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Utilizing Virtual Care Patient Appointment Modalities in Diabetes Care

FINAL REPORT

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Key Messages

This study examined two modalities of virtual care through the eyes of three participant groups: Endocrinologists, Other Providers, and Office Staff. This study heard that virtual care, in the forms of telephone and online platform-based (Zoom) appointments, is a convenient, effective, and efficient option for diabetes care in many circumstances. Appropriate resource levels and remuneration for virtual care may increase the future success of virtual care.

Overall, when compared to in-person appointments, virtual care participants described advantages such as improved convenience for patients, care givers and family members. In comparing virtual modalities, Zoom visits presented fewer difficulties for providers than telephone appointments with respect to communication/relationship building (36% versus 77%); making a diagnosis (23% versus 55%); and developing a treatment plan (27% versus 55%). We heard that Zoom appointments were better for efficiency and for engaging patients in group sessions than telephone or in-person settings. Telephone appointments were perceived to be a more accessible option for patients (32% reported difficulties) than Zoom (64%) and appeared to be an effective and efficient option for a narrow range of circumstances.

In comparing how providers used virtual care, Endocrinologists relied more heavily on telephone appointments with 73% of Endocrinologists relying solely on telephone appointments compared to 5% of Other Providers. Other Providers used online platforms most of the time (15%) or on occasion (80%) and described the creative deployment of the online platform capabilities to enhance care, especially where group appointments were considered. Other Providers described leveraging the pandemic as an opportunity to update and enhance online tools (i.e., websites, handouts) to support virtual care.

Finally, shifting from in-person to virtual care (telephone or online) impacted care coordination activities, which we define as the interactions between patients and office staff or care providers and office staff, to organize service delivery. New mechanisms must be created to support care coordination when patients, providers, and office staff are not co-located.

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Background

The rapid adoption of virtual care, arising from the COVID-19 pandemic, allowed providers to connect with each other and to patients. Going forward, virtual care has potential to remove barriers to care and allow for more rapid and efficient communication. Prior to the pandemic, virtual care in Alberta has primarily involved asynchronous provider-provider interactions (e.g., online referral), telephone appointments between providers and patients, and online consultations between patients and providers, typically at a healthcare facility with a specialist joining remotely (i.e., Telehealth). As use of virtual care grew during the pandemic so did the volume of research examining it. Benefits and barriers to virtual care have been well described (Glauser, 2020; Hardcastle & Ogbogu, 2020; Patterson et al., 2022; Powis & Krzyzanowska, 2022; Shahid et al., 2023).

Recent studies on virtual care of diabetes suggest that quality of care is maintained while being more convenient for patients and improving access to and engagement with care (de Sequeira et al., 2022; Powis & Krzyzanowska, 2022; Tanenbaum et al., 2022). Despite these benefits, challenges remain for both patients and providers. Providers face barriers to conduct physical examination and connectivity issues (Patterson et al., 2022; Shahid et al., 2023). Providers also fear virtual care may increase workload, particularly outside of regular clinic hours (Patterson et al., 2022; Stamenova et al., 2020). Patient concerns include data security, privacy, confidentiality, and connectivity – especially among patients in rural areas (Patterson et al., 2022; Powis & Krzyzanowska, 2022). Patients who are not comfortable with technology may prefer in-person care delivery (Powis & Krzyzanowska, 2022; Tanenbaum et al., 2022).

As Alberta moves out of a pandemic state of healthcare delivery, it is important to take stock of what we have learned to improve post-pandemic healthcare delivery (Powis & Krzyzanowska, 2022). This case study examined the how two virtual care modalities (telephone and Zoom) were used to connect patients and healthcare providers from five (5) diabetes care clinics located in an urban centre in Western Canada through the eyes of healthcare providers (Endocrinologists and Other Providers) and Office Staff (booking clerks and administrative assistants). The goal of this project was, firstly, to consider the experiences of office staff and healthcare providers within a specific clinical program to help inform the best use of various appointments modalities (in-person, telephone, Zoom) going forward; and secondly, to identify and report novel findings that might be generalizable to other settings.

Methods

We used a mixed-methods approach to evaluate the process of the virtual care delivery at five (5) clinics located in a large urban centre in Western Canada. An anonymous online questionnaire comprised of closed and open-ended questions was administered to three participant types (i.e., Endocrinologists, Other Providers, Office Staff) between July and November 2021. Interviews and focus groups followed from September 2021 to May 2022. Other Providers consisted of non-physician care providers such as diabetes educators, education consultants, dieticians, and psychosocial care providers. Office Staff included booking clerks and administrative assistants.

Survey

With the assistance of clinic leadership, an online questionnaire was disseminated across five sites among three participant groups Endocrinologists, Other Providers, and Office Staff. Responses (open and closed) were reviewed to inform lines of inquiry for interviews and focus group discussions. Closed-ended questions were analyzed descriptively, and open-ended questions were extracted and uploaded into NVIVO for thematic analysis alongside interview and focus group transcripts.

Interviews and focus groups

Interviews and focus groups were conducted by telephone and online platform between November 2021 and May 2022. Discussion guides were updated following an initial review of responses to the questionnaire. A primary interviewer conducted the sessions and was supported by another team member who provided technical support and captured field notes. Interviews and focus groups were recorded, transcribed, and uploaded to NVIVO for thematic analysis by dual reviewers.

The coding framework used participant roles (Endocrinologist, Other Provider, Office Staff) and a patient journey process map. Content was coded according to where it originated (role of the participant) and which part of the care delivery process was being described. A matrix compared content and themes across provider roles, in particular, to explore the emerging nuances of why and how virtual care modalities were used by physicians (Endocrinologists) and non-physician (Other Providers) providers.

Results

Survey

Thirty-five people participated in the questionnaire, including Endocrinologists (11), Other Providers (20), and Office Staff (4). Participant characteristics are summarized in Table 1.

Table 1. Survey participant characteristics

Characteristic	Count (%)
Role	
Endocrinologist	11 (31.4%)
Other Care Providers	20 (57.1%)
Office Staff	4 (11.4%)
Location (participants able to select multiple sites)	
Clinic 1	5 (14.3%)
Clinic 2	25 (71.4%)
Clinic 3	3 (8.6%)
Clinic 4	4 (11.4%)
Clinic 5	3 (8.6%)
Sex	
Male	4 (11.4%)
Female	28 (80.0%)
Prefer not to say	1 (2.8%)
Did not answer	2 (5.7%)
Seniority	
< 1 year	1 (2.9%)
1 year - 5 years	9 (25.7%)
> 5 years - 15 years	13 (37.1%)
> 15 years	10 (28.6)
Prefer not to say	2 (5.7)

Selection of Virtual Care Modality

Both Endocrinologists and Other Providers used telephone visits more often than Zoom (online platform-based) with 90.3% reporting all or most of their appointment were conducted by telephone (Figure 1). Endocrinologists relied more heavily on telephone appointments with 73.0% of Endocrinologists relying solely on telephone appointments while Other Providers used Zoom most of the time (15.0%) or on occasion (80.0%).

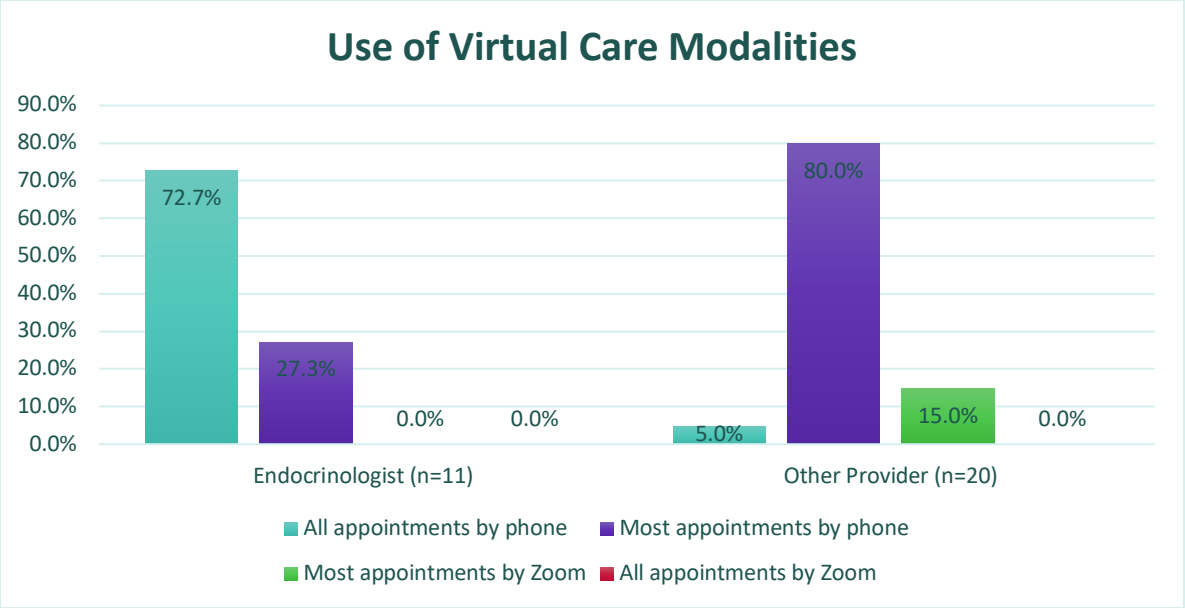

Figure 1. Virtual appointment modalities used by health care providers.

Difficulties with Telephone Appointments

Providers reported difficulties they experienced with telephone visits and their perceived difficulties for their patients (Table 2). More than 70% of providers reported difficulties with communicating/building a relationship, audio quality, and patients' access to a suitable location for the appointment. About one third of providers perceived patient difficulties with access to a telephone. There were few difficulties with documentation (12.9%), providers' access to a telephone (3.2%), or a suitable location (3.2%).

Table 2. Identified difficulties with telephone appointments

Difficulties with Telephone Appointments	Care Providers (n=31)
Communicating by phone	77.4%
Phone audio quality	77.4%
Patient access to location for call	71.0%
Patient access to telephone	32.3%
Documenting by telephone	12.9%
Provider access to telephone	3.2%
Provider access to location for call	3.2%

Difficulties with Zoom Appointments

Regarding Zoom appointments, 22 providers (three Endocrinologists and 19 Other Providers) reported using this modality at least some of the time. The greatest challenge with Zoom visits was audio-visual quality (72.3%) followed by patient access to a computer and suitable location (63.6%). About one third of providers (36.4%) noted difficulty with communication/relationship building. Few difficulties were noted for providers' access to a computer or suitable location (Table 3).

Table 3. Identified difficulties with Zoom appointments

Difficulties with Zoom Appointments	Care Providers (n=22)
Audio visual quality	72.7%
Patient access to computer	63.6%
Patient access Location for appointment	63.6%
Communicating online	36.4%
Documenting online	9.1%
Provider access to computer	4.6%
Provider access to location for appointment	4.6%

Comparing Virtual Care Modalities

Zoom visits presented fewer difficulties for providers than telephone appointments with respect to communication/relationship building (36.4% versus 77.4%); making a diagnosis (22.7% versus 54.8%); and developing a treatment plan (27.3% versus 54.5%). Providers felt that patients were more likely to have difficulties accessing a computer for Zoom appointments (63.6%) than a phone (32.3%) for telephone appointments. With respect to audio/AV quality, documentation, and access to a suitable location for patients and providers, difficulties were similar.

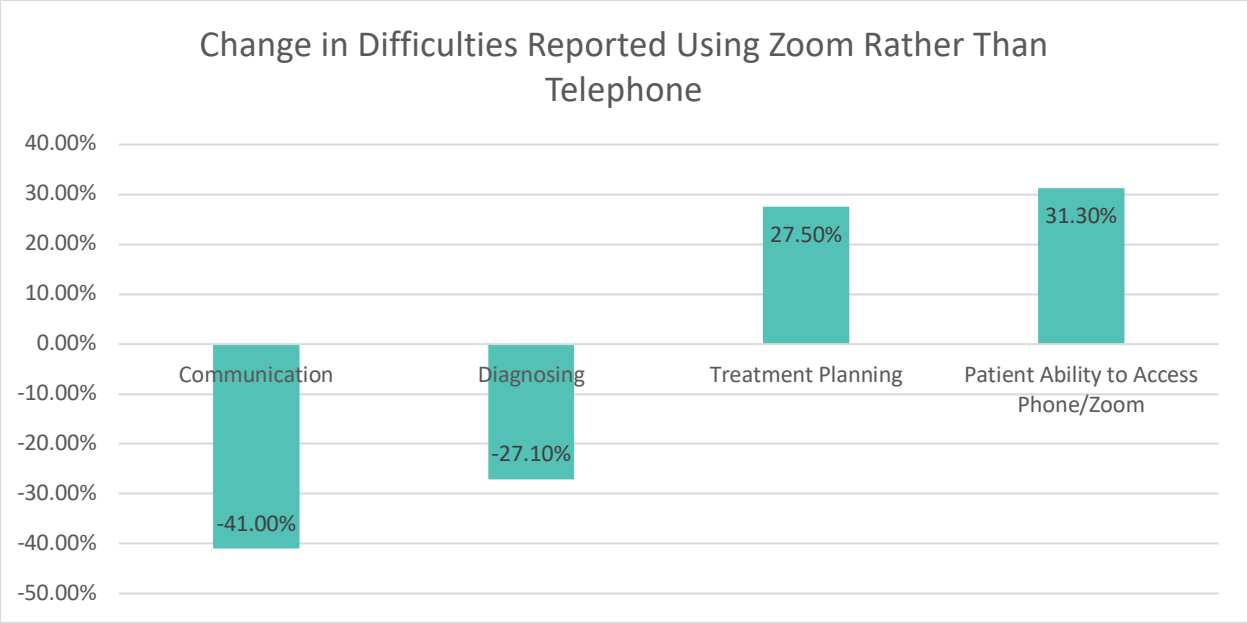

Figure 2. Difficulties using Zoom versus telephone appointments

Other Survey Findings

The survey also shed light on three additional areas. First, unique to Endocrinologists, more than half (57.1%) noted difficulties receiving appropriate remuneration for virtual care. Second, a scan of open text responses from Other Providers described numerous advantages of Zoom appointments as well as group sessions using Zoom. Finally, Other Providers' open text comments frequently described patients as being ill-prepared for their virtual appointments (i.e., driving or shopping, working during the appointment). Along with the closed responses, open text data informed lines of inquiry for subsequent interviews and focus groups.

Qualitative Findings

Four (4) Endocrinologists, six (6) Other Providers and one (1) Office Staff member participated in individual and group discussions with other participants of the same role type. Due to the small number of qualitative participants, characteristics are not provided.

Analysis of transcripts and including open text survey responses yielded two major themes regarding the impact of virtual appointments on diabetes care delivery. First, the Patient Care domain primarily addresses interactions between healthcare providers and patients. The second domain, Care Coordination, speaks primarily to interactions between Office Staff, and patients; between Office Staff and other Office Staff; or between Office Staff and healthcare providers. Themes are described below, and themes and main sub-themes are available in Appendix A.

Theme One: Patient Care

Impacts of Appointment Modality on Diabetes Care Delivery

Each appointment modality – in-person, telephone and Zoom – work well in certain situations. As the traditional method of delivery, in-person appointments remain the preferred approach and endocrinologists appeared particularly accustomed to and comfortable with in-person care delivery. Providers felt in-person care was needed in certain situations (e.g., first appointments, pump starts, building rapport, language barriers) but that virtual appointments could be a convenient, efficient, and effective option for patients and providers in many other circumstances.

Of the virtual appointment options, telephone appointments were more familiar, and providers found these appointments more accessible for themselves and their patients. Providers felt telephone appointments were an efficient option for a narrow range of circumstances such as returning patients with limited medical or social complexity. Prior to the pandemic, online appointments were not used, so time and effort were needed to adopt this modality.

There were differences in how providers adopted and used virtual appointments, based on their role. All Other Providers who completed the survey and were interviewed used Zoom appointments regularly. Only a small minority (27.3%) of endocrinologists surveyed used Zoom while of the four endocrinologists interviewed, one had not used Zoom, two had tried Zoom on rare occasions, and one used it semi-regularly.

When comparing to in-person appointments, providers described several benefits to virtual appointments (both telephone and Zoom) including better attendance, improved convenience for patients, improved involvement of family members or caregivers, increased patient independence, and improved efficiency for providers in some situations. Noteworthy comments describing the benefits of virtual care included:

> *Patients could still attend even if out of town - provided in-country - and could 3-way conference family members for translation or support if needed.*

> *…it feels like we've had less no-shows as transportation barriers were removed (weather, parking/transit costs, etc.)*

> *They were able to grab items from home to verify info- prescriptions, food labels.*

A common challenge with virtual appointments, regardless of modality, was patient readiness. Providers told us that it was common for patients to be ill-prepared to the virtual appointment. Comments included:

> *Difficulty getting a hold of the patient within the designated time window. Difficulty getting the undivided attention of the patient (e.g., patient at work, driving, shopping, etc.)*

> *…patients didn't always seem to value this time as an appointment. They would be out shopping or driving in their car etc.*

Other barriers to virtual care that were not modality-specific included difficulties verifying patient identity, disruptions in the office and appropriate remuneration:

> *The process of verifying each person's identity and sharing of individual data we require took a lot of time to find a solution.*

> *(clinic location) started doing overhead pages recently for urgent care, which are quite loud in the office, and disruptive...*

> *…patients are no less complex when we perform care virtually, so the fact we cannot bill complex modifiers is ridiculous. Virtual care if anything is more onerous for the physician as it further increases our administrative duties, yet we can't bill time modifiers either.*

Focusing on appointments conducted by telephone, the main advantage was accessibility. Providers perceived patients were more comfortable with and had better access to a phone than to the online platform:

> *By far most patients said they would rather talk via phone than do a video visit.*

> *The most challenging part is getting the client to agree to try videoconferencing. The vast majority of clients decline for one reason or another…*

However, in some cases telephones were ineffective due to cell phone coverage:

> *I think that phone line problems were on the patient end (e.g., audio breaking up due to poor connectivity of cell phone).*

The ability to build relationships/rapport using the telephone was a challenge, especially with new patients:

> *I feel engaging and communicating with patients by phone can be more challenging—this was especially true for patients I had never met before.*

Providers also had concerns about privacy when working remotely. One endocrinologist noted that their personal phone number would be visible to patients, something they preferred not to disclose:

> *If working from home, many patients will screen my call if I call from my cell and block the number, but I don't want them to have my personal cell phone, so this is another tricky one to navigate.*

Focusing on Zoom appointments, providers found they were able to approximate a physical exam, build rapport, rely on physical cues for communication, teach and observe patient skills (i.e., insulin pump starts), empower patient self-management, and share information.

> *…there were some creative things that you could do in Zoom in terms of physical examination, which of course you couldn't do over the phone.*

> *Great to be able to build rapport with patient (much easier than phone).*

> *…so helpful to be able to be able to see facial expressions and body language…*

> *I liked using Zoom more than phone as you could actually see the patient and the circumstances, they live in.*

> *(patients) share their screen with me…, they'll bring up like their Libre or their Dexcom, or pump records … you only do that once, and then the next appointment they are prepared…*

> *…. I don't think you'd have any pump trainer agree to do pump start by phone it's either zoom or in-person, there's no other option for something that complex.*

> *invaluable to be able to actually show clients how to set up and use devices like meters, lancing devices, insulin pens and help them trouble-shoot*

…you literally share it (patient hand out) up on the screen, so they're looking at it, they can see you in the corner… I was thrilled when I figured out how to do that.

Other Providers described the benefits of Zoom for group sessions for efficiency, accessibility, and instruction:

So with the Zoom class, we now direct them to our website that has a video that describes what GDM is and ideally they've watched that prior to the class

Virtual classes work so great! No need to book a conference room, enables larger class sizes and city-wide participants, removes transportation-related barriers.

...there are advantages with virtual group sessions...everyone can hear, and everyone can see...

In addition to the benefits Zoom appointments, Other Providers mentioned that the shift to virtual care led to improvements to online resources and their utilization. Other Providers seemed to see the shift to virtual care as an opportunity to further enhance virtual tools:

I know our department has a YouTube channel, I would really like to expand on that…to have a series of short YouTube videos on certain topics, related to Type 1 diabetes and insulin pumping.

clients have been more self-sufficient in accessing information and resources from our clinic website.

Barriers to using Zoom can be attributed to technical, process, and resourcing issues. While Other Providers appeared capable of overcoming these challenges, many Endocrinologists chose instead to rely on telephone appointments.

Technical barriers to using Zoom included lack of computers or internet connection, lack of skill and concerns about privacy:

I found if the patient didn't have a great internet connection, that was a barrier, so I did in those cases have to convert to phone calls.

There're issues where the nursing staff are responsible for setting the meeting up and there's problems where they've never done it before.

Ability to send link to patient via encrypted AHS email was difficult for patients, even for those who had become very zoom-proficient over the course of the pandemic.

So, I can tell you that I almost never use Zoom. I did all and I continue to do the virtual visits by phone. It's just the technological side of it and I don't have an email that I can give out to patients that I want to be accessed.

…if they don't have the technology, so there would be patients that are screened out of the online class.

Zoom's not for everybody. I've got clients who are like, they're elderly, even if they had help, it's just not going to happen.

So, there is a concern about privacy in terms of looking at that data and so the diabetes centre has just recently gotten approval from privacy to be able to set up what are called clinic accounts…

I would say that over half of my scheduled video appointment visits ultimately did not happen as either the patient didn't answer when called, the connection didn't work (i.e., I was calling but the patient wasn't seeing anything on their end), or due to connection issues.

… it's important to make sure you're talking to who you think you are talking to… some sort of piece and identifying information to confirm that it's them and ask them who's in the room.

Process barriers to Zoom appointments were largely related to setting up online appointments. Participants stated:

The booking process (who's responsibility is it) CAT? Clinic clerks? secretary?

(Setting up online appointments) requires more up-front preparation. The process of verifying each person's identity and sharing of individual data we require took a lot of time to find a solution.

Resourcing barriers for Zoom appointments were largely related to administrative burden:

…given the overall higher burden of administrative tasks the result from virtual care (i.e., faxing/mailing prescriptions, lab reqs etc.) I did not think that

adding setting up Zoom appointments to my admin assistant's burden was reasonable…

…'easy' tasks associated with in person clinic (i.e., providing requisitions, prescriptions) became much more complex and time consuming when done virtually - determining new workflows with multidisciplinary staff (i.e., diabetes educators only handling urgent issues meant we as endos handled more routine issues for more patients).

…I wasn't engaging mainly due to resource issues and staffing issues around Zoom appointments and also maybe privacy…

Technical, process, and resource issues are summarized in Table 4.

Table 4. Barriers to Using Zoom

Barriers	Examples
Technical	• Poor connection/wifi/audio quality • Lack of comfort and skill using among providers • Lack of knowledge regarding how to set up and use • Concerns about patient ability to access Zoom • Concerns about privacy and security
Process	• Lack of clarity on who was responsible to set up appointments • Regulatory barriers to conducting out-of-province appointments
Resources	• Zoom appointments took more time than phone appointments • Zoom appointments took more time for office staff to arrange • Zoom appointments coordination required a higher or different skillset from office staff • Appropriate remuneration

Theme Two: Care Coordination

Prior to the pandemic, in-person appointments were booked by clinic staff and follow-up appointments were often made as the patient left the clinic. An Office Staff participant reported:

"The patient came to the desk and, you know, when they are available, and the clinic booked them..."

When in-person appointments halted in March 2020, the task of booking appointments tended to shift from booking clerks to administrative assistants. Scheduled in-person appointments

had to be rescheduled to become virtual. These changes had to be communicated to patients and providers. The duration of appointments was adjusted to accommodate virtual care which meant entire clinic schedules needed to adjust. The shift in both appointment time and type needed to be communicated and confirmed with each patient, creating additional tasks for the administrative assistants.

During traditional in-person appointments, patients, office staff, and care providers were all co-located in the various diabetes clinics. Patients would arrive and "check in". During the in-person "check in" staff could confirm the patient's identity and contact information. Without this "check in", the confirmation of patient identity was taken on by the physician or, in some cases, not completed. Without verification of contact information, follow up communication and referrals to other providers can easily be misdirected, resulting in additional time and effort to reach the patient and potential risk to patient health.

Traditionally, upon completion of in-person appointments, patients "check out" with staff as they leave the clinic. During "check out" they could pick up prescriptions or lab requisitions, supplies (insulin pens), samples, or letters. "Check out" also set in motion booking their next appointment. The loss of the "check out" activities with virtual appointments meant that staff needed to contact patients by phone, email, or mail to arrange the next appointment. This new process was more time and resource intensive. An Office Staff open text survey described the new processes in lieu of "check out":

"Sending out prescriptions, labwork etc as patient not on site to receive."

Certain "check out" activities led to new processes, such as leveraging community-based providers. An Other Provider described a solution they found to accomplish "check out" activities:

"And then one of the wonderful things we found out was how accommodating pharmacists were in getting people meters..."

During the early stages of the pandemic, staff and providers were working from home. With care providers and staff offsite, internal communication and collaboration became more difficult. An office staff participant stated:

"Like before, if I got a question, I just, "okay, could you tell me what I can do, or…' I just pass by, and then I saw my colleagues and I ask them and now ... I was still feeling, like kind of isolated..."

Care Coordination challenges are described in Table 5.

Table 5. Barriers to Patient Coordination in Virtual Environments

Barrier	Example
Check-in	• More difficult to verify patient identity • More difficult to verify patient contact information
Check-out	• More difficult to get supplies, equipment, or paperwork to patients
Team cohesion	• More difficult to give or receive support/advice from others

Discussion

Although this study was based on a small sample and did not reach theoretical saturation, we are confident that in-person, telephone, and Zoom appointments all have a role in diabetes care. In-person appointments support rich and deep communication through visual cues and touch. Building relationships, developing trust, and providing emotional support tend to be more easily accomplished in-person. Conducting physical exams, shared decision-making, and demonstrating skills are also well-suited to in-person interactions. In-person appointments may be best for patients with medical or social complexity. In contrast, telephone interactions are easily accessed by patients and providers. They tend to be brief and convenient but are best reserved for simple circumstances (lab test review and simple medication adjustments for example).

Zoom appointments lie in the middle of the spectrum offering many of the conveniences of telephone appointments (i.e., no travel, or parking issues for patients) as well as some of the richness of in-person appointments. With respect to information sharing, group appointments, and gaining insight into a patient's home life, Zoom appointments can be especially valuable and perhaps even more so than in-person visits. Other Providers seemed to adopt Zoom quickly and wholeheartedly while uptake among Endocrinologists was more guarded. There may be an opportunity for Endocrinologists providing diabetes care to rely on Zoom appointments more often, however several process barriers would need to be addressed to enhance uptake.

Recommendations

Based on our findings, we present the following recommendations to consider with respect to the use of virtual appointments for diabetes care:

Normalizing virtual care:

1) Incentivize the use of virtual care (in appropriate clinical situations) by appropriately remunerating virtual care encounters
2) Integrate patient identity verification and 'check-in' into the sign-on process for Zoom facilitated appointments
3) Create tools for e-prescribing and e-ordering so these activities can be done during the clinic visit and information can be delivered to the pharmacy, lab, or diagnostic imaging center digitally
4) Provide continuous quality improvement opportunities for optimal virtual care practices and experiences

Improving access to virtual care:

For patients:

1. All provincial residents should have access to internet services
2. If cell phones or personal computers are considered required tools for health care access, personal income or social status should not be a barrier to acquiring these tools
3. Create novel health education content that can be used to supplement virtual care encounters (i.e., diabetes-related health content on YouTube)

For providers:

1. Provide appropriate resources:
    a. Secure and reliable online platform
    b. Dual monitors
    c. Headsets
    d. Quiet spaces for providers to take virtual appointments
    e. Technical support and training for providers, patients, and office staff
    f. Ensure office staff have adequate time and skill to support the virtual care process

Be intentional about care coordination and integration:

1. Consider using virtual tools to enhance engagement of community-based providers
2. Consider using virtual tools to include family members and caregivers in care encounters

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Appendix A

1. Care Coordination
    a. New demands on Office Staff
    a. Challenges with providing supplies, reports, requisitions etc. to patients
    b. Challenges verifying identity and contact information

2. Patient Care
    a. Endocrinologist services
        i. Determining appointment type
        ii. Technical considerations
        iii. Resourcing and efficiency
        iv. Privacy and Security

    b. Other Provider Services
        i. Determining appointment type
        ii. Group sessions
        iii. Resourcing and efficiency
        iv. Technical considerations
        v. Virtual Appointment Readiness (this is buried in E under determining appt type, patient considerations)