Conclusions: Nowadays, CRIB score has a lower predictive ability for pre-discharge mortality than birthweight and GA combined or than the Neocosur and EuroNeoNet scores. Reasons for this should be explored.

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EFFECT OF OMT ON LENGTH OF STAY AND WEIGHT GAIN IN A POPULATION OF PRETERM INFANTS

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Background and aims: The use of osteopathic manipulative treatment (OMT) in preterm infants has been documented and results from previous studies suggest the association between OMT and length of stay (LOS) reduction, as well as significant improvement in several clinical outcomes.

Aim of the present study is to show the effect of OMT on LOS and daily weight gain in a sample of premature infants.

Methods: Randomized controlled trial on preterm newborns admitted in a single NICU between 2008-2009.

N=101 subjects free of medical complications and with gestational age >28 and < 38 weeks were enrolled and randomized in two groups: study group (N=47) and control group (N=54).

All subjects received routine pediatric care and OMT was performed to the study group for the entire period of hospitalization.

Endpoints of the study included differences in LOS and daily weight gain. Statistical analyses were based on univariate tests and multivariate linear regression.

Results: Univariate statistical analysis showed no significant imbalances among treated and control groups in terms of main characteristics measured at admission. After adjusting for all potential confounders, multivariate analysis showed a significant association between OMT and LOS

reduction (mean difference between treated and control group: -6.325 95% c.i. -8.687 - -3.962, $p < 0.0001$). OMT was not associated to any change in daily weight gain.

Conclusions: The present study suggests that OMT plays an important role in the management of preterm infants hospitalization.

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CHLORIDE BALANCE IN PRETERM INFANTS DURING THE FIRST WEEK OF LIFE

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Background and aims: To describe chloride balance and plasma chloride changes during the first week of life in preterm infants born between 25 and 32 weeks of gestational age (GA), to analyze the association of chloride changes with fluid and electrolyte homeostasis and intake and the possible relationship with postnatal morbidity.

Methods: Prospective observational study. For 7 days after birth, plasma sodium, chloride, potassium, phosphate and total carbon dioxide (tCO₂) were determined daily and the plasma strong ion difference (SID) calculated. Urinary sodium and chloride, urine volume, body weight, fluid and electrolyte intakes were recorded daily. Data on postnatal morbidities were collected.

Results: 107 infants were studied. Plasma chloride percentiles charts were provided from day 1 to 7. Plasma chloride concentration was significantly positively associated with plasma sodium concentration, while urinary chloride excretion did not paralleled urinary sodium excretion. Higher plasma chloride concentration and lower SID were significantly associated with lower plasma tCO₂. Higher chloride intake, hemodynamically significant patent ductus arteriosus (hsPDA), dehydration, lower sodium intake and lower GA were independent factors associated with higher plasma chloride. Higher chloride intake, lower GA and lower sodium intake were independent factors associated with lower plasma tCO₂ at the multivariate analysis.

Conclusion: In infants born at very low GA clinician should look carefully at chloride intake

and interrelationship between choride and sodium intakes. Indeed, especially in presence of co-morbidities as PDA or dehydration, both these factors can interfere with acid base homeostasis by modifying plasma chloride and SID.

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A NOVEL DEVICE TO ENABLE THE ACCURATE WEIGHING OF VENTILATED SICK PREMATURE NEONATES OBTAINING THE NEED FOR DISCONNECTION FROM VENTILATION

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Background: Accurate weight measurement facilitates optimum care of the preterm infant, but can be problematic. Incubator scales are inaccurate if infants are connected to ventilators, while disconnection from the ventilator to weigh on stand alone scales risks destabilising sick infants. We developed an adjustable device, to use in conjunction with incubator scales, to eliminate this problem.

Aim: To compare the accuracy, when weighing ventilated infants, of incubator scales alone and in combination with this device.

Methodology: Infants were weighed while connected to the ventilator using the incubator scales alone then in combination with the device. Infants were then disconnected from the ventilator for weighing on stand alone electronic scales (the true weight) A feasibility study using manikins gave statistically significant results Subsequently using the above methodology we obtained 41 sets of weights on 22 pressure ventilated infants.

Results: The data were analysed using Stats direct, and displayed using the Bland Altman method. With incubator scales alone the mean error in weight was 43.5g (2SD -28 to +115g). With the adjustable device mean error -5.6g (2SD -36 to +25g). An F-test for variance showed that this improvement in accuracy was highly statistically significant ($p < 0.0002$).

Conclusions: Results indicate that an adjustable device can be used to correct the error in weights obtained from incubator scales in ventilated neonates and obviate the need for disconnection from ventilation. The HFOV arm of the trial is still

ongoing but the interim results indicate a highly statistically improved accuracy in incubator scale weights on oscilated premature neonates when the device is used.

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FLUID BALANCES SHOW POOR AGREEMENT WITH DAILY BODY WEIGHT CHANGES IN SICK NEONATES

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Background: Fluid balance monitoring is a commonly used complex, time-consuming and therefore expensive method to assess patient fluid volume status. In clinical practice fluid balances commonly appear to be inaccurate. Studies on the reliability of fluid balance are lacking however, particularly in newborns.

Aim: To determine the accuracy of the fluid balance in sick newborns.

Methods: Fluid balance totals (ml/day) were compared to daily body weight changes (g/day) in sick newborns admitted to neonatal high care. Correlation coefficients and Bland-Altman plots were used to assess the agreement between fluid balance and daily weight changes. We chose 50 ml as the clinically relevant limit of agreement.

Results: In 170 patients, 482 fluid balances and weight differences over the same period were recorded. The correlation between fluid balance and weight change was moderate $r=0,65$ ($p < 0,01$). The difference between the weight change and fluid balance was more than 50 ml (the limit of agreement) in 40% of the cases, with 95% of the differences ranging from -125 to +104 ml.

Conclusion: Agreement between fluid balance totals and daily weight changes is poor. Fluid balances both under- and overestimated weight changes in unpredictable patterns. Because of the inaccuracy of this time-consuming and complex method, recording a fluid balance is not recommended in neonatal practice.