

The provision of parenteral nutrition: it's not in the bag

The administration of parenteral nutrition is a well-established technique providing nutritional support to patients who have an inaccessible or non-functioning gut (intestinal failure). As such it is widely used by surgeons, intensivists, paediatricians, neonatologists, oncologists and clinical nutrition specialists. However, it is available to all clinicians regardless of specialty or expertise in its use.

Parenteral nutrition

While parenteral nutrition can be a life saver it is also fraught with potentially fatal complications, and so it should never be given without appropriate forethought and planning. For parenteral nutrition to be given safely it needs an accurate assessment of the patient's nutritional requirements, appropriate constitution and compounding of the parenteral nutrition, safe intravenous access (with meticulous aseptic technique and subsequent catheter care) and rigorous monitoring of the patient's electrolytes and anthropometric response. With this in mind, the National Confidential Enquiry into Patient Outcome and Death (NCEPOD) undertook the first national enquiry into the care of hospital inpatients receiving parenteral nutrition and published the findings in its latest report: *A Mixed Bag* (Stewart et al, 2010).

The aim of the study was to look at the assessment, administration, catheter care and monitoring of patients nationally receiving parenteral nutrition. The sample population of 1948 cases was taken from patients regardless of age receiving parenteral nutrition as an inpatient over the 3-month period from 1 January to 31 March 2008 inclusive. Standard NCEPOD methodology was used, namely peer review of case notes and questionnaires.

While it has been widely suspected that care around the provision of parenteral nutrition is poor, the results of the study painted an even blacker picture than anticipated. Within the adult group it was

found that only 19% of patients received care that was consistent with good practice as judged by the specialist advisors, with a third of the adult study population receiving care that was deficient with respect to clinical issues. In over a third of adult patients there had been inadequate consideration given to enteral feeding before the initiation of parenteral nutrition, with almost a third again receiving parenteral nutrition for an inappropriate indication.

Compounding this dire picture is the finding that for those adults who did require parenteral nutrition there was an unreasonable delay in recognizing this in 16% of patients. Furthermore once parenteral nutrition had been initiated in the adult population metabolic complications occurred in 40%, of which half were judged to have been avoidable.

Paediatric and neonatal nutrition

What about the paediatric and neonatal study population? There were insufficient data returns to comment on paediatric issues but the neonatal data provided further worrying insights which suggest that the issues are not confined to adults. NCEPOD found that only a quarter (62 cases) of the neonatal study population (264 neonates in total) received parenteral nutrition care judged to be good by the advisors. There were delays in recognizing the need for parenteral nutrition in 28% of neonates with delays in starting it in 17%. Furthermore for over a third of neonates the first parenteral nutrition provided was inadequate for their nutritional needs.

Perhaps the most telling evidence from the neonatal data was that despite guidelines and scientific evidence that neonatal outcomes are improved when parenteral nutrition is started soon after birth, these are not followed by some units and there appears to be a large variation in practice around the care of extremely low birth weight neonates.

Catheter care

NCEPOD also studied the issues around catheter care for the delivery of parenteral nutrition in both adult and neonatal groups and uncovered further unsatisfactory results. There was evidence of inadequate documentation of both catheter insertion and tip position in both patient groups, with catheter complications occurring in a quarter of both adults and neonates. In the adult group over half of these complications were deemed avoidable.

Going forward

From this report NCEPOD has uncovered serious deficiencies in the provision of parenteral nutrition across the age ranges and there is no doubt that it makes a sobering read. So what is to be done? Among the many recommendations arising from the report, NCEPOD wishes to see more robust assessment of adult patients both before starting and following commencement of parenteral nutrition, including adequate clinical and biochemical monitoring and clear treatment goals. NCEPOD makes similar recommendations for neonates but most importantly calls for there to be consensus opinion

KEY POINTS

- Care around the provision of parenteral nutrition is poor across the age groups.
- Assessment and monitoring of adults receiving parenteral nutrition is inadequate.
- Avoidable metabolic complications are common in all age groups.
- Care of central venous catheters needs improving for adults and neonates.
- There needs to be a consensus document on the use of parenteral nutrition in neonates

across neonatology as to best parenteral nutrition practice.

There is no doubt that matters must improve and it is incumbent upon those within medical education to ensure that the 'cinderella' subject of nutrition gains a heightened profile on both undergraduate and postgraduate curricula.

Conclusions

Nutrition, in all its forms, is literally the 'staff of life' – never more so for those patients with intestinal failure and reliant on parenteral nutrition. Thus it is of great

concern that the care and support around the provision of this life-saving treatment should be so woefully poor across the ages from the beginning of life to the sick elderly. This may reflect an unwillingness for the high volume users of adult parenteral nutrition (such as surgeons) to engage in the process of the administration of parenteral nutrition beyond deeming its necessity; within neonatology it may simply reflect a lack of consensus. Whatever the root cause, vulnerable patients are being put at unnecessary risk through ignorance, complacency or, worse, both.

NCEPOD hopes that the serious deficiencies uncovered in this report will ensure the provision of parenteral nutrition emerges at the forefront of clinical governance agendas at all levels within the NHS. [BJHM](#)

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Stewart JAD, Mason DG, Smith N et al (2010) *A Mixed Bag*. NCEPOD, London