

## Birth before Arrival at a Hospital in Eastern Tokyo, Japan

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### Abstract

Delivery before arrival at a hospital did not cause major perinatal complications; however, it may reflect a serious problem of perinatal medicine in eastern Tokyo, Japan.  
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**Key words:** delivery before arrival in hospital, prenatal visit

Accidental out-of-hospital deliveries are associated with increased risks of trauma, hemorrhage, and infection in both neonates and mothers and with mental uneasiness, pain, and fear in mothers. These fears may arise because of the distance from home to hospital, a lack of transportation, previous precipitate labor (labor of 3 hours or less), and well-meaning advice not to come to the hospital until labor is established<sup>1-3</sup>. Although Tokyo, Japan has few areas that are not covered by efficient transportation networks, births sometimes occur before the mother arrives at a hospital. The aim of this study was to determine the characteristics of births before arrival at hospitals in eastern Tokyo, Japan.

We reviewed the obstetric records of 11,948 deliveries from 2002 through 2007 at Japanese Red Cross Katsushika Maternity Hospital, a major perinatal care center in Tokyo. Demographic information and perinatal outcomes were extracted from patient charts. Cases and controls were compared by means of the  $\chi^2$  test or Fisher's exact test for categorical variables. Odds ratios and 95% confidence intervals were also calculated. Differences were considered significant at  $P < 0.05$ . Variables used in the multivariate model were those that on

univariate analysis had shown statistically significant associations with an increased risk of birth before arrival at the hospital.

There were 34 deliveries (0.28%) before arrival at the hospital. The mothers in 8 of these cases were non-Japanese women (7 Filipino women and 1 Korean woman). Significant risk factors for birth before arrival at the hospital were non-Japanese nationality, multiparity, precipitate labor, and a lack of prenatal care (**Table 1**). Logistic multivariable regression analysis showed that out-of-hospital delivery was significantly more likely in women who had not had prenatal care ( $p < 0.01$ ; adjusted odds ratio: 71; 95% confidence interval: 26–200). The rate of prenatal death was significantly higher for deliveries before arrival at the hospital than for births at the hospital; however the 2 perinatal deaths were unavoidable and unrelated to the place of birth.

In eastern Tokyo, an unusually short duration of labor or failure to recognize the true onset of labor may have accounted for a few cases of births before arrival at the hospital. The present results differ from previous observations in other countries<sup>1-3</sup>, because in our department a lack of prenatal care was the strongest independent risk factor for birth

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## Birth before Arrival in Hospital in Japan

Table 1 Characteristics and perinatal outcomes of 34 births before arrival at the hospital compared with those in births at hospital

	Number (%)	<i>P</i> value*	Crude OR (95% CI)*
Total	34 (100)		
Nationality			
Japanese	26 (76)	<0.01	0.18 (0.08–0.39)
Foreigner	8 (21)	<0.01	5.7 (2.6–13)
Multipara	24 (71)	<0.01	2.7 (1.3–5.6)
No prenatal visit	10 (29)	<0.01	100 (47–230)
Precipitate labor	12 (35)	<0.01	3.3 (1.6–6.6)
Preterm labor	4 (12)	0.68	—
Birth weight<2,500 g	5 (15)	0.65	—
Prenatal death	2 (6)	<0.01	26 (5.9–110)
Perineal laceration ≥ III	0 (0)	0.52	—
Postpartum hemorrhage requiring transfusion	0 (0)	0.61	—

\*vs. births at hospital by  $\chi^2$  test.

Abbreviations: OR, odds ratio; 95% CI, 95% confidence interval.

before arrival at the hospital. In the present study, we could not determine the reasons for these observations, because 2 or 3 of these patients were lost to follow-up without paying their hospital bills. However, we can suggest possible reasons for the present results: (1) economic factors, (2) immoral behavior on the part of the women, (3) insufficient knowledge of the medical system or support system or both, and (4) lack of ability on the part of hospitals to accept patients due to a shortage of obstetricians and neonatologists<sup>4</sup>. We think that some patients could not or did not find a hospital before delivery, because hospitals are sometimes not able accept a patient for delivery who is visiting the hospital for the first time because of a lack of hospital beds or a shortage of hospital workers.

Delivery before arrival at the hospital might not

cause major perinatal complications; however, the results of the present study may reflect a serious problem of perinatal medicine in eastern Tokyo, Japan.

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