Preoperative Anesthesia Virtual Video Consultations in Preadmission Clinic: A Quality Improvement Project.

Yamini Subramani, Jill Querney, Priyanka Singh, Yifan Zhang, Lee-Anne Fochesato, Nida Fatima, Natasha Wood, Mahesh Nagappa

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Abstract

Before surgical procedures, the preadmission clinic (PAC) facilitates perioperative care through preoperative evaluations, education, and patient optimization. The Coronavirus disease 2019 (COVID-19) pandemic precipitated the popularity of virtual care video appointments, emerging as a sought-after alternative to in-person and phone consultations. Despite this trend, our PAC reported zero percent utilization of video consultations in preoperative assessments.

We initiated a prospective quality improvement project employing the Plan-Do-Study-Act (PDSA) methodology. The project aimed to develop, implement, and integrate virtual video consultations in PAC. Data were systematically collected to track the number of patients undergoing video consultations, allowing us to address patient flow concerns and enhance the percentage of video consultations.

Our approach involved an in-depth examination of communications between PAC, surgeon offices, and patients, seeking continuous improvement in video consultations. We tackled technological challenges and streamlined connecting video calls on the day of appointments. We observed consistent improvement through successive PDSA cycles and reaudits, with the percentage of video calls increasing from a baseline of zero to 38%.

The quality improvement process significantly enhanced our institution's preoperative video consultation workflow. By gaining a deeper understanding of the intricate processes within PAC, we strategically intervened to integrate video consultations, ensuring efficiency, morale, and safety were not compromised. This project underscores the potential for transformative improvements in healthcare delivery through the thoughtful integration of virtual care technologies.

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ABSTRACT

Before surgical procedures, the preadmission clinic (PAC) facilitates perioperative care through preoperative evaluations, education, and patient optimization. The Coronavirus disease 2019

(COVID-19) pandemic precipitated the popularity of virtual care video appointments, emerging as a sought-after alternative to in-person and phone consultations. Despite this trend, our PAC reported zero percent utilization of video consultations in preoperative assessments.

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INTRODUCTION

Amid the Coronavirus disease 2019 (COVID-19) pandemic, many in-person consultations in the preadmission clinic (PAC) at our tertiary academic centres of London Health Sciences Centre (LHSC) and St. Joseph’s Health Care in London, Canada, shifted to telephone consultations. Telephone consultations were instrumental in reducing unnecessary hospital visits and in-person interactions, thereby mitigating the risk of COVID-19 transmission. While phone consultations allowed for comprehensive patient history and chart review, they lacked a physical examination, particularly the crucial airway assessment required for anesthesia consultations. Introducing a

telemedicine model with audio and visual components in the PAC could offer several advantages, including a partial physical assessment and valuable preoperative patient information.[1]

LHSC and St. Joseph's Health Care collectively handle approximately 50,000 surgical cases annually across various subspecialties. The PAC is a designated setting to perform multidisciplinary preoperative assessments and optimize operating room efficiency. Notably, not all scheduled surgical patients require preoperative assessment in PAC, as limitations in time, office space, and human resources restrict the number of patients seen. The PAC team, comprising professionals from medicine, anesthesia, nursing, pharmacy, occupational therapy, and physiotherapy, offers preoperative evaluation and education to surgical patients, totalling approximately 8,000 consultations annually across three hospital locations.

Over the years, PAC has undergone alterations in office location, size, caseload, and staffing. The PAC team's preoperative consultations often include internal medicine and/or anesthesiology consultations and cover all surgical subspecialties. Some consultations are time-sensitive or involve mandatory in-person visits due to combined procedures, such as X-rays, electrocardiograms, echocardiography, surgical team consultations, and blood work. Therefore, implementing video consultations requires meticulous planning and decision-making to ensure smooth clinic operations.[2]

Virtual care video appointments at our institution have become a popular alternative to in-person and phone appointments during the COVID-19 pandemic.[3] Patients benefit from time and cost savings, increased communication with providers, improved access to care, and involvement of family members or caregivers.[1,4] Telemedicine has been shown to reduce missed appointments, wait times and readmissions; enhance office efficiency with fewer front desk phone calls; and increase medication adherence. The ability of healthcare providers to make eye contact, assess body language, discuss sensitive topics, and conduct a limited physical examination over a virtual platform can improve the patient-physician relationship.[5]

Telehealth involves electronic communication between patients and healthcare providers to improve patient health remotely.[6] This technology includes mobile devices, remote monitoring, and live video communication.[7] Telemedicine requires audio and visual elements that occur in real-time or are stored and forwarded for later use (synchronous and asynchronous, respectively). While telemedicine has long been utilized in rural areas without access to specialists, its prevalence increased widely during the COVID-19 pandemic.[8] When strategically deployed, virtual care enhances the quality and effectiveness of patient care and enables dynamic risk stratification through big data and machine learning.[9]

Before May 2021, video consultations were absent at our centres, and during the initial project phase, they were limited to one PAC. A preliminary assessment indicated room for development and improvement of video consultations before routine integration. This project aimed to develop, implement, and integrate structured steps and process changes using CISCO DX80 Webex devices, measuring the impact on the number of consultations through validated continuous quality improvement Plan-Do-Study-Act (PDSA) cycles. Importantly, the initiative focused on enhancing preoperative care without direct patient participation or using identifiable data, potentially offering valuable insights to the broader healthcare community.

METHODS

Ethics approval was not obligatory for this initiative; however, we secured Western Research Ethics Board approval (Project ID: 118733) before commencing the quality improvement project, conducted between May 2021 and December 2023. The primary objective was to develop, implement, and integrate virtual video consultations within PAC, offering surgical patients the option of a virtual video consultation as an alternative to in-person visits in collaboration with our institution's multidisciplinary team.

Data spanning four weeks, from the first to the last day of the month following the May 2021 video consultations implementation, were initially collected. Following the initiation of changes, repeat data were gathered for up to one month to evaluate the sustainability and ongoing

enhancement of the revised practice. Daily video consultations in each PAC were systematically documented throughout the project to facilitate continuous quality improvement.

In the project's initial phase, the data supported the suitability of virtual video consultations for bariatric patients. Notably, the acceptance rate for preoperative video consultations among bariatric patients reached 100%, owing to their familiarity with the CISCO Webex platform, from the pre-existing use of it in the bariatric program for preoperative education. This success among bariatric patients catalyzed the broader expansion and implementation of video consultations across PAC.

The PAC team initially explored several months of virtual video consultations focusing on bariatric patients. The objective was to assess the potential for development and improvement and the benefits of this quality improvement project. Approximately one hundred virtual video consultations were conducted to streamline preoperative video consultation steps. Importantly, no data or personal identifiers from participants were collected. Only information related to the process, such as patient selection, the percentage of successful video consultations, and issues encountered, were documented in a patient-independent manner. PAC nursing teams held small group meetings to assess the strengths and weaknesses of telephone and video consultations, documenting opinions shared during the discussions. However, no participant-specific information was collected. Stakeholders were briefed on the results of this preliminary assessment.

To identify areas for expansion and improvement, we sought feedback through an audit and a series of PDSA cycles to facilitate change and monitor progress. A key theme emerging from baseline information and staff feedback was enhancing communication between PAC, patients, and surgeons' secretaries to offer the option of virtual video consultations post-surgical diagnosis. Additionally, patients' emails were collected to enable sending invitation links for video consultations. A unique shared mailbox was established for this purpose.

We enlisted champions from each stakeholder group to garner support for our rapid cycle changes. Leveraging data and stakeholder feedback, we employed the PDSA methodology to shape our quality improvement strategy over three years, abstaining from formal statistical analyses

for before-and-after comparisons.

Strategy

We executed three PDSA test cycles over three years. The Steps Involved in Virtual Care Appointments (VCA) are outlined in Table 1.

Table 1: Steps Involved in Virtual Care Appointments (VCA)

1. Hospital policies and technology to support VCA
Get up to speed on VCA's technology, policies, and FAQs.
2. Is a VCA needed?
Determine if currently scheduled appointments can be VCAs.
3. Call and confirm email
Now that you've determined which appointments are VCAs, it's imperative that you have the correct patient email before you initiate any communication via email.
4. Send VCA invitation
Send a VCA invitation for the date and time.
5. Remind patient
The patient is given an automatic reminder call of the upcoming VCA.
6. Provider communicates to Admin Support
Immediately before the VCA, the provider automatically notifies the person who will create a Cerner registration for the VCA.
7. Create registration
The registration is created in Cerner for the Cerner-scheduled appointment.
The best practice is to create the registration in real time just before the VCA begins.
8. Virtual Care Appointment
The VCA takes place between the patient and the provider.
Because the registration has been created, the provider can now document and place orders on the current encounter during the VCA.
9. Post VCA tasks

Dictation can be attached to the encounter without delays immediately after the VCA.

First Intervention/PDSA Cycle 1:

Approval from the hospital for the secure Cisco Webex platform prompted the utilization of Cisco DX80 Webex devices' cameras in dedicated PAC rooms for video consultations. Collaborative group meetings involving PAC nurses, anesthesiologists, hospital IT, and the hospital virtual care team were held to implement process improvements. Repeated data collection occurred several weeks later using the same preliminary assessment questionnaire after this intervention. The hospital invested in Computer-integrated Cameras (Cisco DX80 Webex devices) through the virtual care funding program, which was installed in PAC rooms. PAC nurses received four training sessions and video virtual appointment scheduling and registration were established. A common email was created with a shared folder/inbox, and regular updates were implemented to enhance virtual care.

Second Intervention/PDSA Cycle 2:

Aiming to boost the percentage of video consultations and simplify the process, a dedicated person was appointed as a video consultation booking clerk at PAC. A re-audit was conducted on the various steps of video consultations several weeks post-intervention.

Third Intervention/PDSA Cycle 3:

The objective was to increase the percentage of video consultations further and streamline the process. This involved improving the booking process, routinely collecting patients' email IDs into electronic records, easing connection to the meeting link for patients and healthcare providers, and integrating them into the patient's electronic record. Training sessions were conducted for the PAC clinic team, including nurses, medicine and anesthesia staff, clinical fellows, and residents. This served as a brief introduction to the initiative and familiarization with the new video consultation process. Changes in provincial rules and regulations for video consultations increased physicians' acceptance rate, addressing persistent improvement opportunities identified in previous

implementation cycles.

RESULTS

The baseline data indicated a zero percent utilization of virtual video consultations at PAC before May 2021, before the initiation of our project. Following the initial PDSA cycles, the interventions consistently enhanced this metric to 17% utilization, signalling positive developments. As PDSA cycle 3 commenced, there was a substantial increase to 29% utilization during the initial phase. This trend continued, reaching 38% utilization of virtual video consultations in the later phase of the cycle, and persistently maintained a high level throughout the entirety of 2023, highlighting the sustained success of our interventions (Figure 1).

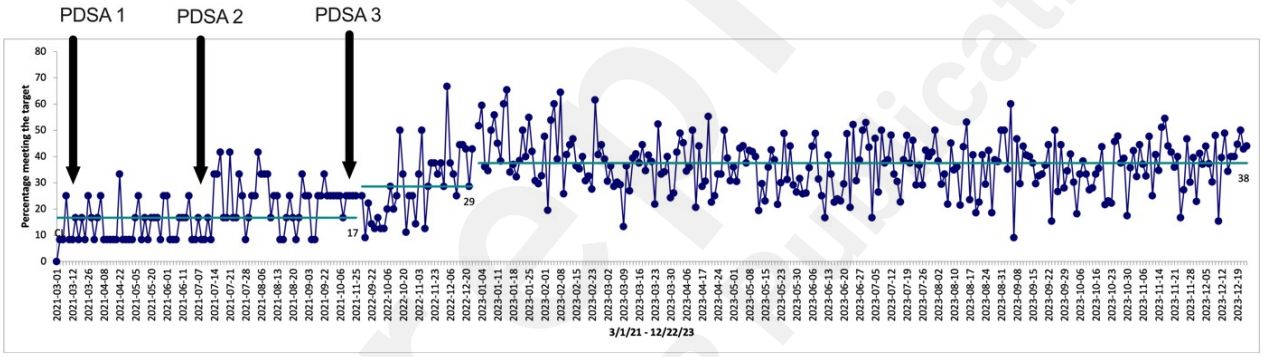

Figure 1: Run chart showing the percentage of patients who completed the video consultation.

Figure 2 presents a comprehensive flow diagram detailing the steps and communication pathways involved in patients' video consultations. Additionally, this figure highlights the specific changes introduced during the PDSA cycles within the project.

Figure 2: A comprehensive flow diagram detailing the steps and communication pathways involved in patients' video consultations during the PDSA cycles.

DISCUSSION

The PAC under study is part of the perioperative process in a Canadian academic tertiary health sciences center within a publicly funded healthcare system. While this quality improvement program may have limited applicability to other institutions due to variations in staffing, office space, equipment, technology, expertise, scheduling, communication, patient volumes, and guidelines, the lessons learned here may still offer valuable insights into enhancing patient satisfaction through the introduction of video consultations during the perioperative period of care.

The primary objective of this quality improvement project was to explore, develop, implement, and integrate virtual video consultations within PAC, ensuring that patient-centred care remains timely, efficient, and safe while preserving the importance of in-person consultations. Key to the project's success was enhancing communication among PAC staff, patients, and surgeons' offices, incorporating the OneChart Video Webex Appointments, and aligning with provincial changes in rules and regulations. Significant clinical enhancements in video consultations were achieved throughout the preoperative journey without compromising patient care, as evidenced by the increase of video consultations in PAC from 0% to 38%. The sustainability of said video consultations was confirmed over the past 12 months, indicating enduring improvement and garnering ongoing support and acceptance from the staff. The groundwork for video consultations positions them for long-term continuation, providing a compelling case for improved staffing, IT support, and physical space. This successful implementation of innovative methods empowers stakeholders to advocate for PAC maintenance and further enhancement.

One prominent limitation in our project stems from significant variability observed across PAC and within the same clinic on different days, resulting in total virtual video consultation fluctuations. Various factors contribute to this variability, including the volume of patients referred to PAC from surgical specialties; medical comorbidities of patients rendering them ineligible for video consultations; specific surgical procedures necessitating in-person consultations; variations in the booking staff at PAC responsible for sending email invitations for video consultations; the number of surgeries conducted during specific slow-down periods such as holidays; and fluctuations in the

overall caseload seen in PAC. Notably, certain days, labelled as "Super Wednesdays" and "Super Tuesdays" in our PAC, presented twice as many patients, leading to increased video consultations on those days. To mitigate the inconsistency in scheduling personnel, a specialized team member was assigned to facilitate clear communication between patients and surgeons' offices, focusing on effectively organizing video consultations.

While the patient information system facilitated data collection, manual data collection remains necessary. Working closely with the hospital's IT and virtual care teams and their resources proved essential in enhancing patient flow throughout the project by seamlessly integrating video calls into electronic records. In the continuous improvement process, communication options like "Virtual care Appointments using Webex" were incorporated into electronic records views, enhancing the efficiency of joining video consultations for the multidisciplinary team in PAC.

Changes in PAC were noted during the project, coinciding with broader system and provincial changes. Increased acceptance rates among patients, PAC staff, and physicians led to higher numbers of video consultations. Workforce issues were addressed by assigning additional clerks to assist with the booking process, although no increase in medical and nursing staff occurred. These modifications underscored the clinic's significance within larger hospitals and the provincial system, emphasizing the need for innovative methods to enhance patient flow, efficiency, and satisfaction without compromising safety.

Virtual care video appointments offer a reasonable alternative to in-person and phone consultations, gaining prominence during the COVID-19 pandemic and likely continuing to play a significant role in healthcare.[10] Future directions involve advancing the newly implemented video consultation by integrating an app-based preoperative education system already used at our hospital. Additionally, expanding electronic communication options, such as asynchronous preoperative messages, will deliver real-time, crucial, and up-to-date information and education about the preoperative journey without interrupting a phone call. This approach aims to empower patients and enhance their compliance with preoperative instructions.

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Supplementary Files

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