required. This means work for doctors and others and illustrates the vital but often neglected role of doctors in accident prevention.

Though such evidence may be necessary to define the problem in young teenagers, we believe that there is enough knowledge of young children's lack of capability in traffic and sufficient concern over the problem to warrant action being taken. We think that those responsible for organising this sport should show a greater sense of responsibility and, as Dr Mason suggests, should raise the lower age limit for participation from 6 to 13 or 14. If they did this parents would recognise the reasons and would not start their children riding outside official races until they are old enough to ride officially. After all, if officials allow 6 year olds to ride why should ordinary parents do otherwise? If the organising bodies do not take this action voluntarily then legislation may be necessary. We have no doubt that the Parliamentary Advisory Council on Transport safety will be watching this closely.

R H JACKSON
H BADERMAN

Child Accident Prevention Trust,
London W1N 3AL

A W CRAFT

Department of Child Health,
Royal Victoria Infirmary,
Newcastle upon Tyne NE1 4LP

1 Committee on Child Health Services. *Fit for the future*. London: HMSO, 1976;**1**:43. (Court report.)
2 Stilwell JH. Motorcycling scrambling injuries in boys. *Br Med J* 1978;i:758.
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SIR,—Mr M A Mason (6 October, p 854) does well to bring to public notice the high incidence of accidents in children under the age of 16 riding motorcycles. There is, however, another aspect of this current craze—namely, pollution of the atmosphere by noise. Admittedly it has never killed anyone, but I believe that distress is caused to many people, often in rural districts, because of this iniquitous pastime.

The underage rider off the public highway is interested in two things only—speed and noise—and the more of either that he can produce the higher he stands among his peers. The parents of such children generally seem to be indifferent both to the dangers to the child and to the annoyance of anyone in earshot. I believe that the time has come for legislation to raise the lower age limit, restrict the use of these vehicles to certain limited supervised centres, and define upper limits of permissible noise.

F R GOODWIN

Sutton Coldfield,
West Midlands B76 9CN

SIR,—The unbridled enthusiasm with which the BBC latched on to this subject is matched only by that of the *BMJ* for publishing a leading article on a subject about which few data are available. Quite correctly the original article by Mr K Sherman and Dr J MacKinnon appeared as a short report—correct because apart from describing a new group of accidents little else of interest emerged.

Why then boost this interesting but otherwise unremarkable set of figures with a leading article that concludes with a demand for legislation. How about demanding some statistically valid information? For example: what percentage of young motorcyclists are involved in these accidents; was the age range evenly spread; and, perhaps more relevant, how does the accident rate compare with other juvenile risk activities such as horseriding, cycling, rollerskating, skateboarding, skiing, climbing trees, and even football?

Dr M A Mason's leading article was not even logically argued—for if, indeed, many more children ride motorcycles unsupervised than in recognised clubs then the fact that the unsupervised group provided only half of the accident cases would seem to support the outlawing of supervised riding, and not the reverse—clearly a nonsensical conclusion, or is it?

Finally, BMX bike injuries seem to present a problem of apparently greater magnitude than motorcycle injuries. Can we now expect a call to have these machines outlawed?

K J J TAYTON

Chepstow,
Gwent NP6 6HW

How common are risk factors among young patients suffering heart attacks?

SIR,—Professor M F Oliver (7 July, p 50) states that young patients with acute myocardial infarction are commonly found "without any measurable risk factors." Over 16 years since 1966 we have seen 795 successive men under 60 who have had their first myocardial infarction at this hospital and have survived 28 days. The table records their distribution into different categories of risk, using standard criteria to identify the three primary risk factors—hyperlipidaemia (serum cholesterol greater than 6·29 mmol/l, (240 mg/100 ml), hypertension, and cigarette smoking. Only 1·8% of these patients were without any of the three primary risk factors, and the proportion did not alter significantly in the younger age groups.

Can Professor Oliver provide data to support his contention that young patients with myocardial infarction are often encountered with no measurable risk factors?

RISTEARD MULCAHY
RONÁN CONROY

Cardiac Department,
St Vincents Hospital,
Dublin 4

**Professor Oliver replies below.—ED, *BMJ*.

SIR,—Professor Mulcahy and Dr Conroy provide valuable information confirming the frequency of risk factors in survivors of first myocardial infarction: indeed, this may be the first time that the documentation has been so thorough. But their apportioning of the presence or absence of risk factors depends, of course, on the cut off points used. These appear to be arbitrary. If those for hypertension are near the median and smokers of 1-10 cigarettes daily are included we may not be so far apart.

My contention that it is not uncommon to find young patients with myocardial infarction at more normal levels of risk than those used for the analysis by Professor Mulcahy and Dr Conroy is based on an earlier international study of risk factors in nine countries.[1]

Of 240 men aged 40 or less who survived acute myocardial infarction 53% had serum cholesterol concentrations less than 6·22 mmol/l (240 mg/100 ml) and only a quarter had cholesterol concentrations of 7·25 mmol/l (280 mg/100 ml) or more; 79% had systolic blood pressures equal to or less than 158 mm Hg, and 74% had diastolic blood pressures less than 90 mm Hg; 30% either did not smoke or smoked less than 15 cigarettes a day; 81% were not obese (Quetelet's index >0·28); 92% did not have a diabetic glucose tolerance response; and 83% did not have hyperuricaemia (>0·5 mmol/l (8·4 mg/100 ml)).

This international study also showed that the prevalence of risk factors varies considerably between countries, and it should not be assumed that the high frequency found in survivors of myocardial infarction in Ireland applies equally in all communities.

M F OLIVER

Cardiovascular Research Unit,
Edinburgh EH8 9XF

1 Dolder MA, Oliver MF. Myocardial infarction in young men. Study of risk factors in nine countries. *Br Heart J* 1975;**37**:493-503.

Neuroleptic malignant syndrome induced by a single injection of haloperidol

SIR,—Dr E Szabadi has reviewed the causes and treatment of the neuroleptic malignant syndrome (12 May, p 1399). We describe a case of the neuroleptic malignant syndrome following a single injection of haloperidol and a therapeutic trial with dantrolene sodium.

A 58 year old woman was admitted to our ward because of ileus. She had undergone two laparotomies 10 months and four months previously for adenocarcinoma of the endometrium and had received postoperative radiotherapy. On admission she was well orientated and cooperative, and we decided to operate on her. The night before the operation the patient received a single intramuscular injection of 5 mg haloperidol as a tranquilliser.

The following morning she was confused and developed sinus tachycardia (140/min) and hyperthermia (above 40°C) accompanied by muscle rigidity and opisthotonos. A lumbar puncture was performed and showed normal sterile cerebrospinal fluid. Serological tests, blood and urine cultures, and a tuberculin test were negative.

Distribution of 795 men who survived their first myocardial infarctions under 60 years into different risk categories

Age	No risk factors No (%)	One risk factor No (%)	Two risk factors No (%)	Three risk factors No (%)	Number of cases No (%)
Under 60	14 (1·8)	260 (32·7)	403 (50·7)	118 (14·8)	795 (100)
Under 50	5 (1·5)	101 (30·7)	174 (52·9)	49 (14·9)	329 (41·4)
Under 45	2 (1·4)	42 (28·4)	81 (54·7)	23 (15·5)	148 (18·6)
Under 40		25 (37·9)	30 (45·5)	11 (16·7)	66 (8·3)
Under 35		7 (43·8)	6 (37·5)	3 (18·8)	16 (2·0)

Correlation between age and number of positive risk factors: Tau = 0·038, n = 795, NS.

An electroencephalogram showed diffuse slow waves consistent with encephalopathy. Computed tomography of the brain was normal. The next day she developed oculogyric spasm and severe extrapyramidal signs consisting of mask face, hypertonia, and cogwheel rigidity. With the above findings and after no response to massive antibiotic treatment, the diagnosis of neuroleptic malignant syndrome was suggested.

Treatment with oral dantrolene sodium was begun, starting with 25 mg daily and increasing gradually to 150 mg daily. Within six days the temperature decreased from 40°C to 32·7°C. The treatment, however, had to be withdrawn by the seventh day because of hepatotoxicity expressed by a rise in serum aspartate aminotransferase activity to 120 U/l (normal < 40) and alkaline phosphatase to 119 U/l (normal < 90). Her temperature rose again to 39°C, while liver function tests returned to normal. Supportive treatment, including antipyretics, cooling blankets, and intravenous fluids, was continued. Because of progressive cachexia and prolonged malnourishment peripheral parenteral hyperalimentation was also started. The symptoms subsided slowly and fever decreased gradually until complete recovery from the syndrome was observed after 29 days. Thereafter, laparotomy was performed showing diffuse spread of the carcinoma.

The neuroleptic malignant syndrome is believed to be an idiosyncratic reaction to haloperidol.[1] This is supported in the present case by the relatively low single dose (5 mg) of the drug and by the fact that the patient had previously been exposed to higher doses of the drug with no noticeable side effects. Moreover, most reports have described psychiatric patients with a prolonged history of phenothiazine treatment, and a possible cumulative effect, while our patient had no such record.

F KONIKOFF
A KURITZKY
Y JERUSHALMI
E THEODOR

Departments of Internal Medicine E and Neurology,
Tel Aviv University Sackler School of Medicine,
Petah Tiqva 49100,
Israel

1 Smego RA, Durack DT. The neuroleptic malignant syndrome. *Arch Intern Med* 1982;**142**:1183-5.

Somatostatin in controlling iatrogenic haemorrhage of the upper gastrointestinal tract

SIR,—The results of treating upper gastrointestinal haemorrhage with somatostatin reported by Professor Francesco Coraggio and others (28 July, p 224) seem impressive. There are, however, a number of peculiarities about their paper which cast doubt on the validity of their conclusions.

The control group of patients, who received no drug treatment, contained 10 patients with ulcers and 10 with haemorrhagic gastritis. Seven of the patients with ulcers failed to stop bleeding, and all had emergency surgery. This is a very high proportion when compared to the 30-40% operation rate reported by others. Even more surprising is that four of the 10 patients with haemorrhagic gastritis continued to bleed and five had emergency operations. In this hospital no patient has been operated on for haemorrhagic gastritis for at least five years. Gastritis associated with the use of non-steroidal anti-inflammatory drugs almost invariably resolves as soon as the drugs are stopped.

This calls into question the definitions of "active bleeding" and "recurrent bleeding" in the Naples trial and also the criteria for surgical intervention. It is implied that all the patients were actively bleeding on entry to the study and that all continued to do so for at least eight hours. This is hard to believe. Most patients stop bleeding quickly, and experience at this hospital shows that only about 11% of patients with bleeding peptic ulcers are still bleeding at the time of first endoscopy. It would take us at least four years to collect 29 patients with actively bleeding ulcers. The Naples group appear to have relied on the appearance of gastric aspirates rather than on endoscopic findings and overall clinical assessment to diagnose continuing haemorrhage. This is a notoriously unreliable technique, and the tube may itself provoke minor bleeding.

The policy which could lead to 35% of patients with haemorrhagic gastritis having emergency operations can only be the subject of wonder. Perhaps minor bleeding provoked by the nasogastric tube was interpreted as persistent or recurrent haemorrhage and an indication for surgery. In any conventional treatment regimen, however, the expected operation rate in the control group would have been no more than four out of 20 (40% of the patients with ulcers and none with gastritis). This is not significantly different from the results for somatostatin.

A rebleeding and operation rate of one in nine (11%) for peptic ulcers treated with somatostatin is undoubtedly better than would be expected with conventional treatment, and it is likely that somatostatin will be valuable in treating bleeding peptic ulcers. The trial from Naples is, however, far from proving this, and a much larger trial with a better defined protocol is needed.

STEPHEN BREARLEY

Department of Surgery,
University of Birmingham,
General Hospital,
Birmingham B4 6NH

*** Professor Coraggio replies below.—ED, *BMJ*.

SIR,—All of our patients had been taking for a long time and at high doses non-steroidal anti-inflammatory drugs and corticosteroids; they all had connective tissue diseases or neoplasms. They were also immunodepressed and had serious coagulation disorders. Thus gastroduodenal haemorrhages in these patients were particularly serious.

Not ignoring the distinction between "active bleeding" and "recurrent bleeding," we thought it better to include only patients with serious active bleeding in order to evaluate in the best possible way the efficacy of the drugs. (We know very well that haemorrhages often stop spontaneously or with only the insertion of a nasogastric tube.) Therefore all the patients presenting with light or intermittent haemorrhages were excluded. In collaboration with the surgeons and considering the seriousness of the primary diseases of our patients, we thought it best to operate on all those with acute haemorrhagic gastritis who were resistant to medical treatment. (Perhaps in Mr Brearley's survey there are patients with a different pathology.)

Finally, we want to point out two important aspects of our research which are clearly described in our paper but which have escaped Mr Brearley's attention: the diagnosis of haemorrhage and its stopping was always made by endoscopy before and after treatment. Furthermore, even though the success that we obtained with somatostatin is comparable to that obtained with conventional treatment, Mr Brearley does not grasp that treatment with somatostatin led to a clear reduction of the bleeding time without any rebleeding after the drug was stopped.

FRANCESCO CORAGGIO

University of Naples,
80131 Naples,
Italy

Appropriate technology: care of the newborn

SIR,—Newborn babies in developing countries, like handicapped children, suffer because there are few specialists who take an interest in adapting modern methods of care to low resources. Dr G J Ebrahim mentions some of the techniques which have been successfully adapted, such as intermittent positive pressure ventilation in asphyxia, the use of the icterometer in assessing jaundice, and the application of phototherapy in a rural hospital. Though it is true that emphasis on the principles of safe delivery, prevention of infection, and early treatment of jaundice is more likely to pay off in terms of lives saved than intensive care techniques, it would be valuable to hear experience of the use of continuous positive airways pressure, of breast milk banks, and of low birthweight baby follow up studies from developing countries. There are many large neonatal units in these countries which need this information to decide how best to deploy their scarce resources. Follow up information is particularly vital. How common are retrolental fibroplasia and hyperbilirubinaemia induced deafness? What nutritional deficiencies are occurring in low birthweight babies? How many of these babies are growth or developmentally retarded?

A small follow up study of a cohort of low birthweight babies in Zimbabwe illustrated the difficulties as well as the value of obtaining such data (Waterston T, Nhembe M, unpublished data). Of 93 babies born in one month in Harare hospital and weighing less than 2000 g, 61 (66%) survived to go home, but only 29 (48% of babies discharged alive) were followed up for over three months. Mean weight gain per month for the wholly breast fed babies in this group was 864 g per month, a very similar figure to the 850 g quoted by Mata for babies of birth weight under 2000 g between 1 and 3 months old.[1] His findings showed that after the first month of life birth weight had very little effect on the increment in weight. A third of the babies were, however, on complementary formula feeds at the time of discharge, and this figure had risen to 57% by 4 months of age. Their weights were beginning to fall off at this age, and infections were becoming more common.

This study is continuing but illustrates the need for appropriate audit of newborn care in developing countries—a point insufficiently emphasised by Dr Ebrahim.

TONY WATERSTON

Department of Child Health,
Ninewells Hospital,
Dundee DD1 9SY

1 Mata LJ. The children of Santa Maria Cauque. *Cambridge*, Mass: MIT Press, 1978:352.

SIR,—Dr G J Ebrahim (6 October, p 899) points out that perinatal mortality in the developing world can be reduced by improving basic prenatal care and by upgrading the skills of traditional birth attendants. In India, where