

CADTH Reference List

Virtual Oncology Visits

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Key Messages

- Two systematic reviews, 3 randomized controlled trials and 9 non-randomized studies were identified about the benefits and harms of virtual oncology visits.
- Four evidence-based guidelines were identified about virtual oncology visits.

Research Questions

1. What are the benefits and harms of virtual oncology visits?
2. What are the evidence-based guidelines regarding virtual oncology visits?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine’s MeSH (Medical Subject Headings), and keywords. The main search concepts were virtual care and oncology. CADTH-developed search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or indirect treatment comparisons, any types of clinical trials or observational studies, and guidelines. The search was completed on Jun 2, 2022 and limited to English-language documents published since January 1, 2020. Internet links were provided, where available.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open-access, full-text versions of evidence-based guidelines were reviewed when available, and relevant recommendations were summarized.

Table 1: Selection Criteria

Criteria	Description
Population	People with cancer
Intervention	Virtual oncology visits (i.e., video or audio visits) for appointments that do not require a physical exam
Comparator	Q1. In-person oncology visits for appointments that do not require a physical exam Q2. Not applicable

Criteria	Description
Outcomes	Q1. Clinical benefits (e.g., acceptance of care, patient satisfaction, quality of life, proportion of patients receiving appropriate consultation and treatment) and harms (e.g., proportion of patients receiving inappropriate consultation or treatment) Q2. Recommendations regarding best practices for virtual oncology visits (e.g., appropriate indications, appropriate use)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, evidence-based guidelines

Results

Eighteen relevant references were identified for this report.¹⁻¹⁸ Two systematic reviews,^{1,2} 3 randomized controlled trials,³⁻⁵ and 9 non-randomized studies,⁶⁻¹⁴ were identified describing benefits and harms of virtual oncology visits. Four evidence-based guidelines¹⁷⁻²⁰ were identified describing virtual oncology visits. No relevant health technology assessments were identified.

Additional references of potential interest that did not meet the report's eligibility criteria but do provide relevant guidance and/or recommendations regarding virtual oncology visits are summarized in [Appendix 1](#). Additional references of potential interest that did not meet the inclusion criteria for this review are listed in [Table 2](#).

Overall Summary of Findings

Two systematic reviews,^{1,2} 3 randomized controlled trials³⁻⁵ and 9 non-randomized studies⁶⁻¹⁴ were identified about the benefits and harms of virtual oncology visits. Notably, the COVID-19 pandemic was explicitly highlighted as a driver for much of the research and guidance identified, with many of the included studies and guidelines citing the pandemic as a key impetus in the development, evaluation and implementation of virtual oncology care.^{2,6,8-10,12,14,15,20} A detailed summary of the identified studies can be found in [Table 2](#).

The studies investigating benefits and harms in this report used a broad variety of oncological populations, types of virtual oncology visits, outcomes, measures and study designs.¹⁻¹⁴ Types of cancers among patients (both pediatric and adult populations) described in the included studies of this review were hematological,¹ gastrointestinal,^{3,4,14} dermatological,^{7,13} neuro-oncological,¹⁰ as well as unspecified or non-specific cancerous conditions.^{2,5,6,8,9,11,12} Relevant outcomes were similarly variable across the eligible studies, including time from consultation to treatment,^{7-9,13} adherence to treatment,^{5,13,14} functional status,^{4,14} patient satisfaction with and/or preference for type of care,^{3,4,11,13,14} adverse events,^{10,14} hospital admission/readmission,^{3,6,8,12} and mortality.^{6,12}

Accordingly, findings in this report varied across the studies investigating the comparative clinical effectiveness of virtual oncology visits versus in-person clinical encounters, with most

studies reporting comparable clinical outcomes between the interventions (i.e., no difference between virtual and in-person oncology care)^{1,4-10}; several reporting a relative benefit of virtual oncology care,^{3,13} and others reporting insufficient clinical data, or mixed findings, that rendered inconclusive findings.^{2,11,12} While there was some emphatic endorsement of the increased use and reliance upon telemedical care for oncology patients in the future,⁸ other study authors emphasized the importance of more research to better understand the outcomes and implications of this considerable shift in the delivery of cancer care.^{1,2,5,12}

Four evidence-based guidelines were identified about virtual oncology visits.^{15,18} A detailed summary of recommendations is available in [Table 3](#). Across the 4 eligible evidence-based guidelines identified,¹⁵⁻¹⁸ a wide variety of guidance and recommendations is available, representing 4 countries — including 1 guideline from Canada,¹⁷ which provides information that is directly relevant to the Canadian context. Common themes throughout the relevant evidence-based guidance include the importance of calculated and appropriate triage,^{15,18} maximizing safety^{16,18} and equity (across rural or remote and disadvantaged populations),^{15,16} as well as practical suggestions and logistical considerations intended to support the implementation and optimization of virtual oncology care.^{15,17} One of the guidelines provides a grade assigned to the body of evidence that informs each of the recommendations,¹⁷ notably, all of the recommendations relevant to this report are assigned a relatively low grade of evidence, suggesting caution in their application.

Table 2: Summary of Included Clinical Effectiveness Studies

Study citation	Study design, population	Intervention and comparator(s)	Relevant outcome(s)	Author's conclusions
Systematic reviews				
Shah, 2021 ¹	SR with 32 included studies i.e., 6 RCTs and 26 NRS Population: Adults and children with malignant or nonmalignant hematological conditions	Intervention: Telemedicine or telehealth interventions Comparator: Traditional or face-to-face patient encounters	Acceptability, and clinical outcomes	“Evidence from this review suggests that telemedicine use in nonmalignant and malignant hematology provides similar or improved health care compared to face-to-face encounters in both pediatric and adult populations. Telemedicine interventions utilized in the included studies were well received in both pediatric and adult settings. However, more research is needed to determine the efficacy of implementing more widespread use of telemedicine for hematological conditions.”
Singh 2021 ²	SR with 34 included studies i.e., 15 RCTs (5 of which were ongoing) and 13 NRS Population: Patients with cancer	Intervention: Virtual care Comparator: In-person care	Clinical outcomes (not specified)	“There are few data for clinical outcomes and supportive care. Future research should assess the role of virtual care in these areas.”

Study citation	Study design, population	Intervention and comparator(s)	Relevant outcome(s)	Author's conclusions
Randomized controlled trials				
Oliveira, 2021 ³	<p>Study design: Two-arm RCT</p> <p>Population: Cancer patients undergoing esophagectomy and gastrectomy</p> <p>N = 81</p>	<p>Intervention: Telephone monitoring (n = NR)</p> <p>Comparator: Institutional care only (n = NR)</p>	<p>Patient symptoms, quality of life, admissions to the emergency centre and satisfaction (f/u time not reported other than stating that the intervention was delivered "for four moments after the surgery")</p>	<p>"Telephone monitoring provided greater patient satisfaction in the intervention group, demonstrating the real impact of this process on the care of cancer patients."</p>
Wall, 2020 ⁴	<p>Study design: Three-arm parallel-group RCT (of which 2 arms describe relevant data)</p> <p>Population: Patients with oropharyngeal (OP) SCC* who are/have undergoing/undergone prophylactic swallowing therapy during chemotherapy</p> <p>N = 79</p> <p><i>*The abstract does not elaborate this acronym; conventional use suggests that it may refer to 'squamous cell carcinoma'</i></p>	<p>Intervention: Telepractice therapy via "SwallowIT" (n = 26)</p> <p>Comparator: Clinician-directed face-to-face therapy (n = 26)</p>	<p>Swallowing, nutritional, and functional measures at baseline, 6 weeks, and 3 months post chemotherapy</p>	<p>"SwallowIT provided clinically equivalent outcomes to traditional service models. SwallowIT and clinician-directed therapy were preferred by patients [as compared to the third arm of the trial i.e., patient self-directed therapy], likely due to higher levels of therapy support."</p>
Walle, 2020 ⁵	<p>Study design: Two-arm RCT</p> <p>Population: Patients with solid tumours undergoing systemic cancer therapy requiring follow-up care with their consulting physician</p> <p>N = 66</p>	<p>Intervention: Video calls via a mobile phone application (n = 33)</p> <p>Comparator: Standard in-person follow-up visits at outpatient clinics (n = 33)</p>	<p>Primary outcome: feasibility (i.e., the proportion of patients successfully completing the first follow-up visit)</p> <p>Secondary outcomes: success rate of video calls (following the first call), patient satisfaction and quality of physician-patient relationship</p>	<p>"Follow-up visits with the tested mobile phone video call application were feasible but software compatibility should be critically evaluated."</p>

Study citation	Study design, population	Intervention and comparator(s)	Relevant outcome(s)	Author's conclusions
Non-randomized studies				
Uppal 2022 ⁶	<p>Study design: Retrospective cohort</p> <p>Population: Patient who underwent cancer-related surgery</p> <p>N = 535</p>	<p>Intervention: Telemedicine post-operative visit (n = 98)</p> <p>Comparator: In-person post-operative visit (n = NR)</p>	<p>Primary outcome: Readmission to hospital at 90 days of f/u</p> <p>Other outcomes: Effectiveness of visits i.e., identification and management of post-operative complications</p>	<p>“Telemedicine POV use adopted during the COVID-19 pandemic did not increase risk of readmission when compared with in-person visits following inpatient oncologic surgery. These data can help inform policy on the continued use and application of telemedicine after the pandemic.”</p>
Duong, 2021 ⁷	<p>Study design: Retrospective cohort period study (with historical comparison and incorporation of a process modelling approach)</p> <p>Population: People who have non-melanoma skin cancer</p> <p>N = 1,079</p>	<p>Intervention: Conventional care pathway with incorporation of tele dermatology (TD) (not otherwise detailed or described), n = 36</p> <p>Comparator: Conventional care pathway (not otherwise detailed or described), n = 1,043</p>	<p>Time between multidisciplinary consultation and surgery, total time in the care pathway</p>	<p>“Interestingly, patients managed by TD were significantly older than those managed using a conventional care pathway. Unexpectedly their total time spent in the process was not shorter. The results of this analysis illustrated the interest of using process modelling approach to assess the impact of a healthcare innovation integration and to further rethink coordination and care pathways for NSMC post TD.”</p>
Hsiehchen 2021 ⁸	<p>Study design: Retrospective cohort with propensity-matched historical controls</p> <p>Population: Newly-referred oncology patients undergoing systemic treatments</p> <p>N = NR</p>	<p>Intervention: Oncology visits that were largely replaced by telehealth (between March and May, 2020), n = NR</p> <p>Comparator: In-person oncology visits (using propensity-score matching with a cohort of patients seen during a similar time period in 2019), n = 206</p>	<p>Time to cancer staging, time to therapy initiation, all-cause emergency department visits and hospitalizations at 3 months f/u, cancer-specific emergency department visits and hospitalizations at 3 months f/u, treatment delays</p>	<p>“Our results indicate that replacement of in-person care with virtual care in oncology does not lead to worse efficiency or outcomes. Given the increased barriers to patients seeking oncology care during the pandemic, our study indicates that telehealth efforts may be safely intensified. These findings also have implications for the continual use of virtual care in oncology beyond the pandemic.”</p>
Nimgaonkar, 2021 ⁹	<p>Study design: Retrospective cohort study</p> <p>Population: People with thoracic malignancies who required an index visit to initiate a new phase of care</p> <p>N = 240</p>	<p>Intervention: Telemedicine-delivered multidisciplinary visit, n = 108</p> <p>Comparator: In-person multidisciplinary visit, n = 132</p>	<p>Time from initial visit to treatment initiation (median days), time from initial visit to treatment initiation (median days)</p>	<p>“Rapid adoption of telemedicine allowed timely delivery of oncologic care during the initial surge of the COVID19 pandemic by a thoracic oncology multi-disciplinary clinic.”</p>

Study citation	Study design, population	Intervention and comparator(s)	Relevant outcome(s)	Author's conclusions
Norman, 2021 ¹⁰	<p>Study design: Retrospective cohort with historical controls</p> <p>Population: People with a diagnosis of malignant brain tumour</p> <p>N = 278</p>	<p>Intervention: Care delivered via telehealth between 13 March and 1 May, 2020, n = 112</p> <p>Comparator: In-person care occurring between 13 March and 1 May, 2019, n = 166</p>	Alterations in care i.e., change from in-person to telehealth, delays in evaluation and intervention, treatment modifications	“Our study showed that use of telehealth and selective alterations in neuro-oncological care during the COVID-19 pandemic did not lead to adverse patient outcomes. This suggests that adaptive physician-led changes were successful and may inform management during the ongoing pandemic, especially with the emergence of the Delta variant.”
Watson, 2021a ¹¹	<p>Study design: Mixed methods evaluation (including health administrative data analyses and patient surveys with a subpopulation)</p> <p>Population: Patients who had at least 1 visit to any provincial cancer centre in Alberta from April 1, 2020, to June 10, 2020</p> <p>N (administrative data analyses) = 21,362</p> <p>N (surveyed) = 397</p>	<p>Intervention: Virtual visit (n = NR)</p> <p>Comparator: In-person visit (n = NR)</p>	Patient satisfaction with care, patient-reported symptoms, referral to supportive care services, patient interest in receiving virtual care in the future	“The COVID-19 pandemic has driven the rapid implementation of virtual visits for cancer care delivery in health care settings. The findings from this mixed methods evaluation provide a concrete set of considerations for organizations looking to develop a large-scale, enduring virtual care strategy.”
Watson, 2021b ¹²	<p>Study design: Mixed methods evaluation including a retrospective chart audit of clinical encounters and a survey of patients</p> <p>Population: People with cancer before and after introduction of telephone clinics</p> <p>N (clinical encounters) = 2,420</p> <p>N (patients surveyed) = 222</p>	<p>Intervention: Telephone encounters in the month following introduction of a telephone clinic (n = 1,212)</p> <p>Comparator: Face-face encounters in the month before the introduction of a telephone clinic (n = 1,208)</p>	Efficacy i.e., patient preference for telephone vs. inpatient care; safety i.e., hospital admission (24 hour and 7 days following visit), mortality (30 days following systemic therapy)	“Generally, patients and clinicians viewed telephone clinics favourably. Nevertheless, a large portion of patients still prefer face-to-face clinics. Services should be tailored to individual preferences. Although there were no 'red flags' in terms of mortality or admission rates, further longitudinal research is required.”

Study citation	Study design, population	Intervention and comparator(s)	Relevant outcome(s)	Author's conclusions
Lee, 2020 ¹³	<p>Study design: Retrospective cohort</p> <p>Population: People (i.e., whose records were analyzed from the Veterans Health Administration (VHA)) with nonmelanoma skin cancers who were preparing to undergo Mohs micrographic surgery (MMS)</p> <p>N = NR</p>	<p>Intervention: Pre-operative consults delivered via tele dermatology, n = NR</p> <p>Comparator: Pre-operative consults delivered via face-to-face visits, n = NR</p>	Consult failure rates, time to treatment, proportion of lesions treated within 60 days	“This study demonstrates that teleconsultation is effective for preoperative consults for MMS within the VHA system. Tele dermatology improved access measures such as time to treatment and travel burden.”
van Egmond, 2020 ¹⁴	<p>Study design: Prospective cohort compared against historical controls</p> <p>Population: People with esophageal cancer with post-operative complications requiring physiotherapy</p> <p>N = 22</p>	<p>Intervention: 12-week supervised post-operative physiotherapy intervention with telerehabilitation, n = NR</p> <p>Comparator: Conventional face-to-face care (not otherwise described or defined), n = NR</p>	<p>Primary outcome: Feasibility (willingness and adherence to participate, refusal rate, treatment duration, occurrence of adverse events, and patient satisfaction) at 6 weeks f/u</p> <p>Secondary outcome: Functional recovery (i.e., measures of musculoskeletal and cardiovascular function and capacity) at 3 months f/u</p>	“This study showed that a postoperative physiotherapeutic intervention with telerehabilitation is feasible for patients with postoperative complications or an increased LoS after esophageal cancer surgery up to 6 weeks after T0.”

f/u = follow-up; LoS = length of stay (in hospital/care); MMS = Mohs micrographic surgery; N/n = number; NR = not reported; NRS = non-randomized study/ies; NSMC = non-melanoma skin cancer; OP = oropharyngeal; RCT = randomized controlled trial(s); T0 = time point 0 (i.e., baseline); TD = tele dermatology; VHA = Veterans Health Administration.

Table 3: Summary of Evidence-Based Guidelines for Virtual Oncology Visits

Guideline development group (year)	Location	Summary of guidance
CCO (2021) ¹⁵	Canada	<p>Relevant guidance and recommendations:</p> <p>Section A: Essential Requirements for virtual care (pp. 8 to 9)</p> <p>A.1. Patient and provider needs</p> <ul style="list-style-type: none"> • Offer the option to all patients • Ensure equitable access • Provide guidance on how to use virtual care • Enable access to technology • Be persistent • Incorporate care partners • Allocate adequate time and space for virtual care <p>Section C: Active management, follow-up and survivorship (p. 17)</p> <p>C.1. Active Management</p> <ul style="list-style-type: none"> • Assess the need for in-person physical examination • Involve other care team partners • Assessment <ul style="list-style-type: none"> ◦ Virtual care should continue to be used for: symptom and pain management, nutrition assessment, drug toxicity, psychosocial factors (e.g., supportive counselling, activities of daily living, etc.), exercise prescriptions. <ul style="list-style-type: none"> ■ Frequency: When the purpose of the appointment is focused on the disease surveillance, health care providers using virtual assessment tools should ensure patients are assessed at the same frequency of appointments as in-person assessments. ■ The need for continuous communication, with non-curative patients can be assisted by using virtual means, such that a patient can flag concerns or initiate appointments when appropriate. <p>C.2. Surgical oncology patients (p. 18)</p> <ul style="list-style-type: none"> • Which components of surgical care are suitable for virtual care? <ul style="list-style-type: none"> ◦ First appointments ◦ Surgical planning and post-operative follow-up ◦ Post-surgical patients <p>C.3. Radiation oncology patients (p. 19)</p> <ul style="list-style-type: none"> • Which components of radiotherapy are suitable for virtual care? <ul style="list-style-type: none"> ◦ First appointments ◦ Treatment discussions ◦ Assess symptoms ◦ Toxicity and in-person assessment

Guideline development group (year)	Location	Summary of guidance
(continued)		<p>C.4. Medical and hematological oncology patients (p. 20)</p> <ul style="list-style-type: none"> • Which components of systemic treatment can be managed using virtual care? <ul style="list-style-type: none"> ◦ First appointments ◦ Toxicity and in-person assessment ◦ Surveillance or observation ◦ Continuation of treatment <p>C.6. Rural and Remote Oncology (p. 21)</p> <ul style="list-style-type: none"> • What are rural and remote oncology considerations for virtual care? <ul style="list-style-type: none"> ◦ Geography and severity of symptoms <p><i>Additional details, including guidance and recommendations, are available in the full text of the guideline (see citation and abstract below)</i></p>
COSA (2022) ¹⁶	Australia	<p>Relevant research questions and associated recommendations:</p> <p>Question: What teleoncology models of care are available to health services in Australia and overseas?</p> <p>Associated, relevant recommendation:</p> <ul style="list-style-type: none"> • Teleoncology models can be used to provide medical services including initial and review consultations, review of admitted patients, monitoring of toxicity, supervision of chemotherapy administration and survivorship care. This is dependent on service capabilities, scope of practice and experience of both the providing urban sites and the receiving rural sites. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application <p>Question: What models of care for teleoncology are available to nursing services?</p> <p>Associated, relevant recommendation:</p> <ul style="list-style-type: none"> • Various chemotherapy regimens can be administered in rural towns using either medical teleoncology models or multidisciplinary models incorporating telenursing and telepharmacy. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application <p>Question: Is teleoncology as effective as standard oncology care for the treatment of cancer?</p> <p>Associated, relevant recommendations:</p> <ul style="list-style-type: none"> • Multidisciplinary care can be provided through teleoncology models in a manner acceptable to health professionals and patients. Use of teleoncology for multidisciplinary team care could result in management decisions similar to face-to-face assessments. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application • Teleoncology models may help reduce waiting lists and inter-hospital transfers for rural patients. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application

Guideline development group (year)	Location	Summary of guidance
(continued)		<p>Question: Is teleoncology as effective as standard oncology care for the palliative care of cancer patients?</p> <p>Associated, relevant recommendation:</p> <ul style="list-style-type: none"> • If rural, remote, or isolated patients with advanced cancer have unmet palliative care needs and do not have access to a specialist palliative care team, it is feasible to provide a specialist palliative care video consultation involving the patient, their family and members of their treatment team. <p>Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application</p> <p>Question: Is teleoncology safe for cancer patients and health professionals compared with standard oncology care?</p> <p>Associated, relevant recommendation:</p> <ul style="list-style-type: none"> • It may be safe to administer chemotherapy in rural towns under the supervision of medical oncologists from larger centres by teleoncology, provided that rural resources and governance arrangements are adequate. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application <p>Question: Are cancer patients and health professionals satisfied with teleoncology compared with standard oncology care?</p> <p>Associated, relevant recommendation:</p> <ul style="list-style-type: none"> • Teleoncology models of care are acceptable to patients from rural and remote areas including Aboriginal and Torres Strait Islanders. <ul style="list-style-type: none"> ◦ Grade of recommendation: C i.e., the body of evidence provides some support for recommendation(s) but care should be taken in its application <p><i>Additional guidance and recommendations are available in the full text of the guideline (see citation and abstract below)</i></p>
Zon et al. (ASCO) (2021) ¹⁷		<p>Relevant standards and qualifying statements:</p> <p>1. Patient selection and implementation of telehealth in oncology</p> <ul style="list-style-type: none"> • Standard 1.1 <ul style="list-style-type: none"> ◦ Where appropriate infrastructure and personnel are available, telehealth via telephone or videoconferencing, delivered by health professionals who are certified and participating in routine maintenance of certification activities, is a reasonable option for <i>[some treatment or long-term management needs]</i> ◦ Further details are provided in the full text of the guideline, pp. 547 to 8 • Standard 1.3 <ul style="list-style-type: none"> ◦ Practices should develop policies and procedures that outline preferred frequency of telehealth vs. in-person visits during the cancer care continuum and consider patient preferences. Frequency of telehealth vs. in-person visits may evolve as outcome or impact data become available.

Guideline development group (year)	Location	Summary of guidance
(continued)	US	<ul style="list-style-type: none"> • Standard 1.4 <ul style="list-style-type: none"> ◦ All clinical visits conducted via telehealth should be documented ◦ Further details are provided in the full text of the published guideline, pp. 548 • Standard 1.5 <ul style="list-style-type: none"> ◦ Before participation in telehealth visits, individualized orientation should be provided to patients and health care professionals for the specific type of technology that will be used to deliver the intervention (e.g., mobile phone, web-based, etc.) on topics including but not limited to instructions to access the platform, navigation of the platform, and provider-specific instructions on the video if needed to physically assess an area of the body. ◦ Note: Although orientation is required, there is no formal telehealth certification required on the part of health care professionals before engaging in telehealth clinical visits with patients. The Expert Panel does not suggest or endorse formal certification for telehealth competencies. • Standard 1.6 <ul style="list-style-type: none"> ◦ For clinical visits conducted via synchronous videoconferencing, a staff member or external technology support person should be available to troubleshoot technology issues, potentially via telephone, and to facilitate workflow. ◦ Further details are provided in the full text of the guideline, pp. 549 • Standard 1.7 <ul style="list-style-type: none"> ◦ Practices should evaluate key performance indicators for oncology telehealth initiatives and quality of care. ◦ Further details are provided in the full text of the guideline, pp. 549 <p>2. Establishment of the doctor-patient relationship</p> <ul style="list-style-type: none"> • Standard 2.1 <ul style="list-style-type: none"> ◦ State and federal policies permitting telemedicine to cross state lines should include a provision requiring that the doctor-patient relationship is established before provision of any telemedicine service. ◦ Further details are provided in the full text of the guideline, pp. 549 <p>3. Advanced practice providers</p> <ul style="list-style-type: none"> • Standard 3.1 <ul style="list-style-type: none"> ◦ Practices should develop standards, algorithms, or policies that govern when patients may see an advanced practice provider ◦ or require a physician telehealth visit on the basis of disease, treatment, or decision inflection points. ◦ Further details are provided in the full text of the guideline, pp. 549 <p><i>Additional guidance and recommendations are available in the full text of the guideline (see citation and abstract below)</i></p>

Guideline development group (year)	Location	Summary of guidance
NICE (2021) ¹⁸	UK	<p>Relevant guidance and recommendations:</p> <ol style="list-style-type: none"> 1. Communicating with patients and minimising risk (i.e., all patients) 1.2. Minimise face-to-face contact by: <ul style="list-style-type: none"> • offering telephone or video consultations (particularly for follow-up appointments and pre-treatment consultations) 5. Staff who are self-isolating: <ol style="list-style-type: none"> 5.1. If a health care professional needs to self-isolate, ensure that they can continue to help by: <ul style="list-style-type: none"> • identifying patients who are suitable for remote monitoring and follow-up and those who are vulnerable and need support <p><i>Additional guidance and recommendations are available in the full text of the guideline (see citation and abstract below)</i></p>

ASCO = American Society of Clinical Oncology; CCO = Cancer Care Ontario; COSA = Clinical Oncology Society of Australia; NICE = National Institute for Health and Care Excellence; NR = not reported.

References

Health Technology Assessments

No literature was identified.

Systematic Reviews

1. Shah AC, O'Dwyer LC, Badawy SM. Telemedicine in Malignant and Nonmalignant Hematology: Systematic Review of Pediatric and Adult Studies. *JMIR Mhealth Uhealth*. 07 08 2021; 9(7): e29619. [PubMed](#)
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Randomized Controlled Trials

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Appendix 1: Summary of Additional References Describing Virtual Oncology Visits

Note that this appendix has not been copy-edited.

Nine clinical guidance documents,¹⁹⁻²⁷ 4 consensus documents,²⁸⁻³¹ and 1 position paper³² were identified describing virtual oncology visits; however, due to the lack of clarity and/or detail as reported in the methods, these resources were placed in this summary of additional references of potential relevance and/or interest. A detailed summary of the literature identified for virtual oncology visits can be found in [Tables 4, 5, and 6](#).

As with the 4 evidence-based guidelines that are included in the main body of this report,¹⁵⁻¹⁸ similar themes appear in the sources of guidance summarized below.¹⁹⁻³² Many of these sources included guidance and advice regarding when and how to use virtual oncology care, including recommendations for triage^{19,23-25,30,31} and implementation of virtual oncology care.^{19,20,27} Two of the sources were developed in Canada, providing directly relevant information to the Canadian context.^{23,26} A variety of oncological populations were featured in these sources, including special populations such as neuro-oncology,^{19,24} geriatric oncology,²² head and neck oncology,^{26,27} cardio-oncology,²⁵ advanced prostate cancer,²⁸ and hematology.³¹ Likewise, many of the sources featured in [Appendix 1](#) described pragmatic advice and suggestions for clinicians and decision-makers who aim to implement virtual oncology care (see [Tables below](#)).^{19,20,22,27}

Notably, all 14 sources featured in this Appendix are explicitly focused on the management of cancer patients during the public health restrictions put in place over the course of the COVID-19 pandemic.¹⁹⁻³² Their lack of a clear link to systematic reviews of the evidence could be associated with the responsive nature of these sources of guidance; for example, providing health care providers and decision-makers with some timely guidance, a comprehensive and methodologically rigorous review of the evidence would be challenging to complete and incorporate into an evidence-based guideline in a short timeframe. The apparent rapidity with which much of the current evidence-base and guidance has been produced further emphasizes the imperative of more rigorous and longitudinal research comparing virtual oncology to in-person visits as a robust base of evidence will better support the development of evidence-based guidelines and best practices to optimally inform this considerable change in health care for cancer patients.

Table 4: Summary of Clinical Guidance Sources

Guideline development author/group (year)	Location	Summary of guidance
Strowd et al. (2022) ¹⁹	International	<p>Relevant guidance and/or advice:</p> <p>Section 1: When to Use or Not Use Telehealth in Neuro-Oncology (pp. 92-4)</p> <ul style="list-style-type: none"> • Opportunities to enhance telemedicine for neuro-oncology (p. 92) • Aspects of neuro-oncology care considered suitable for telemedicine (Table 1, p. 93) • Aspects of neuro-oncology and general medical care that may represents a barrier to telemedicine (Table 1, p. 93) • Encounters suitable for telemedicine (p. 92-3): <ul style="list-style-type: none"> ◦ Chemotherapy monitoring ◦ Treatment consent & education ◦ Remote surveillance visits ◦ Urgent symptom evaluation ◦ Second opinion encounters • Challenges of Telemedicine (p. 93-4): <ul style="list-style-type: none"> ◦ Challenges in conducting neurological/physical examination ◦ Communication challenges ◦ Technical challenges <p>Section 2: How to Conduct a Telehealth Visit in Neuro-Oncology (pp. 94-5)</p> <ul style="list-style-type: none"> • Video encounters • Telephone-only encounters • Special Circumstances—Patient Consent, Pediatric Neuro-Oncology • Practical Tips for Conducting Telemedicine Encounters in Neuro-Oncology <p>Section 3: Who to Include in a Telemedicine Visit in Neuro-Oncology (pp. 95-7)</p> <p>Section 4: Unique Aspects of Telemedicine Encounter in Neuro-Oncology (pp. 97-100)</p> <ul style="list-style-type: none"> • Practical tips and guidance <p>Section 5: Emerging Innovations in Telehealth in Neuro-Oncology (pp. 100-1)</p> <p><i>Detailed considerations and implications are described narratively in the full text of the guidance document: https://academic.oup.com/nop/article-pdf/9/2/91/43152662/npac002.pdf</i></p>

Guideline development author/group (year)	Location	Summary of guidance
Banerjee et al. (2021) ²⁰	US	<p>Relevant guidance and/or advice:</p> <p>Table 1 (pp. 3/6 to 4/6 in the PDF of the full paper – see link below):</p> <ul style="list-style-type: none"> • Step 1: Establish the clinical-patient relationship/Create Rapport <ul style="list-style-type: none"> ◦ Technology check ◦ Make introductions (if first meeting) or greet the patient (if not the first meeting) ◦ Assess patient privacy ◦ Make technology back-up plan ◦ Check patient preference for additional attendees ◦ Endorse question asking ◦ Make partnership statements • Step 2: Set the Agenda <ul style="list-style-type: none"> ◦ Declare agenda ◦ Invite agenda items from patient ◦ Set expectations, if appropriate ◦ Negotiate/prioritize agenda ◦ Check patient understanding • Step 3: Respond empathically to emotion <ul style="list-style-type: none"> ◦ Acknowledge ◦ Encourage expression of feelings ◦ Validate ◦ Normalize ◦ Use silence • Step 4: Deliver the information <ul style="list-style-type: none"> ◦ Preview ◦ Provide information ◦ Check understanding • Step 5: End the televisit <ul style="list-style-type: none"> ◦ Time-check, if appropriate ◦ Summarize ◦ Invite questions ◦ Endorse question asking ◦ Provide referrals, when appropriate ◦ Review next steps <p><i>Detailed guidance, advice and considerations are described in the full text of the guidance document: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7862043/pdf/13187_2021_Article_1959.pdf</i></p>

Guideline development author/group (year)	Location	Summary of guidance
NCCP (2021) ²¹	Ireland	<p>Relevant guidance and/or advice:</p> <p>4. Communication with radiation oncology patients (p. 3/5 in the PDF of the full guidance document – see link below):</p> <p>4.1. Patients who continue to attend for treatment [in-person] should be:</p> <ul style="list-style-type: none"> • Informed as to the steps being taken in the hospital to reduce the risk of infection by: <ul style="list-style-type: none"> ◦ Minimising face-to-face contact by offering virtual consultations <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the guidance document: https://www.hse.ie/eng/services/list/5/cancer/profinfo/cd19-100-nccp-advice-on-management-of-rt-patients.pdf</i></p>
Battisti et al. (2020) ²²	International	<p>Relevant guidance and/or advice:</p> <p>Presentation of a geriatric assessment tool for oncology patients modified for use in telehealth (Table 1, p. 1193) i.e.:</p> <ul style="list-style-type: none"> • Geriatric assessment domains: <ul style="list-style-type: none"> ◦ Functional status <ul style="list-style-type: none"> ▪ assesses activities of daily living ▪ fall history ▪ fatigue rating ◦ Hearing assessment ◦ Comorbidity assessment ◦ Polypharmacy <ul style="list-style-type: none"> ▪ review of current medications ◦ Nutrition <ul style="list-style-type: none"> ▪ weight assessment ◦ Cognition ◦ Social support ◦ Psychological status • SIOG COVID-19 Working Group recommendation (Table 2, p. 1193) i.e.: <ul style="list-style-type: none"> ◦ Deploy telehealth care via telephone or video link to protect both the patient and the clinician and provide continuity of care despite social containment <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the guidance document: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7365054/pdf/main.pdf</i></p>

Guideline development author/group (year)	Location	Summary of guidance
BC Cancer (2020) ²³	Canada	<p>Relevant guidance and/or advice:</p> <p>4.0. General Measures and Mitigation strategies</p> <p>4.3. ACU* visits</p> <ul style="list-style-type: none"> • Many consultations, on-treatment visits, and follow-up appointments can be done by phone or virtually without a patient visit. Some patient appointments require an examination for optimal patient care and decision-making. Some examinations have higher risks (i.e. potential for aerosol) than others: e.g. nasopharyngoscopy, vaginal examination, etc.). All direct face-to-face patient interactions and exams should be deferred if possible and converted to a phone or virtual visit. Higher risk examination may be even more important to defer than others, and/or may need extra infection protection processes (see high risk procedures section below), and should be discussed with infection control. In general, examinations should be deferred in patients known or suspected of COVID-19, but specific scenarios to use as a guide are described in appendix B. (p. 5 of 38) <p>4.4. Other treatment mitigation strategies to consider at any phase</p> <ul style="list-style-type: none"> • In clinically appropriate circumstances, pharmacy and other health care providers may mail or courier medications and provide telephone counselling/ use other telehealth methods. (p. 6 of 38) <p>6.0. Prioritization Guidelines</p> <p>6.5. Nutrition</p> <ul style="list-style-type: none"> • Many oncology nutrition services can be delivered by virtual health or by phone and some on staff will be working from home. (p. 18 of 38) <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the guidance document (see link in reference below)</i></p> <p>*ACU is never elaborated within the document, making the meaning of this acronym unclear.</p>
EANO (2020) ²⁴	NR	<p>Relevant guidance and/or advice:</p> <p>We advise the following, which is in line with the statement from the EANO board, by Martin van den Bent and colleagues LINK(2):</p> <ul style="list-style-type: none"> • Keep regular follow-up intervals, but employ teleconsultations when safe and feasible • Consider methods to give additional support and information, for instance nurse-led support telephone services, online medical counselling and collaboration with national brain tumour patients organizations <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the guidance document (see link in reference below)</i></p>

Guideline development author/group (year)	Location	Summary of guidance
Lenihan et al. (2020) ²⁵	International	<p>Relevant guidance and/or advice:</p> <p>Strategies to Optimize CV Care of Patients With Cancer During a Pandemic</p> <p>Relevant recommendation:</p> <ul style="list-style-type: none"> • During periods of high virus spread and/or risk, C-O consultation before, during, or after cancer therapy should be performed virtually if clinically feasible; in-person consultation should be limited to emergencies for which physical examination is essential in determining clinical management (p. 486) <p>TABLE 5. Best Practices for the Prevention and Management of Cardiac Complications in Patients With Cancer in the Coronavirus Disease 2019 (COVID-19) Era (Table 5, p. 491)</p> <ul style="list-style-type: none"> • 5. During cancer treatment: Asymptomatic, new laboratory abnormalities (or preclinical toxicity): <ul style="list-style-type: none"> ◦ 2020 ESMO consensus recommendation: <ul style="list-style-type: none"> ▪ 5.1. In asymptomatic patients receiving treatment with anthracyclines who have an LVEF decrease of $\geq 10\%$ from baseline to $< 50\%$ or decrease in LVEF to $\geq 40\%$ but $< 50\%$, the following evaluations are recommended (LOE, III; GOR, A): ◦ ICOS consensus recommendation during the COVID-19 pandemic <ul style="list-style-type: none"> ▪ 5.1. This recommendation remains the same, except for repeating LVEF with or without GLS after every other dose of anthracycline-based chemotherapy; it is recommended to monitor patients by checking cardiac biomarkers (Tnl or TnT and BNP or NT-proBNP) every other cycle, and reassessing LV function with imaging only if either biomarker is abnormal or the patient develops heart failure symptoms. The determination for the presence of heart failure symptoms can be obtained by telemedicine <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the guidance document (see link in reference below)</i></p>
O'Connell et al. (2020) ²⁶	Canada	<p>Relevant guidance and/or advice:</p> <p>Referrals:</p> <ul style="list-style-type: none"> • e. Virtual / telephone consultation should be considered for all referrals with a risk of malignancy to better ascertain severity and to guide need for face-to-face consultations. (p. 3 of 7 of the freely available PDF version of the paper) <p>Follow-up:</p> <ul style="list-style-type: none"> • aa. Efforts should be made to maximize the utilization of virtual / telephone follow-ups where appropriate for head and neck cancer follow-ups (p. 5 of 7 of the freely available PDF version of the paper) <p><i>Additional guidance that is not specific to virtual oncology visits is also available in the full text of the PDF paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7387877/pdf/40463_2020_Article_448.pdf</i></p>

Guideline development author/group (year)	Location	Summary of guidance
Prasad et al. (2020) ²⁷	US	<p>Relevant guidance and/or advice:</p> <p>To the best of our knowledge, there are no set guidelines or best practices for patients or head and neck cancer physicians conducting virtual visits. Drawing upon our experience, we aim to compile a set of guidelines for physicians and patients alike to navigate telehealth visits during the era of COVID-19. (p. 1318 of the freely available PDF)</p> <ul style="list-style-type: none"> • General guidelines (pp. 1318-9) <ul style="list-style-type: none"> ◦ physicians ◦ patients • Sub-site specific guidelines (both subjective and particular to a physical exam) (pp. 1319-20) <ul style="list-style-type: none"> ◦ oral cavity ◦ oropharynx ◦ larynx ◦ salivary glands <p><i>Detailed guidance, advice and considerations are described in the PDF full text of the freely available published paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7267295/pdf/HED-42-1317.pdf</i></p>

BC = British Columbia; BNP = brain natriuretic peptide; C-O = cardio-oncology; EANO = European Association of Neuro-Oncology; ESMO = European Society for Medical Oncology; GLS = global longitudinal strain (imaging); GOR = grading of recommendation; ICOS = International Cardio-Oncology Society; LOE = level of evidence; NCCP = National Cancer Control Program; NR = not reported; NT-proBNP = N-terminal pro-brain natriuretic peptide; p. = page; pp. = pages; PDF = portable document format; SIOG = International Society of Geriatric Oncology; TnT = troponin T; TnI = troponin I.

Table 5: Summary of Consensus Documents

Guideline development author/group (year)	Source, location	Summary of consensus statements
Turco et al. (2022) ²⁸	NR	<p>Relevant consensus: No formal consensus was reached regarding the use of telemedicine in patients on an ARPI, but 94% of panellists recommend it during an active phase of the pandemic. Interestingly, 86% of the experts would recommend its use in some form also outside of an active phase of the pandemic. (p. 10)</p> <p><i>Details about the consensus process and other information that is not specific to virtual oncology visits are described in the full text PDF of the freely available published paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8849852/pdf/main.pdf</i></p>
McCarthy et al. (2021) ²⁹	UK	<p>Relevant consensus statements:</p> <ul style="list-style-type: none"> • Consensus statement 1 (p. 2) <ul style="list-style-type: none"> ◦ All patients with a confirmed diagnosis of OED should receive a telephone consultation within 1 – 2 weeks of their cancelled face-to-face appointment. Information regarding signs and symptoms suspicious for disease progression or cancer development (“red flag signs and symptoms”) should be given, self-examination encouraged and advice provided on reducing oral cancer risk factors such as smoking, smokeless tobacco, betel & areca nut, paan, gutka chewing and excessive alcohol intake (Consensus achieved: 100%). • Consensus statement 12 (p. 4) <ul style="list-style-type: none"> ◦ Patients who decline remote consultations and request a face-to-face appointment should be accommodated if capacity allows. Patients should be counselled on the risk and benefits of face-to-face appointments.(Consensus achieved: 100%). <p><i>Details about the consensus process and other information that is not specific to virtual oncology visits are described in the full text PDF of the freely available published paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7674996/pdf/main.pdf</i></p>
Curigliano et al. (2020) ³⁰	NR	<p>Relevant consensus statement:</p> <p>Strategies for patient management and follow-up (p. 1321)</p> <ul style="list-style-type: none"> • STATEMENT 1: Telehealth and digital health in oncology can be an excellent tool for real-time video consultations for primary care triage and interventions such as counselling, medication prescribing and management, management of long-term treatment and post-discharge coordination supported by remote-monitoring capabilities. It can also be an excellent tool for wellness interventions and in areas such as health education, physical activity, diet monitoring, health risk assessment, medication adherence and cognitive fitness. <p><i>Details about the consensus process and other information that is not specific to virtual oncology visits are described in the full text PDF of the freely available published paper: https://www.annalsofoncology.org/article/S0923-7534(20)39948-8/pdf</i></p>

Guideline development author/group (year)	Source, location	Summary of consensus statements
Terpos et al. (2020) ³¹	NR	<p>Relevant consensus:</p> <ul style="list-style-type: none"> • Telemedicine and novel technologies for remote communication are endorsed in order to reduce patient visits to the clinic. (p. 2004) • For patients with diagnosis of monoclonal gammopathy of undetermined significance or smoldering MM: Scheduled visits of patients with stable disease can be delayed with safety. Alternatively, blood examination in local laboratories and consultation via telemedicine is encouraged. (p. 2006) <p><i>Details about the consensus process and other information that is not specific to virtual oncology visits are described in the full text PDF of the freely available published paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7244257/pdf/41375_2020_Article_876.pdf</i></p>

APCS = Advanced Prostate Cancer Society; ARPI = androgen receptor pathway inhibitor; CV = cardiovascular; EMN = European Myeloma Network; ESMO = European Society for Medical Oncology; LVEF = left ventricular ejection fraction; MM = multiple myeloma; OED = oral epithelial dysplasia; NR = not reported; p. = page(s); PDF = portable document format.

Table 6: Summary of Position Paper

Guideline development author/group (year)	Source, location	Summary of position
Cooksley et al. (2021) ³²	NR	<p>Relevant positions:</p> <ul style="list-style-type: none"> • In response to the COVID-19 pandemic, the authors suggest opportunities and future directions for preventing and managing febrile neutropenia in cancer patients: (Table 1, p. 1130) <ul style="list-style-type: none"> ◦ Development and promotion of alternative outpatient healthcare interventions: Telemedicine: medical counselling, remote screening, and monitoring, patient-reported outcome measures, nurse navigator management • In addition, authors of the position suggest future opportunities for developing new models of care: <ul style="list-style-type: none"> ◦ ...telemedicine allows patients to be efficiently screened, enabling distant patient-centered care, while preventing exposure. Clinical and biological monitoring through digital solutions combined with nurse navigators allows anticipation and prevention of adverse downstream consequences [55]. Telemonitoring is well suited in the context COVID-19 and organizations that have already invested in telemedicine ensure that patients with COVID-19 receive the appropriate care [56]. (p. 1136) <p><i>Additional details, as well as information that is not specific to virtual oncology visits, are described in the full text PDF of the freely available published paper: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7682766/pdf/520_2020_Article_5906.pdf</i></p>

MASCC = Multinational Association of Supportive Care in Cancer; NR = not reported.

Clinical Guidance and Recommendations

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Appendix 2: Additional References of Potential Interest

Note that this appendix has not been copy-edited.

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Overview of Systematic Reviews

Alternative Population (i.e., cancer survivors)

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Alternative Outcome (i.e., factors associated with the use of telehealth)

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Alternative Outcomes (i.e., diagnostic accuracy/clinical prioritization)

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Alternative Outcomes (i.e., association of telemedicine use with patient/provider/system factors)

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Guidelines and Recommendations

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Alternative Intervention (i.e., not conventional oncology)

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Qualitative Study Design

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