It integrates with a computerized reference database system. We offer it for readers to use and await future comments with interest.

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Teaching and training of emergencies on 'newly dead' patients: national experiences from Norway

Sir

The need for medical personnel to be capable of performing certain emergency medical procedures e.g. endotracheal intubation, intravascular access, defibrillation and tracheotomy, is without question.

However, it is difficult to learn all of these techniques on patients and mannequins. 'Newly dead' patients represent an alternative where it is possible to perform the procedures under nearly realistic circumstances. However, this educational approach may raise ethical objections from staff unfamiliar with the educational objectives involved (Orlowski *et al.*, 1988; Brattebø & Seim, 1988; Nelson, 1990).

We conducted a survey of the 10 largest Norwegian hospitals and only two had adopted this practice. The rest had considered it, but decided against the practice, not necessarily after a thorough analysis of the ethical questions involved. Six hospitals utilized cadavers for other instructional purposes.

In Norway the routine use of 'newly dead' patients for instruction in emergency medical procedures is not common. However, the practice represents a unique opportunity for training and, in our opinion, is ethically justifiable, provided there is respect and compassion for the deceased. The personnel involved must be made aware of the purpose and ethics through careful discussion (Nelson, 1990).

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Glucagon in the management of deliberate self-poisoning with propranolol

Sir

The Logical treatment for an overdose of a β -adrenoceptor blocker would appear to be a β -agonist. However, in practice, enormous doses would be required (Critchley & Ungar, 1989) and more conventional amounts of β -agonists therefore, do not restore the heart rate or blood pressure (BP) (Weinstein, 1984). Atropine or ventricular pacing may be tried, but in severe overdosage the myocardium becomes refractory to both pharmacological and electrical stimulation (Editorial B. M. J., 1978). Glucagon has been proposed as a more satisfactory treatment (Kosinski *et al.*, 1971; Illingworth 1980; Weinstein, 1984) and its use in the management of an act of self-poisoning with propranolol is illustrated here.

The patient was a 55-year-old hypertensive female who was being treated with amitriptyline and propranolol. She took an excess of both of these drugs although the timing and magnitude of the overdose could not be established. On arrival in hospital she was comatose with a sinus bradycardia of 58 beats/min, BP 165/80 mmHg and a respiratory rate of 10 per min. Her blood sugar (Reflolux) was 6.5 mmol/l. She did not have a stomach washout, presumably because of her comatose state. She was given intravenous naloxone (0.4 mg), atropine (0.6 mg) and glucagon (1 mg), with no significant improvement.

On transfer to the High Dependency Unit her pulse rate was 52 beats/min and BP 75 mmHg systolic. Her arterial blood gases (on unrestricted oxygen) were pO_2 29.72 kPa and pCO_2 5.84 kPa. Her serum urea and electrolyte concentrations were normal. Plasma propranolol concentration was not estimated. The 12 lead ECG met electrical criteria for left ventricular hypertrophy, but there was no disorder of conduction.

She was treated with intravenous fluids (1l N saline in 12h) and with larger doses of glucagon. There was a response within 2 min to an intravenous bolus dose of 4 mg of glucagon with a maximum rise in heart rate to 60 beats/min and in BP to 134/84 mmHg. After 10 min the pressor effect of the injection began to wane and an infusion was prepared with 10 mg glucagon in 100 ml of 5% dextrose infused at 20 ml. The pulse rate and BP were recorded every 30–60 min.

After 5 h with a pulse rate of approximately 60 beats/min and a BP never below 120/60 mmHG the glucagon infusion was stopped. At no stage were any arrhythmias or ectopic beats witnessed. With glucagon, the blood glucose concentration rose to