

Specialty Bias in Obstetric Care for High-Risk Socioeconomic Groups in Maine

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From 1982 to 1984, 46,501 infants were born in Maine hospitals in 46,286 deliveries, of which 6,343 were born to women on state Medicaid (Title 19), and 6,307 were born to women with no health insurance. In comparison with others born in Maine during those years, more infants in these presumed low socioeconomic groups died, were transferred immediately to other hospitals, had low birth-weights, or were readmitted to a hospital within 30 days of birth.

Of all deliveries, 105 family physicians or general practitioners performed 22 percent, 82 obstetricians performed 69 percent, and 16 osteopathic physicians performed 5 percent; but of Medicaid deliveries, obstetricians delivered only 59 percent, while family physicians-general practitioners and osteopaths did commensurately more. The decreased proportion of Medicaid patients cared for by obstetricians was especially prominent in Maine's urban hospital service areas. Pediatricians, on the other hand, cared for the same proportion of Medicaid children as they did all children in all hospital service areas in the state.

The distribution of low socioeconomic, higher obstetric risk patient groups among various medical specialties as demonstrated in these data should be considered by health planners, malpractice insurers, and health insurers including state Medicaid programs.

Sociodemographic characteristics of obstetric patients are commonly known to influence, and have been shown to correlate strongly with, obstetric risk. Race, patient age extremes, parity, and economic status all increase risk.^{1,2}

Family physicians and obstetricians frequently disagree about how obstetric patients should be distributed between their specialties. Recent social trends resulting in increased malpractice suits and consequent dramatic increases in malpractice insurance rates have further enlivened these debates. In Maine, a physician-run medical malpractice company that does a majority of the malpractice business in Maine has provided a focus and forum for extensive discussions of these issues by Maine physicians.

An analysis of uniform hospital discharge data for obstetric care in Maine was undertaken as a result of some of these discussions. This analysis examined patient correlates of high obstetric risk, and how those high-risk obstetric patients were distributed among the physician specialty groups as compared with how the overall obstetric population was distributed. The following working hypothesis was adopted: if physician-patient pairing was a random event, then the distribution of patient subgroups across physician specialties should be the same as the distribution of the overall (total) patient group across specialties. Alternatively, nonrandom distribution of subgroups would indicate biased selection of either physicians by patients or patients by physicians.

METHODS

Each hospital birth to Maine residents in Maine from 1982 through 1984 was analyzed using hospital discharge data collected by the Maine Health Information Center (MHIC) from all Maine hospitals with an obstetric service. These data sets include patient residence, patient payment

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source, and the physician who did each delivery, whether it be vaginal or cesarean section. Home and birthing center birth data, about 250 births annually, were unavailable and therefore not included in the analyses.³⁻⁵ Self-paying (uninsured) and Medicaid (Title 19) pay sources were used as indicators of presumed low socioeconomic status.

All deliveries were categorized by hospital service area, defined by MHIC as those towns from which the plurality of all hospitalized patients are admitted to the given hospital(s). Deliveries and newborns were attributed to hospital service areas by patient town of residence regardless of the Maine hospital in which the birth took place. Thus all hospitalization data are geographically, not hospital, based.

Each year the discharge data showed 400 fewer Medicaid newborns than mothers, and a reciprocal 400 more uninsured newborns than mothers. Using hospital-specific data, the MHIC discovered that in a few hospitals the medical records departments, confirmed by telephone, were coding infants of Medicaid mothers as uninsured pending later confirmation from the State Medicaid Office that the infant was covered by Medicaid. Therefore Medicaid and uninsured newborns were combined when looking at newborn outcomes (Figure 1).

Specialty board status of each family practice and obstetric physician in Maine was determined by data obtained from the Board of Registration in Medicine and reviewed by a joint committee of representatives from the Maine Academy of Family Physicians and the Maine chapter of the American Academy of Obstetrics and Gynecology.

To look at events with relatively low incidence rates, several analyses combined three years of data. These data do not allow linkage of individual maternal and newborn data, so specific infant outcomes cannot be attributed to an individual delivery. Most data are expressed in terms of percentages (ie, proportions); for example, percentage of newborns in each payment source category with adverse outcomes, percentage of at-risk deliveries attended by obstetricians, and so on. All tests of significance were done by the binomial test for the difference between two proportions, with the observed proportion tested against an expected proportion based on statewide or sometimes area-specific norms. Significant differences were indicated when this test showed the two proportions to be different with 95 percent or better confidence limits.

Finally, the hospital discharges of Medicaid children by pediatricians were examined to determine whether the less frequent association between this higher risk socioeconomic group and obstetricians was also true for other specialties. The 1985 hospital discharge data were reviewed for the 12 most common pediatric diagnosis related groups (DRGs) and examined in each hospital service area, as had been done for deliveries.

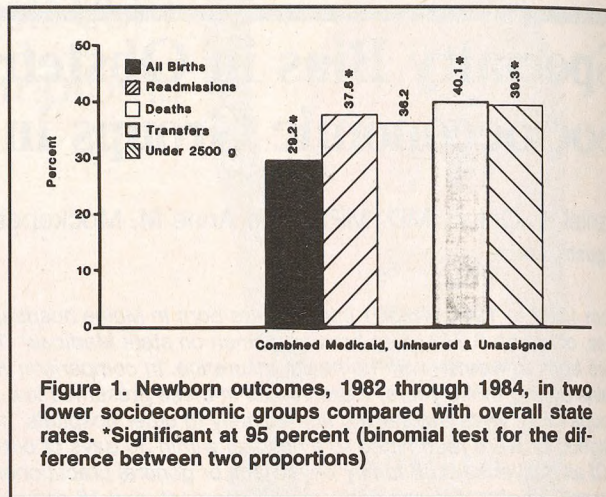


Figure 1. Newborn outcomes, 1982 through 1984, in two lower socioeconomic groups compared with overall state rates. *Significant at 95 percent (binomial test for the difference between two proportions)

RESULTS

Infant, Delivery, and Physician Numbers

There were 46,286 in-hospital deliveries resulting in 46,501 newborns in Maine during the three calendar years 1982 to 1984; multiple births explain the discrepancy. Approximately 2,100 of mothers were uninsured (self-paying) and another 2,100 mothers were covered by Medicaid each year. There were no significant shifts in the distribution of these deliveries among the various specialties during these three years (Table 1). In 1984, 348 individual physicians performed deliveries, and 224 of them did ten or more (Table 2); those with ten or more accounted for 14,995 of the 15,485 deliveries that year in Maine, or 96.8 percent of the total.

Indicators of Socioeconomic Status and Relationships to Obstetric Risk

Medicaid-covered and uninsured infants were overrepresented among Maine infants with adverse birth outcomes (Figure 1) between 1982 and 1984. All these differences were statistically significant with the exception of in-hospital newborn deaths, which were rare events, 199 in three years.

Using insurance coverage as indicators of socioeconomic status, these data demonstrate that for Maine's obstetric population in 1982 through 1984, low socioeconomic status was associated with higher risk of poor newborn outcome. Poor maternal outcomes, such as mortality, were too infrequent to allow comparisons.

TABLE 1. PERCENTAGE OF ALL HOSPITAL DELIVERIES BY SPECIALTY, 1982 THROUGH 1984

Specialty	1982 (N = 15,468)	1983 (N = 15,332)	1984 (N = 15,486)
All family physicians and general practitioners	21	22	22
All obstetricians and gynecologists	67	70	70
Surgeon	3	3	3
Osteopathic physician	6	5	4
Other and uncoded	3	1	2

TABLE 2. NUMBER OF PHYSICIANS DOING DELIVERIES, BY SPECIALTY, 1984

Physician Specialty	Any Deliveries	More Than 10 Deliveries
Family physicians, board certified	123	82
Family or general practice, not board certified	51	23
Obstetrician-gynecologists, board certified	52	50
Obstetrician-gynecologists, not board certified	36	32
Surgeons	29	14
Osteopathic physicians	36	16
Others and uncoded	21	7
Total	348	224

Specialty Bias in the Care of Lower Socioeconomic Group Obstetric Patients

Over the entire state during the three study years, obstetricians delivered approximately 10 percent fewer Medicaid patients and 6.5 percent fewer uninsured patients than would have been predicted by the obstetricians' overall share of deliveries (Figure 2). In other words, although they did 69 percent of all Maine deliveries, they delivered only 59 percent of all Medicaid-covered patients and 62 percent of all uninsured patients.

Family physicians, more commonly not board certified, and other nonobstetricians performed disproportionately more deliveries of Medicaid-covered and uninsured patients. Thus women in socioeconomic classes with higher obstetrical risk were delivered less frequently by obstetricians and more frequently by family physicians and general practitioners and, especially in the case of Medicaid patients, by osteopathic physicians.

Selection Biases Related to Geography, Not Access

When the data from each hospital service area are analyzed individually, they show that this less frequent as-

sociation of obstetricians and Medicaid patients is more pronounced in most of Maine's more urban hospital service areas including Portland, Lewiston, Augusta, and Waterville, despite the fact that in three of the five urban hospital service areas (Bangor, Portland, and Waterville) deliveries by family practice residents are supervised and reported as delivered by obstetricians to the MHIC. Bangor is the only urban area in which there were not significantly fewer Medicaid-covered deliveries by obstetricians than predicted by obstetricians' proportion of overall deliveries in that area. Many obstetricians practice in these urban areas.

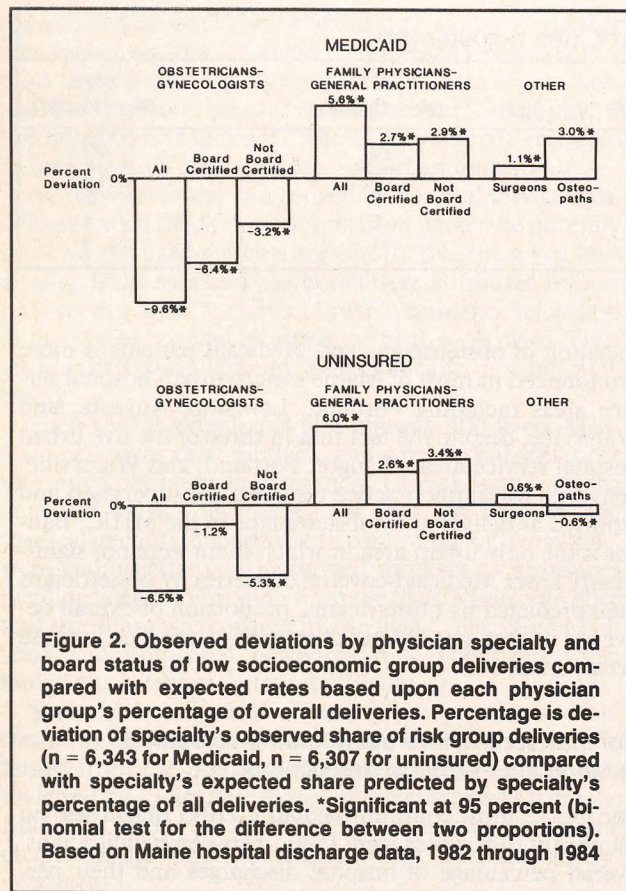
Comparisons With Pediatrician Involvement in Medicaid Pediatric Admissions

For the 12 most common pediatric DRG diagnoses, no significant differences were found between pediatricians' overall percentage of hospital discharges and their percentage of Medicaid-covered discharges in any hospital service or area in the state as a whole.

DISCUSSION

Poor children have an increased risk of dying compared with the rest of the population in Maine⁶ and elsewhere in the United States.⁷ Other US studies have shown that poor women get less prenatal care,⁸ which correlates with more low birthweights.⁹ Using Medicaid-covered and uninsured payment status of newborn infants as indicators for low socioeconomic status, these analyses show that, by being in those categories, an infant's likelihood of a poor outcome is increased.

The paradoxical observation that more patients in these higher risk groups are delivered by family physicians and osteopathic physicians and commensurately fewer by obstetricians probably understates what is likely an even greater redistribution of poor patients away from obstetricians. These data identify delivering physicians, who are sometimes obstetricians called in to help a family physician or osteopathic physician with a complicated



delivery, especially with a cesarean section; the reverse almost never happens. Thus, prenatal care of these patients by obstetricians may be occurring even less frequently than these data indicate. Phillips et al¹⁰ report a similar observation that family physicians cared for a higher risk obstetric population among 150 patient charts audited in Seattle. And Caetano,¹¹ using birth certificate data in California, found higher rates of birth injuries and malformations among patients of general practitioners than of obstetricians; he concluded that these differences were at least partly due to an increased proportion of high-risk patients among the general practitioners' patient population.

On the other hand, it is quite plausible, although impossible to discern from these data, that family physicians and osteopaths are managing only the uncomplicated, lower risk women in these socioeconomic groups, referring all the high-risk ones to obstetricians. It is also possible that the lower socioeconomic groups' poorer obstetrical outcomes are, in whole or in part, the result of poorer

care by family physicians and general practitioners. Because it is not possible to link maternal and newborn records with these current data, separating the newborn outcomes of Medicaid or uninsured mothers cared for by obstetricians compared with other physicians cannot be done. Maine has new birth certificate forms that should allow linkage of maternal and infant discharge data sets and hence delivering physician and infant outcomes in the future.

Arguments that Medicaid patients and physicians other than obstetricians match with each other because they live in the same areas may be true in some areas, possibly because no obstetricians practice in those areas, such as Lincoln. Patients from Lincoln can and do travel out of their hospital service area to Bangor for care by obstetricians. In Lincoln, Medicaid patients do this much less frequently than other patients. But other data, not shown here, show that correcting for the number of Medicaid patients and proportion of deliveries by each specialty in each area, the areas with the most obstetricians show the greatest underrepresentation of Medicaid-covered deliveries by obstetricians.

Many obstetricians in the state acknowledged in personal conversations that they did limit their Medicaid obstetrical practices or declined to care for Medicaid patients except in emergency situations during the years studied. The total compensation for prenatal care and delivery to any physician for prenatal care and delivery of a Medicaid patient was less than \$300 per patient. The state Medicaid office has since increased these payments substantially. Rapidly rising malpractice claim rates could lead many physicians to avoid caring for women who, by their socioeconomic status alone, have an inherently higher incidence of poor newborn outcomes. Obstetricians and other better trained physicians may be more astute at identifying these women than other physicians. This hypothesis would be consistent with the observation that board-certified family physicians and obstetricians care for these high-risk women proportionately less frequently than their non-board-certified counterparts. If higher risk women are being pushed toward care by less-trained physicians or toward less prenatal care by these social trends, more adverse neonatal outcomes could result. Since adverse outcomes may lead to more malpractice suits, the paradoxical result might well be that all physicians may then be asked to pay even higher malpractice insurance rates as a result of their actions to diminish their individual risk of being sued.

Other explanations may also exist for this less frequent association of poor patients and obstetricians with each other. Lower socioeconomic groups may prefer family or general practice physician practice styles or fees. Another explanation may be that that group of physicians may encourage larger numbers of lower socioeconomic groups

in their practices than do obstetricians. But the absence of similar biases when Medicaid pediatric admissions by pediatricians were examined make physician rather than patient preferences more likely to play a greater role in this relative underservice of lower socioeconomic groups by obstetricians.

The distribution of high obstetrical risk patient groups among various medical specialties as demonstrated in these data should be examined and considered by physician groups, health planners, malpractice insurers, and health insurers, including state Medicaid programs.

Acknowledgments

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References

1. Williams R: Measuring the effectiveness of perinatal medical care. *Med Care* 1979; 17:95-110
2. Berkowitz GS: Clinical and obstetric risk factors for preterm delivery. *Mt Sinai J Med* 1985; 52:239-247
3. Maine Vital Statistics, Annual Report. Augusta, Maine, Maine Department of Human Services, 1982
4. Maine Vital Statistics, Annual Report. Augusta, Maine, Maine Department of Human Services, 1983
5. Maine Vital Statistics, Annual Report. Augusta, Maine, Maine Department of Human Services, 1984
6. Nersessian WS, Petit MR, Shaper R, et al: Childhood death and poverty: A study of all childhood deaths in Maine, 1976 to 1980. *Pediatrics* 1985; 75:41-50
7. Gortmaker SL: Poverty and infant mortality in the United States. *Am Soc Rev* 1979; 44:280-297
8. Fisher ES, LoGerfo JP, Daling JR: Prenatal care and pregnancy outcomes during the recession: The Washington State experience. *Am J Public Health* 1985; 75:866-869
9. Leveno KJ, Cunningham FG, Roark ML, et al: Prenatal care and the low birthweight infant. *Obstet Gynecol* 1985; 66:599-605
10. 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
11. Caetano DF: The relationship of medical specialization to complications in pregnancy and delivery, birth injury, and malformation. *Am J Obstet Gynecol* 1975; 123:221-227