Hot topics from the web

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Neonatal-talk (www.infantgrapevine.co.uk) and NICU-NET (www.neonatology.org/nicu-net/join.html) are two of the many websites devoted to the exchange of information between staff involved in the care of neonates and infants, and the following are just a few of the new and on-going topics discussed. The opinions expressed do not claim to be evidence-based but will hopefully promote further discussion.

Vapotherm
NICU-NET

A questioner from San Antonio wanted to know if units were still using Vapotherm in spite of the possibility of Gram-negative infection. The forty replies were mostly using Vapotherm without trouble. Those that weren't, seemed to be using the Fisher & Paykel circuit. Few units were using nasal CPAP as they claimed babies tolerated this less well. Some respondents raised concerns about the lack of data for high-flow nasal cannulae use in neonates.

Comment

Nasal cannulae have traditionally been used to provide supplemental oxygen to neonates at low flow rates (< 0.5 L/min). More recently, nasal cannulae have been used to deliver blended oxygen and air at substantially higher flow rates (≤ 8 L/min). The higher flow rates are now feasible because of new technology that allows effective warming and humidification of the inspired gases. The two devices in most widespread use are produced by Vapotherm and Fisher & Paykel. The former features a unique cartridge system to achieve the warming and humidification, whereas the latter utilises a similar system to that used for warming and humidifying gas in a ventilator circuit. Vapotherm recalled their 2000i™ device in 2006 following reports of Ralstonia colonisation of the device and infections in patients using it. Following modifications, the device has now been reapproved by the FDA in the USA. A new version of the Vapotherm, the Precision Flow™, that utilises a single patient use delivery system, should further reduce the risk of bacterial colonisation. High-flow nasal cannulae (HFNC) are being used by some units as an alternative to nasal CPAP, as either a primary mode of respiratory support or more often following extubation from mechanical ventilation. The major concern is that the CPAP effect that is delivered by HFNC is not routinely measured, thus potentially exposing the neonate to damaging high airway pressure[1]. Furthermore, there is no pressure limiting valve that could prevent inadvertent high pressure delivery[1]. Instead, the pressure delivered is dependent only on the flow rate and the presence of leaks in the airway, for example around the nares. Some data from small studies are now emerging on use of HFNC in neonates[2,3], but further large-scale studies are required to test the safety and efficacy of this method of respiratory support[4].

1. **Finer, N.N.** Nasal cannula use in the preterm infant: Oxygen or pressure? *Pediatrics* 2005; **116**: 1216-17.
2. **Saslow J.G., Aghai Z.H., Nakhla T.A. et al.** Work of breathing using high-flow nasal cannula in preterm infants. *J Perinatol* 2006; **26**: 476-80.
3. **Spence K.L., Murphy D., Kilian C. et al.** High-flow nasal cannula as a device to provide CPAP in infants. *J Perinatol* 2007; **27**: 772-75.
4. **Courtney S.E., Barrington K.J.** CPAP and noninvasive ventilation. *Clin Perinatol* 2007; **34**: 73-92.

NEC after transfusions
NICU-NET

A possible relationship between transfusing red blood cells and necrotising enterocolitis was suspected by an American contributor. A few units agreed and had made their babies 'nil by mouth' during transfusion, aiming to prevent NEC. One reply asked whether T-antigen was considered.

Comment

There is no conclusive evidence of a causal association between blood transfusion and NEC. There have been some case reports and series published suggesting a possible link[1], and these have led to the practice in some units of stopping feeds during blood transfusion. This is not standard practice in the UK, however. There is some evidence of an association between NEC and activation of T antigen on erythrocytes[2,3], but again no causal link has been proven.

1. **Mally P., Golombek S., Mishra R.** Association of NEC with elective packed red blood cell transfusions in stable, growing, premature neonates. *Am J Perinatol* 2006; **23**: 451-58.
2. **Williams R.A., Brown E.F., Hurst D.** Transfusion of infants with activation of erythrocyte T antigen. *J Pediatr* 1989; **115**: 949-53.
3. **Novak R.W., Abbott A.E., Klein R.L.** T-cryptantigen determination affects mortality in NEC. *Surg Gynecol Obstet* 1993; **176**: 368-70.

Umbilical catheters
NICU-NET

A questioner from India wanted to know how long units normally left catheters *in situ*. According to the Centre for Disease Control, UVCs should be limited to 14 days and UACs to 5 days. A PICC line could be left as long as it was patent and was needed. Some units were replacing the UVC with a PICC line after 7-10 days.

Comment

There is no clear evidence on which to base a recommendation, even though the CDC does advise the limits given above[1]. The decision on when to remove a catheter will always require an assessment of the risks and benefits of leaving it *in situ*, which are different in each baby. Some recent evidence suggests early replacement of UVCs with long lines may not reduce the complication rate, supporting the recommendation from the CDC[2]. The important point is to ensure that the catheters are correctly positioned following insertion and remain in the correct position whilst *in situ*[3].

1. **Centers for Disease Control and Prevention.** Guidelines for the prevention of intravascular catheter-related infections. MMWR 2002; **51**(No.RR-10): [18].
2. **Butler-O'Hara M., Buzzard C.J., Reubens L. et al.** A randomized trial comparing long-term and short-term use of umbilical venous catheters in premature infants with birth weights of less than 1251 grams. *Pediatrics* 2006; **118**: e25-35.
3. **Barrington K.J.** UACs in the newborn: Effects of position of the catheter tip. *Cochrane Database of Systematic Reviews* 1999, Issue 1. Art. No.: CD000505. DOI: 10.1002/14651-858.