncologists' workflows and communication preferences. Gerber et al. (2017) suggested that institutions increase support for nurses and patients with portal use for best success.

Research Questions Based on Observations in Practice in Alberta and Portal Research

Multiple research gaps exist that necessitate studying patient portals in the oncology setting in Alberta. PROMs have been studied when patients were solely filling them out on paper. Oncology patients in Alberta are now entering their symptoms (PROMs) into their portal pre-appointment, and this shift in practice needs to be understood. Another gap is how the portal impacts health care team communication, such as electronic messaging since the implementation of patient portals. Most of the research I found related to this topic originates from the United States; this research will contribute to the body of knowledge on patient portal use in Canada. Furthermore, research focuses mostly on physicians' experiences and perspectives on portal use. There is a need for research examining the experiences of nurses and other health care team members (clerical staff) related to the portal. MyAHS Connect is a newer technology in the province and it is important to understand how it transforms health care provider work in oncology. To my knowledge this has not yet been studied since MyAHS Connect implementation.

Theoretical Perspective

This study was informed by the technology-in-practice sociomaterial perspective. This perspective highlights the relationship between technology and health care users and aims to not overestimate technology's power or diminish it to a simple tool (Timmermans & Berg, 2003). Technology is studied in action, inherently related to, "other tools, practices, groups, professionals, and patients" (Timmermans & Berg, 2003, p. 104). In this study, this perspective did not serve as a prescriptive framework but as a theoretical orientation to approach the study.

The sociomaterial perspective originates from actor-network theory (ANT), outlined in the 1980s by Bruno Latour and Michel Callon, and explores how an actor, human or non-human, acts in relation to other actors and their environment (Booth et al., 2016). ANT views technology as non-neutral, that is, inevitably altering the way humans behave (Petrovskaya, 2023). Sociomateriality is the inability to separate seemingly insignificant objects from significant social concepts, as objects impact behaviours (van Hout et al., 2015). Sociomaterial view of technology challenges the traditional descriptions of technology from an essentialist, deterministic, instrumental, and technical point of view (Petrovskaya, 2023). Essentialism views technology as fixed; determinism views it as inherently good or bad; instrumentalism diminishes technology to a mere tool; and the technical view does not consider psychological and social effects of technology (Petrovskaya, 2023). In contrast, technology-in-practice perspective exemplified by ANT offers another non-deterministic, non-essentialist conception of patient portals (Petrovskaya, 2023). This perspective invites the researcher to focus on how humans and technology are in relation with one another and in a specific context (Petrovskaya, 2023). Technology is neither unquestionably positive nor a negative force distracting health care workers from direct care (Petrovskaya, 2023; Santos et al., 2021).

A technology-in-practice sociomaterial orientation was appropriate for use in this study as the goal was to explore how the health care team functions in their environment because of the presence of MyAHS Connect. This theory also supports a focus on oncology as different actors and contexts impact the outcome of the relationship with technology. Booth et al (2016) advocated for using ANT in nursing-focused research due to the socially complex environments that nurses work in. In summary, this theoretical perspective allowed me to examine how the MAC patient portal as a new actor situated in the health care context was both having an impact on other actors and how the portal itself was impacted by those who interacted with it.

Chapter 3: Methods

Study Design

Qualitative description was the method used for this study. Qualitative description is not a singular or prescriptive research method (Sandelowski, 2010). In my study, the overarching goal was to present findings reflective of health care practices in the outpatient oncology clinics as revealed through the interviews with health care team members. Sandelowski (2010), describes qualitative description as "data-near," but emphasizes that the analysis of the data is thoughtful and interpretive (pp. 78-79). Use of qualitative description allowed me to focus on how my methods best aligned with technology-in-practice perspective to answer the research question.

Setting

The study took place in a large urban adult cancer centre in Alberta, specifically, in the outpatient solid-tumour systemic therapy oncology clinics. This is where people with solid-tumour (non-hematological) cancer who are being treated with multiple different therapies, such as chemotherapy, come to see their oncology team to review their treatment and status. In this setting, all pathology, imaging, and blood work is reviewed with patients and plans of care are continuously adapted taking into consideration both the patient's cancer and their quality of life. This setting is also where nurses complete teaching with patients on topics such as chemotherapy, medications, nutrition, symptom management, and systemic navigation, to name a few. Important to note about this setting is that Connect Care, and thus the tethered patient portal MyAHS Connect, launched on November 6th, 2022. Prior to the launch of Connect Care, staff in Cancer Care Alberta (CCA) settings were utilizing an EHR called Aria which did not have a patient portal and was not integrated into other care settings in AHS such as acute care.

Thus, staff and patients are still adapting to the Connect Care electronic health record and patient portal but are generally past the point of feeling that it is a novel technology.

Nursing Roles at Cancer Centre

Within the cancer centre outpatient department, clinic nurses have numerous responsibilities and roles. All nurses are initially trained to see patients in the clinic area - room them, assess them, and then give report to the primary oncologist on their status. Nurses are also responsible for completing education on systemic therapies and ensuring patients have the necessary psychosocial supports, appointments, and prescriptions in place for their cancer treatment. Each clinic [1] is assigned a primary nurse (registered nurse [RN] or licenced practical nurse) who are assigned to be the nurse in that clinic regularly for continuity. Each primary nurse often also works with a secondary nurse in clinic. This secondary nurse may or may not be consistently assigned to that clinic. Nurses are expected to work with all tumour groups aside from those that require additional training such as: gynecology, head and neck, neurology, and sarcoma. In addition to working with specific tumor groups, nurses can be cross trained to other roles including Connect Care In-Basket Management, Telephone Triage (RN only), and Nurse Coordinators (RN only).

In-basket management involves nurses reading, triaging, and responding to patient messages sent in through MAC. All patient messages sent in through MAC get filtered into one of two collective pools on Connect Care: Patient Advice Request or Patient Schedule Request. As the Patient Advice Request pool is most likely to contain patient symptom questions, nurses are asked to prioritize addressing messages sent to that pool first, then to address Patient

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[1] A clinic refers to a set time frame where patients are scheduled to see a certain oncologist and their nursing team. For every oncologist's clinic there is a designated time, physical location (2-5 clinic rooms), and clinic nurse.

Schedule Request messages afterwards. The number of nurses working in-basket management daily varies based on staffing. Each day, clinic nurses not assigned to in-basket management are expected to still review all of the in-basket messages to screen for messages from patients of the specific oncologist(s) that they work with to ensure nothing urgent gets missed. Each in-basket message sent in by patients automatically indicates the respective oncologist they are assigned to.

Telephone Triage nurses are responsible for triaging phone calls from patients who call into the cancer centre daily from 0800-1600 regarding concerns related to symptoms, appointments, etc. Patients of all tumour groups are encouraged to call the Telephone Triage number to receive assistance with any concerns. Patients at the cancer centre do not have a direct line to their clinic nurse, unless they are enrolled in a clinical trial. All patients are given a Telephone Triage contact card at their initial consultations and asked to call in with any questions or concerns.

Nurse Coordinators are responsible for triaging new patient referrals to the cancer centre for a particular tumour group. Nurse Coordinators also support and educate patients and their family members over the phone regarding any additional testing required prior to their initial consultations at the cancer centre. Nurse Coordinators guide patients through the often stressful and confusing process of what occurs between the initial referral being sent and them getting that first consultation appointment with their specialist at the cancer centre. This is considered a leadership role and requires experience in the clinics prior to working in this role.

Clinical Research Unit (CRU) nurses are also a pivotal part of the department and support patients through the process of enrolling and then taking part in a clinical trial. CRU nurses are under a separate manager than the clinic nurses. CRU nurses always see their patients in clinic and these patients get a direct telephone number to their CRU RN to ensure that any adverse events while on a trial drug are being recorded and addressed immediately. Similarly to clinic nurses, CRU nurses have a primary tumour group they work in but are responsible for helping patients in other groups when additional staffing coverage is needed.

Sample

For this study I invited health care providers from an urban adult cancer centre outpatient department systemic therapy (solid-tumour) area, using a combination of purposive, convenience, and snowball sampling for the sample size of 15 participants. Of these 15 participants, 12 were registered nurses, 1 was a clerical staff worker, and 2 were medical oncologists. Age of participants ranged from 25 to 64 years old. Thirteen participants identified as female, and two identified as male. Years of experience working as either a nurse, clerk or oncologist ranged from 3 years to 45 years. Of the 12 registered nurses recruited, 3 of these nurses were CRU nurses, meaning that they support patients in the clinic department who are enrolled in clinical trials. Five of the nurses had experience working as nurse coordinators and 3 nurses regularly worked in Telephone Triage. Two nurses in the study were trained to clinics only.

I considered clerical staff as a member of the health care provider team as they interact with patients directly at numerous points of their care. Clerical staff check patients in for their appointments and are tasked with giving patients the sign-up information sheets for MyAHS Connect. Clerical staff assist in Telephone Triage, in clinics as Medical Office Assistants, and in offices to coordinate external tests, to name a few of their numerous responsibilities. Clerical staff are essential for helping coordinate care in the centre.

Health Care Provider Recruitment

Within the cancer centre, I recruited from the health care providers working with patients with solid tumour cancers (not hematology) in the outpatient department systemic therapy clinics. Inclusion criteria for the study were: health care providers (including nursing, clerical, and medical oncologist staff), who work at the cancer centre in the Solid-Tumour Outpatient Clinic Department, who utilize Connect Care for work duties (the EHR linked to MyAHS Connect), interacting with patients regarding their care either in-person or via telephone, and able to read and understand English.

Participants were recruited primarily through two mechanisms, information session for different health care provider groups followed by study emails. I first held a virtual information session on Tuesday, July 9th, 2024, in the systemic therapy solid tumour outpatient morning huddle that occurs daily on Microsoft teams. All nursing and clerical staff in the solid-tumour clinic area are encouraged to attend this morning meeting (however it is not mandatory). This 5-minute information session included PowerPoint slides (see Appendix A) outlining the study objectives and what participation would involve. Following this short presentation, the two outpatient department nurse clinicians forwarded the nursing recruitment email (see Appendix B) sent from the University of Victoria study email to all the nurses in the solid-tumour outpatient department.

A second information session took place during the CRU nursing team daily morning huddle on Microsoft Teams on July 16th, 2024. Each information session used identical information/slides. A third-party nurse liaison then forwarded my nursing study email to all the CRU nurses following this information session. The email encouraged readers to not reply but express interest by emailing the University of Victoria designated study email (see Appendix B).

Due to high expression of interest, no follow-up emails were required to be sent out to either nursing group.

Efforts to recruit clerks and medical oncologists were tailored based on nursing recruitment. Due to high recruitment of nurses, fewer clerical staff and oncologists were recruited, however, I still felt it was necessary to capture their perspectives in the study as both groups are pivotal members to the patient care team. To recruit clerical staff, on Tuesday August 6th, 2024, the outpatient nurse clinicians forwarded my clerical recruitment email to all the clerical team members. To recruit oncologists, an administrative assistant forwarded my physician study recruitment email to all medical oncologists at the site on Tuesday August 20th, 2024. A reminder email was sent out two weeks later to the same group of oncologists.

I monitored the study email daily for staff inquiries to participate in the research study. Using email, I replied and attached the study information consent form (see Appendix C) to the email for them to review. Then, when communicating via email, I would a) screen potential participants using inclusion criteria; b) book an interview date. Participant consent was then collected at start of interviews: signed for physical in-person interviews and verbally completed for Zoom interviews.

Data Collection

I generated the data for this study through individual semi-structured interviews. Interviews with staff occurred either in-person, or via Zoom video conferencing. Interviews ranged in length from 28-72 minutes (average 49 min). All interviews were recorded with a password protected audio-recording device and then transcribed using Whisper.ai application on my personal laptop, which does not use iCloud technology. I ensured the accuracy of transcription by re-listening to all recordings multiple times whilst reading transcripts. In addition, unstructured, hand-written notes were generated during the interviews based on my observations of the process. This was not a method of data collection but used to guide the questions I would ask participants during the interview. I most often took notes on topics participants mentioned that I wanted to inquire further about. To uphold the technology-in-practice sociomaterial theoretical framework of this study, interview questions avoided positive or negative bias towards the MyAHS Connect portal. Please see Appendix D for the *Interview Guide* questions, including question prompts, for this study. Although the *Interview Guide* was prepared in advance, my approach presupposed openness to the continuous emergence and revision of this tool as the study progressed, based on my reflections of the data. As I interviewed staff, I adapted interview questions to encourage participants to give as much detail as possible regarding the exact work they do and how the MAC portal has impacted this work. Being familiar with clinic work environment, I was also able to ask more in-depth interview questions and probing questions. All participants were emailed a $40 Amazon e-gift card following their interview to thank them for their time participating in the research study.

Data Management

During the initial communication with all study participants, I noted their personal information (names) on a word document master list. Each participant was assigned a code number. This list was stored on a private Microsoft Teams UVic SharePoint Online that is only password accessible by myself and my co-supervisors: Olga Petrovskaya and Vera Caine. All interviews were recorded using a password-protected voice recorder, including Zoom interviews (record feature on Zoom was not utilized to prevent saving files to iCloud).

Immediately after each interview, I uploaded the recording to the SharePoint Online and deleted the audio file from the recording device. Once Whisper.ai finished transcribing the interviews, I copied and pasted the transcripts onto the SharePoint site, and did not save any of the transcripts to my Whisper.ai app or my personal laptop. All consent forms were saved to the SharePoint site, then immediately shredded using secure cancer centre shredding bins.

Data Analysis

I used the thematic analysis approach developed by Braun and Clarke (2006). Thematic analysis can be conducted in combination with various methodologies and theoretical frameworks. Data analysis occurred simultaneously with data collection, so that the analysis could continuously inform and refine data collection. Starting with the first phase of thematic analysis, I became familiar with the data by reading through all the transcribed interviews and listening to the audio recordings. While reading and listening, I would make notes to see what stood out for me. The second phase of data analysis was to generate the initial codes. I manually coded each transcript by re-reading it and summarizing the main parts of each section. The coding was data driven, that is, themes were generated directly from the data (Braun & Clarke, 2006). Although coding was done while considering my research question, I did not exclude any themes in initial coding that emerged outside of the research question.

Once I coded each interview, I compared interviews, and all initial codes and started to organize them into broader themes, continuously looking back on the original codes to ensure each theme has adequate data associated with it. Then, I continuously refined these themes to identify core themes that best represented each data set. Next, I wrote an analysis for each theme so that each can be easily defined (supported by quotes and examples). Careful attention was required in this phase to ensure that data was being analyzed and not just paraphrased (Braun & Clarke, 2006). This was an iterative process, where my analysis was constantly informing the research questions asked in data collection to help attain richness of the data. Final themes comprised the findings.

Rigor

To uphold rigor in this study, I focused on credibility, transferability, and was transparent and aware of my dual role (researcher and as a nurse working at the study site). I ensured credibility by selecting an appropriate sample size, actively listening during the interviews, using probing questions, and monitoring the accuracy of transcriptions. In my manuscript (Chapter 4), I included quotes from the interviews to further enhance credibility. For transferability of the study, I detail MyAHS Connect portal features in written dissemination materials so readers can assess if the portal features studied align with patient portals utilized in their practice settings. I describe which health care providers were responsible for different aspects of work created by the patient portal.

Recognizing my dual role as both researcher and registered nurse in the study setting, consideration of reflexivity was important. Polit and Beck (2021) describe reflexivity as a researcher's self-awareness of their own "personal background and set of values," and how this may affect the study (p. 571). While recruiting colleagues, I was be constantly aware of my dual role. I observed that this dual role had a positive effect on increasing health care team recruitment due to staff's familiarity with me, however, I was conscious of preventing coercion. During data collection, my knowledge of Connect Care as a team member allowed me to ask in-depth interview questions, but I was aware of my biases to ensure I was capturing participants' thoughts. When analyzing data, consulting with my co-supervisors who do not share this dual role provided further protection against bias.

Ethical Considerations

Ethics approval was granted through the University of Victoria Human Research Ethics Board (24-0017) and the Health Research Ethics Board of the Alberta Cancer Committee (HREBA.CC-24-0039) (see Appendix E). Operational Approval was also obtained from Alberta Health Services for this project (see Appendix F). All in-person interviews were conducted in a private room available for booking at the cancer centre to ensure privacy. In terms of my dual role of both nurse and researcher, I do not have any authority over any of the AHS staff members who were invited to participate in this study. As per the Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council (2018) *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*, “undue influence” may occur if someone holding power over another person attempts to recruit them (p. 28). I am not in a power position over my colleagues, which mitigated the risk of undue influence. Also, none of the individuals who assisted with sending recruitment emails (nursing clinicians, nursing liaison, or administrative assistant) are in a power position over anyone recruited for this study. I explicitly stated in recruitment materials that participation is entirely voluntary and will not impact the participant’s job status or relationship with myself.

Dissemination

I will mobilize knowledge generated in this study through conference presentations and a publication. My main goal will be to publish a manuscript with my findings in a journal, like the Canadian Journal of Nursing Research (see Chapter 4). I also will present my research findings to the outpatient nursing department at the cancer centre where the study was conducted. My thesis committee (Olga Petrovskaya, Vera Caine, and myself) have been accepted to present the following abstract as a poster presentation at the 2025 International Council of Nurses Congress in Helsinki, Finland titled: "*The effects of an online patient portal on nursing work in the oncology setting: A qualitative study*." Additionally, I have submitted two abstracts for consideration to be presented at the 2025 Canadian Nursing Informatics Association conference in June 2025 as well as the Canadian Association of Nurses in Oncology annual national conference in October 2025. Dissemination using a variety of methods will be important to ensure research findings are broadly shared.

Chapter 4: Publication (to be submitted to the Canadian Journal of Nursing Research)

Title: The influence of an online patient portal on nurses' work in outpatient oncology clinics: A qualitative study.

Journal: Canadian Journal of Nursing Research

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Authors Contributions. SQ and OP led the conceptualization of the project. SQ drafted the proposal, ethics application, and interview guide under VC and OP's mentorship. SQ conducted participant recruitment, data collection, the initial data analysis, and drafted an early version of the manuscript. OP and VC supervised SQ during data analysis and contributed to manuscript editing. All coauthors approved the final version.

Declaration of conflicting interest. We have no conflicts of interest to declare.

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Ethical approval and informed consent statements. The study received ethics approval from the University of Victoria Health Research Ethics Board and the Health Research Ethics Board of Alberta Cancer Committee. All participants provided informed consent.

Data availability statement. No additional data is publicly available due to the small sample size and location, as information shared could compromise the privacy of research participants.

Abstract

Background: In November 2022, Alberta Health Services launched a new province-wide electronic health record, Connect Care (Epic), with a tethered patient portal, MyAHS Connect, across all Cancer Care Alberta sites. Oncology patients now can view their health record (including results), view and manage appointments, enter data directly into their chart, and securely message their health care team.

Purpose: To explore how an online patient portal influences the health care team's work in an outpatient oncology setting.

Methods: A descriptive qualitative method was used for this research study. 15 health care providers were recruited (12 registered nurses, 2 medical oncologists, 1 clerical worker). Data was analyzed using thematic analysis with a technology-in-practice sociomaterial theoretical perspective informing our approach.

Results: Three main themes were generated: the invisibility of nurses' responsibility of supporting patient portal use, access to the portal shapes a new type of patient, and MyAHS Connect is as good as the networks of care provision in which it is embedded.

Conclusion: This qualitative study details how patient access to the portal changed the ways that health care providers are working but the degree of this change was highly influenced by patient use of the portal, staff's use of the electronic health record (EHR), and the greater system context. This research highlights the substantial role of nurses when patient portals are used in health care practice settings.

Key Words: Patient portal, electronic health record, nursing, oncology, qualitative, actor-network theory, Alberta

Background and Purpose

Online patient portals are ever-increasing in uptake in health care internationally and in Canada, with oncology patients known to be one of the highest user populations of these systems (Suresh et al., 2025). Online portals may allow patients to view their health information, test results, and treatment schedules; request that data be added or corrected in their chart; and send and receive messages from their health care team from either a web browser or the mobile app version of the portal (AHS, n.d.). People with cancer rate perceived benefits of using online portals higher than other patient populations accessing this technology (Rexhepi et al., 2020). In the Canadian province of Alberta (population approx. 4.7 million), its health authority, Alberta Health Services (AHS), implemented a clinical information system, Connect Care (Epic), from 2019 to 2024 (AHS, 2024), which includes an electronic health record (EHR) for providers and a patient portal, MyAHS Connect (AHS, n.d.). The Epic system is widely utilized internationally (Epic, 2025) and in Canada (Digital Health Canada, 2024).

Alberta has a unique history of patient portals: there are two province-wide portals, both launched in 2019, (i) MyAHS Connect launched in 2019-24 by AHS tethered to Epic's Connect Care and (ii) My Personal Records launched by the Government of Alberta's branch, Alberta Health, a view-only portal pulling information from a legacy EHR, Netcare (Government of Alberta, 2023; 2024). The unique history of these two Alberta's portals is well documented (Avdagovska et al., 2020a; Santos et al., 2021) and early experiences of patients and providers related to portal enrolment and use have been reported (Avdagovska et al., 2020b; Graham 2020; Santos et al, 2021).

In November 2022, Connect Care launched across all oncology settings in Alberta (known as Cancer Care Alberta, CCA), enabling all patients visiting a provincial cancer centre to sign up for MyAHS Connect (MAC). Once patients sign up, they can instantly view their blood work, diagnostic imaging and pathology reports, and directly message their health care team. MAC also prompts patients to fill in their medication and health histories and complete their pre-visit questionnaires, MySymptom Report (MSR) up to 72 hours prior to their follow up appointments.

MSR is used to collect data about patient symptoms and concerns using patient-reported outcome measures (PROMs). CCA has been collecting PROMs via pre-visit questionnaires since 2012 using a combination of the Edmonton Symptom Assessment System - revised (ESAS-r) and the Canadian Problem Checklist (Cuthbert et al., 2019), using paper forms prior to the launch of the online patient portal MAC. PROMs collection concurrently accomplishes the goal of improving individual patient assessments in the short-term during clinic visits, while also improving care long-term by supplying aggregated health data for research and quality improvement (Cuthbert et al., 2019). MSR tools are updated and modified over time (Watson et al., 2024).

With the launch of MAC, online-entered MSR patient data can now be captured for both telephone and in-person appointments with physicians. Moreover, when patients fill out their MSR online, the system generates additional questions for any symptoms rated four or higher. Patients can also select if they would like referrals to additional supportive services. No referrals are automatically sent via MSR, however staff review these requests during in-person clinic visits. Patients who do not fill out the online MSR via MAC are given a paper copy during their clinic visit. It is acknowledged that simply collecting PROMs does not improve patient outcomes, rather health care providers must know how to interpret these scores and then act on them accordingly (Snyder et al., 2019).

Published reviews of primary research focused on patient portals commonly report the actual or perceived patient benefits such as promoting self-management, patient centred-care, and improved health outcomes (Antonio et al., 2020; Benjamins et al., 2021; Brands et al., 2022; Carini et al., 2021; Coughlin et al., 2018; Damen et al., 2022; Risling et al., 2017; Suresh et al., 2025). These positive effects often stem from a patients' convenient and timely access to their laboratory and imaging test results (Petrovskaya et al., 2023). Often, health care providers tend to speak more cautiously of patient portals, particularly in the oncology setting. Common concerns cited by health care providers include doubts about the accuracy of patient-entered information, increased patient anxiety, perceived increased workload, and lack of training for portal use (Petrovskaya et al., 2023). Oncologists express apprehension regarding patients viewing their abnormal or confusing results online prior to an in-person discussion (Lam et al., 2024; Suresh et al., 2025).

While patient portal research is rapidly growing, studies examining the contribution of nurses in supporting patients via EHRs and patient portals is a nascent field even though nurses play important roles in care coordination, in particular in oncology (Gerber et al., 2017; Laccetti et al., 2016; Steitz et al., 2020). In a scoping review examining which nursing communication strategies increase patient engagement, patient portals were acknowledged to provide nurses with new communication methods to increase patient satisfaction (Crivelli et al., 2024). Shelley et al.'s (2024) systematic review found that health information systems in oncology settings increased communication between nurses and patients affecting nursing work of assessing, diagnosing, and planning. Shelley et al. (2024) observed that reviewed studies often left out the role nurses play in non-physical, holistic, patient needs. This review, however, was quite broad, including different information systems in both in-patient and out-patient settings such as health records, portals, remote symptom monitoring tools, and clinical decision-making tools.

It is projected that 1 in 2 Albertans will be diagnosed with cancer by 2050 (Alberta Health Services Cancer Strategic Clinical Network, 2022) so use of MAC in Alberta is only expected to increase. Yet, locally, patient portal's impact on care team communication such as electronic messaging, and effects of patient access to their test and imaging results in real-time, have not been studied in the oncology context in the province. Further, a province-wide EHR with the linked MAC patient portal is in existence in oncology settings only since November 2022. In addition to using other MAC functions, patients with cancer are now entering their symptoms (MSR or PROMs) pre-appointment into the portal rather than completing paper forms in the clinic. A few international (predominantly US) qualitative studies (Alpert et al., 2018, 2019; Sieck et al., 2017) focused on provider-patient communication via a portal mostly captured physicians' perspective, thus obscuring nurses' role in care coordination and communication. This research gap necessitated studying nurses' work in the EHR- and patient portal-supported oncology setting in Alberta.

Study purpose

Our research was guided by the question: What are the effects of an online patient portal on the health care team's work in an oncology setting? The primary goal was to understand the experiences of nurses; however, based on the interdisciplinarity of cancer care it was important to also invite clerical staff and medical oncologists to participate.

Methodology and Theoretical Approach

This qualitative descriptive study (Sandelowski, 2010) utilized a thematic analysis (Braun & Clarke, 2006) and was informed by a technology-in-practice sociomaterial theoretical perspective. According to this perspective, technology is neither all-knowing nor is it a simple tool (Timmermans & Berg, 2003). This perspective is rooted in actor-network theory (ANT; Latour, 1996; Law, 2007; Mol, 2010), and explores how an actor, human or non-human, acts in relation to other actors and their environment. ANT views technology as non-neutral, that is, inevitably altering the way humans behave, and invites a focus on how humans and technology are in relation with one another and in a specific context (Petrovskaya, 2023). Technology is neither unquestionably positive nor a negative force distracting health care workers from direct care (Petrovskaya 2023; Santos et al., 2021). ANT informed analyses of nursing practice bring to light what nurses are actually doing rather than promulgating habitual views of nurses' role (Wynn & Garwood-Cross, 2024). The application of ANT to this research helps foreground the presence of a new actor (the portal) and draws our attention to how it alters the behaviour of all actors who interact with it (health care workers, patients) within the organizational context.

Setting and sample

Fifteen health care providers were recruited from July to October 2024 from the outpatient department solid-tumour systemic therapy clinics at an urban adult cancer centre in Alberta. In this setting, multidisciplinary health care teams follow up with patients who require active treatment and review all pathology, imaging, and blood work with them, typically during in person visits to adapt plans of care. Nurses support clinics by assessing patients and provide patient education on topics of chemotherapy, medications, nutrition, symptom management, and systemic navigation. Another group of nurses, trial nurses, support clinical research. Health care providers' EHR, Connect Care, and a patient portal MyAHS Connect, launched in this setting in November 2022, replacing the previous EHR system, Aria. Prior to Connect Care, staff used Aria for scheduling and documentation and accessed Netcare separately from their web browser to view all test results. Aria did not have a tethered patient portal. At the time of this study 18 months following Connect Care launch, staff were still adapting to the new system augmenting the existing EHRs Netcare and Aria as needed.

Nurses (n=12) were recruited through a virtual information session and a recruitment email circulated to all nurses in the department. The study included nurses working in the outpatient department in various roles: nurses who see patients in clinic, nurses who support patients between clinic visits in telephone triage, nurses who recruit and support patients through clinical trials, and nurse coordinators who triage new oncology patient referrals and support patients entering the system. A recruitment email was also sent by a third party to all clerical staff and all medical oncologists at the centre; one clerical staff and two medical oncologists were recruited into the study.

Protection of human subjects

Ethics approval was granted through the University of Victoria Human Research Ethics Board (24-0017) and the Health Research Ethics Board of the Alberta Cancer Committee (HREBA.CC-24-0039). Operational approval was also obtained from Alberta Health Services. After participants provided informed consent, interviews took place in a private setting. The primary researcher (SQ) works as an RN in the setting; however, she holds no authority over colleagues who agreed to participate in the study. Data management procedures adhered to ethical standards.

Data collection

Data was collected through semi-structured interviews from July to October 2024 either in person or on Zoom, and they ranged from 28-72 min (average 49 min). An interview guide was used and included questions such as, can you describe a typical situation when a patient comes to the clinic to see you and this patient uses MyAHS Connect? Do you feel the presence of the MyAHS Connect patient portal changed your workflows? If yes, in what ways? Preliminary analysis occurred concurrently with data collection, which allowed adaptation of interview questions to more thoughtfully explore emerging themes. All interviews were recorded using a password protected audio recording device, stored on a secure shared drive, and transcribed using the Whisper.ai app which does not store any information in cloud technology. All study participants were emailed a $40 Amazon e-gift card following their interview to acknowledge their time contributed to the study.

Data analysis

The thematic analysis (Braun & Clarke, 2006) process included data familiarization (listening to the recorded interviews multiple times whilst reading the transcriptions); creation of initial codes by forming words or sentences to describe the main ideas in each transcript; and comparison and integration of codes across interviews to form broader themes. Themes were generated from, and supported by, interview data. Codes were iteratively reviewed and refined with all members of the research team to ensure accuracy. Our research team includes members with lived experience with cancer care and/or specializing on patient portal research and technology-in-practice/ actor-network theory; only the first author works in the setting where the study was conducted.

Results

Considering the research question of how the portal technology, MyAHS Connect (MAC), impacted staff in the ambulatory oncology setting, three key themes were identified: the invisibility of nurses' responsibility of supporting patient portal use, access to the portal shapes a new type of patient, and MAC is as good as the care networks in which it is embedded.

The invisibility of nurses' responsibility of supporting patient portal use

Nurses in this study described being tasked with the significant responsibilities of handling the influx of work created by patients' ability to directly message staff via their patient portal. Physician staff are not responsible for checking and responding to these messages. After the launch of MAC, nursing staff realized that patients were utilizing this direct messaging feature, which presented a safety concern for nurses in regard to who would be addressing and triaging these messages. The department decided to create a new role for a nurse titled, "in-basket management." Anytime a patient sends a message via the portal, the message gets filtered into one of two in-baskets in the EHR: "Patient Advice Request" or "Patient Scheduling Request." The in-basket management nurse is responsible for reading, triaging and then responding to patient messages.

From a practice standpoint, nurses raised concerns about this role and the difficulty in both appeasing the patient and the physician simultaneously when the questions sent in were not something a nurse could address independently. *I think that in some instances, some nurses are being asked to potentially work outside of their scope of practice . . . So, a lot of things that are coming in, we can't address. Yet we're the ones assigned to address everything that comes in.* (*Clinic Nurse #7)*

It is not clearly indicated on the patient screen of MAC that patients' electronic messages will be read and triaged by nurses. It appears from the patient's end that they are messaging their physician directly. One nurse spoke to how this raises concerns for confidentiality, as patient messages are visible for the entire nursing department as opposed to their individual physician. Multiple nurses expressed how they have received complex questions via the in-basket, such as how to interpret results of radiology scans or plans for future treatment. Often nurses felt torn between appeasing the patient by reaching out to the physician or appeasing the physician by asking the patient to hold onto their concerns until the next clinic visit. One nurse spoke to their personal struggle in addressing in-basket questions from patients. *I find the ones that are more troublesome are when you have to message the doctor and then you have [...] I feel like I get pushed back from the doctor I work with. And then I also don't want to be rude to the patient, but sometimes I will say, "Can you please write this down? We'll address this at your next visit". (Clinic Nurse #5)*

Despite concerns with managing the influx of messages, nurses also spoke to ways that the in-basket messaging functionality positively impacted their work. Nurses expressed how being able to message one of their patients about a non-urgent concern saved time and is more convenient. The messaging feature also allows patients to send in photos to their health care team which makes it possible to engage in visual assessments. These photos are automatically uploaded to the patient's chart once sent in. Nurses can also send patients attachments and resources via MAC instantly. *I find what's really helpful is actually sharing resources with patients through it [...] I can electronically send the information and they have that in hand when they feel that it's safer for them to kind of figure out what they want to pursue with regards to resources available to them. (Clinic Nurse #1)*

In addition to messaging their health care team directly, patients can also enter their health history, request edits to their medication lists, and are prompted to enter their MySymptom Report (MSR) in advance of appointments. These MSR responses are then primarily, or only, used by nurses in the clinic setting. *But the majority of doctors I work with rely on nursing to use that data [...] because they simply just don't have the time.* (*Clinic Nurse #6).* The medical oncologist (#2) pointed out, that *I'm assuming they* [patients] *will go through the MSR they* *report online or ... on a paper. The nurses usually have that sheet ... and then they just give us the report. So, do I see the MSR? Rarely. So, I just hear what the nurses are doing.*

Both medical oncologists also acknowledged that they are unsure where to find a patient's completed MSR if pre-entered online. Some nurses are now being asked by the physicians to review the MSRs for virtual (i.e., over the phone) patient follow-up visits. Previously, the only nursing role in virtual patient care was ensuring there were no orders entered by the physician that needed to be processed by nurses. *So, me and my doctor have an agreement that part of my duty for a virtual patient is to go and review the MSR, which ... I don't think it would get reviewed if I didn't [...] I have to go and review the MSR after the fact. And if the doctor hasn't mentioned anything in their note about these high-rated things, I'll have to give them* [the patient] *a call and make sure they're addressed.* (*Clinic Nurse #6)*

When patients enter their MSR via MAC, there are additional symptom assessment questions that are auto populated based on the scores of their symptoms. Nurses spoke very highly of this additional information and how much they valued it during their in-clinic assessments. It is a nurse's responsibility to enter all patient reported outcome measures (i.e., MSRs or PROMs) into the EHR; however, when patients have already done so online, there is no further work needed. It is important to note that nurses are only utilizing this information during clinic with patients and are not yet expected to routinely review PROMs in-between patient clinic visits. PROMs entered electronically do not replace in person or phone follow up.

Nurses in this study consistently reported that MAC linked to the EHR did not substantially decrease their workloads but instead altered the type of work they are doing. *Before ... we were on Connect Care ... we were filling out all the paperwork, ... all the requisitions, ... blood work, filling them, everything by handwriting it out... So* [the Connect Care EHR] *taken a* *lot of that out. But I do feel it's partially been replaced by this easy access ... the patients have, where we're spending a lot more time reassuring or rebooking or changing things because they've seen something in their chart that needs to be fixed. (Clinic Nurse #2)*

Access to the portal shapes a new type of patient

Access, often described by staff as increased access, unfettered access or open access that the patients now have to their health care team via the portal, has changed the ways patients engage and thus how staff are working with them. Due to increased access, more patient care is being completed electronically, and happens in-between in-person follow-up appointments. This is because patients are seeing test results or information on their portal and are trying to have issues addressed immediately instead of waiting for their next visit. *[A] son called the phone line because of a hemoglobin that was - I want to say 79 - wondering if his mom needed a transfusion and ... that call would never happen had they not known the result.* (*Clinic Nurse #4)*

Another change noted is a shift in the patient–health care provider dynamic. Patients are learning about results in real time, and as pointed out by a physician in the study - as patients are only looking for their own results versus staff who are looking for all their patients' results, patients are reviewing their results often before staff has a chance to do so. Thus, staff have to learn how to respond to patients contacting them about concerns that staff are not yet aware of. This differs from the traditional health care provider-patient relationship where patients only find out about their results when they see their physician. This change in dynamics holds the possibility to negatively impact trust between patients and health care providers. *I'm now having the patient call me first to say, "Hey I saw this what are we gonna do about it?" And I just have to have a conversation ... like, "I've paged the doctor they're gonna get back to me when I get a plan I'll get back to you." [...] So I think it does add some workflow because instead of you know* *me seeing the result, paging the physician, the physician giving me instructions and me calling updating the patient on the plan, they're calling me first. I also don't know if it necessarily makes me look good or on top of things or increases trust if I haven't seen the results yet. (Clinical Research Unit Nurse # 3)*

Not surprisingly, nurses noted that patients are more literate and knowledgeable about their cancer because they have information available to them to process and research on their own. *I remember just in the very beginning of Connect Care rollout people were stunned and upset. Like a staff ... upset that the patients can have access so quickly without understanding the result, but it's become so commonplace in our population to be signed up for this app or services that I think it's just accepted now. And people are more literate. (Clinic Nurse #4)*

Almost every participant acknowledged that a patient's ability to see their schedules and appointments was beneficial for both patients and staff. Numerous staff reported they are addressing less phone calls from patients to clarify when their appointments or tests are. This seems to be particularly important for patients who are on chemotherapy or participating in a clinical trial as they have numerous appointments and tests to keep track of. *They would call us for everything including appointment times, "When is this happening? When's my CT?" That has dramatically decreased with patients having the independence to be able to find that information for themselves.* (*Clinical Research Unit Nurse #1)*. Additionally, staff can now ask patients to check their portal for updates as opposed to having to call patients to notify them. A clerk mentioned: *So, I said, "Okay I will let your nurse know... and then you can just check* [the portal] *maybe later today or tomorrow* [to make sure the update was posted] ... *I always say if it's not changed for tomorrow, you can call me back and I will follow up again.* (*Clerk)*

The increased level of patient knowledge due to access to test results has also impacted patient-health care provider dynamics in the clinic setting. In some instances, staff felt patients having this knowledge prior to the visit was helpful for their visit preparation. *Sometimes you're bringing them into the room you sit them down and they're like, "Oh yeah I want to make sure I review my TSH* [thyroid-stimulating hormone] *with you." So, they already know their TSH is elevated they want to know why, and they want to talk about it. Which is something you would talk about anyways, but they're already prepared for it, which I think is great.* (*Clinical Research Unit Nurse #1).* In other instances, staff encountered scenarios where patient anxiety due to trying to interpret results alone at home meant staff were spending significant time with patients teaching them what the results truly mean and attempting to *talk them off a ledge* or *peel them off the ceiling*. Some nurses occasionally altered the timing of their in-clinic assessments to minimize patient anxiety related to the test results they have already seen. *But then you know you go in and they're crying, and they don't even really want to talk to you because they just want to talk to the doctor because they think everything is progressed and they're doing worse. (Clinical Research Unit Nurse #3)*

Interestingly, one nurse recognized how patient anxiety is also substantial if patients are waiting for results; this nurse was unsure what is worse – if a patient is waiting for results or seeing results that they do not understand. One of the medical oncologists in the study also spoke about how more detail-orientated patients were scrutinizing their reports. Having patients review them prior to the visit allowed patients to formulate their questions, as opposed to going home, re-reviewing the report, and then having to call in and return with more questions at a later date.

With increased access patients can now cancel their appointments without having to call in and provide a reason or request a cancellation. This workload of getting the tests and appointments rebooked can be challenging and is often done by nurses or clinic clerks. *Like this morning, I had a cancellation notification that the patient canceled a scan virtually [...] And it's like whoa, now how is it going to get rebooked? Who's responsible? Who's rebooking it? I have no idea. (Medical Oncologist #1)*

Staff have also found numerous urgent symptom messages in the in-basket despite staff instructing patients to not use the portal for any urgent needs. [Patient's direct message]: "*Well today well my heart rate is being really bad and is there a medication to help me with this and can I have an ECG done?" I was like okay; I can't leave this one and go home. (Clinic Nurse #4)* There were differing opinions about a preferred method of communication, such as phoning about urgent concerns or sending an instant message. Some participants felt like a patient's ability to send a message led to increased reporting of symptoms due to the ease of communication. This can be both positive in that patients may be more likely to report concerns or challenging if the messages are not noticed in a timely manner. Many staff expressed frustrations that patients seemed to be unaware of their health care team's workload. Often staff reported handling messages or questions from patients about things still being worked on. *So, we get a lot of messages of patients being like, "the chemo's not booked yet when is it going to be booked, what time is my chemo?" So that's a common question that we get which takes up a lot of time as well responding back to patients reassuring them that we're working on it. (Clinic Nurse #9)* Interestingly, staff also spoke about ways to mitigate these types of tensions when it comes to managing patient expectations.

MyAHS Connect is as good as the networks of care provision in which it is embedded

This study highlighted that many factors influence the usefulness of MAC for both patients and staff. Success of the system is heavily dependent on staff's ability to support portal use through encouraging and educating patients on how to use it and anticipating patients' needs when reviewing test results via the portal. One physician spoke about how they provide education for patients with each test with regard to what they are anticipating seeing in the results. *I kind of have to go through with them and be like, what am I looking for? Right. And how am I interpreting the scan so that they're not freaking out when they get the results the week before, you know, I see it. […] Because like you're empowering people, which is important, but you can't empower people without the baseline knowledge they need to actually interpret the results. Then you're just literally throwing people into a fire.* (*Medical Oncologist #1)*

Staff who are investing time to explain to patients what results may be and what next steps would be based on those results, reported it was time well spent. This was particularly significant for blood work results that were reported as abnormal, when it may still be considered within the safe range for patients to receive chemotherapy, such as absolute neutrophil count and red blood cell counts.

Staff also reported creative ways patients use to clarify information they accessed on their portal including using Google or ChatGPT to interpret their radiology and pathology reports. Some nurses also reported that some patients are becoming self-aware of how viewing information via their portal makes them feel and choose to stop reviewing their results. *I've had a lot of patients that start off looking at their scans and then they stop because they don't understand fully what is being told. And then they say it stresses them out more rather than just going through it with the doctor. (Clinic Nurse #3)* Staff expressed that they were supportive of patients' decisions to not utilize certain portal features, or, to not utilize the portal whatsoever. However, nearly all staff reported that very few of their patients opted to not utilize the portal at all.

Staff, particularly nurses, spoke about how they are receiving more complex questions from patients regarding their care and thus are now having to speak in more detail about the results such as blood work and imaging with patients. One nurse no longer just tells patients that their blood work is good or fit to proceed with chemotherapy, but instead now describes why that is specific to the numbers. Nurses feel they still need to call patients to explain test results. *So I'll phone them just to say, "yahoo, you know we got another good result," and but you know many patients have said to me even though they did get in and they looked, they say to me, "But I'm really grateful you called, because I don't always understand what they're saying." And I hear that quite a bit too actually. Which again reinforces to me that you should phone.* (*Clinic Nurse #8)*

We also found in this study that not only are patients utilizing the portal in very individualized ways, but staff's use of the EHR is individualized. This created some staff concerns with care potentially being inconsistent for patients depending on staff's willingness to learn new technology and incorporate it into their practice. The clerk shared how their fears of being audited or potentially doing something wrong in a patient's chart holds them back from exploring the functionalities of the EHR. *I don't touch things I'm not familiar with because I'm scared, maybe I will touch it and then I'm gonna get audited or whatever... I only use it what my job is using, I don't press anything that's oh, I didn't know what that was.* (*Clerk)*

The study participants discussed differences among staff's use of MAC functionalities and the tendency to align with the physician's preferred way to use the technology. For example, one physician in the study is comfortable securely messaging patients on MAC but the other physician chooses to not communicate with patients via the portal. These preferences significantly alter how a nurse would address a patient's concern: forwarding it directly to the physician versus contacting the physician for an answer and then contacting the patient to relay that information.

Staff are feeling unsupported in their education regarding the patient portal. All staff in this study reported never having seen what the patient portal looks like unless they had their own personal account to access it, making patient education about the portal very difficult. One nurse described how they were unsure how to teach patients to send in photos via MAC, so they practiced with a patient during a clinic while they were waiting to see their oncologist. *I had some downtime in clinic and I said* [to a patient], *"Can we practice? Can we try and upload a photo?" So, I sat with her, so then I found we were able to upload it.* (*Clinic Nurse #5)*
Overall, it was evident that staff felt strongly that their roles were still highly valued in a context where a patient portal is present and actively used by patients.

Discussion

The aim of this study was to identify how the work of nurses and other health care providers (clerical staff and medical oncologists) has changed since the implementation of a patient portal in the large urban outpatient oncology centre in Alberta. Within the first two years post-implementation, the portal has changed when and how work is being completed by nurses, oncologists, and clerks involved in conducting clinic visits as well as the interpersonal dynamics between all health care team members. The impact of the portal was highly circumstantial, in that it was dependent on the individual use (patients, health care provider) of the portal on either end of the system. Participants were honest about how the portal can be a helpful tool to give patients more independence and to ease communication. Yet it also requires mindful and intentional work to anticipate and mitigate its limitations. Ultimately, the power of the portal to impact care practices and health care providers' work was highly dependent on how the interviewed providers interacted with it within the parameters set by the clinic's management. In other words, the management could make decisions about what functions of the portal will or will not be used. This aligns with the actor-network theory argument about a non-deterministic and non-essentialist nature of technology; what the portal in the clinic "is" does not equal to its technical design but rather becomes a product of political, economic, and other influences shaping care provision.

Laukka et al. (2020), in a qualitative systematic review examining health care providers' experiences interacting with patients via electronic portal messaging, found that the messaging could have both positive and negative impacts and affected the work of various providers differently. For example, oncologists viewed increased communication via a portal as beneficial for patients (Alpert et al., 2019), but oncology nurses recognized that it increased the frequency of interactions and the workload (Gerber et al., 2017). Additionally, work can be completed more efficiently with the portal since messaging a patient is faster than phone calls and interactions are immediately documented into the patient's record (Bishop et al., 2013). However, messaging requires specialized knowledge within a professional's scope to answer patient questions, and non-physician professionals had to ask for support from other appropriate providers to respond (Das et al., 2015). Our findings support observations from the above studies.

Our study found that nurses were assigned most of the new work at the intersection of the patient portal and provider portal (EHR). Participants described that patients were not aware that nurses triage and respond to their messages, as the portal is set up in a way that gives patients the impression they are messaging their oncologist directly. Nurses' work of supporting patient care mediated by portal technology is invisible to the public. Allen (2015) argues that the majority of nursing work happens outside of direct patient encounters (i.e., invisible to the public, other health care providers, and policymakers) and encompasses care management elements crucial for patient care within a fragmented health care system.

Our study surfaces the emergence of a new nursing role, an in-basket manager; the role is important to support patient care yet is invisible. In line with actor-network theory, our study presents an empirical example of how impactful new technology can be for the nursing workforce. In addition to clinic nurses conducting face-to-face patient visits and addressing patient concerns over the phone, a nurse in this new role is now spending an entire working day solely addressing electronic patient messages. This work requires a refined clinical and organizational knowledge to be able to appropriately handle patient queries and coordinate care with a minimal disruption of other providers' work and the most benefit for the patient.

The introduction of a MyAHS Connect (MAC) patient portal has brought forward how nurses mainly take on the responsibility of reviewing and acting on PROMs. This was especially evident in the case of the scheduled telephone follow-up visits. Prior to MAC, nurses were not involved in addressing patient symptom concerns for such visits. Post-MAC implementation, some oncologists have asked their nursing team to review those patients' MySymptom Reports (MSR or PROMs) in MAC as a safeguard to ensure all patient symptoms were addressed in case patients reported symptoms online but did not verbalize them over the phone. This is another example of how MAC has altered the nursing workflow as some nurses were now comparing MSRs questionnaires with the oncologist's documentation and calling patients to complete additional assessments if necessary. This workflow, however, was not standardized throughout the department.

Although PROMs are collected in cancer care organizations across Canada (Canadian Partnership Against Cancer, 2018) and the interventional studies on PROMs are abundant

(Balitsky et al., 2024), to the best of our knowledge, there is a dearth of empirical studies comparing, the actual role of nurses and physicians in acting on PROMs and the nurses' work involved. In a breast and colorectal cancer clinic in Australia that utilizes PROMs, Girgis et al. (2009) compared the management of PROMs by oncology nurse telephone case workers versus medical doctors (general practitioners and oncologists) and found that more referrals for psychosocial resources were made by nurses. Basch et al. (2016), observed that at a US cancer centre, system alerts of patient-entered symptom concerns were emailed to the nursing team to follow up on and address between clinic visits. This echoes our findings that nurses play a large role in collecting PROMs and addressing symptoms reported by patients. This illustrates what Allen (2015) describes as nurses' dual orientation toward the individual patients and the organizational priorities as PROMs are important organizational performance metrics taken to the next level by online patient portals.

Other studies in oncology settings with newly implemented PROMs reported that despite an expectation that nurses should act upon patient-reported symptoms, nurses were struggling to integrate PROMs into their workflow due to a lack of organizational strategies to do so (Thestrup Hansen et al., 2021) or felt that addressing PROMs sometimes required exceeding their scope of practice (Kotronoulas et al., 2017). Our study thus highlights an aspect of nurses' work less frequently captured in the literature where nurses are the primary member of the health care team reviewing and acting on electronically entered PROMs, yet this work too seems invisible within the organizations.

A concept evident throughout each theme was team dynamics and the role that power plays within the health care team. Our discussion of power is informed by Michel Foucault's (1983) view of power as existing in interstices (i.e., being present in all interactions) and as not necessarily a force that oppresses and negates; power also entices people to act and shapes subjectivities. On the other hand, this conception of power should not overshadow the reality of health care with an unequal distribution of knowledge and expertise and different positions occupied by individuals. As much as nurses strive to be patient-centred and mitigate power inequalities in nurse-patient relationships, patient access to the portal resurfaced power dynamics and precipitated shifts in social relations.

In line with actor-network theory's view of agency arising within, and dependent upon, socio-technical networks, and Foucault's view of subjectivities produced within the capillaries of power relations, one of our key themes was the emergence of a new kind of patient who is an active portal user. Patients accessing portal information exhibited what participants in the study described as increased autonomy. Staff observed that patients seemed "smarter" and better informed as they studied their pathology and radiology reports at home, researched details on the internet, or contacted the clinic immediately to clarify results. Patients' access to their information meant they often knew more about their test results in that moment-in-time than their care providers.

Despite patients' increased confidence, staff we interviewed felt that patients were still highly dependent on their care team to interpret test results and answer their questions. Published research overwhelmingly supports these findings highlighting that most patients accessing test results online desire further explanations (Santos et al., 2021). Relatedly, patients' anxiety is often highly dependent on how quickly they can discuss their test results with their health care provider (Petrovskaya et al., 2023). However, Alpert et al. (2019) found that all 13 oncologists in their study expressed concerns that their workloads would not allow them to meet patient expectations for rapid communication following immediate test result release.

Patient portals have the potential to impact nurses' autonomy in the workplace. Nurses described how the portal created challenges for them to work within their scope of practice. A nurse’s sense of autonomy is fostered by completing tasks according to their own judgement and is known to increase their sense of meaning in their work (Both-Nwabuwe et al., 2020). In our study, the position of nurses in relation to patients and the portal sometimes made it difficult for them to continue to work autonomously. Nurses described their role as gatekeepers to the oncologists they work with. Allen (2015) similarly describes nurses as the mandatory health care providers present at different care interfaces throughout a patient’s care trajectory. Nearly all nurses in the study described being in scenarios where they had to consider contacting oncologists regarding patient concerns between clinic visits - scenarios created by patients’ ability to message via the portal at any time. Both-Nwabuwe et al. (2020) argue that professional autonomy, the ability to carry out work without requiring constant permission from others, contributes to meaningful nursing work. This perspective offers a potential explanation as to why nurses struggle with in-basket management; a role that provides little professional autonomy.

Our findings illuminated significant differences in how staff members (even within their respective professional groups) engage with the patient portal such as responding to patients’ messages. Similarly, Gerber et al. (2017) observed differences in preferences for communication styles among oncologists. This raises an interesting question for health care settings implementing patient portals and EHRs that allow for substantial options. Increased options means that care processes are less standardized as providers and patients find their own preferred method to carry out their work and interactions. Mannion and Exworthy (2017) explored how standardization and customization are competing logics in health care and argued that it is critical that health care research focuses on these tensions.

Systematic reviews of published research on patient portals (Antonio et al., 2020; Petrovskaya et al., 2023) observed variable and inconsistent impact of patient portal technology on health care providers' workload and called for contextualized studies examining this topic. In our study, staff strongly foregrounded the topic of the patient portal's impact on their work efficiency and workload. It was clear that productivity, efficiency, and effective care management, as organizational priorities, are taken seriously. Nurses categorized patient portal functionalities and use patterns as either positive or negative based on whether the portal allowed to save time or, in contrast, increased workload. Nurses, however, did not succumb to the efficiency discourses; their foregrounding of effective care management still centered their professional aspiration of patient-centred care.

We argue that the success of the portal is not predetermined and fixed but rather depends on the socio-technical networks in which it is embedded. In our study, staff explained that they and patients relied heavily on one another for support on how to use the portal, noticing the lack of educational support within the organization. In our study, staff felt uncertain about some portal features and appropriate types of portal interactions with patients. Equally, nurses felt ill-prepared to support patients on how to enroll into and use the portal. Nurses shared their concern about potential adverse outcomes related to patients' unfamiliarity with the best and appropriate way to use the portal (e.g., canceling appointments, using portal messaging feature to send in urgent symptom concerns).

Nevertheless, over the nearly two years since the implementation of the portal, this technology required substantial changes in the context of patient education in the clinic: nurses now invest time in teaching patients how to utilize the portal while oncologists teach them how to interpret test results. Nurses and oncologists considered such anticipatory (in contrast to reactive) teaching a worthwhile investment of time. Allen (2015) highlighted nurses' critical role in identifying barriers to patients' smooth progression through the health care system and how they work to mitigate these barriers. Numerous participants in our study viewed the study as an opportunity to voice their ideas for improving the portal and EHR to benefit care delivery.

Recommendations

The results of this study highlight the importance of both patient and health care provider education and support when utilizing patient portals in practice. It is important that the health care providers who are working with patients using online portals have a sense of the portal sign up process and portal functionalities. For the sake of confidentiality and transparency, study participants urged for the portal messaging feature to make it clear that in-basket messages will be read and triaged by numerous nurses.

For other sites implementing patient portals, nurses' capacity and roles need to be considered, as we have found nurses were assigned additional workloads created by portals. It would be interesting for future portal research to focus on how nurses in other oncology care settings are managing the work created by patient portals. We recommend that portals are viewed as a participant in health care, but not as a replacement of health care providers. It is important that portal use is discussed with patients from early contact with the cancer centre and that patients' needs related to portal use are anticipated to mitigate any potential negative effects.

Strengths and Limitations

This study contributes to the body of knowledge on how patient portals impact oncology nurses in Canada. Our theoretical framework, technology-in-practice sociomaterial perspective and actor-network theory, offers a unique perspective on how organizational context impacts portal use and on the effects of a new non-human actor (MAC) on nurses' work. Since the focus of this study was on nurses, the small number of clerks (1) and oncologists (2) recruited may make generalizing these research findings to these populations difficult.

Conclusion

Patient portals in the oncology setting alter the work of health care providers. The degree of this change is highly dependent on the patient use of the portal, the health care provider’s use of the EHR, and the organizational context. Nurses play a significant role in supporting portal use by patients, particularly in managing patient messages and patient data sent in through the system. However, this work remains largely invisible to patients, the public, and other members of the health care team. Patients' knowledge of their cancer and care is ever-increasing with portal use meaning that health care providers have to adapt their work and relationships with patients in recognition of this. Successful portal use requires organizational support of health care providers so that they can proactively support patient portal to prevent negative outcomes. Patient portals do not replace health care team’s support such as interpretation of portal information. Ultimately, health care providers (clerical staff, nurses, and medical oncologists) remained highly valued in a portal context. The collaborative nature of oncology was highlighted by the portal as health care providers and patients worked together to navigate this technology.

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Chapter 5: Reflection and Recommendations

It was a privilege to have the opportunity to sit with my colleagues and explore their experiences in their everyday work. This process expanded from simply answering a research question to seeing how these answers have implications for professional practice, relationships between colleagues, relationships with patients, patient care standards, and how this is impacted by the greater organization. Patient portals exemplify how new and evolving technology is not only inevitable for health care providers, but for the patients we work with as well. I hope that one of the core theoretical underpinnings of this study, the non-neutrality of technology, has been a meaningful take-away. As nurses, to blindly accept any technology as a perfect tool or a loss to what was prior is a disservice to ourselves and patients. Accepting new technologies in our work is not only acknowledging and sharing with one another how it improves care but also recognizing and mitigating its potential to produce poor experiences. Nurses and other health care providers are aware of how the greater organization influences the ability to create change. This work also highlights how the systems we are a part of shape our daily work, thus impacting decisions continuously.

The portal landscape in Alberta is complex, confusing, and at times misunderstood by health care providers. Numerous participants in this study reported being unaware that two patient portals exist – both the Alberta government portal (My Personal Records) and the AHS portal (MyAHS Connect). Or, if they were aware of the two portals, participants were unsure of the distinction between them. One nurse expressed that they chose to participate in this research hoping it would be a means to learn more about the existing portals and distinguish what patients have access to. Beyond deciphering the two portals, staff all resoundingly expressed a desire to learn more about the MAC portal and noted a lack of education about it from the organization both pre and post implementation.

Portals highlight the invisible nursing work, shaping a new type of patient, and portal impact being highly dependent on the care networks in which they are embedded. This finding raised additional questions which could serve as inspiration for future research. From invisible nursing work come questions about why does this work continue to be invisible? What can we do to foster a higher value in nursing work especially at times of great change for an organization, such as the implementation of new technology? In other cancer centres, is patient entered data on the portal also primarily utilized and acted on by nurses? When considering the new type of patient and ongoing pressures in the system, how can we encourage and foster increased patient knowledge and independence? When looking at the systems in which technology is embedded, how does standardization compete with customization? And how can these two coexist? Although exploring these questions is beyond one research project, it was evident to me just how true it is that seeking the answer to one question leaves us with many more to consider.

Implications for Nursing

Despite it being acknowledged in the literature that nurses are the main point of contact in outpatient oncology for patients (Gerber et al., 2017), existing patient portal research predominantly focuses on physicians and how this technology impacts them. This work will be significant in adding to the existing research on how portals impact oncology nurses, particularly in Canada. It is also interesting to consider why nursing research lacks in this area. In my personal experience of conducting this research project, there were countless system barriers at multiple stages of the process. I would argue that lack of support in the systems nurses work in to conduct research is something that needs to be seriously addressed.

New technology, the patient portal, highlighted the significant role nurses play in the health care system to coordinate care. Allen's (2015) book highlighting the invisible work nurses do throughout the health care system was one of the most impactful pieces of work I read when preparing to do this research to reframe my mindset to what nursing *really* is. Allen (2015) enabled me to see how much nursing knowledge I am applying to organizing tasks I do daily. This new lens to view nursing work was very influential in this research as first recognizing the real work nurses are doing is foundational to studying nursing work. The research we conducted is a great example of how actor-network theory when applied to nursing research is useful to represent nursing for what it is and factors in how contextual nursing practice is. Actor-network theory enables the nurse to see just how impactful technology is for them and everyone they encounter in their workplace.

Recommendations

From this research came recommendations generously provided by participants. The strong expression of interest amongst nursing staff to participate in this study highlighted their passion to contribute to change. All participant groups (clerical, nursing, medical oncologists) expressed a need for more education around the portal both for themselves and for the patients to maximize its benefits. Many participants also urged for practical changes to the portal such as eliminating the appointment cancelation feature (instead suggesting patients can request cancelations to be reviewed and approved by staff) and making it more obvious on the patient portal that their messages will be read and addressed by multiple nurses in the department. The medical oncologists suggested having patients' pre-entered MSRs (PROMs) pop up for them to review automatically when they initiate a patient visit in the EHR so they can review this data without having to search for it in the chart. Nurses urged for more support and direction for the in-basket management role. This is not surprising considering that this role often requires consulting other team members and thus threatens a nurse's sense of worth in their work. As previously mentioned, there remains confusion for health care providers on Alberta's two portals and the sign-up process for patients to utilize these portals. Encouraging education in these areas will be critical if the goal is for health care providers in oncology to be promoting MAC portal use. However, no participant in this study spoke to being asked within the organization to encourage their patients to sign up and use MAC. In addition to practical changes, from this research also came ideas for future research in this area.

Our study included a small number of clerical staff and medical oncologists. It would be interesting for future research to focus on these groups of providers, particularly clerical staff workers as their experiences are not explored in the existing literature. Additionally, this research focused on just a portion of the cancer centre: solid-tumour medical oncology. As we did not include health care providers who work with hematology malignancy patients, it would be fascinating to see how the portal has impacted this group of health care providers, as they work with patients undergoing different treatment regimens such as bone marrow transplants. There are also other groups within the cancer centre that were not included in our study whose voices on this subject would be valuable, such as: radiation oncology, surgical oncology, and individuals working in supportive care (palliative care, patient navigation, social work, physiotherapy, and occupational therapy). It would also be beneficial to study the team members who are writing the reports for patients to read on their portal, pathologists and radiologists, to see how patients viewing this information instantly has impacted their work. Certain interventions could also be introduced and studied, such as how incorporating portal supports, perhaps resources to interpret results, or brief summaries of reports in more patient-friendly terminology, impacts patients and their health care providers. Since the Santos et al. (2021) research included patient portal users in Alberta prior to MAC launch across Cancer Care Alberta sites, it would be great to conduct a similar study with oncology patients now, potentially even generating longitudinal data regarding portal use. Survey studies with both patients and health care providers would also be useful. It would be interesting to see how certain patient demographics in Alberta impact portal use, such as diagnosis or age, as most participants in our study described their surprise that age was not a barrier to portal use. New changes in the work setting and workflows at the cancer centre also offer an opportunity for further research.

This research took place prior to a pivotal time for the department. In late October 2024, following all the data collection for this study, the entire cancer centre moved into a new comprehensive facility, combining inpatient and outpatient care. With the move, new models of care were implemented with the goal of increasing efficiency by standardizing workflows anticipating growing numbers of cancer patients. Additionally, it was decided a few weeks following the move to no longer permit nursing staff to respond to the Patient Advise Request in-basket in the EHR. Now, a clerk is assigned daily to send each patient a standardized message in response asking them to call the cancer centre with their questions for appropriate triage, letting them know we are no longer communicating with patients via the in-basket method. Staff are still permitted to use the portal messaging feature when necessary, such as for patients who are deaf or struggling to speak on the phone for other reasons, as is the case for numerous head and neck cancer patients. Patients are also still allowed to send in photos for assessment when asked to by nursing and nursing can send documents (lab work requisition) to patients. This change came into effect after the patients' messaging volume was substantially increasing (from my observation, between 30-50 messages in the in-basket a day) which was immensely difficult for the nursing department to manage. It would be valuable to conduct a study with health care providers now that these new workflows and portal communication changes have been made.

Stepping back from patient portal research, I recommend that nurses continue to advocate for change to make nursing research and quality improvement projects more practical and desirable in their work settings. It would also be interesting to study nurses' desire to conduct research in the oncology setting in Alberta to see what research areas they have interest in and the barriers and facilitators they perceive to doing this important work. I was very privileged to have this opportunity to conduct research with an extremely supportive committee within the additional supports offered through the University of Victoria. However, I recognize that having the time and resources to do research through a master's program is not always feasible. This process led me to think about what can be done to make research participation and system change more achievable to the nurse in their every-day practice. Morrison et al. (2022) completed a mixed-methods systematic review of what influences nurses working in clinical practice to conduct research. They found that despite the numerous barriers to nurses conducting research, such as a perceived lack of knowledge, lack of resources, time, and mentorship, nurses are still highly motivated to play an active role in research. Dedicated time to focus on research and appropriate mentorship are strong facilitators to fostering a culture of nursing research in the workplace (Morrison et al., 2022).

Within the oncology setting, I think there are multiple avenues to increase curiosity about research. Cancer centres already have a group of nurses highly trained on research methods - clinical research unit nurses, who help recruit and support patients in clinical trials in their nursing role. It could be fascinating to bring these nurses together with non-clinical trial nurses on a regular basis so nurses not working in trials could learn about current research. A nursing journal club could also be formed at the cancer centre. More broadly, mentorship programs through nursing associations such as the Canadian Association of Nurses in Oncology could also be implemented to provide guidance to less experienced oncology nurses who have an interest in research. It would be interesting to investigate the possibility of increased collaboration between local universities' nursing faculties and AHS. It would be ideal if nurses employed at the cancer centre could obtain attainable (small full-time equivalent) research assistant roles to gain research experience without having to be a primary researcher.

Conclusion

Patient portal use in the outpatient oncology setting in Alberta has altered the work of clerical staff, nurses, and medical oncologists in numerous ways. This study primarily focused on nurses, with the portal accentuating many ways nurses have taken on the new work created by the portal. With the portal came an entirely new electronic-based nursing role, an in-basket manager. Additionally, the presence of the portal increased the amount of work happening virtually (telephone calls and portal messages) outside of in-person clinic interactions. Nursing work, especially related to the portal, continues to be largely invisible. Data entered by patients into their EHR via their portal is primarily utilized and acted on by nurses. Health care providers are navigating a new era of altered dynamics as their patients are more active members of their care team and more knowledgeable than ever due to portal access to test results. Greater system resources from the organization are still highly sought after by all health care providers to better support their patient's portal use. Health care providers want to see the portal for themselves and be better equipped to teach patients about it. Nurses and medical oncologists have experienced how supporting patients in portal use as soon as possible in their cancer treatment journey is a valuable use of their time to prevent poor patient portal use outcomes. The presence of the MAC portal fostered collaboration between health care providers and their patients to learn from one another about the portal. Health care providers still feel their roles are highly valuable for their patients even in the presence of MAC. There are numerous opportunities for future research on patient portal use in oncology in Alberta, and nurses have a clear value in contributing to this research.

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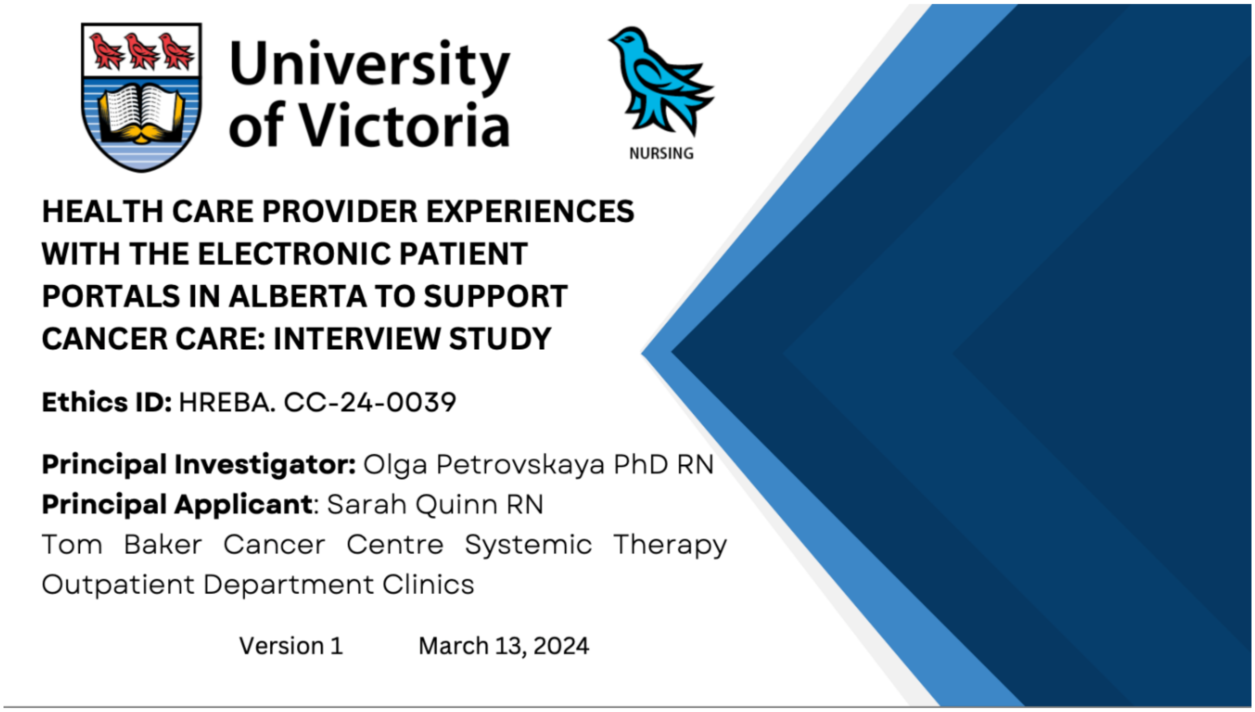
Appendix A: Recruitment PowerPoint Slides



University of Victoria

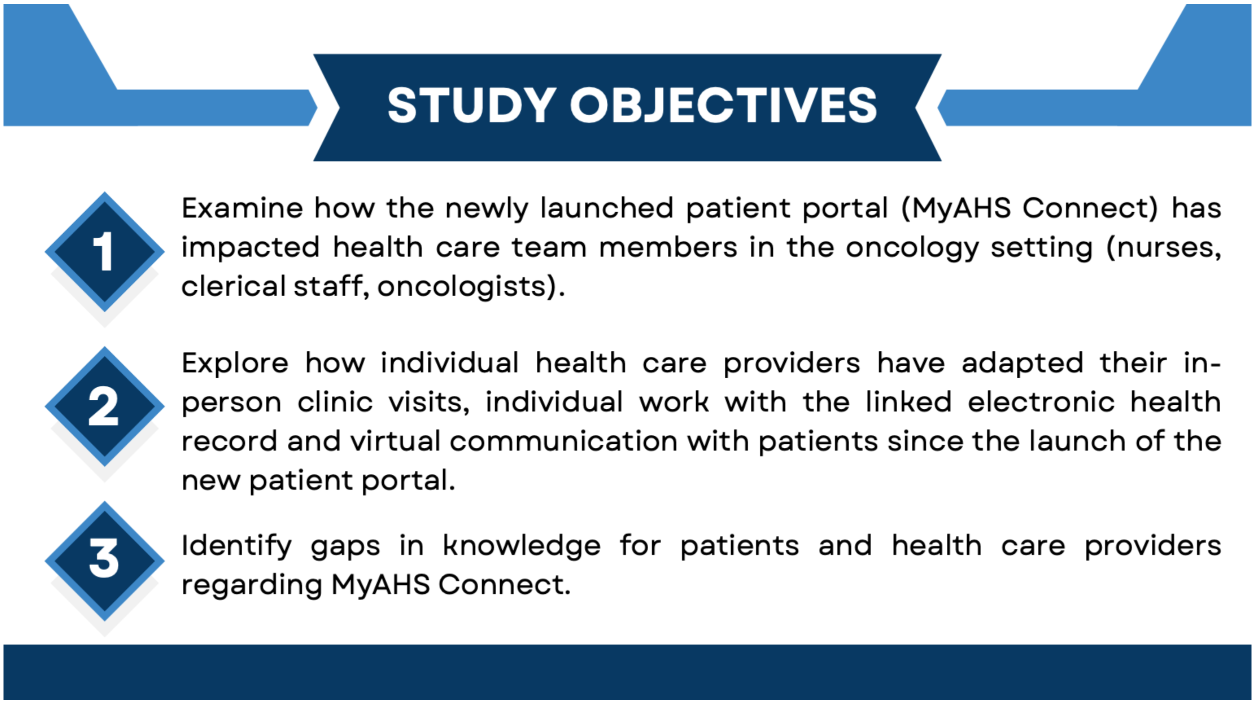
NURSING

HEALTH CARE PROVIDER EXPERIENCES WITH THE ELECTRONIC PATIENT PORTALS IN ALBERTA TO SUPPORT CANCER CARE: INTERVIEW STUDY

Ethics ID: HREBA. CC-24-0039

Principal Investigator: Olga Petrovskaya PhD RN
Principal Applicant: Sarah Quinn RN
Tom Baker Cancer Centre Systemic Therapy Outpatient Department Clinics

Version 1 March 13, 2024



STUDY OBJECTIVES

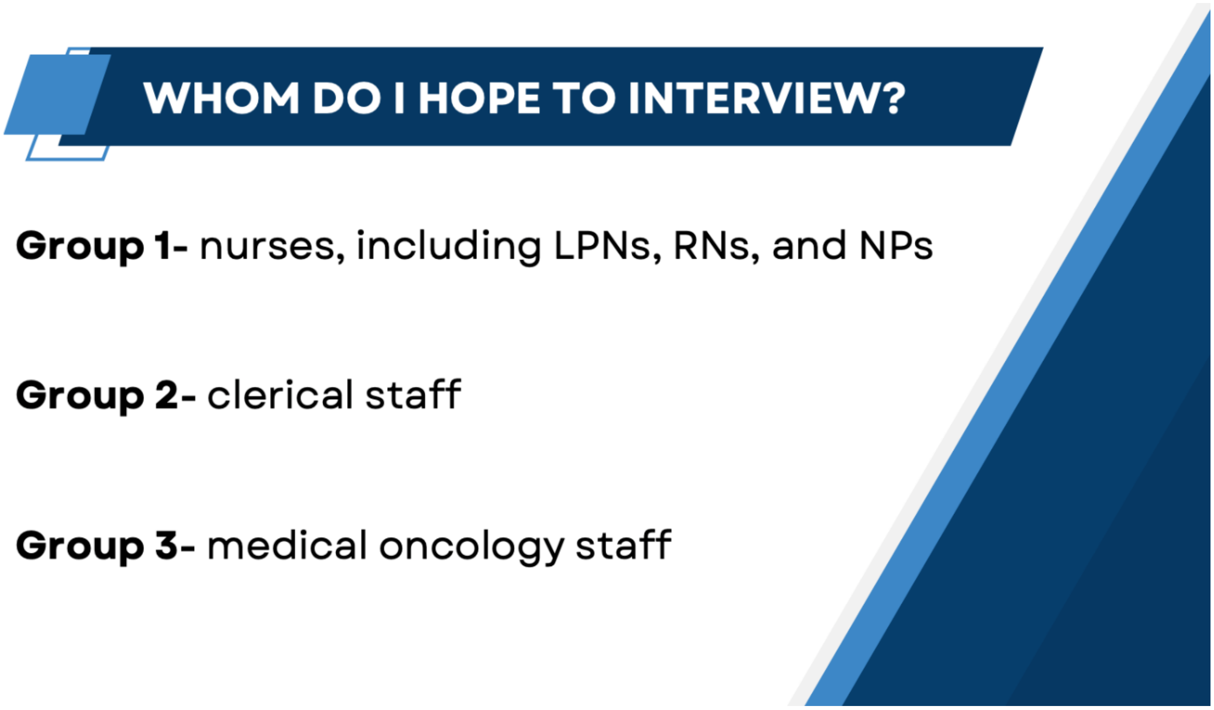
1. Examine how the newly launched patient portal (MyAHS Connect) has impacted health care team members in the oncology setting (nurses, clerical staff, oncologists).
2. Explore how individual health care providers have adapted their in-person clinic visits, individual work with the linked electronic health record and virtual communication with patients since the launch of the new patient portal.
3. Identify gaps in knowledge for patients and health care providers regarding MyAHS Connect.

WHAT PARTICIPATING ENTAILS

Participants will be interviewed by S. Quinn RN for about 45-60 minutes.

Interview questions will give you the opportunity to share whether and how your work and communication with patients and team members have changed after the launch of MyAHS Connect patient portal.

As a thank you for participating, a $40 Amazon e-giftcard will be sent to you via email following the interview.

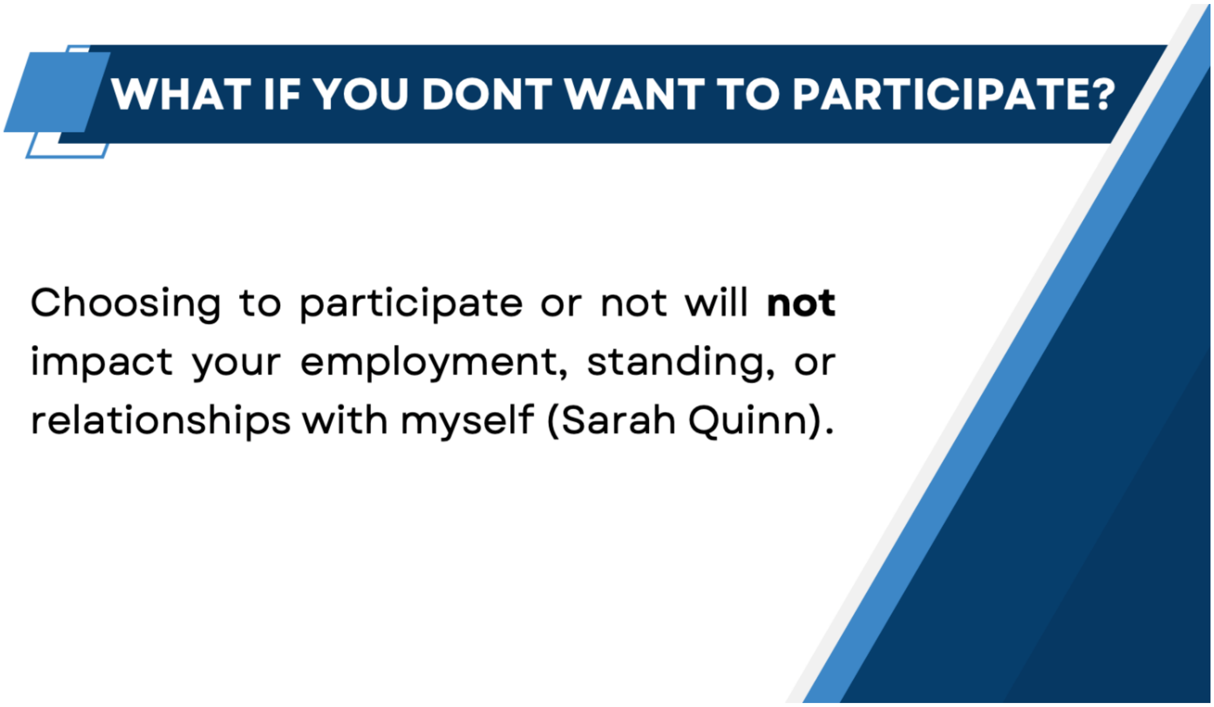


WHOM DO I HOPE TO INTERVIEW?

Group 1- nurses, including LPNs, RNs, and NPs

Group 2- clerical staff

Group 3- medical oncology staff

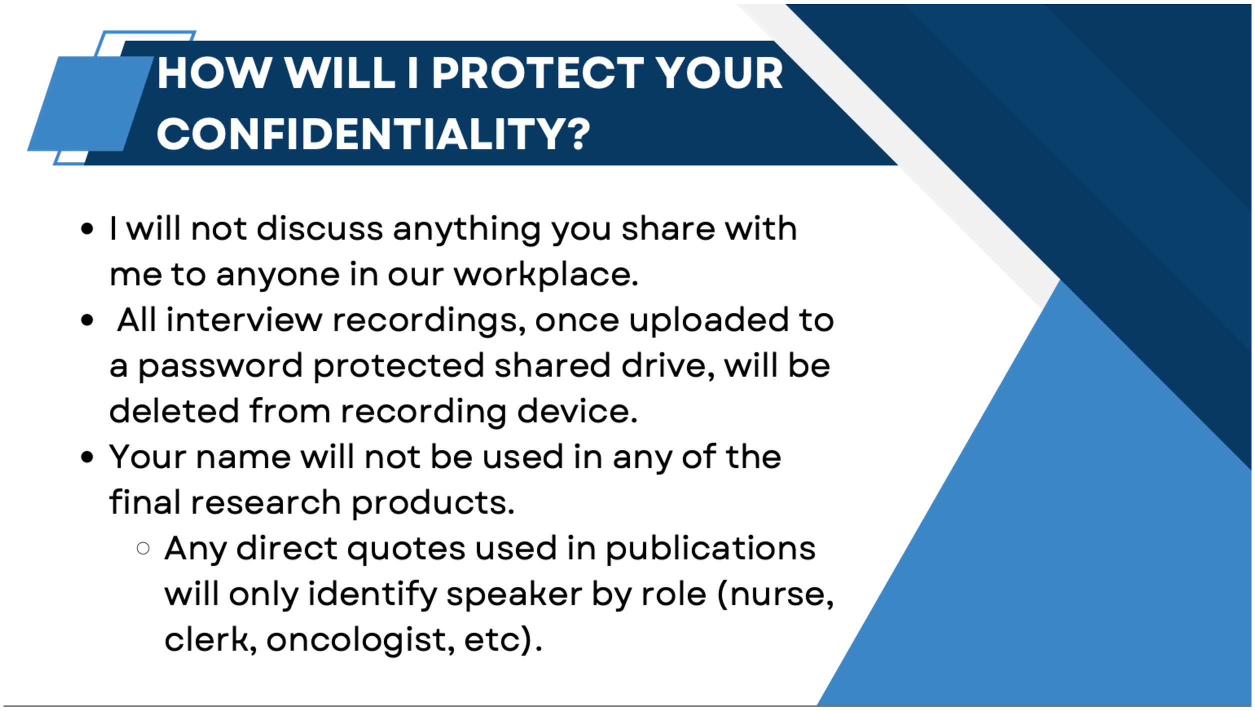


WHAT IF YOU DONT WANT TO PARTICIPATE?

Choosing to participate or not will **not** impact your employment, standing, or relationships with myself (Sarah Quinn).

WHAT HAPPENS IF YOU WANT TO PARTICIPATE?

- You will email me at sqresearch@uvic.ca to express interest
- I will reply to ask you some questions to confirm you are eligible
- If eligible, I will send you consent form to review and we will find a time for a in-person or Zoom interview
- I will obtain your formal consent at start of interview



HOW WILL I PROTECT YOUR CONFIDENTIALITY?

- I will not discuss anything you share with me to anyone in our workplace.
- All interview recordings, once uploaded to a password protected shared drive, will be deleted from recording device.
- Your name will not be used in any of the final research products.
  - Any direct quotes used in publications will only identify speaker by role (nurse, clerk, oncologist, etc).

Questions about your rights as a participant or concerns regarding ethical issues related to this study?

Please contact the Office of the Health Research Ethics Board of Alberta

Telephone: 780-423-5727

Toll Free: 1-877-423-5727

Want to participate?

please email:

sqresearch@uvic.ca

Thank you!

Appendix B: Recruitment Email

Email Subject Line: PARTICIPANTS WANTED – Research on how MyAHS Connect has impacted health care providers HREBA.CC-24-0039

Dear Employees,

Sarah Quinn, a student researcher at the University of Victoria, has contacted the [redacted] **Cancer Centre** asking us to tell our _________ (nurses, or clerical staff, or medical oncologists) about a study she is doing on how MyAHS Connect is impacting health care providers (nurses, clerical staff, and oncologists).

"Health Care Provider Experiences with the Electronic Patient Portals in Alberta to Support Cancer Care: Interview Study"

Ethics ID: HREBA.CC-24-0039

This study is being completed under the supervision of researchers Dr. Olga Petrovskaya and Dr. Vera Caine from the University of Victoria.

The objectives of this study are:

- Examine how the newly launched patient portal (MyAHS Connect) has impacted health care team members in the oncology setting (nurses, clerical staff, oncologists).
- Explore how individual health care providers have adapted their in-person clinic visits, individual work with the linked electronic health record and virtual communication with patients since the launch of the new patient portal.
- Identify gaps in knowledge for patients and health care providers regarding MyAHS Connect.

As part of the study, you will be asked to complete an in-person, Zoom, or telephone interview which should take about 45-60 minutes to complete, at a time that is convenient for you. Interview questions will give you the opportunity to share whether and how your work and communication with patients and team members have changed after the launch of the MyAHS Connect patient portal. In-person interviews will occur in a booked room at the [redacted] Cancer Centre or the University of Calgary Health Sciences Library.

As a thank you for participating, a $40 Amazon e-gift card will be emailed to you following the interview.

If interviews occur during working hours, must be completed during mutual office time only

Alternatively, interviews can be conducted outside of working hours.

If you are interested in participating or learning more about the study, please email:

sqresearch@uvic.ca

What are the benefits to participating?

- Structured opportunity to reflect on practice
- Contribute to identifying educational gaps for both health care workers and patients regarding MyAHS Connect
- Contribute to the state of knowledge on patient portal use in oncology

Potential discomforts to research participation:

- Time commitment for both scheduling and participating in the interview

The researcher will not tell me or anyone at Alberta Health Services who participated or not. Taking part or not taking part in the study will not affect your employment, status, performance evaluation or any services you receive with AHS. If necessary, your data will be aggregated with others when published to conceal your identity.

This study has been reviewed and approved by the University of Victoria Human Research Ethics Board as well as the Health Research Ethics Board of Alberta Cancer Committee. If you have questions or concerns about your rights as a participant or about the way the study is being conducted, you may contact the Office of the Health Research Ethics Board of Alberta:

Telephone: 780-423-5727 Toll Free: 1-877-423-5727

You can also **CONTACT Sarah Quinn DIRECTLY** by phone or email address: **Tel:403-630-9529** or squinn@uvic.ca. As I am sending this email on Sarah Quinn's behalf, please do not contact me regarding this research.

First/Second Follow Up Email

E-mail Subject line: REMINDER: Participants Wanted –Research on how MyAHS Connect has impacted health care providers HREBA.CC-24-0039

Dear Employees,

I have contacted you previously about Sarah Quinn, a student researcher at the University of Victoria regarding research she is doing on how MyAHS Connect is impacting health care providers (nurses, clerical staff, and physicians).

"Health Care Provider Experiences with the Electronic Patient Portals in Alberta to Support Cancer Care: Interview Study"

Ethics ID: HREBA.CC-24-0039

This study is being completed under the supervision of researchers Dr. Olga Petrovskaya and Dr. Vera Caine from the University of Victoria.

The objectives of this study are:

- Examine how the newly launched patient portal (MyAHS Connect) has impacted health care team members in the oncology setting (nurses, clerical staff, oncologists).
- Explore how individual health care providers have adapted their in-person clinic visits, individual work with the linked electronic health record and virtual communication with patients since the launch of the new patient portal.
- Identify gaps in knowledge for patients and health care providers regarding MyAHS Connect.

As part of the study, you will be asked to complete an in-person, Zoom, or telephone interview which should take about 45-60 minutes to complete, at a time that is convenient for you. Interview questions will give you the opportunity to share whether and how your work and communication with patients and team members have changed after the launch of the MyAHS Connect patient portal. In-person interviews will occur in a booked room at the [redacted] Cancer Centre or the University of Calgary Health Sciences Library.

As a thank you for participating, a $40 Amazon e-gift card will be emailed to you following the interview.

If interviews occur during working hours, must be completed during mutual office time only

Alternatively, interviews can be conducted outside of working hours.

If you are interested in participating or learning more about the study, please email:

sqresearch@uvic.ca

What are the benefits to participating?

- Structured opportunity to reflect on practice
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Potential discomforts to research participation:

- Time commitment for both scheduling and participating in the interview

The researcher will not tell me or anyone at Alberta Health Services who participated or not. Taking part or not taking part in the study will not affect your employment, status, performance evaluation or any services you receive with AHS. If necessary, your data will be aggregated with others when published to conceal your identity.

This study has been reviewed and approved by the University of Victoria Human Research Ethics Board as well as the Health Research Ethics Board of Alberta Cancer Committee. If you have questions or concerns about your rights as a participant or about the way the study is being conducted, you may contact the Office of the Health Research Ethics Board of Alberta:

Telephone: 780-423-5727	Toll Free: 1-877-423-5727

You can also **CONTACT Sarah Quinn DIRECTLY** by phone or email address: [redacted] or squinn@uvic.ca. As I am sending this email on Sarah Quinn's behalf, please do not contact me regarding this research.

Appendix C: Consent Form

Version 2 April 4, 2024

University of Victoria

NURSING

Consent Form

Informed Consent Form for Participation in a Research Study

Health care provider experiences with the electronic patient portals in Alberta to support cancer care: Interview study

Protocol ID: HREBA.CC-24-0039

Researcher: Dr Olga Petrovskaya
Faculty of Nursing
University of Victoria
olgap@uvic.ca

Co-Investigators: Sarah Quinn squinn@uvic.ca
Vera Caine vcaine@uvic.ca

WHY AM I BEING ASKED TO TAKE PART IN THIS RESEARCH STUDY?

You are being asked to take part in this study because you are a health care provider, or a staff member using Alberta's Connect Care at the [redacted] Cancer Centre and interacting with patients who might be using the MyAHS Connect patient portal. We are interested in your experience related to how this patient portal influences your work and care provision.

We hope to identify areas for improvement in terms of education regarding MyAHS Connect for both patients and health care providers.

This consent form provides information about the study to assist you with making an informed decision. The researcher will discuss this study with you and will answer any questions you may have. You are encouraged to ask questions. When all your questions have been answered to your satisfaction, you can decide if you want to be in the study or not.

Taking part in this study is voluntary. You may choose whether you take part. If you choose to participate, you may leave the study at any time without giving reason or without penalty.

Deciding not to take part or deciding to leave the study early will not result in any penalty or effect current or future care or employment.

If you decide to participate in this study, you will need to sign and date this consent form. You will receive a copy of the signed form.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

Up to 15 people may take part in this study. We plan to enroll 10-15 people at the [redacted] Cancer Centre.

WHAT WILL HAPPEN DURING THIS STUDY?

If you consent to voluntarily participate in this research, your participation will include an in-depth interview:

- Interviews will happen in-person, over phone, or Zoom as you prefer
- We will find a day and time that works for you
- Each interview will be approximately 60 minutes and will be audio recorded and transcribed, audio recordings will be immediately deleted following transcription
- In the transcribed interview transcripts, we will keep information about your professional group (ie, nurse or physician) as this is required to interpret your responses. All other personal demographic data will be deleted from the transcripts
- The objective of the interview questions will be to gain an understanding of how patients using MyAHS Connect has impacted your workflows, your own perspectives of patient portal use, how the portal have impacted your communication both with patients and with your colleagues, and what aspects of the portal you feel more education is needed for both patients and/or health care providers
- Some examples of potential interview questions:
  Has patients pre-viewing their information on their portal changed your in-clinic interactions with them?

  Have you noticed your use of the computer in the room changing since the implementation of MyAHS Connect and Connect Care?

  What are your own thoughts and beliefs about patients using the portal and having access to their health information?

Do you tell patients they can electronically communicate with the health care team through the portal?
Have you ever had the opportunity to see what the MyAHS Connect portal looks like?

- Demographic questions will be asked in your interview regarding your age, exact role in the clinics, and whether English is your first language, this information will be used to ensure the study sample is varied
- To thank you for your participation, you will receive a $40 e-gift card after the interview
- A second brief interview (up to 20 minutes in length) might be necessary at the later point to clarify information you shared with me in your first interview

This study should take six months to complete, and the results should be known in about six months.

Regardless of whether you are using online patient portals or not, you are invited to participate.

WHAT ARE MY RESPONSIBILITIES SHOULD I DECIDE TO PARTICIPATE IN THIS STUDY?

If you choose to participate in this study, you will be expected to:

- Contact the researcher to express interest in participating by emailing sqresearch@uvic.ca
- Participate in an approximately 60-minute interview
- Potentially participate in a brief (up to 20 minutes in length) second follow up interview

WHAT WILL HAPPEN IF I CHOOSE TO WITHDRAW FROM THE STUDY EARLY?

You can choose to end your participation in this research study (called early withdrawal) at any time without having to provide a reason and without penalty. If you choose to withdraw early, you are encouraged to contact the researcher.

Interview information that was recorded before you withdrew will be used by the researcher for this study, but no additional information will be collected after you withdraw your permission.

Should you withdraw during or after the interview, you will receive full compensation. However, if you withdraw prior to the start of the interview, compensation will not be provided.

WHAT ARE THE RISKS/DISCOMFORTS OF PARTICIPATING IN THIS STUDY?

Participation in this study may cause some minor inconvenience to you. Scheduling an interview may make communication potentially lengthy. If you want to take a break during the interview, or stop and resume at another time, I will accommodate your request.

There are no known or anticipated risks to you by participating in this research.

WHAT ARE THE POTENTIAL BENEFITS OF PARTICIPATING IN THIS STUDY?

By participating in this research, you will have a structured opportunity to reflect on your practice and on your patient relationships in the context of the new Clinical Information System including the provider portal (Connect Care) and patient portals. This study also has the potential for societal benefit as it will identify educational gaps for both patients (from a health care provider perspective) and providers related to the portal which could be useful in developing educational resources for patients and staff related to the portal. This study will also contribute to the state of knowledge around patient portal use from the health care provider's perspectives in ambulatory oncology settings in Alberta/Canada. Some participants may not experience any direct benefit.

HOW WILL MY PERSONAL INFORMATION BE KEPT PRIVATE?

If you decide to participate, the researcher will only collect information they need for this study. They will do everything that they can to make sure that this data is kept private/confidential. No data relating to this study that includes your name will be released outside of the study site nor will it be published by the researcher. Sometimes, by law, the researcher may have to release information including names and therefore absolute confidentiality cannot be guaranteed. However, every effort will be made to make sure that your information is kept confidential. At the beginning of the study, we will give you a number code. This will be the way we keep track of all the information you share with us. Any information that can identify you will be kept on a secure computer drive on the University of Victoria Microsoft SharePoint Online. No parties beside the research team (Olga Petrovskaya, Sarah Quinn, and Vera Caine) will have access to study data.

Your interview will be recorded on a password protected audio recorder or on Sarah Quinn's personal laptop if a Zoom interview. No information will be stored on those devices; it will be uploaded to the secure drive immediately after the interview and then immediately deleted from the audio recorder or laptop file.

Even though the likelihood that someone may identify you from the study data is very small, it can never be completely eliminated. Every effort will be made to keep your information confidential, and to follow the ethical and legal rules about collecting, using, and disclosing this information.

After the study is done, we will still need to securely store your data that was collected as part of the study. We will keep your information for seven years and then it will be permanently deleted. All hand-written notes taken by Sarah Quinn during the interview, as well as signed consent forms, will be immediately uploaded to the shared research drive following your interview and then disposed of using the secure [redacted] Cancer Centre document shredding collection bins.

In the knowledge dissemination material (see later section), your identity will be masked. Use of direct quotes will only include your role (such as nurse, clerk, or medical oncologist) to make data meaningful, but will not include your name.

There is the potential that the data collected in this study could be useful for future patient portal research if being completed by Sarah Quinn or Olga Petrovskaya.
I consent to be contacted in the event my data is requested for future research:

______________ (Participant to provide initials)

WILL THERE BE COSTS INVOLVED WITH PARTICIPATING IN THIS STUDY?

There are no anticipated costs to participating in this study.

WILL I BE COMPENSATED FOR PARTICIPATING IN THIS STUDY?

If you participate in the interview, you will receive a $40 Amazon e-gift card.

WHAT ARE MY RIGHTS AS A PARTICIPANT IN THIS STUDY?

You will be told, in a timely manner, about new information that may be relevant to your willingness to stay in this study.

You have the right to be informed of the results of this study once the entire study is complete. If you would like to be informed of these results, please contact the researcher.

IS THERE ANY CONFLICT OF INTEREST RELATED TO THIS STUDY?

There are no financial conflicts of interest related to this study. However, because Sarah Quinn, RN currently works at the [redacted] Cancer Centre and thus has a personal interest in the outcome of the study, it is a possible conflict of interest. The Health Research Ethics Board of Alberta Cancer Committee requires the study researcher to let you know about this in case you have any questions or concerns. In addition to informing you and HREBA-CC about this possible conflict of interest, Sarah Quinn has provided a management plan to address any concerns that might arise during the research. Sarah Quinn will not push you to take part in this study and will not prevent you from withdrawing from the study at any time should you so choose. If you ever have concerns about this, you should talk to Sarah Quinn or contact HREBA-CC Toll-Free: 1-877-423-5727.

If you have any questions regarding this procedure, please email the appropriate committee:

Cancer Committee: cancer@hreba.ca

WHO WILL BE NOTIFIED OF MY PARTICIPATION IN THIS STUDY?

No one aside from the research team will be notified of your participation in this study. Your employer/manager will not be notified of your decision to participate in this study.

HOW WILL THE RESULTS OF THIS STUDY BE SHARED?

It is anticipated that the results of this study will be shared with others in the following ways: a published article, thesis presentation, presentation to the staff at [redacted] Cancer Centre (or, as of late Fall 2024, the staff of the [redacted] Comprehensive Cancer Centre), a poster displayed in the [redacted] Comprehensive Cancer Centre, and presentations to the Cancer Care Alberta leadership team and patients.

WHO DO I CONTACT FOR QUESTIONS RELATED TO THIS STUDY?

If you have questions about taking part in this study you should talk to the researcher, co-investigator or study nurse. These person(s) are:

Olga Petrovskaya

__________________________	__________________________
Name	Telephone

Sarah Quinn

__________________________	__________________________
Name	Telephone

If you have questions about your rights as a participant or about ethical issues related to this study and you would like to talk to someone who is not involved in the conduct of the study, please contact the Office of the Health Research Ethics Board of Alberta.

Telephone: 780-423-5727

Toll Free: 1-877-423-5727

UNDERSTANDING AND SIGNATURES PAGE

	Yes	**No**
Do you understand that you have been asked to take part in a research study?	☐	☐
Do you understand why this study is being done?	☐	☐
Do you understand the potential benefits and risks/discomforts of taking part in this study?	☐	☐
Do you understand what you will be asked to do should you decide to take part in this study?	☐	☐
Do you understand that you are free to leave the study at any time, without out having to give reason or without penalty?	☐	☐
Do you understand that we will be collecting information about you for use in this study only (unless you gave permission on pg. 4 for future use of data)?	☐	☐
Do you understand that by signing this consent form that you do not give up any of your legal rights?	☐	☐
Do you feel that you had enough time and opportunity to consider the information provided to you by way of asking questions, having conversations with others and considering your options?	☐	☐

By signing this form I agree to participate in this study.

Signature of Participant	Printed Name	Date

STUDY TEAM ACKNOWLEDGEMENT

I believe the person signing this form understands what is involved in this research study and has freely decided to participate.

Signature of Person Conducting the Consent Discussion	Printed Name	Date

You will be given a copy of this signed and dated consent form prior to participating in this optional research.

Appendix D: Interview Guide

Version 1 March 19th, 2024

University of Victoria

NURSING

Interview Script and Interview Guide

Hello, and thank you for agreeing to be interviewed. My name is Sarah Quinn, and I am a Master of Nursing Student with the University of Victoria, and I am also a Registered Nurse here at the [redacted] Cancer Centre.

I emailed you a copy of the study consent form. Have you had the opportunity to review it?

(Await participant response)

Do you have any questions regarding the study consent form?

(Await participant response)

*For in-person interviews:

Great, then I will just ask that you please sign the consent form if you feel you understand the conditions of participating in the study.

(Allow participant time to sign consent)

*For Zoom interviews:

Great, then I will proceed with obtaining your verbal consent for the study.

(Complete verbal consent process)

At this time, I would like to have your permission to audio-record our conversation and I will again remind you what the study is about and what I will ask you to do. Can I turn the recorder on?

(Await participant response)

I will begin with a brief introduction to remind you about the study in general: This study is being done both by myself and my supervisor: a researcher from the Faculty of Nursing at the University of Victoria, Dr. Olga Petrovskaya. This study has received ethical approval from the University Ethics Board as well as the Health and Research Ethics Board of Alberta Cancer Committee. The overall goal of this study is for us to explore how the newly launched patient portal: MyAHS Connect, has impacted health care team members in the oncology care setting. We are curious how health care providers have adapted their in-person clinic visits, individual work with the linked Connect Care electronic health record, and their virtual communication with patients since the launch of MyAHS Connect. We also hope to identify areas for improvement in terms of education regarding MyAHS Connect for both patients and health care providers.

The interview is audio recorded and I will also take notes in the process. You can choose not to answer any questions that make you uncomfortable. The interview can last an hour or so, but if you feel you need to take a break, tell me and we will either take a break, or we can stop and book another interview. If you feel tired, please let me know.

Your answers will be kept confidential and not shared with anyone. Only Dr. Petrovskaya and I will have access to the raw, personally identifiable data. Another important point is that I am interested in what is really happening. Not so much in “how things should be,” but in “how they really are” from your perspective. I am not judging you and not evaluating quality of care. None of what you share with me today will be shared with management or any of your colleagues.

Do you have any questions at this point? Can we start an interview?

(Await participant response)

[These are sample questions; actual questions will emerge in the process of interview depending on what participant says. It is not necessary to ask all questions.]

Demographic questions:

1) Your name (First, Last)
2) Your age
3) Employment
    a. Part time
    b. Full-time
    c. Role- nurse, clerk, MD, etc.
4) Exact position in clinics (which tumour area(s) do you work in)
5) Is English your first language?

In what capacity do you interact with [redacted] Cancer Centre patients?

In which role

In clinic, vs virtually, vs email, vs the portal etc.

Do you have personal experience with AB patient portals? Which ones?- My Health Records (MHR) or MyAHS Connect (MAC) or both? As a patient or as a family member?

Patient Reported Outcome Measures and clinic workflows

[Please note headings are for PA's organization only, questions will not necessarily be asked in this order and headings will not be read aloud to participants.]

In your work at the [redacted], do you work with patients who use MAC? MHR? How do you know which one the patient uses?

Can you describe a typical situation when a patient comes to the clinic to see you and this patient uses a MAC. How does this visit look? Please describe in detail – what forms you use, what Qs you ask, what does patient say …

Are all visits like this when a patient uses MAC? Or are there unusual meetings when a patient viewed information in MAC and asks you something …

Please tell me about the MyAHS Connect patient portal in relation to your work

Has patients pre-viewing their information on their portal changed your in-clinic interactions with them?

Do you use this form often in clinic **Show participant a physical copy of My Symptom Report form while asking question** Tell me how you use this form for patients who do not use the portals vs who do use the portals.

Do you notice patients are filling out their My Symptom Report (MSR) questionnaires through the portal before their appointments?

If a patient does fill in their MSR questionnaire through the portal prior to their follow up, what do you do with this information?

Do you look at the MSR prior to seeing the patient?

How does a patient pre-filling out their MSR questionnaire change your interaction with the patient? Does it change your clinic workflow?

Do you feel your clinic workflow changes without physical copies of MSRs?

Do you use the computer in the clinic room while you are interacting with patients?

Have you noticed your use of the computer in the room changing since the implementation of MyAHS Connect and Connect Care?

Nursing specific

Have you ever been assigned to the role of In-Basket management? Can you describe what this role is like for you?

Do you think patients understand who is reading these messages when they send them in?

Do you work in Telephone Triage? Has MyAHS Connect altered your phone call interactions with patients in TT?

What has worked well and what didn't?

Clerical specific

How has the presence of the MyAHS Connect portal and Connect Care altered your processing of requisitions?

Do you work in Telephone Triage? Has MyAHS Connect altered your phone call interactions with patients in TT?

Were you ever tasked with giving patients information on how to sign up for MyAHS Connect at the check-in desk? Were you given any training on the sign-up process?

What worked well and what didn't?

Physician specific

How do you feel about patients accessing results to tests you have ordered through their portal?

Do you feel presence of the MyAHS Connect patient portal changed the quantity of in-person or virtual follow ups required with patients?

What worked well and what didn't?

Health care provider portal perspectives

Do you feel the presence of the MyAHS Connect patient portal changed your workflows? If yes, in what ways? Please describe and give examples.

Is there a certain demographic or type of patient you observe utilizing the portal more or less?

Such as younger versus older patients, patients of a certain tumour group type, patients of a certain ethnicity, patients of a certain education level?

Do you observe family members accessing the patient's portal on their behalf?

Have patients expressed to you any specific reasons for not wanting to use the portal?

What are your own thoughts and beliefs about patients using the portal and having access to their health information?

What has been your experience of patients accessing their tests results prior to their clinic visits?

Do you encourage patients to look at their test results through the portal? How do you do this? What do you say exactly?

Do you prepare them for what to do if test results are abnormal?

Are there any features you wish the portal has that it does not? Are there any features the portal does have that you wish it did not?

Do you think you feel similarly about MyAHS Connect compared to your colleagues? What have you observed your colleagues saying about patient use of the portal?

What do you think about the portal in relation to patient centred care?

Have you ever had a patient suffer adverse outcomes due to their use of MyAHS Connect?

For example, patients cancelling their own appointments.

Have you observed a patient catching something that was missed due to the presence of MyAHS Connect?

For example- a patient noticing they did not get booked in for a follow up appointment or have a scan ordered pre-followup etc.

Do you feel that MyAHS Connect has changed the quantity of work that you must do?

Where are all the places you look for patient information on Connect Care?

Cancer disease management

Do you feel the presence of the MyAHS Connect portal has changed anything for the patients? For example, the responsibility for taking initiative or self-management? What have you observed specifically?

eHealth literacy

Do you observe that patients understand how to navigate the portal and understand the information that they are reading on the portal?

Have you ever experienced patients not understanding information on their portal? What happened then?

Patient communication with health care team

Do patients often ask you questions about MyAHS Connect or the MyChart app?

Where are all the places you click to look for patient messages in connect care?

Do you ever directly message patients through the portal?

Do you tell patients they can electronically communicate with the health care team through the portal?

Do you ever initiate contact with a patient electronically via the portal?

Have you ever encouraged a patient to upload a photo using MyAHS Connect?

Did you know this feature existed? If not, do you think it would be useful in your practice?

Has there been clear instructions or rules on how you are allowed to interact with patients through the portal?

Communication between health care members

Has the presence of Connect Care or MyAHS Connect changed the way you interact with your colleagues? How so?

For nurses- do you ever forward direct patient messages to physician staff?

Education

Was the MyAHS Connect portal discussed during your orientation to Connect Care?

Have you ever had the opportunity to see what the MyAHS Connect portal looks like?

Have you ever seen what the MyChart app looks like?

Do you feel familiar with what features the MyAHS Connect portal offers?

Do you encourage patients to sign up for and utilize the MyAHS Connect patient portal?

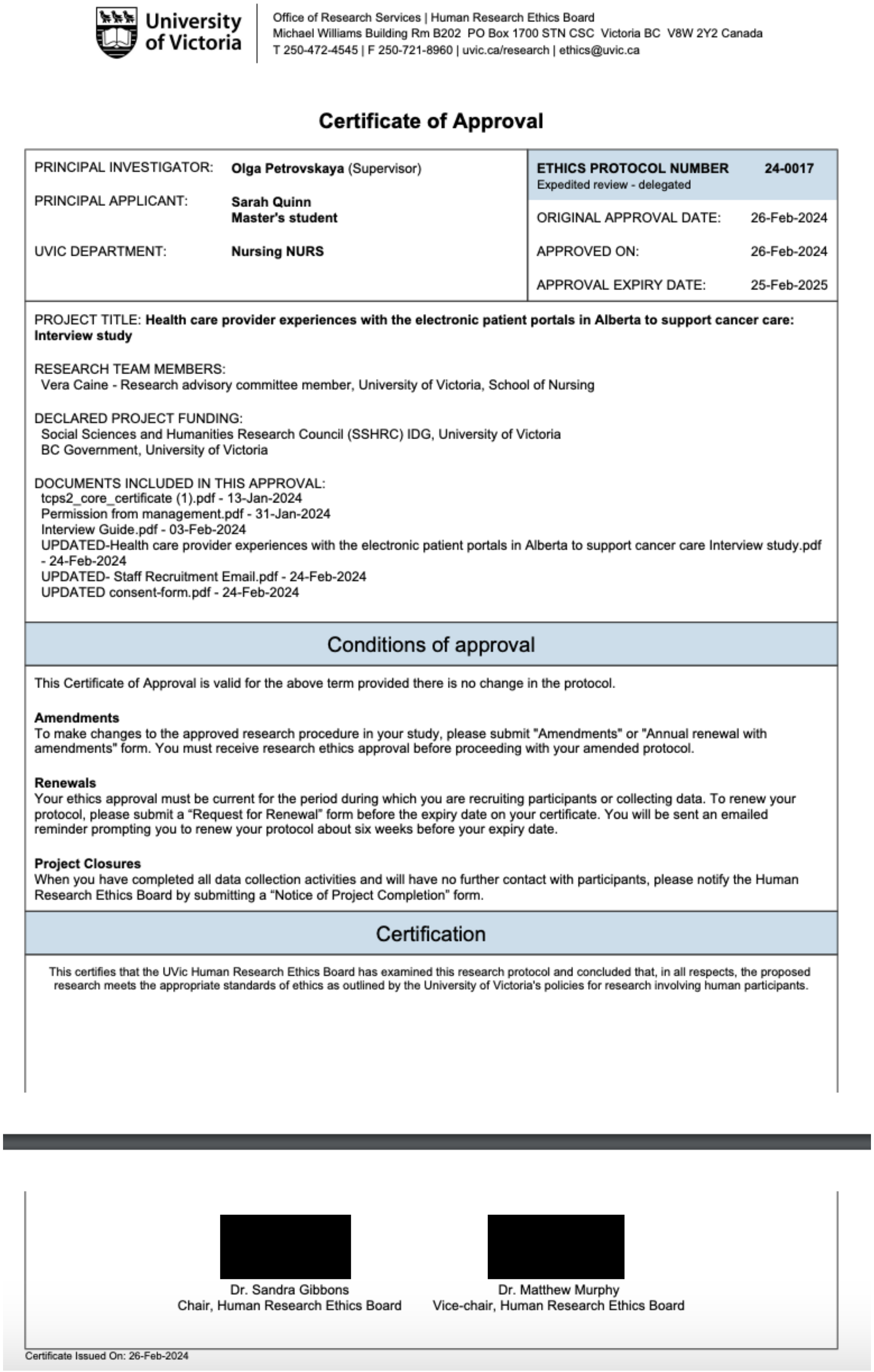
Has management or anyone else encouraged you to do this?

If a patient asks you how to sign up for the portal what do you tell them?

Any final thoughts that we have not covered that you would like to share with me today?

[Researcher will thank a participant at the end of the interview and inform them that a $40 gift card will be sent via email.]

Appendix E: Ethics Approval



University of Victoria
Office of Research Services | Human Research Ethics Board
Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-472-4545 | F 250-721-8960 | uvic.ca/research | ethics@uvic.ca

Certificate of Approval

PRINCIPAL INVESTIGATOR:	**Olga Petrovskaya** (Supervisor)	**ETHICS PROTOCOL NUMBER** Expedited review - delegated	**24-0017**
PRINCIPAL APPLICANT:	**Sarah Quinn** **Master's student**	ORIGINAL APPROVAL DATE:	26-Feb-2024
UVIC DEPARTMENT:	**Nursing NURS**	APPROVED ON:	26-Feb-2024
		APPROVAL EXPIRY DATE:	25-Feb-2025

PROJECT TITLE: **Health care provider experiences with the electronic patient portals in Alberta to support cancer care: Interview study**

RESEARCH TEAM MEMBERS:
Vera Caine - Research advisory committee member, University of Victoria, School of Nursing

DECLARED PROJECT FUNDING:
Social Sciences and Humanities Research Council (SSHRC) IDG, University of Victoria
BC Government, University of Victoria

DOCUMENTS INCLUDED IN THIS APPROVAL:
tcps2_core_certificate (1).pdf - 13-Jan-2024
Permission from management.pdf - 31-Jan-2024
Interview Guide.pdf - 03-Feb-2024
UPDATED-Health care provider experiences with the electronic patient portals in Alberta to support cancer care Interview study.pdf - 24-Feb-2024
UPDATED- Staff Recruitment Email.pdf - 24-Feb-2024
UPDATED consent-form.pdf - 24-Feb-2024

Conditions of approval

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Amendments
To make changes to the approved research procedure in your study, please submit "Amendments" or "Annual renewal with amendments" form. You must receive research ethics approval before proceeding with your amended protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a “Request for Renewal” form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a “Notice of Project Completion” form.

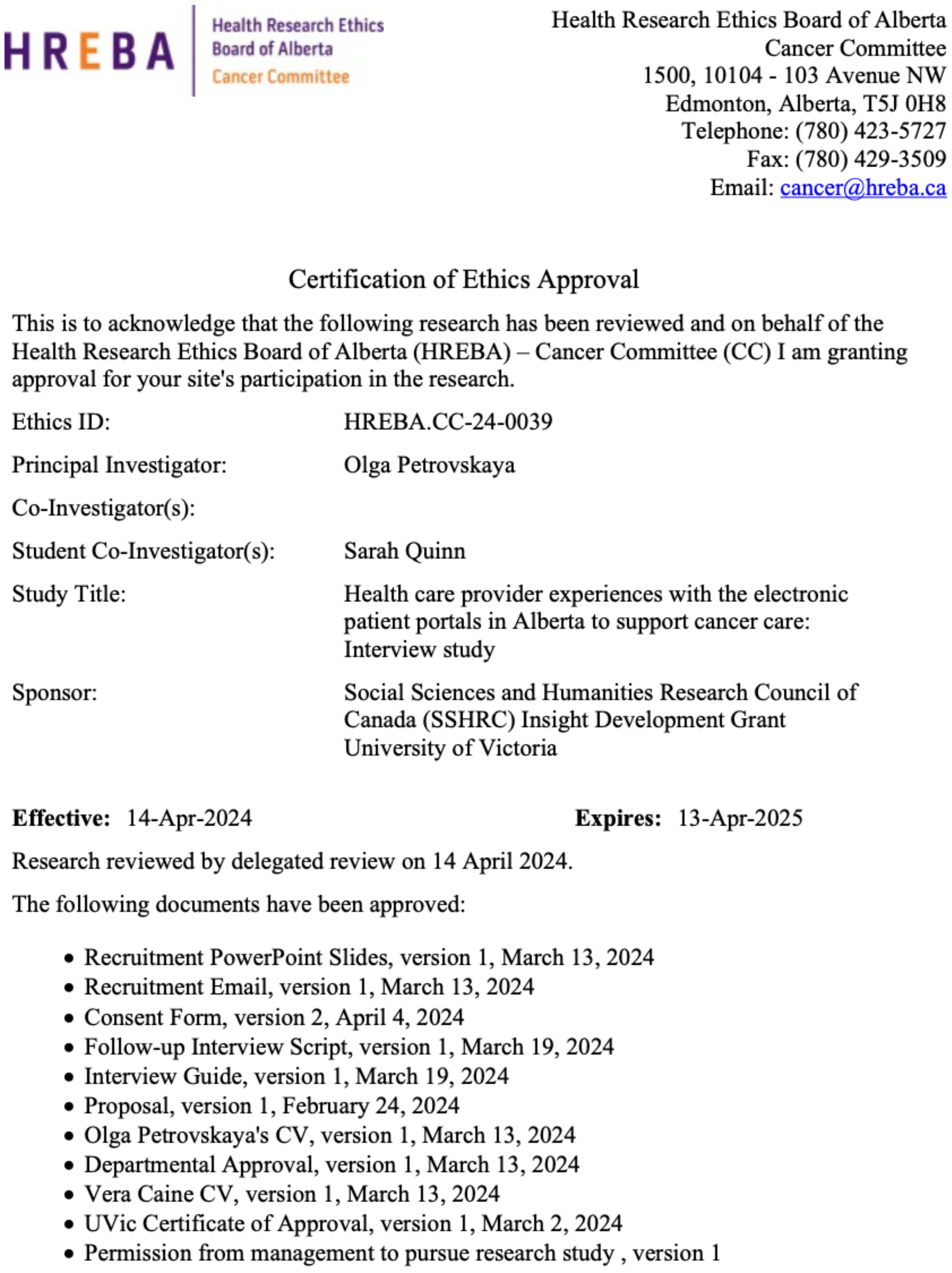
Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria's policies for research involving human participants.

[redacted]
Dr. Sandra Gibbons
Chair, Human Research Ethics Board

[redacted]
Dr. Matthew Murphy
Vice-chair, Human Research Ethics Board

Certificate Issued On: 26-Feb-2024



HREBA
Health Research Ethics
Board of Alberta
Cancer Committee

Health Research Ethics Board of Alberta
Cancer Committee
1500, 10104 - 103 Avenue NW
Edmonton, Alberta, T5J 0H8
Telephone: (780) 423-5727
Fax: (780) 429-3509
Email: cancer@hreba.ca

Certification of Ethics Approval

This is to acknowledge that the following research has been reviewed and on behalf of the Health Research Ethics Board of Alberta (HREBA) – Cancer Committee (CC) I am granting approval for your site's participation in the research.

Ethics ID:	HREBA.CC-24-0039
Principal Investigator:	Olga Petrovskaya
Co-Investigator(s):	
Student Co-Investigator(s):	Sarah Quinn
Study Title:	Health care provider experiences with the electronic patient portals in Alberta to support cancer care: Interview study
Sponsor:	Social Sciences and Humanities Research Council of Canada (SSHRC) Insight Development Grant University of Victoria

Effective: 14-Apr-2024 **Expires:** 13-Apr-2025

Research reviewed by delegated review on 14 April 2024.

The following documents have been approved:

- Recruitment PowerPoint Slides, version 1, March 13, 2024
- Recruitment Email, version 1, March 13, 2024
- Consent Form, version 2, April 4, 2024
- Follow-up Interview Script, version 1, March 19, 2024
- Interview Guide, version 1, March 19, 2024
- Proposal, version 1, February 24, 2024
- Olga Petrovskaya's CV, version 1, March 13, 2024
- Departmental Approval, version 1, March 13, 2024
- Vera Caine CV, version 1, March 13, 2024
- UVic Certificate of Approval, version 1, March 2, 2024
- Permission from management to pursue research study , version 1

- Research Study Budget, version 1, February 19, 2024

This Committee is constituted and operates in accordance with the Alberta Health Information Act (HIA), the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2), Good Clinical Practice (GCP) Guidelines of the International Conference on Harmonization (ICH), Health Canada's *Food and Drug Regulations* (FDR), Part C, Division 5 and is registered with the U.S. Department of Health and Human Services (HHS), Office for Human Research Protections (OHRP), IRB # 00009687.

As a requirement of the HIA, if your study uses health information a copy of this certification will be sent to the Office of the Information and Privacy Commissioner (OIPC).

Members of the HREBA-CC who are named as principal investigators or co-investigators in this research do not participate in discussions related to, nor vote on, such studies when they are presented to the Committee. The membership of this Committee is listed at www.hreba.ca.

This approval is subject to the following conditions:

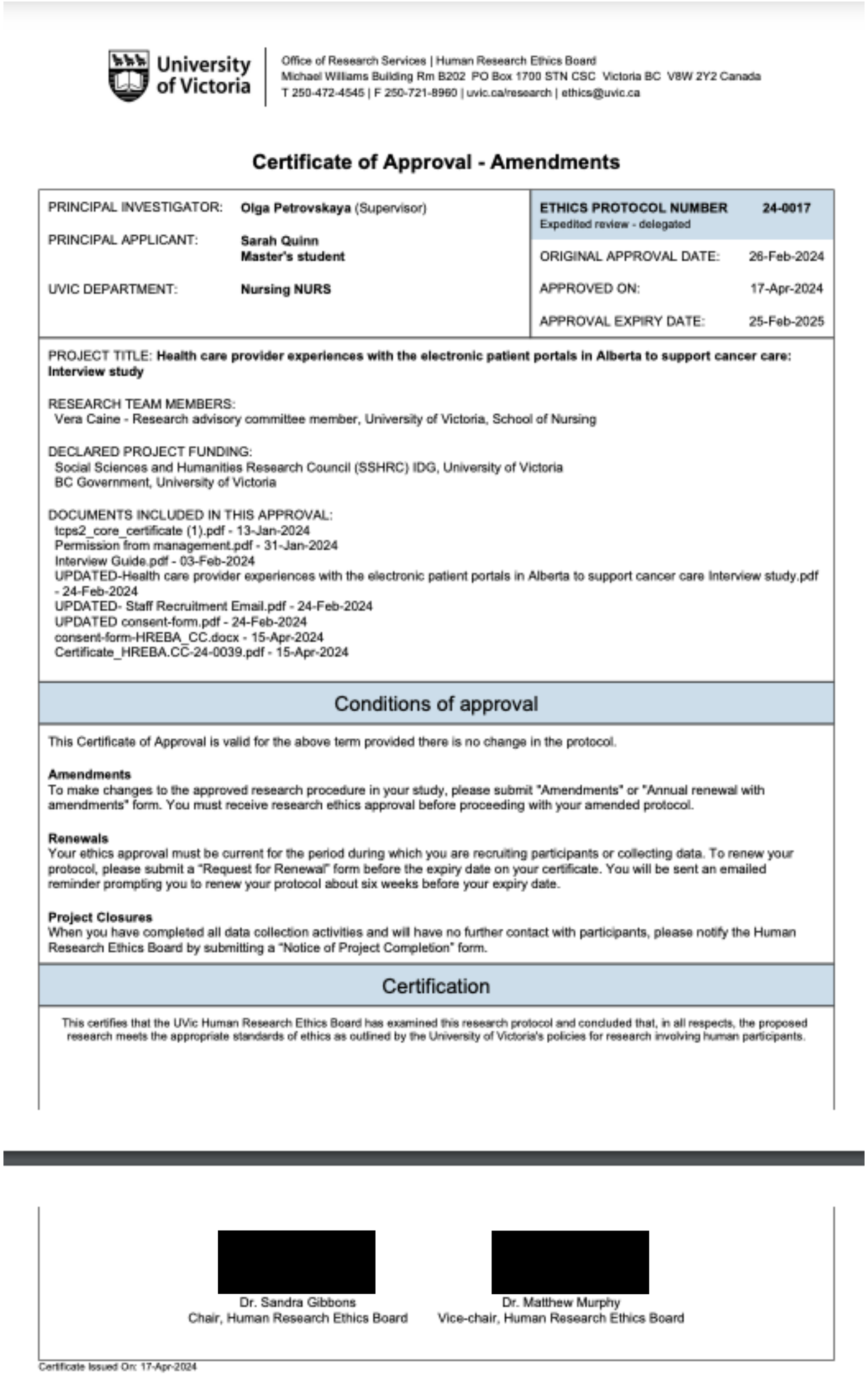
1. It is being granted only for the research described in this application.
2. Any modification to the approved research must be submitted to the Committee for approval prior to implementation.
3. Reportable events (SAE's, new safety information, protocol deviations, audit findings, privacy breaches, and participant complaints) are to be submitted in accordance with the Committee's reporting requirements.
4. A request to renew this ethics certification must be submitted and reviewed by the Committee in advance of the expiry date indicated above. Failure to submit a request will result in the file entering into an expired state, whereby all research must cease.
5. A closure request must be submitted to the Committee when the research is complete or has been terminated.

This approval does not guarantee that you will be able to access health records for research purposes. Other institutional or organizational requirements may be in place that you will be required to meet prior to initiating your research. These include approvals for the allocation of resources in support of your study. Inquiries regarding these additional approvals should be directed to the appropriate institutional or organizational body.

Please accept the Committee's best wishes for success in your research.

Approved on behalf of CC by,	**Date:**
Jackson Wu, HREBA-CC	14-Apr-2024 11:49 AM

Note: This correspondence includes an electronic signature (validation and approval via an online system).



University of Victoria

Office of Research Services | Human Research Ethics Board
Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-472-4545 | F 250-721-8960 | uvic.ca/research | ethics@uvic.ca

Certificate of Approval - Amendments

PRINCIPAL INVESTIGATOR: **Olga Petrovskaya** (Supervisor)
PRINCIPAL APPLICANT: **Sarah Quinn**
Master's student
UVIC DEPARTMENT: **Nursing NURS**

ETHICS PROTOCOL NUMBER **24-0017**
Expedited review - delegated
ORIGINAL APPROVAL DATE: 26-Feb-2024
APPROVED ON: 17-Apr-2024
APPROVAL EXPIRY DATE: 25-Feb-2025

PROJECT TITLE: **Health care provider experiences with the electronic patient portals in Alberta to support cancer care: Interview study**

RESEARCH TEAM MEMBERS:
Vera Caine - Research advisory committee member, University of Victoria, School of Nursing

DECLARED PROJECT FUNDING:
Social Sciences and Humanities Research Council (SSHRC) IDG, University of Victoria
BC Government, University of Victoria

DOCUMENTS INCLUDED IN THIS APPROVAL:
tcps2_core_certificate (1).pdf - 13-Jan-2024
Permission from management.pdf - 31-Jan-2024
Interview Guide.pdf - 03-Feb-2024
UPDATED-Health care provider experiences with the electronic patient portals in Alberta to support cancer care Interview study.pdf - 24-Feb-2024
UPDATED- Staff Recruitment Email.pdf - 24-Feb-2024
UPDATED consent-form.pdf - 24-Feb-2024
consent-form-HREBA_CC.docx - 15-Apr-2024
Certificate_HREBA.CC-24-0039.pdf - 15-Apr-2024

Conditions of approval

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Amendments
To make changes to the approved research procedure in your study, please submit "Amendments" or "Annual renewal with amendments" form. You must receive research ethics approval before proceeding with your amended protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.

Certification

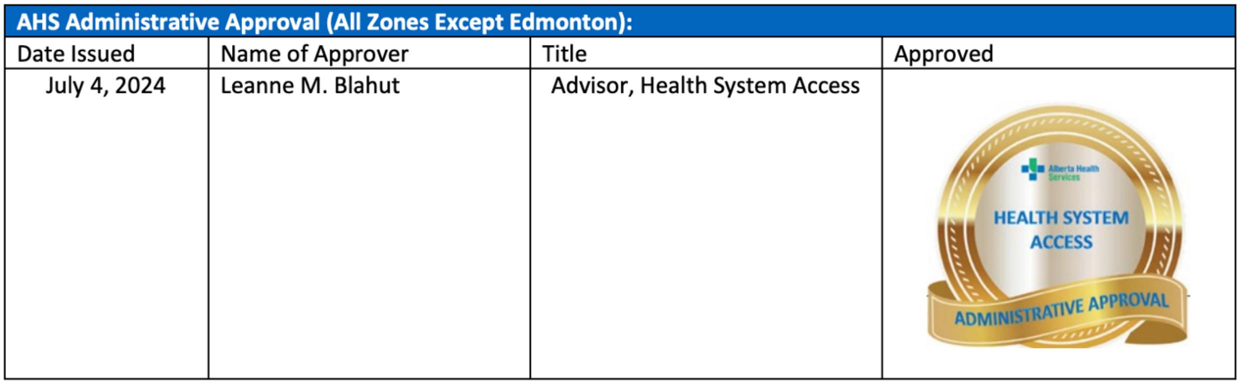
This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria's policies for research involving human participants.

[redacted]
Dr. Sandra Gibbons
Chair, Human Research Ethics Board

[redacted]
Dr. Matthew Murphy
Vice-chair, Human Research Ethics Board

Certificate Issued On: 17-Apr-2024

Appendix F: Operational Approval



AHS Administrative Approval (All Zones Except Edmonton):

Date Issued	Name of Approver	Title	Approved
July 4, 2024	Leanne M. Blahut	Advisor, Health System Access	Alberta Health Services HEALTH SYSTEM ACCESS ADMINISTRATIVE APPROVAL