

Perinatal Outcomes and Family Medicine: Refocusing the Research Agenda

Roger A. Rosenblatt, MD, MPH
Seattle, Washington

Perinatal outcome always has been a major research focus in family medicine. There are a number of reasons that explain the importance of this area of inquiry. Birth is a central human event and has emotional as well as medical significance for the patient and the physician alike. Family medicine deals with the spectrum of human development, and child bearing and child rearing are for most families the crucial events by which they ultimately define themselves. It is essential for the discipline that it remain involved in this area of medical care.

From the medical perspective, care of the pregnant patient remains one of the most important activities of the family physician, both in ambulatory and inpatient settings. National studies of the content of family practice show that prenatal and postnatal care comprise the seventh most common diagnostic category seen by the family physician in the office,¹ and pregnancy is the third most frequent condition encountered in the hospital.² Despite the apparently declining proportion of family physicians who actively practice obstetrics—with concerns about medical malpractice cited as the major reason for this decline³—family physicians remain an important source of obstetric care in the United States. The National Ambulatory Medical Care Survey indicates that obstetricians account for approximately 75 percent of ambulatory visits for prenatal and postnatal care, with general and family physicians taking care of the balance.¹ The American College of Obstetricians and Gynecologists estimates that obstetricians attended 81 percent of US births in 1977, with general and family physicians together present at 18 percent of hospital births.⁴ In rural areas and in certain regions of the country the contribution of family physicians is even more important. Obstetrics will probably remain an essential part of the clinical repertory of family medicine in most areas of the country.

The study of perinatal issues also has several methodological and conceptual aspects that recommend it as a research focus. Perinatal outcomes are well calibrated, can be measured unambiguously, and are almost universally recorded as part of the vital statistics record system. Moreover, the issues addressed by the clinician in the care of obstetric and perinatal patients are a microcosm of the issues confronting the larger health care system. The appropriate incorporation of new technology is an unresolved problem in obstetrics, for pregnancy is approached by the clinician as both a normal physiologic process and a potential disease state. Prenatal care is also an excellent paradigm for the exploration of strategies of prevention in its focus on averting poor outcomes for mother and baby. An increasing capacity to salvage very low birth-weight infants raises a number of ethical and economic questions. This brief list only begins to address the rich stew of controversy and debate that makes the study of perinatal issues both compelling and worthwhile.

The papers by Mengel and Phillips⁵ and Franks and Eisinger⁶ in this issue of *The Journal* fall within one line of inquiry that has been pursued assiduously by family physicians, the importance of interspecialty distinctions in explaining observed differences in perinatal outcome. Stated simply, most studies in this genre ask whether the family physician does as good a job as the obstetrician at delivering babies. Interest in this question reflects the perennial boundary disputes that characterize the evolution and differentiation of the medical specialties. Family medicine, a medical specialty built more on social role than on anatomical system or technological expertise, spends a considerable amount of energy defining both its limits and its capabilities. Because obstetrics is part of that clinical core by which family physicians define themselves, investigators have tried to determine the most effective way that family physicians can participate in this clinical area.

There have been a number of papers that address the quality of obstetric care provided by general practitioners and family physicians. As Mengel describes, these studies fall into three quite distinct methodological categories: descriptive case series,⁷⁻¹⁰ retrospective historical com-

Submitted November 17, 1986.

From the Department of Family Medicine, University of Washington School of Medicine, Seattle, Washington. Requests for reprints should be addressed to Dr. Roger A. Rosenblatt, Department of Family Medicine, HQ-30, School of Medicine, University of Washington, Seattle, WA 98195.

parisons of patients cared for by family physicians and specialist obstetricians,¹¹⁻¹⁶ and population-based studies.¹⁷⁻²⁰ With a few exceptions, the results from these studies are not scientifically very satisfying. The retrospective interspecialty comparison—the most common approach selected—founders on the inability to control adequately for differences in case mix. It is likely that obstetricians and family physicians care for populations that differ from one another in important and systematic ways. This issue is crucial because the major source of variation in outcome in obstetrics can be attributed to the biological differences among pregnant women. Unless there is some way to control for the case mix of the practice populations being compared, it is not possible to attribute observed differences in outcome to the relative skill—or lack thereof—of the physicians involved.

The one difference that does emerge convincingly is a systematic difference in practice style between family physicians and specialist obstetricians. Generalists tend to be less intrusive in their obstetric care and are less likely to use a range of technical resources ranging from fetal monitoring to oxytocin induction to epidural anesthesia. This difference persists even in studies such as those performed by Klein et al²¹ in which only low-risk women meeting certain rigid objective criteria are retained in the two comparison groups. At the risk of overgeneralizing, it does appear that obstetricians are more likely to approach pregnancy as a potential disease and use their skills and the technology they have mastered to intervene in the course of labor. Family physicians, on the other hand, tend to approach parturition as a normal physiological event and are more restrained in their use of medical tools to alter the course of labor and delivery. Whether one or another of these approaches is intrinsically superior is impossible to determine from these studies.

The study reported in this issue of *The Journal* by Franks and Eisinger uses an approach suggested by Mengel and Phillips in their review—a case-control study—to investigate the impact of specialty on perinatal outcome.⁶ The dependent variable used was adverse perinatal outcome, a designation made by a hospital perinatal morbidity and mortality committee composed of obstetricians and pediatricians. Cases were assigned to the adverse outcome group for a variety of objective and quantifiable reasons, ranging from perinatal death at the one extreme to a five-minute Apgar of less than 7 at the other. Each case was matched with four randomly selected controls, and blinded chart reviews were conducted to try to determine which factors were associated with adverse outcomes. Logistic regression was used to control simultaneously for the prenatal risk, insurance status, and race of the mother as well as the specialty of the physician.

The authors find that adverse outcome is unassociated with physician specialty; family physicians and obstetri-

cians appear to have the same proportion of high-risk patients and roughly the same chance of having an adverse outcome. These conclusions are bolstered by a separate descriptive chart audit of a random sample of patients delivered by obstetricians and family physicians, which demonstrates that the case mix of patients cared for by each specialty was remarkably similar. The authors conclude that, in the hospital where they carried out their study, physician specialty had no detectable influence on patient outcome.

The finding is credible, but what does it really mean? In Highline Hospital in Rochester, New York, the site of this study, there is apparently a very close working relationship between the family physicians and obstetricians, with mandatory specialty consultation for all major intrapartum complications. In addition, patients presenting in labor before 34 weeks' gestation are, for the most part, transferred in utero to a tertiary care hospital, thus appropriately diverting the highest risk infants to a setting better equipped to handle very low birthweight children. This transfer policy, and the presence of a meticulous process for the review of all adverse perinatal outcomes, reflect considerable institutional emphasis on the maintenance of a system for ensuring acceptable obstetric and perinatal care. The most convincing and powerful conclusion to draw from this study is that in a setting where obstetricians and family physicians work closely together, establishing and adhering to a mutual pattern of care, specialty differences are unimportant. The medical environment shapes the behavior of physicians no matter what their educational background, and quality of care is probably more dependant on the overall system of care rather than the skills, diligence, or training of any individual physician or group of providers.

This conclusion is in harmony with a number of other observers who have reported on the excellent results achieved in other institutions where there are close, systematic clinical relationships among family physicians and obstetricians.²²⁻²⁴ One possible deleterious effect of this close collaborative relationship might be that the family physicians would adopt the same more-intense obstetric style as the obstetricians with whom they work. This practice style might be appropriate in a setting such as that described here, where the case mix of the populations cared for by the different specialties appears similar. It would, however, be a potential liability in settings where family physicians cared for a predominantly low-risk population, increasing the intensity of the medical intervention in a population that does not require, and might not benefit from, such an approach.²⁵

What should be the shape of further research in the area of interspecialty differences and perinatal outcome? To detect true differences in outcome attributable to the specialty or experience of the physician, it will be necessary

to use new analytic approaches. The independent contribution of physician training to obstetric outcomes, if it exists, is probably subtle. Birthweight-specific perinatal and neonatal mortality are the most precise and the most important outcomes. Because randomized clinical trials are impractical—it is difficult to conceive of a situation where one could match women for perinatal risk and randomize them to different physicians or different settings—retrospective analyses will remain the method of choice.

Mengel and Phillips argue that the case-control approach is ideally suited to such analyses, and the paper by Frank and Eisinger—despite its limitations—demonstrates the utility of the technique. Nevertheless, the population-based studies also have much to recommend them, particularly in the study of perinatal care where adverse outcomes are relatively rare. An adequate study must encompass a large, defined population with a known denominator so that true differences attributable to medical specialty can be detected after controlling for case mix and institutional differences. An excellent source of data for such studies are the vital statistics systems maintained by states and other political entities. Examples of the power of such an approach can be seen in studies of perinatal outcome in Canada,¹⁷ New Zealand,¹⁸ Finland,¹⁹ and England.²⁰ All these studies have remarkably similar findings and suggest that outcomes may be superior for low-risk obstetric populations in less technologically intensive settings. These analyses emphasize the critical importance of regionalization as a tool to match the intensity of the obstetric intervention to the risk status and medical condition of the patient.

What would constitute a worthwhile research agenda in the area of perinatal care? I would suggest the following areas have considerable promise:

Assessing and Improving the Capability of the Clinical Team

Obstetric and perinatal care requires a group effort. Research has demonstrated unambiguously that regional cooperation is effective in reducing perinatal mortality by identifying high-risk pregnancies and triggering appropriate interventions. Dramatic advances in neonatal intensive care are effective to the extent that infants at risk are brought to the facilities in a timely fashion, optimally before birth.

On the other hand, increased technological capacity is not an unalloyed blessing. Evidence is emerging from numerous sources—some cited earlier in this editorial but in general too extensive to discuss here—that intrusive obstetrics in normal pregnancy disrupts the natural process of birth and may cause iatrogenic complications for the mother and baby. The aim of the system should be to match maternal need with the appropriate level of

technical resource. To achieve this coordination, we need further research on designing and implementing cooperative systems of obstetric care involving generalists and specialists working together toward a common goal.

Improved Methods for Determining Relative Prenatal Risk

The clinical utility of prenatal risking protocols has been disappointing. Although numerous instruments have been developed and tested, the predictive value of the best instruments is poor, with most women identified as high risk having normal pregnancies and many pregnancies in which complications develop emerging from the pool of women who were classified as at low risk.

One shortcoming of most existing models is that they are cross-sectional assessments administered at one point early in pregnancy. It seems that there is an opportunity to develop clinically dynamic models that mirror the progress of pregnancy and can assist the clinician in identifying an emerging problem. Computer technology seems ideally suited to this aspect of obstetric care, serving both to ensure that all relevant information is collected and to flag deviant physiological patterns.

Development of Optimal Clinical Strategies for Managing Obstetric Care

Obstetrics stands out as a clinical area in which much of what we believe and do has not been subjected to rigorous review. With the rapid proliferation and application of new technologies in obstetrics, and with a powerful additional push from malpractice insurance carriers, there has been a tendency to make uncritically each new innovation a part of our clinical repertoire with little or no scrutiny. Little attention has been paid to the effect of these new modalities on the quality or outcome of care or on the total cost to the patient and society. Family physicians have both an opportunity and an obligation to try to define what is appropriate in terms of prenatal care and to determine which of the diagnostic and therapeutic cascades that we set in motion are truly beneficial for our patients.

Improving Obstetric Care by Practicing Population-Based Obstetrics

Enormous strides have been made in improving perinatal outcomes in this country. Birthweight-specific perinatal mortality rates are very favorable in the United States. Although medical science undoubtedly will further improve its capacity to care for sick mothers and neonates, physicians have entered the domain of decreasing marginal returns in caring for endangered neonates. The next

major step must be to reduce the incidence of low-birth-weight babies. Despite our technical achievements, crude perinatal mortality rates in the United States compare unfavorably with those achieved by other countries with less technical proficiency and fewer resources.

The key to this paradox is the inability to reach all women in need. The major reservoir of preventable perinatal mortality in this country are those women who receive little or no perinatal care or whose living conditions and personal behaviors predispose them to suboptimal outcomes. Well-trained and diligent providers are a necessary but not a sufficient condition in attempts to promote perinatal welfare. We must broaden our research horizons if the findings of our research are to have a detectable influence on human welfare.

Family physicians will continue to be active in the field of perinatal care. Our research efforts should increasingly be directed at the many unresolved but critical questions remaining in this fascinating and central clinical area.

References

- Rosenblatt RA, Cherkin DC, Schneeweiss R, et al: The content of ambulatory medical care in the United States: An interspecialty comparison. *N Engl J Med* 1983; 309:892-897
- Rosenblatt RA, Schneeweiss R, Cherkin DC, et al: Inpatient diagnosis clusters: Analyzing hospital care in family medicine. *J Fam Pract* 1984; 18:93-101
- Research Issues in the Assessment of Birth Settings. Report of a Study by the Committee on Assessing Alternative Birth Settings. Washington, DC, Institute of Medicine, National Academy Press, 1982
- The family physician and obstetrics: A professional liability study, mimeograph. Survey conducted by the Committee on Professional Liability and the Division of Research and Information Services of the American Academy of Family Physicians. Kansas City, American Academy of Family Physicians, 1986
- Mengel MB, Phillips WR: The quality of obstetric care in family practice: Are family physicians as safe as obstetricians? *J Fam Pract* 1987; 24:159-164
- Franks P, Eisinger S: Adverse perinatal outcomes: Is physician specialty a risk factor? *J Fam Pract* 1987; 24:152-156
- Bull MJV: Ten years' experience in a general practice obstetric unit. *J R Coll Gen Pract* 1980; 30:208-215
- Koning JH: The obstetrical experience of 20 years in one family practice. *J Fam Pract* 1982; 14:163-171
- Stewart-Hess CH, Green THH: Account of 1000 consecutive deliveries in a general practice based on a type of maternity unit. *Br Med J* 1962; 2:1115-1118
- Marsh GN: Obstetric audit in general practice. *Br Med J* 1977; 2:1004-1006
- Wanderer MJ, Suyehira JG: Obstetrical care in a prepaid cooperative: A comparison between family practice residents, family physicians, and obstetricians. *J Fam Pract* 1980; 11:601-606
- Taylor GW, Edgar W, Taylor BA, et al: How safe is general practitioner obstetrics? *Lancet* 1980; 1:1287-1289
- Ely JW, Ueland K, Gordon MJ: An audit of obstetric care in a university family medicine department and an obstetrics-gynecology department. *J Fam Pract* 1976; 3:397-401
- Phillips WR, Rice GA, Layton RH: Audit of obstetrical care and outcome in family medicine, obstetrics, and general practice. *J Fam Pract* 1978; 6:1209-1216
- Caetano DF: The relationship of medical specialization (obstetricians and family practitioners) to complications in pregnancy and delivery, birth injury, and malformation. *Am J Obstet Gynecol* 1975; 123:221-227
- Meyer BA: Audit of obstetrical care: Comparison between family practitioners and obstetricians. *Fam Pract Res J* 1981; 1:20-27
- Black DP, Fyfe IM: The safety of obstetric services in small communities in northern Ontario. *Can Med Assoc J* 1984; 130:571-576
- Rosenblatt RA, Reinken J, Shoemack P: Is obstetrics safe in small hospitals? Evidence from New Zealand's regionalized perinatal system. *Lancet* 1985; 2:429-431
- Hemminki E: Perinatal mortality distributed by type of hospital in the central district of Helsinki, Finland. *Scand J Soc Med* 1985; 13:113-118
- Tew M: Do obstetric intranatal interventions make birth safer? *Br J Obstet Gynaecol* 1986; 93:659-674
- Klein M, Lloyd I, Redman C, et al: A comparison of low-risk pregnant women booked for delivery in two systems of care: Shared care (consultant) and integrated general practice unit. I. Obstetrical procedures and neonatal outcome. II. Labour and delivery management and neonatal outcome. *Br J Obstet Gynaecol* 1983; 90:118-127
- Oldershaw KL: Use by general practitioners of obstetric beds in a consultant unit: Report of first 500 cases. *Br Med J* 1968; 3:112-116
- Oldershaw KL, Brudenell JM: Use by general practitioners of obstetric beds in a consultant unit: A further report. *Br Med J* 1975; 1:139-145
- Roseveare MP, Bull MJV: General-practitioner obstetrics: Two styles of care. *Br Med J* 1982; 284:958-960
- Brody H, Thompson JR: The maximin strategy in modern obstetrics. *J Fam Pract* 1981; 12:977-986