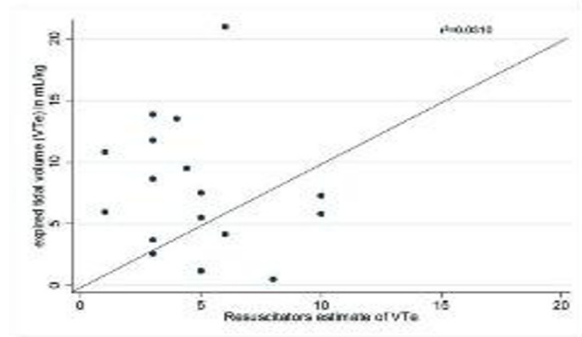


assessment of chest rise from the infant’s head and infant’s side with measured tidal volume during PPV in the delivery room.

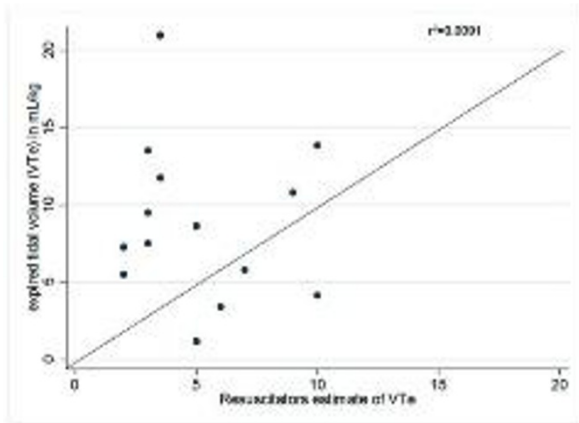
Methods: Airway pressures and expiratory tidal volume (V_{Te}) were measured during PPV using a respiratory function monitor. After 60 seconds of PPV, resuscitators at the infants’ head and infants’ side were asked to assess chest rise and estimate delivered V_{Te} . These estimates were compared with measurements taken during the previous 30 seconds.

Result: Twenty infants receiving PPV were included. A total of 433 inflations with a mean of (SD) of 23 (4) inflations per infant during the 30 seconds baseline. Six resuscitators were unable to assess tidal volume from their position at the infant’s head versus three from the infant’s side. Figure 1 (Tidal volume assessment at the infant’s head) and Figure 2 (Tidal volume assessment at the infant’s side) illustrate the poor agreement between estimated and delivered V_{Te} . Assessment from the infants side was somewhat better than from the head.



[Tidal volume assessment at the infants side]

Conclusion: During mask ventilation most resuscitators were unable to accurately assess chest wall movement in either of two positions.



[Tidal volume assessment at the infants head]

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USING CENTILE CHARTS DERIVED FROM PULSE OXIMETRY MEASUREMENTS TO INFORM OXYGEN TREATMENT IN THE DELIVERY ROOM

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Background: Titration of supplemental O₂ using oxygen saturation (SpO₂) measured by pulse oximetry (PO) is becoming common in the delivery room. However there is little consensus to define “normoxia”. Even brief hyperoxia is toxic for neonates.

Methods: In a prospective, observational study, we recorded preductal SpO₂ every two seconds for ten minutes after birth. A Masimo Radical PO was placed on the infant’s right hand/wrist immediately after birth. PO data (SpO₂ and signal quality) were downloaded and analysed only when there were

no alarm messages (low IQ signal, low perfusion, sensor off, ambient light). Infants were excluded if they received oxygen treatment or assisted ventilation in this time or they had a congenital anomaly that could interfere with transition. We used these data to construct centile charts.

Results: Data from 468 infants, of 25 to 42 weeks gestation, were used. At two minutes after birth the 10th, 50th and 90th centiles were 46%, 73% and 91% and at five minutes 73%, 89%, and 97%. Deciding the appropriate centile to target for oxygen treatment is a balance between treating those who need it and not giving it to those who don't. If the 50th centile was used this would lead to half of the normal population receiving oxygen unnecessarily. Choosing a lower centile (e.g. 10th) may be more appropriate.

Conclusions: The appropriate saturation target for infants receiving oxygen during resuscitation remains uncertain. Future trials could compare outcomes of infants resuscitated using different SpO₂ targets.

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CONGENITAL ANOMALIES AND PERINATAL RESOURCE UTILIZATION: A POPULATION STUDY

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Background and aims: Congenital anomalies pose significant health, social and economic challenges to society. The Fetal Alert Network (FAN) integrates antenatal care for pregnancies with anomalies in Ontario (population >13 million) and allows us examine the impact of antenatal diagnosis on maternal and fetal outcomes.

Methods: Retrospective analysis of all infants admitted to Level III NICUs in the Province of Ontario Canada, between Jan 2005 and Dec 2008, using CNN and FAN data. Infants were stratified into anomaly (based on ICD codes), versus non-anomaly groups and pre or postnatal diagnosis of anomaly. Data were analyzed using descriptive statistics and bivariate and multivariate analyses were used to assess fetal and maternal outcomes.

Results: Over the four year period 15,237 infants were admitted to regionalized tertiary level NICUs (2.8% of all births) and 4,400 (29%) had at least 1 congenital anomaly. There was significant difference in maternal age between the 2 groups $p < 0.0001$, but not in maternal diabetes or mode of delivery. There were significantly more male infants in the anomaly group $p < 0.005$. Birth weight (mean 2.3kg) and GA (mean 34 weeks) although low, were greater in the anomaly group. Illness severity as measured by SNAP-II scores, duration of ventilation and length of hospital stay were all greater in the anomaly group, $p < 0.0001$.

Conclusions: This study provides new insights into the impact of congenital anomalies on perinatal health care provision in a regionalised setting and the rationale for continued efforts to decrease the prevalence of these defects.

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HYPERBILIRUBINEMIA IN A NATIONAL COHORT OF EXTREMELY PREMATURE INFANTS

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Background and aims: Hyperbilirubinemia is a possible risk factor for adverse neurodevelopmental outcome in extremely premature infants. The study was undertaken to analyse the frequency, severity and treatment of hyperbilirubinemia in such infants.

Methods: Hyperbilirubinemia was studied retrospectively in a national cohort of 422 infants with gestational age (GA) of 22⁰ to 27⁶ completed weeks and/or birth weight (BW) of 500 to 999 g who survived beyond the 2nd day and had bilirubin measured. Group differences were analysed by t-test.

Results: Mean maximum bilirubin levels (TsB) were 176±43 µmol/L (range 72-391) and did not differ between GA. TsB ≥ 200 µmol/L and ≥ 250 µmol/L was seen in 24.2 % and 4.3 % of infants, respectively. Mean duration of TsB ≥ 200 µmol/L was 1.9±1.7 days (range 1-10) and did not differ between GA, but was more frequent in boys ($p=0.048$). 85.4 % of infants received phototherapy for 2.3±1.7 days (range