



Clinical Paper

Changes over time in delivery room management of extremely low birth weight infants in Italy



Daniele Trevisanuto^{a,*}, Irene Satariano^a, Nicoletta Doglioni^a, Giulio Criscoli^b, Francesco Cavallin^c, Camilla Gizzi^d, Claudio Martano^e, Fabrizio Ciralli^f, Flaminia Torielli^g, Paolo Ernesto Villani^h, Sandra Di Fabioⁱ, Lorenzo Quartulli^j, Luigi Giannini^k, on Behalf of Neonatal Resuscitation Study Group, Italian Society of Neonatology

^a Children and Women's Health Department Medical School, University of Padua, Azienda Ospedaliera Padova, 35128 Padua, Italy

^b Italian Army – Signals and Information Technology HQ – C4 Systems Integration Development, Treviso, Italy

^c Independent Statistician, Padua, Italy

^d Neonatal Intensive Care Unit, Pediatric and Neonatal Department, "S.Giovanni Calibita" Fatebenefratelli Hospital – Isola Tiberina, 00186 Rome, Italy

^e Neonatal Intensive Care Unit, Pediatric Department, Medical School, University of Turin, Azienda Ospedaliera, OIRM-S.Anna, 10126 Torino, Italy

^f Neonatal Intensive Care Unit, Department of Mother and Infant Science, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, University of Milan, 20122 Milan, Italy

^g Neonatology Unit, University of Genova, Azienda Ospedaliera San Martino IRCCS – IST National Institute on Cancer Research, 16100 Genova, Italy

^h Neonatal Intensive Care Unit, Maternal and Pediatric Department, Carlo Poma Hospital, Mantova, Italy

ⁱ Neonatal Intensive Care Unit, Department of Mother and Infant Science, "San Salvatore" Hospital, L'Aquila, Italy

^j Neonatology Unit, "A. Perrino" Hospital – ASL, 72100 Brindisi, Italy

^k Pediatric Department, Medical School University "La Sapienza" Rome, Azienda Ospedaliera Policlinico Umberto I, 00161 Rome, Italy

ARTICLE INFO

Article history:

Received 30 January 2014

Accepted 26 April 2014

Keywords:

Delivery room

Guidelines, infant, newborn

Premature

Resuscitation

Survey

ABSTRACT

Aim: To identify changes in practice between two historical periods (2002 vs. 2011) in early delivery room (DR) management of ELBWI in Italian tertiary centres.

Methods: A questionnaire was sent to the directors of all Italian level III centres between April and August 2012. The same questionnaire was used in a national survey conducted in 2002. Among the participating centres, those that filled the questionnaire in both study periods were selected for inclusion in this study.

Results: There was an 88% ($n = 76/86$) and 92% ($n = 98/107$) response rate in the 2 surveys, respectively. The two groups overlapped for 64 centres. During the study period, the use of polyethylene bags/wraps increased from 4.7% to 59.4% of the centres. The units using 100% oxygen concentrations to initiate resuscitation of ELBWI decreased from 56.2% to 6.2%. The approach to respiratory management was changed for the majority of the examined issues: positive pressure ventilation (PPV) administered through a T-piece resuscitator (from 14.0% to 85.9%); use of PEEP during PPV (from 35.9% to 95.3%); use of CPAP (from 43.1% to 86.2%). From 2002 to 2011, the percentages of ELBWI intubated in DR decreased in favor of those managed with N-CPAP; ELBWI receiving chest compressions and medications at birth were clinically comparable.

Conclusions: During the two study periods, the approach to the ELBWI at birth significantly changed. More attention was devoted to temperature control, use of oxygen, and less-invasive respiratory support. Nevertheless, some relevant interventions were not uniformly followed by the surveyed centres.

© 2014 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Approximately 5–10% of newborns require some assistance to begin breathing at birth; about 3% are managed with positive pressure ventilation (PPV) and less than 1% requires extensive resuscitative measures; these percentages noticeably rise when referred to preterm infants.^{1–3}

Some interventions, such as the use of polyethylene/polyurethane wrapping,^{4,5} titrating inspiratory fraction of oxygen,⁶

Abbreviations: CPAP, continuous positive airway pressure; DR, delivery room; ELBWI, extremely low birth weight infant; PEEP, positive end expiratory pressure; PIP, positive inspiratory pressure.

* Corresponding author at: Children and Women's Health Department Medical School, University of Padua, Azienda Ospedaliera di Padova, Via Giustiniani, 3, 35128 Padua, Italy.

E-mail address: trevo@pediatria.unipd.it (D. Trevisanuto).

and the use of non-invasive ventilation have been recently evaluated in prospective randomized clinical trials.⁷ An increasing body of evidence suggests that these interventions in the delivery room (DR) management of extremely low birth weight infants (ELBWI) may have a direct influence on the immediate survival and also on long-term morbidity.^{3,8,9} Therefore, the general outcome might be improved throughout a structured and well coded approach starting from the first minutes of life.

International clinical guidance describes a standardized approach to newborn resuscitation in the DR and national clinical algorithms are guided by these consensus statements.^{1,10,11} However, a few large studies have examined the consistency of practice and the adherence to the International Guidelines in early DR management.^{11–15}

In 2002, we conducted a survey on the approach to neonatal resuscitation of ELBWI at the Italian level III centres.¹⁵ The data showed that the DR management of these infants was very different across the Italian tertiary centres, reflecting a paucity of evidence and consequent uncertainty among clinicians.

Since then, two iterations of the International Liaison Committee on Resuscitation (ILCOR) guidelines for neonatal resuscitation have been released, the most recent of which in 2010.^{1,16} In these versions, the body of recommendations devoted to neonatal resuscitation of ELBWI has been progressively increasing.

In 2012, we conducted a second national survey in order to verify the compliance of level III centres with the new guidelines.

To obtain a reliable comparison in overall attitude over time, we focused on those centres that participated in both surveys. Our aim was to identify changes in early DR management of ELBWI in Italy over a period of approximately ten years (2002–2011).

2. Methods

2.1. Participants and evaluation instrument

A structured 73 item questionnaire in Italian and an accompanying introductory letter were sent by email to the directors of the 107 Italian level III centres provided with on site delivery (Italian Society of Neonatology database). A reminder was sent to non responders every 2 weeks for a maximum of three times. At that point, if we had not received an answer yet, the participant was contacted by phone by an investigator (IS) and a new email was sent.

Participation was entirely voluntary. The survey was conducted between April and August 2012. The survey focused on establishing the current DR practices in the domains of neonatal resuscitation: thermal control, oxygen therapy, positive pressure ventilation (PPV), surfactant treatment, chest compressions and medications. The questionnaire included items on the epidemiological and organizational characteristics of the centre, the equipment and practice of the centre, and questions referred to the neonatal resuscitation of the ELBWIs during the period 1 January to 31 December 2011. Participants gathered the data using local medical records or databases. The questions included multiple choice, fill in, and yes/no questions.

The same questionnaire was used in a national survey conducted in 2002, with the exclusion of 3 questions about “Use of cap”, “Use of saturation targets” and “Use Sustained Lung Inflation”.¹⁵

In the two study periods (2002 and 2011), there were two different populations ($n = 86$ and $n = 107$) of the Italian level III centres based on the Italian Society of Neonatology database.

Among the participating centres, those that filled the questionnaire in both study periods were selected for inclusion in this analysis.

2.2. Statistics

Categorical data are expressed as number and percentage, continuous data as median and interquartile range (IQR). Statistical analysis was performed using R 2.12 language. Statistical comparisons between the two periods were not performed due to the nature of the study. In fact, it can be defined as “voluntary inquiry with presence of non-respondents”. It's neither a sample for an infinite population nor a sample chosen from a finite population (a proper survey). Therefore, comparisons using statistical inferential methods are not needed.

The study was approved by the Human Research Ethics Committee of the Azienda Ospedaliera di Padova, University of Padua.

3. Results

A total response rate of 87% ($n = 76/86$) and 92% ($n = 98/107$) was obtained for the first (2002) and second (2011) historical period, respectively.

3.1. Characteristics of centres

Sixty-four centres participated in both surveys. Their characteristics are shown in Table 1. There was an increase of the total number of ELBWI from 2002 to 2011. Medical staff (physicians and nurses) also increased, but it was proportional to ELBWI increment, as shown by the relative ratios in Table 1. The organizational aspects were similar in the two periods. A Pediatrician/Neonatologist was the team leader for neonatal resuscitation in both periods in most centres (57/64, 89.1%).

3.2. Temperature management

DR temperatures were comparable between the two periods, with a median of 24 °C (Table 2).

The use a polyethylene bag/wrap for the management of ELBWI at birth increased from 4.7% (3/64) in 2002 to 59.4% (38/64) in 2011. A cap was widely used to cover the head of the patients at birth in 2011 (43/64, 67.2%), but this information was not available in 2002 (Table 2).

3.3. Oxygen therapy

The rate of centres using 100% oxygen to initiate resuscitation decreased from 56.3% (36/64) to 6.3% (4/64) and the rate of those using >40% oxygen decreased from 76.6% (49/64) to 9.4% (6/64).

The use of pulse oxymeter increased from 71.9% (46/64) to 95.3% (61/64). Most centres (58/64, 90.6%) declared to use saturation

Table 1
Characteristics of centres in the two study periods.

Period of study	2002	2011
Participating centres	64	64
Total births at surveyed centres	126,897	137,504
Total VLBWI born at surveyed centres	2796	3608
Total ELBWI born at surveyed centres	1169	1388
Births/centre*	1560 (1278–2594)	1850 (1349–2664)
ELBWI admitted*	17 (10–23)	19 (13–27)
Physicians*	9 (7–12)	11 (8–12)
Nurses*	26 (17–30)	27 (21–34)
Ratio physicians/ELBWI*	0.61 (0.40–0.80)	0.57 (0.41–0.78)
Ratio nurses/ELBWI*	1.51 (1.18–2.29)	1.45 (1.03–1.96)
Team leader for neonatal resuscitation:		
Pediatrician/Neonatologist	59 (92.1)	62 (96.8)
Anesthesiologist	5 (7.9)	2 (3.2)

Data expressed as n (%) or *median (IQR).

Download English Version:

<https://daneshyari.com/en/article/5998111>

Download Persian Version:

<https://daneshyari.com/article/5998111>

[Daneshyari.com](https://daneshyari.com)