

Comparing percutaneous CVCs and peripheral cannulae for delivery of parenteral nutrition in neonates

Neonatal parenteral nutrition (PN) may be delivered via peripheral cannulas or central venous catheters (CVCs; umbilical or percutaneous). As a result of complications associated with umbilical catheters, many neonatal units prefer to use percutaneous catheters after initial stabilisation. Although they can be difficult to place, these catheters may be more stable than peripheral cannulae and require less frequent replacement.

The use of CVCs has been thought to increase the risk of adverse events (eg bacteraemia, invasive fungal infection, cardiac tamponade, other extravasation injuries). However, a Cochrane review of randomised trials of newborn infants receiving PN showed no evidence that percutaneous CVCs increase the risks of adverse events, particularly invasive infection.

Infants in the percutaneous CVC group needed fewer catheters during hospitalisation. The study provided limited evidence on the effects of the interventions on nutrition – more trials are needed to determine which method is better for improving nutrition, growth and development in newborn infants.

Reference

Ainsworth S., McGuire W. Percutaneous central venous catheters versus peripheral cannulae for delivery of parenteral nutrition in neonates. *Cochrane Database Syst Rev* 2015:CD004219.

Training healthcare providers in neonatal resuscitation improves neonatal outcomes

One in 10 newborn infants requires some resuscitative efforts at birth when signs of breathing or a heartbeat are not detected. In 2000, approximately four million newborn infants died in the first four weeks of life worldwide, with almost half of these deaths occurring on the first day. The presence of adequately trained personnel who can perform neonatal resuscitation may prevent deaths and brain injury. Numerous neonatal resuscitation programmes exist and generally include knowledge and skill-based components taught over a half- or full-day course. However, the effectiveness of these programmes in decreasing deaths or brain injury due to lack of oxygen in newborn infants has not been reviewed.

A team of researchers based in Canada, Ireland and the USA set out to determine whether standardised formal neonatal resuscitation training (SFNRT) programmes reduce neonatal mortality and morbidity, improve acquisition and retention of knowledge and skills, or change teamwork and resuscitation behaviour.

The team identified 14 studies: five community-based studies (187,080 deliveries) and nine manikin-based studies (626 newborns). SFNRT compared to basic newborn care or basic newborn resuscitation, in developing countries, results in a reduction of early neonatal and 28-day mortality. According to the authors, the addition of teamwork training to SFNRT improved teamwork behaviour and decreased resuscitation duration. Future research in this area should report on neonatal morbidity, including hypoxic ischaemic encephalopathy and neurodevelopmental outcomes.

Reference

Dempsey E. et al. Standardised formal resuscitation training programmes for reducing mortality and morbidity in newborn infants. *Cochrane Database Syst Rev* 2015:CD009106.

Outcomes are improving for extremely preterm infants

Major complications have decreased and survival has improved for extremely premature infants born over a 20-year period, according to research from the National Institutes of Health Neonatal Research Network published online in the *Journal of the American Medical Association*.

Barbara Stoll of the Emory University School of Medicine in Atlanta, USA, and colleagues reviewed data for 34,636 infants born at 22–28 weeks' gestation.

The researchers found a significant improvement in survival

for infants born at 23–24 weeks' gestation and an increase in survival without major complications among infants born 25–28 weeks of gestation.

This study will help clinicians to counsel parents about anticipated outcomes for their infants and also provides outcome data that can be used for benchmarking purposes.

Reference

Stoll B.J. et al. Trends in care practices, morbidity, and mortality of extremely preterm neonates, 1993–2012. *JAMA* 2015;314:1039–51.

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