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*Method of Patient Classification System in obstetric staff scheduling.*

*I. Criteria and categories of care*

The methods defined in world literature by the common name Patient Classification System (PCS) consist in the classification of patients according to the adopted criteria of care into proper groups (categories) according to the evaluation of their demand for care expressed by the number of minutes of care provided by an individual occupational group in each category during a defined time, e.g. one day. The time of care demanded in a particular category should be consistent with the standards of care adopted in an individual country (6). The application of PCS method enables the determination of the demand for a given type of service, and consequently constitutes a basis for scheduling the appropriate number of staff.

In international literature and management practice, the problem of improvement of PCS methods has been well described and solved for several dozen years. This concerns scheduling of the nursing, dentistry and doctors staff (1, 3, 4, 7, 8, 9, 11, 12). An organizational experiment conducted in several departmental hospitals in the 90s aimed at the adjustment of PCS methods to the state of nursing care and organizational conditions in Polish hospitals (6). Unfortunately, at that time, the verification of PCS methods for the speciality of obstetrics was not in the focus of the researchers' interest. Investigations on the adjustment of PCS methods to the needs of obstetrics were first initiated by the English midwife B a l l (2), whereas the first attempts in Polish hospitals were not undertaken until the end of the 90s (5). It appeared that due to the specific character of obstetrics, PCS methods applicable to hospitalized patients were not suitable for obstetric care, even after verification. For this medical speciality it was necessary to establish all PCS method components: criteria of obstetric care, the determination of direct nursing time, and the determination of the percentage of time devoted to non-nursing activities. Only then could the demand for obstetric care be defined and the proper number of midwives planned. Hence, the following research problems were posed:

1. What should be the contents of obstetric care criteria for a woman in labour in the delivery room?
2. How many categories of care are adequate for women in labour?

## MATERIAL AND METHODS

Studies were conducted during the period from November 1999 to March 2000 in a delivery room at one of the clinics in Lublin. The study comprised 250 women in labour, for whom the time of performing 4,286 various midwifery activities was measured.

The study method was an active observation; the technique – time-scheduling, self-observation of the workday, analysis of the documentation concerning the duration of labour and the stay of the parturient in the ward. During the study, the labour registers for 1999 and the first three months (January, February, March) 2000 were analysed, as well as individual labour observation charts and obstetric records. This facilitated later the determination of criteria for obstetric care and the number of categories of care.

## RESULTS

During Stage I of the study the obstetric care criteria were defined. Four stages of labour were adopted as a main criterion. The detailed criteria were formulated based on the clinical determinants of individual stages of labour, with the consideration of the subsequent elements of care of the mother and her child (10). Studies by other authors provided some guidelines (2, 5). Apart from typically obstetric criteria there were also determinants concerning: hygiene, nutrition, measurement of life parameters, drugs taken, knowledge concerning health and psycho-social care.

The first main criterion of care – the first stage of labour, covers detailed parameters pertaining to: week of pregnancy at labour, single or multiple pregnancy, and the lie of the fetus. The criteria concerning the course of pregnancy, determination of the position at labour, independence with respect to hygienic activities, type of diet, measurement of life parameters, fetus monitoring and the progress of labour were also considered. Further criteria were: evaluation of independence with respect to excretion, assessment of the state of the amniotic sac and its contents, application of respiratory exercises, treatment, attitude of the mother towards labour, and the presence or absence of loved ones during labour.

The second stage of labour is the subsequent main criterion of obstetric care. The detailed criteria covered: duration of labour, position at uterine contractions, hygienic activities, diet, measurement of life parameters, monitoring of the fetus. Further criteria were: protection of perineum, activity of the mother, method of fulfilment of the need for excretion, treatment, attitude towards labour and the presence of loved ones.

The subsequent criterion is the third stage of labour. Detailed determinants concern: state of a newborn assessed by Apgar scale, weight at birth, contact between mother and child, way of conducting the third stage of labour and evaluation of the afterbirth. The remaining criteria are similar to those at the first stage of labour and pertain to: independence with respect to hygienic activities, type of diet, measurement of life parameters, excretion, treatment, psychological state of a woman at childbirth and the presence of loved ones.

The last criterion concerns the fourth stage of labour. The following detailed determinants were adopted: the period spent in the delivery room, measurement of life parameters and evaluation of the *fundus uteri* and bleeding from the genital canal, method of feeding the child, knowledge of health problems and contact with surroundings.

At Stage II of the study the number of categories of care of women in labour was determined. The analysis of the process of labour enabled the classification of parturients into three categories of care.

Category I of minimum obstetric care covered 54.5% of patients. These were parturients with a

pregnancy exceeding 37 weeks, with a single living fetus with longitudinal cephalic lie. The course of pregnancy was normal without disorders on the part of other systems. During the first stage the progress of the delivery process was normal and lasted up to 8 hours. The amniotic sac was maintained and the rupture occurred at a proper time. The second stage of labour lasted up to 2 hours. In Category I of care, the newborn was ascribed 7-10 scores according to Apgar scale. Birth weight was from 2,500-4,000 g. The contact between mother and child was very good. During the third stage of labour it was passively and actively controlled by the midwife, and the afterbirth was complete. Bleeding from the genital canal remained within the standard (up to 200 ml), the canal being uninjured. The last stage of labour was shortened with respect to the period of stay in the delivery room.

Category II of moderate obstetric care covered 20.6% of mothers. These were women with pregnancy of over 32 weeks but less than 37 weeks, and over 40 weeks. The pregnancy was twin or single with abnormal fetus position. The obstetric interview was burdened with the medical history of this and/or previous pregnancies. The measurement of life parameters was performed every 2 hours and ASP was additionally monitored periodically. Disorders were observed in the delivery process and Cesarean section was planned. The rupture of the amniotic sac and the outflow of the normal amniotic fluid were diagnosed. The mother required information concerning respiratory and relaxing exercises. She had a poor knowledge of the course of labour, was excited and impetuous, contact with the midwife was difficult, and temporary psychological support was needed. The second stage of labour was prolonged by over 2 hours. The newborn was ascribed 4-6 scores according to Apgar scale, with birth weight below 2,500 g or over 4,000 g. The contact between the mother and child was often disturbed. Bleeding from the genital canal of over 200 ml occurred, as well as abrasions and ruptures of the genital canal. During the fourth stage of labour a 2-hour observation in the delivery room was necessary. The measurement of life parameters and control of the height of the *fundus uteri* were conducted every 15 min. Increased bleeding from the genital canal was observed.

Category III of intensified obstetric care covered 24.9% of women at childbirth. These were mothers with a pregnancy of less than 32 weeks, single or multiple, abnormal fetus position or stillbirth. The obstetric interview showed previous problems and there existed diseases of other organs. An observation chart concerning the measurement of life parameters was completed every 15 min, and ASP monitoring was constantly provided. Disorders in uterine contraction functions were observed, and the lack of the progress in the labour process indicted the necessity for an emergency Caesarean section. The patient had a catheter permanently inserted. The outflow of the amniotic fluid was high, this fluid being of abnormal colour and smell. She had a negative attitude towards labour, had no knowledge of the course of the process of labour and required the constant presence of the midwife. During the second stage of labour pathologies occurred, which were an indication for an instrumental delivery. In Category III of care, the newborn was ascribed 0-3 scores according to Apgar scale, it had inborn defects and a weight below 1,500 g. The child was either stillborn or died after birth. There occurred pathology of the third stage of labour, manual and/or instrumental procedures were applied. Haemorrhage occurred from the genital canal, as well as the first- or third-degree rupture of the perineum. During the final stage of labour the time of staying in the delivery room was prolonged by over 2 hours. It was necessary to provide care after general anaesthesia and a detailed observation of the mother. The measurement of life parameters was frequently performed, the height of the *fundus uteri* was determined and the amount of bleeding from the genital canal.

## DISCUSSION

The analysis of the international literature concerning PCS methods for nursing and few studies by Polish authors provided incentives for the development of PCS methods in nursing care. Four-months studies conducted in the delivery room by the method of active observation, as well as an analysis of obstetric records and the performance of over 4,000 measurements of various obstetric activities constituted a good methodological basis for the development of the criteria and categories of care, and consequently the later determination of obstetric care time standards.

The approach discussed in the present study differed from proposals by authors from West European countries and the USA. Similar to our study, foreign authors quoted four main criteria of obstetric care; however, with respect to the number of obstetric care categories they proposed five basic and three supplementary categories. This proposal, when verified in the practice of Polish delivery rooms, was not justified due to the lack of clear differences in the classification of women at childbirth into the eight categories proposed (2).

In the own study, four main criteria were adopted for mothers giving birth in the delivery room. These were the subsequent stages of labour. The main criteria were ascribed more than a dozen detailed criteria concerning the specific character of obstetric care, as well as general nursing care. This enabled the determination of three categories of obstetric care.

The development of the criteria and categories of care provided a basis for the determination of obstetric care time standards, according to the mothers' demand for these services. The problem of the development of time standards for obstetric care will be presented in Part II and III of the study.

## CONCLUSIONS

1. Four main criteria of obstetric care for mothers in the delivery room were adopted, which corresponded to the subsequent stages of labour. The main criteria were ascribed the detailed criteria which were specific for care of mother and newborn, as well as typical nursing criteria concerning e.g. hygiene, nutrition, excretion, treatment, measurement of life parameters, knowledge of health problems and psychological support.

2. Three categories of care were determined and described: Category I of minimum obstetric care which covered 54.5% of mothers; Category II of moderate obstetric care – 20.6%; and Category III of intensified obstetric care – 24.9% of mothers in the delivery room.

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## SUMMARY

The lack of verified Patient Classification System methods for obstetric care provided incentives for the development of own proposal, which would be adjusted to the conditions in Polish delivery rooms and the mothers' demand for these services.

Four main criteria of obstetric care were adopted which corresponded to the subsequent stages of labour. These main criteria were ascribed more than a dozen detailed criteria concerning the specific character of obstetric care, as well as general nursing care. The chart containing the criteria of care facilitated the classification of women in labour into individual categories of obstetric care. Three categories of care were distinguished: Category I of minimum obstetric care, Category II of moderate obstetric care, and Category III of intensified obstetric care.

Metoda „Patient Classification System” w planowaniu obsad położniczych.

### I. Kryteria i kategorie opieki

Brak zweryfikowanych metod Patient Classification System dla potrzeb opieki położniczej był przesłanką do opracowania własnej propozycji, przystosowanej do warunków organizacyjnych krajowych sal porodowych i zapotrzebowania na opiekę położniczą rodzących.

Zaproponowano cztery główne kryteria opieki położniczej, zorientowane na kolejne okresy porodu oraz po kilkanaście wyznaczników szczegółowych, specyficznych dla opieki położniczej jak też ogólnopielęgniarskich. Arkusz z kryteriami opieki ułatwiał przydział rodzących do odpowiednich kategorii opieki położniczej. Zaproponowano trzy kategorie opieki: I kat. opieki położniczej minimalnej, II kat. opieki położniczej umiarkowanej, III kat. opieki położniczej wzmoczonej.

