



Comparative Effectiveness Review
Number 256

Effectiveness of Telehealth for Women's Preventive Services



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None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

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Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Evidence-based Practice Centers (EPCs), sponsors the development of systematic reviews to assist public- and private-sector organizations in their efforts to improve the quality of healthcare in the United States. The Health Resources and Services Administration requested this report from the EPC Program at AHRQ. AHRQ assigned this report to the following EPC: the Pacific Northwest Evidence-based Practice Center (Contract Number: 75Q80120D00006).

The reports and assessments provide organizations with comprehensive, evidence-based information on common medical conditions and new healthcare technologies and strategies. They also identify research gaps in the selected scientific area, identify methodological and scientific weaknesses, suggest research needs, and move the field forward through an unbiased, evidence-based assessment of the available literature. The EPCs systematically review the relevant scientific literature on topics assigned to them by AHRQ and conduct additional analyses when appropriate prior to developing their reports and assessments.

To bring the broadest range of experts into the development of evidence reports and health technology assessments, AHRQ encourages the EPCs to form partnerships and enter into collaborations with other medical and research organizations. The EPCs work with these partner organizations to ensure that the evidence reports and technology assessments they produce will become building blocks for healthcare quality improvement projects throughout the Nation. The reports undergo peer review and public comment prior to their release as a final report.

AHRQ expects that the EPC evidence reports and technology assessments, when appropriate, will inform individual health plans, providers, and purchasers as well as the healthcare system as a whole by providing important information to help improve healthcare quality.

If you have comments on this evidence report, they may be sent by mail to the Task Order Officer named below at: Agency for Healthcare Research and Quality, 5600 Fishers Lane, Rockville, MD 20857, or by email to epc@ahrq.hhs.gov.

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Technical Expert Panel

In designing the study questions and methodology at the outset of this report, the EPC consulted several technical and content experts. Broad expertise and perspectives were sought. Divergent and conflicted opinions are common and perceived as healthy scientific discourse that results in a thoughtful, relevant systematic review. Therefore, in the end, study questions, design, methodologic approaches, and/or conclusions do not necessarily represent the views of individual technical and content experts.

Technical Experts must disclose any financial conflicts of interest greater than \$5,000 and any other relevant business or professional conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The TOO and the EPC work to balance, manage, or mitigate any potential conflicts of interest identified.

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Prior to publication of the final evidence report, the EPC sought input from independent Peer Reviewers without financial conflicts of interest. However, the conclusions and synthesis of the scientific literature presented in this report do not necessarily represent the views of individual reviewers.

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Effectiveness of Telehealth for Women’s Preventive Services

Structured Abstract

Objectives. To evaluate the effectiveness, use, and implementation of telehealth for women’s preventive services for reproductive healthcare and interpersonal violence (IPV), and to evaluate patient preferences and engagement for telehealth, particularly in the context of the coronavirus (COVID-19) pandemic.

Data sources. Ovid MEDLINE[®], CINAHL[®], Embase[®], and Cochrane CENTRAL databases (July 1, 2016, to March 4, 2022); manual review of reference lists; suggestions from stakeholders; and responses to a Federal Register Notice.

Review methods. Eligible abstracts and full-text articles of telehealth interventions were independently dual reviewed for inclusion using predefined criteria. Dual review was used for data abstraction, study-level risk of bias assessment, and strength of evidence (SOE) rating using established methods. Meta-analysis was not conducted due to heterogeneity of studies and limited available data.

Results. Searches identified 5,704 unique records. Eight randomized controlled trials, one nonrandomized trial, and seven observational studies, involving 10,731 participants, met inclusion criteria. Of these, nine evaluated IPV services and seven evaluated contraceptive care, the only reproductive health service studied. Risk of bias was low in one study, moderate in nine trials and five observational studies, and high in one study. Telehealth interventions were intended to replace usual care in 14 studies and supplement care in 2 studies. Delivery modes included telephone (5 studies), online modules (5 studies), and mobile applications (1 study), and was unclear or undefined in five studies. There were no differences between telehealth interventions to supplement contraceptive care and comparators for rates of contraceptive use, sexually transmitted infection, and pregnancy (low SOE); evidence was insufficient for abortion rates. There were no differences between telehealth IPV services versus comparators for outcomes measuring repeat IPV, depression, post-traumatic stress disorder, fear of partner, coercive control, self-efficacy, and safety behaviors (low SOE). The COVID-19 pandemic increased telehealth utilization. Barriers to telehealth interventions included limited internet access and digital literacy among English-speaking IPV survivors, and technical challenges and confidentiality concerns for contraceptive care. Telehealth use was facilitated by strategies to ensure safety of individuals who receive IPV services. Evidence was insufficient to evaluate access, health equity, or harms outcomes.

Conclusions. Limited evidence suggests that telehealth interventions for contraceptive care and IPV services result in equivalent clinical and patient-reported outcomes as in-person care. Uncertainty remains regarding the most effective approaches for delivering these services, and how to best mobilize telehealth, particularly for women facing barriers to healthcare.

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Executive Summary

Main Points

- Based on 16 studies, outcomes of telehealth interventions compared with in-person or usual care were generally similar for adolescent and adult women presenting for contraceptive care (screening, counseling, provision, followup care) or receiving services for screening, evaluation, or treatment of interpersonal violence (IPV).
- Two studies demonstrated that telehealth was either better or worse than usual care for contraceptive care or IPV services; the remaining 14 studies showed no differences in effectiveness.
- Compared with usual care alone, telehealth interventions to supplement in-person care resulted in similar rates as comparators for contraceptive use (oral contraception, condoms, or long-acting reversible contraception) at 6 months, sexually transmitted infection (STI), and pregnancy (all low strength of evidence [SOE]); impact on abortion rates was unclear (insufficient SOE).
- Compared with usual care, telehealth interventions for IPV services resulted in similar rates of repeat IPV, depression, fear of partner, coercive control, self-efficacy, post-traumatic stress disorder, and safety behaviors (low SOE), and unclear evidence on harms (insufficient SOE).
- No studies evaluated telehealth services for family planning or STI counseling.
- Three studies indicated the COVID-19 pandemic increased telehealth utilization.
- Studies did not adequately evaluate factors related to access, health equity, or potential harms of telehealth.

Purpose and Background

This Comparative Effectiveness Review aims to address the decisional dilemma about the uncertainty regarding the **effectiveness of telehealth for delivering specific preventive services for women** and how to best mobilize telehealth to address women’s healthcare needs, particularly for those who are geographically isolated or in underserved settings or populations. This review also serves as a resource for policymakers, practice leaders, and other stakeholders to inform future efforts to evaluate telehealth outcomes for women presenting for preventive health services and its role in serving populations adversely affected by disparities due to socioeconomic disadvantage, race or ethnicity, rural location, or other factors.

Methods

This review follows standard methods for systematic reviews¹ that are further described in the full protocol available on the Agency for Healthcare Research and Quality website: <https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/telehealth-women-protocol.pdf>. The protocol was registered with PROSPERO (CRD42021282298).

Searches were conducted in Ovid MEDLINE[®], CINAHL[®], Embase[®], and Cochrane CENTRAL databases from July 1, 2016, to March 4, 2022, and were supplemented by manual review of reference lists and a Federal Register Notice.

Investigators developed pre-established eligibility criteria defined by populations, interventions, comparators, outcomes, and setting in accordance with established methods¹ and

revised the criteria with input from a technical expert panel and federal partners. The population included adolescent and adult women (≥ 13 years old), including those who are pregnant, eligible for screening, counseling, or treatment for reproductive health (family planning, contraception, and STI counseling) and IPV services. For this review, family planning services were defined based on Title X guidelines² and include preconception counseling and birth spacing; contraceptive care (screening, counseling, provision, and followup care) was considered separately under reproductive health services.

Results

A total of 5,704 references from electronic database searches and reference lists were reviewed. After dual review of titles and abstracts, 320 papers were selected for full-text review. Across all Key Questions, eight randomized controlled trials, one nonrandomized trial, and seven observational studies on the comparative effectiveness of telehealth interventions for women's preventive services were included. Most studies evaluated the effectiveness of telehealth interventions for contraceptive care and IPV. Cross-sectional studies evaluated the effects of telehealth interventions during the COVID-19 pandemic mostly using data from surveys of clinicians and patients.

Evidence on contraceptive care mostly examined populations of non-white (62 to 75%), lower income, and young women ages 16 to 27 years. For IPV interventions, patients were slightly older (mean age of 33 years). Outcomes related to access, health equity, or health disparities were not addressed. Data on harms was extremely limited for IPV and not addressed in studies of contraceptive care. Main findings are summarized by preventive service in **Table A**.

Table A. Summary of evidence: Effectiveness of telehealth interventions versus comparator

Preventive Service	Outcome	Intervention	Comparison	Number of Studies;* Study Design; Participants (n)	Overall Effect	Strength of Evidence
Family Planning†	NA	NA	NA	No Studies	NA	NA
Contraception	Contraceptive use	Supplemental telephone counseling; Structured telephone support	4-month supply of OCPs, condoms, and in-person counseling; general advice for followup as needed	2 RCTs (1,724)	Similar rates of OCP continuation and condom use at 3,6, and 12 months; similar rates of LARC use at 6 months.	Low
	STI rates	Supplemental telephone counseling	4-month supply of OCPs, condoms, and in-person counseling;	1 RCT (1,155)	Similar rates of STIs.	Low
	Pregnancy rates	Supplemental telephone counseling	4-month supply of OCPs, condoms, and in-person counseling;	1 RCT (1,155)	Similar pregnancy rates.	Low
	Abortion rates	Structured telephone support	General advice for followup as needed	1 RCT (569)	Similar rates of abortion in both groups of postabortion patients at 1 year; reduction of subsequent abortion in both groups within 2 years.	Insufficient
STI counseling	NA	NA	NA	No studies	NA	NA
IPV	IPV rates	Interactive online tools	Noninteractive online tools	2 RCTs (1,132)	No difference in repeat IPV between interactive vs. noninteractive online tools in 2 RCTs	Low
	Depression scores	In-person interviews followed by phone calls; interactive online tools	Referral; noninteractive online tools	5 RCTs (2,322)	Telehealth is at least as effective as usual care alternatives for improving measures of depression.	Low
	PTSD scores	Interactive online tools	Noninteractive online tools	2 RCTs (1,182)	No difference in PTSD symptoms between interactive vs. noninteractive online tools.	Low
	Fear, coercive control	Interactive online tools	Noninteractive online tools	2 RCTs (884)	No difference between interactive vs. noninteractive online tools.	Low
	Self-efficacy	Interactive online tools; computerized encounters; in-person interviews followed by phone calls	Noninteractive online tools; in-person encounters; referral	3 RCTs (919)	Telehealth is at least as effective as usual care alternatives for improving self-efficacy scores.	Low
IPV, continued	Safety behaviors	Telephone calls; computerized encounters; in-person interviews followed by phone calls	Usual care; in-person encounters; referral	4 RCTs (1,175)	Telehealth is at least as effective as usual care for increasing safety behaviors.	Low

Preventive Service	Outcome	Intervention	Comparison	Number of Studies;* Study Design; Participants (n)	Overall Effect	Strength of Evidence
	Harms	Interactive online tool	Noninteractive online tool	1 RCT (231)	No difference in patient reported anxiety using a tailored, online safety tool vs. a static version.	Insufficient

*Outcomes reported separately; the same study may report different outcomes

†Family Planning was defined based on Title X guidelines² and included preconception counseling and birth spacing; contraceptive care (screening, counseling, provision, and followup care) was considered separately under reproductive health services.

Abbreviations: IPV=interpersonal violence; LARC=long-acting reversible contraception; NA= not applicable; OCPs=oral contraceptive pills; PTSD=post-traumatic stress disorder; STI=sexually transmitted infection; RCT=randomized controlled trial

Strengths and Limitations

This review provides limited evidence on telehealth interventions for contraceptive care and for screening, evaluation, or treatment of IPV in adolescent and adult women, that resulted in generally similar outcomes compared with in-person care. Limitations of this review include using only English-language articles, studies applicable to the United States, and exclusion of studies published only as abstracts. We did not conduct statistical or graphical methods for assessing for small sample effects (a potential marker for publication bias) due to small numbers of trials and heterogeneity in study design methods, patient populations, and outcomes. Other common reasons studies did not meet inclusion criteria were due to ineligible interventions, populations, or lack of comparators.

Most limitations of the evidence base are related to the lack of relevant telehealth studies for the preventive services included for this review, the relative weakness of study designs used in this field, the rigor with which the studies were conducted, and the completeness of reporting of key outcomes. Other important limitations include the lack of factors related to access, health equity, or potential harms of telehealth.

Future Research Needs and Opportunities

Research is needed to address gaps and deficiencies of existing studies. Additional research is needed to evaluate interventions for women's preventive services that have not been addressed by existing studies, including family planning and STI counseling.

Future trials should evaluate effectiveness of different types of telehealth interventions and strategies and include patients representing broader age ranges; with diverse backgrounds including those who are disadvantaged due to socioeconomic factors, rural location, or geographic isolation; and from other underserved groups at risk for health disparities based on race, ethnicity, disabilities, or gender identity.

Implications and Conclusions

Overall evidence is low for telehealth interventions that supplement usual care to increase contraceptive use and telehealth for IPV interventions; effectiveness is similar compared with usual care for most outcomes. No studies evaluated telehealth services for family planning or STI counseling or evaluated factors related to access, health equity, or potential harms of telehealth.

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1. Methods guide for effectiveness and comparative effectiveness reviews. Rockville, MD: Effective Health Care Program, Agency for Healthcare Research and Quality. Content last reviewed January 2020. <https://effectivehealthcare.ahrq.gov/products/cer-methods-guide>.
2. U.S. Department of Health and Human Services. HHS Announces \$35 Million for Telehealth in the Title X Family Planning Program. Washington, D.C.: U.S. Department of Health and Human Services; 2021. Accessed December 10, 2021.

Introduction

Background

In 2016, the Health Resources and Services Administration (HRSA) partnered with the American College of Obstetrics and Gynecology (ACOG) under a cooperative agreement to support the Women's Preventive Services Initiative (WPSI) to update and develop evidence-based guidelines for women's preventive healthcare services. Currently, the services informed by the WPSI recommendations are covered for most women without cost sharing under the Affordable Care Act (ACA)¹ resulting in a range of preventive services available to women, including contraception, counseling for sexually transmitted infections (STI), and screening for interpersonal violence (IPV), among others. Implementation of these services is guided by health equity to ensure "quality preventive healthcare for women at every stage of life."² Evaluating approaches to care that are inclusive, accessible, and sustainable are important to optimize women's health and reduce disparities. Effective approaches must appeal to both patients and clinicians. As such, care models that include shared decision-making to elicit patient preferences are critical, as they can improve efficacy, patient and clinician satisfaction, and help reduce health disparities.³ Telehealth is one promising approach to meet these needs. However, coverage, reimbursement, and regulation of telehealth services have been slow to evolve.^{4,5}

Traditionally, preventive services for women are either integrated into well woman visits^{6,7} focusing on screening and prevention, or offered opportunistically in the context of managing health conditions. Recent research has found that telehealth may improve some obstetric and gynecologic outcomes⁸ and may be effective for contraceptive care.⁹⁻¹¹ "Telehealth" has been described to include services that utilize information and telecommunications technology in healthcare delivery for a specific patient involving a clinician across distance or time, such as remote real-time clinical visits and remote monitoring. Virtual health technologies are considered part of telehealth services, and may include mobile health applications (apps) or devices that collect patient-generated health data and interventions provided over the internet, such as screening questionnaires and education, but may not be bidirectional. Telehealth for family planning, contraceptive services, and safety decision aids for survivors of IPV¹²⁻¹⁴ show promise as a way to make these services more inclusive, accessible, and cost-effective. Telehealth services have been offered for contraception¹⁵ to facilitate access for more geographically distant patients.¹⁶ Telehealth for IPV services¹⁷⁻¹⁹ have demonstrated acceptability and feasibility for violence prevention and decision support for those in abusive relationships. Specific definitions for telehealth interventions were considered as part of the scoping process for this review.

Telehealth may improve access for underserved populations and those facing barriers to care.²⁰ However, use of telehealth could also widen disparities due to the differences in internet access and digital literacy; equity considerations including age, accessibility barriers, and language barriers.²⁰⁻²⁴ Other issues such as system factors, including access to care or provider shortages, and social determinants of health including transportation barriers, food insecurity, and trauma could also affect how and whether populations at risk for disparities access care using telehealth. Bias and structural racism²⁵ further exacerbate health disparities.²⁶ Given this context, questions remain about how to best promote access and equity while streamlining healthcare delivery for populations²⁷ with unacceptable, ongoing disparities in health outcomes.^{28,29} Updating the approach to preventive services and reproductive healthcare to include telehealth for remote counseling or monitoring may present opportunities to close the gap on these disparities.³⁰ Yet, research has not definitively addressed whether telehealth

increases access to care nor whether it results in similar or better outcomes compared with in-person care for reproductive health (including family planning, contraception, and STI counseling) and IPV in women.

The coronavirus (COVID-19) pandemic led to rapid adoption of telehealth as a strategy to provide health services while reducing the risk of coronavirus exposure.³⁰⁻³³ The pandemic has also highlighted existing health disparities and placed a spotlight on a concerning rise in the incidence of IPV against women and girls as a direct result of COVID-19 mitigation measures, such as stay-at-home orders.³⁴⁻³⁸ Intervention efforts for IPV must consider limitations in accessing the usual channels of support, particularly as many women have been unable to leave abusive or unstable environments due to stay-at-home orders and increasing hardship, likely resulting in increased rates of IPV,³⁹⁻⁴¹ and creating new barriers to reporting. Data from a recent survey highlight the impact of the pandemic on the way that women use and access care.⁴² Compared with men, more women have skipped preventive health services (26% vs. 38%), with differences based on income and overall health, and a disproportionate impact on women of color. Contraceptive access has also been impacted by the pandemic, with more women in younger age groups (18 to 25 years) reporting a delay or inability to access contraception. In the same survey, there were notable increases in the use of telehealth for both men and women, with high overall satisfaction in telehealth use amongst those surveyed.

The Coronavirus Aid, Relief, and Economic Security Act⁴³ provided federal funding to increase telehealth access and provide infrastructure to increase capability and capacity for services for women including provision of family planning.⁴⁴ More recently, additional funding through the American Rescue Plan to enhance funding for Title X has been added to expand telehealth services for comprehensive family planning and related preventive health services.⁴⁵ However, questions remain about whether some services can, or should, continue to occur remotely after the pandemic, given issues of patient perceptions, preferences, and barriers to virtual versus in-person care. Changes in regulatory and payment policies that supported the increases in telehealth during the pandemic may inform patient and clinician preferences. Furthermore, it is also important to identify the disadvantages telehealth may pose in effectively delivering preventive services to specific underserved populations.

Purpose of the Review

This systematic review identifies and synthesizes current research on the use of telehealth for a subset of preventive health services and conditions included in the WPSI guidelines, specifically women's reproductive health (including family planning, contraception, and STI counseling), and IPV services to inform HRSA program planning and identify research gaps. These services are particularly amenable to telehealth interventions and may have been affected by limited in-person care early in the pandemic. A comprehensive understanding of the current context (Contextual Question), effectiveness (Key Question [KQ] 1a and 2a), patient preferences and engagement (KQ 1b, c and 2b, c), and implementation of telehealth in the context of COVID-19 (KQ 1d and 2d) was the foundation for the review. In addition, barriers to and facilitators of the use of telehealth in geographically isolated and underserved settings and populations (KQ 1e and 2e), and evidence about the impact of COVID-19 on the use of telehealth and virtual health for these services, were included. Harms (KQ 1f and 2f) were also addressed.

Evidence on the impact of COVID-19 on the use of telehealth is particularly relevant.⁴⁶ Considerations for the equitable future use of telehealth as a supplement or replacement for some

in-person care needs to consider patient-centered outcomes including patient preferences, content of services and frequency of visits, status of technology, and potential harms. Importantly, this review aims to address the decisional dilemma facing policymakers and practice leaders about the uncertainty regarding the effectiveness of telehealth for delivering specific preventive services and how to best mobilize telehealth to address women's healthcare needs, particularly for those who are geographically isolated or in underserved settings or populations. This review explicitly evaluates outcomes for populations adversely affected by disparities due to socioeconomic disadvantage, racial or ethnic minority status, rural location, or other factors as defined by the National Institute on Minority Health and Health Disparities.⁴⁷

Scope and Key Questions

The review is defined by six sub-questions that address two overarching preventive health services, the first focusing on evidence about women's reproductive health and the second focusing on interpersonal violence as they relate to telehealth interventions. A Contextual Question was also requested to help inform the report. Contextual Questions are not reviewed using systematic review methodology. The Key Questions, Contextual Question, and analytic framework (Figure 1) are below.

Key Questions

KQ 1: For conditions related to women's reproductive health (including family planning, contraception, and STI counseling):

- a) What is the evidence of effectiveness of telehealth as a strategy for delivery of healthcare services for reproductive health?
- b) What are patient preferences and patient choice in the context of telehealth utilization?
- c) What is the effectiveness of patient engagement strategies for telehealth?
- d) What is the impact of COVID-19 on the effectiveness of telehealth and patient engagement?
- e) What are the barriers to and facilitators of telehealth for women's reproductive health in low-resource settings and populations?
- f) What are the harms of telehealth for women's reproductive health?

KQ 2: For IPV (including intimate partner violence and domestic violence):

- a) What is the evidence of effectiveness of telehealth as a strategy for screening and interventions for IPV?
- b) What are patient preferences and patient choice in the context of telehealth utilization?
- c) What is the effectiveness of patient engagement strategies for telehealth?
- d) What is the impact of COVID-19 on the effectiveness of telehealth and patient engagement?

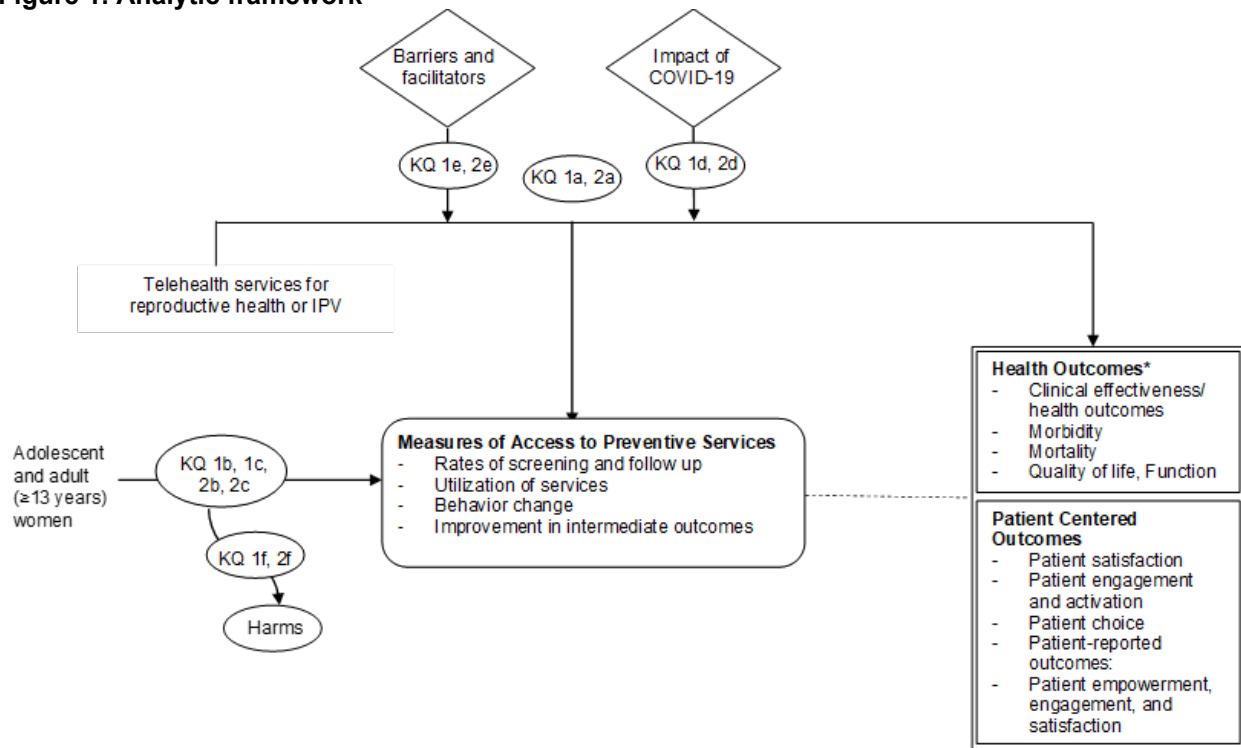
- e) What are the barriers to and facilitators of telehealth for screening and interventions for IPV in low-resource settings and populations?
- f) What are the harms of telehealth for screening and interventions for IPV?

Contextual Question

What guidelines, recommendations, or best practices have been developed for the design and use of telehealth and virtual health technologies for women for any clinical conditions, including patient preferences, patient choice, patient engagement, and implementation in low-resource settings?

Analytic Framework

Figure 1. Analytic framework



Abbreviations: COVID-19= coronavirus disease-2019; IPV=interpersonal violence; KQ=Key Questions

* Outcomes vary by preventive service and are specified in Appendix Table A-2.

Methods

This Comparative Effectiveness Review (CER) follows methods of the Agency for Healthcare Research and Quality (AHRQ) Methods Guide for Effectiveness and Comparative Effectiveness Reviews (hereafter the “AHRQ Methods Guide”).⁴⁸ All methods were determined a priori and a protocol was developed through a process that included collaboration with a technical expert panel, federal partners, and public input on Key Questions and study eligibility criteria. The protocol was registered on the PROSPERO systematic reviews registry (CRD42021282298) and published on the AHRQ website: <https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/telehealth-women-protocol.pdf>.

Literature Search Strategy

We conducted electronic searches in Ovid MEDLINE®, CINAHL®, Embase®, and Cochrane CENTRAL from July 1, 2016, to March 4, 2022. (See **Appendix A** for full strategies). This captures studies of systems that rely on more current technology and follows searches from a recent report that provided an evidence map of telehealth services for women (search end date was December 2016).⁴⁹ We reviewed the studies included in the evidence map for consideration in this review and included information on the dates the studies were conducted, the technologies used, and the dates of publication. Reference lists of included systematic reviews were screened for additional studies and relevant references were carried forward. A Federal Register Notice was posted to encourage submission of unpublished studies through a Supplemental Evidence and Data for Systematic review (SEADS) portal.

Inclusion and Exclusion Criteria and Study Selection

Criteria were established *a priori* to determine eligibility for inclusion and exclusion of abstracts in accordance with the AHRQ Methods Guide⁴⁸ and search strategies were peer reviewed. Study eligibility criteria for this CER were based on the population, intervention, comparisons, outcomes, settings, and study designs of interest (PICOS) framework and the Key Questions. The population of interest was adolescent and adult women (≥ 13 years old), including those who are pregnant, and those eligible for screening, counseling, or treatment for reproductive health services (family planning, contraception, and sexually transmitted infection [STI] counseling) and interpersonal violence (IPV). Details regarding the PICOS are summarized in **Table 1** with additional details in **Appendix Table A-1**. Specific outcomes for each preventive service considered are described in detail in **Appendix Table A-2**.

For this review, the term *women* is used in a biological context, where applicable (e.g., individuals with potential for becoming pregnant without contraception), and can be applied to individuals of all gender identities, including cisgender, transgender, gender non-binary, or otherwise gender expansive for relevant services.

Reproductive health services considered for this review include family planning, contraception, and STI counseling. For this review, family planning services were defined based on Title X guidelines⁵⁰ and include preconception counseling and birth spacing; contraceptive care (screening, counseling, provision, and followup care) was considered separately under reproductive health services. We considered contraceptive care that could be delivered via telehealth by a broad range of health care workers (e.g., physicians, nurses, pharmacists, counselors). Telehealth services for IPV include screening, diagnosis, and treatment for intimate partner violence and domestic violence.

The term *telehealth* is used to define services that may include the use of information and telecommunications technology in healthcare delivery for a specific patient involving a clinician across distance or time, such as remote real-time clinical visits and remote monitoring. For this review we refer to *telehealth* when considering interventions that use technology to facilitate interactions at a distance between specific patients and clinicians and are bidirectional or link to clinical care. Interactions could occur over time (asynchronous) as well as over distance. We considered telephone conversations, e-mail, and short message service (SMS) texts to be telehealth if they allow interaction between patient and clinician (bidirectional) and could replace or supplement an in-person interaction. Interventions were not included if they occurred only in one direction or if they were not personalized (e.g., phone, email or text message notifications, generic messages sent to a group of patients). For example, an app that collects data but does not involve clinical decision-making or individualized patient care was not eligible for inclusion, but an app or website that is bidirectional and personalized based on specific patient input was considered.

Study designs considered for inclusion were comparative studies of any design including trials and observational studies. We considered observational cohort studies, pre-post designs (i.e., comparison of the same population across time points), and before-after studies (i.e., comparison of two time points; may not have the same population). Qualitative studies that evaluated patient and clinician preferences, and barriers to and facilitators of telehealth were included. Descriptive studies with no outcome data or studies that included only data from one point in time (cross-sectional) were not included, although they were considered for studies evaluating the impact of the COVID-19 pandemic and for the Contextual Question. Also excluded were modeling studies or studies that used synthetic data. We reviewed existing systematic reviews and included their results if appropriate. References lists of systematic reviews were also used to identify relevant studies. Commentaries, letters, and articles that described telehealth systems or implementation strategies but did not assess impact were excluded, as were studies published only as conference abstracts. Inclusion was restricted to English-language articles, and studies of nonhuman subjects were excluded. Studies had to report original data to be included.

To ensure accuracy, all excluded abstracts were dual reviewed by two investigators. Each full-text article was independently reviewed for eligibility by two team members. All disagreements were resolved through a consensus process between investigators.

Table 1. PICOS—inclusion and exclusion criteria

PICOS	Include	Exclude
Population	Adolescent and adult women (≥13 years), regardless of pregnancy status; eligible for screening, counseling, or treatment for: <ul style="list-style-type: none"> • Reproductive health services: (family planning, contraception, STI counseling) • IPV services 	<ul style="list-style-type: none"> • Men • Age <13 years
Interventions	Two-way telehealth strategies linked to clinical care with direct contact between a clinician or other provider and a patient or group of patients	One-way telehealth, provider consults, or peer-led interventions not linked to clinical care
Comparators	<ul style="list-style-type: none"> • Usual or in-person care or traditional care models (care provided without telehealth) • Telehealth + in-person care vs. in-person care alone (augmentation) • Clinical services before and after COVID-19 pandemic 	No comparator or comparison groups not clearly described

PICOS	Include	Exclude
Outcomes*	For all conditions and services KQ 1a and 2a: <ul style="list-style-type: none"> • Clinical effectiveness, patient health outcomes • Quality of life, function KQ 1b, 1c, 1d, 2b, 2c, and 2d: Measures or descriptions of patient satisfaction, patient engagement and activation, patient choice KQ 1e and 2e: Measures or descriptions of barriers and facilitators in low-resource settings <ul style="list-style-type: none"> • Patient-reported outcomes: patient empowerment, engagement, and satisfaction • Measures of healthcare access, equity, and utilization <ul style="list-style-type: none"> ○ Rates of screening and followup; adherence; no-shows ○ Utilization KQ 1f and 2f: Harms (e.g. missed diagnosis, incorrect diagnosis, overdiagnosis, delay in treatment, mental health outcomes, stress, anxiety, loss to followup)	<ul style="list-style-type: none"> • Outcomes not relevant to the KQs • Cost analyses • Patient knowledge/education
Clinical Setting	<ul style="list-style-type: none"> • Home, outpatient, primary care, or primary care-referable • No geographic restriction: can be urban, suburban, or rural 	Studies of health care services delivered outside of healthcare settings (e.g., social services, churches, schools, prisons)
Country Setting	Countries with services and practice similar to the U.S. ("very high" on the United Nations Human Development Index)	Countries with significantly different health care systems and fewer resources
Study types and designs	<ul style="list-style-type: none"> • RCTs • Cohort studies with concurrent controls for gaps in RCT evidence • Cohort, pre-post and comparative surveys for before and after start of COVID-19 pandemic (March 2020) • Comparative studies including trial and observational studies, including prospective and retrospective cohort studies and before-after studies (i.e., natural experiments) • Qualitative studies that evaluate preferences, barriers/facilitators 	Case reports, case series
Language	English language	Non-English

*See Appendix Table A-2 for a complete list of outcomes considered for each preventive service

Abbreviations: COVID-19=coronavirus disease-2019; IPV=interpersonal violence; KQ=Key Question; RCT=randomized controlled trial; STI=sexually transmitted infection; US=United States

Data Abstraction and Data Management

Dual review of abstracts was conducted using prespecified inclusion criteria and DistillerSR software. Discrepancies were resolved by discussion and consensus. Investigators tracked results in an EndNote database (Thomson Reuters). For studies meeting inclusion criteria, evidence tables were constructed with the following data: study design, year, setting, country, sample size, patient and clinician type and characteristics (e.g., age, sex, race, reason for presentation, diagnosis, clinician training/background/scope of practice and primary care or specialty type), intervention characteristics (e.g., mode of delivery, duration or frequency, function), and results relevant to each Key Question (KQ), as outlined in the previous PICOS section. All study data were verified for accuracy and completeness by a second team member.

Risk of Bias Assessment of Individual Studies

Predefined criteria were used to assess the risk of bias (also referred to as quality or internal validity) for each individual included study, using criteria appropriate for the study designs (**Appendix A**). Controlled trials and observational studies were assessed using a priori established criteria consistent with the AHRQ EPC approach recommended in the chapter, *Assessing the Risk of Bias of Individual Studies*, described in the *Methods Guide for Effectiveness and Comparative Effectiveness Reviews*⁴⁸ (**Appendix A**). Randomized controlled trials (RCTs) were evaluated using criteria and methods developed by the Cochrane Back and Neck Group,⁵¹ cohort and other observational studies of interventions were evaluated using criteria developed by the U.S. Preventive Services Task Force,⁵² and followed the approach recommended in the AHRQ Methods Guide chapter “Assessing the Risk of Bias of Individual Studies When Comparing Medical Interventions.”⁴⁸ For RCTs, we focused on randomization, allocation concealment, analysis according to randomized groups (intention-to-treat analysis), and attrition. Cohort studies were included to fill gaps in evidence for studies not specifically addressing the COVID-19 pandemic. For before-after studies and interrupted time-series studies assessing effects during the COVID-19 pandemic, criteria included prespecified outcome measures, enrollment methods, and controlling of temporal trends, derived from a National Institutes of Health checklist.⁵³ For surveys, criteria were derived from a set of questions developed by members of this review team for a Health Information Exchange systematic review⁵⁴ and evaluated reported response rates; sampling strategy, selection, and sample characteristics; survey questions; and consideration of confounders and analyses. (See **Appendix A**.)

Each study evaluated was independently reviewed for risk of bias by two team members. Any disagreements were resolved through consensus. Based on the risk of bias assessment, individual included studies were rated as “low,” “moderate,” or “high” risk of bias. High risk of bias studies were not excluded a priori but were considered to be less reliable than low or moderate risk of bias studies when synthesizing the evidence.

Data Analysis and Synthesis

Evidence tables identify study characteristics, results of interest, and risk of bias ratings for all included studies and summary tables highlight the main findings. Studies were reviewed and highlighted using a hierarchy-of-evidence approach, where the best evidence is the focus of the synthesis for each Key Question. RCTs were prioritized and studies with lower risk of bias ratings were given more weight in our synthesis for each clinical indication and outcome. Since the Key Questions varied in nature and scope, the approach to synthesis also varied.

Quantitative data were summarized in summary tables and descriptive analysis and interpretation of the results are provided. Meta-analyses were not performed as they would not produce meaningful results due to limited numbers of studies reporting similar outcomes and due to heterogeneity based on study design, patient population, and interventions. Most trials lacked statistical power to detect differences in outcomes between intervention and comparison groups, limiting further comparisons and interpretation of results. We created categories of results based primarily on the direction of the effect and whether differences were statistically significant. Results are summarized across studies grouped by preventive service and/or telehealth function/modality.

Qualitative data were summarized in tables. For synthesis of qualitative data on barriers, facilitators, and patient preferences (KQ 1b, 1e, 2b, 2e), key statements addressing included outcomes were extracted from each study and categorized according to theme and type of preventive service (family planning, contraception, STI counseling, IPV), and results were summarized in tables.

There were not sufficient data available for any of the KQs to conduct an additional analysis of populations particularly affected by potential barriers to preventive services and telemedicine. In addition, outcomes related to health equity, access, and disparities were considered for inclusion but were not reported by studies.

Grading the Strength of the Body of Evidence

The strength of evidence (SOE) was assessed as high, moderate, low, or insufficient, using the approach described in the AHRQ Methods Guide,⁴⁸ based on study limitations, consistency, directness, precision, and reporting bias. These criteria were applied regardless of whether evidence was synthesized quantitatively or qualitatively. SOE was initially assessed by one researcher and confirmed by a second. Descriptions of criteria and overall grades are described in full in **Appendix A**.

SOE and the corresponding conclusions are expressed in terms of whether the outcome measured and analyzed in the studies is better, worse, or similar with telehealth compared with in-person clinical interactions without telehealth, often referred to in studies as usual care. However, usual care could have different definitions depending on the study, including in-person interactions; interactions providing enhanced versus routine counseling; generic information; information covering other health topics; or no clinical interaction. For this reason, we have provided detailed descriptions of usual care when they were included in the articles.

KQs 1b, 1d, 1e, 2b, 2d, and 2e are descriptive. When applicable, a formal SOE assessment was conducted based on study-design specific criteria. We prioritized reports of U.S. national or regional studies over local reports or data from other countries. We summarized the strengths and limitations of the data collection and analyses of the included reports for these questions, with a focus on elements such as the extent the sample represents the population of interest and the completeness and reliability of the data.

The evidence for KQs 1b, 1d, 1e, 2b, 2d, and 2e was limited and consisted of studies that used qualitative methods (e.g., interviews, case studies, focus groups) as well as quantitative methods and the studies were not comparative. We assessed SOE based on methodological limitations, coherence, adequacy, and relevance. We recognize that studies conducted or published quickly during the pandemic may contribute to overall conclusions, but may not be as rigorous as a study of the same design conducted during other timeframes. This was taken into consideration when considering the body of evidence.

Assessing Applicability

Applicability was considered according to the approach described in the *Methods Guide for Effectiveness and Comparative Effectiveness Reviews*.⁴⁸ We used the PICOS framework to consider the applicability of the evidence base for each Key Question, for example, examining the characteristics of the patient populations (e.g., clinical condition) and study setting to determine how well the identified body of evidence matches these criteria. Information relevant for assessing applicability included the number and diversity of settings or locations as well as characteristics of the population, telehealth intervention, or implementation strategy.⁵⁵ Variability

in the studies may limit the ability to generalize the results to other populations or settings and affect the degree of confidence on how well this evidence base can be applied to other populations and settings.

Peer Review and Public Commentary

Experts were invited to provide external peer review of this systematic review; AHRQ and the Health Resources and Services Administration (HRSA) also provided comments. In addition, the draft report was posted for public comment on the AHRQ website for 4 weeks. All comments were reviewed and used to inform revisions for the final report.

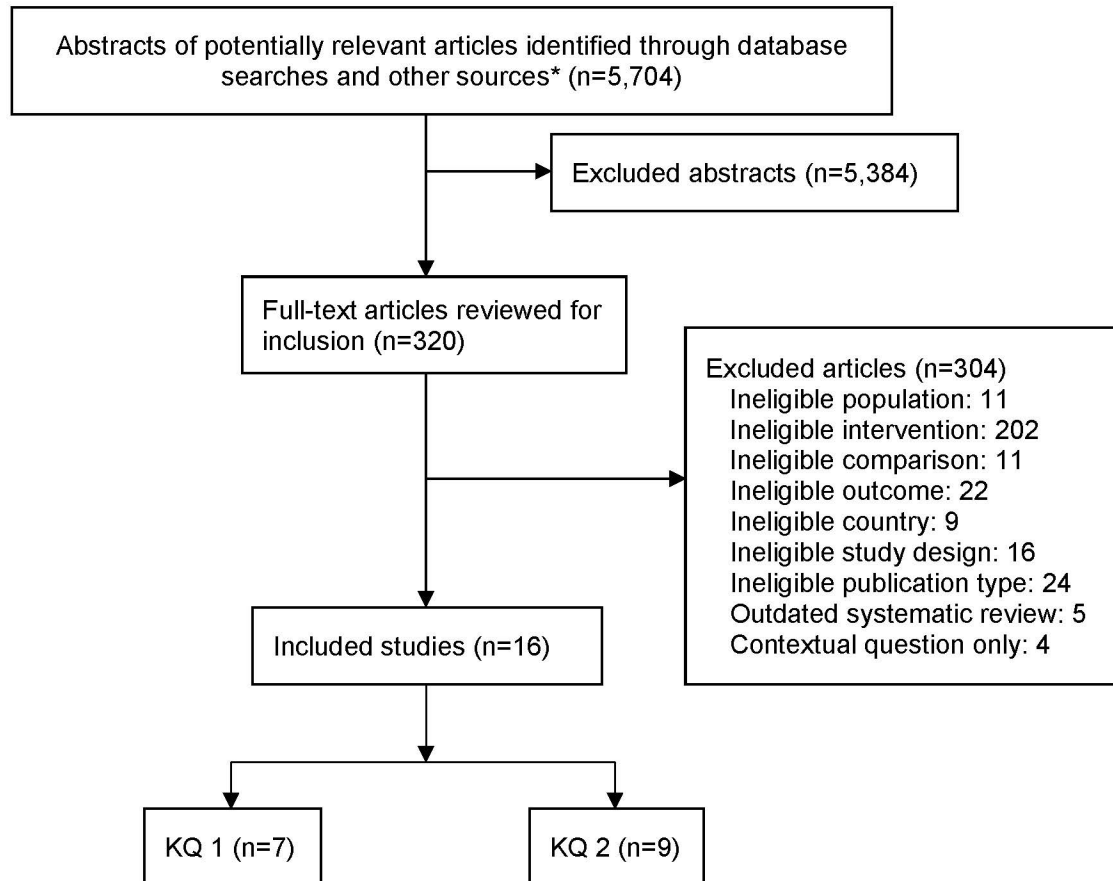
Results

Results of Literature Search

A total of 5,704 references from electronic database searches and reference lists were reviewed. After dual review of titles and abstracts, 320 papers were selected for full-text review, of which 304 articles were excluded. Sixteen studies were included across all Key Questions: eight randomized controlled trials (RCTs), one nonrandomized trial, and seven observational studies (**Figure 2**). Results are arranged by Key Question (KQ), then by outcome, and are summarized below, followed by tables in the accompanying text.

Characteristics of included studies are detailed in **Appendix B**. A list of included studies can be found in **Appendix C** and excluded studies with reason for exclusion are in **Appendix D**. Data abstraction of study characteristics and results, quality assessment for all included studies, and details for grading SOE are available in **Appendixes E, F, and G**, respectively. Appendix references are available in **Appendix H**.

Figure 2. Literature flow diagram



*Other sources include reference lists of relevant articles, studies, and systematic reviews, suggestions from reviewers, etc.

Abbreviations: KQ = Key Question

Key Question 1. Women’s Reproductive Health Services

Key Question 1a. What is the evidence of effectiveness of telehealth as a strategy for delivery of healthcare services for reproductive health?

Key Question 1b. What are patient preferences and patient choice in the context of telehealth utilization?

Key Question 1c. What is the effectiveness of patient engagement strategies for telehealth?

Key Question 1d. What is the impact of COVID-19 on the effectiveness of telehealth and patient engagement?

Key Question 1e. What are the barriers to and facilitators of telehealth for women’s reproductive health in low-resource settings and populations?

Key Question 1f. What are the harms of telehealth for women’s reproductive health?

Key Points

- Evidence of effectiveness of telehealth interventions for contraceptive care was low for contraceptive use at 6 months, low for sexually transmitted infection (STI) and pregnancy rates, and insufficient for abortion rates compared with in-person visits alone. There were no studies of family planning or STI counseling.
- Telephone counseling when used as a supplement to in-person contraceptive care probably results in similar rates of contraceptive use at 6 months (2 RCTs) and may have similar STI and pregnancy rates (1 RCT each).
- Cross-sectional surveys of primary care clinicians suggest that telehealth visits for contraceptive care increased during the COVID-19 pandemic.
- In cross-sectional surveys, the majority of patients and clinicians surveyed reported that telehealth visits for contraceptive care were satisfying and effective.
- No studies reported on patient engagement strategies (KQ 1c) or harms of telehealth interventions (KQ 1f) for reproductive health services.

Description of Included Studies

Two RCTs of 1,724 women and adolescents, five non-RCTs contributed to evidence on the effect of telehealth interventions on contraceptive care (**Table 2**).^{56,57} No studies addressed family planning (e.g., birth spacing, preconception planning) or STI counseling. Both RCTs met criteria for moderate risk of bias (**Appendix F**).^{56,57} Populations ranged from 569 to 1,155 participants in reproductive health clinics⁵⁶ or abortion clinics.⁵⁷ Mean ages ranged from 16 to 27 years with the majority of participants identifying as non-White in both studies (62 to 75%). Neither study specifically reported being conducted in rural settings. Interventions with effects on contraceptive use included telephone-based support or counseling. Studies involved telephone

counseling supplementation to clinic visits in young women and adolescents⁵⁶ or structured telephone support⁵⁷ for women seeking postabortion care. Comparisons included limited supplies of contraception plus in-person counseling⁵⁶ or general advice for followup care as needed.⁵⁷ Both studies reported contraceptive use as the primary outcome; secondary outcomes included self-reported pregnancy and STI rates,⁵⁶ and subsequent abortion.⁵⁷ One trial was conducted in the United States.⁵⁶ and another in the United Kingdom (U.K.).⁵⁷ Each of the interventions used different approaches for contraceptive care. Overall strength of evidence (SOE) was low for impact on contraceptive use, low for STI and pregnancy rates, and insufficient for impact on abortion rates (**Appendix G**). Detailed study characteristics and results can be found in **Appendix E**.

Five cross-sectional studies meeting inclusion criteria assessed the impact of the COVID-19 pandemic on the effectiveness of telehealth and patient engagement for conditions related to women's reproductive health; all studies were of contraceptive care interventions and did not evaluate STI counseling or family planning (**Table 2**).⁵⁸⁻⁶² Surveyed populations included primary care and family planning clinicians, as well as women seeking reproductive care, and ranged in size from 86 to 3,142 participants. Three studies of clinicians examined delivery of telehealth visits for contraception before and during the pandemic, but data were collected at a single timepoint. Studies evaluated the types of contraceptive services provided. Two studies examined patients' use and acceptability of telehealth services for contraception during the pandemic. All five studies were conducted in the United States. Assessment of the risk of bias was low⁵⁹ to moderate^{58,60-62} (**Appendix F**). Details of studies reporting patient-centered outcomes can be found in **Appendix E**.

Detailed Synthesis

KQ 1a. Effectiveness of Telehealth for Reproductive Health Services

Two RCTs evaluated telephone-based contraceptive support to supplement to usual care. An RCT evaluated two interventions on the effectiveness of behavioral counseling on oral contraceptive (OC) adherence in the United States (n=1,155); and compared standard care (S) with clinic visits (C) or clinic plus phone visits (C+P).⁵⁶ Participants were 16 to 24 years old; low income (80%); White (25%), Black (19%), and Hispanic (54%); and the majority self-identified as single or never married (78%). Those receiving standard care received a 4-month supply of OCs, 24 condoms, and a followup appointment at the initial visit, while those in the clinic intervention also received individual educational and behavioral counseling at the initial visit; those in the phone-enhanced intervention also received weekly phone contact with a counselor until they started OCs, followed by monthly calls for 6 months. Outcomes assessed via phone interviews at 3, 6, and 12 months included contraceptive use, reported as continuation of OC. Secondary outcomes included self-reported pregnancy and STI rates. There were no significant differences in OC continuation after 12 months (C+P: 20% [76/384] vs. C: 18% [69/383] vs. S: 20% [77/388]; p=0.77), based on intention-to-treat analyses. Pregnancy (hazard ratio [HR] [95% confidence interval {CI}]: 1.07 [0.72 to 1.59] vs. 1.00 vs. 1.39 [0.95 to 2.03], p=0.22) and STI rates (13 [3.4%] vs. 18 [4.6%] vs. 12 [3.1%]; p=0.50) did not differ between study groups.

A multicenter RCT of contraceptive care following elective abortion in the U.K. evaluated the effectiveness of structured, specialist contraceptive support via telephone at 2 to 4 weeks postabortion compared with general advice to followup with a general practitioner.⁵⁷ Mean age of participants was 27 years; 65 percent were non-White. The primary outcomes were effective

contraceptive use at 6 months postabortion and long-acting reversible contraceptive (LARC) use measured via self-report. There was no statistically significant difference between the telephone intervention and controls for the use of effective contraception methods at 6 months (62% [88/142] vs. 54% [80/148]; mean difference [MD] 8%; 95% CI, -3.4 to 19.2) or LARC at 6 months (42% [60/142] vs. 32% [48/148]; MD 10%; 95% CI, -1.3 to 20.9). There was a statistically significant difference in the proportion of women changing from no method or non-LARC method to a LARC method at 6 months (50%) compared with controls (31%; $p=0.004$). There were no significant differences between groups for the secondary outcome of subsequent abortion at 1 year (10% [26/270] vs. 10% [28/281]; $p=0.10$). Limitations included significant loss to followup, as well as lack of blinding and high participant attrition. Applicability was low given the limited population and narrow clinical setting of those enrolled.

In summary, we judged there to be no difference in contraceptive use (two RCTs, low SOE) STI and pregnancy rates (one RCT, low SOE) for telehealth interventions used to supplement usual care compared with usual care alone, but evidence was insufficient for abortion rates (single smaller RCT).

KQ 1b. Patient Preferences and Patient Choice for Telehealth Utilization

One study assessed patient preferences in the context of telehealth utilization for contraceptive care⁶¹ and one study assessed utilization of telehealth services.⁵⁸ Among patients who received care at a single-family planning clinic in New York City, 86 percent reported being “very satisfied” with their visit and 63 percent reported that the visit completely met their needs. Most of those surveyed agreed that telehealth visits should continue after the pandemic (72%) and half preferred telehealth to in-person care (50%). Though very limited in scope and generalizability, this study supports patient acceptability of telehealth for contraceptive care.

One cross-sectional study examined racial and ethnic differences in utilization of telehealth services at 10 family planning clinics located in Arkansas, Kansas, Missouri, and Oklahoma during the early pandemic (April to July 2020).⁵⁸ Based on a review of electronic health records from this period, 40 percent of a total of 3,142 sexual and reproductive health visits were conducted using telehealth. During this specific time period there were differences in the number of visits conducted via telehealth based on participant race or ethnicity. Among Black participants 31.6 percent of visits were conducted using telehealth, 29.2 percent of visits were among individuals reporting multiple races, and 41.2 percent of visits were among White participants. Visits among Black patients were less prevalent for telehealth visits compared with in-person visits (19.3% vs. 27.7%; $p<0.001$), with similar patterns among those reporting multiple races (2.5% vs. 4.0%; $p<0.05$). Visits by White patients were more prevalent among telehealth visits (61.3% vs. 58.3%; $p<0.05$), as were visits by Asian/Native American/Hawaiian patients (4.0% vs. 2.9%, $p<0.05$) and those with unknown race/ethnicity (12.9% vs. 7.1%; $p<0.001$). There was no significant difference for patients identifying as Latinx (8.6% vs. 8.8%). Findings were limited by a narrow selection of family planning clinics in a single geographic region and did not describe the scope of family planning services; however, the majority of visits were for contraception (64%). Study authors did not further elucidate reasons for observed differences in telehealth visits between groups.

KQ 1d. Impact of COVID-19 on the Effectiveness of Telehealth and Patient Engagement

Patient Preferences and Patient Engagement

One cross-sectional survey evaluated use and acceptability of telehealth services from a patient perspective.⁶¹ Patients who received contraceptive services via telehealth (n=86) at a family planning clinic affiliated with a large academic health center in New York between April and June 2020 were surveyed.⁶¹ There were 169 patients who had an eligible telehealth visit during this period based on their need for contraceptive counseling (e.g., initiate contraception, problems with current method, desire to change or discontinue methods). Of these, 86 (51%) responded to the quantitative survey and 23 participated in a qualitative, in-depth interview. Patients represented different demographic characteristics (12% White, 33% Black, 56% Hispanic), levels of education (33% high school or less), marital status (43% married/partnered), employment status (41% employed full time, 26% employed part time), and the majority (76%) reported never having prior difficulty accessing contraceptive care in the past 5 years. Patient visits primarily took place over the phone (93%) and the remainder (7%) took place via video. Most participants (94%) used smartphones for the visits. Among participating patients, 86 percent reported being “very satisfied” with their visit and 63 percent reported that the visit completely met their needs. The majority indicated that they were not concerned about privacy (67%), though 25 percent reported being somewhat or very concerned about privacy. Interviews revealed that many privacy concerns were regarded as minor and were frequently from non-private home environments where conversations could be overheard. Most patients (72%) agreed that telehealth visits should continue after the pandemic and 50 percent preferred telehealth to in-person care. This study was limited by small sample size from a single, specialty-focused academic health center and had a low response rate, but demonstrated that telehealth was an acceptable mode of delivering and implementing contraceptive care.

Clinician Preferences and Utilization

Three cross-sectional surveys of primary care clinicians suggest an increase in provision of telehealth visits for contraceptive care during the COVID-19 pandemic and high levels (86%) of clinician and patient satisfaction when using telehealth.

A cross-sectional study described results of a survey aimed to evaluate clinician preferences and experiences with rapid expansion of telemedicine for contraceptive counseling in response to the COVID-19 pandemic.⁶⁰ The survey was given to 754 family planning clinicians and was completed by 172 (34% response rate). Participating clinicians had a mean age of 39.9 years, were primarily female (92.9%) and White (68.6%), were physicians in residency training or fellowship (39.7% and 34.6%, respectively), in mostly academic settings (75.6%) and had practice locations across the U.S. Of responders, 54.3 percent reported that they “sometimes or often” used telehealth for contraceptive care prior to the pandemic and 30.8 percent reported they “sometimes or often” used telehealth for contraceptive care during the past 2 months of the pandemic. Of those who responded, 156 reported providing telehealth services during the COVID-19 pandemic. The majority (79.5%) of clinicians strongly agreed that telehealth visits are an “effective way to provide contraceptive counseling” and 84 percent strongly agreed that the “role of telehealth for contraceptive counseling should be expanded even after the pandemic.”

A cross-sectional study surveyed 791 U.S. primary care physicians who delivered sexual and reproductive healthcare to adolescents prior to the pandemic.⁵⁹ Data came from the national DocStyles survey of U.S. physicians. Physician specialties included internal medicine (46.0%), family medicine (31.2%), and pediatrics (22.8%). Surveys were completed between September and October, 2020 and compared pre- and during pandemic timeframes. Survey response rates were 69 percent and 76 percent for physicians in internal medicine or family medicine and pediatrics, respectively. Participants were predominantly male (64.8%), non-Hispanic White (59.7%), represented all regions of the United States, had a median age of 47 years, and a median of 16 years in practice. For contraceptive care, 60.7 percent reported that they used telehealth for contraceptive initiation or continuation during the pandemic, compared with 35.2 percent prior to the pandemic. For STI services, 43.5 percent utilized telehealth during the pandemic compared with 21.7 percent prior. Among physicians who delivered these services, 27.3 percent reported confidentiality concerns about the delivery of sexual and reproductive healthcare via telehealth, though the specific nature of these concerns were not described.

A cross-sectional survey of U.S. physicians (n=1,063) from the Web-based 2020 DocStyles survey compared changes in the provision of family planning-related clinical services before and during the COVID-19 pandemic.⁶² The online survey included primary care physicians (63%), obstetrician-gynecologists (23%), and pediatricians (15%), with nine additional questions specifically evaluating family planning service delivery during the pandemic. Participants represented all U.S. regions, were predominantly male (61.5%), mostly non-Hispanic White (62%), had practiced medicine for more than 10 years (76%), were in a suburban setting (74.6%), and were over 45 years of age (60%). Prior to the pandemic, 27.6 percent reported providing contraceptive initiation by telehealth and 29.4 percent reported managing contraceptive continuation by telehealth. During the pandemic, these proportions increased to 55.8 and 60.1 percent, respectively. Based on physician reporting, there were statistically significant differences in the proportion of those providing LARC placement (41.2% [438] vs. 36.3% [386]; $p<0.05$) and removal (45.1% [479] vs. 40.1% [426]; $p<0.05$) before versus during the pandemic and an increase in the use of telehealth for contraceptive initiation (27.6% [293] vs. 55.8% [593]; $p<0.05$), continuation (29.4% [313] vs. 60.1% [639], $p<0.05$), or renewal (54.9% [584] vs. 62.2% [661]; $p<0.05$) during the same period.

These studies demonstrate strong clinician acceptability among primary care and family planning providers. Limitations include low overall survey response rates and the potential for recall bias regarding specific services delivered and delivery timing. Studies also lacked precision in the definitions of contraceptive and STI services as well as timeframes for the periods pre- and during-pandemic.

KQ 1e. Barriers and Facilitators of Telehealth for Women's Reproductive Health Services in Low Resource Settings

One study examined racial and ethnic differences in the uptake of telehealth services at 10 nonprofit family planning clinics located in Arkansas, Kansas, Missouri, and Oklahoma during the early pandemic (April to July, 2020).⁵⁸ This study (described above) suggests that there are barriers to participation in telehealth for contraceptive care based on demographic groups. Reasons for between-racial group differences were not explored. Another study conducted in a clinic serving the poorest area of New York City also identified privacy concerns as a potential barrier, though notably, participants reporting these concerns still participated in a telehealth visit.⁶¹ Physicians also reported a number of barriers to providing family planning services via

telehealth during the COVID-19 pandemic, including: technical challenges (45.8%), confidentiality concerns (21.8%), billing concerns (32.7%), and patient discomfort (31.2%). Compared with a pre-pandemic assessment of telehealth barriers (31.7%, 17.0%, 23.1%, and 21.9%, respectively), the proportion of physicians reporting each of these barriers increased ($p < 0.05$ for each).

In both studies, surveyed patients included only those who participated in telehealth care, so characteristics of nonparticipants (who may have been most impacted by barriers) were not described. **Appendix Table E-6** provides a summary of the barriers and facilitators for telehealth interventions identified for this report.

Table 2. Main findings by outcomes category of studies of telehealth for reproductive health

Studies (n Patients)	Telehealth Function*	Telehealth Mode†	Clinical Outcomes	Patient-Reported Outcomes
2 RCTs (N=1,724) ^{56,57}	Counseling; contraceptive support	Telephone (2)	~ Contraceptive use ^{56,57} ~ STI rates ⁵⁶ ~ Abortion rates ⁵⁷ ~ Pregnancy rates ⁵⁶	NR
5 cross-sectional studies (N=2,026 physicians ^{59,60,62} and N=3,228 patients ^{58,61})	Contraceptive care: counseling, management ⁵⁸⁻⁶²	Telephone; Video	NR	+Patient acceptability (quant) ⁶¹ +Patient acceptability (qual) ⁶¹

Direction of effect: - , worse outcome with telehealth (none shown); ~ , similar outcome with telehealth; + , improved outcome with telehealth

*Function categories are prevention, screening, counseling, treatment, remote monitoring

†Mode is a description of the technology, like phone, video, SMS, mobile app

Abbreviations: NR=none reported; RCT=randomized controlled trial; SMS=short message service; STI=sexually transmitted infection

Key Question 2. Interpersonal Violence

Key Question 2a. What is the evidence of effectiveness of telehealth as a strategy for screening and interventions for interpersonal violence (IPV)?

Key Question 2b. What are patient preferences and patient choice in the context of telehealth utilization?

Key Question 2c. What is the effectiveness of patient engagement strategies for telehealth?

Key Question 2d. What is the impact of COVID-19 on the effectiveness of telehealth and patient engagement?

Key Question 2e. What are the barriers to and facilitators of telehealth for screening and interventions for IPV in low-resource settings and populations?

Key Question 2f. What are the harms of telehealth for screening and interventions for IPV?

Key Points

- Evidence of effectiveness of IPV telehealth interventions was low for several outcomes including repeat IPV, symptoms of depression, post-traumatic stress disorder (PTSD), fear of partners, or experiences of coercive control.
- Evidence of effectiveness was low for IPV telehealth interventions for improving scores of self-efficacy and low for increasing safety behaviors.
- Evidence for harms of telehealth interventions was insufficient.
- Use of a mobile app for IPV screening in pregnant women increased during the COVID-19 pandemic compared with pre-COVID utilization rates.
- Internet access and digital literacy were reported barriers to use of Web-based meeting platforms for telehealth visits among English-speaking immigrant IPV survivors.
- No trials evaluated patient preferences and choices or patient engagement strategies using telehealth interventions for IPV (KQ 2b, KQ 2c).
- Feeling anxious or upset while engaging with an online IPV intervention tool was similar for both intervention and control groups in the only trial evaluating potential harms.

Description of Included Studies

Six RCTs^{12,18,19,63-65} and a nonrandomized trial⁶⁶ of 2,663 women evaluated the effectiveness of telehealth methods for IPV interventions. One before-after study⁶⁷ and one cross-sectional study⁶⁸ described the impact of COVID-19 on the effectiveness of telehealth for IPV (**Table 3**). One RCT met criteria for low risk of bias¹² and five for moderate risk of bias;^{18,19,63-65} one nonrandomized trial met criteria for moderate risk of bias (**Appendix F**).⁶⁶ No

trials evaluated patient preferences and choices or patient engagement strategies using telehealth interventions for IPV, and one trial of interventions also evaluated harms.⁶³

Trials were conducted in the United States,^{18,64-66} Australia,^{12,19} and Canada,⁶³ and enrolled women with positive responses to IPV screening questions or recent IPV experiences. Trials enrolled between 150 to 720 women from academic medical centers,^{18,63} family planning clinics,⁶⁵ a district attorney's office,⁶⁶ probation programs,⁶⁴ and through online recruitment.^{12,19} Participants were generally age 18 years and older.

The before-after study⁶⁷ evaluated utilization of a mobile pregnancy app; the other cross-sectional study⁶⁸ used qualitative data to evaluate virtual (online) platforms for IPV services among immigrant women and providers to identify changes in IPV services and strategies to ensure safety, as well as identify barriers and facilitators to using virtual platforms. Based on modified risk of bias assessments, one study met criteria for moderate risk of bias⁶⁷ and the other for high risk of bias.⁶⁸ Both studies were conducted in the United States, one in an academic health center and the other in domestic violence organizations; sample sizes ranged from 62 to 959 participants.

Detailed Synthesis

KQ 2a. Effectiveness of Telehealth for Interpersonal Violence Screening and Interventions

Six RCTs of IPV interventions showed no differences between women randomized to telehealth interventions versus comparison or usual care in repeat IPV, depressive symptoms, PTSD scores, fear of partner, coercive control, measures of self-efficacy, and safety behaviors (low SOE). Evidence for harms of telehealth interventions was insufficient.

Repeat IPV

Two of the six RCTs of IPV interventions evaluated repeat IPV, measured by the Severity of Violence Against Women Scale (SVAWS).^{18,19} Both trials evaluated similar versions of a tailored, interactive online safety tool versus a static version, adapted for different populations. A RCT of 720 Spanish or English-speaking women from four regions in the United States randomized women to a tailored, interactive online safety and health intervention (Internet Resource for Intervention and Safety, IRIS) versus a static, non-tailored version of the tool.¹⁸ Nearly 40 percent of the study population was non-White and 10 percent reported female partners. Both groups reported a significant decrease in three SVAWS subscales for psychological abuse (baseline vs. 12 months: intervention, 47.72 vs. 37.85; $p < 0.001$; control, 45.62 vs 35.43; $p < 0.001$), physical abuse (baseline vs. 12 months: intervention, 41.83 vs. 33.83; $p < 0.001$; control, 40.08 vs 31.65; $p < 0.001$), and sexual abuse (baseline vs. 12 months: intervention, 10.94 vs. 8.98; $p < 0.001$; control, 10.51 vs. 8.73; $p < 0.001$). Less abuse occurred over time for both groups, with no differences between groups.

An RCT of 412 women in Australia¹⁹ also evaluated a tailored, interactive, online safety intervention (iSafe) versus a static, non-tailored version. The study population included 27 percent who identified as indigenous (Maori). Both groups demonstrated reduced IPV exposure over time, measured by the SVAWS, with no difference between groups at 12 months (adjusted estimate, -2.47 ; 95% CI, -7.95 to 3.02). A sub-analysis of indigenous women demonstrated a significant effect of the intervention on IPV based on the SVAWS at 6 months (adjusted

intervention estimate, -14.19; 95% CI, -24 to -4.37) and 12 months (adjusted intervention estimate -12.44; 95% CI, -23.35 to -1.54) compared with non-indigenous women.

Depression and Post-Traumatic Stress Disorder

Of the Six RCTs of IPV interventions, five evaluated depressive symptoms and two RCTs also evaluated PTSD.^{18,19,63} All RCTs used versions of the Center for Epidemiologic Studies Depression Scale (CES-D) to evaluate depressive symptoms, although trials did not indicate whether participants met clinical thresholds for depression based on CES-D scores.

An RCT of 306 women screening positive for IPV in family planning clinics in the United States evaluated an IPV intervention consisting of in-person motivational interviews and three subsequent telephone sessions over 4 months compared with a control intervention involving referrals to community-based resources.⁶⁵ Depressive symptoms, measured by CES-D scores, improved (declined) for both groups from baseline to 6 months (intervention, 15.7 vs. 11.7, $p<0.001$; control, 14.3 vs. 11.8, $p<0.0001$). In an adjusted analysis, improvements in scores were greater for the intervention versus control group (adjusted mean change [standard error {SE}], -4.2 [0.6] vs. -2.6 [0.6]; $p=0.07$). Limitations for this study were that the comparison did not isolate the telehealth component to determine its effect and that the referral (comparison group) was vaguely defined.

Four trials^{12,18,19,63} evaluated similar versions of a tailored, interactive online safety tool versus a static version, adapted for different populations of women with a history of IPV, and reported similar outcomes. An RCT of 720 women, described above, in the IRIS trial evaluated depressive symptoms measured by the CES-D, from baseline at 6 and 12-month followup.¹⁸ Depression scores improved for both groups over time (baseline vs. 12-months: intervention, 37.00 vs. 26.82, $p<0.001$; control, 38.73 vs. 26.73; $p<0.001$), with no difference between groups. Results were similar for PTSD symptoms, measured by the PTSD checklist, Civilian Version (PCL-C), a second primary outcome of the trial (baseline vs. 12-months; intervention, 19.06 vs. 15.83, $p<0.001$; control, 19.53 vs. 16.06, $p<0.001$).

An RCT of 462 Canadian women with recent IPV evaluated depressive symptoms, measured by the revised CES-D (CESD-R), from baseline over 3, 6, and 12-month followups for women randomized to a tailored, interactive online safety and health intervention (iCAN Plan 4 Safety), an adapted version of IRIS, or a static non-tailored version of the tool (comparison).⁶³ In the tailored version, women received individualized responses and an action plan based on their responses to questions. Depression scores improved for both groups over time (baseline vs. 12-months: tailored, 40.62 vs. 27.95, $p<0.001$; non-tailored, 39.15 vs. 29.83; $p<0.001$), and did not differ between groups. Results were similar for PTSD symptoms, also measured by the PCL-C, a second primary outcome of the trial (baseline vs. 12-months: tailored, 53.00 vs. 43.29, $p<0.001$; non-tailored, 51.69 vs. 44.45; $p<0.001$; tailored vs. non-tailored, $p=0.269$).

In an RCT of 422 women receiving community supervision for substance use in Australia who experienced IPV or fear of a partner in the previous 6 months, interactive computer modules (I-DECIDE) were compared with a static website containing brief information about IPV and a standard emergency safety plan (comparison).¹² The computer modules addressed healthy relationships, safety, and priorities. Based on responses, women completed an action planning or motivational interviewing module, and an individualized action plan was developed. Depression scores (CESD-R) improved for both groups from baseline to 12-month followup and did not differ between groups (intervention, 30.6 vs. 21.9; control, 32.5 vs. 21.5; $p=0.163$).

Another RCT of 412 women in Australia,¹⁹ also described above, evaluated depressive systems measured by the CESD-R, at 6 and 12 months. Depression scores improved for both groups over time, with no difference between groups (adjusted intervention estimate, -0.98 ; 95% CI, -4.89 to 2.94). A sub-group analysis of primary outcomes by ethnicity compared depression scores for indigenous women compared to non-indigenous women and found statistically significant differences in depression scores at 3 months (adjusted intervention effect -8.7 ; 95% CI, -15.9 to -1.6), but not at 6 or 12 months.

In summary, we judged there to be no difference between groups in depression scores (5 RCTs with similar or slightly improved measures, low SOE) and no difference in groups for PTSD scores (2 RCTs, low SOE).

Interpersonal Violence–Related Outcomes

In an RCT, experiences of coercive control, measured by the Women’s Experiences with Battering (WEB) scale, improved (scores declined) from baseline to 12 months for women randomized to either a tailored interactive online safety and health intervention (iCAN Plan 4 Safety) or a static non-tailored version of the tool (comparison) (tailored, 50.15 vs. 39.62 , $p<0.001$; non-tailored, 49.93 vs. 40.94 ; $p<0.001$).⁶³ Results did not differ between groups ($p=0.645$). A second RCT¹⁸ used the WEB scale to measure experiences of coercive control and reported improvement (lower scores) for both groups over time, but no difference between groups. In another RCT of 422 women, the level of fear of a perpetrator, measured by responses on a visual analogue scale, similarly improved (decreased) from baseline to 12 months for women randomized to interactive computer modules (I-DECIDE) or a static website containing brief information about IPV and a standard emergency safety plan.¹²

In summary, results of the telehealth studies that evaluated interactive online tools indicated improvements in IPV-related measures for both intervention and control groups without significant differences between groups (low SOE).

Self-Efficacy

Three RCTs evaluated self-efficacy as an outcome measure.^{12,64,65} Self-efficacy scores, measured by the Generalized Self-Efficacy Scale, improved (increased) from baseline to 12 months for both groups in an RCT of 422 women evaluating interactive computer modules (I-DECIDE) compared with a static website containing brief information about IPV and a standard emergency safety plan (comparison).¹² However, in this RCT, scores increased more in the control group (intervention, 27.0 vs. 27.8 ; control, 26.3 vs. 29.0 ; $p=0.0023$).

An RCT of 191 women receiving community supervision for prior substance use in the United States evaluated self-efficacy scores from baseline over 3-months followup for women randomized to computerized versus in-person services (comparison).⁶⁴ These included IPV education, screening, and risk assessment; safety planning; identification of social support; goal setting; and identification of service needs and referrals. A printout of services selected with referrals and action plans were provided to both groups. Results indicated improved (increased) self-efficacy scores, measured by the Domestic Violence Self-Efficacy Scale (DVSE), for both groups (computerized, 20.29 vs. 22.18 , $p<0.001$; in-person, 20.93 vs. 22.85); improvements in scores did not differ between groups (0.36 ; -2.20 to 2.91). The clinical significance of the 2–point mean increase in scores is unclear.

Self-efficacy scores, measured by the DVSE, also improved from baseline to 6-months followup for both groups in a RCT of 306 women comparing in-person motivational interviews

and three subsequent telephone sessions with referrals to community-based resources (comparison) (intervention, 75.9 vs. 82.1, $p=0.0002$; control, 76.6 vs. 80.7, $p=0.0087$).⁶⁵ In an adjusted analysis, improvements in scores did not differ between intervention versus control groups (adjusted mean change [standard error], 6.1 [1.6] vs. 3.7 [1.5]; $p=0.255$). In summary, we judged there to be no difference between groups in self-efficacy scores (three RCTs with similar or slightly improved measures, low SOE).

Safety Behaviors

Four trials evaluated efforts to adapt safety behaviors as outcome measures.^{12,18,64,66} A nonrandomized trial of 150 women with protection orders against an intimate partner in the United States evaluated an intervention consisting of six telephone calls over 8 weeks to discuss safety-promoting behaviors compared with usual care.⁶⁶ Outcomes were measured using the Safety-Promoting Behavior Checklist that included 15 behaviors, such as removing weapons, hiding keys and money, and asking neighbors to call police if violence begins. Women in the intervention group averaged two new safety behaviors over the 18-month followup period ($F_{4,144}=5.45$, $p<0.001$), which was significantly higher than the control group (difference, $F_{4,144}=2.81$; $p=0.028$).

The proportion of women receiving IPV services over the previous 90 days increased from baseline over 3-months for women randomized to either computerized or in-person services (comparison) in an RCT⁶⁴ of 191 women receiving community supervision for substance use in the United States (computerized, 8.3% vs. 19.4%, $p<0.05$; in-person, 4.0% vs. 16.2%, $p<0.05$); changes did not differ between groups (0.51; 0.07 to 3.92).

In an Australian RCT, the number of helpful behaviors for safety and wellbeing undertaken increased from baseline to 12 months for women randomized to interactive computer modules (I-DECIDE) or a static website containing brief information about IPV and a standard emergency safety plan.¹² Each group adopted a mean of 4.2 actions over time, with no difference between groups. In a U.S. RCT¹⁸ of a similar interactive, online tool, there was an increase of safety behaviors from baseline to 6 to 12 months for women randomized to an interactive computer module (IRIS) versus a static website, with no difference between groups.

In summary, we judged there to be no difference between groups in safety behaviors scores (4 RCTs with similar or slightly improved measures, low SOE)

Harms of Interventions

One trial reported potential harms of an online IPV intervention using a scoring system based on a 5-point scale.⁶³ There was a similar number of the study population that reported that “working through the online tool made me anxious or upset” (tailored, 29.3% vs. non-tailored, 24.9%). However, there was no difference in potential harms between the tailored intervention and control group (mean [standard deviation] 3.22 [1.25] vs. 3.33 [1.21], $p=0.380$). No other studies evaluated harms of telehealth interventions for IPV, therefore we judged the evidence to be insufficient to make a conclusion.

KQ 2d. Impact of COVID-19

Two studies evaluated the impact of telehealth strategies to evaluate IPV screening frequency or access to services during the COVID-19 pandemic using a mobile app, phone, or video conference.

A before-after study of 950 women evaluated the use of self-screening tool for IPV as part of an optional module in a prenatal care app.⁶⁷ The population included pregnant women (80% white) attending an academic health center and compared patients who used the mobile app and completed the IPV screening module during COVID-19 stay-at-home order (March 23 to May 15, 2020) with patients who used the mobile app before the COVID-19 pandemic. Using a quality improvement pilot evaluation strategy, outcomes assessed included a comparison of IPV screening frequencies and IPV incidence rates during these two time periods. The mobile app provides resources to users (e.g., local shelter), analyzes user information to predict pregnancy adverse effects, and assesses patients' psychosocial risks. The IPV screening module includes two questions from the Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System measures of physical violence and forced sexual acts, and 10 questions from the WEB scale to quantify psychological abuse. Study results demonstrated an increased use of an IPV screening mobile app during COVID-19 stay-at-home order compared with pre-pandemic use, from 67 percent (368/552) to 85 percent (347/407) (95% CI, 17% to 28%; $p < 0.001$), but reported similar levels of physical violence, sexual violence, and psychological abuse before and during the stay-at-home order ($p = 0.56$).

In a cross-sectional study,⁶⁸ qualitative interviews were conducted with IPV survivors ($n = 45$) and 17 providers who serve them to assess the barriers to accessing IPV services using a virtual platform during the COVID-19 pandemic. Participants included English-speaking immigrant IPV survivors from several U.S. regions (i.e., Massachusetts, New Jersey, Texas, Illinois, Maryland, Virginia, and Washington D.C.) and care providers. Interviews were conducted over the phone or via video conference to evaluate the effect of the COVID-19 pandemic on their relationship, accessibility of IPV services, and identification of other pertinent needs or safety concerns. Participants reported challenges with accessing a virtual platform (i.e., lack of internet access, digital illiteracy) and preference for face-to-face interactions, as it allowed survivors to leave their homes. Providers reported strengthening their Web-based platforms to tailor safety plans using code words to indicate that help is needed and hand signals during video conferences to mitigate risk while using video and telephone visits, and using telephone applications and text messaging to check-in with survivors.

Major limitations of studies include low power to detect change in IPV incidence.^{67,68}

Table 3. Main findings by outcome category of studies of telehealth for interpersonal violence

Studies (n Patients)	Telehealth Function*	Telehealth Mode†	IPV-Related Outcomes	Mental Health Outcomes	Access-Related Outcomes	Patient-Reported Outcomes
6 RCTs ^{12,18,19,63-65} (N=3,714); 1 nonrandomized trial ⁶⁶ (N=150)	Counseling; education	Phone ^{12,63,64} ; online ^{18,19,65,66}	~Repeat IPV ^{18,19} ~Fear of partner ¹² ~Coercive control ⁶³ ~Safety behaviors ^{12,18,64,66}	~Depressive symptoms ^{12,18,19,63-65} ~PTSD symptoms ^{18,63}	NR	~Self-efficacy ^{12,64,65} ~Harms ⁶⁵

Studies (n Patients)	Telehealth Function*	Telehealth Mode†	IPV-Related Outcomes	Mental Health Outcomes	Access-Related Outcomes	Patient-Reported Outcomes
1 before-after (959) ⁶⁷ ; 1 cross-sectional (45 patients; 17 providers) ⁶⁸	Screening; assessment of access ⁶⁸	Mobile app ⁶⁷ ; phone or video conference ⁶⁸	~Levels of physical violence, sexual violence, and psychological abuse	NR	+ Use of IPV screening mobile app during COVID-19 pandemic	-Patients reported challenges with accessing virtual platform +Providers reported strengthening their virtual platforms

Direction of effect: -, worse outcome with telehealth; ~, similar outcome with telehealth; +, improved outcome with telehealth

*Function categories are prevention, screening, counseling, treatment, remote monitoring

†Mode is a description of the technology, like phone, video, SMS, mobile app

Abbreviations: COVID-19=coronavirus disease-2019; IPV=interpersonal violence; NR=not reported; PTSD=post-traumatic stress disorder; RCT=randomized controlled trial; SMS=short message service

Contextual Question

What guidelines, recommendations, or best practices have been developed for the design and use of telehealth and virtual health technologies for women for any clinical conditions, including patient preferences, patient choice, patient engagement, and implementation in low-resource settings?

In response to the COVID-19 pandemic there was a rapid shift in clinical care to provide clinical services using telehealth platforms. Slowly, guidance emerged in response to the need to support stay-at-home orders while continuing to provide clinical care, including preventive services. Initially, the move to telehealth was reactive and guided by available resources. As the pandemic progressed, data emerged about delays in screening,⁶⁹ increased incidence of advanced disease,⁷⁰⁻⁷² and increasing disparities in preventive care.⁷³ This resulted in best practices to promote the effective and equitable delivery of healthcare.⁷⁴⁻⁷⁹ Although there are no formal guidelines for telehealth delivery of preventive services, guidance by leading professional organizations for the use of telehealth services can be found in **Table 4**. None of the guidance specifically addresses low-resource settings.

As the pandemic has continued, formal guidelines from the Centers for Medicare & Medicaid Services and others on the healthcare system side have emerged as a response to billing and reimbursement needs, in addition to efforts to optimize patient health and safety, and to help guide clinicians.⁸⁰⁻⁸³ While screening guidelines have not changed in response to the pandemic,^{84,85} methods for facilitating appropriate and timely screening have been revised to reflect the changing healthcare needs,⁷⁶ in particular for those at higher risk for healthcare disparities, including those with limited resources due to geography, socioeconomic status, or local resources.

Table 4. Professional guidance for the use of telehealth

Organization	Topic Area	Guidance/Best-Practices
American College of Obstetricians and Gynecologists (ACOG) ⁷⁴	General Telehealth	<p>Obstetrician-gynecologists and other physicians should consider becoming familiar with and adept in telehealth technology. In most states, physicians, nurses, and other healthcare providers must be licensed in the state where the patient is located and may also need to be credentialed at the facility where the patient is located.</p> <p>It is important that the patient-physician relationship is upheld and valued in the treatment plan, and physicians who provide telehealth should examine their state laws and medical board definitions closely to ensure that their practices are compliant.</p> <p>Obstetrician-gynecologists and other physicians who provide telehealth should make certain that they have the necessary hardware, software, and a reliable, secure internet connection to ensure quality care and patient safety.</p> <p>Physicians who provide telehealth must comply with the Health Insurance Portability and Accountability Act (HIPAA) privacy and security rules and also should be aware of the unique security risks posed by virtual healthcare technology, which can be vulnerable to outside threats</p> <p>In response to the COVID-19 pandemic, many elements of a well-woman examination might be conducted with virtual counseling sessions, with the in-person physical examination deferred to a later date or performed on an as-needed basis.⁷⁵</p>
Women's Preventive Services Initiative (WPSI) ⁷⁶	General Telehealth, preventive services	<p>The WPSI encourages healthcare professionals to continue to offer preventive services for their patients through telehealth platforms whenever possible. Healthcare professionals should consider telehealth modalities as an alternative to in-person preventive visits and services.</p> <p>Many preventive services on the Well Woman Chart (https://www.womenspreventivehealth.org/wellwomanchart/) that involve screening, assessment, and counseling can be done via telehealth. It is important to note that in some situations, a physical examination may be indicated to address the particular preventive service being addressed. However, some aspects of the preventive visit, such as obtaining relevant medical history, family history, review of systems, counseling, education, and potential prescription could occur via telehealth, with the physical examination conducted at a later time during a subsequent in-person visit.</p> <p>The following preventive services may be done via telehealth:</p> <ul style="list-style-type: none"> • Contraceptive counseling, discussion of methods, and prescribing contraceptives that do not require an in-person visit such as intrauterine devices or implants. • Interpersonal and domestic violence screening and discussion of available resources • Sexually Transmitted Infection prevention counseling • Postpartum contraceptive counseling, discussion of methods, and prescribing contraceptives that do not require an in-person visit • Counseling regarding folic acid supplementation
U.S. Preventive Services Task Force (USPSTF)	Preventive services	<p>The USPSTF does not have formal guidelines regarding telehealth, however, they do note preventive services that could easily get worse over time should be continued via telehealth and if appropriate, in-person visits. IPV may be hard to recognize via telehealth.</p>

Organization	Topic Area	Guidance/Best-Practices
Centers for Disease Control and Prevention (CDC) ^{77,78}	General Telehealth during COVID-19 pandemic	<p>Telehealth services can facilitate public health mitigation strategies during this pandemic by increasing social distancing. These services can be a safer option for healthcare providers and patients by reducing potential infectious exposures. They can reduce the strain on healthcare systems by minimizing the surge of patient demand on facilities and reduce the use of PPE by healthcare providers.</p> <p>Maintaining continuity of care to the extent possible can avoid additional negative consequences from delayed preventive, chronic, or routine care. Remote access to healthcare services may increase participation for those who are medically or socially vulnerable or who do not have ready access to providers. Remote access can also help preserve the patient-provider relationship at times when an in-person visit is not practical or feasible.</p> <p>During COVID-19, it is critical that access to family planning services remains available while keeping healthcare providers and their patients safe.</p>
American Academy of Family Physicians (AAFP) ⁸⁶	General Telehealth and Telemedicine	<p>The AAFP supports expanded use of telehealth and telemedicine as an appropriate and efficient means of improving health, when conducted within the context of appropriate standards of care. The appropriateness of a telemedicine service should be dictated by the standard of care and not by arbitrary policies. Available technology capabilities as well as an existing physician-patient relationship impact whether the standard of care can be achieved for a specific patient encounter type.</p> <p>The AAFP recommends streamlined licensure processes for obtaining several medical licenses that would facilitate the ability of physicians to provide telemedicine services in multiple states. The AAFP encourages states to engage in reciprocity compacts for physician licensing, especially to permit the use of telemedicine. Within a state licensure framework, the AAFP strongly believes that patients with an established relationship, who are traveling, should be allowed to be treated by their primary care physician, so long as the physician is licensed in the state in which the patient receives their usual care.</p> <p>As telemedicine services are expanded and utilized to achieve the desired aims, it is imperative that outcomes are closely monitored to ensure disparities in care are not widened among vulnerable populations, attributed to increased use of telemedicine. Policies should acknowledge the geographical and socioeconomic disparities that exist and could be exacerbated by the improper adoption of telehealth if not explicitly addressed.</p> <p>Access to broadband is a social determinant of health. All patients and practices should have broadband access to support delivery of telehealth services in accordance with AAFP's policy on Health Care for All.</p>
American Academy of Pediatrics (AAP) ⁷⁹	Telehealth during COVID-19 pandemic	Updated AAP interim guidance strongly urges continued use of telehealth and in-person services so that all children and adolescents have access to healthcare during and after the pandemic.

Abbreviations: STD=sexually transmitted disease; STI=sexually transmitted infection;

Family Planning Services

Many organizations, including the American College of Obstetricians and Gynecologists (ACOG), American Academy of Family Physicians (AAFP), World Health Organization (WHO), International Federation of Gynaecology and Obstetrics (FIGO), and Women's Preventive Services Initiative (WPSI), among others,⁸⁷ have recommended that access to family planning services should be available via telehealth, especially during the COVID-19

pandemic.^{74,78} Notably, some of these services were offered via telehealth prior to the pandemic and were effective and acceptable to both patients and clinicians.⁸ These services have continued to remain feasible, safe and acceptable for patients throughout the pandemic.⁸⁸

Contraception

Several groups, including those who support the use of telehealth for family planning services,⁸⁷ have recommended reducing barriers to contraceptive access during the COVID-19 pandemic through a variety of mechanisms. These include performing new patient contraceptive visits via telehealth, prescribing multi-month contraception at reduced or no cost, providing counseling about postponing removal of LARC, prioritizing in-person contraceptive visits to placement of LARC while performing pre-procedural counseling via telehealth, training and offering self-administered injectable contraception, and utilizing pharmacist prescribed contraception.⁸⁹

Sexually Transmitted Infection Counseling

No organizations provide specific guidance or recommendations for STI counseling via telehealth. Recommendations by the CDC suggest reducing barriers to STI testing by increasing access to self-collected STI screening, when appropriate. The CDC and AAP recommend that in-person STI management be reserved for symptomatic patients who have a risk for developing complications, while low-risk STI screening and uncomplicated symptom management be performed via telehealth.^{90,91}

Interpersonal Violence

A proposed option to facilitate routine screening for IPV during the COVID-19 pandemic is to include telehealth via technology-enabled interventions, which has been shown to be preferred by IPV survivors in other contexts.^{37,92} Organizations such as the National Network to End Domestic Violence, the National Coalition Against Domestic Violence, the National Domestic Violence Hotline, the Sexual Violence Research Initiative, and the Center for Court Innovation have emphasized the importance of continued screening via telehealth visits with clinicians using trauma informed approaches.^{37,92} While telehealth may offer many benefits and can provide IPV screening that might otherwise not be available under stay-home orders, organizations have recommended that digital tools should be used to augment screening rather than replace it entirely.^{37,92} More research is needed to identify how digital screening tools and telehealth IPV screening could negatively impact underserved patients. It is recommended that providers who serve immigrant communities be trained to be culturally sensitive when addressing the issue of IPV, and to be able to provide local resources specifically for immigrant patients.⁶⁸ Prior to the pandemic, online resources allowed for effective screening, and this remains a promising tool in order to improve access to care and promote patient safety given the ongoing pandemic. Screening for IPV during the COVID-19 pandemic has presented many challenges.

Discussion

Key Findings and Strength of Evidence

The key findings of this review are summarized in **Table 5** and in the strength of evidence (SOE) table (**Appendix Table G-1**). Sixteen studies were identified for inclusion and were limited to contraceptive care and interpersonal violence (IPV) services (8 randomized controlled trials [RCTs], 1 nonrandomized trial, 1 before-after study, and 6 cross-sectional studies). Studies showed no differences in outcomes between telehealth interventions used to supplement in-person care and comparisons for rates of contraceptive use (low SOE), sexually transmitted infection (STI) (low SOE), and pregnancy (low SOE); evidence for rates of abortion was insufficient. For IPV services, there were no differences between telehealth interventions and comparisons for repeat IPV, depressive symptoms, post-traumatic stress disorder (PTSD), fear, coercive control, self-efficacy, and safety behaviors (low SOE), and insufficient evidence for harms of interventions. No studies evaluated harms of telehealth interventions for reproductive health services, including contraceptive care.

Telehealth interventions included both synchronous and asynchronous interventions aimed at providing access to reproductive health or IPV services outside of an in-person clinical visit using video, websites, mobile app, or telephone to supplement or replace in-person care. Findings suggest that several of these strategies could facilitate the uptake of telehealth for these preventive services and can result in outcomes mostly similar to in-person care.

Surveys of clinicians utilizing telehealth for contraceptive care during the COVID-19 pandemic demonstrate an increase in telehealth visits compared with pre-pandemic use. Both patients and clinicians found telehealth for contraceptive care to be satisfying and effective. Newer studies support these findings, including similar patient perceptions of high-quality counseling for those self-selecting telehealth versus in-person care.⁹³

Studies evaluating the effectiveness of telehealth methods for IPV interventions demonstrated differences in scores for depression favoring the intervention in one trial but not in four others; increase in self-efficacy favoring the control group in one trial; and more helpful safety behaviors for the intervention group in one trial. Trials indicated no differences for other outcomes. Measures were predominantly based on clinical scales that may have limited relevance or unclear diagnostic implications. In addition, most studies of IPV interventions were conducted outside clinical settings or practices, but are feasible for implementation within clinical practice. Surveys reflect how strategies to ensure safety and privacy when using virtual platforms for IPV interventions are critical.

Studies conducted during the COVID-19 pandemic were largely cross-sectional studies and did not assess the impact of the pandemic on telehealth services provided or the effectiveness of care. Rather, these studies offer a snapshot of utilization patterns or patient perspectives and provide a low level of evidence to inform this question. For example, a study conducted in 10 family planning clinics in different states reported differences in rates of utilization by race and ethnicity. The study reported the number of patients who accessed services during the pandemic and captured differences in uptake and use. While it may reflect potential barriers to telehealth and disparities in access, it does not account for other contributing factors such as social determinants of health, technology services, internet access, or translation services. Studies do not account for regional differences on the impact of the pandemic, nor do they account for clinic-level differences in available resources for telehealth provision. While some studies report

on service acceptability,^{60,61} measures of effectiveness are notably absent. The cross-sectional design of the available studies also increases the risk of recall bias from participants.

Barriers to telehealth implementation include limitations in internet access, lack of comfort with technology, and lack of resources for engaging in telehealth services. The impact of telehealth on patient engagement, access to care, health equity, and harms is uncertain.

Our review highlights a substantial gap in the evidence to inform telehealth interventions for family planning, contraception, STI screening, and IPV services. More evidence is needed on the benefits or potential harms of these interventions. While some findings of this review suggest a small benefit for a limited number of outcomes, further well-designed studies, such as RCTs with clearly defined comparison groups and health outcomes, are needed to improve understanding around the effective telehealth interventions that address women's preventive healthcare needs.

Table 5. Summary of evidence: Effectiveness of telehealth interventions versus comparator

Preventive Service	Outcome	Intervention	Comparison	Number of Studies;* Study Design; Participants (n)	Overall Effect	Strength of Evidence
Family Planning†	NA	NA	NA	No Studies	NA	NA
Contraception	Contraceptive use	Supplemental telephone counseling; structured telephone support	4-month supply of OCPs, condoms, and in-person counseling; general advice for followup as needed	2 RCTs (1,724)	Similar rates of OCP continuation and condom use at 3,6, and 12 months; similar rates of contraceptive or LARC use at 6 months.	Low
	STI rates	Supplemental telephone counseling	4-month supply of OCPs, condoms, and in-person counseling	1 RCT (1,155)	Similar rates of STIs.	Low
	Pregnancy rates	Supplemental telephone counseling	4-month supply of OCPs, condoms, and in-person counseling	1 RCT (1,155)	Similar pregnancy rates.	Low
	Abortion rates	Structured telephone support	General advice for followup as needed	1 RCT (569)	Similar rates of abortion in both groups of postabortion patients at 1 year; similar reduction in subsequent abortion rates within 2 years.	Insufficient
STI Counseling	NA	NA	NA	No studies	NA	NA
IPV	Repeat IPV	Interactive online tools	Noninteractive online tools	2 RCTs (1,132)	No difference in repeat IPV between interactive vs. noninteractive online tools in 2 RCTs.	Low
	Depression scores	In-person interviews followed by phone calls; interactive online tools	Referral; noninteractive online tools	5 RCTs (2,322)	Telehealth is at least as effective as usual care alternatives for improving measures of depression.	Low
	PTSD scores	Interactive online tools	Noninteractive online tools	2 RCTs (1,182)	No difference in PTSD symptoms between interactive vs. noninteractive online tools.	Low
	Fear, coercive control	Interactive online tools	Noninteractive online tools	2 RCTs (884)	No difference between interactive vs. noninteractive online tools.	Low
	Self-efficacy	Interactive online tools; computerized encounters; in-person interviews followed by phone calls	Noninteractive online tools; in-person encounters; referral	3 RCTs (919)	Telehealth is at least as effective as usual care alternatives for improving self-efficacy scores.	Low
	Safety behaviors	Telephone calls; computerized encounters; in-person interviews followed by phone calls	Usual care; in-person encounters; referral	4 RCTs (1,175)	Telehealth is at least as effective as usual care for increasing safety behaviors.	Low
	Harms	Interactive online tool	Noninteractive online tool	1 RCT (231)	No difference in patient reported anxiety using a tailored, online safety tool vs. a static version.	Insufficient

*Outcomes reported separately; the same study may report different outcomes

†Family Planning was defined based on Title X guidelines² and included preconception counseling and birth spacing; contraceptive care (screening, counseling, provision, and followup care) was considered separately under reproductive health services.

Abbreviations: LARC=long acting reversible contraception; NA= not applicable; OCPs=oral contraceptive pills; PTSD=post-traumatic stress disorder; RCT=randomized controlled trial; STI=sexually transmitted infection; RCT=randomized controlled trial

Findings in Relation to What Is Already Known

While this systematic review demonstrates a paucity of data to inform the effectiveness of telehealth interventions for family planning, contraception, STI counseling, or IPV services, other systematic reviews have found that telehealth interventions for other women's health services (e.g., smoking cessation, breastfeeding, medication abortion, and high-risk obstetric scheduling) were associated with improved clinical outcomes.⁸ Our findings are consistent with a 2019 systematic review that found that telehealth interventions were effective for contraceptive continuation, but the review did not include interventions for contraceptive care that were bidirectional as required in the current review.

Remote provision using telehealth strategies for contraceptive care and reproductive health services is not a new practice. Prior to the COVID-19 pandemic, a wide range of reproductive health services were already being offered via telehealth.⁹⁴ The use of telehealth for contraceptive care is increasingly more common, as demonstrated by a 2017 survey indicating that contraceptive care (e.g., counseling, surveillance, provision) represented four of the five most commonly reported uses of telehealth for reproductive healthcare services.⁹⁴ Currently there are no federal limitations to the use of telemedicine for contraceptive services, but variation in state laws that may have different requirements for in-person services could impose specific limitations for telehealth.⁹⁵

Telehealth platforms (e.g., telephone and video visits) have also been effectively used to provide access to medication abortion and have been a viable care strategy for over a decade.^{96,97} More recently, the American Academy of Family Physicians (AAFP) has endorsed the expanded use of telehealth for reproductive health services, including medication abortion.^{98,99} As women face an increase in state-by-state abortion restrictions,¹⁰⁰⁻¹⁰² access to these services is becoming more limited,¹⁰³ particularly among those who already have limited access to reproductive healthcare.¹⁰⁴ Importantly, telehealth for medication abortion has been shown to be an effective and safe alternative and is acceptable to patients compared with in-person care.¹⁰⁵ Guidance on implementation of these services in the face of the COVID-19 pandemic is also available¹⁰⁶ and supported by organizations such as American College of Obstetricians and Gynecologists (ACOG), the American Board of Obstetrics and Gynecology, and the Society for Maternal-Fetal Medicine, among others.¹⁰⁷

Clinical decision aids are another example of how technology has been utilized to enhance clinical care. The clinical decision aids evaluated for this review utilized online, individually tailored tools for IPV interventions compared with static versions of the online tool.^{12,18,19,63} Importantly, these decision aids provided an evidence-based tool to support survivors and clinicians to deliver trauma informed care to IPV survivors. Although other clinical decision aids were not evaluated in the context of telehealth interventions for this review, they could be applied as examples of tools that could be tested or adapted to facilitate care or serve as clinician extenders. For example, in a systematic review of achieving health equity in preventive services, cancer screening rates were higher in patients provided with navigation, including reminder calls, to facilitate receipt of preventive services.¹⁰⁸ Clinical decision aids have been described as effective methods to facilitate clinical care and to help patients navigate the clinical space.⁹⁴ Future research could consider the role of decision aids and patient navigation strategies that are amenable for use in the telehealth setting. For example, a mobile app used as a clinical adjunct for contraceptive decision support improved contraceptive use at 3 and 6 months and increased patient satisfaction with visit quality and contraceptive choices compared with usual care.¹⁰⁹

Decision aids may be an unstudied area of potential tools that are available but have not yet been applied in the telehealth setting. These tools have been used to screen for IPV^{14,110} and facilitate contraceptive decision making.¹⁰⁹

Applicability

A number of issues could impact the applicability of our findings. Applicability of the findings of this review is limited by small study size, and limited geographic and clinical settings of the clinicians or patients surveyed. The scope of this review was defined to include a subset of preventive services for telehealth for a specific population (i.e., women presenting for reproductive health or IPV services). Of these services, we found only studies on contraceptive care and IPV services. Studies conducted specifically to evaluate the effect of the COVID-19 pandemic on the use and acceptability of telehealth for the defined preventive services may have limited applicability and scope. Patients included in these surveys may also represent those who self-selected into a group willing to receive services via telehealth. For example, the time period identified as a focus of this review includes a time characterized by a sudden acceleration in the adoption of telehealth services and concurrent rapid policy changes for reimbursement for healthcare services in response to the COVID-19 pandemic. Most studies were conducted when in person care was considered unsafe, and need to be further evaluated in non-pandemic conditions. Notably, telehealth interventions to supplement in person contraceptive services resulted in similar outcomes as in person care. However, with only two studies included for contraceptive care effectiveness, the evidence is not definitive. Additional studies are needed to determine whether this is a true effect, including direct comparisons to determine the comparative benefits of telehealth care alone to those receiving in-clinic care. Older studies of IPV may have used dated technology. For example, previous internet-based decision aid interventions are now being adapted as applications for smartphones. There may also be studies of telehealth in this new context that are ongoing, but were not yet published at the time of this review.

Implications for Clinical and Policy Decisions

Our review has implications for clinical and policy decision-making. The majority of studies did not demonstrate significant differences in clinical outcomes and trials did not report differences in acceptability when telehealth modalities were used to supplement or replace in-person care. As such, when determining whether telehealth services should continue to be offered as a feasible option for the delivery of reproductive health or IPV services, it is critical to consider the comparable performance of these services. Importantly, the comparison used in many studies included for this review was usual care or in-person care; some telehealth interventions supplemented usual care. For studies included for contraception, telephone counseling was used to supplement in person care in two trials. This assumes that the alternative to telehealth is in person care, rather than no care at all, as telehealth may improve access to care for those who otherwise might not receive care. There are populations whose clinical needs can be better met remotely because having access to telehealth-based care is as not as onerous as travelling long distances, taking time off work, or seeking childcare coverage to achieve their preventive healthcare needs. Furthermore, telehealth may facilitate access to and utilization of essential preventive services for populations who forgo preventive care due to challenges with access, transportation, or distance to care.

One of the more significant impacts of the COVID-19 pandemic on healthcare delivery is the transformative effect on the adoption of many forms of telehealth.^{31,111,112} Increased use of telehealth for direct patient care demonstrates how the pandemic has been a catalyst for changes in technology, policy, payment/reimbursement, and patient workflows. While there was initially a drastic increase in telehealth visits at the onset of the pandemic, these levels have since declined as patients, clinicians, and healthcare systems have adapted. However, the use of telehealth remains high and is unlikely to return to lower, pre-pandemic levels.¹¹³

This review of telehealth was conducted in response to the COVID-19 pandemic and data on its effectiveness continues to emerge. As such, synthesizing the available evidence about the comparative effectiveness, acceptability, implementation, and methodological weaknesses of research studies, although limited, contributes to understanding about the future use of telehealth services for reproductive health and IPV. Future research related to implementation of telehealth should engage diverse and underserved populations to better understand challenges with access to technology in specific settings. As data emerges in response to the rapid increase in telehealth utilization during the COVID-19 pandemic, future research should include rigorous studies measuring the impact of telehealth on health equity, access to care, and evaluating the effectiveness and harms of telehealth for women's preventive services, including studies in diverse populations and rural settings. Given that evidence specific to telehealth for women's preventive health services is incomplete, this review highlights the need for additional research in this area while continued coverage of telehealth services is considered.

Limitations of the Systematic Review Process

We excluded non-English language articles and did not search for studies published only as abstracts. In addition to the limitations of the evidence base described below, there are limitations to the review process and the decisions, tools, and methods available for systematic reviews. Searching for telehealth studies related to reproductive health and IPV services poses several challenges that required assessing whether and how to use specific indexing and key word terms. While telehealth is increasingly indexed, it is a broad term that overlaps with others. Additionally, while the MeSH term "m-health" exists in Medline this does not capture all possible models of telehealth. Given these challenges, we worked with an expert research librarian with extensive experience with systematic reviews and tested combinations of index terms and key words. Our search strategies are included in **Appendix A**. Despite this approach and supplemental efforts that included checking references of included studies and systematic reviews, and suggestions from stakeholders and responses to requests for data, it is possible that relevant studies were missed, even though searches were peer reviewed.

Determining if similar outcomes confer a benefit depends on considering multiple factors, such as resources needed and how perspectives may differ (e.g., what is most important to a patient may not be what is most important to a clinician or a health system). For this reason, we reported when outcomes were similar, and then discussed the context to help facilitate conclusions about whether similar outcomes with telehealth can be interpreted as a benefit. Given the variety of study designs, interventions, outcomes and the lack of detail on comparators in many studies, we were unable to conduct quantitative synthesis, or meta-analyses. This heterogeneity is also challenging for qualitative synthesis of the effectiveness studies.

Limitations of Evidence Base

We identified 16 studies that evaluated the effectiveness or implementation of telehealth interventions for women's reproductive health and IPV services, with contraceptive care being the only reproductive health service addressed. Important limitations to this evidence base need to be considered as they impact the utility of this research for practice and policy decisions. In addition to the narrow scope of services addressed, most of the key limitations are related to the lack of relevant telehealth studies for these particular preventive services, the relative weakness of study designs used in this field, the rigor with which the studies were executed, and the completeness of reporting of key outcomes (**Table 6**). Many excluded studies implemented telehealth approaches that were not bidirectional or did not link to clinical care. Other common reasons studies did not meet inclusion criteria were ineligible interventions, populations, or lack of comparators.

Most of the included studies were small and half were not randomized trials. However, observational studies also demonstrated that telehealth interventions generally resulted in similar outcomes as in-person care. Importantly, for many studies that did not reach statistical significance, there was a signal that there were similar outcomes for both telehealth and in-person groups. Many studies of telehealth were cross-sectional and compared outcomes before and after the implementation of telehealth or compared cohorts of patients, clinicians, or organizations with and without telehealth and did not include comparison groups or efforts to isolate the effect of telehealth from historical trends or changes over time resulting from the COVID-19 pandemic. Six trials and five observational studies were rated moderate risk of bias; two were rated low and one was rated high risk of bias (**Appendix F**). Methodological limitations of moderate and high risk of bias studies were related to selection bias (e.g., whether inclusion was based on a random sample or all that met inclusion criteria and whether analyses account for important potential confounding); unclear blinding; high levels of attrition or differential loss to followup; and unclear use of statistical methods.

In studies of telehealth, interpreting these results requires consideration of the context and the intended function of the telehealth intervention. For this reason, we expressed the overall effect as whether the outcome measured and analyzed in the studies is better, worse, or similar with telehealth compared with clinical interactions without telehealth. When outcomes are better or worse, the interpretation is relatively clear. If telehealth is used to provide access to additional services and patient outcomes are found to be better, telehealth is providing a benefit. If a study finds patient outcomes are worse, then telehealth is having a negative impact or causing harm. Evaluating the impact of interventions is less clear when patient outcomes are found to be similar with and without telehealth. However, some of the available trials demonstrated benefit in both groups, which is particularly challenging when outcomes are measured on scales with unclear clinical application, such as self-efficacy scores or safety behaviors. Future studies should move beyond efficacy to more clearly evaluate effectiveness of telehealth interventions and should include studies to assess whether telehealth platforms can increase the reach of services and improve effectiveness for communities.

The main limitation of this evidence base is small studies with sometimes conflicting results. While there were no studies conducted in rural settings, it might be possible to use telehealth to allow healthcare to be delivered in rural locations as an alternative to transferring a patient or requiring travel to a non-rural setting. Many of the IPV studies were conducted in specific study populations, such as women receiving treatment for substance abuse, or women attending an academic health center. Statistically significant differences in depression scores were reported in

one study of an IPV intervention that included a subanalysis of intervention effectiveness in an indigenous population,¹⁹ signaling the potential for technology to help meet the needs of stigmatized or vulnerable populations. One study included patients who identified as having non-male partners,¹⁸ but no other studies were specifically conducted in gender diverse populations, further limiting applicability. Results from these select study samples cannot be generalized to all women. More research is needed to identify the disadvantages telehealth may pose in effectively delivering preventive services to specific underserved populations and whether telehealth interventions should supplement or replace traditional screening services.

Table 6. Limitations of the evidence

Domain	Limitations of the Evidence
Populations	<ul style="list-style-type: none"> • Mostly adolescents and younger women; limited studies in some clinical areas; lack of reporting on or analyses of social determinants of health and sociodemographic factors
Interventions	<ul style="list-style-type: none"> • Limited detail on some interventions (content, approach, frequency of interactions), especially mobile applications and websites
Comparisons	<ul style="list-style-type: none"> • Variation in comparators and definition of usual care; interventions to enhance usual care were not always clinically distinct
Outcomes	<ul style="list-style-type: none"> • For some, lack of clear definitions or variability in outcome definition or measure • Lack of telehealth harms outcomes • Access and health equity outcomes not reported; simple reporting of utilization does not address access • Demographic differences in utilization of telehealth services; how different groups may benefit from or are disadvantaged by telehealth services.
Setting	<ul style="list-style-type: none"> • No studies of patients in rural areas; reporting is limited to the location of the clinician or services provided
Study Design	<ul style="list-style-type: none"> • Few RCTs of contraception and IPV • No RCTs for STI counseling and family planning • Risk of bias limitations (Appendix F) • Studies conducted during pandemic used observational study design that have inherently higher risk of bias (pre-post or cross-sectional)

Abbreviations: IPV=interpersonal violence; RCT=randomized controlled trials; STI=sexually transmitted infection

Conclusions

Limited evidence suggests that telehealth interventions for contraceptive care and IPV services result in equivalent clinical and patient-reported outcomes as in-person care. Uncertainty remains regarding the most effective approaches for delivering these services and how to best mobilize telehealth, particularly for women facing barriers to healthcare.

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Abbreviations and Acronyms

AAFP	American Academy of Family Physicians
ACA	Affordable Care Act
ACOG	American College of Obstetrics and Gynecology
AHRQ	Agency for Healthcare Research and Quality
C	clinic visits
CDC	Centers for Disease Control and Prevention
CER	Comparative effectiveness review
CES-D	Center for Epidemiologic Studies Depression Scale
CI	confidence interval
CESD-R	Center for Epidemiologic Studies Depression Scale, Revised
COVID-19	Novel Coronavirus disease-2019 infection
C+P	clinic plus phone visits
DVSE	Domestic Violence Self-Efficacy Scale
FIGO	International Federation of Gynaecology and Obstetrics
HR	hazard ratio
HRSA	Health Resources and Services Administration
IPV	Interpersonal violence
KQ	Key Question
LARC	Long-acting reversible contraception
MD	mean difference
NA	not applicable
NR	none reported
OC	oral contraceptive
PCL-C	PTSD checklist, Civilian Version
PICOS	population, intervention, comparisons, outcomes, settings, and study designs of interest
PTSD	post-traumatic stress disorder
RCT	randomized control trial
S	standard care
SD	standard deviation
SE	standard error
SEADS	Supplemental Evidence and Data for Systematic review
SMS	short messaging service
SOE	strength of evidence
STD	sexually transmitted disease

STI	sexually transmitted infections
SVAWS	Severity of Violence Against Women Scale
U.K.	United Kingdom
USPSTF	United States Preventive Services Task Force
WEB	Women's Experiences with Battering
WHO	World Health Organization
WPSI	Women's Preventive Services Initiative

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Appendix A. Methods

Search Strategies

Database: Ovid MEDLINE(R) ALL

Search Strategy:

- 1 Telemedicine/
- 2 Mobile Applications/
- 3 (telemedicine or telemedical or telehealth or telephone or phone or (cell adj2 (phone or device)) or (cellular adj2 (phone or device)) or (text adj2 messag*) or "texting" or virtual or "remote monitor*" or "ehealth" or "e-health" or "mhealth" or "m-health" or (mobile adj2 health) or (digital adj2 health)).ti,ab,kf.
- 4 or/1-3
- 5 Women's Health/
- 6 exp Women/
- 7 Female/
- 8 (woman or women).ti,kf,sh.
- 9 (pregnant or pregnancy).ti,kf,sh.
- 10 or/5-9
- 11 Gynecology/
- 12 Family Planning Services/
- 13 exp Contraception/
- 14 exp Sexually Transmitted Diseases/
- 15 exp Domestic Violence/
- 16 exp Intimate Partner Violence/
- 17 ("reproductive health" or "family planning" or contraception or contraceptive or "sexually transmitted infection*" or "sexually transmitted disease*" or "STI*").ti,ab,kf.
- 18 (violent or violence or abuse or abused or abusive).ti,ab,kf.
- 19 or/11-18
- 20 4 and 10 and 19
- 21 (201607\$ or 201608\$ or 201609\$ or 20161\$ or "2016 06 \$" or "2016 07 \$" or "2016 08 \$" or "2016 09 \$" or "2016 1 \$" or "2016 jun \$" or "2016 jul \$" or "2016 aug \$" or "2016 sep \$" or "2016 oct \$" or "2016 nov \$" or "2016 dec \$").dp.
- 22 20 and 21
- 23 limit 20 to yr="2017 -Current"
- 24 22 or 23
- 25 "case reports".pt.
- 26 24 not 25
- 27 limit 26 to english language

Database: EBM Reviews - Cochrane Central Register of Controlled Trials

Search Strategy:

- 1 Telemedicine/
- 2 Mobile Applications/

- 3 (telemedicine or telemedical or telehealth or telephone or phone or (cell adj2 (phone or device)) or (cellular adj2 (phone or device)) or (text adj2 messag*) or "texting" or virtual or "remote monitor*" or "ehealth" or "e-health" or "mhealth" or "m-health" or (mobile adj2 health) or (digital adj2 health)).ti,ab.
- 4 or/1-3
- 5 Women's Health/
- 6 exp Women/
- 7 Female/
- 8 (woman or women).ti,sh.
- 9 (pregnant or pregnancy).ti,sh.
- 10 or/5-9
- 11 Gynecology/
- 12 Family Planning Services/
- 13 exp Contraception/
- 14 exp Sexually Transmitted Diseases/
- 15 exp Domestic Violence/
- 16 ("reproductive health" or "family planning" or contraception or contraceptive or "sexually transmitted infection*" or "sexually transmitted disease*" or "STI*").ti,ab.
- 17 (violent or violence or abuse or abused or abusive).ti,ab.
- 18 or/11-17
- 19 4 and 10 and 18
- 20 limit 19 to yr="2016 -Current"

Database: CINAHL

Search Strategy:

-
- S1 (MH "Telecommunications+")
 - S2 TI telemedicine or telemedical or telehealth or telephone or phone or "cell* phone" "or "cell* device" or "text messag*" or "texting" or virtual or "remote monitor*" or "ehealth" or "e-health" or "mhealth" or "m-health" or "mobile health" or "digital health"
 - S3 AB telemedicine or telemedical or telehealth or telephone or phone or "cell* phone" "or "cell* device" or "text messag*" or "texting" or virtual or "remote monitor*" or "ehealth" or "e-health" or "mhealth" or "m-health" or "mobile health" or "digital health"
 - S4 S1 OR S2 OR S3
 - S5 (MH "Women+")
 - S6 (MH "Women's Health")
 - S7 (MH "Female")
 - S8 TI woman or women or pregnant or pregnancy
 - S9 AB woman or women or pregnant or pregnancy
 - S10 S5 OR S6 OR S7 OR S8 OR S9
 - S11 (MH "Reproduction+")
 - S12 (MH "Gynecology")
 - S13 (MH "Family Planning")
 - S14 (MH "Contraception+")
 - S15 (MH "Sexually Transmitted Diseases+")
 - S16 (MH "Domestic Violence") OR (MH "Intimate Partner Violence")

S17 TI "reproductive health" or "family planning" or contraception or contraceptive or "sexually transmitted infection*" or "sexually transmitted disease*" or "STI*" or violent or violence or abuse or abused or abusive

S18 AB "reproductive health" or "family planning" or contraception or contraceptive or "sexually transmitted infection*" or "sexually transmitted disease*" or "STI*" or violent or violence or abuse or abused or abusive

S19 S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18

S20 S4 AND S10 AND S19

S21 S4 AND S10 AND S19

S22 S4 AND S10 AND S19

S23 S4 AND S10 AND S19

Limiters - Published Date: 20160601-20211231; Publication Type: Clinical Trial, Journal Article, Meta Analysis, Randomized Controlled Trial, Systematic Review

Database: Elsevier Embase

Search Strategy:

(('telehealth'/exp OR 'mobile application'/exp OR telemedicine:ti OR telemedical:ti OR telehealth:ti OR telephone:ti OR phone:ti OR 'cell* phone':ti OR 'cell* device':ti OR 'text messag*':ti OR 'texting':ti OR virtual:ti OR 'remote monitor*':ti OR 'ehealth':ti OR 'e-health':ti OR 'mhealth':ti OR 'm-health':ti OR 'mobile health':ti OR 'digital health':ti) AND ('female'/de OR woman:ti OR women:ti OR pregnant:ti OR pregnancy:ti) AND ('reproductive health'/exp OR 'birth control'/exp OR 'domestic violence'/exp OR 'reproductive health':ti OR 'family planning':ti OR contraception:ti OR contraceptive:ti OR 'sexually transmitted infection*':ti OR 'sexually transmitted disease*':ti OR 'sti*':ti OR violent:ti OR violence:ti OR abuse:ti OR abused:ti OR abusive:ti) AND [english]/lim AND [2016-2021]/py

Inclusion and Exclusion Criteria

The criteria for eligibility of individual studies are based on the Key Questions and PICOS described in the text. Additional details on the scope of this project are provided below and the inclusion and exclusion criteria are outlined in **Table A-1**.

Study Designs: We included comparative studies of any design including comparative trials and observational studies. We included observational cohort studies, including pre-post designs (i.e., the same participants compared across time points) as well as before-after designs (i.e., one group of participants before an intervention/system change compared to a different group after the change). We excluded descriptive studies with no outcomes data or studies that included only data from one point in time (post only). We also excluded modeling studies or studies that used synthetic data. We accessed existing systematic reviews, and reviewed reference lists to identify studies. We also excluded commentaries, letters, and articles that described telehealth systems or implementations but did not assess impact.

Outcomes: In the protocol we specified included outcomes for the following preventive services: family planning, contraception, sexually transmitted infection (STI) counseling, and interpersonal violence (IPV). Only prespecified outcomes for these services were considered and are further defined in **Table A-2**.

Non-English-Language Studies: We restricted to English-language articles, but reviewed English-language abstracts of non-English language articles to identify studies that would otherwise meet inclusion criteria, to assess for the likelihood of language bias.

The systematic review protocol and a request for unpublished information was posted by AHRQ on the Federal Register Supplemental Evidence and Data (SEADs) Web page. Additionally, emails requesting information were sent to individual federal agencies as well as non-governmental organizations involved in telehealth and experts familiar with telehealth practices and policy. The request resulted in one file upload of an unpublished abstract on access to sexual and reproductive health services and care during the COVID-19 pandemic. This paper is currently under review at a journal and will be reviewed for this report when published.

Table A-1. PICOS and corresponding inclusion and exclusion criteria

PICOS	Include	Exclude
Population	Adolescent and adult women (≥ 13 years), regardless of pregnancy status; eligible for screening, counseling, or treatment for: KQ 1: Reproductive health services: (family planning, contraception, STI counseling) KQ 2: IPV	<ul style="list-style-type: none"> • Men • Age <13 years

PICOS	Include	Exclude
Interventions	<p>KQ1: Reproductive health services:</p> <ul style="list-style-type: none"> • Family planning (preconception counseling and care) • Contraception (screening, counseling, provision, and follow-up care) • STI counseling <p>KQ2: Interpersonal violence (intimate partner violence, domestic violence)</p> <p>KQ 1a, 1b, 1e, 1f, 2a, 2b, 2e, and 2f: Telehealth and virtual health, defined as:</p> <ul style="list-style-type: none"> • Any two-way telehealth strategy intended to supplement or replace traditional in-person care (e.g. virtual visits, remote monitoring, mobile applications, at-home use of medical devices, use of a facilitator; use of patient-portal or electronic medical record) • Must include direct contact between a clinician or other provider and a patient or group of patients • Telehealth can be synchronous or asynchronous • Interventions may be comprised of a single telehealth strategy or may be delivered as telehealth packages, comprised of multiple telehealth strategies. <p>KQ 1c, 1d, 2c, and 2d: Patient engagement strategies using telehealth and virtual health</p>	<ul style="list-style-type: none"> • KQ1: Non-FDA-approved contraceptive devices, medications, and other methods that are not currently in clinical use in the U.S. as of 2021 • Telehealth clinician-to-clinician consults • Interventions without bidirectional communication between the patient and the healthcare team (e.g., one-way email or text messages) • Peer-led interventions (no clinician involvement) • Maternity Care
Comparators	<ul style="list-style-type: none"> • For effectiveness and harms (KQ 1a, 1c, 1d, 1f, 2a, 2c, 2d, 2f): Usual or in-person care or traditional care models (care provided without telehealth); telehealth + in-person care vs. in-person care alone (augmentation) • For barriers, facilitators, preferences (KQ 1b, 1e, 2b, 2e): Studies with or without comparison groups (i.e. patients' perceptions are based on comparisons of their own previous experiences) • KQ 1d and 2d: during COVID-19: Clinical services before and after COVID-19 pandemic 	No comparison for effectiveness and harms
Outcomes	<p>For all conditions and services</p> <p>KQ 1a and 2a:</p> <ul style="list-style-type: none"> • Clinical effectiveness, patient health outcomes (see specific outcomes) • Quality of life, function <p>KQ 1b, 1c, 1d, 2b, 2c, and 2d: Measures or descriptions of patient satisfaction, patient engagement and activation, patient choice</p> <p>KQ 1e and 2e: Measures or descriptions of barriers and facilitators in low-resource settings</p> <ul style="list-style-type: none"> • Patient-reported outcomes: patient empowerment, engagement, and satisfaction • Measures of healthcare access, equity, and utilization <ul style="list-style-type: none"> ◦ Rates of screening and followup; adherence; no-shows ◦ Utilization of services <p>KQ 1f and 2f: Harms (e.g. missed diagnosis, incorrect diagnosis, overdiagnosis, delay in treatment, increase in redundant testing or in low-value care, mental health outcomes, stress, anxiety, loss to followup)</p>	<ul style="list-style-type: none"> • Outcomes not relevant to the KQs • Cost analyses • Patient knowledge/education
Clinical setting	<ul style="list-style-type: none"> • Home, outpatient, primary care, or primary care-referable • Contact can be simultaneous (synchronous) or communicating across time (asynchronous) • Individuals providing care include a broad range of healthcare workers (physicians, nurses, pharmacists, counselors, etc.) • No geographic restriction: can be urban, suburban, or rural 	Studies of healthcare services delivered outside of healthcare settings (e.g., social services, churches, schools, prisons)

PICOS	Include	Exclude
Country setting	Research conducted in the U.S. or in populations similar to U.S. populations, with services and interventions applicable to U.S. practice (i.e., countries with a United Nations HDI of “very high”)	Countries with significantly different healthcare systems and fewer resources (e.g., low-income countries); not rated ‘very high’ on the 2018 HDI
Study types and designs	<ul style="list-style-type: none"> • RCTs • A best evidence approach will be used for considering inclusion of observational studies (non-RCT with some type of comparison): <ul style="list-style-type: none"> ○ Comparative studies including trial and observational studies, including prospective and retrospective cohort studies and before-after studies (i.e., natural experiments) ○ Qualitative studies that evaluate preferences, barriers/facilitators ○ Studies that specifically note that they were conducted during the COVID-19 pandemic (e.g. either specify they are assessing effects of COVID-19, or compare practices before and after March 2020) will be included. Studies with data that overlap this period will be considered only if results are stratified by pre-post pandemic. 	Case reports, case series
Language	English language	Non-English

Abbreviations: COVID-19=novel coronavirus; FDA=U.S. Food and Drug Administration; HDI=human development index rating; KQ=Key Question; PICOS=population, interventions, comparators, outcomes, and settings; RCT=randomized controlled trial; STI=sexually transmitted infection; US=United States

Table A-2. Outcomes by preventive service

Category	Included Outcomes
Family planning	<ul style="list-style-type: none"> • Desired pregnancy; unwanted/unintended pregnancy • Interpregnancy interval • Resource utilization
Contraception	<ul style="list-style-type: none"> • Reduced unintended or unwanted pregnancy and births • Increased contraceptive use/uptake • Change in contraceptive method • Reproductive health outcomes • Harms associated with contraceptive care (e.g., complications of contraceptive methods; delayed method start; unable to start method of choice; reproductive coercion)
STI counseling	<ul style="list-style-type: none"> • Health outcomes: <ul style="list-style-type: none"> ○ STI incidence (based on testing/biologic confirmation) ○ STI complications • Behavioral outcomes: <ul style="list-style-type: none"> ○ Changes in STI risk behaviors (e.g., multiple sexual partners, concurrent sexual partners, sexual partners with high STI risk, unprotected sexual intercourse or contact, sex while intoxicated with alcohol or other substances, sex in exchange for money or drugs) ○ Changes in protective behaviors (e.g., sexual abstinence; mutual monogamy; delayed initiation of intercourse or age of sexual debut; use of condoms, other barrier methods, or chemical barriers; or other changes in sexual behavior) • STI harms: <ul style="list-style-type: none"> ○ Healthcare avoidance ○ Psychological harms (e.g., anxiety, shame, guilt, stigma)

Category	Included Outcomes
IPV	<ul style="list-style-type: none"> • Health outcomes <ul style="list-style-type: none"> ○ Reduced exposure to IPV as measured by a validated instrument (e.g., Community Composite Scale), self-report frequency of abuse (e.g., number of physical/sexual assaults), or discontinuation of an unsafe relationship ○ Physical morbidity caused by IPV, including acute physical trauma (e.g., fractures, dislocations) ○ Mental health morbidity caused by IPV, including acute mental morbidity (e.g., stress, nightmares) and chronic mental health conditions (e.g., posttraumatic stress disorder, anxiety, depression) ○ Sexual trauma, unintended pregnancy, pregnancy loss, and sexually transmitted infections ○ Healthcare utilization attributed to physical or mental effects of IPV (e.g., rates of emergency room visits); ○ Social isolation • Harms <ul style="list-style-type: none"> ○ Increased abuse or other forms of retaliation; and other reported harms of screening or identification

Abbreviations: IPV=interpersonal violence; KQ=Key Question; STI=sexually transmitted infections

Process for Selecting Studies: Pre-established criteria as presented in **Table A-1** was used to determine eligibility for inclusion and exclusion of abstracts in accordance with the AHRQ *Methods Guide for Effectiveness and Comparative Effectiveness Reviews*.¹ After de-duplication, we imported all references to DistillerSR for managing abstract and full-text review. To ensure accuracy, all excluded abstracts were dual reviewed. Full-text was retrieved for all citations deemed appropriate for inclusion by at least one of the reviewers. All potentially relevant full-text articles were independently reviewed for eligibility by two team members. Any disagreements were resolved by consensus. A flow diagram of study screening and inclusion is below in **Appendix B**, and a record of studies included in the review and those excluded at the full-text level with reasons for exclusion can be found in **Appendix C** and **D**, respectively.

Data Extraction

After studies were deemed to meet inclusion criteria, we abstracted study design, year, setting, country, sample size, patient and providers types and characteristics (e.g., age, sex, race, reason for presentation, diagnosis, and provider specialty), intervention characteristics (e.g., mode of delivery, duration or frequency, function) and results relevant to each Key Question as outlined in the PICOS section in **Tables A-1 and A-2**. Information relevant for assessing applicability included the number of patients randomized/eligible for inclusion in an observational study relative to the number of patients enrolled or the number and diversity of settings or locations as well characteristics of the population, telehealth intervention or implementation strategy, and administrating personnel. Sources of funding for all studies were also recorded. All study data was extracted into Excel and verified for accuracy and completeness by a second team member.

Risk of Bias (Quality) Assessment of Individual Studies

Predefined criteria were used to assess the risk of bias (also referred to as quality or internal validity) for each individual included study, using criteria appropriate for the study designs. Controlled trials and observational studies were assessed using a priori established criteria consistent with the AHRQ-EPC approach recommended in the chapter, *Assessing the Risk of*

Bias of Individual Studies When Comparing Medical Interventions in the *Methods Guide for Effectiveness and Comparative Effectiveness Reviews*.¹

For randomized controlled trials we assessed adequacy of randomization and allocation concealment, eligibility criteria, baseline differences between groups, intention-to-treat analyses, attrition and adherence levels, blinding methods, reliable and consistently implemented outcome measures, and prespecified and reported outcomes. For observational cohort studies, we assessed eligibility criteria, participant selection, baseline differences between groups, reliable and consistently implemented outcome measures, blinding of outcome assessors or data analysts, amount and handling of missing data, loss-to-follow up and attrition, and prespecified and reported outcomes. Individual studies were rated as “low risk of bias,” “moderate risk of bias,” or “high risk of bias,” and ratings can be found in **Appendix E**.

Modified risk of bias assessment tools have been developed by the National Institutes of Health (NIH) to assist researchers in focusing on concepts key to a study’s internal validity. These tools have not been independently published and are not considered standardized, but may be useful for interpreting research findings. Criteria for evaluating the cross-sectional studies, derived from a set of questions developed by members of this review team for a Health Information Exchange systematic review,² were used to distinguish the relative quality of the studies done during the COVID-19 pandemic. These assessments are defined in **Table A-3** and **A-4** below.

Studies rated “low risk of bias” are considered to have the least risk of bias, and their results are generally considered valid. “Low risk of bias” studies include clear descriptions of the population, setting, interventions, and comparison groups; a valid method for allocation of patients to treatment; low dropout rates and clear reporting of dropouts; appropriate means for preventing bias; and appropriate measurement of outcomes.

Studies rated “moderate risk of bias” are susceptible to some bias, though not enough to invalidate the results. These studies may not meet all the criteria for a rating of low risk of bias, but no flaw is likely to cause major bias. The study may be missing information, making it difficult to assess limitations and potential problems. The “moderate risk of bias” category is broad, and studies with this rating will vary in their strengths and weaknesses. The results of some moderate risk of bias studies are likely to be valid, while others may be only possibly valid.

Studies rated “high risk of bias” have significant flaws that imply biases of various types that may invalidate the results. They have a serious or “fatal” flaw in design, analysis, or reporting; large amounts of missing information; discrepancies in reporting; or serious problems in the delivery of the intervention. In general, observational studies that do not perform adjustment for potential confounders will be assessed as “high risk of bias.” This is because it is likely the results of these studies are at least as likely to reflect flaws in the study design as the true difference between the compared interventions. We did not exclude studies rated high risk of bias a priori, but high risk of bias studies were considered to be less reliable than low or medium risk of bias studies when synthesizing the evidence, particularly if discrepancies between studies were present.

Each study evaluated was independently reviewed by two team members. Any disagreements were resolved by consensus.

Table A-3. Modified risk of bias assessment tool for pre-post, before-after, and interrupted time-series studies*

Criteria	Response options
Were all eligible participants that met the prespecified entry criteria enrolled?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Were the people assessing the outcomes blinded to the participants' exposures/interventions?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)? (this is also about the same patients)	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Risk of bias rating	Low, Moderate, High

*National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study with no control group, <https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools>

Table A-4. Risk of bias criteria for cross-sectional surveys*

Criteria	Response options
Is the sampling strategy or selection criteria reported and appropriate?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Are the response or participation rates reported and are they acceptable given the type of study?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Are characteristics (e.g., demographics) of respondents/participants reported?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Is how the questions were developed/selected reported and is it appropriate?	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Were confounders considered? (could be in analysis or presentation, such as stratifying results)	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Is analysis appropriate? (given the type of data)	Yes, No, Cannot Determine/ Not Applicable/ Not Reported
Risk of bias rating	Low, Moderate, High

*Source: Hersh W, Totten A, Eden K, et al. Health Information Exchange. Evid Rep Technol Assess (Full Rep). 2015 (220):1-465. doi: 10.23970/ahrqpcerta220. PMID: 30307736.

Data Analysis and Synthesis

Evidence tables identify study characteristics, results of interest, and risk of bias ratings for all included studies and summary tables highlight the main findings (**Appendix E**). Since the Key Questions varied in nature and scope, our approach to synthesis also differed.

Quantitative data was summarized in tables; ranges of results, descriptive analysis, and interpretation of the results is provided. Meta-analyses were not performed as they would not producing meaningful results due to limited numbers of studies reporting similar outcomes, and heterogeneity based on study design, patient population, and interventions.

Standard systematic review methods were applied to evaluate studies and highlight studies using a hierarchy-of-evidence approach. Randomized trials were prioritized; studies with lower risk of bias ratings were given more weight in our synthesis for each clinical indication and outcome. Qualitative data are summarized in tables (**Appendix E**) with ranges provided. Descriptive analysis and interpretation of the results are provided based on the direction and magnitude of effect. Using qualitative synthesis, we created categories of results based primarily on the direction of the effect, whether there was statistical significance or not, with less emphasis on the magnitude of the effect (e.g., large difference in benefits, no difference in harms), reporting findings according to risk of bias ratings, and summarizing results across studies grouped by preventive service and/or telehealth function/modality.

For synthesis of qualitative data on barriers, facilitators, and patient preferences (KQ1b, e and KQ 2b, e), key statements from each study were extracted and categorized according to theme and type of preventive service (family planning, contraception, STI counseling, IPV). Main themes and frequencies of occurrences across studies are summarized in tables (see **Appendix E**). Results are compared with results of quantitative studies reporting barriers, facilitators, and preferences as available to determine coherence of findings across all sources in the systematic review.

There was not sufficient data available for any of the KQs to conduct an additional analysis of populations particularly affected by potential barriers to preventive care services delivered via telehealth. Although health equity, access, utilization, and disparities were considered for inclusion, they were not reported by studies.

Grading the Strength of the Body of Evidence

The strength of evidence (SOE) for each Key Question was assessed by one researcher for each clinical outcome (see PICOS). For KQ1a, c, d (effectiveness) we used the approach described in the *Methods Guide for Effectiveness and Comparative Effectiveness Reviews*.¹ To ensure reliability and validity of the evaluation, the body of evidence was assessed for the following criteria as they are defined in the Methods Guide:

- Study limitations (low, medium, or high level of study limitations)
 - Rated as the degree to which studies for a given outcome are likely to reduce bias with study design and study conduct, based on risk of bias assessments.
- Consistency (consistent, inconsistent, or unknown/not applicable)
 - Rated by degree to which studies find similar magnitude of effect (i.e., range sizes are similar) or same direction (i.e., effect sizes have the same sign) or where there was only one study of a given design, we assessed consistency as “unknown” and downgraded the SOE.
- Directness (direct or indirect)
 - Rated by degree to which evidence assesses (a) comparison of interest, (b) in the population of interest, and (c) measures the specific outcome of interest.
- Precision (precise or imprecise)
 - Degree of certainty surrounding an effect estimate as it relates to a specific outcome. This may be based on sufficiency of sample size and number of events, and if these are adequate, the interpretation of the confidence interval.

KQs 1b, d, e and 2b, d, e are descriptive and modified SOE assessment was conducted based on criteria for specific study designs (**Tables A-3 and A-4**). We prioritized reports of U.S. national or regional studies over local reports or data from other countries. We summarized the strengths and limitations of the data collection and analyses of the included reports for these questions, with a focus on elements such as the extent the sample represents the population of interest and the completeness and reliability of the data.

The evidence for KQs 1b, d, e and 2b, d, e consisted of studies that use qualitative methods (e.g., interviews, case studies, focus groups) as well as quantitative methods and the studies were not comparative. For these reasons the SOE approach planned for the other KQs was not applicable. To address this, we assessed the fit of the GRADE-CERQual approach to our included studies for these questions.³ When applicable to the body of literature, we assessed SOE based on the following domains from this framework:

- Methodological limitations
- Coherence
- Adequacy
- Relevance

The bodies of evidence were assigned an overall SOE grade of high, moderate, low, or insufficient according to a four-level scale by evaluating and weighing the combined results of the above domains (**Table A-5**). Because studies were anticipated to be heterogeneous in the interventions, clinical settings, and outcomes, we did not anticipate that meta-analysis would be possible. As such, the conclusion of findings being similar were based on individual studies not finding statistically significant differences, with consistency across multiple studies in this finding, and that the point estimates were not subjectively viewed as being large. Importantly, studies with moderate SOE had assurance that each study had sufficient power to detect meaningful differences together with the range of reported effect estimates.

Table A-5. Definitions of the grades of overall strength of evidence

Grade	Definition
High	Very confident that the estimate of effect lies close to the true effect for this outcome. The body of evidence has few or no deficiencies. The findings are stable (i.e., another study would not change the conclusions).
Moderate	Moderately confident that the estimate of effect lies close to the true effect for this outcome. The body of evidence has some deficiencies. The findings are likely to be stable, but some doubt remains.
Low	Limited confidence that the estimate of effect lies close to the true effect for this outcome. The body of evidence has major or numerous deficiencies (or both). Additional evidence is needed before concluding either that the findings are stable or that the estimate of effect is close to the true effect.
Insufficient	No evidence. Investigators are unable to estimate an effect, or have no confidence in the estimate of effect for this outcome. No evidence is available, or the body of evidence has unacceptable deficiencies, precluding reaching a conclusion.

Appendix B. Results

Results of Literature Searches

A total of 5,704 references were identified from electronic database searches. After dual review of abstracts, 320 full text papers were evaluated for inclusion. Search results and selection of studies are summarized in the literature flow diagram (**Figure 2** in the report). A total of 16 studies were included (7 for Key Question 1 and 9 for Key Question 2). **Table B-1** reports the characteristics of the included studies. The list of included studies is in **Appendix C** and excluded studies with reason for exclusion are in **Appendix G**.

Table B-1. Characteristics of included studies

Characteristic	Categories	Number of Articles
Clinical Preventive Service	Family Planning	0
	Contraception	7 ^{4,10}
	STI counseling	0
	IPV	9 ¹¹⁻¹⁹
Mode of Telehealth	Telephone	5 ^{4,6,17-19}
	Mobile App	1 ¹⁶
	Online Module	5 ¹¹⁻¹⁵
	Unclear or undefined mode	5 ^{5,7-10}
Outcome categories	Patient	13 ^{4-6,9,11-19}
	Clinician	3 ^{7,8,10}
Study Design	RCT	8 ^{4,6,11-15,19}
	Controlled observational study	1 ¹⁷
	Observational-before/after	1 ¹⁶
	Observational-pre/post	0
Sample Size	Observational-cross-sectional	6 ^{5,7-10,18}
	Under 100	2 ^{8,18}
	100-500	6 ^{9,12-15,17,19}
	501-1000	5 ^{6,7,11,13,16}
Geographic Location	1001-10,000	3 ^{4,5,10}
	United States, Urban/suburban	6 ^{4,9,12,13,17,19}
	United States, Mixed/unclear	6 ^{5,7,8,10,16,18}
	United States, Rural	0
	United Kingdom	1 ⁶
	Canada	1 ¹¹
Risk of Bias	Australia	2 ^{14,15}
	Low	2 ^{7,14}
	Moderate	13 ^{4-6,8-13,15-17,19}
	High	1 ¹⁸

Abbreviations: IPV=interpersonal violence; RCT=randomized controlled trial; STI=sexually transmitted infection

Appendix C. Included Studies List

1. Berenson AB, Rahman M. A randomized controlled study of two educational interventions on adherence with oral contraceptives and condoms. *Contraception*. 2012;86(6):716-24. doi: 10.1016/j.contraception.2012.06.007. PMID: 22840278.
2. Ford-Gilboe M, Varcoe C, Scott-Storey K, et al. Longitudinal impacts of an online safety and health intervention for women experiencing intimate partner violence: randomized controlled trial. *BMC Public Health*. 2020;20(1):260. doi: 10.1186/s12889-020-8152-8. PMID: 32098633.
3. Gilbert L, Shaw SA, Goddard-Eckrich D, et al. Project WINGS (Women Initiating New Goals of Safety): A randomised controlled trial of a screening, brief intervention and referral to treatment (SBIRT) service to identify and address intimate partner violence victimisation among substance-using women receiving community supervision. *Crim Behav Ment Health*. 2015;25(4):314-29. doi: 10.1002/cbm.1979. PMID: 26482019.
4. Glass NE, Perrin NA, Hanson GC, et al. The longitudinal impact of an internet safety decision aid for abused women. *Am J Prev Med*. 2017;52(5):606-15. doi: 10.1016/j.amepre.2016.12.014. PMID: 28108189.
5. Hegarty K, Tarzia L, Valpied J, et al. An online healthy relationship tool and safety decision aid for women experiencing intimate partner violence (I-DECIDE): a randomised controlled trial. *Lancet Public Health*. 2019;4(6):e301-e10. doi: 10.1016/s2468-2667(19)30079-9. PMID: 31155223.
6. Hill BJ, Lock L, Anderson B. Racial and ethnic differences in family planning telehealth use during the onset of the COVID-19 response in Arkansas, Kansas, Missouri, and Oklahoma. *Contraception*. 2021;104(3):262-4. doi: 10.1016/j.contraception.2021.05.016. PMID: 34058223.
7. Koziol-McLain J, Vandal AC, Wilson D, et al. Efficacy of a web-based safety decision aid for women experiencing intimate partner violence: randomized controlled trial. *J Med Internet Res*. 2018;19(12):e426. doi: 10.2196/jmir.8617. PMID: 29321125.
8. Krishnamurti T, Davis AL, Quinn B, et al. Mobile remote monitoring of intimate partner violence among pregnant patients during the COVID-19 shelter-in-place order: quality improvement pilot study. *J Med Internet Res*. 2021;23(2):e22790. doi: 10.2196/22790. PMID: 33605898.
9. Kumar U, Pollard L, Campbell L, et al. Specialist follow-up contraceptive support after abortion-Impact on effective contraceptive use at six months and subsequent abortions: a randomised controlled trial. *PLoS ONE [Electronic Resource]*. 2019;14(6):e0217902. doi: 10.1371/journal.pone.0217902. PMID: 31185058.
10. McFarlane J, Malecha A, Gist J, et al. Increasing the safety-promoting behaviors of abused women. *Am J Nurs*. 2004;104(3):40-50; quiz -1. doi: 10.1097/00000446-200403000-00019. PMID: 15108570.
11. Sabri B, Hartley M, Saha J, et al. Effect of COVID-19 pandemic on women's health and safety: a study of immigrant survivors of intimate partner violence. *Health Care Women Int*. 2020;41(11-12):1294-312. doi: 10.1080/07399332.2020.1833012. PMID: 33085577.
12. Saftlas AF, Harland KK, Wallis AB, et al. Motivational interviewing and intimate partner violence: a randomized trial. *Ann Epidemiol*. 2014;24(2):144-50. doi: 10.1016/j.annepidem.2013.10.006. PMID: 24252714.
13. Steiner RJ, Zapata LB, Curtis KM, et al. COVID-19 and sexual and reproductive health care: findings from primary care providers who serve adolescents. *J Adolesc Health*. 2021;69(3):375-82. doi: 10.1016/j.jadohealth.2021.06.002. PMID: 34301467.

14. Stifani BM, Avila K, Levi EE. Telemedicine for contraceptive counseling: an exploratory survey of US family planning providers following rapid adoption of services during the COVID-19 pandemic. *Contraception*. 2021;103(3):157-62. doi: 10.1016/j.contraception.2020.11.006. PMID: 33212033.
15. Stifani BM, Smith A, Avila K, et al. Telemedicine for contraceptive counseling: patient experiences during the early phase of the COVID-19 pandemic in New York City. *Contraception*. 2021;104(3):254-61. doi: 10.1016/j.contraception.2021.04.006. PMID: 33861981.
16. Zapata LB, Curtis KM, Steiner RJ, et al. COVID-19 and family planning service delivery: findings from a survey of U.S. physicians. *Prev Med*. 2021;150:106664. doi: 10.1016/j.ypmed.2021.106664. PMID: 34081938.

Appendix D. Excluded Studies List

1. Abrahams N, Jewkes R, Lombard C, et al. Impact of telephonic psycho-social support on adherence to post-exposure prophylaxis (PEP) after rape. *AIDS Care*. 2010;22(10):1173-81. doi: 10.1080/09540121003692185. PMID: 20640949. **Exclusion reason:** Ineligible intervention
2. Abrams LC, Johnson PR, Leavitt LE, et al. A randomized trial of text messaging for smoking cessation in pregnant women. *Am J Prev Med*. 2017;53(6):781-90. doi: 10.1016/j.amepre.2017.08.002. PMID: 28982527. **Exclusion reason:** Ineligible intervention
3. Ahmad F, Hogg-Johnson S, Stewart DE, et al. Computer-assisted screening for intimate partner violence and control: a randomized trial. *Ann Intern Med*. 2009;151(2):93-102. doi: 10.7326/0003-4819-151-2-200907210-00124. PMID: 19487706. **Exclusion reason:** Ineligible intervention
4. Ahmed AH, Roumani AM, Szucs K, et al. The effect of interactive web-based monitoring on breastfeeding exclusivity, intensity, and duration in healthy, term infants after hospital discharge. *J Obstet Gynecol Neonatal Nurs*. 2016;45(2):143-54. doi: 10.1016/j.jogn.2015.12.001. PMID: 26779838. **Exclusion reason:** Ineligible intervention
5. Aicken CRH, Fuller SS, Sutcliffe LJ, et al. Young people's perceptions of smartphone-enabled self-testing and online care for sexually transmitted infections: qualitative interview study. *BMC Public Health*. 2016;16(1):1-11. doi: 10.1186/s12889-016-3648-y. PMID: 118158122. **Exclusion reason:** Ineligible population
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- prevention for LGB teens: an RCT. *Pediatrics*. 2021;147(3):e2020013607. doi: 10.1542/PEDS.2020-013607. PMID: 33568491. **Exclusion reason:** Ineligible intervention
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302. Zero O, Geary M. COVID-19 and intimate partner violence: a call to action. *R I Med J*. 2020;103(5):57-9. PMID: 32481784. **Exclusion reason:** Used for Contextual Question only
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Appendix E. Evidence Tables

Table E-1. Study characteristics of trials of telehealth for women’s preventive services

Service	Author, Year	Population; Setting	Study Characteristics (N)	Population Characteristics	Inclusion and Exclusion
Contraception	Berenson, 2020 ⁴	Low-income women 16 to 24 years; U.S.; 5 publicly funded reproductive health clinics	RCT (N=1,155) TH Mode: Online and telephone Funding: MCHB; HRSA Risk of Bias: Moderate	Mean (SD) age: 19.9 (2.4) years Race: -White: 24.8% -Black: 18.6% -Hispanic: 54.2% -Other race: 2.3% Mean (SD) number of prior pregnancies: 1.5 (0.7) History of STI: 16.1%	Inclusion: Sexually active, not pregnant females ages 16 to 24 requesting initiation of OCP July 2006 and January 2010 Exclusion: Desire to become pregnant in the next year, a medical contraindication to OCP, and/or prior (>1 month) OCP use
	Kumar, 2019 ⁶	Women seeking an abortion; U.K.; Abortion clinics	RCT (N=569) TH Mode: Telephone Funding: London sexual health program; NIHR Risk of Bias: Moderate	Mean (SD) age: 27.3 (6.4) years Race: -White: 38% -Black: 50% -Asian: 4% -Mixed/other race: 8% Ever had a live birth: 51% No previous abortion: 50.3%	Inclusion: Women seeking an abortion Exclusion: Could not speak English, intended to leave area, decided to continue with pregnancy
IPV	Ford-Gilboe, 2020 ¹¹ “iCAN”	Women ≥19 years; Canada; online intervention	RCT (N=531) TH mode: Online, interactive Funding: Canadian Institutes of Health Research Risk of Bias: Moderate	Mean (SD) age: 34.61 (10.7) years Indigenous identity: 13.4% Children <18 years living at home: 47.8% Large urban community: 48.9% Medium sized city: 27.5% Rural community/small town: 23.6% Abuse type -Severe combined abuse: 82.5% -Physical abuse: 85.5% -Emotional abuse: 99.1% -Harassment: 78.8%	Inclusion: ≥19 years who reported IPV in the previous 6 months, with computer to access the internet, a safe email address, and secondary mailing address Exclusion: Women who had been in a relationship with an abusive partner >12 months prior to study enrollment

Service	Author, Year	Population; Setting	Study Characteristics (N)	Population Characteristics	Inclusion and Exclusion
IPV, continued	Gilbert, 2015 ¹²	Women >18 years; U.S.; community court and probation sites	RCT (N=191) TH mode: tailored website Funding: NIDA Risk of Bias: Moderate	Mean (SD) age: 34.2 (11.4) years Race: -Black: 67% -Latina: 30% Single or never married: 71% Ongoing intimate relationship: 70%	Inclusion: Women undergoing supervision for substance abuse >18 years receiving community supervision Exclusion: No permanent address, drug use or drug treatment in past 6 months, no intimate partner relationships in the past year, relocating or living far from service
	Glass, 2017 ¹³	Women >18 years; U.S.; community intervention in 4 academic health centers	RCT (N=720) TH mode: tailored website Funding: NIMH Risk of Bias: Moderate	Mean (SD) age 33.41 (10.64) years Race: - White: 64% - Black: 25% - Asian: 3.5% - Native American: 1.6% - Hawaiian/Pacific Islander: <1% - Multiracial: 5% Partner's gender - Female: 9.8% - Male: 90.2%	Inclusion: Adult women, English speaking, reported IPV with male or female partner in the past 6 months, community supervision Exclusion: NR
	Hegarty, 2019 ¹⁴	Women 16 to 50; Australia; online	RCT (N=422) TH mode: tailored website Funding: Australian research council Risk of Bias: Low	Mean (SD) age: 33.7 (8.48) years Race: NR Currently in a relationship with perpetrator of violence: 46% Children <18 years at home: 45% Urban: 79% Rural: 18% Remote: 3%	Inclusion: 16 to 50 years, had access to a computer and internet connection, and answered question 1 of the screening questionnaire Exclusion: NR
	Koziol-McLane, 2019 ¹⁵	Women >18 Australia; online	RCT (N=412) TH mode: tailored website Funding: New Zealand health research council Risk of Bias: Moderate	Mean age: 29 (16-59) years Ethnic Group: - European: 72.1% - Maori (indigenous): 27.4% - Asian: 10.2% - Pacifica: 10.2% - Other: 1.7%	Inclusion: >16 years in New Zealand, English speaking, experienced IPV in current relationship Exclusion: NR

Service	Author, Year	Population; Setting	Study Characteristics (N)	Population Characteristics	Inclusion and Exclusion
IPV, continued	McFarlane, 2004 ¹⁷	Women; U.S.; district attorney's office, family violence unit	Non-randomized controlled study (N=150) TH mode: Telephone Funding: National Institute of Justice Risk of Bias: Moderate	Mean (SD) age: 32.4 (8.9) years Race: -White: 26.7% -Black: 32.7% -Latino: 5.3% Relationship to abuser: -Spouse or common-law spouse: 54% -Ex-spouse or ex-common-law spouse: 16.7% -Girlfriend: 8% -Ex-girlfriend: 21.3%	Inclusion: Women receiving orders against an intimate partner Exclusion: NR
	Saftlas, 2014 ¹⁹	Women ≥18 years; U.S., family planning clinics	RCT (N=306) TH mode: Telephone Funding: CDC Risk of Bias: Moderate	Age 18-19 years: 25.5% Age 20-24 years: 38.9% Age 25-29 years: 20.6% Age 30-39 years: 9.5% Age ≥40 years: 5.2% Race: - White: 84.6% - Non-white: 14.4% - Hispanic: 12.1% - Non-Hispanic: 86.9% Cohabitation status: -Living together: 48.0% -Not living together: 49.3%	Inclusion: ≥18 years, positive for IPV, English speaking Exclusion: Pregnant or incarcerated

Abbreviations: CDC=centers for disease control and prevention; HRSA=health resource services administration; IPV=interpersonal violence; MCHB=Maternal and Child Health Bureau; NIDA=National institute on drug abuse; NIHR=National institute for health research, clinical research network; NIMH=National institute of mental health; NR=not reported; OCP=oral contraceptive pill; RCT=randomized controlled trial; SD=standard deviation; TH=telehealth; U.K.=United Kingdom; U.S.=United States

Table E-2. Intervention characteristics of trials of telehealth for women’s preventive services

Service	Author, Year	Telehealth Intervention (n)	Comparison Intervention(s) (n)	Intervention Duration	Follow-up Method
Contraception	Berenson, 2012 ⁴	C+P: Clinic-based plus telephone intervention; face to face behavioral counseling; phone calls reviewed how to take OCP correctly; what to do with missed doses, strategies to address side effects; and importance of condom use; given toll free number to call 24 hours a day if needed for additional assistance (275 at 6 months; 218 at 12 months)	S: Standard care; face-to-face behavioral counseling and education at baseline clinic visit (268 at 6 months; 213 at 12 months) C: Oral and written instructions, 4-month supply of OCPs and 24 free condoms; additional 9-month supply at 3-month followup (270 at 6 months; 214 at 12 months)	Contacted weekly until they began OCP and then monthly for 6 months by contraceptive counselor	12 months and 12 interviews medical review
	Kumar, 2019 ⁶	2 telephone followup contacts by nurses for contraceptive support in addition to usual care (282)	Usual care: general advice to follow up with a general practitioner (287)	2 to 4 weeks and 3 months post-abortion via telephone	6 months telephone
IPV	Ford-Gilboe, 2020 ¹¹ “iCAN”	iCAN, an interactive, tailored online safety and health intervention (231)	Brief, static version of iCAN, that was not tailored (231)	1-time, online session	12-month survey
	Gilbert, 2015 ¹² “WINGS”	Computerized WINGS intervention: interactive, tailored online program providing IPV education, screening and risk assessment (94)	Case manager WINGS intervention: in-person IPV education, screening and risk assessment; safety planning (97)	1-time session averaging 44.6 minutes for the computerized version and 46.7 minutes for the case manager version	3-month interview assessment audio of assistance interview
	Glass, 2017 ¹³ “IRIS”	IRIS, an interactive, tailored online safety decision tool and intervention (361)	Static, online version that was not tailored (359)	1-time, online session	6 and 12 months computerized followup
	Hegarty, 2019 ¹⁴ “I-DECIDE”	I-DECIDE: 3 modules addressing healthy relationships, safety, and priorities, with questions from the CAS and Danger Assessment, received tailored messages; individualized action plan developed and tailored to the woman's preferences. (227)	Static website containing brief information about domestic violence and a standard emergency safety plan (195)	12 monthly sessions	6 and 12 months via telephone
	Koziol-McLain, 2019 ¹⁵ “iSafe”	I-SAFE: interactive, Web-based safety decision aid with 3 components addressing safety priorities, danger assessment, and individualized action plan based on an interactive process (210)	Static, online version that was not tailored (202)	1-time, online session	Repeat assessment and 12 months
	McFarlane, 2004 ¹⁷	6 intervention telephone calls and 4 follow up calls over 8 weeks in which safety-promoting behaviors were discussed (75)	Usual services: counseling on promoting safety, social services, legal resources and 4 followup calls (75)	8 weeks	3, 6, 12 months followup via telephone

Service	Author, Year	Telehealth Intervention (n)	Comparison Intervention(s) (n)	Intervention Duration	Follow-up Method
IPV, continued	Saftlas, 2014 ¹⁹	Motivational Interviewing: 1-hour face-to-face educational session at baseline, followed by 3, 10- to 15-minute telephone sessions conducted 1, 2, and 4 months post enrollment (98)	On-site meeting with field coordinator or advocate; written materials and referral to community-based resources (108)	Repeated 4 times at 1, 2, 4 months post-baseline	6-month baseline telephone

Abbreviations: OCP=oral contraceptive pill; IPV=interpersonal violence

Table E-3. Outcomes of trials of telehealth for women’s preventive services

Services	Author, Year	Clinical Outcomes	Patient Reported Outcomes	Harms/Adverse Events
Contraception	Berenson, 2012 ⁴	<p>I vs. S vs. C</p> <p>OCP continuation after 3 months: 58.3% (224/384) vs. 55.2% (214/388) vs. 49.9% (191/383), p=0.06</p> <p>OCP continuation after 6 months: 39.3% (151/384) vs. 37.4% (145/388) vs. 31.9% (122/383), p=0.08</p> <p>OCP continuation after 12 months: 19.8% (76/384) vs. 19.8% (77/388) vs. 18.0% (69/383), p=0.77</p> <p>Became pregnant: 13.5% (52/384) vs. 12.4% (48/388) vs. 16.5% (63/383)</p> <p>Pregnancy, HR (95% CI): 1.07 (0.72 to 1.59) vs. 1.00 vs. 1.39 (0.95 to 2.03), p=0.22</p> <p>Continued to use OCP OR (95%CI): 1.09 (0.86 to 1.40) vs. 1.00 vs. 0.80 (0.63 to 1.03)</p> <p>STI at 12 months: 13 (3.4%) vs. 18 (4.6%) vs. 12 (3.1%)</p>	None	NR
	Kumar, 2019 ⁶	<p>I vs. C, ITT analysis</p> <p>Using effective contraception method at 6 months: 62% (88/142) vs. 54% (80/148); mean difference 8% (95% CI, -3.4 to 19.2)</p> <p>LARC at 6 months: 42% (60/142) vs. 32% (48/148); mean difference 10 (95% CI, -1.3 to 20.9)</p> <p>Changed from non-LARC or no contraception method prior to abortion to LARC at 6 months: 43% vs. 31%; OR 1.67 (95% CI, 1.01 to 2.75)</p> <p>Subsequent abortion within 1 year: 10% (26/270) vs. 10% (28/281); mean difference 0.3 (95% CI, -4.6 to 5.3)</p> <p>Subsequent abortion at 1 year: 10% (26/270) vs 10% (28/281); p=0.098; and 2 years: 6% (15/270) vs. 6% (16/281); mean difference 0.1 (95% CI, -3.7 to 4.0)</p>	I vs. C Satisfaction with chosen contraceptive method at 6 months: 87% (116/134) vs. 79% (111/140); mean difference 7 (95% CI, -1.5 to 16.1)	None reported

Services	Author, Year	Clinical Outcomes	Patient Reported Outcomes	Harms/Adverse Events
IPV	Ford-Gilboe, 2020 ¹¹ "iCAN"	I vs. C, mean (SD) CESD-R at 3 months: 33.44 (20.79) vs. 33.03 (20.38) CESD-R at 6 months: 30.47 (22.15) vs. 30.82 (20.31) CESD-R at 12 months: 27.95 (22.50) vs. 29.83 (21.26) WEB at 3 months: 43.09 (11.66) vs. 44.77 (11.93) WEB at 6 months: 42.04 (14.15) vs. 42.28 (14.12) WEB at 12 months: 39.62 (15.73) vs. 40.94 (14.69)	I vs. C, mean (SD) Score on question using 5-point scale ranging from 1=strongly disagree to 5=strongly agree -I gained something from completing the online tool: 4.51 (0.625) vs. 4.45 (0.699), p=0.380 -The information in the online tool fit with my needs and concerns: 4.28 (0.756) vs. 4.11 -If I had known what this study would be like, I would still have taken part: 4.46 (0.700) vs. 4.35 (0.798), p=0.159 -I would recommend the online tool to other women: 4.62 (0.599) vs. 4.47 (0.766), p=0.038 -I felt comfortable and safe taking part: 4.63 (0.603) vs. 4.59 (0.723), p=0.511	I vs. C, mean (SD) Score on question using 5-point scale ranging from 1=strongly disagree to 5=strongly agree -I felt anxious or upset engaging with the tool: 3.22 (1.25) vs. 3.33 (1.25), p=0.380
	Gilbert, 2015 ¹² "WINGS"	NR	No differences between the two intervention groups for any outcome measure: physical, sexual, verbal, and psychological IPV and combinations; received IPV services after the intervention over past 90 days; IPV self-efficacy; social support; days not using drugs over past 30 days	NR
	Glass, 2017 ¹³ "IRIS"	I vs C, mean (SD) SVAWS -Psychological abuse: 6 months, 37.89 (14.72) vs. 36.97 (14.40); 12 months, 37.85 (15.75) vs 35.43 (15.07); p=0.33 -Physical abuse: 6 months, 33.07 (13.95) vs. 32.03 (13.05); 12 months, 33.83 (15.65) vs. 41.83 (14.30); p=0.69 -Sexual abuse: 6 months, 9.03 (4.49) vs. 8.92 (4.39); 12 months, 8.98 (4.74) vs. 8.73 (4.58); p=0.59 CESD-R at 6 months: 31.36 (22.28) vs. 30.97 (21.94); CESD-R at 12 months: 26.82 (22.75) vs. 26.73 (22.82); p=0.40 PCL-C at 6 months: 17.09 (6.28) vs. 17.25 (6.57); PCL-C at 12 months: 15.83 (6.49) vs. 16.06 (6.61); p=0.75 WEB at 6 months: 41.79 (14.74) vs. 41.36 (15.11) =; WEB at 12 months: 38.98 (16.96) vs. 39.33 (16.88); p=0.81	NR	NR

Services	Author, Year	Clinical Outcomes	Patient Reported Outcomes	Harms/Adverse Ev
IPV, continued	Hegarty, 2019 ¹⁴ "I-DECIDE"	I vs. C, mean (SD), ITT imputed analysis CESDS-R at 6 months: 22.5 (17.1) vs. 24.2 (17.2); mean difference -0.3 (95% CI, -3.5 to 3.0) CESDS-R at 12 months: 21.9 (19.3) vs. 21.5 (19.3); mean difference -1.9 (95% CI, -5.6 to 1.7) CAS score at 12 months: 17.1 (20.5) vs. 17.0 (19.5); mean difference -0.1 (95% CI, -4.4 to 4.3)	I vs. C, mean (SD), ITT imputed analysis GSES at 6 months: 27.5 (5.2) vs. 28.1 (4.4); mean difference 1.3 (95% CI, 0.3 to 2.3) GSES at 12 months: 27.8 (5.4) vs. 29.0 (5.0); mean difference 1.6 (95% CI, 0.6 to 2.7) Fear of partner (VAS, 0 to 10) at 6 months: 3.0 (2.7) vs. 3.5 (2.5); mean difference 0.4 (95% CI, -0.3 to 1.0) Fear of partner (VAS, 0 to 10) at 12 months: 2.7 (2.8) vs. 2.9 (3.0); mean difference 0.1 (95% CI, -0.6 to 0.9) Number of helpful actions taken at 6 months: 4.3 (2.6) vs. 4.2 (2.7); mean difference -0.2 (95% CI, -0.8 to 0.4) Number of helpful actions taken at 12 months: 4.2 (2.8) vs. 4.2 (2.6); mean difference -0.1 (95% CI, -0.8 to 0.5)	NR
	Koziol-McLain, 2019 ¹⁵ "iSafe"	I vs. C, ITT imputed analysis, unadjusted intervention effect (95%CI) SVAWS at 6 months: 69.36 (2.22) vs 70.88 (1.84), -1.52 (-7.19 to 4.16) SVAWS at 12 months: 70.0 (2.16) vs 72.43 (2.12), -2.43 (-8.39 to 3.53) CESD-R at 6 months: 23.68 (1.65) vs 24.27 (1.45), -0.59 (-4.9 to 3.73) CESD-R at 12 months: 22.59 (1.63) vs. 23.30 (1.51) -0.71 (-5.08 to 3.66) CES-D subanalysis of Maori women at 6 months, adjusted estimate: -14.19 (-24 to -4.37) CES-D subanalysis of Maori women at 12 months: -12.44; (-23.35 to -1.5)	NR	NR
	McFarlane, 2004 ¹⁷	I vs. C, mean (SD) Number of safety promoting behaviors practiced: p=0.028 between groups over time -3 months: 12.5 (2.9) vs. 9.9 (2.8) -6 months: 12.0 (2.5) vs. 10.4 (2.2) -12 months: 11.9 (2.7) vs. 10.6 (2.5) -18 months: 12.0 (2.7) vs. 10.5 (2.6)	NR	NR

Services	Author, Year	Clinical Outcomes	Patient Reported Outcomes	Harms/Adverse Ev
IPV, continued	Safllas, 2014 ¹⁹	I vs C, CES-D score from baseline to 6 months: Intervention, 15.7 vs. 11.7, p<0.001; control, 14.3 vs. 11.8, p<0.0001 I vs. C, adjusted mean change (SE) from baseline to followup CES-D score, Depressive symptoms: -4.2 (0.6) vs.-2.6 (0.6), p=0.07 Self-efficacy: 6.1 (1.6) vs. 3.7 (1.5), p=0.255 State of readiness to change, OR (95% CI) (precontemplation as reference), I vs. C Contemplation/panning: 1.45 (0.36 to 5.80) Action/maintenance: 2.0 (0.86 to 4.57)	NR	NR

Abbreviations: C=comparison group; CESDS-R=Center for Epidemiologic Studies Depression Scale-Revised; CI=confidence interval; GSES=General Self-Efficacy-Schwarzer; HR=hazard ratio; I=intervention group; IPV=interpersonal violence; ITT=intention-to-treat; LARC=long-acting reversible contraceptive; NR=not reported; OCP=oral contraceptive pill; OR=odds ratio; PCL-C=Post-traumatic checklist, civilian; S=standard care; SD=standard deviation; SE=standard error; SVAWS=Severity of violence against women scale; VAS=visual analogue scale; WEB=Women's Experiences with Battering Scale

Table E-4. Characteristics of studies of the impact of the COVID-19 pandemic on telehealth for women

Service	Author, Year	Study Characteristics	Telehealth Model; Time Period	Inclusion and Exclusion Criteria	Baseline Population Characteristics
Contraception	Hill, 2021 ⁵	N=3,142 Study design: Cross-sectional at 4 timepoints Setting: Unclear, U.S. ROB: Moderate	Telehealth visits (n=1,257) vs. in-person visits (n=1,885) based on electronic medical records from April 1, 2020 to July 31, 2020	Inclusion: Women receiving sexual and reproductive healthcare (in clinic or telehealth) Exclusion: Patients requesting injectable contraception, long-acting reversible contraception (i.e. implant and IUD), and/or confirmatory pregnancy testing	Age, mean (SD): 33.7 (8.48) years Non-white: 42% Visits: Contraception: 1712/3142 (54.5%) STI-related: 897/3142 (28.5%) General gynecological concerns: (17.0%)
	Steiner, 2021 ⁷ Clinicians	N=791 Study design: Cross-sectional survey Setting: Mix of urban and rural, U.S. ROB: Low	Survey: proportion using telehealth before vs during pandemic September 14, 2020 to October 26, 2020	Inclusion: General primary care physicians and pediatricians in the U.S. providing care to ≥ 1 adolescent patient per week Exclusion: OBGYN providers	Age, median: 47 Male: 47% Non-white: 40%
	Stifani, 2021 ⁹ Patients	N=86 Study design: Cross-sectional survey Setting: Urban, U.S. ROB: Moderate	Quantitative survey to elicit patients' satisfaction and experience; in-depth interviews	Inclusion: Patients ≥ 18 years, who had a telehealth visit between April and June 2020 primarily focused on contraceptive counseling or other issues related to contraception Exclusion: NR	Age 18-25: 27% Age 26-35: 49% Age 36-45: 19% Age >45: 6% Non-white: 88%
	Stifani, 2021 ⁸ Clinicians	N=172 Study design: Cross-sectional Setting: Urban/suburban, U.S. ROB: Moderate	Survey: telehealth delivery reflecting on prior/during pandemic timepoints June, 2020 to July, 2020	Inclusion: Physicians, NPs, PAs, CNMs, who practice in the U.S. and provide abortion or contraception Exclusion: NR	Age, mean (SD): 39.9 (8.3) years Non-white: 31% From academic centers: 76% Urban practice: 76% In practice <5 years: 42%

Service	Author, Year	Study Characteristics	Telehealth Model; Time Period	Inclusion and Exclusion Criteria	Baseline Population Charac
Contraception, continued	Zapata, 2021 ¹⁰ Clinicians	N=1,063 Study design: Cross-sectional survey Setting: Mix of urban and rural, U.S. ROB: Moderate	Survey: family planning service delivery during Covid-19 pandemic September, 2020 to October, 2020	Inclusion: Primary care physicians providing family planning services who had responded to an online survey Exclusion: Non-responders, responders who did not provide family planning services	Age >45 years: 59.3% Male: 62% Non-white: 39% Urban/Suburban/Rural: 35%/53% Specialty: Family practice: 34% Internist: 28.7% Pediatrician: 14.7% OB/GYN: 22.7%
IPV	Krishnamurti, 2021 ¹⁶	N=959 Study design: Before-after Setting: Urban, U.S. ROB: Moderate	Hybrid model: patients completed IPV screening during their first prenatal appointment Prior to shelter-in place order: January 23, 2020 to March 22, 2020 (n=443) During shelter-in place order: March 23, 2020 to May 15 2020 (n=552)	Inclusion: Pregnant residents of Allegheny County, Pennsylvania who were prescribed the MyHealthyPregnancy app during an in-person visit that filled the IPV screening module Exclusion: NR	Age, mean: NR Non-white: ~11%
	Sabri, 2021 ¹⁸	N=62 Study design: Cross-sectional, qualitative survey Setting: Unclear, U.S. ROB: High	Survey: barriers/facilitator to use of IPV services using virtual platform 45 women and 17 providers	Inclusion: Immigrant women residing in the U.S. with experiences of IPV with the last year, providers were those who had ≥2 years of experience serving immigrant survivors of IPV Exclusion: NR	Age, mean: NR Non-white: NR

Abbreviations: CDC= Centers for Disease Control and Prevention; CNM=certified nurse midwife; HRSA=Health research and services administration; IPV=interpersonal violence; IUD=intrauterine device; MCHB= Maternal and Child Health Bureau; NICHD=National Institute of Child Health and Development ; NIH=National Institutes of Health; NP=nurse practitioner; NR=not reported; OBGYN=obstetricians/gynecologists; PA=physician's assistant; SD=standard deviation; U.S.=United States

Table E-5. Outcomes of studies of the impact of the COVID-19 pandemic on telehealth for women

Service	Author, Year	Comparisons	Main Results
Contraception	Hill, 2021 ⁵	Telehealth visits during COVID-19 pandemic vs. in-person visits during COVID-19 pandemic by race/ethnicity	<p>TH vs. in-person visits during COVID-19 pandemic Overall visits: 40.0% (1257/3142) vs. 60.0% (1885/3142) Visits for contraception: 63.5% (798/1257) vs. 48.5% (914/1885), p<0.001 Use by race: Black: 31.6% (242/765), p<0.05 Multiracial: 29.2% (31/106), p<0.05 Unknown race: 54.9% (162/295), p<0.05 White: 41.2% (771/1870), p<0.05 All other race identities: 48.1% (51/106), p<0.05 Latinx: 39.6% (108/273), p=NS</p> <p><u>Within group comparison of TH visits by race/ethnicity:</u> Black: 19.3% (242/1257) vs. 27.7% (523/1885), p<0.001 Multiracial: 2.5% (31/1257) vs. 4.0% (75/1257), p=0.03 Unknown race: 12.9% (162/1257) vs. 7.1% (133/1885), p<0.001 Latinx: 8.6% (108/1257) vs. 8.8% (165/1885), p=NS White: 14% (771/1257) vs. 9.9% (1870/1885), p=NR</p>
	Steiner, 2021 ⁷	Just before the COVID-19 pandemic vs. during the COVID-19 pandemic	<p>Utilization of services just before the COVID-19 pandemic vs. during the COVID-19 pandemic: TH for contraception use: 35.2% (278/791) vs. 60.7% (480/791), p<0.001 TH for STI services: 21.7% (172/791) vs. 43.5% (344/791), p<0.001</p> <p>During COVID-19 pandemic: TH for contraception discontinued: 6.8% (19/278) TH for contraception initiated: 43.1% (221/513) TH for STI services discontinued: 5.8% (10/172) TH for STI services initiated: 29.4% (182/619)</p>
	Stifani, 2021 ⁹ Patients	Telehealth visits for contraception counseling during the COVID-19 pandemic	<p>Satisfaction with TH visits: - Very satisfied: 86% (74/86) - Somewhat satisfied: 12% (10/86) - Somewhat dissatisfied: 0% - Very dissatisfied: 2% (2/86) TH visit met needs: - Needs were completely met: 63% (54/86) - Met for the moment but will need in-person visit later: 24% (21/86) - Met some needs but still needed in-person visit after: 11% (9/86) - Did not meet any needs and needed in-person visit: 2% (2/86)</p>

Service	Author, Year	Comparisons	Main Results
Contraception, continued	Stifani, 2021 ⁸ Providers	Before COVID-19 pandemic vs. during the COVID-19 pandemic	<p>Before vs. during COVID-19 pandemic:</p> <p>TH for contraception use (often or sometimes): 54.3% (19/35) vs. 30.8% (48/156)</p> <p>Satisfaction with TH during COVID-19 pandemic:</p> <ul style="list-style-type: none"> -TH is effective (strongly agree): 79.5% (124/156) -TH role should be expanded (strongly agree): 84.0% (131/156) -TH became routine would feel very happy: 63.5% (99/156) <p>Referral to in-person visits during COVID-19 pandemic:</p> <ul style="list-style-type: none"> -≤25%: 53.2% (83/156) -26 to 50%: 25.6% (40/156) ->50%: 8.3% (13/156) <p>Preferred TH type:</p> <ul style="list-style-type: none"> -Video: 59.6% (93/156) -Phone: 13.5% (21/156) -No strong preference: 25.6% (40/156) <p>Reason for referral to in-person visits during COVID-19 pandemic:</p> <ul style="list-style-type: none"> -LARC insertion: 52.6% (82/156) -LARC removal: 9.6% (15/156) -Depo: 10.3% (16/156) -Other reason: 3.8% (6/156)
	Zapata, 2021 ¹⁰	Before COVID-19 pandemic vs. during COVID-19 pandemic	<p>Before vs. during COVID-19 pandemic (n for each group=1063, same providers):</p> <p>LARC placement: 41.2% (438) vs. 36.3% (386), p<0.05</p> <p>LARC removal: 45.1% (479) vs. 40.1% (426), p<0.05</p> <p>TH for contraception initiation: 27.6% (293) vs. 55.8% (593), p<0.05</p> <p>TH for contraception continuation: 29.4% (313) vs. 60.1% (639), p<0.05</p> <p>Renewed contraception prescriptions without requiring an office visit: 54.9% (584) vs. 62.2% (661), p<0.05</p> <p>Allowed curbside pickup/mail delivery of contraception: 18.5% (197) vs. 29.5% (314), p<0.05</p> <p>Supported self-administration of subcutaneous injectable contraception: 15.6% (166) vs. 15.5% (165), p=NS</p> <p>Counseled on extending use of LARC beyond their FDA-approved duration: 26.3% (280) vs. 25.8% (274), p=NS</p> <p>Provided or prescribed emergency contraceptive pills in advance: 33.8% (359) vs. 35.4% (376), p=NS</p> <p>Provided or prescribed a year's worth of OCP: 52.0% (553) vs. 52.3% (556), p=NS</p> <p>Sent patient reminders about DMPA injections or LARC removal or replacement: 22.8% (242) vs. 22.1% (235), p=NS</p>
IPV	Krishnamurti, 2021 ¹⁶	MyHealthyPregnancy app; includes an optional IPV screening module vs. pre-COVID-19 use	IPV screening increased post COVID: from 67% to 85%, IPV incidence did not increase

Service	Author, Year	Comparisons	Main Results
	Sabri, 2021 ¹⁸	Use of IPV services during COVID-19 pandemic	Barriers to TH: lack of resources to engage in virtual services, lack of comfort with virtual platform, access to internet, preference for face-to-face interaction. Facilitators: use of text messages, emails, and video conference with safety plan (code word); use of telephone or text message check-ins; use of various safety plan, when using virtual platform, were needed: code work, hand gesture, secure text that need pin to be read

Abbreviations: COVID-19=novel coronavirus pandemic 2019; FDA=U.S. Food and Drug Administration; IPV=interpersonal violence; LARC=long-acting reversible contraceptive; NS=not significant; OCP=oral contraceptive pills; TH=telehealth

Table E-6. Barriers and facilitators to telehealth for reproductive and IPV services

Topic Number of Studies	Intervention	Method N* Location	Facilitators	Barriers	Impact
Family Planning [†]	NA	No studies	No studies	No studies	No studies
Contraception K=4 ^{5,6,8-10}	Telephone or video nurse contacts for contraception counseling and support	Telephone or video N=4,737 U.S. & U.K.	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Fewer females seeking care (49%)¹⁰ Technical challenges with contraceptive care via telehealth (45.8%)¹⁰ Confidentiality concerns (21.8%)¹⁰ Billing concerns (32.7%)¹⁰ Patient discomfort (31.2%)¹⁰ Geographic regions⁵ 	<ul style="list-style-type: none"> Very satisfied with telehealth visits: 86% (74/86)⁹ Satisfaction with chosen contraceptive method at 6 months: 87% (116/134) vs. 79% (111/140); mean difference 7 (95% CI, -1.5 to 16.1)⁶ Needs were completely met: 63% (54/86)⁹
STI counseling	NA	No studies	No studies	No studies	No studies
IPV K=2 ^{11,18}	Interactive, tailored online safety and health intervention; and use of IPV services during the COVID-19 pandemic	Online or unclear N=524 U.S & Canada	<ul style="list-style-type: none"> Use of text messages, emails, and video conference with safety plan (code word)¹⁸ Use of telephone or text message check-ins¹⁸ Use of various safety plans when using virtual platform¹⁸ 	<ul style="list-style-type: none"> Lack of resources to engage in virtual services¹⁸ Lack of comfort with virtual platform¹⁸ Lack of access to the internet Preference for face-to-face interaction¹⁸ 	<ul style="list-style-type: none"> Would recommend the online tool to other women, mean (SD) on VAS: 4.62 (0.599) vs. 4.47 (0.766), p=0.038¹¹

*N is used here to represent the unit of analysis, which may be number of individual participants or may be number of healthcare sites or systems.

[†]Family Planning was defined based on Title X guidelines²⁰ and included preconception counseling and birth spacing; contraceptive care (screening, counseling, provision, and followup care) was considered separately under reproductive health services.

Abbreviations: CI=confidence interval; COVID-19=novel coronavirus 2019; K=number of studies N=number of subjects; NA=not applicable; SD=standard deviation; U.K=United Kingdom; U.S.=United States

Appendix F. Risk of Bias Assessment

Table F-1. Risk of bias assessment for included randomized controlled trials

Author	Was the Assignment to the Treatment Groups Really Random?	Was Allocation Adequately Concealed?	Were Groups Similar at Baseline in Terms of Prognostic Factors?	Were Patients Blinded?	Were Healthcare Providers Blinded?	Were Outcome Assessors Blinded?	Was the Rate of Overall Attrition Within Acceptable Levels?	Was the Rate of Differential Attrition Within Acceptable Levels?	Did the Article Analyze People in the Groups in Which They Were Randomized (Intention-to-Treat, No Crossovers Between Groups in Analysis)?	Was the Funding Source Reported?	Assessment of Bias
Berenson, 2012 ⁴	Yes	Unclear	Yes	No	No	Yes	No	Yes	Yes	Yes	Moderate
Ford-Gilboe, 2020 ¹¹	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Moderate
Gilbert, 2015 ¹²	Yes	Unclear	Yes	Yes	Not Reported	Unclear	Yes	Yes	Yes	Yes	Moderate
Glass, 2017 ¹³	Yes	Yes	Yes	Yes	Not Reported	Unclear	Yes	Yes	Yes	Yes	Moderate
Hegarty, 2019 ¹⁴	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Low
Koziol-McLain, 2019 ¹⁵	Yes	Yes	Yes	Yes	Not Reported	Unclear	Yes	Yes	Yes	Yes	Moderate
Kumar, 2019 ⁶	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Moderate
Saftlas, 2014 ¹⁹	No	Unclear	Yes	Unclear	No	Unclear	No	Yes	Yes	Yes	Moderate

Table F-2. Risk of bias assessment for the included nonrandomized controlled study

Author, Year	Did the Study Attempt To Enroll All (or a Random Sample of) Patients Meeting Inclusion Criteria (Inception Cohort)?	Were the Groups Comparable at Baseline on Key Prognostic Factors (e.g., by Restriction or Matching)?	Did the Study Use Accurate Methods for Ascertaining Exposures and Potential Confounders (i.e., Age, Sex, Other Medications)?	Were Outcome Assessors and/or Data Analysts Blinded to the Exposure Being Studied?	Did the Article Report Attrition or Missing Data?	Is There Important Differential Loss to Followup or Overall High Loss to Followup or Missing Data?	Did the Study Perform Appropriate Statistical Analyses on Potential Confounders (i.e., Age, Sex, Other Medications)?	Were Outcomes Prespecified and Defined, and Ascertained Using Accurate Methods?	Assessment of Bias
McFarlane, 2004 ¹⁷	Yes	Yes	Yes	Not reported	Yes	No	Unclear	Yes	Moderate

Table F-3. Risk of bias assessment for the included before-after study*

Author, Year	Were All Eligible Participants That Met the Prespecified Entry Criteria Enrolled?	Were the Outcome Measures Prespecified, Clearly Defined, Valid, Reliable, and Assessed Consistently Across All Study Participants?	Were the People Assessing the Outcomes Blinded to the Participants' Exposures/ Interventions?	Were Outcome Measures of Interest Taken Multiple Times Before the Intervention and Multiple Times After the Intervention (i.e., Did They Use an Interrupted Time-Series Design)? (This Is Also About the Same Patients)	Were Temporal Trends Considered or Controlled for (e.g., Statistical Adjustment, Comparison With Another Hospital in Same Time Period)? Compared With Other Hospital?	Assessment of Bias
Krishnamurti, 2021 ¹⁶	Yes	Yes	No	Yes	Yes	Moderate

*National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study with no control group, <https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools>

Table F-4. Risk of bias assessment for included cross-sectional studies*

Author, Year	Is the Sampling Strategy or Selection Criteria Reported and Appropriate?	Are the Response or Participation Rates Reported and Are They Acceptable Given the Type of Study?	Are Characteristics (e.g., Demographics) of Respondents/Participants Reported?	Is How the Questions Were Developed/Selected Reported and Is it Appropriate?	Were Confounders Considered? (Could Be in Analysis or Presentation, Such as Stratifying Results)	Is Analysis Appropriate? (Given the Type of Data)	Assessment of Bias
Hill, 2021 ⁵	Yes	NA	No	NA	Yes	Yes	Moderate
Sabri, 2020 ¹⁸	Yes	No	No	Yes	Unclear	Unclear	High
Steiner, 2021 ⁷	Yes	Yes	Yes	Yes	Yes	Yes	Low
Stifani, 2021a ⁸	Yes	Yes	Yes	Yes	Unclear	Yes	Moderate
Stifani, 2021b ⁹	Yes	Yes	Yes	Yes	Unclear	Yes	Moderate
Zapata, 2021 ¹⁰	Unclear	Yes	Yes	Yes	Yes	Yes	Moderate

*Source: Hersh W, Totten A, Eden K, et al. Health Information Exchange. Evid Rep Technol Assess (Full Rep). 2015 (220):1-465. doi: 10.23970/ahrqepcerta220. PMID: 30307736.

Appendix G. Details on Strength of Evidence

Appendix Table G-1. Strength of evidence

Preventive Service	Outcome	Studies; Observations (n); Study Designs	Directness	Consistency and Precision	Limitations	Summary of Findings	Strength of Evidence
Contraception	Contraceptive use	2 RCTs (1,724) ^{4,6}	Direct	Consistent; precise	Moderate: lack of blinding; high participant attrition or loss to followup	Similar rates of oral contraceptive continuation at 12 months (19.8% [76/384] vs. 19.8% [77/388] vs. 18.0% [69/383]; p=0.77); similar rates of contraceptive use (p=0.17) or LARC use at 6 months postabortion (42% [60/142] vs. 32% [48/148]; mean difference 10 (95% CI, -1.3 to 20.9); p=0.08)	Low
	STI incidence	1 RCT (1,155) ⁴	Direct	NA; imprecise	Moderate: See above	Similar rates of STI for intervention and control groups (13 [3.4%] vs. 18 [4.6%] vs. 12 [3.1%]; p=0.50)	Low
	Pregnancy	1 RCT (1,155) ⁴	Direct	NA; precise	Moderate: See above	Similar pregnancy rates for intervention and control groups (HR [95% CI]: 1.07 [0.72 to 1.59] vs. 1.00 vs. 1.39 [0.95 to 2.03], p=0.22)	Low
	Abortion rates	1 RCT (569) ⁶	Direct	NA; imprecise	Moderate: Significant loss to followup	Similar abortion rates at 1 year for intervention and control groups (10% [26/270] vs. 10% [28/281]; p=0.10)	Insufficient
Family planning	Delivery of family planning services	1 cross sectional study ⁵	NA	NA	NA	NA	Insufficient
STI Screening	NA	No studies	NA	NA	NA	NA	Insufficient

Preventive Service	Outcome	Studies; Observations (n); Study Designs	Directness	Consistency and Precision	Limitations	Summary of Findings	Strength of Evidence
Intimate Partner Violence (IPV)	IPV rates	2 RCTs (1,132) ^{13,15}	Direct	Consistent; imprecise	Moderate; few studies; heterogenous populations	No differences in measures of IPV (SVAWS) for interactive vs. noninteractive online tools at 12 months in two trials. Subgroup analysis in one study showed statistically significant differences at 6 (adjusted intervention estimate, -14.19; 95% CI -24 to -4.37) and 12 months (adjusted intervention estimate -12.44; 95% CI -23.35 to -1.54) for indigenous vs non-indigenous women.	Low
	Depression scores	5 RCTs (2,322) ^{11,13-15,19}	Direct	Inconsistent; precise	Moderate: few studies; heterogeneous interventions and comparisons	Significantly improved measures of depression (CES-D) for both groups with in-person interviews followed by phone calls vs. referral in 1 trial (intervention, 15.7 vs. 11.7, p<0.001; control, 14.3 vs. 11.8, p<0.0001; adjusted mean change [SE], -4.2 [0.6] vs. -2.6 [0.6], p=0.07). No differences between interactive vs. noninteractive online tools in 4 other trials.	Low

Preventive Service	Outcome	Studies; Observations (n); Study Designs	Directness	Consistency and Precision	Limitations	Summary of Findings	Strength of Evidence
Intimate Partner Violence (IPV), continued	PTSD scores	2 RCTs (1,182) ^{11,13}	Direct	Consistent; imprecise	Moderate: few studies	No differences in PTSD symptoms (PCL-C) between interactive vs. noninteractive online tools (baseline vs. 12-months: tailored, 53.00 vs. 43.29, p<0.001; non-tailored, 51.69 vs. 44.45; p<0.001; tailored vs. non-tailored, p=0.269); (baseline vs. 12-months; intervention, 19.06 vs. 15.83, p<0.001; control, 19.53 vs. 16.06, p<0.001).	Low
	Fear, coercion	2 RCTs (884) ^{14,19}	Direct	Consistent; imprecise	Moderate: few studies; clinical relevance of measures unclear	No differences between interactive vs. noninteractive online tools for fear (mean [SD], 3.0 [2.7] vs. 3.5 [2.5]; mean difference 0.4 [95% CI, -0.3 to 1.0]); or coercion (baseline vs. 12-months: tailored, 53.00 vs. 43.29, p<0.001; non-tailored, 51.69 vs. 44.45; p<0.001; tailored vs. non-tailored, p=0.269).	Low
	Self-efficacy	3 RCTs (919) ^{12,14,19}	Direct	Inconsistent; imprecise	Moderate: few studies; comparison intervention may be an inadequate control; clinical relevance of measures unclear	Significantly greater improvement in self-efficacy scores for noninteractive (control group) versus interactive online tool (intervention, 27.0 vs. 27.8; control, 26.3 vs. 29.0; p=0.0023). No differences in scores in the two other trials (adjusted mean change [SE], 6.1 [1.6] vs. 3.7 [1.5]; p=0.255).	Low
	Safety behaviors	4 RCTs (763) ^{12-14,17}	Indirect	Inconsistent; imprecise	Moderate: few studies; heterogeneous interventions and comparisons; clinical relevance of measures unclear	Significantly more safety behaviors with telephone calls vs. usual care (F _{4,144} =5.45, p<0.001). No differences between groups in 3 other trials.	Low
	Harms	1 RCT (231) ¹¹	Indirect	NA; imprecise	Moderate	No difference in patient reported anxiety between a tailored, online safety tool versus a static version (mean [SD] 3.22 [1.25] vs. 3.33 [1.21], p=0.380).	Insufficient

Abbreviations: CES-D=Center for Epidemiologic Studies Depression Scale; CI=confidence interval; IPV=interpersonal violence; LARC=long-acting reversible contraception; PCL-C = PTSD checklist, civilian version; PTSD=posttraumatic stress disorder; NA=not applicable; PTSD=posttraumatic stress disorder; RCT=randomized controlled trial; SD=standard deviation; SE=standard error; STI=sexually transmitted infection; SVAWS = severity of violence against women scale

Appendix H. Appendix References

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