

Audit of Obstetrical Care and Outcome in Family Medicine, Obstetrics, and General Practice

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To compare obstetrical practices and outcome, hospital charts were audited of 50 patients cared for by each of three physician groups: family medicine residents (FM), private obstetrician-gynecologists (OB), and private general practitioners (GP). The FM patient group was at highest perinatal risk on the basis of maternal age, marital status, socioeconomic status, and obstetrical history. FM patients had fewest total inductions, elective inductions, early surgical rupture of membranes, and augmented labors after conduction anesthesia. Mean duration of total labor and all stages of labor were equal for the three groups except FM multiparas, who had shorter total labors than GP multiparas. FM patients had the least anesthesia, the least analgesia, and the fewest conduction anesthetic blocks. Rates were equal among the three groups for cesarean section, episiotomy, and use of forceps. FM mothers had equal rates of perinatal complications and FM infants had equal Apgar scores compared to the other groups. These data differ from previously published studies. Documentation of quality and character of FM obstetrical care with the resulting favorable comparison to that of obstetricians and general practitioners has important implications for the fields of family medicine and maternal-child health care.

The practice of family medicine includes comprehensive care of family, mother, and newborn infant in continuity through the natural process of pregnancy and childbirth. Understanding of current trends in the development of the field of family medicine and in the evolution of its role in maternal-infant health-care services requires ob-

jective information on the quality and character of obstetric care provided by the family physician. The present study attempts to document the nature of obstetrical care in one family medicine program in an inner-city urban hospital setting, and thereby stimulate discussion and study of the role of obstetrics in family practice and the complementary role of family medicine in obstetrical care.

Method

The hospital records of 150 obstetric patients admitted to Providence Medical Center, Seattle, January through December of 1976, were re-

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Table 1. Demographic Data

	Family Medicine	Obstetrics	General Practice	Difference	
				FM-OB	FM-GP
Maternal Age (Years)					
Mean \pm Standard deviation	21.4 \pm 4.0	28.6 \pm 6.1	25.7 \pm 5.9	$t = 6.91$ $P < 0.001$	$t = 4.21$ $P < 0.001$
Marital Status (Number)					
Never married	29	4	9	$\chi^2 = 17.42$ $df = 2$ $P < 0.001$	
Married ever	21	46	41		
Financial Status (Number)					
Public assistance	39	8	13	$\chi^2 = 30$ $df = 2$ $P < 0.001$	
Private insurance	11	42	37		
Parity (Number)					
Primipara	30	13	24	$\chi^2 = 12.03$ $df = 2$ $P < 0.005$	
Multipara	20	37	26		

viewed from three groups: 50 of the 79 patients delivered by family medicine residents, 50 of the 413 patients delivered by private obstetrician-gynecologists, and 50 of the 88 patients delivered by private general practitioners. Using hospital medical record indexes, all obstetrical patients delivered during the study period were grouped according to specialty of attending physician and 50 patients were randomly selected from each group for inclusion in the study.

The 15 family medicine (FM) residents all worked at Providence Family Medical Center, a family practice residency training program which supplies comprehensive care including prenatal, obstetrical, and pediatric care to families in Seattle's inner-city community. Residents deliver the patients they follow for prenatal care, and deliveries are attended by family medicine faculty physicians or selected private general practice staff physicians. The five obstetrician-gynecologists (OB) were male and all except one were certified by the American Board of Obstetricians-Gynecologists. The seven general practitioners (GP) included two females and none

were certified by the American Board of Family Practice. All private physicians in both groups had at least 20 years of practice experience.

Data were abstracted from each patient record to document the patient's demographic profile, selected process factors to assess obstetrical care, and measures of maternal and infant outcome. Comparisons were made between the three physician groups to document the obstetrical care they provided and to evaluate the resulting outcome. With $N = 50$ for each patient group, results reported in number of patients can be doubled to conveniently find group percentages.

Results

Patient Population

The demographic profile of patients from the three physician groups is shown in Table 1. Family medicine patients were significantly younger (median age 20 years) than either OB patients (median age 27 years) or GP patients (median age 25 years). Significantly larger proportions of the

Table 2. Characteristics of Labor

Number of Patients	Family Medicine	Obstetrics	General Practice	Difference	
				FM-OB	FM-GP
Induction of Labor					
Spontaneous labor	47	36	37	$\chi^2 = 9.25$	
Induced labor	3	14	13	df = 2	
Induced with indication	3	3	4	P < 0.01	
Induced without indication	0	10	9	P = 0.036*	P = 0.062*
Rupture of Membranes					
Spontaneous rupture	35	32	34	NS**	NS**
Surgical rupture	15	18	16		
Early surgical	1	7	6	P = 0.037*	P = 0.05*
Late surgical	14	11	10		
Augmentation of Labor					
After conduction anesthesia	1	6	5	P = 0.033*	P = 0.197*
Other indication	3	0	2		
*Fisher-Yates Exact Test for Fourfold Tables ¹					
** χ^2 , df = 2, α = 0.05					

FM patients were never married and on public assistance than in either the OB or the GP groups. More FM patients were primiparas than in the OB group.

Labor

No differences were found between the three patient groups in the number of weeks gestation at delivery or in mean admission hematocrit level (37 percent for all three groups).

Induction of labor was performed significantly less frequently in FM patients than in either OB or GP patients (Table 2). Premature rupture of membranes was the indication for all FM inductions while the OB group had significantly more inductions without any stated indication; a similar difference of borderline significance existed between FM and GP patients. There were no differences between the groups in proportion of patients with spontaneous rupture of membranes. Among those patients with surgical rupture of membranes, how-

ever, significantly fewer patients in the FM group than either the OB or the GP group had early surgical rupture of membranes (rupture at cervical dilation less than 4 cm and station less than zero).

Although no significant group differences were found in total frequency of oxytocin augmentation of labor, significantly more OB patients than FM patients required augmentation for arrest of labor after conduction anesthesia. Comparison of mean duration of total labor or of each stage of labor (Table 3) failed to reveal any differences between patient groups, even when compared within primipara and multipara categories. The one exception was significantly shorter mean duration of total labor among multiparas in the FM group than the GP group.

Anesthesia

Significantly more FM patients had no anesthesia or only local or pudendal block anesthesia than either OB or GP patients (Table 4). Signifi-

Table 3. Length of Labor

Mean ± Standard Deviation	Family Medicine	Obstetrics	General Practice	Difference*	
				FM-OB	FM-GP
Total Labor (Hours)					
All patients	9.5 ± 6.9	7.1 ± 4.1	10.7 ± 7.9	NS	NS
Primiparas	13.0 ± 7.0	8.1 ± 4.7	13.0 ± 8.4	NS	NS
Multiparas	5.0 ± 3.1	6.8 ± 3.7	8.8 ± 6.9	NS	P < 0.02
Stage I (Hours)					
Primiparas	11.9 ± 6.7	7.4 ± 4.7	11.9 ± 8.1	NS	NS
Multiparas	4.6 ± 3.1	6.2 ± 14.3	7.9 ± 6.7	NS	NS
Stage II (Minutes)					
Primiparas	60.4 ± 36.7	36.9 ± 20.0	63.1 ± 27.6	NS	NS
Multiparas	20.9 ± 10.0	27.2 ± 15.7	24.1 ± 13.4	NS	NS
Stage III (Minutes)					
All patients	4.6 ± 3.7	3.8 ± 3.3	3.6 ± 2.0	NS	NS

* *t*-test, $\alpha = 0.05$

cantly fewer FM patients had conduction anesthesia than did OB or GP patients, the difference being due to fewer caudal blocks performed in the FM group with no difference in the rate of spinal blocks between the three groups. No FM patient had general anesthesia.

Analgesia

Significantly more FM patients received no analgesic than did the other two patient groups (Table 5). Among those patients who received any analgesic there was no difference between the three patient groups in the number of medication doses given. Among total patient groups, however, FM patients were given significantly fewer doses of analgesic than were GP patients.

Delivery

Between the three patient groups there were no differences in frequency of cesarean section or episiotomy (Table 6). The FM group had lower

frequency of use of low, mid, and total forceps, but these differences failed to achieve statistical significance. The FM group had significantly fewer cases of persistent posterior fetal position than the GP group.

Maternal Complications

The frequency of all complications—hemorrhage, fever, preeclampsia, hypotension, spinal headache—was equal for the FM and OB groups and lower than for the GP group, but the difference was not statistically significant (Table 7).

No difference was found in the frequency of all perineal lacerations between the three groups. Among patients with lacerations, however, the FM group had more fourth degree lacerations than the OB or GP groups. These fourth degree lacerations in the FM group were significantly associated with primipara births ($\chi^2=4.69$, $df=1$, $P<0.05$) and with the use of forceps ($\chi^2=5.08$,

Number of Patients	Family Medicine	Obstetrics	General Practice	Difference*
Conduction Anesthesia				
Caudal block	1	25	24	P < 0.001
Spinal block	25	19	20	N.S.
Total conduction	26	44	44	P < 0.001
Pudendal, local or none	24	4	3	P < 0.001
General anesthesia	0	2	3	**

* χ^2 , df = 2, α = 0.05
 ** QNS for significance test

	Family Medicine	Obstetrics	General Practice	Difference	
Number of Patients					
Receiving no analgesic	13	8	1	$\chi^2 = 10.94$ df = 2	
Receiving any analgesia	37	42	49	P < .01	
Doses of Analgesic (Mean \pm Standard Deviation)					
All patients	1.9 \pm 1.8	1.8 \pm 1.4	2.5 \pm 1.4	NS	FM-OB* FM-GP*
Patients receiving any analgesic	2.6 \pm 1.6	2.2 \pm 1.3	2.5 \pm 1.4	NS	P < 0.05 NS

* *t*-test, α = 0.05

df=1, P<0.025) but not associated with infant birth weight, fetal position, or type of anesthesia. Length of postpartum hospital stay was equal for all three patient groups with a mean stay of 3.4 days.

Infant Outcome

Apgar scores at one minute and five minutes were highest for the FM patients, but the differences between the groups were not statistically significant (Table 8). No significant differences were found between groups in infant birth weight. One fetal death occurred in the GP group. Roughly half of each patient group chose to breast feed their infants.

Discussion

The points documented by this audit, of

similarities and differences in the obstetrical care provided by family medicine residents, private obstetrician-gynecologists, and private general practitioners, illustrate the quality and character of the family medicine approach to patient care in continuity through pregnancy and childbirth.

In each area examined, process and outcome measures documented the obstetrical care provided by family medicine residents to compare favorably to that of private OB and GP physicians despite the fact that the family medicine patient population was at significantly higher perinatal risk on the basis of age, marital status, socioeconomic class, and obstetrical history. Compared to their OB and GP colleagues, FM residents attained a record of equal length of labor, equal infant Apgar scores, equal rates of maternal complications, and equal lengths of postpartum hospital stay.

The features of FM obstetrical care that stood

Number of Patients	Family Medicine	Obstetrics	General Practice	Difference*
Cesarean Section	5	6	3	NS
Fetal Position				FM-GP
Occiput anterior	44	40	35	$\chi^2 = 5.77$
Occiput posterior	4	8	13	df = 1
Breech	2	2	2	P < 0.025
Forceps				
Low forceps	21	26	28	NS
Mid forceps	1	4	4	
Episiotomy	43	46	41	NS
* χ^2 , df = 2, $\alpha = 0.05$				

in contrast to the care provided by obstetrician-gynecologists and general practitioners characterized FM care as a more "natural" birth process. Family medicine patients were less frequently subjected to elective induction of labor, early surgical rupture of membranes, or oxytocin augmentation of labor after anesthetic block. They received less analgesia and less anesthesia. Despite this relative lack of intervention, patients had no longer total labors and no increase in incidence of prolonged labor in any stage. In fact, FM residents tended to deliver multiparous women in shorter total time than did the general practitioners. The greater use of conduction anesthesia in the OB and GP patient groups was perhaps responsible for their higher incidence of persistent posterior fetal position.

Although there was no difference in rates of episiotomies and lacerations, the finding that a higher proportion of fourth-degree lacerations occurred in family medicine resident deliveries with the use of low forceps, suggests increased training and experience in this procedure may further improve resident skill.

This study was limited in size and scope and thereby in the generalizations that can be made from these observed associations. Larger studies are currently underway to further assess the suggestive findings and investigate larger patient

populations and other patient care settings.

The audit previously published by Ely, Ueland, and Gordon of the University of Washington³ comparing FM obstetrical care to that of a university obstetrics-gynecology department provides interesting confirmations and contrasts to the data presented here. Both studies found essentially no differences between the FM group and the comparison physician groups in incidence of prolonged second stage of labor or Apgar scores. Both studies documented less use of conduction anesthesia.

Unlike the present study, however, with its description of a high-risk patient population under the care of the FM residents, the University of Washington study compared a high-risk referral OB patient group to a relatively low-risk middle class FM patient population. Within this favorable patient population the University of Washington FM residents achieved a shorter length of postpartum hospital stay than their obstetrician-gynecologist counterparts, but they also recorded significantly longer first stages of labor in nulliparas and significantly higher incidence of maternal complications. In the present study FM physicians equaled the record of both the obstetrician-gynecologists and the general practitioners on these measures.

Caetano's study of birth certificates⁴ suggests

Table 7. Maternal Complications

Number of Patients	Family Medicine	Obstetrics	General Practice	Difference	
				FM-OB	FM-GP
Lacerations					
Fourth degree	9	1	1	P = 0.04*	P = 0.0005*
Third degree	1	3	9		
Second					
Complications					
Any complication	7	6	14	NS**	NS**
No complication	43	44	36		

* Fisher-Yates Exact Test for Fourfold Tables¹
** χ^2 , df = 1, α = 0.05.

general physicians may diagnose and report complications of pregnancy and childbirth more accurately than obstetricians. That factor may operate equally in both the present study and that reported from the University of Washington, relatively inflating the complication rates for both groups of FM residents in comparison to the OB physician groups.

The documentation provided by this audit and similar studies provides a basis for the evaluation of the role of obstetrics in a comprehensive family practice and the role of family medicine in maternal-infant health care. Such evaluation comes at a time critical to the continuing growth and formulation of family medicine as a discipline organizing medical knowledge and health-care services, and critical to the development of policy and patterns of the nation's obstetrical care services.

Obstetrics is an integral part of family medicine. Mehl, Bruce, and Renner⁵ compared family practices similar except in their inclusion or exclusion of obstetrics. They showed that including obstetrical care in a family medicine practice was associated with improved physician satisfaction with the practice, increased proportion of care pro-

vided in continuity and to entire families, larger numbers of pediatric patients, and increases in practice time devoted to problems in the areas of gynecology, orthopedics, minor surgery, and psychosocial problems, especially as treated in the context of the family.

The American Academy of Family Physicians (AAFP) has included prenatal and obstetrical care in the core curriculum for competency-based training in family practice residency training programs.⁶ University departments of family medicine and of obstetrics and gynecology have seriously examined their roles in providing physician education in obstetrics.⁷ Planning by a joint committee of the AAFP and American College of Obstetrics and Gynecology (ACOG) for achievement of these core training requirements has established family medicine as the training ground for the other "primary care" specialties and supported the qualification of appropriately trained family physicians to take major responsibility for surgical complications of obstetrics.^{6,8} The related AAFP/ACOG policy that hospital privileges for such responsibilities should be based on documented training and proven competence rather than arbitrary specialty divisions provides a strong

Table 8. Infant Outcome				
	Family Medicine	Obstetrics	General Practice	Difference
Apgar Score				
1-Minute Score:				
Mean	8.67	8.34	8.39	NS*
Range	4-10	2-10	0-10	
5-Minute Score:				
Mean	9.65	9.50	9.38	NS*
Range	8-10	4-10	0-10	
Infant Weight				
Mean	7 lb 8 oz	7 lb 3 oz	6 lb 14 oz	NS**
Range	4 lb 10 oz 10 lb 5 oz	4 lb 3 oz 9 lb 10 oz	3 lb 5 oz 9 lb 6 oz	
* Mann-Whitney U, $\alpha = 0.05$				
** <i>t</i> -test, $\alpha = 0.05$				

foundation for guarantee of the family physician's role in continuing patient care in the arena of competing specialists.⁹

Consideration of the role family medicine can best play in the evolution of maternal-infant health-care services must take into account these objective assessments of quality and character of family medicine obstetric care. The countercurrents of the continuing debate,¹⁰ such as pressure towards regionalization of obstetric and neonatal care, increased physician specialization, growth of interest in family-centered maternity care, and alternative approaches to childbirth, act in concert to pull family medicine towards the center balance point of the controversy. That point can add another solid cornerstone to the foundation of family medicine as it stands amid the patients, practitioners, and politics of American health care.

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