

## Scheduling Prenatal Care for Low-Risk Women

***More than half the births in the U.S. annually are to women at low risk for complications of pregnancy. Prenatal care for these women is therefore a major item on the U.S. health care agenda. Recommendations of two national committees on the subject are reviewed as well as results of three randomized, controlled trials which compared these recommendations with traditional prenatal care. Both the recommendations and results of the trials support adopting a new obstetric visit schedule for pregnant women who are at low risk for adverse perinatal outcomes.***

### Introduction

Prenatal care is the foundation of all health care: the medical circumstances of birth predict not only immediate neonatal outcome but also long-term outcome, including intelligence quotient and school performance.<sup>1</sup> Many observational studies support the concept that prenatal care improves pregnancy outcome.<sup>2-10</sup> Of the 4 million infants born in the United States each year, more than half are born to women at low risk for adverse pregnancy outcome. Thus, prenatal care for these women is a major item on the U.S. health care agenda. What has never been clear is how much prenatal care low-risk women need to achieve a good pregnancy outcome. This article reviews 1) recommendations made by two national committees concerning prenatal care for low-risk women; and 2) results of three randomized, controlled trials that compared these recommendations and traditional care. Results of the trials support adopting a new visit schedule for low-risk pregnant women.

### Recommendations of Two National Committees

This question was examined by both the Royal College of Obstetrics and Gynaecology (Great Britain) and the Expert Panel on the Content of Prenatal Care (United States). In 1982, the Royal College advocated a schedule of fewer antenatal visits than traditionally provided for British women at low risk for adverse pregnancy outcome.<sup>11</sup> In 1989, the Expert Panel on the Content of Prenatal Care made a similar recommendation.<sup>12</sup> Composed of professionals from many sectors of the U.S. health care system, this multidisciplinary group reviewed available literature and determined that traditional visits for health promotion and risk assessment could be combined to provide 8 to 10 visits for low-risk women instead of the traditional schedule (13 or 14 visits). The new schedule eliminated the traditional visit at 20 weeks' gestation and included longer intervals between visits during the third trimester.

### Clinical Trials

Since 1995, three published randomized, controlled trials<sup>13-15</sup> have advocated this visit schedule for low-risk women.

### Kaiser Permanente Clinical Studies

In one study, Binstock and Wolde-Tsadik<sup>13</sup> randomly assigned 549 low-risk women at the Kaiser Permanente Medical Center in Woodland Hills, California, to either a traditional schedule of 13 visits or a study schedule of 8 visits. Women were considered at "low" risk for adverse pregnancy outcome if they were at <18 weeks' gestation and had no prior obstetric problems such as preterm birth and no medical problems such as chronic hypertension or diabetes. Each visit was structured to provide "focused content" appropriate for gestational age. Perinatal outcome, medical utilization, and patient satisfaction were measured. No differences in rates of low birthweight, preterm delivery, or cesarean delivery were seen. The control group had 11.3 visits per pregnancy; the study group had 8.2 visits ( $p < .001$ ). The authors found no differences in administration of recommended prenatal tests such as maternal serum  $\alpha$ -fetoprotein or glucose screening or in duration of maternal or neonatal hospital stay. In addition, results of postpartum satisfaction questionnaires showed that patients were equally satisfied with many aspects of prenatal care. Patients in the study group were more satisfied with number of visits scheduled, number of providers seen, pregnancy education received, and appointments arranged than the control group. Of the 549 women who entered the study, only 401 women were included in the final analysis. The authors noted study limitations, including method of randomization and exclusion of women in whom high risk factors developed. Nonetheless, this study showed the feasibility of adopting this new schedule in a managed care setting and created a foundation for larger trials.

In a trial conducted in the Colorado Division of Kaiser Permanente, McDuffie et al<sup>15</sup> randomly assigned 2764 pregnant women who were at low risk for adverse perinatal outcome to a control schedule of 14 visits or to an experimental schedule of 9 visits. This study included women aged 18 to 39 years whose prenatal care was initiated before 13 completed weeks' gestation. The authors excluded women who had a previous obstetric condition such as preterm birth, delivery of a neonate small for gestational age, current obstetric condition such as multiple gestations, or a past or current medical illness such as diabetes, hypertension, or renal disease. The experimental schedule included visits at

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8, 12, 16, 24, 28, 32, 36, 38, and 40 weeks' gestation. Overall, the control group had 12.9 visits to providers and the experimental group had 10.3 visits ( $p < .0001$ ). No differences were seen between the two groups with regard to clinically relevant maternal and neonatal outcomes, including rate of preterm delivery (i.e., delivery at  $<37$  weeks' gestation), preeclampsia, cesarean delivery, low birthweight or very low birthweight, and stillbirth. In addition, results of a postpartum questionnaire showed no differences between groups in measures of quality of prenatal care, education, or written educational materials. Significantly more patients (89.2%) in the experimental group than in the control group (82.8%) said they believed that their number of prenatal visits was just right ( $p = .002$ ). In this study, both perinatal outcome and patient satisfaction were maintained when low-risk women had fewer scheduled prenatal visits than traditionally provided.

#### British Clinical Study

In Great Britain, Sikorski et al<sup>14</sup> compared clinical and psychosocial effectiveness of a traditional schedule (13 antenatal visits) with that of a new schedule (6 or 7 antenatal visits). After assessing risk, the authors randomly assigned 2794 low-risk women to one of the two groups. As in the other trials, the authors excluded women who had a history of obstetric problems or medical illnesses and those who had received only late care (after 22 weeks' gestation). In addition, they excluded women at the extremes of reproductive age ( $<16$  years or  $>40$  years), those weighing  $<41$ - $47$  kg (depending on ethnic group), and those weighing  $>100$  kg. General practitioners and midwives shared activities during scheduled visits, a practice similar to that described by Binstock and Wolde-Tsadik (in whose study obstetricians and either midwives or nurse practitioners provided care). Overall, the group receiving traditional care visited 10.8 times per pregnancy, whereas the group assigned to the new antenatal visit schedule visited 8.6 times per pregnancy ( $p < .0001$ ). Women assigned to the new visit schedule also had fewer day (outpatient) admissions and ultrasonographic examinations and were less often suspected of carrying fetuses small for gestational age. The authors reported no differences in any measure of clinical outcome, including rate of cesarean delivery (15.4% for women receiving traditional care vs 13.9% for women assigned to the new visit schedule). The authors conducted an extensive questionnaire on psychosocial variables. Significantly more women in the traditional schedule group (83.0%) than in the new schedule group (78.7%) re-

ported that their providers listened to them during the antenatal visits ( $p < .05$ ); more women (83.8%) in the traditional schedule group than in the new schedule group (67.5%) were satisfied with the visit frequency ( $p < .05$ ); and on a scale of 0 to 5, where 5 represented maximum worry, women in the traditional schedule group were less worried about the health status of the baby (score = 1.5) than were women in the new schedule group (score = 1.7). However, when asked whether they would choose the same schedule in a future pregnancy, more women in the new schedule group (70.3%) than in the traditional schedule group (62.6%) said they would choose the same schedule again ( $p < .05$ ). Because patients were not blinded to the schedules they received, biases for some psychosocial variables may have existed. Overall, the study supported the clinical effectiveness of reducing number of prenatal visits for women who are at low risk for adverse perinatal outcome.

#### Comparisons and Conclusions

Thus, during the past two years, three prospective clinical trials have indicated that reducing number of prenatal care visits does not result in any clinically important differences in perinatal outcome. These studies (except the British trial) also show that patients are pleased with the care they receive. Because most women either work or rear children, antenatal visits can seem like unnecessary interruptions in the day. Although cost savings are made possible by reducing number of prenatal visits, analyses should include indirect medical costs to patients during health care visits (e.g., costs of absence from work, travel time, and arranging child care).

The results of these three studies underscore the need to answer the question, "If number of visits does not matter, then what does?" First, each of these studies identified a "low-risk" population, and no risk assessment system is perfect. Risk assessment must also be continued so that if any new risk factors such as hypertension or preterm labor develop, the visit schedule and care plan can be modified as needed. Second, because two of the three studies were conducted in a group-model health maintenance organization (HMO) and the third was conducted within a national health care setting (in England), access to health care—an important factor—was available. Third, each of these systems had organized systems for delivering prenatal care, and the content of prenatal care is important. Individual elements of content may differ between clinics and even between providers (e.g., routine ultrasonographic examinations), but the overall content in the three studies appears to have been similar.

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## Conclusion

The medical evidence from these randomized, controlled trials supports adoption of a reduced visit schedule for pregnant women who are at low risk for adverse perinatal outcome. This suggestion is directly applicable to patients in group-model settings such as Kaiser Permanente and may be generalized to >2 million low-risk women annually who deliver in the United States. As implemented, this system should include risk assessment (to assure proper selection of patients) and should incorporate into the schedule the details of visit timing and content. Nationwide implementation of this system would standardize and coordinate prenatal care, maintain good pregnancy outcome, and reduce both direct and indirect medical costs for low-risk women. Further work will be required to identify elements of prenatal care which are responsible for good pregnancy outcome. Understanding these factors will lead to improvement of both prenatal care and pregnancy outcome. ❖

### References

- Hack M, Taylor HG, Klein N, Eiben R, Schatschneider C, Mercuri-Minich N. School-age outcomes in children with birth weights under 750 g. *N Engl J Med* 1994;331:753-9.
- Gortmaker SL. The effects of prenatal care upon the health of the newborn. *Am J Public Health* 1979;69:653-60.
- Shiono PH, Klebanoff MA, Graubard BI, Berendes HW, Rhoads GG. Birth weight among women of different ethnic groups. *JAMA* 1986;255:48-52.
- Scholl TO, Miller LK, Salmon RW, Cofsky MC, Shearer J. Prenatal care adequacy and the outcome of adolescent pregnancy: effects on weight gain, preterm delivery, and birth weight. *Obstet Gynecol* 1987;69:312-6.
- Murray JL, Bernfield M. The differential effect of prenatal care on the incidence of low birth weight among blacks and whites in a prepaid health care plan. *N Engl J Med* 1988;319:1385-91.
- Tyson J, Guzick D, Rosenfeld CR, Lasky R, Gant N, Jiminez J, et al. Prenatal care evaluation and cohort analyses. *Pediatrics* 1990;85:195-204.
- Schramm WF. Weighing costs and benefits of adequate prenatal care for 12,023 births in Missouri's Medicaid program, 1988. *Public Health Rep* 1992;107:647-52.
- Malloy MH, Kao TC, Lee YJ. Analyzing the effect of prenatal care on pregnancy outcome: a conditional approach. *Am J Public Health* 1992;82:448-50.
- Mustard CA, Roos NP. The relationship of prenatal care and pregnancy complications to birthweight in Winnipeg, Canada. *Am J Public Health* 1994;84:1450-7.
- Kogan MD, Alexander GR, Kotelchuck M, Nagey DA. Relation of the content of prenatal care to the risk of low birth weight: maternal reports of health behavior advice and initial prenatal care procedures. *JAMA* 1994;271:1340-5.
- Royal College of Obstetricians and Gynecologists. Report from the RCOG working party on antenatal and intrapartum care. London: Royal College of Obstetricians and Gynecologists, 1982.
- United States. Public Health Service Expert Panel on the Content of Prenatal Care. *Caring for our future: the content of prenatal care*. Washington (DC): Public Health Services, Dept of Health and Human Services, 1989.
- Binstock MA, Wolde-Tsadiq G. Alternative prenatal care: impact of reduced visit frequency, focused visits and continuity of care. *J Reprod Med* 1995;40:507-12.
- 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.
- McDuffie RS Jr, 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.

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## Intuition

"The capacity for making intuitive decisions is a basic ingredient of creativity. Intuition means relinquishing control of the thinking mind and trusting the vision of the unconscious. Because it can't be quantified or rationally justified, it is often opposed in the workplace. But it has the ring of truth, because it is grounded in the ability of the unconscious to organize information into unanticipated new ideas. Intuition is what you add to the information you collect. If you understand that, you see you can never collect total information. You have to add your feelings, your gut reaction, to make the right decision. In that sense, there is no answer that's right for everybody—just what's right for you. That's using intuition in the right way.

*Jan Carlzon, The Creative Spirit, Penguin Books, 1992.*