COVID-19 Scientific Advisory Group
Rapid Evidence Report

Key Research Questions:

1. **What is the impact of virtual visits (e.g. videoconferencing, telephone, texting, email) compared with or in addition to in-person visits on process outcomes, patient and provider satisfaction, quality of care, and access to provider?**
2. **Are there differences in the evidence base and recommendations for types of visits and provider?**

Context

- During the COVID-19 pandemic, access to in-person ambulatory visits and procedures has been limited to urgent/emergent visits.
- In order to reduce the potential for exposure to COVID-19, virtual visits have been recommended where clinically appropriate (for instance, in-person visits are still required where physical examination is crucial, for example, for chronic wound management). Virtual visits are being offered by physicians for patients with and without COVID-19, and have been a critical service in supporting Albertans, including those experiencing the psychological impact of COVID-19. Going forward post-COVID-19, it is anticipated that the demand for virtual visits will continue to be higher than pre-COVID-19.
- Prior to COVID-19, most of the prior experience with virtual health in Alberta was either through telephone calls between a patient and a provider, or through telehealth, where patients travelled to an AHS facility telehealth space for a video interaction with assistance of local health care professionals. Since mid-March 2020, a variety of virtual visit platforms have been preferentially explored including Skype® and Zoom®, where patients can remain in their homes during the visit.
- As the reintroduction of non-urgent ambulatory services is planned, to support physical distancing protocols, ongoing support for virtual visits is being considered as a means to maintain access and reduce waitlists. It is noted that current payment models and infrastructure options for virtual visits are underdeveloped in our current system.
- The Canadian Medical Association's Virtual Care Task Force has provided principles and recommendations to advance the use of virtual care across primary and specialty care with the goals of improving access as well as establishing excellence that upholds quality of care and supports continuity of care within health care teams (CMA 2020).
- This review focused on virtual visit modalities that diverse patient groups could use in their home (i.e. smartphone, telephone, computer), and not technology where patients were required to travel to a different site. The scope of this review was limited to physician encounters, and we were not able to evaluate the full breadth and complexity of virtual care visits and health interventions including the use of remote sensors, triage services, nurse clinicians, allied health practitioners, health coaches, social media interventions and web-based interventions.

Key Messages from the Evidence Summary

- Descriptions of primary care virtual visits suggest that primary care physicians often dealt with multiple issues during a single consultation, while, within specialty care studies which were often designed for very specific patient populations, specialty physicians often had a more narrow focus i.e., single disease. Few

studies addressed access to care for diverse populations, low-income or race/ethnicity differences, continuity of care, or patient-centered care.

- Within primary care, a number of systematic reviews and meta-analyses including a small number of randomized controlled trials (RCT) have been completed looking at the use of virtual health interventions across a variety of settings, presentations and virtual care modalities. The studies are quite heterogeneous, with small sample sizes, and risk of significant bias. Nonetheless there are consistent findings of patient and provider satisfaction with virtual care, with only one study identifying a preference for face-to-face visits by both physicians and patients for different reasons, despite both groups being very satisfied with videoconferencing. Physicians preferred in-person visits for physical exams and ordering lab tests, while patients preferred in-person visits when seeking care for gastrointestinal, musculoskeletal, and respiratory complaints. When compared to usual face-to-face care, virtual care also showed modest improvement in outcomes of visit time (decrease), travel costs (decrease), fewer laboratory and diagnostic imaging tests needed and some reduction in requirements for urgent or subsequent face-to-face visits were reported. Several studies noted improved access and patient satisfaction when seeking care using virtual visits with a known provider or when seeking care with a known group of physicians, which approximates the concept of continuity of care. Only one study described virtual care by family physicians who were not familiar with the patient (no relational continuity), but had access to the patient's chart, ensuring informational and management continuity. The remainder of studies did not explicitly state whether patients were part of the medical home or team-based care suggesting a need to explicitly review these distinctions going forward.
- Within specialty care, there are a larger number of high-quality studies comparing different virtual care interventions. Multiple RCTs, systematic reviews and some meta-analyses looking at virtual care interventions for patients with mental health conditions, neurology, diabetes, and chronic kidney disease are available. Like the primary care studies, these studies are also heterogeneous, have methodological flaws and suffer from significant bias. However, the narrower focus of these studies allows for better evaluation of practitioner and patient level outcomes, system utilization and costs which suggest that virtual care may be equivalent to in person visits and may afford some improvement in patient access and lower costs for patients in rural settings or those with complex health needs which limit travel.
- A limited number of studies suggested that there may be differences in uptake and satisfaction with virtual care based on patient age, rurality, and socio-economic status but that overall, very high levels of satisfaction can be attained across broad patient populations. For example, one study identified that younger patients had higher satisfaction with virtual visits post hospital discharge than their older counterparts but both groups indicated they were satisfied. Several other studies reported that rural patients had as good as or better outcomes than their urban counterparts for palliative consults, comfort care for patients with dementia, and an improved composite outcome of death, hospitalization, emergency department visits and admission to a nursing facility for patients with chronic kidney disease. Only one study identified a barrier to virtual visits for patients in rural areas with no cellphone capability.
- Since socio-economic factors have not been well-studied, there is insufficient evidence to show how virtual visits might impact access to care in this context (e.g., language, age, income).
- One study highlighted that patients using video visits had health problems resolved at a similar rate compared to in-person visits and required a similar number of follow-up visits, suggesting that patients were not using virtual visits as a first step prior to seeking in-person care.

Committee Discussion

The committee considered using this review as draft until additional areas requiring further evidence are completed e.g., a supplementary review of virtual care focusing on specific conditions, shared care, team-based care, and patient's medical home. We considered whether the draft document should be posted, clearly labelled as an interim review, with additional work to be undertaken, or delay posting on the AHS external website but with the ability to be use this interim document for internal purposes until the final version is complete. Areas to

highlight in an expanded evidence review of evidence will be further discussed after the SAG meeting, but areas for consideration were highlighted. Attention was suggested on studies that examine the following: the use of virtual health modalities for the health care teams, the impact of virtual health on clinic use and costs; the impact on the patient's medical home, team-based care and continuity of care, and the impact of virtual health in specific health conditions (specifically mental health, diabetes, and cardiovascular health) and in vulnerable or marginalized populations including those at greater risk of health disparities.

Pragmatic Considerations

1. Given our present circumstances of trying to deliver health care during a global pandemic, and the lack of evident harm and possibly improved patient and provider experience with virtual care, we support the use of virtual visits where appropriate and as an alternative to in-person care, optimally provided within an existing physician patient relationship, based on extant data. Many jurisdictions in Canada including Alberta Health Services are currently on a path to increase the use of virtual visits. Physicians will need to consider what conditions and elements of care are appropriate to be performed virtually. Importantly, numerous publications exist that provide guidance on appropriate indications for virtual care (CPSA 2020, AMA 2020, Kaibara 2015).

2. Evidence currently supports the use of virtual visits when platforms appropriately address technological and capacity barriers. There is very high satisfaction and acceptability with use of a variety of virtual modalities (video, telephone, email, text) across broad patient and physician populations. It is acknowledged that there will be some proportion of the patient population for whom virtual visits may be medically appropriate but are not feasible due to accessing technology and comfort with technological devices (e.g., computers, internet). However, exploring and mitigating these barriers should be a priority as processes evolve.

3. Given the ongoing need to support virtual health visits as routine health care is reestablished during the pandemic, as well as possible increase in the use of virtual visits post-pandemic because of patient demand, efforts should be made to measure the types, volumes and outcomes of virtual health encounters in real time to support decision making within the Alberta health care context. Since current evidence has focused on short-term health care utilization and clinical outcomes, there is an opportunity to gain a better understanding about the long-term impact of virtual health on patients and the health system perspective more broadly, if the implementation of virtual visits is monitored going forward.

4. An expanded review of the evidence is required to gain a better understanding of the application and outcomes of virtual visits in various models of care (e.g., patient's medical home, team-based care, shared care models) and cost (patient, provider, remuneration, funding models). The existing literature review did not address these aspects of virtual care which are important to support decision making within Alberta as we expand use. For example, given the importance of continuity for better patient care and outcomes (Tammes et.al. (2017), Ionescu-Ittu et.al. (2007), Barker et.al. (2017)), a specific review to assess the use of virtual visits in longitudinal primary care is ongoing.

Strength of Evidence

This review only focused on studies with strong methodology, such as systematic reviews and randomized controlled trials. Grey literature was reviewed to locate previously published studies with strong methodology.

Limitations of this review

- The search strategy was limited to articles published in English in the last 5 years due to the volume of articles published on this research question. In order to ensure feasibility of the rapid review, we selected articles that were both available and most relevant to the question.
- Published research referenced within the selected studies were not extracted for review. Evaluations and other studies that reside in the grey literature were not included in this review.

- Most systematic reviews included RCTs that were underpowered to detect differences in clinical outcomes and health system utilization.
- This review was limited to care provided by physician. We did not consider cost or funding models, remuneration, shared care, and team-based care. It is important particularly for primary care to explore virtual visits within the context of team-based care as this model aligns with the patient's medical home and patient-centred care in the community. As well, it is important for achieving integration across the health care system to further explore the use of virtual visits in shared care environments to enhance quality of care including patient satisfaction and the effective management of health services.
- Lastly, there is high variability with regards to what virtual care means, even within a single group (for example, video visit). Therefore, it is important to clarify whether the meaning of virtual care is similar across studies being compared, otherwise differences in outcomes may be inconsistent or unclear due to differences in how care is being delivered, rather than the modality itself.

Summary of Evidence

Evidence from the primary literature

We searched MedLine, CINAHL, PubMed for original articles, systematic reviews or meta-analysis. We searched grey literature but did not include results within this review due to the large number of original peer-reviewed articles identified and the time constraints dictated by a rapid review. Our search was limited to articles published between 2015 and 2020; and supplemented with key studies identified prior to 2015. While cost of virtual visits was not in-scope for this review, several studies did consider financial implications ((Bahrani et al. (2017); McGrail et al. (2017); Robb et al. (2019); Polisena et al. (2009)).

Primary care

Of the 140 abstracts identified in the search, we reviewed 77 articles, and included 8 research articles in the primary care section (see Appendix Table 2A): 2 systematic reviews, 1 evidence summary, 2 RCTs, 1 observational case-matched cohort study, and 2 retrospective cross-sectional studies.

One comprehensive systematic review by Bashshur et al. (2016) examined access, efficiency and quality of care in primary care settings. This review included a meta-analysis of 22 feasibility-focused RCTs (sample sizes ≥30), concluding that tele-mental health was feasible and acceptable for mental health services across a broad range of interventions and patient populations, including those living in rural areas.

McGrail et al. (2017) combined a patient survey with the analysis of health care claims data in British Columbia. Her results indicate that younger patients and physicians were significantly more likely to use virtual visits: 93.2% (n=372) of patients mentioned virtual visits were high quality and 91.2% (n=364) of patients reported virtual visits were 'very' or 'somewhat' helpful to resolve a health issue. This study also reported a decreasing trend in the cost of primary care services associated with virtual visits for patients who saw a known provider compared to the patient group who saw a new provider (Can –$8.68 per visit, P<.001), suggesting provider continuity offers a benefit.

Usual care versus virtual care (primary care):

One systematic review (Downes et al., 2017) included two systematic reviews and one RCT comparing telephone consultations to face-to-face visits in general practice. They concluded that telephone consultations were an appropriate alternative to in-person visits for a wide variety of conditions with which patients present. They assessed repeat visits and provider time spent with patients as a proxy for efficiency. A greater number of repeat visits occurred with telephone encounters (2 more visits per 10 patients) and a shorter amount of time was spent with patients (decrease of 1.5 minutes). This might be due to a large variety of chronic conditions being

addressed in primary care settings. Other empirical studies concluded: 1) patients using video visits had health problems resolved at a similar rate compared to in-person visits and required a similar number of follow-up visits, indicating that patients were not using virtual visits as a first step prior to seeking in-person care (Gordon et al., 2017); 2) high degree of patient satisfaction during a full year of video visits (Donelan et al., 2019); 3) patients using telephone visits had the same number of ED visits and hospital admissions as those patients who had face-to-face visits. Elderly patients with comorbidities who used telephone visits had an improved quality of life score (physical component) after their virtual visit (Gonzalez-Ortega et al., 2017).

Several studies noted improved access and patient satisfaction when seeking care using virtual visits with a known provider or when seeking care with a known group of physicians, which approximates the concept of continuity of care. These studies refer to continuity through virtual visits using terms such as “established patients” (Donelan 2019), “appointment with their physician” (Bunn 2010), and “patients who saw a known provider” (McGrail 2017). Only one study indicated that family physicians were not familiar with the patient (relational continuity), but had access to the patient’s chart ensuring informational and management continuity (Gonzalez-Ortega 2010). No additional studies indicated that patients who called for a virtual care appointment or attended a virtual visit were randomly assigned to a new or unfamiliar physician or clinic. The remainder of studies did not explicitly state whether patients were part of the medical home or team-based care.

Gaps and limitations (primary care):

- Few empirical studies were available for inclusion in this review for primary care. This might be partly due to inclusion/exclusion criteria i.e., excluding shared care models, team-based care (e.g. the virtual encounter was with a non-physician provider), or was more of a “teleconsultation”, where the patient had to leave their home and travel to another facility to use the videoconferencing infrastructure.
- Systematic reviews and meta-analyses included a variety of virtual health modalities and studies with different levels of rigor and often small sample sizes. These situations do not lend themselves to obtaining effect sizes to support strong conclusions about the effectiveness of virtual visits in the primary care setting.

Specialty care

Of the 140 abstracts identified in the search, we reviewed 77 articles, and included 17 research articles in the specialty care section (see Appendix Table 2B): 6 systematic reviews, 9 RCTs, 1 quasi-experimental study, and 1 retrospective cross-sectional study.

Types of visits and associated outcomes:

1) **Diabetes, Cardiovascular disease and related chronic conditions.** Armfield et al. (2016) conducted a systematic review of 27 studies using video technology (Skype) and found that Skype was suitable for the management of chronic diseases such as cardiovascular disease, diabetes, and speech and language pathology. Application of video visits was effective for patient education. Totten et al. (2016) reviewed 58 systematic reviews and concluded that telehealth includes a wide range of technologies to address many functions in health care for patients with a variety of conditions. Overall the most consistent benefit of telehealth was for the remote monitoring of chronic conditions (i.e., most effective for COPD, heart failure and mixed chronic conditions) and psychotherapy. Benefits were noted for two visit types: communications and counselling interventions.

2) **Chronic Kidney Disease.** One Cochrane review (Stevenson et al., 2019), and one RCT (Ishani et al., 2016) concluded that virtual health studies were underpowered leading to an inability to detect a difference in outcomes;

3) **Dermatology**. One RCT (Armstrong et al., 2018) showed that dermatologists who provided assessments, recommendations, education, and prescriptions using a collaborative-connected health platform was as effective as in-person visits in improving clinical psoriasis..

4) **Tumors and cancer.** One RCT (Lyu et al., 2016) used WeChat video/phone/text to follow-up on head and neck tumors and demonstrated improved patient-provider communication and patient satisfaction compared with telephone calls.

5) **Palliative.** A systematic review (Ostherr et al., 2016) of 38 articles reported that virtual care visits (video, telephone, text, email) were most commonly used for advanced cancer to provide information or education, serve as decision aids, promote advance care planning, and relieve physical symptom distress using older technology. No difference in outcomes were observed.

6) **Mental health**. A large RCT (n=628) showed no difference in healthcare utilization with telephone follow-up compared to home-visit usual care after 3, 6, and 12 months for post-partum depression (Wisner et al., 2017).

7) **Epilepsy.** One RCT (Bahrani et al., 2017) showed that patients reported difficulty hearing and understanding the physician and were concerned about privacy when using telephone visits. However, there was no difference in epilepsy clinical outcomes (seizures, and unscheduled in person visits) for telephone and in-person visits.

8) **Post-discharge follow-up.** A retrospective cohort study (Xiao et al., 2019) showed significant improvement in overall hospital ratings (AOR 1.52, *P* = 0.04) and physician communication (AOR 1.56, *P* = 0.021) with post-discharge telephone calls compared to no intervention. A quasi-experimental study (Heath et al., 2015) found that follow-up telephone calls done after hospital discharge identified post-discharge issues in almost 20% of pediatric patients (50% of which were medication related). The study was underpowered to determine whether this results in improved health care utilization (i.e., reduction in ED visits and in 30-day hospital readmissions) compared to the usual hospital discharge process. One systematic review (Lu et al., 2018) noted improvements in both perioperative patients and provider satisfaction, as well as a decrease in ED visits and hospital readmissions after follow-up using text messages.

Usual care versus virtual care (specialty care):

For specialty care, most peer-reviewed articles compared usual care (in-person visit) to virtual care (virtual visits) and found no difference in access, clinical outcomes, or patient/provider satisfaction. There were no adverse events reported in any of the studies reviewed. One RCT used an equivalency design to test clinical outcomes for psoriasis and found the virtual visit ('connected health') model was as effective as in-person management in improving clinical outcomes among patients with psoriasis (Armstrong 2018). Most RCTs used a null hypothesis testing no difference between virtual visits and in-person visits.

Gaps and limitations (specialty care):

- Given the high volume of existing literature in specialty care and heterogeneity in virtual care modalities and intervention types, scoped reviews would be beneficial to more fully understand the impact of virtual visits. Disease and medical specialty specific scoped reviews are available, noting that some areas have a substantial body of evidence e.g., mental health/telepsychiatry.
- Power to detect an effect was not mentioned for most systematic reviews. Some studies mentioned being underpowered to detect an effect (Heath et al., 2015; Ishani et al., 2016; Shuen et al., 2018).

Socioeconomic Status (specialty care):

- Some studies pre-selected patients who physicians felt would benefit from virtual visits (WIHV, 2019).
- Age: Ishani et al (2016) studied chronic kidney disease in older men using telehealth and showed no difference in clinical outcomes. Gonzalez-Ortega et al (2017) studied elderly people with a high level of comorbidities and showed improved physical component of quality of life. Platts-Mills et al (2018) studied older emergency department patients that had follow up care via video and tele-care, and this virtual care group showed greater decrease in pain and better physical functioning.

- Income: Sood et al (2018) studied Veteran's Administration primary care clinics that enabled patients to conduct video-consultations with specialists for diabetes care. Gras (2018) studied lower income patients and showed improved compliance for follow up care.
- Remote Rural: Wisner et al (2017) showed improved follow up for post-partum depression. Terekhova et al (2017) showed improved access to services and patient satisfaction.

Evolving Evidence

The literature on COVID-19 and virtual visits has so far been limited to perspective commentaries and recommendations/operating procedures for conducting a virtual visit.

Virtual visits are now being offered in Canada to improve access to essential health care services for patients with and without COVID-19, including mental health supports, and to help mitigate the spread of COVID-19 (Carlton et al., 2020). It has had a transformative effect on healthcare delivery in the US (Mann et al., 2020) overcoming key barriers that had existed, including limited remuneration options, lack of comfort with the required technology by patients and providers, and rural medicine.

In New York, telemedicine visits for urgent care were spread across age strata with the largest use in the 20-44 age group; ambulatory visits were more evenly distributed among the age groups though the 20-44 age group was still the largest utilizer (Mann et al., 2020). These changes in visit volume were driven by large-scale video-based telemedicine adoption by both patients and providers during a 6-week period. There were 144,940 video visits conducted involving 115,789 unique patients and 2,656 unique providers. By providing this service, and reinforcing the public health guidelines, patients were able to receive the care they needed while also protecting themselves, their families and the public itself.

Khairat et al. (2020) also reports on the uptake of virtual visits in a case study report out of North Carolina. They noted that the early uptake in virtual visits in areas that had the highest densities of COVID-19 cases helped reduce the number of emergency department visits by providing remote consultation to patients, reducing overcrowding in acute care and mitigating disease-spread.

Wosik et al. (2020) also report the dramatic uptake in virtual visits, where telehealth visits increased over a 4 week period, where it was previously accounting for <1% of total visits to 70% of all visits, with over a 1000 virtual visits per day. Wosik et al. also describes the extended plan for virtual visits going forward, with 'SuperUsers' coming forward to assist with more extended implementation and a 'Train the Trainer' model to rapidly encourage staff development in order to onboard all physicians and staff for the provision of virtual visits. This could also occur for the development of virtual visits standards in Alberta.

In the months to come, virtual visits will be a critical service in supporting Albertans experiencing the psychological impact of the COVID-19 crisis (depression, anxiety, loneliness), especially videoconferencing where patients can experience both verbal and nonverbal reassurance (Sabin & Skimming, 2015; Toh et al., 2016).

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Authorship and Committee Members

This report was written by Mary Modayil, Charles Cook, Lisa Cook, Meaghan Lunney, and Richard Golonka, with assistance from Staci Hastings. It was scientifically reviewed by Judy Seidel (external reviewer), Elizabeth Mackay, Wes Jackson (external reviewer), Nicholas Myers (external reviewer), Jonathan Choy (external

reviewer), Nicholas Mitchell (external reviewer), Frank MacMaster (external reviewer), Sarah Hall (external reviewer), and Emma Billington (external reviewer). The full Scientific Advisory Group was involved in discussion and revision of the document: Braden Manns (co-chair), Lynora Saxinger (co-chair), John Conly, Alexander Doroshenko, Shelley Duggan, Nelson Lee, Elizabeth MacKay, Andrew McRae, Jeremy Slobodan, James Talbot, Brandie Walker, and Nathan Zelyas.

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Appendix

List of Abbreviations

AHS: Alberta Health Services

COVID-19: Coronavirus Disease-2019

SAG: Scientific Advisory Group

KRS: Knowledge Resource Services

CVD: Cardiovascular Disease

RCT: Randomized Controlled Trial

Methods

Literature Search

Two literature searches were conducted by Lauren Seal from Knowledge Resources Services (KRS) within the Knowledge Management Department of Alberta Health Services. KRS searched databases for articles published from 2015-01-01 to 2020-12-31, and included: Medline, CINAHL, PubMed, TRIP Pro/Google Advanced Search. Briefly, the first search strategy involved combinations of keywords and subject headings including: (telehealth OR telemedicine OR telecare OR "remote consultation" OR "virtual care" OR "virtual consultation" OR "virtual health" OR ehealth OR mhealth OR "mobile health" OR econsult) AND (physician OR doctor OR specialist) AND ("quality of life" OR satisfaction OR outcome OR "patient experience") from:2015

Articles identified by KRS in their search were initially screened by title against the inclusion/exclusion criteria listed in Table 1 below. 69 articles were identified by KRS with references and abstracts provided for further review. 45 were excluded from the review in accordance with the inclusion/exclusion criteria stated below.

The second search strategy involved combinations of keywords and subject headings including:(telehealth OR telemedicine Or videoconferencing OR e-mail OR "virtual care" OR "virtual visit" OR "virtual health" OR ehealth OR mhealth OR telephone OR "mobile health" OR econsult OR “text message”) AND (physician OR doctor OR specialist) AND (patient) AND ("quality of life" OR satisfaction OR outcome OR "patient experience" OR continuity

Articles identified by KRS in their search were again screened by title against the inclusion/exclusion criteria listed in Table 1 below. 71 articles were identified by KRS with references and abstracts provided for further review. 18 were excluded from the review in accordance with the inclusion/exclusion criteria stated below.

Of the 77 articles identified through the two searches (24 identified in the first search, and 53 identified in the second search), 59 articles were excluded after reviewing the full article, giving a grand total of 18 articles for review. We identified an additional 26 articles through hand-searching, and 7 were included in the review. In total, 8 articles were reviewed for primary care and 17 articles were reviewed for specialty care.

Unpublished studies reporting negative results or evaluating unintended consequences due to virtual visits were not found using this rapid review search strategy, which may reflect publication bias.

The multiplicity of terms that reflects the heterogeneity of modes of delivery (e.g., telehealth, mHealth, e-Health) is a challenge because one jurisdiction's definition does not carry over into another jurisdiction's use of the term.

Table 1. Inclusion and exclusion criteria for results of the literature search

Inclusion Criteria	Exclusion Criteria
1. Direct communication (asynchronous or synchronous) between a physician and a patient using video, telephone, text or email 2. Published between 2015 and 2020 to limit number of articles available to most recent evidence on this topic (i.e., communication technologies) and to complete review in a timely manner 3. RCTs, observational studies, systematic review, meta-analyses and evaluations 4. English only language preference 5. Full text only and Grey literature 6. All geographical locations	1. Article is not from a credible source 2. Article does not have strong study design methodology 3. Presented data/evidence is not sufficient to address the research questions 4. Exclude shared care models for this review (appropriate for a future review) 5. Exclude comparison between types of virtual visits 6. Exclude studies where a patient needs to come into a clinic to use teleconference devices e.g., "Alberta Telehealth" 7. Exclude remote patient monitoring 8. Exclude comparison between types of virtual visits 9. Exclude team-based care models for this review (appropriate for a future review)

Critical Evaluation of the Evidence

Exclusion criteria for study quality were adapted from the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018). Potential articles were evaluated on three criteria: 1) Peer reviewed or from a reputable source; 2) Clear research question or issue; 3) Whether the presented data/evidence is appropriate to address the research question. Preprints and non peer-reviewed literature (such as commentaries and letters from credible journals) are not excluded out of hand due to the novelty of COVID-19 and the speed with which new evidence is available.

Table 2 below is a narrative summary of the body of evidence included in this review. The categories, format, and suggested information for inclusion were adapted from the Oxford Centre for Evidence-Based Medicine, the Cochrane Library, and the AGREE Trust (Urwin, Gavinder & Graziadio, 2020; Viswanathan et al, 2012; Wynants et al., 2020; Brouwers et al., 2010).

Table 2A. Narrative overview of the literature included in this review – Primary Care

Author (year) Hyperlink	Jurisdiction (Province, Country)	Article Type	Objective and Outcomes	Modality
Donelan (2019) https://www.ncbi.nlm.nih.gov/pubmed/30667610	US	Observational - cross-sectional survey; Qualitative	**OBJ:** Describe experiences of patients and providers with Virtual Video Visits (VVV) compared to office visits. **OUT:** Both physicians and patients during a full year of experience with VVV show high degree of satisfaction as measured by visit quality and willingness to recommend the visits.	Video
Bashshur (2016) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4744872/	US, Australia	Evidence Summary	**OBJ:** Assessing feasibility and/or acceptance of telemedicine in the diagnosis and treatment of mental health disorders. Includes 22 feasibility studies with sample sizes of >=30. **OUT:** Nearly all included studies suggest that tele-mental health was feasible and acceptable for mental health interventions across a broad range of interventions and patient populations, including those in rural area.	Video, Telephone
Kashgary (2017) https://journals.sagepub.com/doi/10.1177/1357633X16661604	Multiple (review)	Systematic review and meta-analysis	**OBJ:** Focused on the role of mobile devices via phone calls and SMS in patient-doctor communication, and aimed to assess its impact on various health outcomes. 19 studies investigated medication adherence, 20 studies investigated disease-control interventions, and two investigated test-result reporting. **OUT:** Modest improvements in communication and health outcomes.	Telephone, Text

McGrail (2017) https://www.jmir.org/2017/5/e177/	Canada - BC	Observational - case-matched cohort	**OBJ:** To assess empirically the influence of virtual visits on overall primary care use and costs, including whether virtual care is with a known or a new primary care physician. **OUT:** Younger patients and physicians were significantly more likely to use and provide virtual visits. Virtual visits were liked by patients, with 372 (93.2%) of respondents saying their virtual visit was of high quality and 364 (91.2%) reporting their virtual visit was "very" or "somewhat" helpful to resolve their health issue. Virtual visits appear to have the potential to decrease primary care costs by approximately Can $4 per quarter (Can -$3.79, P=.12), but that benefit is most associated with seeing a known provider (Can -$8.68, P<.001).	Video, telephone, text, email
Downes (2017) https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-017-0529-0	Multiple (review)	Systematic review	**OBJ:** The aim of this review is to utilize a systematic review to collate evidence on the use of telephone consultation as an alternative to face-to-face general practice visits. **OUT:** They concluded that such consultations can be an appropriate alternative to in-person consultations. Regarding utilization, the authors reported that teleconsultations resulted in more repeated visits but required providers to spend less total time with patients. One challenge of researching general practitioner consultation is the wide variety of conditions with which patients present. The many conditions addressed impede the measurement of diagnostic agreement between teleconsultation and in-person consultation.	Telephone

Stahl (2010) https://www.ncbi.nlm.nih.gov/pubmed/20386035	US	Randomized controlled trial	**OBJ:** Examine the physician's ability to diagnose and treat, the acceptability of the videoconference, the conditions where evaluation via VC was acceptable to clinicians, how much patients were willing to pay to access VC and for which kinds of conditions. **OUT:** Physicians were very satisfied with videoconferencing but preferred F2F overall. The physical exam and ability to order appropriate lab tests were the least satisfying elements of the virtual encounter. Patients were very satisfied with videoconferencing but also overall preferred F2F (mainly for patients seeking care for gastrointestinal, musculoskeletal, and respiratory complaints).	Video
Gonzalez-Ortega (2017) https://www.ncbi.nlm.nih.gov/pubmed/27920119	Spain	Randomized controlled trial	**OBJ:** To determine if adding virtual health (telephone) by a family physician to the usual care of complex patients reduced ED and admissions, and whether it has a positive effect on health status, quality of life, and caregiver burden. **OUT:** The patient population was primarily elderly people with a high level of comorbidity (CRG levels 6,7). The telephone visits improved the physical component of the QOL score, but not the health or mental state. There was no difference in the number of ED visits or hospital admissions. The caregiver burden was not assessed due to an insufficient sample size.	telephone

Gordon (2017) https://pubmed.ncbi.nlm.nih.gov/28213342/	Indiana (USA)	Retrospective cross-sectional study	**OBJ:** To analyze the care provided and the cost of virtual visits over a 3-week episode compared with in-person visits to retail health clinics (RHC), urgent care centers (UCC), emergency departments (ED), or primary care physicians (PCP) for acute, non-urgent conditions. **OUT:** Virtual visits for non-urgent conditions was comparable to that received in in-person health care settings. Patients receiving care through virtual visits had similar follow-up outpatient evaluation and management visit rates as patients using other locations. This finding suggests not only patients using virtual visits had their health problems resolved at similar rates as patients treated at other locations but also that patients were not using virtual visits as a first step before seeking in-person care.	Video

Table 2B. Narrative overview of the literature included in this review – Specialty Care

Author (year) Hyperlink	Jurisdiction (Province, Country)	Article Type	Objective & Outcome	Modality
Beck (2017) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5595275/	US - Multiple States	Randomized research	**OBJ:** To determine the feasibility of virtual house calls, their impact on quality of life and quality of care, and whether they save time, reduce caregiver burden and decrease travel. Comparing usual care to usual care supplemented by 4 virtual visits **OUT:** No difference in the number of visits with specialists, nor with the quality in life measured by the PDQ-139, nor with the quality of care between the two groups. Patients in the virtual care group had saved time and travel during the visit encounter when compared to the usual care group. There was no difference in caregiver burden between the two groups. There was no difference in the frequency of hospital visits or ED use between the two groups. Overall, patients preferred virtual visits over the in-person visits, and reported feeling "better" compared to the control group.	Video
Shuen (2018) https://dx.doi.org/10.1016/j.jemermed.2018.07.023	US	Randomized controlled trial	**OBJ**: 251 patients enrolled and randomly assigned to three groups (discharge as usual; phone call after discharge; text messaging after discharge) to determine the effectiveness of a virtual follow-up after ED discharge on ED return visits, follow-up in primary care and patient satisfaction. **OUT:** No significant differences between the groups on ED return visits; the control group had a larger proportion of patients re-attending the ED or primary care than either phone or text group, with a trend toward significance. Fewer participants in the text group than in the phone group requested a physician callback. No differences were noted in patient satisfaction between the groups.	Telephone, text
Stevenson (2019) https://dx.doi.org/10.1002/14651858.CD012379.pub2	Multiple (review)	Systematic review	**OBJ:** Included 43 randomized controlled trials (RCTs) and quasi-RCTs using an eHealth intervention to promote behaviour change in people with CKD were included. **OUT**: included blood pressure (9 studies); biochemical parameters (6 studies); clinical end-points (16 studies); dietary intake (3 studies); quality of life (9 studies); medication adherence (10 studies); behaviour (7 studies); physical activity (1 study); and cost-effectiveness (7 studies). Non-significant reductions in interdialytic weight gain of 0.13kg (4 studies) and in dietary sodium intake of 197 mg/day (2 studies). Uncertain whether using eHealth interventions, in addition to usual care, impacts the number of deaths as the certainty of this evidence was graded as low due to high or unclear risk of bias, indirectness and imprecision.	Video, text, email

Xiao (2019) https://www.ncbi.nlm.nih.gov/pubmed/31282963	US - Minnesota	Observational - Retrospective cohort	**OBJ**: Assess whether a post discharge telephone call with the discharging hospitalist influenced patient satisfaction and 30-day readmission rates. **OUT**: 30-day readmission rates improved after patients received a post-discharge telephone call, but this outcome was not statistically significant. Patient satisfaction was rated significantly higher (using HCHAPS scores), particularly in younger patients. The combination of a telephone call intervention and an LOS of up to 30 days lowered the incidence of readmissions	Telephone
Toten (2016) https://www.ncbi.nlm.nih.gov/pubmed/27536752	Multiple (review)	Rapid Review	**OBJ**: 58 systematic reviews included. **OUT**: The most consistent benefit reported is when telehealth is used for communication, counseling or remote monitoring in chronic conditions such as cardiovascular and respiratory disease, with improvements in outcomes such as mortality, quality of life, and reductions in hospital admissions.	Video, telephone, text or email
Armstrong (2018) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6324453/	US - Multiple States	Randomized controlled trial	**OBJ**: To determine whether asynchronous communication between specialist and patient results in equivalent clinical improvements in psoriasis compared with in-person care. Patients were randomized to receive 1:1 online or in-person care to determine if this virtual care model resulted in improvements in disease severity. **OUT**: Asynchronous communication was equivalent to in-person care in terms of disease improvements (PASI score)	Telephone, email
Bahrani (2017) https://www.sciencedirect.com/science/article/pii/S1059131117306672?via%3Dihub	India	Randomized controlled trial	**OBJ**: To compare telephonic review of stable epilepsy patients with in person visits. **OUT**: Patients in the telephone group reported difficulty hearing and understanding the physician when they met, and they were concerned about privacy of their visit. Regardless of the group (telephone or in person) the patients had the same number of seizures, and unscheduled in person visits. Patients in the telephone group incurred less cost and travel time.	telephone
Heath (2015) https://hosppeds.aappublications.org/content/5/5/241.long	US - North Carolina	Observational - Quasi-Experimental	**OBJ**: Follow up calls 72 hours of discharge to assess problems with transition. **OUT**: Despite addressing the wide variety of issues and problems (20% of all calls) after discharge through telephone calls, there were no statistically significant improvements in utilization or patient satisfaction scores.	Telephone
Ishani (2016) https://www.ajkd.org/article/S0272-6386(16)00140-2/abstract	US - Minneapolis	Randomized controlled trial	**OBJ**: Whether an interprofessional team (nephrologist, nurse practitioner, nurses, clinical pharmacy specialist, psychologist, social worker, and dietician) using telehealth was a feasible care delivery strategy and whether this strategy could affect health outcomes in patients with chronic kidney disease (CKD). **OUT**: No difference in all-cause mortality, hospitalization, emergency department visits, or nursing home admission.	telehealth device (touch screen computer with peripherals)

Lu (2018) **https://www.ncbi.nlm.nih.gov/pubmed/29111887**	Multiple (review)	Systematic review	**OBJ**: Use of short message service (SMS) and mobile application-based interventions in surgical patients to evaluate the advantages and disadvantages. Included studies: SMS (8 studies), mobile application (4), combined SMS and application (1), automated phone call (1), and electronic transmission of pictures to the physician (1). **OUT**: Both mobile applications and SMS-based interventions increased adherence to medications and protocols and improved clinic attendance. Lower readmission rates and emergency room visits were reported. Satisfaction with automated communication systems was high for both patients and physicians.	Text
Lyu (2016) **https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5146789/**	China	Randomized controlled trial	**OBJ**: Feasibility of using WeChat as an assistant to clinically track and follow-up patients with head and neck tumors. **OUT**: Improved patient satisfaction compared to using traditional telephone follow-up.	Video, Text, Telephone
Ostherr (2016) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4827321/	US, UK, Canada, Netherlands, Spain, Japan, Korea, India, Australia	Systematic review	**OBJ**: Reviewed 38 articles published between 1997–2013 to understand common uses of electronic communication technology on end-of-life communication between doctors and patients. **OUT**: Recommendations that future research should take advantage of the affordances of virtual visits. The value of video in helping patients clarify their treatment preferences should encourage more providers to experiment with this medium using their mobile devices. Research is needed to help health care providers determine when face-to-face communication with patients is necessary, and when remote communication will achieve comparable objectives.	Video, telephone, text, email
Platts-Mills (2018) https://www.ncbi.nlm.nih.gov/pubmed/29304831	US	Randomized controlled trial	**OBJ**: Assess feasibility of an educational video and pain management 'telecare' (48-72hrs post-discharge call) for older patients with acute musculoskeletal pain who used the ED and compare the effect of 'Video + Telecare' vs. 'Video Alone' vs. Standard Care. **OUT**: Patients in the "Video + Telecare" group demonstrated a greater decrease in pain at one month, better physical functioning, fewer side effects and fewer patients received an opioid.	Telephone
Westra (2015) https://www.ncbi.nlm.nih.gov/pubmed/31238886	Netherlands	Randomized controlled trial	**OBJ**: Follow-up consultation between the patient and physician via a secured real-time video connection 6 weeks after plastic surgery of the face was compared to traditional in-person consultation after the same time interval. **OUT**: Patients were equally satisfied with traditional and video consultation, with the latter found to be more of a time-saver. While still satisfied, patients did report the communication effectiveness of the physicians during the videoconference to be an area for improvement (e.g. technical support and training on the provision of care via videoconference).	Video

Wisner (2017) https://www.ncbi.nlm.nih.gov/pubmed/28796940	US	Randomized controlled trial	**OBJ**: Assess the impact of telephone delivered depression care management. **OUT**: Mean depression symptoms and function scores improved in groups assigned to telephone or usual care. Health service use was similar.	Telephone
Armfield (2015) https://www.ncbi.nlm.nih.gov/pubmed/26183642	US, UK, Canada, Ireland, Finland, Switzerland, Australia, Belgium, Sweden, Cambodia, Taiwan	Systematic review	**OBJ**: Update the 2012 systematic review of the clinical applications of Skype. **OUT**: Skype is easy to use and freely available for many devices and from the 27 studies identified, there is no formal evidence in favor of, or against, the clinical use of Skype. It is being used for patients across the age spectrum, though more often for adult rather than for paediatric applications. Skype is being used primarily for chronic disease management	Video

Search Strategy

April 28, 2020 (First Search Strategy)

Medline/PubMed

1 exp Telemedicine/ (27662)
2 exp Videoconferencing/ (1782)
3 exp Remote Consultation/ (4741)
4 "remote meet*".mp. (8)
5 "remote appointment*".mp. (0)
6 (virtual adj2 health*).mp. (527)
7 (virtual adj2 consult*).mp. (121)
8 (virtual adj2 meet*).mp. (96)
9 (virtual adj2 appointment*).mp. (10)
10 (online adj2 consult*).mp. (229)
11 (online adj2 meet*).mp. (160)
12 (online adj2 appointment*).mp. (51)
13 skype.mp. (342)
14 zoom.mp. (1548)
15 "microsoft team*".mp. (0)
16 "google hangouts".mp. (9)
17 "google duo".mp. (0)
18 webex.mp. (12)
19 gotomeeting.mp. (6)
20 (virutal adj2 care).mp. (0)
21 (virtual adj2 visit*).mp. (169)
22 (online adj2 care).mp. (385)
23 (online adj2 visit*).mp. (137)
24 "electronic care".mp. (67)
25 "electronic visit*".mp. (29)
26 "electronic consult*".mp. (208)
27 "electronic meet*".mp. (14)
28 "electronic appointment*".mp. (13)
29 ehealth.mp. (3551)
30 ecare.mp. (28)
31 evisit*.mp. (15)
32 econsult*.mp. (113)
33 emeet*.mp. (0)
34 eappointment*.mp. (0)
35 exp Telephone/ (22116)
36 "mobile health".mp. (7428)
37 mhealth.mp. (4229)
38 "mobile care".mp. (63)
39 mcare.mp. (7)
40 sms.mp. (5803)
41 mms.mp. (4652)
42 "text messag*".mp. (4993)
43 exp Health Services Accessibility/ (109316)
44 exp Outcome Assessment, Health Care/ (1114353)
45 exp "Quality of Life"/ (191100)
46 exp Job Satisfaction/ (24703)
47 (provider adj2 satisf*).mp. (740)
48 exp "Treatment Adherence and Compliance"/ (240254)
49 (patient adj2 experience*).mp. (21926)
50 exp Hospitalization/ (235806)
51 exp Program Evaluation/ (75010)

52 exp Quality Indicators, Health Care/ (20969)
53 exp Physicians/ (138782)
54 specialist*.mp. (94011)
55 exp Specialization/ (24209)
56 (telehealth or teleaudiology or teleneurology or teleneuropsychology or teleneuropsychiatry or telerehabilitation or "teletrauma care" or telecardiology or telepsychiatry or telepsychology or teleradiology or telepathology or teledermatology or teleopthalmology or telesurgery).mp. (9373)
57 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 56 (72924)
58 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 (1818812)
59 53 or 54 or 55 (243123)
60 57 and 58 and 59 (1043)
61 limit 60 to (english and last 5 years) (432)
62 limit 61 to (government publication or guideline or meta analysis or observational study or practice guideline or randomized controlled trial or "review" or "systematic review" or systematic reviews as topic) (109)

CINAHL

S1 (MH "Telehealth+") OR (MH "Teleconferencing") OR (MH "Telephone+") OR (MH "Videoconferencing+")
S2 (MH "Remote Consultation")
S3 (telehealth or teledentistry or teleaudiology or teleneurology or teleneuropsychology or teleneuropsychiatry or telerehabilitation or "teletrauma care" or telecardiology or telepsychiatry or telepsychology or teleradiology or telepathology or teledermatology or teleopthalmology or telesurgery 19,758
S4 "remote meet*" OR "remote appointment" OR virtual N2 health OR virtual N2 consult* OR virtual N2 meet* OR virtual n2 appointment* OR online N2 consult* OR online N2 meet* OR online N2 appointment* OR ehealth OR "mobile health" 20,071
S5 mhealth OR "electronic consult*" OR skype OR zoom OR "microsoft team*" OR "google hangout*" OR "google duo" OR webex OR gotomeeting Expanders - Apply equivalent subjects
Search modes - Boolean/Phrase Interface - EBSCOhost Research Databases
Search Screen - Advanced Search
Database - CINAHL Complete 15,849
S6 virtual N2 visit* OR virtual N2 care* OR online N2 visit* OR online N2 care OR "electronic care" OR "electronic visit" OR econsult OR "electronic meet*" OR "electronic appointment" OR ecare OR evisit OR eappointment 1,609
S7 "mobile health" OR "mobile care" OR sms OR mms OR "test messag*" 19,081
S8 (MH "Health Services Accessibility+") 91,516
S9 (MH "Outcomes (Health Care)+") 505,643
S10 (MH "Quality of Life+") 125,231
S11 (MH "Consumer Satisfaction+") OR (MH "Job Satisfaction+") OR (MH "Patient Satisfaction+") 117,250
S12 "provider satisf*" 436
S13 (MH "Patient Compliance+") 54,111
S14 "patient experience" 4,474
S15 (MH "Hospitalization+") 103,161
S16 (MH "Program Evaluation") 43,695
S17 (MH "Clinical Indicators") 12,923
S18 (MH "Physicians+") 119,846
S19 specialist* 53,287
S20 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 60,686
S21 S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 940,658
S22 S18 OR S19 169,194
S23 S20 AND S21 AND S22 1,073

S24 S20 AND S21 AND S22 Limiters - Published Date: 20150101-20200631; Language: English 477
S25 S20 AND S21 AND S22 Limiters - Published Date: 20150101-20200631; Language: English; Publication Type: Meta Analysis, Meta Synthesis, Practice Guidelines, Randomized Controlled Trial, Review, Systematic Review61

TRIP Pro/Google Advanced Search
(telehealth OR telemedicine OR telecare OR "remote consultation" OR "virtual care" OR "virtual consultation" OR "virtual health" OR ehealth OR mhealth OR "mobile health" OR econsult) AND (physician OR doctor OR specialist) AND ("quality of life" OR satisfaction OR outcome OR "patient experience") from:2015 – in TRIP, only searched systematic reviews, guidelines, and RCTs

April 29, 2020 (Second Search Strategy)

Medline
1 exp Telemedicine/ (27710)
2 exp Videoconferencing/ (1784)
3 (virtual adj2 health*).mp. (527)
4 (virtual adj2 consult*).mp. (121)
5 (virtual adj2 meet*).mp. (96)
6 (virtual adj2 appointment*).mp. (10)
7 (online adj2 consult*).mp. (229)
8 (online adj2 meet*).mp. (160)
9 (online adj2 appointment*).mp. (51)
10 skype.mp. (342)
11 zoom.mp. (1549)
12 "microsoft team*".mp. (0)
13 "google hangouts".mp. (9)
14 "google duo".mp. (0)
15 webex.mp. (12)
16 gotomeeting.mp. (6)
17 (virutal adj2 care).mp. (0)
18 (virtual adj2 visit*).mp. (170)
19 (online adj2 care).mp. (386)
20 (online adj2 visit*).mp. (137)
21 "electronic care".mp. (67)
22 "electronic visit*".mp. (29)
23 "electronic meet*".mp. (14)
24 "electronic appointment*".mp. (13)
25 ehealth.mp. (3561)
26 ecare.mp. (28)
27 evisit*.mp. (15)
28 emeet*.mp. (0)
29 eappointment*.mp. (0)
30 exp Telephone/ (22129)
31 "mobile health".mp. (7448)
32 mhealth.mp. (4254)
33 "mobile care".mp. (63)
34 mcare.mp. (7)
35 sms.mp. (5809)
36 mms.mp. (4657)
37 "text messag*".mp. (5005)
38 Electronic Mail/ (2657)
39 e-mail*.mp. (8053)

40 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 (79318)
41 exp Health Services Accessibility/ (109385)
42 exp Outcome Assessment, Health Care/ (1115016)
43 exp "Quality of Life"/ (191265)
44 exp Job Satisfaction/ (24718)
45 (provider adj2 satisf*).mp. (740)
46 exp "Treatment Adherence and Compliance"/ (240417)
47 (patient adj2 experience*).mp. (21953)
48 exp Hospitalization/ (235957)
49 exp Program Evaluation/ (75048)
50 exp Quality Indicators, Health Care/ (20985)
51 exp "Continuity of Patient Care"/ (241173)
52 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 (1961487)
53 exp Physicians/ (138875)
54 physician.mp. (250640)
55 doctor*.mp. (124249)
56 exp Specialization/ (24217)
57 specialist*.mp. (94131)
58 53 or 54 or 55 or 56 or 57 (533351)
59 exp Patients/ (64224)
60 exp Patient Care/ (956444)
61 patient*.mp. (6848220)
62 59 or 60 or 61 (7230449)
63 40 and 52 and 58 and 62 (2461)
64 limit 63 to (english and last 5 years) (871)
65 limit 64 to (government publication or guideline or meta analysis or observational study or practice guideline or randomized controlled trial or "review" or "systematic review" or systematic reviews as topic) (234)

CINAHL

S1 (MH "Telehealth+") OR (MH "Teleconferencing") OR (MH "Telephone+") OR (MH "Videoconferencing+")
S2 mhealth OR "electronic consult*" OR skype OR zoom OR "microsoft team*" OR "google hangout*" OR "google duo" OR webex OR gotomeeting
S3 "mobile health" OR "mobile care" OR sms OR mms OR "test messag*"
S4 (virtual N2 health OR virtual N2 consult* OR virtual N2 meet* OR virtual n2 appointment* OR online N2 consult* OR online N2 meet* OR online N2 appointment* OR ehealth OR "mobile health") OR (virtual N2 visit* OR virtual N2 care* OR online N2 visit* OR online N2 care OR "electronic care" OR "electronic visit" OR "electronic meet*" OR "electronic appointment" OR ecare OR evisit OR eappointment) Limiters - Published Date: 20150101-20200631; Language: English; Publication Type: Meta Analysis, Meta Synthesis, Practice Guidelines, Randomized Controlled Trial, Review, Systematic Review 1,535
S5 (MH "Email") 6,899
S6 S1 OR S2 OR S3 OR S4 OR S5 62,004
S7 (MH "Continuity of Patient Care+") 20,384
S8 (MH "Health Services Accessibility+") 91,522
S9 (MH "Outcomes (Health Care)+") 505,711
S10 (MH "Quality of Life+") 125,239
S11 (MH "Consumer Satisfaction+") 72,701
S12 (MH "Job Satisfaction+") 45,816
S13 (MH "Patient Satisfaction+") 58,271
S14 "provider satisf*" 437
S15 (MH "Patient Compliance+") 54,115
S16 "patient experience" 4,476
S17 (MH "Hospitalization+") 103,166
S18 (MH "Program Evaluation") 43,697

S19	(MH "Clinical Indicators")	12,923	
S20	S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19	954,444	
S21	(MH "Physicians+")	119,857	
S22	specialist* OR doctor*	144,677	
S23	S21 OR S22	222,592	
S24	(MH "Physician-Patient Relations")		34,099
S25	(MH "Patient Care+")	824,788	
S26	(MH "Patients+")	296,133	
S27	S24 OR S25 OR S26	1,037,812	
S28	S6 AND S20 AND S23 AND S27		753
S29	S6 AND S20 AND S23 AND S27		749
S30	S6 AND S20 AND S23 AND S27	Limiters - Published Date: 20150101-20201231	335
S31	S6 AND S20 AND S23 AND S27	Limiters - Published Date: 20150101-20201231; Publication Type: Meta Analysis, Meta Synthesis, Practice Guidelines, Randomized Controlled Trial, Review, Systematic Review46	

PubMed

1 "telemedicine"[MeSH Terms] OR "videoconferencing"[MeSH Terms] OR "telephone"[MeSH Terms] OR "electronic mail"[MeSH Terms] OR "virtual health"[Title/Abstract] OR "virtual consult*"[Title/Abstract] OR "virtual meet*"[Title/Abstract] OR "virtual appointment "[Title/Abstract] OR "online meet*"[Title/Abstract] OR "online appointment"[Title/Abstract] OR "skype"[Title/Abstract] OR "zoom "[Title/Abstract] OR "google hangouts "[Title/Abstract] OR "webex"[Title/Abstract] OR "gotomeeting"[Title/Abstract] OR "virtual care"[Title/Abstract] OR "virtual visit*"[Title/Abstract] OR "online care"[Title/Abstract] OR "online visit*"[Title/Abstract] OR "electronic care"[Title/Abstract] OR "electronic visit*"[Title/Abstract] OR "electronic meet*"[Title/Abstract] OR "electronic appointment"[Title/Abstract] OR "ehealth"[Title/Abstract] OR "ecare"[Title/Abstract] OR "evisit "[Title/Abstract] OR "eappointment"[Title/Abstract] OR "mobile health"[Title/Abstract] OR "mobile care "[Title/Abstract] OR "mhealth"[Title/Abstract] OR "mcare"[Title/Abstract] OR "sms"[Title/Abstract] OR "mms"[Title/Abstract] OR "text messag*"[Title/Abstract] OR "e mail*"[Title/Abstract] – 73,021

2 "health services accessibility"[MeSH Terms] OR "outcome assessment, health care"[MeSH Terms] OR "Quality of Life"[MeSH Terms] OR "job satisfaction"[MeSH Terms] OR "provider satisf*"[Title/Abstract] OR "Treatment Adherence and Compliance"[MeSH Terms] OR "patient experience*"[Title/Abstract] OR "hospitalization"[MeSH Terms] OR "program evaluation"[MeSH Terms] OR "quality indicators, health care"[MeSH Terms] OR "Continuity of Patient Care"[MeSH Terms] – 1950515

3 "physicians"[MeSH Terms] OR "specialization"[MeSH Terms] OR "physician*"[Title/Abstract] OR "doctor*"[Title/Abstract] – 348365

4 "patients"[MeSH Terms] OR "patient care"[MeSH Terms] OR "patient*"[Title/Abstract] – 2990807

1 and 2 and 3 and 4 – 1053
English and last 5 years – 359
With study type filters – 91

TRIP Pro/Google Advanced Search

(telehealth OR telemedicine Or videoconferencing OR e-mail OR "virtual care" OR "virtual visit" OR "virtual health" OR ehealth OR mhealth OR telephone OR "mobile health" OR econsult OR “text message”) AND (physician OR doctor OR specialist) AND (patient) AND ("quality of life" OR satisfaction OR outcome OR "patient experience" OR continuity) from:2015 – in TRIP, only searched systematic reviews, guidelines, and RCTs

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