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Use of size 4fr nasal gastric feeding tubes on the neonatal unit

The aim of this report is to show how to deliver the safest care to our babies on the neonatal unit by considering introducing the use of size 4fr enteral feeding tubes. Enteral feeding is a major part of neonatal care at St Peter's Hospital. This report will show how literature supports use of enteral feeding as the preferred method to provide nutrition for preterm babies. Enteral feeding provides both nutritional and non-nutritional benefits, such as helping to develop brain growth, promoting maturity of the gut and reducing inflammation.[1]

Kirstie Flucker
Clinical Practice Educator, Ashford and St Peter's Hospitals NHS Foundation Trust

Keywords

nasal gastric tube (NGT); feeding; mother's expressed breast milk (MEBM); nasojejunal

Key points

Flucker K. Use of size 4fr nasal gastric feeding tubes on the neonatal unit. *Infant* 2024; 20(5): 146-47.

1. Increasing numbers of neonatal services support the use of smaller bore enteral feeding tubes in neonates weighing less that 1kg.
2. Some units now support the use of smaller bore enteral feeding tubes in babies under 2kg who require respiratory support.
3. Slower administration of feeds increases digestion of enteral feeds.
4. Smaller bore enteral feeding tubes reduce the risk of vagal stimulation to low birthweight babies.

Neonatal units across the UK have introduced the use of size 4fr enteral feeding tubes to feed neonates. Hospitals such as Evelina Children's Hospital,[2] Cambridge University Hospitals NHS Foundation Trust, East of England Neonatal Operational Development Network (ODN),[3] East Kent University Hospitals NHS Foundation Trust,[4] Sherwood Forest Hospitals NHS Foundation Trust,[5] West Midlands Neonatal ODN[6] and Managed Clinical Network (MCN) for neonatology west of Scotland[7] have all provided clinical guidance on the safe use of size 4fr enteral feeding tubes.

The above mentioned neonatal services support the use of smaller bore enteral feeding tubes, either nasogastric or orogastric, in neonates weighing less than 1kg, with some units also supporting their use in babies under 2kg who also require respiratory support such as high flow oxygen or continuous positive airway pressure (CPAP).[6] Medway NHS Foundation Trust uses size 4fr enteral feeding tubes in babies who are under 32 weeks' corrected gestation, as per their neonatal nursing guideline *Nasogastric/orogastric and nasojejunal feeding*.[8] Literature supports the use of smaller bore feeding tubes, such as the size 4fr, in neonatal care to prevent breakdown of skin around the nasal area. This is also useful when babies require respiratory support. The smaller bore tube is less likely to rub against the nasal septum, which would improve comfort for the baby and consequently promote growth and development.[6]

Using the size 4fr feeding tube with slight pressure when the baby is on CPAP is the second most successful manoeuvre when using either mask or prongs, to enable CPAP to provide sufficient flow to support the baby's own breaths.[8] Larger bore tubes are more likely to interfere with respiratory equipment such as CPAP.[9] This is because using the larger bore feeding tube nasally gives reduced seal when using CPAP masks, and minimises the space in the infants' nostrils when using nasal cannula at the same time via CPAP, high flow nasal cannula oxygen or low flow nasal cannula oxygen.

The Leeds Teaching Hospitals NHS Trust indicates in its clinical guidance for neonatal staff that neonates should have a size 4fr or 5fr feeding tube inserted and to only insert a size 6fr enteral feeding tube when on high density feeds.[10] The manufacturer EnFit, which supplies the neonatal enteral feeding tubes to St Peter's Hospital neonatal unit, also highlights that its size 4fr and 5fr enteral feeding tubes can be used in neonates. Size 6fr feeding tube would be used for higher density feeds.[11]

When infants with lower birth weights are fed milk via an enteral feeding tube, they will digest more when it is administered at a slower pace. Administering faster paced feeds via large enteral feeding tubes to low birthweight

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babies can cause vagal stimulation. Such stimulation increases the risk of apnoea and bradycardia during feeds, which consequently causes more respiratory instability.[12] Slowing the feed down when it is administered reduces the risk of tachypnoea and bradycardia post feeding.[13]

St Peter's speech and language therapist (SLT) states: "From an SLT perspective, the use of smaller feeding tubes would be positive. It slows the feeding down, which is beneficial for the baby in terms of gastric comfort and helps reduce negative oral experiences, which will help with long term feeding experiences and outcomes."[8]

Studies show that perforation from insertion of enteral feeding tubes is more likely to occur with larger bore tubes than it is with smaller bore enteral feeding tubes.[15] Extreme preterm babies are much more likely to experience perforation due to their immaturity, fragility and the absence of muscle fibres.[16] A further study found that babies who are born small for their gestational age, as well as preterm babies, are most at risk of iatrogenic oesophageal perforation. Although it is rare, it is noticeable in babies weighing less than 750g.[17] Several cases of gastric perforation have been caused by vigorous nasogastric or orogastric tube insertions. This can also contribute to neonatal mortality.[15] However, the sizes of the enteral feeding tubes used during these studies were not stated.



Clinical guidance is available on the safe use of size 4fr enteral feeding tubes.

Conclusion

This report provides evidence showing that feeding at a slower pace is more beneficial to premature babies and suggests that this can be achieved by using smaller bore feeding tubes, like the size 4fr enteral feeding tube.

From the research completed for this report and with the evidence that the studies present currently, we propose that there is sufficient evidence to support the use of size 4fr enteral feeding tubes in babies weighing under 1kg. Babies over 1kg may continue to use size 5fr enteral feeding tubes.

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