mean weight loss in the Norwegian study was significantly higher in the cimetidine group than in the placebo group (difference=7.3 kg, $p<0.001$, 95% confidence interval 6.4 to 8.2). A weight reducing effect of 7.3 kg over eight weeks is much greater than that achieved with any other previously tested anti-obesity drug.

The second aim of our study was to evaluate the success of the blinding and its relation to weight loss. The double blind, randomised trial is considered the gold standard for therapeutic research.⁶⁻⁸ In contrast to recommendations,^{9,10} however, the effectiveness of the blinding has only rarely been tested and related to outcome. In a placebo controlled study of the effect of vitamin C on the common cold, an apparent dose related effect on the duration of symptoms was noted, but the effect disappeared when subjects identifying the vitamin by its special taste were excluded.¹¹ Our results indicate that unblinding may be particularly likely to invalidate studies with a crossover design. Unfortunately, crossover studies are often insufficiently analysed.^{12,13} Since data from the two periods are often pooled, unrecognised bias caused by unblinding during the second period can make the whole study unreliable.

In a study of fenfluramine and placebo in obesity 71% of the patients correctly identified their treatment, most because of side effects of the active drug.¹⁴ Fenfluramine was effective, and there was a tendency towards a greater weight loss in patients taking fenfluramine who gave correct guesses. However, this tendency was also noted for patients receiving placebo. Unfortunately, the number of patients was too small to allow a meaningful comparison of fenfluramine and placebo in this respect, since only three patients taking the drug and three taking placebo guessed wrongly.

We found cimetidine to be inefficient as a treatment for obesity. Despite the fact that the drug had only few side effects, our patients guessed their therapy (cimetidine or placebo) correctly more often than expected by chance, especially during the second period of treat-

ment. Our patients were seen in groups and were able to exchange experiences and suggestions. Therefore, patients obtaining a better than average weight loss would be expected to believe they were being given cimetidine. However, this was not so. The "placebo effect," calculated as the difference in mean weight loss between those who believed they were receiving active treatment and those who believed they were receiving placebo, was insignificant, being only 1.2 kg (-0.8 kg to 3.2 kg). In accordance with international manuscript guidelines¹⁰ we suggest that the success of the blinding be routinely included as an important variable in controlled clinical trials.

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Modified paediatric resuscitation chart

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Abstract

Objectives—To determine whether a modified paediatric resuscitation reference chart improves the speed and accuracy of calculation of doses of drugs in simulated paediatric cardiopulmonary arrests when compared with the chart devised by Oakley.

Design—A prospective study in which a series of randomly assigned questions was used to compare the performance of doctors using the two charts.

Setting—Accident and emergency departments in two hospitals.

Subjects—31 senior house officers.

Main outcome measures—The speed and accuracy of calculation of volumes of drugs to be administered.

Results—The modified chart significantly increased the accuracy of the calculations (62/62 v 43/62, $p<0.05$), the speed of correct calculations (6.8 s v 36.0 s, $p<0.0001$), and the number of calculations that were completed (62/62 v 50/62, $p<0.001$).

Conclusions—The modified paediatric resuscitation chart should supersede the existing chart.

Introduction

Paediatric cardiopulmonary arrest is an uncommon occurrence which any doctor may be called on to manage. Oakley reported problems in treating this condition and identified two main factors contributing to delays in making decisions.¹ The first is the wide variation in the weights of children of different ages, making selection of the correct dose of drug difficult when a child's weight or age is unknown. The second is the infrequency of cardiopulmonary arrest in children, resulting in a tendency for doctors to forget recommended doses. Oakley asked 34 junior doctors of various grades and specialties about their knowledge of doses of drugs, sizes of endotracheal tubes, and defibrillation energy for children of various ages and weights. The results of his study led him to devise a reference chart, which was produced by the *BMJ* (figure). Although this chart is widely used, no studies evaluating its use have been published.

We have observed the use of the chart in several accident and emergency departments and found the following problems: some of the doses of drugs on the

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chart are expressed as weights so that a calculation must be performed to derive the volume to be administered; there is no clear demarcation between the columns containing information on doses, causing delay when the patient's age, length, or weight lies between two columns while a decision is made on which dose to use; and doses of drugs and sizes of endotracheal tubes for a given weight range are contained in two different parts of the chart. To overcome these problems we modified the chart as follows: we expressed doses of drugs as millilitres of solution to be administered for a given weight range, thus eliminating the need for calculations; we placed all doses of drugs, sizes of endotracheal tubes, and defibrillation energies relevant to a particular weight range in the same vertical column; and we placed the maximum weight, age, and length of child near the top of the column of suitable doses of drugs (figure). We report the results of our comparison of the speed and accuracy of calculating the volumes of drugs with each chart.

Subjects and methods

We tested 31 senior house officers in accident and emergency departments. We prepared a series of eight questions asking for the volume of a given drug to be administered to a child of a given age, weight, or length. We asked each doctor to answer two questions with Oakley's chart and two with the modified chart, making a total of 62 questions for each chart (questions were assigned randomly). The volume to be administered and the time taken to derive the volume were recorded. We compared each answer with the recommended volume to determine the accuracy of calculation.

Results

The table shows that all questions were answered correctly with the modified chart and that 43 of the 62 questions were answered correctly with Oakley's chart ($p < 0.05$, $\chi^2 = 7.02$, $df = 1$). A calculation was completed for all questions with the modified chart but for only 50 questions with Oakley's chart ($p < 0.001$, $\chi^2 = 11.16$, $df = 1$). The doctors took about five and a half times longer to calculate the correct answer with Oakley's chart (mean = 36.0 s) than with the modified chart (mean = 6.8 s, $p < 0.0001$ (Wilcoxon's rank sum test)). In five of the seven cases in which the volume was calculated inaccurately and in eight of the 12 cases in which no volume was calculated the drug in question was lignocaine: the doctors usually failed to realise that a 1% solution of lignocaine contains lignocaine 10 mg/ml.

Discussion

During cardiopulmonary resuscitation drugs are administered parenterally, which means that the correct dose of the drug must be drawn up into a

Accuracy and speed of calculations of volumes of drugs with Oakley's paediatric resuscitation chart and modified chart

	Oakley's chart	Modified chart
No of calculations (n=62):		
Correct	43	62
Incorrect	7	
Not done	12	
Mean (range) time for calculation of correct volume(s)	36.1 (12-92)	6.6 (4-12)
Mean (range) factor of overestimation of drug dose	x5.7 (x2-x12.5)	

Standard reference chart

Modified reference chart

Standard reference chart designed by Oakley and modified reference chart

syringe. Unless the dose is expressed in terms of the volume of solution to be administered a calculation must be performed to convert the dose into a volume. This process is time consuming, and likely to result in errors. Such errors are made more likely by the stress of treating a cardiac arrest and the infrequency of cardiac arrest in children. It therefore seems reasonable to record the required volumes of drugs to be administered in such circumstances in a reference chart. This study has shown that such a chart signifi-

cantly improves the speed and accuracy of determining the volumes of drugs to be administered when compared with the standard chart now in use.

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Treatment of acute mountain sickness by simulated descent: a randomised controlled trial

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Abstract

Objective—To evaluate the therapeutic efficacy of a portable hyperbaric chamber for treatment of acute mountain sickness.

Design—Controlled randomised trial over two mountaineering seasons.

Setting—High altitude research laboratory at 4559 m above sea level.

Subjects—64 climbers with acute mountain sickness randomly allocated to different treatments.

Interventions—One hour of treatment in the hyperbaric chamber at a pressure of 193 mbar or 20 mbar as control or bed rest.

Main outcome measures—Symptoms of acute mountain sickness before, immediately after, and 12 hours after treatment. Permitted intake of analgesic and antiemetic drugs in the follow up period.

Results—Treatment with 193 mbar caused greater relief of symptoms than did control treatment or bed rest. During the 12 hour follow up period intake of analgesics was similar (58-80% of subjects in each group). Symptom scores had improved in all subjects after 12 hours with no significant differences between groups.

Conclusions—One hour of treatment with 193 mbar in a portable hyperbaric chamber, corresponding to a descent of 2250 m, leads to a short term improvement in symptoms of acute mountain sickness but has no beneficial long term effects attributable to pressurisation.

Introduction

About half the Himalayan trekkers examined at an altitude of 4240 m suffered from headache and at least one additional symptom of acute mountain sickness such as nausea, insomnia, or dizziness.¹ Likewise the prevalence of acute mountain sickness in the Alps was found to be 9%, 18%, 27%, and 51% at 2800 m, 3050 m, 3600 m, and 4500 m respectively.² Severe acute mountain sickness with general malaise, headache resistant to analgesics, and vomiting may progress to cerebral and pulmonary oedema.^{3,4} The incidence of these life threatening conditions was estimated to be 2-3% in a trekking population in Nepal at 4240 m¹ and 10% after rapid ascent to 4559 m in the Alps.⁵

As a common pathogenesis of high altitude illnesses has been suggested^{3,4} early successful treatment of acute mountain sickness may prevent the development of high altitude cerebral oedema or pulmonary oedema. Rapid descent, however, the treatment of choice, is often not possible while trekking for topographical reasons or while mountaineering because of adverse weather conditions or difficult terrain. Bottled oxygen

is rarely carried by trekking or mountaineering parties as it is heavy and a limited supply provides only short term relief for a seriously ill mountaineer. Recently fabric hyperbaric chambers have been developed which allow the exposure of a person to 140-220 mbar above the ambient pressure by operating foot or hand driven pumps, thus simulating a descent of 1500-2500 m depending on the altitude and the type of bag used.⁶ The whole equipment, including the pump, weighs 4-6 kg and represents an inexhaustible device for rapid improvement of oxygenation.

Rapid relief of symptoms of acute mountain sickness and high altitude pulmonary oedema and cerebral oedema has been reported by investigators using these portable hyperbaric chambers.⁷⁻⁹ These uncontrolled studies, however, do not allow the assessment of long term effects of such treatment because they included only a small number of subjects and additional treatment such as supplemental oxygen, descent, or dexamethasone was used. We investigated the effect of 1 hour of hyperbaric treatment during a 12 hour follow up in 35 subjects with acute mountain sickness at 4559 m randomly allocated to pressurisation of 193 or 23 mbar. Because of unexpected beneficial effects with the control treatment (23 mbar) the next year another 36 subjects were randomly allocated to a treatment with 193 mbar, 16 mbar, or bed rest.

Subjects and methods

LOCATION AND SUBJECTS

The study was carried out at the high altitude research laboratory in the Capanna "Regina Margherita" located at an altitude of 4559 m (barometric pressure 430-440 mm Hg) in the Alps Valais. Subjects were recruited from mountaineers who happened to spend a night in this alpine hut while climbing in the mountains of the Monte Rosa. Mountaineers who had ascended by foot and who stayed at 4559 m for at least 12 hours after treatment were eligible to enter the trial if they suffered from headache and one or more additional symptoms of acute mountain sickness. Subjects with clinical signs of high altitude pulmonary oedema (dyspnoea at rest, respiration rate >25/min, and rales) and those who had taken acetazolamide or nifedipine during ascent were excluded from the study. Subjects were informed that different pressures were being tested, and throughout the study they were not aware of what pressures had been applied.

STUDY DESIGN

After informed consent subjects were randomly assigned to the various treatments. Randomisation was performed in blocks of six (in 1990) and nine (in 1991). When subjects agreed to participate in the trial the

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