uncommon and in any case would not alter our conclusions regarding the rectum and sigmoid.

Silman *et al* found six patients who had adenomas greater than 10 mm in diameter among 108 who had noticed rectal bleeding,⁵ and Farrands and Hardcastle found one patient with a sigmoid adenoma among 35 with rectal bleeding.¹⁶ We found four patients with adenomas among 48 who had noticed rectal bleeding but, unlike the two previous reports, we subjected those 263 subjects who had not noticed rectal bleeding to sigmoidoscopy and found seven with polyps and one with cancer. Forty four subjects would have undergone unnecessary sigmoidoscopy with its attendant cost and anxiety if a policy of investigation on the basis of rectal bleeding had been implemented.

Although flexible sigmoidoscopy was performed in this study by experienced endoscopists, in a minority of patients the instrument was not inserted beyond 40 cm. This difficulty has been reported previously¹⁷ and might have been overcome by better bowel preparation. In patients rather than volunteers it is our practice to repeat sigmoidoscopy after more thorough bowel preparation. Our findings, however, are certainly valid for rigid sigmoidoscopy, for which the average length of insertion has been reported as 19.5 cm.¹⁸

We examined rectal bleeding in apparently healthy men who had not consulted a doctor for this symptom. The results confirm that rectal bleeding is not rare in healthy men and caution against any public education programme designed to use it as a "screening test" for colorectal cancer. A patient presenting to a doctor with this symptom is, however, a different problem. We are currently examining whether full investigation of such patients will result in the diagnosis of significant numbers of colorectal neoplasms. The recent onset of rectal bleeding or the concomitant presence of other symptoms may select those people who go to their doctor and, together with other factors as yet undefined, may allow the doctor to select patients for colorectal investigation.

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SHORT REPORTS

Adverse cardiovascular response to oral trimeprazine in children

Trimeprazine has been widely used both as a premedicant and as a general paediatric sedative. Recently we became aware of four cases in which the use of trimeprazine as a paediatric premedicant was accompanied by disturbing cardiorespiratory instability.

Case reports

The table summarises all four cases. Case 1 is reported in detail below.

CASE 1

A 5 year old girl weighing 17.7 kg required tonsillectomy. She had been admitted to hospital one month previously, but operation had been deferred as she was suffering from an infection of the upper respiratory tract. The only other relevant history was that she tended to faint when subjected to stress such as the sight of blood. On admission on this occasion no abnormality was found. Her blood pressure was 100/60 mm Hg.

She was given, as premedication, trimeprazine 48 mg (Vallergan Forte 8 ml) orally. Thirty minutes later she complained of severe abdominal pain and requested a bed pan. She then complained of dizziness and was placed horizontally with her head tilted slightly downwards. A further 30 minutes later she again complained of severe abdominal pain and suddenly became unconscious and apnoeic. Oxygen was given through a face mask and the

Summary of four cases of severe hypotension with bradycardia after oral administration of trimeprazine

Case No	Age (years) and sex	Body weight (kg)	Dose of trimeprazine (mg)	Proposed operation	Medical history	Previous trimeprazine administration	After administration of trimeprazine				
							Patient's complaint	Physical signs	Time since trimeprazine administration	Treatment	Outcome
1	5 F	17.7	48	Tonsillectomy	Upper respiratory tract infection	No	Dizziness, abdominal pain	Hypotension (pulses impalpable); bradycardia (52/min); apnoea	30-60 min	Oxygen; adrenaline by subcutaneous infusion; sodium bicarbonate; hydrocortisone	Drowsy for 12 hours; operation abandoned
2	8 F	25.5	90	Myringotomy	Upper respiratory tract infection	Yes (possible hypotension)		Sudden unconsciousness; "Soon after" convulsions; cyanosis; bradycardia; hypotension	Atropine 0.3 mg by intravenous infusion		Drowsy for 6 hours; second episode of bradycardia some hours later lasting 5 minutes with spontaneous recovery
3	7 F	21.5	90	Tonsillectomy	Fever (settled overnight)	No	Abdominal pain	Vomiting; bradycardia; hypotension	60 min	None	Operation deferred; operation 2 days later without incident
4	5 M	16	48	Plastic surgery	Recurrent chest infection	Yes (no recorded complication)		Central cyanosis; bradycardia (50/min)	80 min	None	Recovered within 2 hours

chest easily inflated. Her heart rate was 52 beats/minute (apex); there were no palpable pulses and no response to stimuli. She was given adrenaline 1:1000 0.5 ml by subcutaneous infusion, 5% sodium bicarbonate 10 ml, and hydrocortisone 100 mg by intravenous injection. An intravenous infusion of plasma protein fraction was started. Within a few minutes peripheral pulses were palpable and systolic blood pressure was 50 mm Hg. She remained drowsy for about 12 hours but apart from having fever (37.4°C) made an uncomplicated recovery. Her parents declined further attempts at surgery and she was discharged.

Comment

The children received doses from 2.7 mg/kg to 4.2 mg/kg, which corresponded with the suggested range for preanaesthetic sedation. The preparation was returned to the manufacturer, but no abnormality was found. Possibly the suggested dose range of 2 to 4 mg/kg is too high. Vivori recommended 1.5 mg/kg to a maximum of 30 mg,¹ but as he combined this dose with morphine a precise comparison is difficult.

In two instances the episodes were probably partially self induced by posture. Other predisposing factors are not immediately obvious, although certain factors warrant consideration. Firstly, one of the two children who had previously received trimeprazine may have exhibited postoperative hypotension on that occasion too. Secondly, all the children had suffered recent infection of the upper respiratory tract or fever. Finally, two children had complained of abdominal pain immediately before the cardiovascular depression became apparent.

The Committee on the Safety of Medicines has recorded seven additional cases in which trimeprazine might have been implicated (personal communication), and there have been previous suggestions that the drug may occasionally produce serious cardiovascular complications. During the course of a study of premedication with phenothiazines trimeprazine was prematurely withdrawn as a result of two cases (out of 10 administrations) of "frightening" hypotension occurring before induction of anaesthesia.² Trimiglozzi and Ciaula reported one case in which hypotensive symptoms were such that treatment of pruritus by trimeprazine had to be stopped.³

The manufacturers have no record of hypotensive complications other than those quoted in this report.

1 Vivori E. In: Rees GJ, Gray TC. *Paediatric anaesthesia: trends in current practice*. London: Butterworths, 1981:91-100.

2 Dundee JW, Moore J. The effects of premedication with phenothiazine derivatives on the course of methohexital anaesthesia. *Br J Anaesth* 1961;33:382-96.

3 Trimiglozzi G, Ciaula V. Clinical results on the antipruritic action of new phenothiazine derivative. *Minerva Dermatologica* 1959;34:712-15.

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Cardiopulmonary resuscitation skills of preregistration house officers

The importance of cardiopulmonary resuscitation is well established, yet studies in the United States found that only 29% of junior doctors could satisfactorily compress and ventilate a manikin—that is, perform basic life support.¹ A recent study from Addenbrookes Hospital showed that only 8% of junior doctors could manage a cardiopulmonary arrest adequately.² We report on the resuscitative skills of newly appointed house officers at a London teaching hospital.

Subjects, methods, and results

All house officers were tested during their first month as qualified doctors. On their first morning they were issued with a 10 question, five stem multiple choice paper, to be completed in 10 minutes. The practical evaluation was in two parts: part 1 tested their ability to perform adequate external cardiac massage and mouth to mouth ventilation using a standard Ambu training manikin. Special attention was paid to the force of compression, rate and rhythm, and whether external cardiac massage was done dangerously—that is, off centre or too low. The technique and effectiveness of mouth to mouth ventilation were also assessed. House officers failed if they were unable

adequately to ventilate the manikin or produce adequate chest compression, as recorded by the attached standard monitors, or if their technique was dangerous. Part 2 tested the house officer's skill at intubating an intubation model, connecting the endotracheal tube via standard connections to a standard anaesthetic machine, and delivering enough 100% oxygen. Special attention was paid to whether the doctor checked the laryngoscope and bulb, protected the teeth during intubation, and whether the tube was lubricated and the balloon satisfactorily inflated. The time taken to intubate and ventilate was recorded.

The multiple choice paper tested the management of ventricular fibrillation, asystole, and electromechanical dissociation. Priorities when conducting advanced cardiac life support were also assessed, as were skills in the management of complications arising during cardiopulmonary resuscitation—for example, pneumothorax.

The table summarises the results. Of the 29 doctors tested, 16 (55%) adequately and safely compressed and ventilated the manikin. Of the 19 who failed the intubation section, 18 could not intubate and 12, even if they had intubated, could not have delivered a supply of oxygen—either because they could not connect the tube to the anaesthetic machine or because they could not turn on the oxygen supply.

Results of multiple choice paper and practical examination

Topic	Percentage performing to an acceptable standard (60% or over in multiple choice paper)
<i>Multiple choice paper</i>	
General topics relating to cardiopulmonary resuscitation (two questions)*	73
Ventilation (four questions)	23
Management of ventricular fibrillation (one question)	33
Management of asystole (one question)	10
Management of electromechanical dissociation (one question)	47
Management of multiple ventricular extrasystoles (one question)	40
<i>Practical examination</i>	
External cardiac massage and mouth to mouth ventilation	55
Intubation and ventilation	34†
Checking of laryngoscope before use	10
Lubrication of endotracheal tube	10
Inflation of balloon	26

*Each question had five stems.

†Time taken varied from one minute 30 seconds to three minutes 20 seconds. Average time taken was one minute 55 seconds. No doctor intubated in less than 35 seconds (upper limit of time allowed for pass grade in advanced cardiac life support examination in the United States).

Comment

Despite 55% of these new doctors adequately and safely being able to perform external cardiac massage and mouth to mouth ventilation on a manikin, none would have achieved a pass in the advanced cardiac life support examination in the United States.³

Only 40% of patients dying from coronary artery disease survive long enough to reach hospital.⁴ This has been one of the main arguments for "bystander cardiopulmonary resuscitation" and the necessary large scale training programmes to make this possible.⁵ Patients may need to be resuscitated in the accident and emergency department, theatres, or on a general ward, where house officers may be the first on the scene. Only one third of doctors were able to intubate and ventilate and of the remainder, most could not intubate; and, even if they had, they still could not have established a sufficient supply of oxygen. The average intubation time of one minute 55 seconds suggests that perhaps junior doctors should use mask ventilation instead.

Cardiopulmonary resuscitation requires largely practical skills. Apart from the examination of patients, practical skills are neither taught nor, more important, examined in final medical examinations. Learning cardiopulmonary resuscitation by experience on patients will cost lives. Many doctors, having failed abysmally in a particular part of the study, were particularly receptive when given a practical tutorial.

The skills are not complex: many house officers failed because they were literally unable to turn on the oxygen supply of a standard anaesthetic machine. Others, lacking this vital skill, even attempted to unscrew the oxygen bottle from the trolley, which could have resulted in the cylinder falling from the machine.

Responsibility for this state of affairs must rest with the teaching authorities. Hitherto they have assumed that these skills are acquired by "osmosis," rather than by any organised programme of instruction. Our own college has made instruction in resuscitation compulsory at