

the bottom of the social scale, which may partially explain our results. The high incidence of scalds and fat burns among Asian children relates to different methods of cooking in Asian households, especially the use of ghee (clarified butter) and many dishes (hence many vessels) in Asian meals. Asian homes tend to have many relatives present at mealtimes and, as Asian women traditionally supervise both children and cooking, accidents happen more easily. Small overcrowded kitchens are less safe for children than open air cooking in a village back yard.

Learmonth found that burns and scalds were common in rural communities in India.<sup>3</sup> The principal contributory factors were lack of supervision of children, dangerous cooking practices, and flowing

flammable clothing. Education has an important impact in preventing burns in India.<sup>4</sup> Our findings identify a need for a similar service here.

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- 1 Morris JA, Gardner MJ. Calculating confidence intervals for relative risks (odds ratios) and standardised ratios and rates. *Br Med J* 1988;296:1313-6.
- 2 Bull JP, Jackson DM, Walton C. Causes and prevention of burning accidents. *Br Med J* 1964;iii:1421-7.
- 3 Learmonth A. *Factors in child burn and scald accidents: a review of the literature*. Bradford: School of Science and Society, Bradford University, 1980.
- 4 Keswani MH. The prevention of burning injury. *Burns* 1986;12:533-9.

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## Safe use of lignocaine

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Inadvertent overdosage of local anaesthetic agents, which are in widespread daily use, is well documented.<sup>1</sup> Many doctors seem to choose the strength of these agents indiscriminately, using 2% when 0.5% would be adequate. I carried out a study to test the hypothesis that many doctors are unaware of basic information about these drugs.

### Method and results

I conducted a survey on two consecutive days at a large teaching hospital and a district general hospital. Junior doctors of all grades were approached on an ad hoc basis and asked six questions about ligno-

appropriate dose was the most important factor in preventing "catastrophic reactions." It is depressing to find that doctors are still ignorant of the appropriate dose.

Labelling drugs in weight per volume percentages is an old and accepted method used for many preparations, but the Committee on Safety of Medicines should perhaps re-examine this method of dispensing drugs. In addition to local anaesthetics, drugs dispensed in containers labelled with percentages include intravenous solutions and dermatological and ophthalmological preparations. Similar mathematical errors might be encountered with adrenaline, which is labelled in parts per volume. For many years Sweden has required solutions to be labelled with the weight per millilitre.

The basic pharmaceutical data given in the *British National Formulary*<sup>2</sup> and product data sheets should be reinforced. The deficiencies in data sheets have all been discussed elsewhere.<sup>3</sup> The original packaging for all

### Results of questionnaire survey on safe use of lignocaine

	No (%) giving correct response			Correct response	Range of responses given		
	Anaesthetists (n=17)	Other specialties (n=83)	All (n=100)		Anaesthetists	Other specialties	All
(1) How much lignocaine is there in: 5 ml 1% Lignocaine?	16 (94)	29 (35)	45	50 mg			
10 ml 2% Lignocaine?	16 (94)	27 (33)	43	200 mg			
(2) For a 60 kg adult, what is the safe dose (ml) of: 1% Lignocaine plus adrenaline?	8 (47)	13 (16)	21	40-60 ml	2-48 ml	2-360 ml	2-360 ml
2% Lignocaine?	9 (53)	17 (21)	26	8-12 ml	5-12 ml	5-720 ml	5-720 ml
(3) What is the safe dose (mg/kg) of: Lignocaine?	9 (53)	8 (10)	17	2.8-4.2 mg/kg	0.1-6.0 mg/kg	0.01-500 mg/kg	0.01-500 mg/kg
Lignocaine plus adrenaline?	9 (53)	2 (2)	11	6.4-9.6 mg/kg	0.01-10 mg/kg	0.01-600 mg/kg	0.01-600 mg/kg

caine (table). One hundred doctors participated (73 employed at the teaching centre and 27 at the district general hospital). Their specialties covered all acute medical and surgical disciplines. For the last four questions the dose given in the *British National Formulary*<sup>2</sup> (plus or minus 20%) was accepted as correct. The table gives the results.

### Comment

Probably the most important finding of this study was that less than half of the doctors knew that 1% lignocaine was equivalent to 10 mg/ml. The results would be less worrying if these doctors could be expected to give the appropriate volume of local anaesthetic. Many respondents in another study claimed that they knew the safe volume of lignocaine for adults.<sup>3</sup> Forty six per cent of the doctors in my study would have given two or more times the maximum recommended volume of 2% lignocaine (question 2). Grimes and Cates<sup>1</sup> suggested that administering the

drugs should perhaps include an obligatory data sheet similar to those already provided by some manufacturers. An additional entry in the data sheet for local anaesthetic agents might include the safe dose in mg/kg.

Finally, there has been some discussion in the United States about the potential problems of large doses of lignocaine in prefilled syringes for use with infusion fluids.<sup>3</sup> Reducing the size of ampoules of stronger lignocaine solutions (2% and above), perhaps to 2 ml, should be considered.

- 1 Grimes DA, Cates W. Deaths from paracervical anesthesia used for first trimester abortion 1972-1975. *N Engl J Med* 1976;295:1397-9.
- 2 British Medical Association and Royal Pharmaceutical Society of Great Britain. *British national formulary No 17*. London. BMA and Pharmaceutical Press, 1989:437-9.
- 3 Kelly DA, Henderson AM. Use of local anaesthetic agent drugs in hospital practice. *Br Med J* 1984;286:1784.
- 4 Medawar C. Data sheets: a consumer perspective. *Lancet* 1988;i:777-8.
- 5 Moore DC. Unintentional lethal/toxic injections: elimination of drugs vs vigilance. *Anesthesiology* 1988;68:475-6.

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