# Fantoms

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## Unwanted extras

Oral medicinations commonly given to preterm newborns, such as iron, vitamins, mineral supplements and steroids, have usually been formulated for older patient groups. They may contain various additives (excipients) such as solvents, emulsifiers, preservatives, colourings, sweeteners and flavourings that have not been fully evaluated in terms of safe exposure in newborns. Whittaker and colleagues have estimated the exposure to these compounds during their hospital course of a group of preterm infants. Their findings are alarming and raise the possibility that they could even contribute to adverse outcome. For example, a preterm infant on furosemide may be exposed chronically to alcohol at a dose, weight for weight, equivalent to an adult consuming several units per week. The study highlights the need for better labeling of medicines and the importance of trials with appropriate outcome measures in establishing the balance of benefit and risks for the treatments used in the neonatal unit. ***See page F236***

## Permissive Hypotension

Large numbers of extremely preterm infants receive treatment for hypotension because of a belief that their blood pressure should be equal to or greater than their gestation in weeks. Dempsey at al rightly question the validity of blood pressure in isolation as a measure of adequate of end-organ perfusion and have coined the term permissive hypotension. This is an approach where hypotension defined by blood pressure values is not treated provided that other measures of circulatory status such as urine output, peripheral perfusion and lactate levels are reassuring. In their case series a population of infants with low blood pressure but a circulatory status that was otherwise reassuring who were not treated, had outcomes that were comparable with those of infants with "normal" blood pressure. This did not just include borderline values. Some of the infants had mean arterial blood pressures well below 20mmHg. As with $PCO_2$ and permissive hypercarbia, interventions to alter blood pressure carry risks as well as possible benefits. The number of infants in this study was not large and could have failed to identify important risks. Infants with mild hypotension but otherwise adequate circulation on clinical assessment are common and would be a good starting population for a prospective trial of interventions to alter blood pressure. It would also be helpful to compare this approach with one based on the current enthusiasm for evaluating systemic blood flow echocardiographically. It could be argued that during the last decade our most significant advance has been an increasing willingness to leave things alone but there must come a tipping point and we should not miss it. ***See page F241***

## Hypothermia

"Standard of care" is a much-used phrase but it is difficult to apply it very widely in neonatology as so much of what we do is based on evolved practices rather than solid research evidence. Screening for and treating retinopathy of prematurity fits the bill. What about hypothermia for hypoxic-ischaemic encephalopathy? The trials have been done and few would dispute that it can improve outcome in selected cases. The UK TOBY cooling register now reports the cooling of 120 infants since the TOBY trial was completed, showing that the treatment can be applied promptly and safely outside the trial setting. Most would want it to be available for their own relative yet it is still far from universally available in the UK. Issues from the earlier trials such as the incidence of hyperthermia in control infants and uncertainty about its role in severely affected infants may have so far prevented some clinicians reaching the point of conversion. Perhaps this will change when the TOBY trial outcomes are published. ***See page F260***

## Monitoring breathing by pulse-oximetry

Wertheim and colleagues extend observations from adults and show that respiratory patterns can be extracted from pulse-oximetry data in neonates using mathematical models that detect the equivalent of pulsus paradoxus in the plethysmographic waveform. They studied sleeping infants and selected data from periods that were free of movement artifact so it remains to be demonstrated how useful this technique could be clinically under less controlled conditions. ***See page F301***