MANAGEMENT OF PRETERM INFANTS IN ROMANIA

Laura Mihaela SUCIU1, Manuela CUCEREA1, Bela SZABO2, Lucian PUŞCĂŞIU2, Mark ADAMS3

1 Department of Neonatology, UMF Tg Mureş
2 Department of Obstetrics and Gynecology, UMF Tg Mureş
3 Department of Neonatology, University Hospital Zurich

INTRODUCTION:

There are marked variation in medical practices and patient outcomes among geographic regions, hospitals and physicians. Variation has been found in almost every area of medical practices that has been studied [1]. Outcome research attempts to identify structural features of the medical care system and specific aspects of the process of care that contribute to these variations. Wide variations in the outcome of infants treated in different NICU’s have been reported previously [3,4,10]. There are several potential sources for the effectiveness of care and chances [9]. Roger and collab. suggested a four step process for improving the effectiveness and efficiency of medical care:

- monitoring medical care practices, outcome and costs,
- identifying medical care practices, outcome and costs,
- studying specific interventions in outcome studies or trials,
- providing feedback and education to change behaviour [2,8].

Our proposal provides each steps in an integrated approach and will have the potential to make a measurable impact on the effectiveness and efficiency of neonatal intensive care. The chief aim of this project is to maintain and improve the quality and safety of medical care for high risk neonates. In support of this aim, we want to develop a database including information about prenatal care and outcome of newborn infants.

Our main aim is to demonstrate the advantages of National Database development for preterm and low birth weight infants born at participating institution or admitted to them. The goal is to build the research base in the area of epidemiology/health services research and Quality Improvement Science. The database will specifically be designed that would guide five specific issues that have been identified by focus group as priority areas for improvement:

- Under-utilization of maternal transport;
- Delayed decision to maternal transport;
- Difficulty in decision to neonatal transport;
- Variability in perinatal management;
- Variability in neonatal management [3,4,10].

We intend to perform comparative analyses between Romanian participating centers parameters and between Romanian centers and International Neonatal Networks parameters (VON, Minimal Neonatal Data Set-Swiss Neonatal Network).

METHODS:

Two tertiary level Neonatal Intensive Care Units equal demographics and volume sizes were included in our study. We used a pre-structured form that contains 80 items: 20 demographics parameters, 20 obstetrical parameters and 40 neonatal parameters. Obstetrical and neonatal parameters have included perinatal interventions. Data were collected retrospectively from maternal and neonatal chart sheets over a period of three years: January 1, 2007 and December 31, 2009.
CLINICAL MANAGEMENT

Inclusion criteria: new born babies extremely low birth weight, birth weight less than 1500 grams, born before 32 gestational ages. We use the form data and develop a database (DBASE III+, Ashton-Tate). We excluded from our analysis incomplete forms. For confidentiality reasons we will name the two centers A and B.

“Intended parameter” is parameter purposely to be recorded and “recorded parameter” is parameter who was posted in medical charts. We thought that if intervention was not recorded in maternal and fetal medical chart when the intervention was not performed; this statement refers to perinatal interventions only.

RESULTS:

276 preterm infants, born before 32 gestational weeks and birth weight less than 1500 grams were included in our study. The gestational age was best obstetrical estimated by first trimester ultrasound and/or first day of the last menstrual period criteria if ultrasound exam was not available. We analyzed 144 form in center A (52%) and 130 form in center B (48%). We excluded from our analysis two forms in center A and eight forms in center B. The reason was incomplete or incorrect filled forms more than 20% of items. The overall median time for form filling was 35 minutes (between 10 and 80 minutes). We found an association between filling time and hospitalization length of stay.

The mean of hospitalization period was 51 +/- 13 days in center A (0-80 days) and 60 +/- 9 (0-180 days) in center B (p< 0.05). Cases of children who died in the first hours after admission in Neonatal Intensive Care Units were recorded with 0 days. The mean of respiratory support period was 4 days in center A and 7 days in center B (p<0.05).

The concordance between intended and registered parameter was 40% in demographic data set, 80% in obstetrical data set and 70% in neonatal data set.

In center A we found less concordance between intended and registered demographic parameters: parental occupation, parental level of education, nationality compared with center B (40% versus 28%) but the differences did not reached the statistical significance (p> 0.05).

Comparative analysis found that obstetrical dataset missing information are often in center A compare to center B: steroidal antenatal prophylaxis (47% versus 37%), tocolysys (70% versus 40%), antibiotics prophylaxis (17% versus 21%) antenatal transfer to tertiary center (30% versus 22%), but the differences reached the statistical significance only for steroidal antenatal prophylaxis (p<0.05).

Global analyses show that we have information about delivery mode and fetal presentation in the same high percent in both centers (85%).

Comparative analysis found first 24 hours of life and reanimation parameters neonatal dataset missing information often in center A compare to center B: reanimation period, arterial blood pH value draw from umbilical cord, arterial pressure value, peripheral oxygenation value. Center A compare to Center B parameters found: delivery room respiratory support time (85% versus 68%), arterial blood pH values (36% versus 45%), Mean Blood Pressure at the time of admission in Neonatal Intensive Care Units (48% versus 65%), peripheral oxygen saturation values at the time of admission in Neonatal Intensive Care Units (62% versus 48%). Information related to feed recommendation at discharge time was found only for 24% of cases admitted to Center A and B. We did not found information about family centered care interventions like family visits frequency. Despite this, for all cases we found information about weight and anthropometrics parameters at discharged from both Neonatal Intensive Care Units.

DISCUSSION:

Our goal was to make a comparative analysis of parameters recorded by international neonatal data Networks [5, 6, 7, 11, 12] and parameters recorded in Romanian neonatal and obstetrical medical charts. Romanian tertiary Neonatal Intensive Care Units were small center. Often, less than 50 very low birth weight preterm were annually admitted to such centers. This is the reason why individualized analyses of neonatal mortality and morbidity often did not reached the statistical significance. We highlight in our study the importance of National Data Base Development and National Neonatal Network for babies born preterm. The goal is to build the research base in the areas of epidemiology/health services research and Quality Improvements Science. This Database will permit to collect high-quality, reliable data of very preterm infants, very low birth weight and other “high-risk” newborn infants, to transform these data into information by developing risk-adjusted, confidential reports that inform and organize work, and to move from information to action by supporting perinatal providers in their work of improving care and outcome. We want to develop an Internet-based, real-time data entry, data management, and report-on-demand information system:

- identify trends and variation in neonatal mortality and morbidity;
• to benchmark local trends;
• to monitor the effect of guidelines.

We want to set up a simple but functional structure using a web-based html-questionnaire to collect data and a web-accessible content management system CMS to store data. Each participating center will have access to the CMS and to its own data. Researchers from all participating NICU’s can apply to the scientific committee to receive anonymized data for evaluation. This way, each center can decide upon the use of its own data. Ensuing publications of research result must circulate through all participating centers prior to submission to a journal. Each researcher substantially participating in the publication will be listed as author. Center to center comparisons will only be made upon request of the Scientific Committee and de-identified in a way that allows no identification of another center.

These confidential reports intend to provide feedback on Units performances for use in local quality improvement efforts.

**CONCLUSIONS:**

Improving the outcome of the infants cared for in one’s Neonatal Intensive Care Unit is the main objective of improvement projects that are pursued independently or as member of a collaborative project. While improving outcome of patients is a key motivator for NICU’s that are members of a collaborative projects, the very nature of the collaborative encourages each member to also take on the responsibility of improving the care for the entire patients.

The Database could represent a substantial resource for outcomes research and epidemiological study. In the future, we also plan to expand data collection to include longer-term outcome and assess the quality of life of NICU survivors. In the future we want to work closely with parents whose infant have been cared in Neonatal Intensive Care Units to develop appropriate tools for assessing and communicating the outcomes of infants who receive neonatal intensive care.

**Bibliografie**

5. www.vtoxford.org
6. www.eurononeonet.org
7. www.neonet.ch
11. www.canadianneonatalnetwork.org
12. www.nichd.nih.gov