

# Implementation of a laborist program and evaluation of the effect upon cesarean delivery

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**OBJECTIVE:** Laborist programs have expanded throughout the United States in the last decade. Meanwhile, there has been no published research examining their effect on patient outcomes. Cesarean delivery is a key performance metric with maternal health implications and significant financial impact. Our hypothesis is that the initiation of a full-time dedicated laborist staff decreases cesarean delivery.

**STUDY DESIGN:** In a tertiary hospital staffed with private practice physicians, data were retrospectively reviewed for 3 time periods from 2006 through 2011. The first period (16 months) there were no laborists (traditional model), followed by 14 months of continuous in-hospital laborist coverage provided by community staff (community laborist), and finally a 24-month period with full-time laborists providing continuous in-hospital coverage. The primary hypothesis was that full-time laborists would decrease cesarean delivery rates.

**RESULTS:** Data from 6206 term nulliparous patients were retrospectively reviewed. The cesarean delivery rate for no laborist care was 39.2%, for community physician laborist care was 38.7%, and for full-time laborists was 33.2%. With adjustment via logistic regression, full-time laborist presence was associated with a significant reduction in cesarean delivery when contrasted with no laborist (odds ratio, 0.73; 95% confidence interval, 0.64–0.83;  $P < .0001$ ) or community laborist care (odds ratio, 0.77; 95% confidence interval, 0.67–0.87;  $P < .001$ ). The community laborist model was not associated with an effect upon cesarean delivery.

**CONCLUSION:** A dedicated full-time laborist staff model is associated with lower rates of cesarean delivery. These findings may be used as part of a strategy to reduce cesarean delivery, lower maternal morbidity and mortality, and decrease health care costs.

**Key words:** cesarean delivery, hospitalist, laborist, patient safety

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The hospitalist concept has expanded and evolved since the mid-1990s to provide focused care for the hospitalized patient. This paradigm of support and treatment was initially utilized for internists in the United States to improve physician care and efficiency while striving to provide high-value medical services.<sup>1</sup> In the last decade, this model has extended into the dominion of the labor and delivery unit. These laborist programs have grown due to a perceived need for improved

physician efficiency, decreasing provider workload and risk of eventual burnout, a desire to improve patient safety, and through efforts to reduce hospital liability.<sup>2</sup> Despite these laudable goals and assumptions, the examination of the effects of laborists upon patient care metrics has not been studied to date.

Transforming a long-standing model of delivery care within the United States has the possibility of producing many alterations in outcomes. Laborist programs may positively affect patient care through

heightened surveillance, improved teamwork, and superior emergency response. Alternatively, laborists may theoretically affect care negatively via an introduction of discontinuity of care, increasing risk of untoward outcome from increased handoffs, and result in disagreement of inpatient and outpatient care providers regarding management.<sup>3</sup> Moreover, several styles of laborist care exist including: community provider models utilizing local obstetricians with existing office practices to provide shared 24-hour on-site labor unit presence, full-time laborist models of physicians without office practice duties who solely cover a labor and delivery unit when working, and models that include emergency room gynecologic consultation in addition to labor and delivery unit coverage. Furthermore, laborist models vary across a spectrum with minimalist models of care for emergencies of other private obstetric providers and provision of care to women with no prenatal care to instances of full-service laborists who provide care for all obstetrical interventions routinely and work in conjunction with the patient's

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private obstetrician. These divergent and varied models are being created without knowledge of which laborist care system would be the safest, be the most efficient, or provide higher patient satisfaction. In addition, laborist programs are growing rapidly without any previous study to date examining key outcome measures.

Cesarean delivery is a key performance indicator with effects upon maternal morbidity and mortality as well as having financial implications upon care. Cesarean delivery is associated with 3 immediate major causes of this morbidity and mortality via increased risks of obstetric hemorrhage, thromboembolism, and puerperal infection. In addition, cesarean delivery increases the risk of maternal complications in a subsequent gestation via increased risks of uterine rupture and placenta accreta. An increase in maternal mortality within the United States has become a troubling trend over the last decade.<sup>4</sup> Furthermore, the increase in maternal mortality is only a small fraction of the problem as maternal morbidity is 50 times more prevalent.<sup>5</sup> This crisis of maternal health complications has led to calls for a cohesive and organized approach to combat the possibly increasing incidence of maternal mortality.<sup>6</sup> Factors that prevent a first cesarean delivery may hence add to this effort.<sup>7</sup> Additionally, with the current increased importance of driving value-oriented care the 50% increase in maternal and newborn costs associated with cesarean delivery as compared to vaginal delivery represents a financial burden that cannot be sustained.<sup>8</sup> Within California alone, the increased health care costs associated with cesarean delivery is conservatively estimated at \$240 million in 2011.<sup>9</sup> Across the United States, the total cesarean section rate stood at 32.8% with an overall rate increase of >60% since 1996.<sup>10</sup> The American Congress of Obstetricians and Gynecologists has recognized the importance of nulliparous vertex singleton cesarean births as a focus for measurement and quality improvement action with a target rate of 15.5%.<sup>11</sup> This target over the last decade has not been met and the Healthy People target for 2020 is a cesarean delivery rate of 23.9%

for low-risk women with a singleton, vertex presentation and no prior cesarean births.<sup>12</sup> With this goal in mind, our objective was to examine cesarean delivery rates in term nulliparous patients with a live singleton vertex presentation to examine whether the presence of a laborist was associated with a change in cesarean delivery rates at a single institution with a well-established laborist program. Furthermore, we sought to find whether the type of laborist model had a further influence on this outcome.

### MATERIALS AND METHODS

A retrospective review of hospital databases and medical records was conducted reviewing delivery data over a 5-year time interval from October 2006 through October 2011. Approval for the study was obtained from our local institutional review board. The hospital is a tertiary care hospital staffed solely by private obstetrician–gynecologists without a residency or midwifery program and performing approximately 4500–5000 deliveries per year. During this time period there were 3 consecutive types of care provided on labor and delivery. From October 2006 through January 2008 only traditional private practice care (traditional care) without a dedicated in-house physician coverage was utilized. A total of 52 obstetricians provided obstetrical care at the institution during this time period of traditional care and offered as-needed care for patients without an obstetric provider in a rotating call schedule. This was followed by a period from February 2008 through April 2009 where local community physicians contracted with the hospital to provide 24-hour coverage for hospital services for obstetrical emergencies and to provide care for patients without an assigned provider due to lack of prenatal care or the patient presenting to a hospital where her physician did not have privileges (community laborist). These community laborists also would provide care for patients of other community providers by request or through their regularly scheduled private group call coverage. From these 45 community physicians, a majority participated in a rotating paid laborist 24-hour

in-hospital call schedule for the community laborist program. From November 2009 through October 2011 a dedicated full-time laborist model (full-time laborist) was completely implemented using physicians whose employment was solely dedicated to inpatient care primarily upon labor and delivery. The 3 groups were responsible for evaluation and management of all obstetric concerns of patients without a previous medical provider at the hospital as well as emergency room gynecologic consultation. The in-hospital laborist groups also responded to obstetric emergencies within the hospital, provided care to patients without an assigned hospital physician, and covered private physicians for obstetrical concerns by request. The full-time laborist staff was comprised of 4 obstetrician–gynecologists as a coverage group. These full-time laborists worked 12-hour shifts for 1 week (84-hour work week) with a separation of day and night teams. The laborist in the following week had the time off with no clinical responsibility. There was a loss of 2 full-time laborists during the study period and a total of 6 full-time laborists were utilized during the study of the full-time laborist period. Three of the 6 full-time laborists had previous private practices in the Las Vegas, NV, area prior to becoming a full-time laborist. There were a total of 44 other community doctors practicing obstetrics at this institution during the full-time laborist period. The first 6 months of the full-time laborist group (April through November 2009) were not included in data analysis due to the model having a mix of coverage of both full-time and community hospital coverage during its initial formation. The decision for this exclusion was done in the initial study design and the data for this 6-month time period were not analyzed at any time.

Data were examined solely for nulliparous patients with a singleton, vertex, live fetus at term ( $\geq 37$  weeks) to examine the effect on cesarean delivery rate while limiting possible confounding variables that could arise from medically indicated preterm delivery or delivery history.

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