1976. At about the same time she became pregnant and in December the same year she gave birth to a normal girl weighing 2.94 g. At the time of delivery the mother was still HBsAg-positive and had HBeAg as well as DNA-polymerase in her serum. The cord blood was HBsAg negative and negative also for HBeAg and DNA-polymerase. The newborn child was given 3 ml high-titred HBIG (Kabi) (anti-HBs about 1/300 000 by passive haemagglutination) immediately after delivery. The same dosage was repeated one, three, and six months after birth. A further prophylactic dose was planned at nine months after birth but at that time the mother turned HBsAg negative (18 months after onset of symptoms) so that no more injections were given.

Today, about 18 months after birth, the girl is still HBsAg-negative and she has no anti-HBs in her serum. Her liver function tests are, as previously, normal.

Our conclusion after previously having experienced three failures with single prophylactic injections of HBIG to three children of HBsAg-positive renal dialysis mothers is that repeated administration of HBIG in high dosage may be of value for babies of highly contagious mothers.

STEN IWARSON
GUNNAR NORKRANS

University Department of
Infectious Diseases,
Östra Sjukhuset,
Göteborg, Sweden

Interaction of digoxin with antacid constituents

SIR,—The use of activated dimethicone as a constituent of proprietary antacid preparations has increased dramatically in recent years. Dimethicone has already caused drug absorption problems with the oral anticoagulant warfarin,¹ giving rise to decreased bioavailability of the drug. The absorption of digoxin has been shown to be dramatically affected by various antacid constituents.²⁻⁴ It was therefore thought important to determine the effects, if any, of dimethicone on the absorption of digoxin in relation to other antacid constituents. This work was carried out using an in-vitro experimental model of drug interaction in the gut.⁵ This model involves absorption across a physiological membrane and has been shown to correlate well with the in-vivo situation.⁵ The cumulative absorption of digoxin (0.25 mg) was followed alone and while in combination with therapeutic quantities of antacid constituents. Digoxin in all cases was measured using radioimmunoassay.

The results shown in the table indicate that activated dimethicone does not significantly affect the absorption of digoxin. This was subsequently confirmed by an in-vivo study in healthy volunteers in the department,

which indicated that the digoxin pharmacokinetic parameters did not vary in the presence of dimethicone. Other antacid constituents investigated, using the present in-vitro technique, indicated decreased percentage digoxin absorption values comparable to those reported in the literature.

In conclusion, although dimethicone did not affect the absorption of digoxin, it is clear from these results and from other reports²⁻⁴ that antacid constituents will affect digoxin's bioavailability. This is especially so in the case of magnesium trisilicate, which, in the present study, decreased the absorption of digoxin by 99.5%. We therefore suggest that patients stabilised on digoxin should be made fully aware of this interaction as many of the implicated antacid constituents are included in freely available "over the counter" antacid preparations.

JAMES C MCELNAY
D W G HARRON
P F D'ARCY
M R G EAGLE

Department of Pharmacy,
Queen's University,
Belfast

- ¹ Talbot, J M, and Meade, B W, *Lancet*, 1971, **1**, 1292.
- ² Khalil, S A H, *Journal of Pharmacy and Pharmacology*, 1974, **26**, 961.
- ³ Van der Vijgh, W J F, Fast, J H, and Lunde, J E, *Drug Intelligence and Clinical Pharmacy*, 1976, **10**, 680.
- ⁴ Brown, D D, and Juhl, R P, *New England Journal of Medicine*, 1976, **295**, 1034.
- ⁵ D'Arcy, P F, Muhyiddin, H A, and McElnay, J C, *Journal of Pharmacy and Pharmacology*, 1976, **28**, 33P.

Misuse of pressurised nebulisers

SIR,—We have been concerned about the difficulties many of our patients appear to have in using pressurised aerosols containing bronchodilators or steroids and would like to report a small survey we have performed to evaluate the extent of this problem.

We investigated 53 consecutive outpatients using bronchodilators by pressurised aerosol and found that some 25% were using an undoubtedly incorrect technique. These patients were on average older (mean age 58 years) than those using their inhalers correctly (mean age 40 years). There were many different faults in usage, but these all seemed to result from a basic inability to synchronise the activation of the nebuliser with inspiration. In fact 15% of the patients found this completely impossible even while under supervision. It is also worth noting that three patients from the "incorrect" group and 10 from the "correct" group could not remember receiving instruction in the use of their inhaler.

The patients whose technique we managed to correct did show evidence of an improved therapeutic response in terms of forced expiratory volume in the first second (average increase of 0.5 l above the value obtained when incorrect technique was employed). There was, however, no dramatic fall in frequency of usage apart from one patient who virtually stopped using her bronchodilator nebuliser (we think this was probably explained by the coincidental correction in the use of her beclomethasone inhaler).

The figures we report are considerably worse than those of Patterson and Crompton,¹ who found 8% of their patients with an incorrect and 6% with a doubtful technique. We would suggest that incorrect use of pressurised nebulisers is probably much higher in many populations than is realised

and that even after instruction many older patients are incapable of using these devices correctly.

J E EARIS
ALAN BERNSTEIN

Department of Thoracic Medicine,
Hope Hospital,
Salford, Greater Manchester

- ¹ Patterson, I C, and Crompton, G K, *British Medical Journal*, 1976, **1**, 76.

Sodium cromoglycate in intrinsic asthma

SIR,—The place of sodium cromoglycate (SCG) in the management of allergic and exercise asthma is now well established. SCG has been shown to stabilise mast cell membrane and prevent chemical mediator release in the type I allergic reaction. This effect may be mediated by SCG's ability to inhibit cyclic phosphodiesterase¹ and to interfere with Ca^{++} ion transport across the mast cell membrane, which is essential for the activation of the reaction.²

The mechanism involved in the pathogenesis of intrinsic asthma is unknown and the evidence for any local or generalised immunological involvement as seen in extrinsic asthma is lacking. It is, therefore, not surprising to find SCG ineffective in the treatment of intrinsic asthma as reported by Dr K B Saunders and others (6 May, p 1184). Further, the questions their study set out to answer still remain unanswered and the improvement observed in three patients could well have been due to the placebo effect of SCG or the variability of the disease process itself. SCG does have a transient irritant effect in some patients³ but rarely requires the treatment to be discontinued. It would have been of interest if the authors had studied the patients who developed irritant bronchoconstriction by monitoring their peak expiratory flow rate over a period of time to determine the duration and the degree of irritant bronchospasm caused by SCG.

K R PATEL

Department of Respiratory Medicine,
Western Infirmary,
Glasgow

- ¹ Roy, A C, and Warren, B T, *Biochemical Pharmacology*, 1974, **23**, 917.
- ² Foreman, J C, and Garland, L G, *British Medical Journal*, 1976, **1**, 820.
- ³ Patel, K R, Kerr, J W, and Wade, I M, *Clinical Allergy*, 1971, **1**, 199.

Medical Act 1978: a new anxiety for overseas doctors?

SIR,—I represent the BMA's Hospital Junior Staffs Committee on the General Medical Council's working party which is studying the implementation of the new Medical Act. The HJSC discussed the Act at its meeting on 30 May. Members were worried about the proposals for limited registration as they foresee these creating the same anomalies that have beset temporary registration under the old regulations.

To begin with there will be a large pool of doctors who will have "unlimited limited registration" and, of course, newcomers will be worse off with a five-year limit on their registration. This will hinder most of the doctors who intend to make a career in this country. Admittedly, there will be an avenue for doctors to progress from limited to full registration, but the criteria for this progress

Effects of antacid constituents on digoxin absorption in vitro

Antacid constituent	Percentage decreased absorption of digoxin
Aqueous emulsion of activated dimethicone (35%)	3.4
Aluminium hydroxide gel, BP	11.4
Bismuth carbonate	15.2
Light magnesium carbonate	15.3
Magnesium trisilicate	99.5