train GPs that went on in those ‘prehistoric times’ in most of the alcohol units in this country, may I be permitted to mention just one example: the regular weekend seminars for GPs held at St Bernard’s Hospital’s addiction units in the 1960s and 1970s.

This letter is in no way a criticism of Professor McAvoy’s very significant work and important paper, only a plea to be very cautious in naming even approximately the period when work on a certain problem had started — in itself often a very difficult undertaking.

REFERENCES

REPLY

TRAINING GENERAL PRACTITIONERS: RESPONSE
BRIAN R. McAVOY

Department of Primary Health Care, School of Health Sciences, University of Newcastle upon Tyne, Newcastle upon Tyne NE2 4HH, UK

I am grateful to Dr Glatt for adding an important historical perspective to my paper. I would also fully acknowledge his observation on the difficulty of attempting to define when work on a certain problem started. By limiting my review to my professional lifespan, I clearly omitted much important earlier work as described by Dr Glatt in his letter.

ACCELERATED METABOLISM OF ETHANOL IN PATIENTS WITH BURN INJURY
A. W. JONES*1, H. J. ZDOLSEK2, F. SJÖBERG3 and B. LISANDER4

1Department of Forensic Toxicology, 2Burns Intensive Care Unit, Department of Hand and Plastic Surgery and 3Department of Anesthesiology, University Hospital, 581 85 Linköping, Sweden

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The impact of pathological states on the rate of ethanol clearance from the body is not easy to find in the scientific literature. In a recent review article, the influence of burn injury on the clinical pharmacokinetics of various drugs and medication was covered, but the disposition and fate of ethanol in the body was not considered (Jaehde and Sörget, 1995). This gap in knowledge is
unfortunate considering that heavy drinkers and alcoholics are over-represented in accidents within the home, at work, and on the roads. Trauma patients suffering from burn injuries admitted to intensive care units are sometimes under the influence of alcohol (Fuller, 1995).

We obtained approval from the ethical committee at the University Hospital in Linköping to administer a small dose of ethanol (30–40 g) to patients suffering from burns caused mainly by flames and covering 15–70% of total body surface area. Among other things, we wanted to investigate the disposition and metabolism of ethanol in these trauma patients. Their blood alcohol concentrations at the start of the study were zero. Within 24 h after suffering the burns, the patients (seven men and one woman) received ethanol (10% v/v in glucose) by constant rate intravenous infusion for 60 min. The mean age of the patients was 40 years (SD 12) and their mean body weight was 77.4 kg (SD 11) and none of them was known to be dependent on alcohol. Samples of arterial blood were obtained through an indwelling catheter at intervals of 15–30 min for 4 h and plasma was obtained by centrifugation. The concentrations of ethanol in plasma were determined by headspace gas chromatography and this method has a coefficient of variation of <1% (Jones and Schuberth, 1989).

The rate of ethanol metabolism (g/h) was calculated by dividing the dose (g) administered by the time required for the blood alcohol concentration to decrease to <5 mg/dl (1 mmol/l) (Jones, 1984). This method of obtaining the elimination rate of alcohol was endorsed by Von Wartburg (1989) and has the advantage that accurate curve-fitting to the pseudolinear elimination phase is not necessary. Moreover, only a few blood samples are required on the terminal end of the concentration–time profile to apply the dose/time₀ method of calculating the rate of alcohol elimination (Jones, 1984). Using this procedure, the mean rate of ethanol combustion in patients with burn injury was 11.5 g/h (SD 3.2) with a span of 7.5–17.1 g/h. This rate of disposal was considerably faster than a mean elimination rate of 5.7 g/h (SD 0.94) and a span of 4.2–7.2 g/h observed in nine healthy subjects (all male) who served as controls (mean age 25 years, body weight 76 kg) and received a similar dose of ethanol (0.30 g/kg) in glucose also by intravenous infusion. This twofold increase in the rate of ethanol elimination in patients with severe burns was statistically highly significant (P < 0.001).

Approximately 95–98% of the dose of ethanol administered is oxidized in the liver by alcohol dehydrogenase (ADH) and the end-products of metabolism are carbon dioxide and water (Lieber, 1991). The ADH pathway of ethanol metabolism is tightly linked to oxidative metabolic processes in general (Bernstein et al., 1975; Israel et al., 1975). Shortly after suffering major burn injury, a hypermetabolic state develops and the hepatic oxygen consumption (basal metabolic and energy consumption by the liver) increases enormously (Demling, 1985; Burdge et al., 1986). This enhanced activity of metabolic processes at the level of the mitochondrial respiratory chain in burn patients seemingly boosts the oxidation of ethanol as well as that of other substrates such as glucose (Burdge et al., 1986; Crow and Hardman, 1989; Bonate, 1990).

The association between heavy drinking and trauma, including major burn injury, is well documented, e.g. smoking in bed after a drinking spree or serious injuries from alcohol-related traffic accidents (Fuller, 1995). When investigating the cause of road traffic accidents, a person’s blood alcohol concentration is an important consideration because 80 mg/dl (17.4 mmol/l) in the UK and 20 mg/dl (4.3 mmol/l) in Sweden are equated with legal intoxication and unfitness to drive. This raises the question of whether pathophysiological conditions associated with trauma, such as major burn injury, need to be considered when calculating the dose of alcohol ingested from a measured BAC. This question often arises in medicolegal casework during investigations of road traffic accidents caused by drunk drivers. This study establishes that patients with burn injury eliminate alcohol much faster than healthy control subjects, and this finding might need consideration whenever retrograde extrapolation of a person’s blood alcohol concentration is contemplated for forensic purposes.

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