exhibit two peaks; one at 265 nm, consistent with DNA absorption, and the second at 450 nm. Bilirubin absorbs maximally between 420 to 480 nm—the blue range. Despite such evidence, few clinically adverse side effects have been reported.

Ennever *et al*³ found the most effective wavelength for the production of 4Z 15E bilirubin to be 390 nm with an overall effective band from 350 to 470 nm. But other types of isomerisation occur and the relative contributions of different isomerisations to the overall effect of phototherapy is unknown.

Vecchi *et al*⁵ have shown that longer wavelengths in the green range result in more effective phototherapy than daylight lamps. They note that the depth of penetration of light in human skin increases with increasing wavelengths.

Clinical indications for phototherapy remain confused. Obviously infants should be exposed to the minimal necessary irradiation. Until optimal conditions are defined, however, we can only reiterate our plea that paediatricians measure the 'dose' of phototherapy and that manufacturers provide emission spectra for phototherapy light sources.

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Oral rehydration solutions and electrolyte content of water

Sir,

We read with interest the annotation by Tripp and Candy on oral rehydration solution.¹ We would, however, like to draw attention to the composition of the most vital part of oral rehydration solution—water.

In industrialised countries it is taken for granted that the electrolyte content of drinking water is negligible (as per public health standards). The composition of fresh water, however, depends upon many geological factors and varies from area to area.²

In Benghazi the sodium content of unboiled drinking water ranges from 20 to 56 mmol(mEq)/l and that of boiled water from 39 to 82 mmol(mEq)/l.³ The sodium content of a standard commercial formula milk, reconstituted with boiled water can range from 43 to 125 mmol(mEq)/l with an osmolality from 350 to over 426 mmol(mEq)/l (see Table).

Table Composition of natural unboiled fresh water

	Natural fresh water	Benghazi water
Sodium (mmol(mEq)/l)	0.35–0.72	20–56
Potassium (mmol(mEq)/l)	0.20	0.36–0.66
Calcium (mmol/l)	0.03–0.16	1.53–2.08
Total solids (mg/dl)	≤0.03	0.12–0.35
pH	5–7	7.4–7.74

Conversion—SI to traditional units: calcium 1 mmol/l≈4mg/100 ml.

In view of the above limitations, we do not advocate use of any commercial or World Health Organisation oral rehydration solution in infants with diarrhoeal disease in our area. We have been treating these children successfully with water supplemented with glucose, potassium, and bicarbonate.

Paediatricians working in the developing countries or remote rural areas, should ascertain the electrolyte content of the regional drinking water before making any protocols for oral rehydration treatment.

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Doxapram and neonatal apnoea

Sir,

Stimulated by the report of Sagi *et al*¹ on the beneficial effect of doxapram in treating neonatal apnoea refractory to aminophylline, we recently used the drug in two preterm infants. The first, a baby of 28 weeks' gestation weighing 1200 g, was 17 days old at the time of receiving doxapram. The second baby was of 26 weeks' gestation, weighed 880 g, had suffered an intraventricular haemorrhage at the age of 24 hours, and was being ventilated for apnoea at 13 days of age. In both babies the frequency of apnoeic attacks was dramatically reduced within a few hours of starting doxapram infusion at a dose of 2.5 mg/kg/hour, and within the ensuing 12 hours the second baby no longer required ventilation. Both babies became extremely agitated, however, while receiving doxapram, exhibiting virtually continuous erratic limb movements, excessive crying, and disturbed sleep. We felt obliged to stop the infusion and their behaviour returned to normal within two or three hours. As in the cases reported by Sagi *et al*,

doxapram was given in addition to aminophylline and the blood theophylline concentrations of both babies were in the region of 11 to 13 mg/l.

Although Sagi *et al* described no complications attributable to doxapram in any of their five patients, we were nevertheless not surprised by our experience as the data sheet for doxapram warns of agitation and increased skeletal muscle activity, especially when it is used concurrently with aminophylline. It is possible that our two babies were for some reason unusually susceptible to the observed reaction but their state of agitation was so alarming that we would hesitate before using these drugs in combination again, despite the beneficial effect on the frequency of apnoea. There is little information available on the efficacy of doxapram alone in the treatment of neonatal apnoea and further clinical trials are indicated.

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Dr Sagi and co-workers comment:

We were glad to hear that our report¹ had stimulated others to try doxapram when apnoeic attacks persist despite adequate concentrations of blood theophylline.

The signs of central nervous system overstimulation observed in two preterm infants treated by Drs Dear and Wheeler were not observed in any of over 20 patients we have treated with doxapram and aminophylline combined. Moreover, in our report we mentioned one infant who had inadvertently received 5 mg/kg over two hours without adverse effects.

Doxapram alone has already been found effective in the treatment of apnoea of prematurity.² We have recently completed a double blind trial on 16 preterm infants with idiopathic apnoea, comparing doxapram and aminophylline. While neither drug had a significant advantage over the other, doxapram alone was found beneficial.

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Malabsorption of vitamin B₁₂

Sir,

We were interested to read a case report by Conway *et al* on vitamin B₁₂ neuropathy in a 6 year old.¹ The failure to thrive in their patient before treatment with vitamin B₁₂ is similar to two siblings that we reported² with the Imerslund-Grasbeck syndrome. We too were able to document a rapid increase in weight after treatment with parenteral vitamin B₁₂. It would seem, therefore, that selective malabsorption of vitamin B₁₂ should be added to the list of rare causes of failure to thrive in children.

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BPA response to 'Healthier children thinking prevention'

Sir,

I sympathise with the views expressed by another senior clinical medical officer.¹ In my experience, district medical officers and specialists in community medicine do not have any paediatric postgraduate qualifications such as the Diploma of Child Health, as mentioned by my colleague. Paediatric services should be run by accredited paediatricians whether the children in their care happen to be seen in hospitals, schools, nurseries, or at home.

Reference

- ¹ Anonymous. (A senior clinical medical officer). BPA response to 'Healthier children thinking prevention' (letter). *Arch Dis Child* 1984;**59**:594-5.

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Ultrasound diagnosis of gastro-oesophageal reflux

Sir,

Naik and Moore suggest that ultrasound should replace the conventional barium meal examination for suspected gastro-oesophageal reflux.¹ In addition to exposure to radiation the barium oesophagram is not 'physiologic' since barium is not a normal meal, and is said to have a 15% false negative rate which, theoretically, could be avoided if one were able to use longer periods of observation. There is a more important diagnostic limitation of the barium oesophagram, however, which does not seem to have been circumvented by ultrasound. Gastro-oesophageal reflux is very common, especially in infants, and is self-limiting and benign in the overwhelming majority.² Any diagnostic method relying on the simple finding of retrograde flow of gastric contents into the oesophagus such as the barium oesophagram has to prove a high specificity, that is, the ability to identify clinically important reflux without too many false positive results.³ Indeed, recent studies show an inordinately high false positive rate for the barium oesophagram in comparison