

# ANTENATAL IDENTIFICATION OF SPONTANEOUS PRE TERM BIRTH

By

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## SUMMARY

Five hundred booked antenatal women who subsequently delivered at J.L.N. Hospital, Ajmer, were studied to identify women at a higher risk for preterm delivery. Factors associated with spontaneous preterm birth were also analysed. The risk of preterm delivery was detected antenatally by the scoring system of Fedrick, J. (1976) and results were found to be highly significant, for both primi and multigravida. The risk scoring system can be quickly and easily applied to antenatal patients and good degree of correlation with clinical outcome can be obtained.

### *Introduction*

Prematurity is a single greatest problem facing us today, accounting for a large number of perinatal mortality and morbidity. In order to reduce the number of premature births, early identification of patients at high risk of spontaneous preterm birth is essential. An attempt has been made to identify in advance women "at high risk" of preterm birth by a risk scoring system based largely on socio-economic status and reproductive performance of the patient.

### *Material and Methods*

The present study was conducted on 500 pregnant patients in the Department of Obstetrics and Gynaecology, J.L.N. Hospital, Ajmer in the year 1984-1985. In all the women detailed history was

taken in which women whose last menstrual period was known were included. Any patient with an expected date of confinement less than six weeks from the date of first antenatal visit and who delivered before 28 completed weeks of amenorrhoea were excluded from the study. Each woman was advised regular antenatal examination. All the new born infants were weighed and estimation of their gestational age was done immediately after birth, simultaneously a scoring system (Fedrick, 1976) was used (Table I).

The individual scores of 6 variables for primi and 10 variables for multi were compounded together to produce a composite score for each women. The women with a score of 5 or over (either primi or multigravida) were placed "At risk" for premature labour.

Premature birth was considered to have occurred if the gestation terminated spontaneously before 37 completed weeks and the infant was less than 2.5 kg.

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TABLE I  
Scoring System

| All women                           |                   |                            |
|-------------------------------------|-------------------|----------------------------|
| 1. Maternal Age                     | :                 | < 20 ..... 1.3             |
|                                     |                   | 20-29 ..... 1.0            |
|                                     |                   | 30 + ..... 0.9             |
| 2. Social Class                     | :                 | I, II ..... 0.7            |
|                                     |                   | III, IV, V ..... 1.0       |
|                                     |                   | Unmarried ..... 1.5        |
| 3. Weight                           | :                 | < 50.8 kg. .... 1.8        |
|                                     |                   | 50.8-57.1 kg. .... 1.1     |
|                                     |                   | 57.2-63.4 kg. .... 0.8     |
|                                     |                   | 63.5 + ..... 0.6           |
| 4. Smoking                          | :                 | Non smoker ..... 0.8       |
|                                     |                   | 1-9 Cig/per day ..... 1.3  |
|                                     |                   | 10 + Cig/per day ..... 1.7 |
| 5. Threatened abortion              | :                 | Yes ..... 3.9              |
|                                     |                   | No ..... 0.9               |
| 6. Previous abortion                | :                 | Non ..... 1.0              |
|                                     |                   | One + ..... 1.2            |
| Parous Women only                   |                   |                            |
| 1. Previous SB/NDD                  | :                 | None ..... 0.9             |
|                                     |                   | One ..... 1.4              |
|                                     |                   | Two ..... 4.5              |
| 2. Previous Live births             | :                 | < 2500 gm ..... 0.7        |
|                                     |                   | None ..... 0.7             |
|                                     |                   | One ..... 2.0              |
|                                     |                   | Two ..... 3.9              |
|                                     | Three + ..... 7.2 |                            |
| 3. Previous Large Infants (4000 gm) | :                 | None ..... 1.1             |
|                                     |                   | One + ..... 0.4            |
| 4. Previous APH                     | :                 | Yes ..... 2.8              |
|                                     |                   | No ..... 1.0               |

A correlation of the composite score and spontaneous preterm birth was assessed and will be discussed.

#### Observations and Discussion

Out of 500 booked antenatal patients 53 (10.6%) delivered preterm. The incidence of preterm birth gradually decreased with advancing years of age. Highest incidence of premature births were reported in primipara (43.40%), and in women belonging to low socio-

economic groups. The incidence of prematurity was found to be six times higher in mothers weighing less than 50.8 kg. Only 2 cases were found to be smokers and both delivered prematurely. Nine fold increase in the incidence of premature births was found in women with previous history of threatened abortion and 75% of those with positive history delivered prematurely. About 27% of premature births occurred in women having history of previous abortion against 8.9% in women, with no such

history. Relationship to previous large infants (> 4 kg) was found to be insignificant statistically.

Women with a history of previous 3 or more premature births were ten times more likely to have another premature births, than a woman of similar parity with no such previous history. A sharp increase of six fold was found in women who had previously had two or more stillbirths or neonatal deaths. On applying chi square test these results were found to be highly significant statistically. Incidence of premature births was maximum (83.02%) with the birth spacing less than 2 years. Amongst 17 cases (18.68%) of prematurity with associated diseases of pregnancy, anaemia played a major role to cause premature births (41.18%) followed by PET and hypertension. Incidence of prematurity was more in female births (12.24%) as compared to male births (9.12%).

The results of applying the composite score on 500 pregnant patients (192

primi and 308 multigravida) and their distribution among the various risk groups is shown in Tables II and III.

Out of 192 primigravida, 23 (11.98%) had spontaneous preterm births (Table II). When a score of 5 or over was taken to label patients to be "at risk" only 8 (4.16%) women were identified. The high risk primigravida group in the present study contributed only 34% of all primigravida preterm births. Among the primigravida identified to be at high risk all delivered prematurely (100%), which is statistically highly significant ( $P < 0.001$ ) when individual scores were considered it was noticed that as the score decreases prediction rate increases but specificity decreases.

Out of 308 multigravida when a score of 5 or over was taken to place patients at high risk of preterm delivery 17 (5.52%) were kept in the high risk group, accounting for 10 (33.33%) of all multigravida preterm births (Table III). Among the high risk group the specificity was 58.82%, and was found to be

TABLE II  
Relationship Between Composite Score and Spontaneous Preterm Birth  
(Primigravidae)

| S. No. | Score      | No. in population | Spontaneous preterm birth |            |
|--------|------------|-------------------|---------------------------|------------|
|        |            |                   | Number                    | Percentage |
| 1.     | 5 or more  | 8                 | 8                         | 100.00     |
| 2.     | 4.0 to 4.9 | 1                 | 1                         | 100.00     |
| 3.     | 1.5 to 3.9 | 45                | 7                         | 15.55      |
| 4.     | 1.0 to 1.4 | 105               | 6                         | 5.71       |
| 5.     | 1          | 33                | 1                         | 3.03       |
| Total  |            | 192               | 23                        | 11.98      |

$$X^2 = 64.89.$$

$$Df = 2$$

$$P = < 0.001 \text{ (Highly significant).}$$

TABLE III  
Relationship Between Spontaneous Preterm Births and Scoring System (Multigravida)

| S. No. | Score     | Spontaneous preterm births |               | Percentage |
|--------|-----------|----------------------------|---------------|------------|
|        |           | No. in population          | No. of births |            |
| 1.     | 7 or more | 15                         | 9             | 60.00      |
| 2.     | 6.0-6.9   | 1                          | 1             | 100.00     |
| 3.     | 5.0-5.9   | 1                          | 0             | —          |
| 4.     | 4.0-4.9   | 6                          | 0             | —          |
| 5.     | 2.5-3.9   | 14                         | 6             | 42.85      |
| 6.     | 2.0-2.4   | 3                          | 0             | —          |
| 7.     | 1.5-1.9   | 4                          | 1             | 25.00      |
| 8.     | 1.0-1.4   | 24                         | 1             | 4.17       |
| 9.     | 1.0       | 240                        | 12            | 5.00       |
| Total  |           | 308                        | 30            | 25.00      |

$X^2 = 48.90.$

Df = 2.

P = < 0.001 (Highly significant).

highly significant statistically ( $P < 0.001$ ). In multigravida if a score of 4 or over is taken to predict preterm labour then the specificity falls still lower (43.3%) although the prediction rate increases to 7.46% when score of below 3.9 were analysed 285 (92.33%) were labelled to be at risk but the incidence of prematurity in this group was only 7%. It also seems that as score decreases specificity of prediction also decreases.

The present study confirms the findings of Fedrick (1976) who stressed the importance of past reproductive performance. He identified 9% of primigravida and 25% of multigravida when a score of 5 or over was taken to predict women at high risk and Fedrick was able

to predict 25% of preterm births when 1% of patients were labelled at risk and 45% of preterm births when 5% of patients were so labelled.

The system for predicting spontaneous preterm birth used in the present study has been shown to provide a satisfactory tool for prospective studies of natural history of preterm labour and delivery. New variables can be added which would enhance the accuracy of prediction and eliminate patients from the high risk category who are not likely to deliver preterm.

#### References

1. Fedrick, J.: Br. J. Obstet. Gynec. 83(5): 351-4, 1976.
2. Fedrick, J. and Anderson, A. B. M.: Br. J. Obstet. Gynec. 83: 342, 1976.