

## Theme: Neonatology

**Lower versus higher arterial oxygen saturations for preterm infants.** (*Cochrane Database Syst Rev.* 2017;4:CD011190)

Though oxygen is the most frequently used drug in preterm infants, there is hardly any consensus regarding the target oxygen saturation (SpO<sub>2</sub>) range, which would optimally balance potential benefits with harms. This systematic review of 5 trials (4965 infants) analyzed the effects of lower (≤90%) versus higher (>90%) SpO<sub>2</sub> range targeting, on death or major morbidities in extremely preterm (<28 weeks) infants. There was no significant difference in the composite primary outcome between lower (85-89%) versus higher (91-95%) SpO<sub>2</sub> groups (RR 1.04, 95% CI 0.98, 1.10) (high-quality evidence). Compared to higher, lower SpO<sub>2</sub> significantly increased the incidence of death at 18 to 24 months corrected age (RR 1.16, 95% CI 1.03, 1.31) (high-quality evidence) and necrotizing enterocolitis (RR 1.24, 95% CI 1.05, 1.47) (high-quality evidence). However, lower SpO<sub>2</sub> significantly decreased the incidence of retinopathy of prematurity requiring treatment (RR 0.72, 95% CI 0.61, 0.85) (moderate-quality evidence). There were no significant differences for blindness, severe hearing loss, cerebral palsy, or other morbidities between the groups.

**Simplified antibiotic regimens for treatment of clinical severe infection in the outpatient setting.** (*Lancet Glob Health.* 2017;5:e177-85)

This three-arm, randomized, open-label, equivalence trial was carried out to compare the availability and feasibility of different antibiotic treatment regimen in young infants (age 0-59 d) in community settings, who are not critically sick. Infants were randomly assigned to receive either intramuscular procaine benzylpenicillin and gentamicin once daily for 7 days (reference group); or oral amoxicillin twice daily plus intramuscular gentamicin once daily for 7 days; or intramuscular procaine benzylpenicillin plus gentamicin once daily for 2 days followed by oral amoxicillin twice daily for 5 days. Primary outcome variable was treatment failure within 7 days of enrolment. Authors finally included 2251 infants for per-protocol analysis. Treatment failure within 7 days was reported in 90 (12%) infants in reference group, 76 (10%) in amoxicillin plus gentamicin group (risk difference -1.9, 95% CI -5.1, 1.3), and 99 (13%) in procaine benzylpenicillin, gentamicin, and amoxicillin group (risk difference 1.1, 95% CI -2.3, 4.5), indicating that simplified antibiotic regimens requiring fewer injections are equivalent to the reference treatment, and have the potential to treat sick young infants where referral is not possible.

**Comparative study of medications for closure of patent ductus arteriosus.** (*Eur J Pediatr.* 2017;176:233-40)

The efficacy and side effects of indomethacin, ibuprofen, and paracetamol was assessed in 300 preterm neonates with

hemodynamically significant PDA (hs-PDA). One hundred neonates were randomly allocated in each group. Paracetamol group received 15 mg/kg/6 h intravenous (IV) paracetamol infusion for 3 days. Ibuprofen group received 10 mg/kg IV ibuprofen infusion followed by 5 mg/kg/day for 2 days. Indomethacin group received 0.2 mg/kg/12 h of IV infusion of indomethacin for three doses. Regarding PDA closure, there was no significant difference among the groups ( $P = 0.868$ ). However, a significant increase in serum creatinine and blood urea nitrogen and a significant reduction in platelet count and urine output were noted in both ibuprofen and indomethacin groups ( $P < 0.001$ ). A significant increase in bilirubin levels was observed in the ibuprofen group only. The study results indicated that paracetamol was as effective as indomethacin and ibuprofen for closure of hs-PDA in preterm neonates with lesser side effects.

**Probiotics for the prevention of necrotizing enterocolitis in very-low-birth-weight infants: A meta-analysis and systematic review.** (*Acta Paediatr.* 2017 May 4. doi: 10.1111/apa.13902. [Epub ahead of print])

This meta-analysis of 23 randomized controlled trials (7325 neonates) measured the efficacy of probiotic supplementation for prevention of necrotizing enterocolitis (NEC) stage e<sup>2</sup> and death in very low birth weight infants. 145 (3.9%) infants in the probiotic group developed NEC compared to 240 (6.6%) in control group (RR 0.57, 95% CI 0.43, 0.74;  $P < 0.001$ ). Fewer deaths occurred in the probiotic group compared to controls (RR 0.72, 95% CI 0.57, 0.92;  $P = 0.009$ ). Trials using a combination of *Bifidobacterium* and *Lactobacillus* species reported a statistically significant reduction in the incidence of NEC. Trials that utilized a *Lactobacillus species* or *Bifidobacterium species* alone or a combination of *Bifidobacterium* and *Streptococcus thermophilus species* showed a non-significant reduction in relative risk of developing NEC.

**Skin-to-skin care patterns in the NICU and their effect on early cognitive and communication performance.** (*BMJ Open.* 2017;7:e012985)

This study investigated the impact of skin-to-skin care (SSC) on early cognitive and communication performance of 97 extremely preterm infants (22-26 weeks). Median (IQR) total SCC duration was 17.2 (5.1, 36.6) hours. In majority of cases, SSC was provided by mothers. A steep decline in SSC participation of parents was noted at 30 weeks corrected age. Infants with high (above median) SSC participation were more likely to score ≥80 on the cognitive and communication scales of Bayley-III than low SSC participation (below median) at 6 and 12 months. However, the results were not statistically significant.

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