

interviews, which had been placed in the "lonely hearts" or "contact" sections of local and national newspapers and magazines. The sample came from 107 of the 120 postal districts in Britain. The age range was 16-73 (mean 33.3 (SD 8.7) years), with only 148 coming from social and occupational classes 1 and 2.

Preliminary analysis shows that 644 reported having had sexual contact with men and women in the year before the interview (mean three male and three female partners). Six hundred and ninety nine reported vaginal intercourse with a female partner, of whom 502 had not used a condom. Four hundred and sixty one reported anal intercourse with male partners, of whom 135 had not used a condom. Five hundred and thirty one reported that they currently had a regular female partner, but only 233 currently had a regular male partner. One hundred and seventy four had both female and male regular partners. Almost all the respondents' regular male partners (203) knew of their sexual activity with women, but only a third (144) of their regular female partners knew of their homosexual activities.

Considerable potential exists for the spread of sexually transmitted diseases within and by this population, with its high numbers of partners and appreciable rate of unprotected anal and vaginal intercourse. The extent to which HIV will spread within this population depends crucially on the patterns of sexual contact with existing core groups (especially gay men).

P WEATHERBURN
Research fellow
D REID
Research associate

Sigma Research,
School of Health Studies,
University of Portsmouth,
London SW2 1BZ

- 1 Winklestein W, Wiley JA, Padian N, Levy J. Potential for transmission of AIDS-associated retrovirus from bisexual men in San Francisco to their female sexual contacts. *JAMA* 1986;256:901.
- 2 Davies PM, Hickson FCI, Weatherburn P, Hunt AJ. *Gay men, sex and AIDS*. London: Falmer Press, 1993.
- 3 Boulton M, Hart G, Fitzpatrick R. The sexual behaviour of bisexual men in relation to HIV transmission. *AIDS Care* 1992;4:165-75.
- 4 Johnson AM, Wadsworth J, Wellings K, Field J. *Sexual attitudes and lifestyles*. London: Blackwell Scientific, 1994.

Protecting children in cars from tobacco smoke

EDITOR,—There is considerable evidence that exposure of children to environmental tobacco smoke is associated with an increase in morbidity in those with pre-existing asthma and an increase in the number of new cases of asthma.^{1,2} In Australia, accreditation standards for child care now require that day care centres be smoke free,³ and nearly one in four smokers report voluntarily smoking only outdoors at home.⁴

While the state regulates many aspects of the domestic environment (for example, electrical and building standards, smoke detectors), there are few precedents for the regulation of personal behaviours such as smoking in homes (although sexual and violent behaviour towards children is outlawed in many countries). When adults smoke in the enclosed, confined interiors of cars small children who are passengers are involuntarily exposed to often prolonged, concentrated volumes of environmental tobacco smoke. To our knowledge, public support for the regulation of smoking in cars has never been measured in any country.

To test community support for the banning of smoking in cars while children are passengers we conducted a random household survey, using standard methods for assessing the prevalence of smoking and attitudes.⁵ The survey was conducted throughout New South Wales, Australia, in

November 1994. Altogether 1461 people aged 18 and over were asked "Do you think it should be illegal to smoke in cars when travelling with children?" A total of 1048 (72%) respondents agreed, 396 (27%) disagreed, and 17 (1%) were undecided. There were no significant differences in responses by age, educational attainment, country of birth, city or rural residence, or employment status. A higher proportion of women (556/735 (75.6%)) than men (492/709 (69.4%)) agreed with the proposal ($\chi^2=6.78$, $df=1$, $P=0.009$). Two hundred and sixty two (63%) of 413 current smokers also agreed.

The compulsory fitting and use of car seat belts and infant restraints are obvious precedents in terms of the state interceding in the private conduct of parents in cars. Use of seat belts is enforced in Australia by opportunistic police checks and penalties, with the result that compliance with the law concerning seat belts is consistently higher than 95%. The strong community support shown in our survey for a ban on smoking in cars carrying children could give rise to similar compliance.

ADRIAN BAUMAN
Associate professor
X C CHEN
Research assistant

Department of Community Medicine,
University of New South Wales,
Kensington,
Australia

SIMON CHAPMAN
Associate professor

Department of Public Health and Community Medicine,
University of Sydney,
Westmead Hospital,
Westmead,
New South Wales 2145,
Australia

- 1 Charlton A. Children and passive smoking—a review. *J Family Pract* 1994;38:267-77.
- 2 US Environmental Protection Agency. *Respiratory health effects of passive smoking: lung cancer and other disorders*. Washington, DC: Office of Health and Environmental Assessment, Office of Research and Development, US Environmental Protection Agency, 1992. (EPA/600/6-90/006F.)
- 3 Jorm L, Blyth F, Chapman S, Reynolds C. Smoking in child family day care homes—policies and practice in New South Wales. *Med J Aust* 1993;159:518-22.
- 4 Mullins R, Borland R, Hill D. *Smoking knowledge, attitudes and behaviour in Victoria: results from the 1990 and 1991 household surveys*. QE6 1990-91. Melbourne: Victorian Smoking and Health Project, 1993.
- 5 Hill DJ, White VM, Gray NJ. Measures of tobacco smoking in Australia 1974-1986 by means of a standard method. *Med J Aust* 1988;149:10-2.

Obtaining insurance should not depend on mechanism of diagnosis tests

EDITOR,—In his editorial on the parliamentary report *Human Genetics: the Science and its Consequences*, Peter Harper reports sharp criticism of insurance companies, but fails to clarify the grounds for complaint.¹ He seems to imply that insurance companies should not take into consideration the results of genetic tests that are known to the patient. It is difficult to discern the reasoning for differentiating between genetic and conventional predictive tests.

Take two examples, Huntington's disease and polycystic disease of the kidneys. These are both autosomal dominant conditions with a major impact on mortality in middle age. For Huntington's disease a highly accurate genetic test exists; for polycystic disease, ultrasound scanning can be almost as accurate, and in time, presumably, a genetic test will become available for this condition too. If access to results of genetic tests is forbidden, proposers with Huntington's disease and a positive result will obtain insurance while proposers with polycystic disease and positive findings on ultrasound scanning will not (until a genetic test is developed for the condition). This is

inequitable. The ability to obtain insurance should not depend merely on the mechanism of a diagnostic test.

Without medical underwriting voluntary insurance schemes will not survive because of the adverse selection they will face. Therefore, one accepts compulsory schemes, such as national insurance, or allows the principle of underwriting, or both, as currently in Britain.

W T HAMILTON*
General practitioner

Exeter EX1 1SR

A P ROUND
Senior registrar in public health medicine

Exeter EX1 1PQ

G H HALL*
Retired consultant physician

Exeter EX2 4NT

- 1 Harper P. Science and Technology Committee's report on genetics. *BMJ* 1995;311:275-6. (29 July.)
- 2 Brackenridge RDC, Elder WJ. *Medical selection of life risks*. 3rd ed. New York: Stockton Press, 1992.

*W T Hamilton is a part time medical officer for the Medical Sickness Group, an insurance company. G H Hall is the chief medical officer for the same company.

Effects of helicopter service on survival after trauma

Service is part of a continuum of care

EDITOR,—In their study of the London helicopter emergency medical service J P Nicholls and colleagues failed to take account of a fundamental aspect concerning the potential added value of such a service.¹ In patients with trauma medical interventions before admission to hospital are generally most effective in reducing mortality and improving long term outcome if a continuum of medical care from resuscitation to definitive surgery and rehabilitation is in place.² The London helicopter emergency medical service together with related developments at the Royal London Hospital enables such care to be provided because of the integration of the various elements into a trauma system. Patients transported by other means or to other accident and emergency departments in London (even if by helicopter) are not necessarily assured of this continuum of care because of the following factors: long transfer times without adequate continuing resuscitation, inappropriate triage to hospitals that lack relevant medical specialties on site, and an inexperienced and inadequate medical response that fails to provide timely, definitive care when the patients arrive at those hospitals.^{3,4}

Despite matching for severity of injury, the authors' study may have underestimated the effectiveness of the London helicopter emergency medical service by including, in the helicopter cohort, patients taken to other hospitals and by simultaneously reducing the proportion recruited from the Royal London Hospital. A more valid study would have compared patients taken by the London helicopter emergency medical service to the Royal London Hospital with a matched control group taken by land based paramedics to either the same or another major accident and emergency department.

Although the trial involving American helicopter services that the authors cite failed to show significantly improved outcomes in patients, this should be interpreted in the context of the superior land based ambulance services and hospital based trauma services in the United States compared with London.⁵ In such settings it is not surprising that helicopter based services provide little added benefit.

Until the standard care provided for patients

with trauma is improved, the London helicopter emergency medical service may be a relatively equitable and efficient means of providing high quality care for such patients in Greater London. The issue of the effectiveness of the helicopter compared with other modes of transport has not been adequately assessed.

PETER GREENGROSS
Registrar in public health medicine

Brent and Harrow Health Authority,
Harrow,
Middlesex HA1 3EX

- 1 Nicholl JP, Brazier JE, Snooks HA. Effects of London helicopter emergency service on survival after trauma. *BMJ* 1995;311:217-22. (22 July.)
- 2 Earlham R. Trauma centres. *Br J Surg* 1993;80:1227-8.
- 3 Report on the London ambulance service by the review team chaired by William Wells to the secretary of state for health following the death of Nasima Begum. London: South Thames Regional Health Authority, 1995.
- 4 Commission on the Provision of Surgical Services. Report of the working party on the management of patients with major injuries. London: Royal College of Surgeons of England, 1988.
- 5 Trunkey D. Trauma systems: a model for regionalised care. *JAMA* 1995;273:421-2.

**Peter Greengross was a registrar in the London helicopter emergency medical service in 1993-4.

Design of study predisposed to type II error

EDITOR,—In their paper on the London helicopter emergency medical service J P Nicholls and colleagues, of the University of Sheffield's medical care research unit, mention several concerns¹ that we expressed at the time that the unit published its first report on the service to the Department of Health in 1994.²

The helicopter is part of an integrated specialist trauma service, and it is unfortunate that the unit looked at parts of the service separately. In doing so the unit isolated the effect of the helicopter from the effect of the hospital. We believe that patients require a continuum of care, such that separation of these effects is misleading. The study group contained only a third of all the patients treated by the London helicopter emergency medical service and transferred to the base hospital, and the unit's original report admitted that "Plainly these numbers are too small to establish whether there is any benefit associated with the [Royal London Hospital] in terms of survival."² This is borne out by the wide confidence intervals in Nicholls and colleagues' paper. It would be expected that any benefit from the entire system would be best seen in those patients taken to hospitals with a full range of trauma facilities when the nearest hospital does not have appropriate facilities for definitive care. To reduce the size of this group by ignoring two thirds of the patients brought to the Royal London Hospital predisposes to a type II error.

Other important factors include the fact that the study period included the greater part of our learning curve; the evident mismatching in terms of anatomical severity of injury and physiological response of the patients attended by the London helicopter emergency medical service and those attended by the London ambulance service; and the delay in publication, which means that the data are two years out of date. Even when these factors are allowed for, the paper points to benefits of the system, which are clearly stated in the abstract. The service is considerably busier now than it was at the time that the data were collected and is more accurately targeted. We are therefore encouraged that the study shows that 13 patients a year are alive who would have died if treated by the conventional system. This figure is now almost certainly higher. The fact that the confidence intervals include zero merely reflects the low power of the study.

We are also encouraged that in its original report the medical care research unit found that the helicopter emergency medical service "usually triages patients appropriately," although this comment is not in Nicholl and colleagues' paper.

This finding agrees with our analysis of our triage decisions.³ These results support the continuation of this important initiative to redress the poor outcome of trauma care in Britain.⁴

A D W MACLEAN

Clinical director

Helicopter emergency medical service

T J COATS

Neurosurgical research fellow

Royal London Hospital,
London E1 1BB

C J C KIRK

Data manager

Helicopter emergency medical service

F W CROSS

Consultant surgeon

- 1 Nicholl JP, Brazier JE, Snooks HA. Effects of London helicopter emergency medical service on survival after trauma. *BMJ* 1995;311:217-22. (22 July.)
- 2 Nicholl JP, Brazier JE, Snooks HA, Lees-Mlanga S. The costs and effectiveness of the London helicopter emergency medical service. Final report to the DoH, July 1994. Sheffield: Medical Care Research Unit, University of Sheffield, 1994.
- 3 Coats TJ, Wilson AW, Cross FW. On-scene medical decision making and overtriage. *Br J Surg* 1993;80:1291-3.
- 4 Anderson ID, Woodford M, de Dombal FT, Irving M. Retrospective study of 1000 deaths from injury in England and Wales. *BMJ* 1988;296:1305-8.

Helicopters do not care for patients

EDITOR,—J P Nicholl and colleagues' paper shows some of the misconceptions that develop when an expensive piece of machinery such as a helicopter is associated with medical care.¹ A helicopter is a machine that flies through the air and can be used to transport personnel and equipment. It does not deliver medical care: the personnel and equipment do. The misconception that the helicopter delivers care pervades the literature on this subject, and this paper is no exception. To state that "we have assessed the effectiveness of the London helicopter" is wrong. The sole purpose of the helicopter personnel and equipment is to provide rapid resuscitation in the field.² What the authors should have assessed is the effectiveness of rapid resuscitation in major trauma. The difference between the treatment groups was the difference in personnel and equipment provided to achieve resuscitation.

Unfortunately, the paper does not define resuscitation and therefore fails to establish the number of patients requiring resuscitation. No criteria are given for "achieving resuscitation," so the number of patients who were resuscitated was not measured. Presumably some patients in the helicopter group did not need resuscitating since they were taken to hospital by ambulance and were not accompanied by a member of the helicopter personnel. Hence one would not expect a difference in outcome between this group and the ambulance group, but the design of the study meant that such patients were regarded as being in the helicopter group.

Since 26.9% of patients in the helicopter group had a triage revised trauma score of ≤ 9 , compared with 16.6% in the ambulance group, probably more patients in the helicopter group required resuscitation because their trauma was more severe. Consequently, the two cohorts were not comparable in terms of patients who were severely injured, as the authors acknowledge. The number of patients who were resuscitated and recovered to have an acceptable quality of life was not measured. Quality of life is a crucial issue but was not addressed by this study.

My conclusions are that the design of the study was flawed and that the crucial outcome measurements were not made. The paper raises more questions than it answers and is certainly not a comprehensive assessment of the London helicopter emergency medical service.

JOHN N WILDEN

Locum consultant neurosurgeon

Department of Neurosurgery,
Pinderfields Hospital,
Wakefield WF1 4DG

- 1 Nicholl JP, Brazier JE, Snooks HA. Effects of London helicopter emergency medical service on survival after trauma. *BMJ* 1995;311:217-22. (22 July.)

2 Wilden JN. Rapid resuscitation in severe head injury. *Lancet* 1993;342:1378.

Miscalculation exaggerated benefits

EDITOR,—J P Nicholl and colleagues estimate that an extra 13 patients with major trauma (injury severity score ≥ 16) could survive each year if attended by the helicopter emergency medical service in Greater London.¹ This seems to be based on an arithmetical error. For patients with an injury severity score of 16-24 the relative risk of death associated with being attended by the helicopter versus an ambulance is reported as 0.8 but should be 1.1 on the basis of the figures in table IV. This in turn represents a relative risk of death of 1.2 for all patients with a score of ≥ 16 and 1.1 for patients with a score of 16-40.

The suggestion that extra lives could be saved is not supported by the data presented. With only one preventable death being averted by the presence of a doctor in 337 attendances by the helicopter and a higher relative risk of death for both minor and major trauma, there is no justification for sending up medical crew on helicopter missions in Greater London.

GARRY J WILKES
Staff specialist

Emergency Department,
Royal Brisbane Hospital,
Herston 4029,
Queensland,
Australia

- 1 Nicholl JP, Brazier JE, Snooks HA. Effects of London helicopter emergency medical service on survival after trauma. *BMJ* 1995;311:217-22. (22 July.)

Dramatic management of trauma may be counter productive

EDITOR,—J P Nicholl and colleagues report that analysis of trauma and injury severity scores showed that 16% more deaths than predicted occurred in patients with trauma attended by helicopter but only 2% more in patients attended by land ambulances crewed by paramedics.¹ On average the helicopter patients arrived in hospital 10-20 minutes later than the ambulance patients. They were managed more intensively at the scene and spent an average of six minutes longer there.

The authors suggest that the comparatively longer time spent at the scene of the incident by helicopter patients may lead to poorer outcomes in some patients. This supports the theory that "scoop and run" is preferable to "stay and play." Is the helicopter patients' more intensive management directly related to the drama engendered by the arrival of the helicopter? Is such drama counter productive?

Over the past decade the management of major trauma in Britain has become increasingly dramatic, with the introduction of paramedics, thoracotomy in the field, helicopters, trauma centres, etc. Despite this, convincing evidence of the advantages of such dramatic approaches is lacking. Yet to question such "progress" has been regarded as Luddite. For example, Purkiss *et al* found that none of 18 patients with trauma survived resuscitative thoracotomy.²

The dramatic approach to trauma does not necessarily equate with improved survival: there may even be an inverse relation between the two. Those interested in the management of major trauma await the overdue conclusions resulting from the Department of Health's survey that compared results in a trauma centre with results in more conventional accident and emergency departments. Could it be that the establishment of a trauma centre does not result in the expected improvement in survival?

I suggest that helicopters and thoracotomy in the field are examples of the emperor's new clothes. The key to the successful management of trauma lies in improved education, training, and super-