fic signals. Published testimony shows that these drivers have important difficulties,[1] and an Australian review of the literature shows that they have more accidents.[2]

But here is the astonishing anomaly: most traffic authorities insist that "professional" drivers have good colour vision, yet the majority of drivers, us "amateurs", may drive even if we fail the colour vision test. So a father with poor colour vision who is driving his children about cannot have the same safety at signals as a cab driver with his fares.

The solution is simple and practical: change the signals. Follow the example of the traffic signs, which use a combination of shape-coding and supplemental colours. The critical stop sign works well for all drivers.

A road trial of improved traffic signals is being planned by the BC Ministry of Transportation and Highways and the City of Victoria. We on the planning committee hope that those concerned with traffic safety will take an interest in this trial.

Morley G. Whillans, MD
for the Color Blind Committee
1020 McGregor Ave.
Victoria, BC

References

1. Whillans MG: Colour-blind drivers' perception of traffic signals. *Can Med Assoc J* 1983; 128: 1187–1189
2. Cole BL, Vingrys AJ: *Are Standards of Colour Vision in the Transport Industries Justified?* Report to the Australian Dept of Aviation, Melbourne, 1985

Not Always on the Level

As one of the anesthetists present I can confirm that Professor E.J. Moran Campbell, whose book of reminiscences was recently reviewed in *CMAJ* (1988; 139: 757–758), was given tubocurarine while awake, in slowly increasing dosage, at Hammersmith Hospital, London, possibly during 1965.

On this occasion complete curarization was not achieved; a signal had been arranged so that reversal agents could be given when Professor Campbell so desired. Complete curarization may have been achieved at a later date.

Maurice C. Crocker, MB
Chief of anesthesia
Victoria General Hospital
Winnipeg, Man.

The use of vitamin K in the perinatal period

The guidelines of the Fetus and Newborn Committee of the Canadian Paediatric Society for the use of vitamin K to prevent hemorrhagic disease of the newborn, published in the July 15, 1988, issue of *CMAJ* (139: 127–130), promote the use of oral vitamin K_1 (2 mg) as a cost-effective replacement for injectable vitamin K_1 (1 mg) in healthy newborns.

This concerns me, because vitamin K_1 is not yet commercially available in an oral liquid dosage form in Canada. As a result, if vitamin K_1 is to be administered orally, an injectable formulation must be given (preferably with an oral syringe, to ensure dosing accuracy). Whether this is more economical is debatable.

I believe that the committee's recommendation of oral over conventional intramuscular injection is premature in Canada.

Lu-Ann Murdoch, BScPhm
Director
Drug Information Centre
Faculty of Pharmacy
University of Toronto
Toronto, Ont.

[The principal author of the committee's article responds:]

It might appear at first blush that the cost of an orally administered 2-mg dose of the intramuscular preparation of vitamin K_1 for infants would be almost twice the cost of the intramuscularly administered 1-mg dose of the same preparation. Although this is true with the 1 mg/0.5 ml preparation it is not true when the hospital pharmacy department makes up a stock bottle of the more concentrated 10 mg/ml preparation for adults. The following procedure is used by the Pharmacy Department of the Grace Maternity Hospital, Halifax.

A 7-ml amber dropper bottle is autoclaved, and four 10 mg/ml ampoules of phytonadione (vitamin K_1) are soaked in alcohol. Within a laminar flow hood the contents of the ampoules are transferred to the dropper bottle with sterile technique. Stored in this bottle in the refrigerator the preparation has an expiry date 1 month hence. It is used in a dose of 2 mg (four drops) orally with the first clear liquid feeding in the normal (not high-risk) nursery. The amount of benzyl alcohol (1.6 mg) ingested with one dose is negligible to the neonate.

When prepared in this way the cost of 2 mg of orally administered vitamin K_1 is about 60% of that of 1 mg of the intramuscularly administered vitamin (Table I). Thus, the oral dosage route is more cost-effective.

Orally administered vitamin K_1 appears to be as effective as the intramuscularly administered vitamin. Oral administration costs less and is less traumatic to the infant than intramuscular administration. For the sake of the newborns, who receive the sharp

Table I — Relative costs of intramuscular and oral doses of vitamin K_1

Item	Cost, $
Intramuscular 1-mg dose	
Vitamin K_1, 1 mg/0.5 ml	0.58
Syringe (1 ml)	0.12
Needle	0.02
Total cost per dose	0.72
Oral 2-mg dose	
Vitamin K_1, 10 mg/ml ($0.98 × 4)	3.92
Autoclaved dropper bottle	0.68
Technician time	1.67
Total (20 doses)	6.27
Assuming 15 doses, cost per dose	0.42