Background

Clinical delivery of health care has historically focused on the in-person interaction(s) between a person, and sometimes family or other support, and a provider, and often a care team. The introduction of health care delivery through an audio-visual or solely audio medium, known as telehealth or telemedicine, has great potential to increase both the accessibility of clinical care and patient satisfaction with care.[1] However, care delivery absent in-person observations raises concerns about appropriateness, efficacy, and unintended consequences and should be built on the consideration of how a telehealth visit differs from an in-person visit.[2,3] All health care visits should follow the Agency for Healthcare Research and Quality (AHRQ) adaptation of the Institute of Medicine 's Crossing the Quality Chasm domains that delivery of care be: safe (avoid harm), effective (avoid underuse and misuse), patient centered (respectful of and responsive to patients), timely, efficient (avoid waste), and equitable.[4,5] Reiterating these domains in the context of virtual care is both helpful as we consider offering a health care service via telehealth and necessarily as we think through intended and unintended consequences.

Availability of telehealth services has been trending upward due to increased availability of computers, smart phones and supporting software capable of transmitting high-quality video for the last decade. Telehealth then rapidly increased in use in early 2020 due to SARS-COV-2 restricting in-person interactions to reduce viral transmission.[6] Approximately 34.5 million telehealth services were delivered to Medicaid and CHIP beneficiaries from March through June 2020, representing an increase of 2,632% compared to March through June 2019.[7]

This rapid acceleration of telehealth has identified a knowledge gap among physical and behavioral health providers in how to determine if a service is appropriate for delivery over telehealth. Telehealth also raises unique issues related to confidentiality and access. Uncertainties remain about whether services delivered over telehealth are equivalent to services delivered in-person in how those clinical visits contribute to a person's overall health and specific health outcomes and/or whether telehealth leads to downstream health care utilization due to continued unmet need (i.e., how well a person's concern can be addressed virtually). In some cases, telehealth may be able to appropriately meet a need but is not a good fit for a particular person and may have unintended consequences. In one example, patients who accessed telehealth services for an acute respiratory infection were almost twice as likely (5.9% vs 10.3%) to seek follow-up care within seven days.[8]

The volume of literature is rapidly increasing due to increased use of telehealth services and more focused investigation into benefits and potential unintended consequences, shining light on whether a service is safe, effective, and efficient. Broadly, literature shows that costs and benefits are dependent on the health care service, the patient, and the overall health context.[9] Patients surveyed tend to be satisfied with telehealth encounters with being female and understanding telehealth being associated with being satisfied.[10] Slightly more than half of providers have reported similarly high satisfaction.[11]

Recognizing this gap between evidence (emerging and established) and a widely accepted community standard, the Bree Collaborative elected to develop standards for delivery of health care services via telehealth in 2020 and convened a workgroup from January to X 2021. This guideline focuses on both physical and behavioral health delivered in an outpatient care setting (including primary and specialty care), for synchronous interaction of either a patient with a provider or care team and between providers (eConsults).

Focus Areas

The workgroup developed focus areas based on AHRQ's IOM framework, available evidence, and expert opinion to define a community standard for telehealth across Washington state.

Focus Area	Clinical Steps

Appropriateness	• Exercise clinical judgment in determining whether telehealth services are appropriate for a given service, a given person, and a given situation.
	• Adopt criteria below to determine appropriateness of telehealth service(s):
	  ○ Visit does not detract from longitudinal relationship.
	  ○ No need for a physical examination or assessment can be made virtually and/or information to be gathered is anticipated to be patient-reported.
	  ○ No anticipation for aggressive intervention(s).
	  ○ Condition(s) not at risk for acute complication(s).
	  ○ Patient has consented to receive telehealth.
	  ○ Patient has audio-only or audiovisual capabilities.
	  ○ Privacy can be ensured during visit.
	• For new patients, comprehensively triage/screen to ensure patient should not be offered in-person prior to telehealth.
	• Episodic, direct-to-patient telemedicine services used only as an intermittent alternative to usual source of care to meet immediate acute care needs.
	• Ensure equitable access to telehealth services such as not restricting telehealth to those who have home-based video capabilities, or if labs are required.

Person-Centered Interaction(s)	• Prior to the telehealth visit, ensure the provider and/or care team understands the patient's expectations and the person understands the capabilities of the system. • Ensure patient consents to having a virtual visit and the protocol if the visual component of audio-visual fails. • If during the course of a telehealth visit, the provider determines that an in-person visit is needed, clearly document steps taken to provide in-person visit. • All staff who interact with the person are clearly identified. • Staff are professional, interacting with the person in private areas and in professional dress. • Information is integrated into the health record. • Person's usual source of care is identified and information is sent and/or care is coordinated

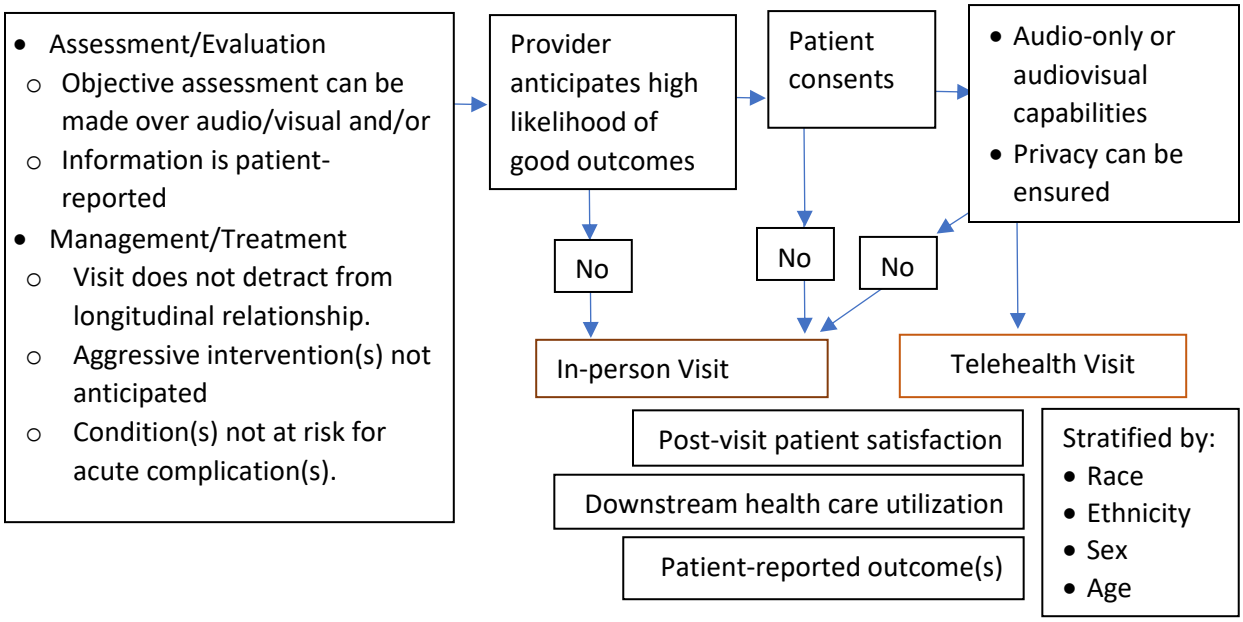
Measurement and Follow-up	• Modernize data infrastructure to differentiate in-person, audio-visual, and audio-only services
	• Report on standardized quality and safety measures including:
	  ○ Downstream healthcare utilization.
	  ○ Patient-reported outcome(s).
	  ○ Patient satisfaction.
	• Stratify metrics by race/ethnicity, sex, age categories (i.e., <18, 19-45, 45-64, 65-74, >75) to identify disparities in outcomes and utilization

The Bree Collaborative recommends that all members of our health care ecosystem think of telehealth through the lens of a community shared consent process. Just as an individual provider is bound to weight the potential risks and benefits of a particular test or procedure with a patient, so should the risks and benefits of a virtual visit be weighed and communicated to the patient receiving care, where relevant.

Virtual care is a mode of care or a tool that when used appropriately greatly enhances convenience of, access to, equity of, and overall cost of care. When used inappropriately, this tool can be expensive, inappropriate, and dangerous, resulting in poor outcomes, increased cost via duplication of services, disintegration of care from existing, valuable, longitudinal relationships and a poor experience for the patient/member.

In considering risks and benefits, base decisions on the criteria shown in Figure 1, below.

Figure 1: Telehealth Decision-Making Flowchart



These guidelines are in alignment with the August 2020 Washington, Colorado, Nevada and Oregon joint overarching principles for telehealth:[12]

- **Access:** Adequate, culturally responsive, patient-centered, equitable access to health care
- **Confidentiality:** Protected confidentiality, informed consent
- **Equity:** Addressing inequities and disparities in care.
- **Standard of Care:** Applied to all services and information provided, including quality, utilization, cost, medical necessity and clinical appropriateness.
- **Stewardship:** Evidence-based strategies, mitigate and address fraud, waste, discriminatory barriers and abuse.
- **Patient choice:** Patients, with providers, should be offered choice of service delivery mode including retaining the right to receive health care in person.
- **Payment/reimbursement:** Reimbursement for services provided via telehealth modalities will be considered in the context of individual state's methods of reimbursement.

Checklists

Health Care System and Delivery Site(s)

- ☐ Adopt the following criteria in determining whether service lines can be offered via telehealth:
    - Assessment/Evaluation
        - Objective assessment can be made over audio/visual interaction and/or
        - Information gathered is anticipated to be patient-reported (e.g., patient health quesationnaire-9)
    - Management/Treatment
        - Visit does not detract from longitudinal relationship (e.g., assessment for acute sinus infection vs. diabetes self-management coaching)
        - If visit is being offered by site or providers other than the person's primary care provider or team, ensure that information flows back to provider and/or team
        - Aggressive intervention(s) not anticipated
        - Condition(s) not at risk for acute complication(s).
- ☐ Do not deem services inappropriate for telehealth:
    - In the patient is above a certain age
    - If the patient needs labs
- ☐ Engage staff in designing telehealth workflows
    - Discuss/anticipate quality and safety concerns including unintended consequences and how to monitor for and address adverse events
    - Designate one technology platform site-wide to support telehealth services
- ☐ Institute central governance over telemedicine so that one person or team (instead of multiple separate service lines) can help ensure consistency and the involvement of the quality department.
- ☐ Designate a clinician leader and/or staff champion(s) who are accountable for monitoring, tracking, coaching, training, and/or providing guidance to organization staff and clinicians on appropriate, high-quality, effective use of virtual care/telehealth.
- ☐ Adopt and define site-wide protocols:
    - Obtaining the person's consent to participate in telehealth visit prior to seeing provider including they are of consenting age or has an appropriate parent or guardian present and they desire to participate in the virtual visit (e.g., not just at recommendation of staff)
    - Asking person about:
        - Their technology capabilities
        - Whether they are able to effectively communicate verbally or through a keyboard)
        - Whether privacy and safety can be ensured during the visit
        - effectively managing hardware and/or software
    - How the provider and care team should address:
        - Best communication practices within the visit (see page X)
        - Technology failures during the visit
        - Privacy breeches or safety issues during the visit.

  - If during the course of a telehealth visit, the provider determines that an in-person visit is needed, steps taken to provide in-person visit and documentation of steps.
  - Introducing new staff who will interact with the person

- ☐ Provide access to:
  - Initial staff telehealth training track completion of training
  - Ongoing training/education as technology improves, protocols change at a state or national level, and evidence grows for telehealth services. This may be informal and/or through CME.

Health Plans

- ☐ Modernize claims data infrastructure to differentiate in-person, audio-visual, and audio-only services
- ☐ Monitor, report, and act on quality, experience, and adverse outcomes related to vendor care outcomes through existing standard quality monitoring programs, with participation by licensed peer clinicians
- ☐ Perform meaningful vetting of chosen vendor provider credentials and qualifications
- ☐ Do no incent, encourage or require members to dissociate their care, including virtual care, from existing longitudinal relationships with providers or care team

Employers and Health Care Purchasers

- ☐ Prioritize receipt of telehealth services from usual sources of care such as a health home, primary care provider, or care team. This can be done through financial incentives or network design.
- ☐ If offering stand-alone telehealth services, ensure the vendor is able to and does send information back to a person's usual source of care.

Regulators

- ☐ Consult with a group of Washington State licensed clinicians on whether a health plan's filed product is medically safe, appropriate, and will result in positive downstream outcomes before approval

Consumers

- ☐ Prioritize receiving telehealth services from your usual source of care (e.g., health home, primary care provider)
- ☐ If you do receive care from a telehealth provider not associated with your usual source of care, ensure that your information about the visit and any follow-up is communicated back to your provider

Appropriate Health Care Service

A proliferation of guidelines in 2020 and 2021 has grown the conditions and patient populations for which and for whom telehealth is recommended. Established evidence does not necessarily exist for all types of clinical interactions recommended by various guidelines as many lean heavily on expert opinion to prioritize patient safety and reduce the risk of viral spread. At the start of the SARS-COV-2 pandemic, the Centers for Disease Control and Prevention recommended telehealth for: low-risk urgent care, management of chronic health conditions and medication, coaching around chronic health conditions, physical and occupational therapy, monitoring clinical signs of chronic medical conditions, case management, post-hospital discharge follow-up, advance care planning and counseling, non-emergent care for those in long-term care facilities, and providing education and training provider to provider.[13]

The Agency for Healthcare Research and Quality (AHRQ) conducted a review of evidence for telehealth in 2016 that found a variety of systematic reviews and thousands of studies with sufficient evidence to support: "Remote patient monitoring for patients with chronic conditions; communication and counseling for patients with chronic conditions; and psychotherapy as part of behavioral health."[14] A subsequent AHRQ review in 2019 found varying results that were highly dependent on setting and individual patient factors; "remote intensive care unit consultations likely reduce mortality, specialty telehealth consultations likely reduce patient time in the emergency department, telehealth consultations in emergency services likely reduce heart attack mortality, remote consultations for outpatient care likely improve access and clinical outcomes."[15]

A 2015 Cochrane review comparing effectiveness, patient and provider acceptability, and costs of telemedicine in addition to or instead of face-to-face interactions found the function of telehealth to focus on: "monitoring of a chronic condition to detect early signs of deterioration and prompt treatment and advice, provision of treatment or rehabilitation, education and advice for self-management, specialist consultations for diagnosis and treatment decisions, real-time assessment of clinical status, screening.[16] The review reports strong evidence to support telehealth as acceptable in the management of heart failure, control of blood glucose for patients with diabetes, and treatment for a variety of behavioral health conditions. Other Cochrane reviews have reported telehealth to be appropriate for medication adherence for prevention of heart disease; management of chronic respiratory disease, chronic obstructive pulmonary disease, chronic kidney disease, and asthma; symptom management for adults with cancer, rehabilitation after stroke and for multiple sclerosis, pain management for children and adolescents, blood glucose monitoring during pregnancy, treatment of anxiety and depression, diagnosis of skin cancer in adults.[17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32] Telehealth has been used to effectively deliver care to improve quality of life outcome scores for cancer patients.[33]

The Veterans Administration Evidence-based Synthesis Program reports similar patient outcomes as in-person for telemedicine treatment for major depressive disorder, post-traumatic stress disorder, and chronic pain.[34] Telehealth has been shown to be appropriate for a wide range of ages, from pediatric to geriatric care. Adolescent clinics report successfully implementing and utilizing telehealth for treating eating disorders, contraception/menstrual disorders, gender-affirming care, general adolescent medicine, HIV treatment, and substance abuse.[35] Among older adults with chronic illness, care delivered via telehealth has been associated with improved self-care skills, self-monitoring behaviors, and other outcomes.[36]

Increasing Equity

Utilization of telehealth varies based on patient factors, indicating inequitable access. Older adults, those in rural areas, women, those who are married were more likely to use telehealth.[37] However, those with anxiety and depression were also more likely to use telehealth.[37] Mobile health apps also continue to show unmet needs.[38] Solutions to address disparities include: proactively exploring potential disparities in telemedicine access, developing solutions to mitigate barriers to digital literacy and the resources needed for engagement in video visits, removing health system–created barriers to accessing video visits, and advocating for policies and infrastructure that facilitate equitable telemedicine access.[39]

Patient barriers should be assessed and addressed prior to a telehealth visit. Barriers reported by patients include technology to connect with providers or peer support not being available, technology malfunctioning, not understanding how to connect, poor internet connection, and not being able to access a virtual visit in a private setting (e.g., living in a shelter, living with multiple residents).[40] Providers and systems should not assume that age itself makes telehealth a poor fit for an individual.

Best Practices in the Telehealth Visit

Best practices for a provider during a telehealth visit are similar to best practices for interpersonal interactions in-person and are based in common sense (e.g., establishing rapport by asking about goals and values, reviewing chart(s) before the visit). Differences include the need to ensure that two-way communication is possible (e.g., sound from the provider, sound from the person) and professional (e.g., dress, background) with added communication techniques (i.e., screenside manners) to facilitate trust and information exchange including:[41,42]

- Asking for a phone number in case of technology failure
- Addition of pauses between speakers to accommodate tendency to talk over one another during an audio/visual engagement
- Greater attention to reiterating what the person has said
- Having the person mimic your actions (e.g., how you are holding the phone)
- Prior to ending the call, asking if the person has additional questions (i.e., doorknob question)

The Centers for Medicare & Medicaid Services developed a General Provider Telehealth and Telemedicine Tool Kit, available here. The American Medical Association offers a quick guide to telehealth, here, and recommends best practices including:[43]

- Basics of audio-visual communication (e.g., lighting, sound)
- Make sure patients can connect prior to the visit
- Dress professionally
- Have a backup plan for technology failure

The American Hospital Association offers best practices here. The Institute for Healthcare Improvement (IHI) recommends making a telehealth visit age-friendly through the 4M framework:[44]

- **What Matters**: Asking about values, needs, priorities
- **Medication**: Including medication reconciliation
- **Mentation**: Assessing the person's cognitive state

- **Mobility**: Observing how a person gets around a home

Implementation

As with all types of systematic change, case studies of telehealth implementation show the need for leadership engagement, clinical champions at multiple levels, multiple forms of staff education, and telehealth-specific measures.[45] The US Health and Human Services offers guidance here on developing a workflow including preparing and training care teams, scheduling, gathering and entering information, supporting patients who have limited English proficiency and/or disability and other best practices.

Lessons from clinics who have successfully adopted telehealth include: strengthening team dynamics, engaging with and supporting frontline staff, training prior to implementation, ensuring that all users know how to maximize the modality for optimum benefit.[46] For a delivery site prior to the SARS-COV-2 pandemic, investment in telemedicine reached a break-even point financially ranged from one to nine years.[47] The IHI recommends focusing on:[48]

- Design and implementation (e.g., central governance within the organization over telehealth, investigation of unintended consequences)
- Clinician support (e.g., access to patient data)
- Patient engagement (e.g., checklist to prepare for visit, example here

Measuring and Assuring Quality and Safety

Telehealth services should be as effective and safe as in-person service, should increase efficiency and not add additionally to total cost of care (e.g., through added downstream health care utilization), and should respect a person's preference and values.[49] Due to the use of telehealth in health care services for which evidence is emerging or does not exist, the workgroup recommends continuous monitoring of health outcomes and patient-reported satisfaction measures by delivery modality. The workgroup is also sensitive to the possibly of perversely inventing audio-visual or audio clinical interactions over in-person interactions with potentially determinantal patient effects. The workgroup objective is comparison between delivery systems and health plans and therefore recommends a standardized measurement of telehealth as in other areas of health care.

The American Medical Association's Return on Health: Moving Beyond Dollars and Cents in Realizing the Value of Virtual Care, available here, frames digitally-enabled care as a facilitator of higher-quality, safer care and offers different metrics. The following quality and safety domains should be measured, including:[50]

- Downstream care utilization (e.g., to measure additional total cost of care)
    - Number of emergency department visits
    - Number of hospitalizations
- Patient experience and/or other patient-reported outcome measure
    - Patient activation measure (PAM)
- Effectiveness
- Access
    - Time to third next available appointment or consultation
    - Percentage of patients with disabilities who are able to conduct a virtual visit through adaptive technologies

Coding

Interactions should be differentiated based on modality of delivery in order to track quality and safety and intervene if needed. The American Academy of Pediatrics offers guidance here, and the American Academy of Family Physicians here, "*Telemedicine services may make up 2 distinct services, depending on where the patient is located during the telemedicine encounter*"[51]

Claims can be submitted using the 95 modifier, "*Synchronous telemedicine service rendered via a real-time interactive audio and video telecommunications system….append this modifier to an appropriate CPT code*."[48] Medicare uses the 95 modifier, and will "…pay the non-facility amount for telehealth services…billed with the place of service (POS) the physician would have used if the service had been provided in person (e.g., POS 11 – Office). Physicians should append modifier -95 to the claim lines delivered via telehealth. Claims with POS 02 – Telehealth will be paid at the normal facility rate, which is typically less than the non-facility rate under the Medicare physician fee schedule."[52]

Codes unique to non-face to face encounters include:[5354]

- 99421-99423: Up to seven days cumulative e-visits that cannot be used for scheduling appointments or conveying test results.
- 99441-99443: Audio-only visits

Appendix C: Guideline and Systematic Review Search Results

	Year	*Title*	*Summary or Findings*
AHRQ: Research Findings and Reports	2019	Telehealth for Acute and Chronic Care Consultations	In general, the evidence indicates that telehealth consultations are effective in improving outcomes or providing services, with no difference in outcomes; however, the evidence is stronger for some applications, and less strong or insufficient for others. However, as specific details about the implementation of telehealth consultations and the environment were rarely reported, it is difficult to assess generalizability. Exploring the use of a cost model underscored that the economic impact of telehealth consultations depends on the perspective used in the analysis. The increase in both interest and investment in telehealth suggests the need to develop a research agenda that emphasizes rigor and focuses on standardized outcome comparisons that can inform policy and practice decisions.
	2016	Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews	The research literature on telehealth is vast and varied, consisting of hundreds of systematic reviews and thousands of studies of use across various clinical conditions and health care functions. There is sufficient evidence to support the effectiveness of telehealth for specific uses with some types of patients, including— Remote patient monitoring for patients with chronic conditions; Communication and counseling for patients with chronic conditions; Psychotherapy as part of behavioral health.
Cochrane Collection	2021	Healthcare stakeholders' perceptions and experiences of factors affecting the implementation of critical care telemedicine (CCT): qualitative evidence synthesis	Our review identified several factors that could influence the acceptance and use of telemedicine in critical care. These include the value that hospital staff and family members place on having access to critical care experts, staff access to sufficient training, and the extent to which healthcare providers at the bedside and the critical care experts supporting them from a distance acknowledge and respect each other's expertise. Further research, especially in contexts other than North America, with different cultures, norms and practices will strengthen the evidence base for the implementation of CCT internationally and our confidence in these findings. Implementation of CCT appears to be growing in importance in the context of global pandemic management, especially in countries with wide geographical dispersion and limited access to critical care expertise. For successful implementation, policymakers and other stakeholders should consider pre-empting and addressing factors that may affect implementation, including strengthening teamness between bedside and hub teams; engaging and supporting frontline staff; training ICU clinicians on the use of CCT prior to its implementation; and ensuring staff have access to information and knowledge about when, why and how to use CCT for maximum benefit.
	2021	Mobile phone-based interventions for improving adherence to medication prescribed for the primary prevention of	There is low-certainty evidence on the effects of mobile phone-delivered interventions to increase adherence to medication prescribed for the primary prevention of CVD. Trials of BP self-monitoring with mobile-phone telemedicine support reported modest benefits. One trial at low risk of bias reported modest reductions in LDL cholesterol but no benefits for BP. There is moderate-certainty evidence that these interventions do not result in harm. Further trials of these interventions are warranted.

	cardiovascular disease in adults	
2021	Telerehabilitation for chronic respiratory disease	This review suggests that primary pulmonary rehabilitation, or maintenance rehabilitation, delivered via telerehabilitation for people with chronic respiratory disease achieves outcomes similar to those of traditional centre-based pulmonary rehabilitation, with no safety issues identified. However, the certainty of the evidence provided by this review is limited by the small number of studies, of varying telerehabilitation models, with relatively few participants. Future research should consider the clinical effect of telerehabilitation for individuals with chronic respiratory diseases other than COPD, the duration of benefit of telerehabilitation beyond the period of the intervention, and the economic cost of telerehabilitation.
2021	Digital interventions for the management of chronic obstructive pulmonary disease	There is insufficient evidence to demonstrate a clear benefit or harm of digital technology interventions with or without supported self-management, or multi-component interventions compared to usual care in improving the 6MWD or self-efficacy. We found there may be some short-term improvement in quality of life with digital interventions, but there is no evidence about whether the effect is sustained long term. Dyspnoea symptoms may improve over a longer duration of digital intervention use. The evidence for multi-component interventions is very uncertain and as there is little or no evidence for adverse events, we cannot determine the benefit or harm of these interventions. The evidence base is predominantly of very low certainty with concerns around high risk of bias due to lack of blinding.
2020	Telephone interventions for symptom management in adults with cancer	Telephone interventions provide a convenient way of supporting self-management of cancer-related symptoms for adults with cancer. These interventions are becoming more important with the shift of care closer to patients' homes, the need for resource/cost containment, and the potential for voluntary sector providers to deliver healthcare interventions. Some evidence supports the use of telephone-delivered interventions for symptom management for adults with cancer; most evidence relates to four commonly experienced symptoms - depression, anxiety, emotional distress, and fatigue. Some telephone-delivered interventions were augmented by combining them with face-to-face meetings and provision of printed or digital materials. Review authors were unable to determine whether telephone alone or in combination with other elements provides optimal reduction in symptoms; it appears most likely that this will vary by symptom. It is noteworthy that, despite the potential for telephone interventions to deliver cost savings, none of the studies reviewed included any form of health economic evaluation.
2020	Telerehabilitation for people with low vision	We did not find any evidence from RCTs or CCTs on the efficacy of using telerehabilitation for remote delivery of rehabilitation services to individuals with low vision. Given the disease burden and the growing interest in telemedicine, the two ongoing studies, when completed, may provide evidence in understanding the potential for telerehabilitation as a platform for providing services to people with low vision.
2020	Mobile technologies to support healthcare provider to healthcare provider	Our confidence in the effect estimates is limited. Interventions including a mobile technology component to support healthcare provider to healthcare provider communication and management of care may reduce the time between presentation and management of the health condition when primary care providers or emergency physicians use them to consult with specialists, and may increase the likelihood of receiving a clinical examination among participants with diabetes and those who required an ultrasound. They may decrease the number of people attending primary care who are referred to secondary or tertiary care in some conditions, such as some skin

	communication and management of care	conditions and CKD. There was little evidence of effects on participants' health status and well-being, satisfaction, or costs.
2020	Telerehabilitation services for stroke	While there is now an increasing number of RCTs testing the efficacy of telerehabilitation, it is hard to draw conclusions about the effects as interventions and comparators varied greatly across studies. In addition, there were few adequately powered studies and several studies included in this review were at risk of bias. At this point, there is only low or moderate-level evidence testing whether telerehabilitation is a more effective or similarly effective way to provide rehabilitation. Short-term post-hospital discharge telerehabilitation programmes have not been shown to reduce depressive symptoms, improve quality of life, or improve independence in activities of daily living when compared with usual care. Studies comparing telerehabilitation and in-person therapy have also not found significantly different outcomes between groups, suggesting that telerehabilitation is not inferior. Some studies reported that telerehabilitation was less expensive to provide but information was lacking about cost-effectiveness. Only two trials reported on whether or not any adverse events had occurred; these trials found no serious adverse events were related to telerehabilitation.
2019	eHealth interventions for people with chronic kidney disease	eHealth interventions may improve the management of dietary sodium intake and fluid management. However, overall these data suggest that current evidence for the use of eHealth interventions in the CKD population is of low quality, with uncertain effects due to methodological limitations and heterogeneity of eHealth modalities and intervention types. Our review has highlighted the need for robust, high quality research that reports a core (minimum) data set to enable meaningful evaluation of the literature.
2019	Psychological therapies (remotely delivered) for the management of chronic and recurrent pain in children and adolescents	There are currently a small number of trials investigating psychological therapies delivered remotely, primarily via the Internet. We are cautious in our interpretations of analyses. We found one beneficial effect of therapies to reduce headache severity post-treatment. For the remaining outcomes there was either no beneficial effect at post-treatment or follow-up, or lack of evidence to determine an effect. Overall, participant satisfaction with treatment was positive. We judged the quality of the evidence to be very low, meaning we are very uncertain about the estimate. Further studies are needed to increase our confidence in this potentially promising field.
2019	Techniques of monitoring blood glucose during pregnancy for women with pre-existing diabetes	Two new studies (406 women) have been incorporated to one of the comparisons for this update. Although the evidence suggests that CGM in comparison to intermittent glucose monitoring may reduce hypertensive disorders of pregnancy, this did not translate into a clear reduction for pre-eclampsia, and so this result should be viewed with caution. There was no evidence of a difference for other primary outcomes for this comparison. The evidence base for the effectiveness of other monitoring techniques analysed in the other five comparisons is weak and based on mainly single studies with very low-quality evidence. Additional evidence from large well-designed randomised trials is required to inform choices of other glucose monitoring techniques and to confirm the effectiveness of CGM.
2018	E-Health interventions for anxiety and	At present, the field of e-health interventions for the treatment of anxiety or depression in children and adolescents with long-term physical conditions is limited to five low quality trials. The very low-quality of the evidence means the effects of e-health interventions are uncertain at this time, especially in children aged under 10 years.Although it is

	depression in children and adolescents with long-term physical conditions	too early to recommend e-health interventions for this clinical population, given their growing number, and the global improvement in access to technology, there appears to be room for the development and evaluation of acceptable and effective technologically-based treatments to suit children and adolescents with long-term physical conditions.
2018	Teledermatology for diagnosing skin cancer in adults	Studies were generally small and heterogeneous and methodological quality was difficult to judge due to poor reporting. Bearing in mind concerns regarding the applicability of study participants and of lesion image acquisition in specialist settings, our results suggest that teledermatology can correctly identify the majority of malignant lesions. Using a more widely defined threshold to identify 'possibly' malignant cases or lesions that should be considered for excision is likely to appropriately triage those lesions requiring face-to-face assessment by a specialist. Despite the increasing use of teledermatology on an international level, the evidence base to support its ability to accurately diagnose lesions and to triage lesions from primary to secondary care is lacking and further prospective and pragmatic evaluation is needed.
2017	Different methods and settings for glucose monitoring for gestational diabetes during pregnancy	Evidence from 11 RCTs assessing different methods or settings for glucose monitoring for GDM suggests no clear differences for the primary outcomes or other secondary outcomes assessed in this review. However, current evidence is limited by the small number of RCTs for the comparisons assessed, small sample sizes, and the variable methodological quality of the RCTs. More evidence is needed to assess the effects of different methods and settings for glucose monitoring for GDM on outcomes for mothers and their children, including use and costs of health care. Future RCTs may consider collecting and reporting on the standard outcomes suggested in this review.
2016	Remote versus face-to-face check-ups for asthma	Current randomised evidence does not demonstrate any important differences between face-to-face and remote asthma check-ups in terms of exacerbations, asthma control or quality of life. There is insufficient information to rule out differences in efficacy, or to say whether or not remote asthma check-ups are a safe alternative to being seen face-to-face.
2015	Interactive telemedicine: effects on professional practice and health care outcomes	The findings in our review indicate that the use of TM in the management of heart failure appears to lead to similar health outcomes as face-to-face or telephone delivery of care; there is evidence that TM can improve the control of blood glucose in those with diabetes. The cost to a health service, and acceptability by patients and healthcare professionals, is not clear due to limited data reported for these outcomes. The effectiveness of TM may depend on a number of different factors, including those related to the study population e.g. the severity of the condition and the disease trajectory of the participants, the function of the intervention e.g., if it is used for monitoring a chronic condition, or to provide access to diagnostic services, as well as the healthcare provider and healthcare system involved in delivering the intervention.
2015	Telerehabilitation for persons with multiple sclerosis	There is currently limited evidence on the efficacy of telerehabilitation in improving functional activities, fatigue and quality of life in adults with MS. A range of telerehabilitation interventions might be an alternative method of delivering services in MS populations. There is insufficient evidence to support on what types of telerehabilitation

			interventions are effective, and in which setting. More robust trials are needed to build evidence for the clinical and cost effectiveness of these interventions.
	2014	Psychological interventions for individuals with cystic fibrosis and their families	Currently, insufficient evidence exists on psychological interventions or approaches to support people with cystic fibrosis and their caregivers, although some of the studies were promising. Due to the heterogeneity between studies, more of each type of intervention are needed to support preliminary evidence. Multicentre studies, with consequent funding implications, are needed to increase the sample size of these studies and enhance the statistical power and precision to detect important findings. In addition, multicentre studies could improve the generalisation of results by minimizing centre or therapist effects. Psychological interventions should be targeted to illness-specific symptoms or behaviours to demonstrate efficacy.
	2012	Telemedicine for the support of parents of high-risk newborn infants	There is insufficient evidence to support or refute the use of telemedicine technology to support the parents of high-risk newborn infants receiving intensive care. Clinical trials are needed to assess the application of telemedicine to support parents and families of infants in NICU with length of hospital stay and their perception of NICU care as the major outcomes.
	2011	Telehealthcare for chronic obstructive pulmonary disease	Telehealthcare in COPD appears to have a possible impact on the quality of life of patients and the number of times patients attend the emergency department and the hospital. However, further research is needed to clarify precisely its role since the trials included telehealthcare as part of more complex packages.
Veterans Administration Evidence-based Synthesis Program	2019	Evidence Brief: Video Telehealth for Primary Care and Mental Health Services	Video delivery of mental health treatments are likely similar to in-person treatments in terms of patient satisfaction (for both Major Depressive Disorder [MDD] and Post-Traumatic Stress Disorder [PTSD]), number of sessions completed (PTSD), quality of life (both MDD and PTSD), response (MDD), and remission rates (both MDD and PTSD). · Video delivery of mental health treatments are associated with lower or similar implementation costs (PTSD and MDD) and health care utilization costs (MDD only) compared to in-person treatments. · Evidence is emerging on the use of video for diagnosis of mental health conditions as well as the use of video for treatment of chronic pain. · There is a lack of evidence on the use of video in primary care for conditions other than chronic pain, as well as a lack of information on the impact of video in both mental health and primary care on important access outcomes, including wait times, frequency of use, and provider productivity.

	2019	Systematic Review: Effectiveness of Remote Triage	The majority of included studies did not demonstrate a decrease in primary care or emergency department (ED) use; however, the current evidence is limited and of marginal quality. Only 1 study with high ROB found a significant decrease in primary care utilization when comparing a national telephone triage system to a more local telephone triage system, and no study found a decrease in ED utilization. Yet, 4 studies reported significant increase in utilization among patients in the remote triage condition. · Evidence from 2 studies suggested that local, practice-based telephone triage services have higher case resolution outcomes and refer fewer patients to emergency or primary care services compared with regional/national telephone-based remote triage. · While we also explored safety outcomes including ED visits, emergent hospitalization, and death, neither of the 2 studies identified statistically significant differences in safety outcomes among study arms. · No clear pattern emerged about the effects of remote triage on patient satisfaction. Some evidence supports that patient satisfaction is affected to the degree that patients perceive the service they receive to differ from the service they expected (eg, same-day vs after-hours advice). · Last, we addressed the comparative costs of a telephone triage system. Two studies evaluated the costs of in-person primary care compared to either GP-led or nurse-led telephone triage and found no difference in overall cost of care. A third study compared a national telephone triage system to a local triage system, finding that overall cost was not different when controlling for the triaged patient's final point of health care contact.
	2017	ESP Report: Access Management Improvement	A key finding of this review is that evidence about primary care access management is essentially limited to implementation of Advanced/Open Access, with all but 3 publications coming in a ten-year period of time from 2001-2010. Most studies reported dramatic improvements in access. The most commonly used intervention components were reducing the backlog, using fewer appointment types, and setting goals, but whether these are key features of success cannot be determined from the data. Some studies of longer duration reported more mixed results, with rising wait times and the need for modifications to the access management strategy reported in 2 large and long-term studies. Patient populations and contexts have been described at only a basic level. Five toolkits were identified, most coming from settings described in implementation studies
Health Technology Assessment Program	N/A		
Centers for Disease Control and Prevention	2020	Using Telehealth to Expand Access to Essential Health Services during the COVID-19 Pandemic	Telehealth services can be used to: Screen patients who may have symptoms of COVID-19 and refer as appropriate Provide low-risk urgent care for non-COVID-19 conditions, identify those persons who may need additional medical consultation or assessment, and refer as appropriate Access primary care providers and specialists, including mental and behavioral health, for chronic health conditions and medication management Provide coaching and support for patients managing chronic health conditions, including weight management and nutrition counseling

		Participate in physical therapy, occupational therapy, and other modalities as a hybrid approach to in-person care for optimal health Monitor clinical signs of certain chronic medical conditions (e.g., blood pressure, blood glucose, other remote assessments) Engage in case management for patients who have difficulty accessing care (e.g., those who live in very rural settings, older adults, those with limited mobility) Follow up with patients after hospitalization Deliver advance care planning and counseling to patients and caregivers to document preferences if a life-threatening event or medical crisis occurs Provide non-emergent care to residents in long-term care facilities Provide education and training for HCP through peer-to-peer professional medical consultations (inpatient or outpatient) that are not locally available, particularly in rural areas
Institute for Clinical and Economic Review	N/A	

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