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obtained when comparing the Hudson and Vickers air cn-[3].

 REQUIRED MACH NUMBER OF JETS

Figure 3.


NITROUS OXIDE ADMINISTRATION VIA OXYGEN THERAPY DEVICES

SIR,—I was interested to read the paper by Joshi, Ooi and Soni [1] on nitrous oxide administration using oxygen therapy devices. Of particular interest to me were the widely divergent results obtained when comparing the Hudson and Vickers air entrainment masks, using a flow of 50% oxygen–50% nitrous oxide (e.g. 40% mask—nitrous oxide: Hudson 6.5%, Ventimask 13.6%). I was concerned also to see that, in calculating a theoretical concentration of nitrous oxide, these workers chose to assume that altering the composition of the primary flow does not affect the entrainment ratio.

I have previously studied the Accurox air entrainment masks using a primary flow of Entonox [2]. I think it is worth noting that the nominal 35% and 50% blenders from this manufacturer provided concentrations of oxygen and nitrous oxide similar to those reported by Joshi for the Hudson 40% and Ventimask 40%, respectively.

The function of air entrainment oxygen masks is best explained by the process of constant-pressure jet mixing [3]. The equations governing B, the mass entrainment ratio (entrained mass flow/jet mass flow), are complex. However, for a given volume flow, a jet of 50% oxygen–50% nitrous oxide has a mass that is 18.75% greater than that of a jet of oxygen. Thus, even if B is unaffected by the change in primary flow, an increase in volume of entrained air of 18.75% would be predicted. My own data demonstrated an increase in entrained flow of 13% (range 5–27%) in Accurox masks. I do not accept the assumption, therefore, that the altering the composition of the primary flow does not affect the entrainment ratio.

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3. Scaccia R. Air entrainment masks: jet mixing is how they work; The Bernoulli and Venturi principles are how they don’t. Respiratory Care 1979; 24: 928–931.

SIR,—Thank you for the opportunity to reply to Dr Goddard’s letter. It is unfortunate that Dr Goddard has not read our article in detail. Our study was not a theoretical analysis of the performance characteristics of simple and fixed-performance masks. The values for the likely inspired concentrations of nitrous oxide and oxygen were not derived from mathematical predictions, but were actually measured from the “trachea” of a lung model. We agree that an assessment of the nitrous oxide–oxygen delivery characteristics of such masks requires more complex models as used by Dorrington [1] in his analysis of gas transfer in oxygen delivery systems. However, for the purpose of only checking on the general validity of our experimental results, we avoided this mathematical maze and felt that a simplified formula was adequate. Indeed, the observed variation among the various fixed-performance masks, when looking at the differences between predicted and measured concentrations of the gases in the study, strongly suggest that there were no systematic differences arising from the simplified mathematical treatment applied.

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MORTALITY IN ITU PATIENTS RECEIVING NEUROMUSCULAR BLOCKING DRUGS

SIR,—Some comment has been made on the fact that no mortality figures were quoted in one of our recent papers on the use of constant infusions of atracurium in critically ill patients in an intensive care unit [1].

In this series of 15 patients, seven of whom suffered combined renal and respiratory failure and eight of whom had respiratory failure but normal renal function, the ITU mortality in the former group was 43%, and in the latter group, 25%. These mortality figures are comparable to those reported in previously published studies [2–4].

We hope that those who have made much of this omission will, in future, quote these figures directly. However, it is our belief that comparison of data on mortality, gained retrospectively, is futile because of the disparity between patients. Some form of disease classification is necessary if it is to be effective [5]. However, we would support consideration of a controlled,
prospective study of mortality in the critically ill who are receiving infusions of neuromuscular blocking drugs.

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E. S. SHEARER
University of Liverpool


FACE MASKS AND SPINAL ANAESTHESIA

Sirs,—The wearing of face masks while performing spinal anaesthesia remains a controversial issue. Although there is little clear evidence for the transmission of infection to the patient during this procedure, we are reminded occasionally of the potential for serious morbidity [1]. It is therefore mandatory to consider the most appropriate way in which we can “pay attention to detail” [2] and attempt to prevent adverse events.

Philips and colleagues [3] have presented evidence to support the contention that masks are effective in reducing bacterial infection, and consequently recommended their use. However, we believe their conclusions to be flawed in one respect. They propose that an anaesthetist should remain completely silent within a specific context. However, I believe it is unrealistic to propose that an anaesthetist should remain completely silent during the course of providing a spinal or extradural block, and I would even suggest that it would be bad practice to do so. I am amazed at the contractions that some wish to go through to avoid the taking of a simple, straightforward precaution. What motives are involved I cannot understand.

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PAIN ON I.V. INJECTION OF METOCLOPRAMIDE

Sirs,—I was interested to read the report of Ganta and Fee [1] in which they described the use of metoclopramide 5 mg in an attempt to abate the pain produced by injection of anaesthesia by propofol. Their work suggests that the drug is as effective for this purpose as the more commonly used lignocaine.

I have been using metoclopramide as an antiemetic for more than 2 yr. I give every patient I anaesthetize an i.v. bolus of metoclopramide 5 mg into a small vein on the dorsum of the hand, before any other product [2]. I continue to use metoclopramide, but now administer the drug when the patient is asleep.

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