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# Length of Stay after Vaginal Birth: Sociodemographic and Readiness-for-Discharge Factors

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# Length of Stay after Vaginal Birth: Sociodemographic and Readiness-for-Discharge Factors

By Marianne Weiss, Polly Ryan, Lisa Lokken, and Magdalen Nelson

**Background:** *The impact of reductions in postpartum length of stay have been widely reported, but factors influencing length of hospital stay after vaginal birth have received less attention. The study purpose was to compare the sociodemographic characteristics and readiness for discharge of new mothers and their newborns at 3 discharge time intervals, and to determine which variables were associated with postpartum length of stay.* **Methods:** *The study sample comprised 1,192 mothers who were discharged within 2 postpartum days after uncomplicated vaginal birth at a tertiary perinatal center in the midwestern United States. The sample was divided into 3 postpartum length-of-stay groups: group 1 (18–30 hr), group 2 (31–42 hr), and group 3 (43–54 hr). Sociodemographic and readiness-for-discharge data were collected by self-report and from a computerized hospital information system. Measures of readiness for discharge included perceived readiness (single item and Readiness for Discharge After Birth Scale), documented maternal and neonatal clinical problems, and feeding method.* **Results:** *Compared with other groups, the longest length-of-stay group was older; of higher socioeconomic status and education; and with more primiparous, breastfeeding, white, married mothers who were living with the baby's father, had adequate home help, and had a private payor source. This group also reported greater readiness for discharge, but their newborns had more documented clinical problems during the postbirth hospitalization. In logistic regression modeling, earlier discharge was associated with young age, multiparity, public payor source, low socioeconomic status, lack of readiness for discharge, bottle-feeding, and absence of a neonatal clinical problem.* **Conclusions:** *Sociodemographic characteristics and readiness for discharge (clinical and perceived) were associated with length of postpartum hospital stay. Length of stay is an outcome of a complex interface between patient, provider, and payor influences on discharge timing that requires additional study. Including perceived readiness for discharge in clinical discharge criteria will add an important dimension to assessment of readiness for discharge after birth.*

Length of stay after childbirth is a controversial issue that affects new mothers and babies,

health care delivery systems, and health policy and legislation. A trend of decreasing length of postpartum hospital stay has been observed globally (1). In the United States, in response to pressures fueled by anecdotal data, public opinion, and political rhetoric, legislation (2) was enacted that mandated insurance coverage for a minimum postpartum hospital stay of 48 hours for mothers and babies after vaginal birth. However, the legislation left the ultimate decision on timing of discharge with the new mother and her caregiver.

Research about early obstetrical discharge has focused on the impact on maternal-neonatal outcomes (1,3), not on factors associated with, or predictive of, who will be discharged early. Studies to evaluate the premise that a longer postpartum stay is beneficial in terms of infant morbidity and mortality have not produced consistent findings (1,3–8). Little emphasis has been given to other factors associated with length of postpartum hospital stay that may influence decisions about postpartum discharge timing. The purpose of this study was to compare the sociodemographic characteristics and readiness for discharge of new mothers and their newborns at 3 discharge time intervals (24, 36, and 48 hr postpartum), and to determine if any of these variables are associated with postpartum length of stay.

## **Background**

Early obstetrical discharge has been offered to new mothers in the United States since the 1940s (9). The term “early discharge” describes hospital discharge occurring before the usual or customary discharge time, and is reported as the length of hospital stay in hours or days. Discharge timing that is considered “early” has been redefined as the prevailing length of stay has progressively decreased. In the United States, for example, the standard length of stay was 8 to 14 days in the 1950s but declined to less than 2 days in the mid-1990s.

Other countries have shown similar declines, but at different rates (1). Currently, early discharge is defined as discharge prior to 48 hours after birth in the United States (10).

Development of early discharge programs paralleled the decline in maternal and neonatal length of hospital stay. They were initiated to promote and support maternal-infant well-being and family adaptation by providing medical, psychosocial, and economic advantages for low-risk families. Programs were designed to provide post-discharge surveillance and support for maternal and neonatal physiological and psychological adjustment, and included education about infant care, breastfeeding, and parenting (11–15). Prenatal preparation and postpartum follow-up in the form of one or more home visits or telephone contacts during the first week post-discharge were common program elements (16).

Systematic reviews of the safety of early discharge concluded that although no evidence

was demonstrated of adverse outcomes associated with early discharge (1), there was no sound evidence to support the safety of discharge before 48 hours in the absence of compensatory follow-up services (3). Early discharge might be safe for carefully selected and prepared populations (3), but adverse outcomes could not be ruled out because of the methodological limitations of studies comparing early and traditional discharge timing (1).

Reports of two studies comparing outcomes within the early discharge period offered contrasting results. In one study no differences were found in breastfeeding rates, depression, sense of competence, and satisfaction with care among women discharged in less than 30 hours, 31 to 39 hours, or 40 to 48 hours (17). In another study, mothers with a 1-night postpartum hospital stay more frequently reported fatigue, worry about their newborn's health, and neonatal morbidity; were less likely to initiate breastfeeding; and were more likely to stop breastfeeding in the first week post-discharge than mothers with a 2-night stay (18).

Although the impact of payor pressures on length of postpartum hospital stay received extensive coverage in the media and the outcomes of early obstetrical discharge were widely reported, other factors that might also influence length of hospital stay have received less attention. Factors associated with early obstetrical discharge in the 1988 National Maternal and Infant Health Survey included less than high school education, age greater than 35 years, inadequate prenatal care, public payor source for health care, breastfeeding, and care provided by a midwife (19). In an Australian study that compared new mothers with a hospital stay of less than 48 hours with women hospitalized for 5 days or more, early-discharge mothers were more likely to be multiparous, low income, and without private health insurance (20).

Readiness for discharge after birth as a concept has not been explicitly included in studies about length of stay. The American Academy of Pediatrics and American College of Obstetricians and Gynecologists have recommended criteria for determining readiness for early discharge that include physiological, social support, and patient education parameters (10). Nearly one-half (47%) of mothers thought that a 1-night postpartum hospital stay was too short, compared with one-fourth of women with a 2-night stay (18). Pediatricians and new mothers have reported a high level of agreement (92%) about perceptions of readiness for postpartum discharge (22). When readiness was defined as both mother and pediatrician agreeing on readiness status, 25 percent of new mother-infant pairs were classified as unready. Maternal education less than high school was a predictor of lack of readiness. Those who were not ready at the time of discharge reported being less happy and made twice as many telephone calls to health care professionals for infant-related concerns in the first month after discharge.

For this study, we conceptualized length of stay as an outcome associated with the

mother's sociodemographic (i.e., personal, social, and economic) characteristics, and with the mother's and newborn's readiness for discharge (i.e., maternal-neonatal clinical problems, mother's perceived readiness, and infant feeding method).

## **Methods**

The study design was cross-sectional, with comparative and correlational analyses of the three major constructs: sociodemographic characteristics, readiness-for-discharge factors, and length of postpartum hospital stay. Newly delivered mothers from a single tertiary perinatal center in the midwestern United States were invited to participate in the study if they met the following criteria: (a) discharged with the newborn on or before the second postpartum day (by 54 hr postbirth); (b) vaginal birth followed by an uncomplicated postpartum and neonatal hospital stay; (c) able to speak and read sufficient English to complete the study forms and telephone interviews; and (d) willingness to provide a primary and secondary telephone number for postpartum follow-up calls (for the purposes of a postpartum follow-up study, not reported here). The sampling goal was to enroll all eligible participants from a cohort of women who delivered between July 1996 and June 1997. Of 2,775 mothers with vaginal births; 2,553 (92%) were discharged by 54 hours' postbirth, 2,153 (77.6%) met eligibility criteria, and 1,192 (55.4%) enrolled in the study. Failure to enroll was related to refusal or failure to receive or return the enrollment form.

## **Variables and Instruments**

Length of postpartum hospital stay was defined as the number of hours between birth and discharge, and was obtained from the computerized hospital information system. The 1,192 participants were grouped based on their postbirth length of hospital stay. The 3 categories were selected a priori to reflect the realities of discharge timing patterns and represented 1-and 2-night postpartum hospital stays as well as a 1 1/2 day stay for women who delivered late in the day, had additional needs for postpartum teaching, or special transportation requirements. Group 1 comprised 367 mothers with a length of stay of 24 hours +/-6 hours (18–30 hr); group 2, comprised 443 mothers with a length of stay of 36 hours +/-6 hours (31–42 hr); and group 3 comprised 382 mothers with a length of stay of 48 hours +/-6 hours (43–54 hr).

A sociodemographic questionnaire was developed for the study by the researchers. Family socioeconomic status was measured with the Hollingshead Four Factor Index of Social Status (23). Age, parity, race, and payor data were obtained from the computerized hospital information system. Payor data were categorized as private (preferred provider and health maintenance types of managed care organizations); public (Medicaid and Medicaid-funded

enrollment in health maintenance organization insurance plans); and self pay.

Readiness-for-discharge factors included maternal perception and criterion-based measures. The Readiness for Discharge After Birth Scale, which was used to measure perceived readiness for discharge, was modified from earlier versions used with adult and elderly postsurgical patients (24,25) to reflect the postpartum experience. Dimensions of readiness for discharge included pain, strength, energy, mood, functional ability, and self and baby care knowledge. The 9-item scale used a Likert format, with item scores ranging from 0 to 10. High scores reflect a positive rating. A Cronbach's alpha coefficient of 0.87 for the total sample provided evidence of the reliability of the scale. A single item dichotomous (yes/no) question "Are you ready for discharge?" was used as a second measure of perceived readiness for discharge.

Criterion-based measures of readiness for discharge consisted of postbirth maternal and neonatal clinical problems. Clinical problems occurring during the postpartum hospital stay were documented by the nurse on clinical pathways (21) that were used within the study hospital as a mechanism for tracking clinical care and outcomes. Clinical problems selected for inclusion in the study analysis were based on professional criteria for early maternal-neonatal discharge (10). For example, maternal and neonatal problems included physiological parameters (e.g., alterations in vital signs, urine output, wound healing, laboratory tests); self and infant care knowledge and skills deficits; and inadequate family support. Problems were categorized as early or late, and were documented separately for mother and baby (mother/early, mother/late, newborn/early, newborn/late). Early problems occurred in the first 12 hours after birth, and reflected variations in the immediate adaptation. Late problems occurred after 12 hours of life, and reflected problems that needed to be addressed before discharge. Feeding method was also included as a readiness-for-discharge factor because it is a major focus of discharge preparation and has been associated with length of stay in previous studies (18,19). Data on feeding method, categorized as breast or bottle, were obtained from the hospital information system.

## **Procedures**

Approval was obtained from university and hospital institutional review boards. A pilot test of 20 women was conducted to test the ease of use of the study forms by the participants and research assistants. On the day of discharge, after the decision to discharge had occurred and during the review of discharge instructions, nursing staff on the mother-baby unit presented eligible mothers with a study packet consisting of an informational letter and a data collection form. The letter contained an explanation of the study, a request for participation, and a statement informing the mother that completion of the data collection form indicated her willingness to participate. The data collection form contained the single item

readiness-for-discharge question, the Readiness for Discharge After Birth Scale, and questions about sociodemographic characteristics.

### **Data Analysis**

Data were entered and analyzed using SPSS 8.0 (26) for descriptive and comparative analyses. Sociodemographic and readiness for discharge variables were compared across the 3 groups, using analysis of variance (age, family socioeconomic status, Readiness for Discharge After Birth Scale) and chi-square tests (parity, marital status, living arrangement, adequate help at home, education, race, payor, single readiness-for-discharge item, clinical problems, feeding method). Direct logistic regression analysis was used to test whether the sociodemographic and readiness-for-discharge variables reliably predicted membership in the length-of-stay groups. SAS Logistic (27) was selected for the logistic regression analyses because it can handle multiple categories of the dependent variable. The regression analyses tested the relationships between the predictor variables (sociodemographic and readiness-for-discharge factors) and length of hospital stay with awareness that tests of association do not imply causality.

### **Results**

The mean age of the sample group was 28 years (range 12–44 yr). Two-thirds (66.7%) of the sample were married, and an additional 10 percent of mothers (76.6% of total sample) lived with the father of the baby. In 14 percent of households, neither the mother nor her partner was employed. Race distribution of the sample was 71.4 percent non-Hispanic white, 25.0 percent black, and 3.6 percent from other racial groups.

Medicaid was the public payor source for 48.2 percent of participants; the remaining women had private insurance plans (47.5%) as their payor source or had no insurance (self-pay, 4.4%). Of the women with Medicaid, 90.7 percent were enrolled through the Medicaid program in managed care insurance plans (health maintenance organizations) that provided access to the same providers and hospitalization benefits for the postpartum hospital stay as women in the same health maintenance organizations with private funding sources.

### **Differences among Length-of-Stay Groups**

When the sociodemographic characteristics of the 3 length-of-stay groups were compared (Table 1), group 3 mothers were older ( $f(2, n = 1,156) = 23.51, p < 0.001$ ) and of higher socioeconomic status ( $f(2, n = 1,155) = 30.27, p < 0.001$ ). Group 3 included more mothers who were primiparous ( $w^2(2, n = 1,191) = 11.31, p = 0.004$ ), married ( $w^2(6, n = 1,185) = 59.47, p < 0.001$ ), living with the father of the baby ( $w^2(16, n = 1,190) = 42.09, p < 0.000$ ), and had

adequate help at home ( $w^2(2, n = 1,189) = 8.10, p = 0.017$ ). Group 3 also included a greater percentage of mothers who were college graduates ( $w^2(12, n = 1,188) = 73.66, p < 0.001$ ), white ( $w^2(4, n = 1,157) = 32.06, p < 0.001$ ), and had a private health insurance ( $w^2(10, n = 1,191) = 110.25, p < 0.001$ ).

The mean score for the total sample on the Readiness for Discharge After Birth Scale was 67.5 (SD = 12.3) of a possible score of 90. Item means ranged from 6.1 to 8.6 of 10. Pain and energy were the lowest scoring items with item means of 6.0 and 6.1, respectively. Readiness for Discharge After Birth Scale scores (Table 2) were lowest for group 1 (mean = 65.9) and highest for group 3 (mean = 68.8) ( $f(2, n = 1,189) = 5.518, p = 0.004$ ). In analyses by parity, similar differences among groups were evident for multiparas ( $f(2, n = 835) = 5.824, p = 0.003$ ) with mean scores of 65.9, 67.9, and 69.5 for groups 1, 2, and 3. No differences occurred among groups for primiparas.

The second measure of readiness for discharge was the question “Are you ready for discharge?” posed in a yes/no response format. Overall, 89 percent of participants indicated they were ready to go home. Ninety-six percent of the mothers in group 3 responded “yes,” compared with 88 percent in group 2 and 82 percent in group 1 ( $w^2(2, n = 1,164) = 37.46, p < 0.001$ ). Similar findings were obtained in analyses by parity. Among primiparas, 85 percent of mothers were ready to go home in group 1, 84 percent in group 2, and 96 percent in group 3 ( $w^2(2, n = 353) = 11.32, p = 0.003$ ). Among multiparas, 81, 89, and 96 percent reported being ready for discharge in groups 1, 2, and 3, respectively ( $w^2(2, n = 819) = 29.05, p = 0.003$ ). When the characteristics of those who reported being ready for discharge were compared with those who reported not being ready, the not-ready-for-discharge group included more women (59%) who had a public payor source compared with women who reported being ready (47%) ( $w^2(1, n = 1,164) = 6.57, p = 0.012$ ). The ready and not-ready groups did not differ on measures of parity, marital status, race, socioeconomic status, and maternal education.

Analysis of clinical problems as a criterion-based measure of readiness for discharge revealed a small number of mothers (3.1%) and newborns (6.9%) with postbirth clinical problems. Early maternal problems were primarily related to physiological abnormalities, such as bleeding or inability to void. Ten percent of early maternal problems were knowledge deficits related to infant feeding and safety. Only 7 maternal late problems were recorded in the entire sample. Two were related to physiological problems, and 5 were knowledge deficits related to infant care. Early neonatal problems were related to physiological parameters (78.3%), such as unstable



body temperature, cardiopulmonary status, or bleeding after circumcision, and to feeding-related problems (21.7%). Many (63.3%) of the late neonatal problems were feeding related, and 75 percent of feeding problems were recorded in breastfeeding babies. Group 3 had more newborns with late clinical problems (5.5%) than groups 1 (0.3%) and 2 (2.0%) ( $w^2(2, n = 1,192) = 21.07, p < 0.001$ ). This result should be viewed with caution, however, as only 1 clinical problem was documented in group 1. No differences were found among the groups on the other 3 clinical problem categories (mother/early, mother/late, newborn/early) (Table 2).

During the postpartum hospitalization period, 60.0 percent of participants were breastfeeding babies. More mothers in group 3 breastfed (71.4%) than in groups 1 (52.6%) and 2 (56.0%) ( $w^2(4, n = 1,127) = 31.32, p < 0.001$ ). Breastfeeding rates for primiparas were 48.2, 65.8, and 67.9 percent ( $w^2(4, n = 330) = 10.37, p = 0.035$ ), and 54.0, 52.2, and 73.2 percent for multiparas ( $w^2(4, n = 797) = 28.96, p < 0.001$ ) for groups 1, 2, and 3, respectively.

### **Association between Sociodemographic and Readiness-for-Discharge Variables and Postpartum Length of Stay**

Six demographic variables (age, race, payor, living arrangements, parity, and socioeconomic status) were selected for entry into a logistic regression analysis to determine predictors of length-of-stay group (Table 3). The remaining variables (education, occupation, marital status, adequate help at home) were not significant predictors of length-of-stay group in the preliminary testing of the model, and were closely related to socioeconomic and living arrangement variables. The test of the final model, using length-of-stay group 1 as the reference group, against a constant only model was statistically reliable ( $w^2(6, n = 1,076) = 100.85, p < 0.001$ ), indicating that the predictors as a set reliably distinguished among the 3 length-of-stay categories. Younger mothers, multi-paras, and those with lower family socioeconomic status and a publicly funded health care payor source were more likely to be discharged earlier. Conversely, women with higher family socioeconomic status, older age, primiparity, and private payor sources (preferred provider organizations, health maintenance organizations) were more likely to have a longer length of stay. Post-hoc logistic regression analyses were used to identify variables that distinguished between groups 1 and 2 and groups 2 and 3. None of the demographic variables distinguished between groups 1 and 2. For the comparison of groups 2 and 3, age, parity, and payor source predicted length of stay in the same relationships as described for the full model.

Five readiness-for-discharge factors were selected for entry into a logistic regression analysis to determine predictors of length of stay (Table 3). The variables included in the final

model were perceived readiness for discharge (single item), clinical problems (mother/early, baby/early, baby/late), and feeding method. The Readiness for Discharge After Birth Scale was excluded because it was not a significant predictor in an early test of the model and was redundant conceptually with the single item variable. The mother/late clinical problem variable was excluded due to the insufficient number of women who had late problems. The test of the final model, using length-of-stay group 1 as the reference group, against a constant only model was statistically reliable ( $\chi^2(5, n = 1,099) = 75.07, p < 0.001$ ), indicating that the predictors as a set reliably distinguished among the 3 length-of-stay groups. The relationships indicated that mothers who perceived that they were not ready for discharge, were bottle-feeding, and had newborns without late clinical problems were more likely to go home early. Perceived readiness, breast-feeding, and presence of a late neonatal problem were associated with a longer length of stay. Post-hoc logistic regression analysis indicated that late neonatal problems was the only readiness-for-discharge factor that distinguished between groups 1 and 2. In the comparison of groups 2 and 3, perceived readiness for discharge and feeding method predicted length-of-stay group. In both analyses the variables predicted length of stay in the same relationships as described for the full model.

## **Discussion and Conclusions**

Length-of-stay groups differed on all sociodemographic variables included in this study. Consistent with the findings of other studies (19,20), mothers who were discharged early were more likely to be multiparous, less educated, low socioeconomic status, and without privately funded health insurance. The shortest length-of-stay group (group 1) also included bottle-feeders and younger mothers, contrary to previous findings (19). Length-of-stay groups in this study also differed in composition by race, marital status, and living arrangement. The longer length-of-stay group had a higher percentage of mothers who were white, married, and living with the father of the baby. Of particular note, the shorter length-of-stay groups included more women with public funding for their health care, even though more than 90 percent of these mothers were enrolled, through the Medicaid program, in the same health plans with the same benefits for postpartum hospitalization as the mothers with private insurance payor sources. When sociodemographic variables were entered into a predictive model for length of stay, 4 variables predicted going home earlier: young age, Medicaid as payor, multiparity, and low socioeconomic status. Taken together, the sociodemographic characteristics of the shorter length-of-stay groups do not describe the low-risk mothers for whom early discharge programs were originally intended. Women with characteristics often associated with vulnerability were discharged early. The

reasons for this pattern of early discharge of potentially vulnerable women were not investigated in this study.

Most study women perceived that they were ready for discharge, and a higher percentage of women in the longer length-of-stay group reported being ready, compared with the other groups. A perception of not being ready was associated with earlier discharge. Maternal perception of readiness for discharge apparently was not used as a criterion for decisions regarding timing of discharge. Rather than readiness influencing discharge decisions, early discharge may have precipitated feelings of not being ready to go home, supporting the notion of potential vulnerability among those discharged in the earliest group.

In contrast, it appeared that clinical readiness for discharge, measured by neonatal clinical problems, influenced length of stay. A longer length of stay was more likely for newborns with clinical problems, most commonly through a full second postpartum day (group 3). In fact, only 1 newborn had a clinical problem after 12 hours of life among 367 in the earliest length-of-stay group, suggesting that this was a reason for delaying discharge within the study population of essentially normal low-risk mothers and infants. Many late neonatal problems were feeding related and occurred among breastfeeding babies. Consistent with results reported by Lane et al (18), breastfeeding mothers and their newborns tended to stay longer, reflecting their postpartum learning needs.

Length of stay can be conceptualized as the outcome of a process that involves the patient and provider, and is influenced by payor type. The differences among study groups may have resulted from a combination of provider practices and beliefs, patient preferences for postpartum care and support, and organizational pressures to control costs. For example, providers may have retained newborns in hospital to resolve clinical problems before discharge. In contrast, multiparous, bottle-feeding mothers with healthy newborns were discharged early, reflecting beliefs that the mothers could be safely discharged home and that they did not have physiological or learning needs requiring postpartum hospitalization. The higher percentage of black women in the early discharge group could reflect racial and/or socioeconomic disparities, or perhaps their expectations for greater support for the transition to parenthood within their family and community than in the hospital environment. Whereas race was not an independent predictor of length of stay in the logistic regression model, it is associated with the other variables that predicted length-of-stay group in this study (age, socioeconomic status, parity, Medicaid as payor, higher rate of bottle-feeding). Women with public funding may have been discharged early to support cost containment efforts in the face of limited reimbursement. However, in the health care market that served as the study setting, reimbursement for publicly and privately funded

women enrolled in health maintenance types of insurance plans would have been similar. No data were collected in this study with respect to provider awareness or beliefs about reimbursement levels or the impact of these beliefs on discharge decisions.

Length of postpartum hospital stay may provide an illuminating example of the emerging understanding of the sociopolitical and economic systems that shape health behaviors and access to health resources (28). In its inception, early discharge was developed for low-risk families. In this study, even though newborns with clinical problems tended to stay longer, women and babies with sociodemographic characteristics that suggested potential vulnerability were more likely to go home early. The young, unmarried, multiparas of low socioeconomic status and education who went home earliest would theoretically derive considerable benefit from the additional teaching and support that could be offered in a longer hospital stay. Why these women were selected or chose to go home early was not investigated in this study. Further research is needed to explain the complex dynamics underlying the results of this study, with attention to the interface of patient, provider, payor, and health system contributions to the discharge decision process.

### **Limitations**

The purpose of this study was to describe and compare characteristics of women in each of 3 postpartum length-of-stay groups, and to identify factors that were associated with length of stay. The study did not evaluate whether there were benefits to early or later discharge or rationale for discharge decision-making. The major study limitation is that the sample was derived from a single site, and may reflect discharge patterns and practices unique to a single institution. Other factors that may have affected length of stay, including obstetrical interventions (inductions, epidural anesthesia) and availability of family members and transportation on the day of discharge, were not addressed in this study. The number of documented clinical problems was very small due to the sample of normal mothers and babies and underreporting related to compliance issues with completion of the clinical problem tracking documents by nursing staff. Accuracy and compliance with documentation and data entry into the computerized tracking system were not assessed.

### **Implications**

The study findings point to two major considerations with respect to postpartum length of stay after vaginal birth. First, criteria implicitly or explicitly applied in the selection of candidates for earliest discharge may have disadvantaged potentially vulnerable families. Caregivers, both individual and organizational, must question the assumptions on which they base discharge decisions, and evaluate the unintended consequences of those decisions. The implementation of

a minimum 48-hour postpartum hospital stay should help to reduce disparities in length of stay based on sociodemographic factors, and to benefit these families by extending opportunities for self-care and infant care knowledge and skills acquisition. Further research is needed to evaluate whether sociodemographic factors associated with short length of stay persist when women and their caregivers are the decision-makers about timing of discharge without the pressures associated with reimbursement incentives for early discharge, as was intended with implementation of the legislation guaranteeing a 48-hour postpartum hospital stay (2).

Second, perceived readiness for discharge should be considered as a factor in decisions regarding discharge. Adding perceived readiness for discharge to clinical discharge criteria, such as absence of clinical problems, will provide a more comprehensive assessment of readiness for discharge after birth. Incorporating assessment of readiness into discharge planning can be accomplished as simply as asking the mother if she feels ready for discharge. A more detailed assessment, using a tool such as the Readiness for Discharge after Birth Scale, can provide information on which to base the decision about discharge timing and individualized interventions to facilitate the transition to home. Readiness for discharge means readiness for taking on the challenges of self, infant, and family care at home. The new mother must be physically, emotionally, and educationally ready. Those who are not ready are at risk for postdischarge problems, perhaps explaining the higher rates of neonatal readmissions (5,6), morbidity (18), and mortality (7) reported after early discharge.

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## Appendix

### Table 1

#### Comparison of Sociodemographic Factors Across Length-of-Stay Groups

<i>Characteristic</i>	<i>Group 1</i>	<i>Group 2</i>	<i>Group 3</i>
	<i>(18-30 hr)</i> (n = 367)	<i>(31-42 hr)</i> (n = 443)	<i>(43-45 hr)</i> (n = 382)
Age‡ (mean, SD)	27.1 (6.2)	7.3 (6.3)	29.8 (5.4)
Family socioeconomic status‡ (mean, SD)	35.1 (20.1)	37.0 (20.5)	45.4 (16.8)
	<i>No. (%)</i>	<i>No. (%)</i>	<i>No. (%)</i>
Parity (primiparous)†	92 (25.1)	124 (28.1)	137 (35.9)
Marital status (not married)‡	151 (41.5)	174 (39.5)	70 (18.4)
Living arrangement (with baby's father)‡	261 (71.3)	320 (72.4)	330 (86.4)
Help at home (inadequate)*	14 (3.8)	25 (5.6)	7 (1.8)
Maternal education‡			
< High school	61 (16.7)	74 (16.8)	23 (6.0)
High school	86 (23.6)	94 (21.3)	54 (14.1)
Partial college or 2 yr college	106 (29.0)	102 (23.1)	84 (42.1)
4 yr college	112 (30.7)	171 (38.7)	221 (57.8)
Race‡			
White	242 (67.2)	283 (65.7)	301 (82.2)
Black	101 (28.1)	132 (30.6)	56 (15.3)
Other	17 (4.7)	16 (3.7)	9 (2.5)
Payor‡			
Public (Medicaid)	214 (58.3)	248 (56.0)	112 (29.4)
Private	133 (36.3)	174 (39.3)	258 (67.7)
Self-pay	20 (5.4)	21 (4.7)	11 (2.9)

\* p < 0.05; †p < 0.01; ‡p < 0.001



**Table 2****Comparison of Readiness-for-Discharge Factors Across Length-of-Stay Groups**

<i>Factors</i>	<i>Group 1 (18-30 hr) (n = 367)</i>	<i>Group 2 (31-42 hr) (n = 443)</i>	<i>Group 3 (43-45 hr) (n = 382)</i>
Readiness for Discharge after Birth Scale* (maximum score = 90) (mean, SD)	65.9 (13.0)	67.6 (12.5)	68.8 (10.9)
	<i>No. (%)</i>	<i>No. (%)</i>	<i>No. (%)</i>
Ready for discharge single item† Response = yes	293 (82.1)	380 (87.8)	360 (96.3)
Clinical problems			
Mother-early	10 (2.7)	8 (1.8)	12 (3.1)
Mother-late	2 (0.5)	1 (0.2)	4 (1.0)
Mother—total	12 (3.3)	9 (2.0)	16 (4.2)
Newborn-early	14 (3.8)	26 (5.9)	13 (3.4)
Newborn-late†	1 (0.3)	9 (2.0)	21 (5.5)
Newborn—total	15 (4.1)	35 (7.9)	32 (8.4)
Breastfeeding at discharge†	184 (52.6)	228 (56.0)	264 (71.4)

\* $p < 0.01$ ; † $p < 0.001$ .

**Table 3****Logistic Regression Model of Sociodemographic and Readiness-for-Discharge Variables Predicting Short (Group 1) Length of Stay**

<i>Variable</i>	<i>Odds Ratio</i>	<i>95% CI</i>	<i>p</i>
<b>Sociodemographic Variables</b>			
Age (range = 12 to 44 yr)	0.96	0.93-0.98	0.0014
Race (0 = black, 1 = other)	0.86	0.73-1.02	ns
Payor (0 = private, 1 = public)	1.35	1.22-1.49	0.0001
Living arrangement (0 = not with baby's father, 1 = with baby's father)	0.99	0.90-1.08	ns
Parity (0 = primiparous, 1 = multiparous)	1.78	1.35-2.35	0.0001
Socioeconomic status (range of scores = 0 to 66)	0.90	0.81-0.99	0.0282
<b>Readiness-for-discharge variables</b>			
Reading for discharge (0 = ready, 1 = not ready)	2.93	2.04-4.22	0.0001
<b>Clinical problems (0 = absent, 1 = present)</b>			
Mother—early	1.01	0.56-1.82	ns
Baby—early	1.02	0.64-1.62	ns
Baby—late	0.37	0.19-0.72	0.0032
Feeding method (0 = breast, 1 = bottle)	1.72	1.41-2.11	0.0001

*ns = not significant (p > 0.05)*