

An Audit of Obstetric Care in a University Family Medicine Department and an Obstetrics-Gynecology Department

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The care of obstetric patients in a university family medicine department was compared with that in the obstetrics-gynecology department of the same university. The obstetric service patients tended to be at higher risk due to a higher black population (24.2 percent vs 6.3 percent), greater prepregnancy weight (mean 154.0 lbs vs 113.9 lbs), and a greater number of patients referred from the community because of prenatal complications. However, the family medicine patients had a higher incidence of premature rupture of membranes (26 percent vs 11 percent), and were therefore at risk for several complications. Family medicine nulliparas had first stages of labor which lasted an average of 12.2 hours as opposed to obstetric service nulliparas whose first stages averaged only 9.2 hours. There were more family medicine than obstetric service patients who received no anesthesia (18.0 percent vs 10.2 percent). Elective low forceps were used more often by obstetric service physicians than by family physicians (28.2 percent vs 15.3 percent). Mothers on the family medicine service had more puerperal complications than those on the obstetric service (16.0 percent vs 5.6 percent). No serious discrepancies in quality of care could be found between the two services.

Obstetrics has always been considered an important part of general practice in the United States and has now become an integral part of family practice residency programs throughout the country. It is estimated that almost one half of obstetric deliveries are currently performed by generalists. Quality of family medicine resident training in obstetrics has been of concern both to obstetrics-gynecology departments and to family medicine departments.¹ However, to date there has been no documentation of the performance of family practice programs in delivering obstetric care. This study is an attempt to determine the differences in performance between a family medicine department and an

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Table 1. Pregnancy Data

	Obstetrics		Family Medicine		Obstetrics-Family Medicine Difference	
	Mean	Std. Dev.	Mean	Std. Dev.		
Weeks gestation at delivery	39.3	2.6	39.6	2.2	NS*	
Weeks of prenatal care	19.9	9.3	24.6	7.3	p<0.001	
Number of prenatal visits	8.1	4.0	10.4	3.9	p<0.001	
Prepregnancy weight (lbs)	154.0	46.3	113.9	47.2	p<0.001	
Maternal weight gain (lbs)	primigravida	28.0	10.9	27.5	9.1	NS
	multigravida	27.9	11.8	27.6	9.5	NS

*NS: not significant

obstetrics-gynecology department in the same university, the University of Washington.

Methods

A total of 1,308 patient charts were audited for 73 variables. Family medicine patients had an additional 15 variables reviewed for a total of 88 variables. All University of Washington family medicine deliveries occurring between July 1, 1972, and March 31, 1975 (33 months), were included in the study; this totaled 111 deliveries. These data were compared with all University of Washington Obstetrics Service deliveries occurring between January 1, 1972, and December 31, 1972 (12 months), which totaled 1,197 deliveries.

The data were analyzed using SPSS (Statistical Package for the Social Sciences) language and a CDC 6400 computer. Significance of differences was determined using the chi-square test of association and post hoc comparisons for categorical variables (eg, race, type of delivery) and the t-test for continuous variables (eg, maternal age, length of labor). In interpreting the differences it should be cautioned that multiple comparisons on the same data inflate the probability of spurious significant results beyond the assigned *p* value.²

The formal obstetric training of University of Washington family medicine residents consists of two months on the University of Washington Obstetrics Service in the first year of

training (average 33 deliveries per resident), and for most residents an additional two-month rotation at Group Health Hospital in Seattle (average 41 deliveries per resident). Together with the deliveries of the family medicine patients themselves, on the average each resident will have performed 81 deliveries at the end of the three-year residency.

For family medicine patients, prenatal care is provided by residents and faculty in the model unit at the University Hospital. The patients are admitted to the labor and delivery floor of the University Hospital with family medicine faculty as attending physicians, and are usually delivered by family medicine residents. An attempt is made in every case to have the physician providing the prenatal care deliver his patient. (This actually occurred in 45 percent of the deliveries.) Residents and faculty from the obstetrics-gynecology department are always readily available for formal or informal consultation.

The variables examined were grouped into nine categories: demographic data, obstetric history, pregnancy data, labor data, anesthesia, delivery data, puerperal factors, outcome of infant, and patient management errors. The variables were also grouped into four other independent categories: (1) risk factors over which medical personnel may have some control (eg, length of labor), (2) risk factors over which medical personnel have no control (eg, race), (3) process variables (eg, type of anesthesia), and (4) outcome variables (eg, Apgar score).

Results

Demographic data: The obstetrics service patients included 24.2 percent blacks as opposed to only 6.3 percent for the family medicine service (*p*<0.001). There were no significant differences between the two services in maternal age, area of residence, or marital status.

Obstetric history: The mean number of previous premature deliveries per patient was higher for the obstetrics service (0.08) than for the family medicine service (0.03, *p*<0.02). There were no differences between the two populations in number of previous term deliveries, previous stillbirths or abortions, or

Table 2. Frequency of Pregnancy Complications

	Obstetrics Percent	Family Medicine Percent	Other Reports Percent	
First trimester bleeding	*	11.7	11.8	(Hellman) ³
Abruptio placenta	1.1	2.7	0.7-2.0	(Niswander) ⁴
Placenta previa	0.6	0	0.5	(Niswander) ⁴
Premature rupture of membranes	11	26	12	(Hellman) ³

*Data for OB patients not available.

Table 3. Length of Labor

	Obstetrics		Family Medicine		Obstetrics-Family Medicine Difference	
	Mean	Std. Dev.	Mean	Std. Dev.		
Total length of labor (hrs)	8.8	5.7	10.2	7.7	NS*	
Length of first stage (hrs)	nulliparas	9.2	6.2	12.2	8.8	<i>p</i> <0.02
	multiparas	6.5	4.6	7.3	5.6	NS
Length of second stage (min)	nulliparas	63.5	43.0	68.6	42.8	NS
	multiparas	24.1	20.9	23.9	16.5	NS
Length of third stage (min)	4.9	4.4	5.8	6.3	NS	

*NS: not significant

total number of previous deliveries.

Pregnancy data (Tables 1 and 2): Of note is the greater number of prenatal visits per patient for family medicine and the greater prepregnant weight for obstetrics. The rate of premature rupture of membranes was twice as high among family medicine patients as among obstetrics patients. Maternal weight gain and average gestation at delivery were similar for both groups.

Labor data (Tables 3 and 4): Family medicine nulliparas tended to have longer first stages of labor than did obstetrics service patients, although the mean duration for family medicine was similar to that reported in the literature (12 hours).³ There was no significant difference in the frequency of prolonged second stage of labor or in use of the internal monitor.* Obstetrics physicians tended to use oxytocin more frequently and to have fewer instances of prolonged latent phase of labor.

Anesthesia: Several differences were found between the two services in the type of anesthesia used (Table 5). The family medicine patients tended to require less anesthesia overall and to make more frequent use of paracervical and pudendal blocks. On the other hand, obstetrics patients received conduction anesthesia more often than family medicine patients.

Delivery data: The type of delivery (Table 6) was another process variable which contained obstetrics-family medicine differences. Family medicine physicians used elective low forceps less often than both the obstetrics service and the usage reported in the literature.³ The difference seems to correspond to the increased frequency of deliveries allowed to occur spontaneously among family medicine patients.

Maternal puerperal complications: Family medicine patients tended to have more puerperal complications overall, although no single complication could be held responsible for this finding (Table 7). Most of the difference seems to be accounted for by higher rates of endometritis and postpartum hemorrhage. The significance of these differences could not be tested reliably due to the small

numbers of patients having these complications.⁵ The length of hospital stay of the mother, however, was shorter for family medicine patients (mean: 3.12 days) than for obstetrics patients (mean: 4.66 days, $p < 0.001$).

Outcome of infant: The mean Apgar score of the obstetrics infants (7.4 at one minute, 8.6 at five minutes) was not significantly different from the mean scores of the family

medicine infants (7.5 at one minute, 8.8 at five minutes). As summarized in Table 8, the neonatal outcome was similar for the two groups.

Management errors: These data are available only for family medicine patients (Table 9). Standard practice at the University of Washington Hospital is to obtain a VDRL, endocervical culture, rubella titer, Papanicolaou smear, and hematocrit on all

Table 4. Labor Data

	Obstetrics		Family Medicine		Obstetrics-Family Medicine Difference
	Number	Percent	Number	Percent	
Prolonged latent phase of 1st stage of labor*	37	3.1	14	12.5	$p < 0.001$
Second stage of labor \geq 120 min	67	5.6	8	7.2	***
Use of oxytocin as indication for monitoring**	237	19.8	12	10.7	$p < 0.05$
Use of internal monitor	312	26.1	35	31.5	NS

*Judged from appearance of modified Friedman curve.^{7,8}
 **The use of oxytocin was not recorded as a separate variable. It was audited as an indication for fetal monitoring and probably gives some insight as to its relative use by obstetrics and family medicine physicians.
 ***Cell number less than 10, no significance test applied.⁵

Table 5. Type of Anesthesia

	Obstetrics		Family Medicine		Obstetrics-Family Medicine Difference
	Number	Percent	Number	Percent	
None	122	10.2	20	18.0	$p < 0.02$
Caudal and/or epidural	753	62.8	52	46.9	$p < 0.001$
Spinal	68	5.7	1	0.9	*
Pudendal and/or paracervical	182	15.3	25	22.5	$p < 0.05$
Other	72	6.0	13	11.7	$p < 0.05$
Total	1,197	100	111	100	

*Cell number less than 10, no significance test applied.⁵

*fetal scalp electrode plus intrauterine catheter