

# Schedule of Visits and Televisits for Routine Antenatal Care: A Systematic Review

## Evidence Summary



### Main Points

- Reduced visit versus traditional visit schedules for routine antenatal care
  - Studies comparing reduced routine antenatal visit schedules with traditional schedules did not find differences between schedules in gestational age at birth, likelihood of being small for gestational age, likelihood of a low Apgar score, likelihood of neonatal intensive care unit (NICU) admission, maternal anxiety, likelihood of preterm birth, and likelihood of low birth weight.
  - There is insufficient evidence for numerous prioritized outcomes of interest (e.g., completion of the American College of Obstetricians and Gynecologists (ACOG) recommended services and patient experience measures).
  - Qualitative studies reported several potential facilitators and barriers to implementing reduced visit schedules, including:
    - Barriers from patient perspective: hesitancy to take on more responsibility and emotional discomfort with reduced visits.
    - Barriers from both patient and provider perspectives: reduced visits may lead to important gaps in patient knowledge and pregnant individuals vary in confidence in managing their pregnancy independently.
    - Facilitators from provider perspective: reduced visits align with midwifery philosophies of care, improvement in overcrowding (of clinics), may increase clinic time available to be directed to patients with high-risk pregnancies, and patients may value fewer visits and avoiding inconveniences of attending multiple appointments.
    - Barriers from provider perspective: reduced visits may compromise patients' antenatal care and their psychosocial needs, go counter to patients' familiarity with the traditional model across decades of social networks, and may result in repercussions from management should adverse events occur.

*Continued on page 2*

- Televisits for routine antenatal care
  - Studies comparing hybrid (televisits and in-person) visits and all in-person visits did not find differences in rates of preterm births, rates of NICU admissions, but found possible greater satisfaction with hybrid visits. However, an additional survey that directly compared televisits and in-person visits found greater satisfaction with in-person visits.
  - There is insufficient evidence for numerous prioritized outcomes.
  - Qualitative studies reported several potential facilitators and barriers to implementing televisits, including:
    - Facilitators from patient and provider perspectives: televisits allow care to be better tailored to the needs of patients; televisits protect patients, providers, and clinics from COVID-19; televisits enhance community and relationship building (although some believed it could hinder); televisits are helped by home monitoring devices use and system supports (e.g., guidance, technology support, translation services).
    - Barriers from patient and provider perspectives: potential reduced quality of care with televisits and patients' psychological apprehension and general desire to be seen in-person.
    - Barriers from provider perspective: no or limited IT (information technology) literacy of patient or providers; need for onerous training of providers; perception of the added complexity televisits bring to service delivery; difficulty for patients in the initial set-up; difficulty for patients to describe symptoms virtually; lack of buy-in from health-system leadership; a need to integrate televisits within existing workflows; concerns about potentially liability issues and changes in reimbursement policies; limited evidence (or lack of knowledge of evidence) on the use of televisits for routine antenatal care; and difficulty of transitioning to televisits for patient populations with health disparities and those with difficulty accessing the necessary technology.
    - Facilitators from provider perspective: guidelines on which types of antenatal visits are (or are not) appropriate for televisits; user-friendly technology and resources to support and encourage health providers and patients engagement; translation of materials for non-English-speaking patients; patients' appreciation for continuity of care; provider ease with technology; access to colleagues with prior telehealth experience; improved patient attendance at visits; and ability to manage low-risk pregnancies at home.
    - Facilitator from provider and clinic leadership perspectives: training for staff and regular leadership meetings to ease the transition.
    - Facilitator from leadership perspective: support for office staff to ease implementation challenges.

*Continued on page 3*

- Tradeoffs of barriers and facilitators from provider perspective: lack of privacy for televisits versus increased ability of family to attend and participate in televisits; and reduced training opportunities for junior clinicians versus improved team cohesion and case discussion between senior and junior clinicians with televisits.
- Studies did not evaluate heterogeneity of treatment effects (whether some specific groups of patients may have had better or worse outcomes with reduced routine visits or televisits) or equity issues (whether certain classes of patients might be disadvantaged by reduction in the number of visits or use of televisits).



## Background and Purpose

Antenatal care (also termed prenatal care) is one of the most common preventive health services in the United States, accessed by about 4 million women annually. Antenatal care aims to improve the health and wellbeing of pregnant patients and their babies through (1) medical screening and treatment; (2) anticipatory guidance; and (3) psychosocial support. Though there is strong evidence for many prenatal services (e.g., routine laboratory testing, imaging and vaccinations), the evidence for specific aspects of delivering antenatal care related to frequency and timing of visits, and to televisits for individuals receiving routine antenatal care is less clear.

In the United States, current recommendations include 12 to 14 office-based visits for individuals with low-risk pregnancies, in addition to laboratory testing and ultrasounds. Since 1989, though, several US-based and international guidelines have recommended fewer antenatal visits (6 to 9) for those with low-risk pregnancies.

Telemedicine (the use of electronic communication among providers, patients, healthcare administrators, and others to enable healthcare delivery) is a relatively new approach to routine antenatal care. Televisits (specifically, simultaneous, two-way communication between providers and patients, primarily via internet or phone) are the type of telemedicine that most directly relate to patients' interactions with their providers. The potential benefits and harms or concerns related to televisits, as opposed to in-person care, have yet to be elucidated for routine antenatal care.

ACOG and the Society for Maternal-Fetal Medicine (SMFM) nominated this topic for systematic review (SR) to support a planned new evidence-based joint consensus statement to address the preferred frequency and timing of routine antenatal care visits and the use of televisits for routine antenatal care. This SR aims to inform providers of routine antenatal care, pregnant patients, policymakers, and developers of clinical guidance about the evidence regarding the benefits and harms of less frequent versus traditional visit schedules for routine antenatal care; the benefits and harms of televisits for routine care; and providers', pregnant patients', and others' perspectives, preferences, and experiences related to routine visit schedules and use of televisits for routine antenatal care.



## Methods

We used methods consistent with those outlined in the Agency for Healthcare Research and Quality Evidence-based Practice Center Program Methods Guidance. We synthesized both quantitative and qualitative research studies. Our searches targeted comparative studies and qualitative research studies from database inception to February 12, 2022. The PROSPERO protocol registration number is CRD42021272287.

Based on discussions with stakeholders, we prioritized 15 outcomes deemed important to pregnant patients and their babies with the greatest potential to be affected by changes to routine antenatal visits. These included: maternal quality of life, maternal anxiety, maternal depression, satisfaction with antenatal care, lost work time, preterm birth, gestational age at birth, small for gestational age, low birth weight, Apgar score, breastfeeding, completion of ACOG recommended services, unplanned visits, NICU admissions, and delayed diagnoses.



## Results

**Reduced versus traditional visit schedules:** All but one study recruited pregnant patients who were at low antenatal risk. Studies varied greatly in sample size (randomized controlled trials [RCTs]: 80-2692; nonrandomized comparative studies [NRCSs]: 214-3882). Five RCTs and five NRCSs compared reduced with traditional visit schedules for routine antenatal care. The RCTs were mostly at low risk of bias, except that studies could not blind the intervention (one RCT also had a high dropout rate). The NRCSs were generally at high risk of bias due to failure to adjust for potential confounders and fundamental differences between compared groups. Studies varied in the number of scheduled visits employed in both the reduced schedule and the traditional schedule study arms. Traditional schedules were mostly consistent with the ACOG guideline of about 14 scheduled visits, ranging from 12 to 15. In contrast, the number and timing of alternative visit schedules varied substantially, ranging from 6 or 7 (depending on participant parity) to 10. Studies also varied regarding who provided antenatal care; although, most studies provided few details.

Moderate-strength evidence from studies comparing reduced versus traditional visit schedules did not indicate differences in infant outcomes between visit schedules regarding gestational age at birth (2 RCTs and 2 NRCSs; mean difference [MD] about 0 days), being small for gestational age (3 RCTs; summary odds ratio [OR] 1.08, 95% confidence interval [CI] 0.70 to 1.66), low Apgar score (3 RCTs and 2 NRCSs; ORs ranging from 0.62 to 1.26, all statistically nonsignificant; MD 0 at 1 and 5 minutes), and NICU admission (3 RCTs and 2 NRCSs; summary OR 1.05, 95% CI 0.74 to 1.50). Low-strength evidence from studies comparing reduced versus traditional visit schedules did not indicate differences between visit schedules regarding maternal anxiety (3 RCTs, incomplete data reporting), preterm birth (1 RCT and 2 NRCSs; ORs ranged from 0.80 to 1.25, all statistically nonsignificant), and low birth weight (1 RCT and 3 NRCSs; summary OR 1.02, 95% CI 0.82 to 1.25).

Due to inconsistent findings, there was insufficient evidence regarding satisfaction with antenatal care (5 RCTs, 2 NRCSs) and number of unplanned antenatal visits (1 RCT, 2 NRCSs). Numerous prioritized outcomes had insufficient evidence. These included quality of life, depression, lost work time, breastfeeding outcomes, completion of ACOG recommended services, and delayed diagnoses.

Four qualitative studies provided perspectives on reduced scheduled visits from patients, providers, and clinic leadership. The studies suggested that providers perceived that reduced visit schedules could lessen the inconveniences for patients with low-risk pregnancies of attending multiple appointments and may allow more clinic time to be directed to patients with high-risk pregnancies. Patients and providers expressed concerns that some patients may not have the confidence to independently manage their pregnancies under reduced care models and that fewer visits may compromise patients' antenatal care. Providers also expressed concerns that implementation may be hampered by decades of patients' (and their families') familiarity with the traditional care model. Patients noted emotional discomfort with reduced care and inversely positive emotions with a traditional care schedule. Providers also expressed fears that reduced care may lead to staff cutbacks. Finally, providers emphasized their perceived need for a supportive management, without which they expressed fears about repercussions from management in the event of a rare adverse event associated with maternity care.

**Televisits versus in-person visits:** Two RCTs, four NRCSs, and one survey compared televisits with in-person visits for routine antenatal care. One RCT was at low risk of bias but the other RCT had incomplete reporting in a conference abstract. Neither could blind visits. The NRCSs were at high risk of bias due to failure to adjust for potential confounders and fundamental differences between compared groups. The survey was at low risk of bias. The number of televisits ranged from one to five. Three studies were conducted during the COVID-19 pandemic; neither of the two studies that compared hybrid visits during COVID-19 with in-person visits pre-pandemic accounted for other factors that may have led to different outcomes during the pandemic, such as change in employment, office work, sleep time, societal stressors, social isolation, and changes in diet and exercise. Some of these factors may have reduced risk of poor outcomes (e.g., increased sleep); others may have increased risks (e.g., stressors).

Low-strength evidence from studies comparing hybrid (televisit and in-person) and all in-person visits did not indicate differences regarding preterm births (1 RCT, 3 NRCSs; summary OR 0.93, 95% CI 0.84 to 1.03,  $P=0.18$ ) or NICU admissions (3 NRCSs; summary OR 1.02, 95% CI 0.82 to 1.28). There was also low-strength evidence that patients receiving hybrid visits were more likely to be satisfied with antenatal care than patients receiving all in-person care (1 RCT, 1 NRCS); however, a survey that directly compared satisfaction with televisits versus satisfaction with in-person visits (among patients receiving hybrid visits) was inconsistent, finding greater satisfaction with in-person visits.

Numerous prioritized outcomes had insufficient evidence. These included quality of life, mental health (anxiety, depression, and stress), lost work time, gestational age at birth, small for gestational age, low birthweight, Apgar score, breastfeeding, completion of ACOG recommended services, unplanned visits, and delayed diagnoses.

Five qualitative studies provided perspectives on use of televisits for routine antenatal care from patients, providers, and clinic leadership. The studies suggest that patients and providers believe televisits may improve patients' access to and continuity of care, and could allow tailoring of care, but they had mixed views on whether televisits may improve or hamper communication and relationship-building between providers and patients. Patients and providers believed televisits may protect patients from COVID-19 transmission. Provider-perceived facilitators of implementation included guidance from colleagues with telemedicine experience and providers' ease with technology; providers and leadership noted that time and training are needed to help staff transition to televisit care. System supports and home monitoring were considered by patients, providers and clinic leadership as important adjuncts to support the implementation of televisits. Providers noted that they would also value guidelines regarding appropriate care for televisits. Providers and clinic leadership noted that clinic leadership support of office staff is important. Concerns that televisits may hamper safety, quality of care, and worsen health disparities were noted by patients, providers, and clinic leadership. Providers perceived that patients' psychological apprehension with televisits and telehealth technology may pose a barrier to its uptake.



## Limitations

The evidence base is small. The approaches to antenatal care delivery evaluated were varied and did not allow for easy comparisons across studies. Reported outcomes mostly included standard birth outcomes without strong plausible biological connection to structural aspects of antenatal care. Numerous prioritized outcomes have no or insufficient evidence. The NRCSs were almost all unadjusted and thus subject to high risk of bias. While the qualitative evidence synthesis provides context to our quantitative findings, it was also relatively sparse in the quantity and diversity of perspectives identified. Further evidence on patient perspectives is needed from patients themselves (rather than from providers), a range of provider disciplines, and clinic leadership (in general, and from diverse healthcare settings and practice models).



## Implications and Conclusions

The evidence allowed few specific conclusions. Generally speaking, studies did not report negative effects to reduced schedules of antenatal care or the incorporation of televisits into antenatal care. Although providers and patients had some concerns about reduced visit schedules and use of televisits, several potential benefits were also noted. While the evidence appears to be applicable to a range of populations and settings, there is insufficient evidence about how changes in visit numbers or use of televisits may impact different populations, especially as concerns health disparities, inequities, and social determinants of health. Future research is needed that includes outcomes of most importance and relevance to changing antenatal care visits. Until there is further evidence to provide more definitive conclusions, other factors, importantly patient preferences,



may be important to help decide whether or not to implement reduced antenatal care schedules and/or substitute telehealth for select antenatal care visits.

## Full Report

Balk EM, Konnyu KJ, Cao W, Reddy Bhuma M, Danilack VA, Adam GP, Matteson KA, Peahl AF. Schedule of Visits and Televisits for Routine Antenatal Care: A Systematic Review. Comparative Effectiveness Review No. 257. (Prepared by the Brown Evidence-based Practice Center under Contract No. 75Q80120D00001.) AHRQ Publication No. 22-EHC031. Rockville, MD: Agency for Healthcare Research and Quality; June 2022. DOI: <https://www.doi.org/10.23970/AHRQEPCCER257>. Posted final reports are located on the Effective Health Care Program [search page](#).

