Efficient Prenatal Care: Fewer Visits, Fewer Sonograms

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In this issue of **ecp**, Evidence Matters focuses on obstetric care and how it might be done more efficiently. The goal of prenatal care is to ensure delivery of a healthy baby to a healthy mother. The standard regimen of care that most obstetric providers have been trained to use is intense—14 visits during a 40-week pregnancy and a myriad of screening tests. Many recommended aspects of prenatal care have not been shown in clinical trials to improve outcomes, but more tests and visits must be better, right? The studies presented in this issue of **ecp** show the opposite—that more visits and, at least in the case of routine ultrasonography, more tests are not necessarily better. Neither increases the number of healthy babies delivered to healthy mothers.

The first study presented here was designed to put the recommendations of the Expert Panel on the Content of Prenatal Care[1]—a multidisciplinary panel convened by the Public Health Service—to the test of a randomized, controlled trial. This trial, conducted in the Colorado region of Kaiser Permanente, found that reducing the number of prenatal visits had no adverse effects on outcome or patient satisfaction. That the intensity of prenatal care can safely be reduced has been confirmed by randomized trials in Britain[2] and Zimbabwe.[3] By paying attention to what we do in fewer prenatal visits, we can improve the efficiency of prenatal care while satisfying our patients and maintaining excellent pregnancy outcomes. Obstetric providers can use the results of these randomized trials to safely reduce the intensity of routine prenatal care and continue to deliver healthy babies to healthy mothers.

Performing ultrasonography at least once and often twice or more during pregnancy has seemingly become routine. This practice was based on the belief that such screening would improve outcomes. However, the RADIUS trial, presented here and in another paper[4] examining the impact of routine screening ultrasonography on maternal management and outcomes, demonstrated that routine ultrasonography does not reduce adverse perinatal outcomes or obstetric interventions.

Keeping in mind the caveat that these trials examined care given to low-risk obstetric patients, it seems clear that in prenatal care, more is not necessarily better. Indeed, when equivalent or better outcomes result from less intense care, resources become available for use elsewhere. To me that means that less—not more—is better.

References

1. Public Health Service Expert Panel on Prenatal Care. Caring for our Future: The Content of Prenatal Care. Washington, DC: Public Health Services, US Dept of Health and Human Services; 1989.
2. Sikorski J, Wilson J, Clement S, Das S, Smeeton N. A randomised controlled trial comparing two schedules of antenatal visits: the antenatal care project. BMJ.1996;312:546-53.
3. Munjanja SP, Lindmark G, Nyström L. Randomized controlled trial of a reduced-visits programme of antenatal care in Harare, Zimbabwe. Lancet. 1996;348:364-9.
4. LeFevre ML, Bain RP, Ewigman BG, et al. A randomized trial of prenatal ultrasonographic screening: impact on maternal management and outcome. Am J Obstet Gynecol. 1993; 169:483-9.

This paper is available at ecp.acponline.org.

McDuffie RS, Beck A, Bischoff K, Cross J, Orleans M. Effect of frequency of prenatal care visits on perinatal outcome among low-risk women. A randomized controlled trial. JAMA. 1996;275:847-51.

QUESTIONS. Does reducing the number of routine prenatal visits increase adverse maternal or perinatal outcomes? Are patients satisfied with a reduced number of prenatal visits?

DESIGN. Randomized, controlled trial.

PATIENTS. Healthy, pregnant, adult women with no past or current high-risk obstetric conditions who presented for their first intake visit in the first trimester. All patients were enrolled in a nonprofit, group model, health maintenance organization (the Colorado region of Kaiser Permanente).

INTERVENTION. 1165 women were randomly assigned to receive fewer routine prenatal visits. They were to be seen at 8, 12, 16, 24, 28, 32, 36, 38, and 40 weeks of gestation. For parous women, a telephone call was scheduled at 12 weeks instead of an office visit. 1163 women were randomly assigned to attend the usual schedule and number of visits. They were to be seen every 4 weeks from 8 to 28 weeks, every 2 weeks until 36 weeks, and weekly thereafter.

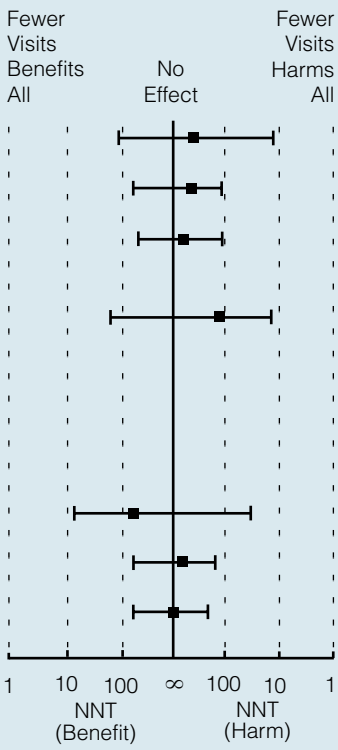
RESULTS. On average, women assigned to fewer visits had three fewer visits per pregnancy. There were no significant differences between the groups in any maternal outcome (**Table 1**). Other outcomes with no significant differences included mild preeclampsia; preterm labor; cesarean section for fetal distress; preterm, premature rupture of membranes; gestational diabetes; multiple births; choriamaniotitis; abruptio placenta; and postpartum hemorrhage.

There were no significant differences between the two groups in any perinatal outcome (**Table 1**). In addition, there were no significant differences in mean gestational age, mean birthweight, number of babies born

TABLE 1

Maternal and Perinatal Outcomes of Fewer Routine Obstetric Visits*

MATERNAL OUTCOME	FEWER VISITS	USUAL CARE	RRI (95% CI)	ARI (95% CI)	NNT (95% CI)
Preterm delivery					
< 37 weeks	6.3%	5.4%	16% (–19 to 51)	0.9% (–1.1 to 2.8)	
< 32 weeks	0.9%	0.7%	25% (–8 to 128)	0.2% (–0.5 to 0.9)	
Severe preeclampsia	0.9%	0.8%	11% (–84 to 105)	0.1% (–0.6 to 0.8)	
Cesarean section	13%	12%	8% (–15 to 30)	1.0% (–1.8 to 3.6)	
PERINATAL OUTCOME	**FEWER VISITS**	**USUAL CARE**	**RRI (95% CI)**	**ARI (95% CI)**	
Birthweight					
< 2500 gm	5.4%	6.1%	–11% (–42 to 20)	–0.7% (–2.6 to 1.2)	
< 1500 gm	0.6%	0.5%	17% (–100 to 134)	0.1% (–0.5 to 0.7)	
Stillbirth	0.4%	0.4%	0% (–124 to 124)	0% (–0.5 to 0.5)	



**ARI = absolute risk increase (e.g., use fewer visits) to benefit one person; NNT (Benefit) = number needed to treat to benefit one person; NNT (Harm) = number needed to treat to harm one person; RRI = relative risk increase (from fewer prenatal visits). Note that for the outcomes presented here, the 95% CI includes the possibility of harm or benefit and thus passes through infinity.*

small for gestational age, or number of babies with APGAR scores below 7 at 5 minutes.

Patients were questioned about satisfaction with their prenatal care. The only significant difference was that more patients in the fewer-visits group rated the number of prenatal visits as "just right" (89.2% in the fewer-visits group vs. 82.8% in the usual visits group, $P = 0.002$; NNT, 16; 95% CI, 10 to 44). The two groups were equivalent in all other measures of patient satisfaction.

CONCLUSION. In low-risk obstetric patients, reducing the number of routinely scheduled prenatal visits from a target of 14 to 8 or 9 visits has no adverse effect on maternal or perinatal outcomes and may increase patient satisfaction.

Ewigman BG, Crane JP, Frigoletto FD, et al. Effect of prenatal ultrasound screening on perinatal outcome. N Engl J Med. 1993;329:821-7.

QUESTION. Does routine ultrasonography (U/S) on two occasions reduce perinatal morbidity and mortality?

DESIGN. Multicenter randomized, controlled trial.

PATIENTS. Women at low risk for adverse pregnancy outcomes and no clinical indication for U/S. All centers were in the United States. Academic centers, HMOs, and private practices were included.

INTERVENTION. 7812 women were randomly assigned to receive two routine U/S examinations during pregnancy. The first examination was to be scheduled at 18 to 20 weeks of gestation; the second was to be scheduled at 31 to 33 weeks. 7718 women were randomly assigned to have no routine U/S examinations.

RESULTS. The rates of adverse perinatal outcomes were equivalent between the screened and unscreened groups. Analysis of the 11 predefined adverse outcomes indicating severe morbidity and of the 8 adverse outcomes indicating moderate morbidity revealed no differences between the screened and unscreened groups. There were no differences in rates of preterm births or postdate births between the two groups. Rates of fetal or neonatal death were equivalent in the two groups. Selected outcomes are presented in **Table 2**.

Women assigned to no screening averaged 0.6 U/S examinations; 55% had no U/S examinations. Women assigned to routine screening averaged 2.2 U/S examinations.

CONCLUSION: A policy of routine ultrasonography in low-risk pregnant patients does not improve perinatal outcomes.

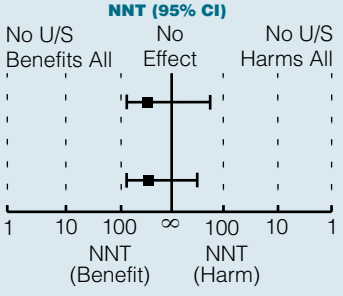
Key Evidence

- **In low-risk obstetric patients, reducing the number of routinely scheduled prenatal visits has no adverse effect on maternal or perinatal outcome.**
- **Reducing the number of prenatal visits does not impair, and may modestly improve, patient satisfaction with prenatal care.**
- **In low-risk obstetric patients, routine prenatal ultrasonography does not improve perinatal outcomes.**

TABLE 2

Outcomes for No Ultrasonography vs. Routine Ultrasonography*

OUTCOME	NO U/S	ROUTINE U/S	RRR (95% CI)	ARR (95% CI)	NNT (95% CI)
Any adverse outcome	4.9%	5.0%	1.5% (15 to –12)	0.1% (0.9 to –0.6)	
Fetal/neonatal death	0.5%	0.7%	20% (56 to –16)	0.2% (0.4 to –0.1)	



**ARR = absolute risk reduction; NNT (Benefit) = number needed to benefit one person; NNT (Harm) = number needed to harm one person; RRR = relative risk reduction. Note that for the outcomes presented here, the 95% CI includes the possibility of harm or benefit and thus passes through infinity.*