


Dr Scherjon comments:

The most obvious difference in the analysis presented in the letter of Kempley et al and our study is that our analysis is based on 10 longitudinal measurements, instead of two point measurements. We are therefore able to analyse the contribution of several variables to a repeated measurement model.

We used values of MAP and PCO₂ (as did Kempley), but also analysed both variables as covariates changing over time. Thus the effect of MAP and PCO₂ both on the patient specific level of CBVF and within patient time course on CBVF could be estimated. Secondly, our model included gestational age as a possible confounding variable. The latter seems to be essential in the interpretation of the results.

Growth retardation (IUGR) was defined by a raised antenatal umbilical/cerebral pulsatility index ratio (U' /C' ); an index indicating fetal haemodynamic redistribution and very strictly related to neonatal birthweight. For this reason a more classic definition of SGA, using the fetal growth ratio (FGR), was used. The lower limit for appropriate fetal growth was 80%, corresponding to the 4.3 birthweight centile.

If gestational age is not included in the model (table 1) MAP has a significant contribution to CBVF; if gestational age is included in the model its contribution disappears.

Interestingly, the interaction component between IUGR grouping and MAP<sub>pend</sub> appeared to be significant only for the lower gestational ages. This suggests that there might be a different effect of MAP<sub>pend</sub> on CBVF for IUGR compared with non-IUGR infants (IUGR defined by FGR and not by the U' /C' ratio).

We therefore repeated the analysis for the two growth retardation definitions. For the normal FGR infants and for not the normal FGR (U' /C' ratio group) we found a significant contribution of the time course of blood pressure changes on CBFV, but the absolute levels of MAP seem to have no contribution to the model (table 2).

We agree with Kempley that there seems to be a different setting for the regulation of CBFV between appropriately grown and SGA neonates, although we did find the effect when FGR alone is used as the definition of SGA. We also could not show the effect for the absolute MAP values on CBFV. It might be, as was suggested in the original article, that SGA is associated with a more stable CBVF, and therefore this would explain the lower incidence of severe intracranial pathology found in the growth retarded group.

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Neonatal abstinence syndrome

**Editor,**—Our clinical experience of neonatal abstinence syndrome (NAS) differs from that in Liverpool described by Shaw and Melcor, who focused on methadone.¹ During the period 1989-94 inclusive, we identified 39 babies at risk of NAS. Of these, two (5%) had mothers with a history of drug use who denied current use, one (3%) mother took codeine, five (13%) used heroin, 22 (56%) used methadone and nine (23%) did not use opiates at all (largely alcohol and amphetamines). Of the mothers using methadone, five (23%) took methadone alone, eight (38%) took heroin in early pregnancy followed by methadone as part of a detoxification regimen, and nine (41%) were polypharmacy users.

The median time between withdrawal for the methadone group was 30 hours (range 0-7 days) and for the heroin group 1-5 days (range 1-2 days). Median duration of medical treatment for the methadone group was 23 (range 0-80) days and for the heroin group, 4-5 (range 0-8 days). The median length of stay in hospital for the methadone group was 22-5 (range 6-107) days—one baby was successfully withdrawn from morphine at home under close supervision—the median for the heroin group was 12-5 (range 7-15) days.

Of the babies exposed to methadone, 18 (81%) were placed at home, the others being fostered. Follow up appointments at this hospital were kept by 12 (55%) babies, two (9%) attended for appointments at referring hospitals, two (9%) moved and were offered follow up with a local paediatrician (outcome unknown), and six (27%) were chronic non-attenders. Of the heroin group, one baby was adopted and the rest stayed with their mothers. Two (40%) were followed up on more than one occasion, one attended outpatients only once, and two (40%) never attended. There was one death in a baby exposed to methadone and heroin who died at the age of 6 weeks from meningococcal septicemia.

Even though the Liverpool figures suggest an earlier and less severe withdrawal from methadone than has previously been suggested we cannot be certain that the mothers were not taking heroin in addition to methadone. Our figures suggest a longer period of onset and a more protracted course of NAS with methadone. We would caution paediatricians to be aware of the pattern of local drug use before altering observation policy for NAS on the basis of one paper.

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1 Shaw NJ, Melcor L. Neonatal abstinence syn-


Pros and cons of antiseptic cord care

**Editor,**—A recent letter points out that anti-
septic agents may delay separation of the umbilical cord.¹ However, certain agents can hasten cord separation. This has public health implications. In many non-industrial settings the period from birth to cord separation is an important rite of passage during which varied social and dietary taboos are observed.

Among the pastoralist people of Southern Sudan, where neonatal tetanus is common and seems to be related to traditional cord care techniques,² cord care kits were promoted in the 1980s. When I interviewed mothers of babies with tetanus neonatorum (n=35, unpublished data) none had used cord care kits. Seventy five per cent had applied earth to the cord which had been collected from a number of important sites. When asked why this was done most replied that it helped to expedite the process of cord separation. In traditional village culture in this region mother and baby are segregated in the family home, and restrictive dietary restrictions are enforced until the cord separates, when mother and infant become the focus of a collective feast. Women prefer

<table>
<thead>
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<th>Table 1</th>
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<td><strong>GAMS</strong></td>
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**GA:** gestational age; IUGR: fetal growth retardation as defined by U' /C' ratio or FGR; MAP: mean arterial blood pressure; CO₂: transcutaneous PCO₂; interaction component between MAP<sub>pend</sub> and IUGR.

<table>
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Cardiac arrest associated with vancomycin in a neonate

EDITOR,—A 13 day old newborn girl was treated for an Escherichia coli infection with a once daily, 20 minute infusion of 150 mg of ceftriaxone. Progress was normal until vancomycin (150 mg) was mistakenly injected intravenously over 20 minutes. Within 10 minutes she stopped breathing and became cyanotic; pulse and cardiac sounds were absent. Bag ventilation with 100% oxygen and chest compressions were immediately started. An endotracheal intubation was performed. The infant recovered within one minute from her cardiac arrest. The evolution during the following 18 months has been favourable.

To our knowledge, four other cases of cardiac arrest after a rapid infusion of vancomycin have been reported involving one adult and three children. Of these, two infants died. No cardiac arrest in a newborn baby has been described before.

This report of a cardiac arrest in a neonate, after a rapid intravenous infusion of vancomycin, strengthens the usual recommendation that this drug should be administered over a prolonged time. The proportion of young children (four out of five) among the reported cases might suggest that a rapid infusion of vancomycin could particularly lead to a cardiac arrest in this age group. This major side effect of vancomycin could be related to a neuromuscular blockade or a ventricular arrhythmia, or a direct transient depression of the cardiac function, or an extreme form of an anaphylactoid reaction.

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Intestinal dilatation in the fetus

EDITOR,—Richards and Holmes have described a series of nine cases with intestinal dilatation in the fetus, all with surgical
tell that the happy conclusion of this ritual seclusion. Policy makers should be aware that home cord care kits which prolong the time to cord separation may not be taken up by the target population.


Antenatal ultrasound scan showing intestinal dilatation.

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