

not take place in isolation. Within the framework of the national curriculum substance misuse should be taught in both primary and secondary schools through a wider programme of personal health and social education. The danger is that other demands of the curriculum may mean that personal health and social education is not given the importance that it deserves. If this approach is to be successful then teachers must be well trained and kept up to date. This point is endorsed by the Advisory Council on the Misuse of Drugs.¹⁶

In relation to the need to educate parents any programme should not only give information but should also help them with parenting and communication skills. Family background and parenting styles have been found to predict later adolescent drug misuse.¹³ Some drug prevention teams funded by the Home Office have successfully worked with "parent empowerment" groups. A leaflet published recently by the Department of Health carries the message, "If you don't talk to your child someone else will" and emphasises the role of parents.¹⁷

For some people a religious faith can make a positive contribution to their not starting to take drugs.¹⁸ In addition, many users have found a new quality of life without drugs through their Christian faith.¹⁹

CONCLUSIONS

The results of this study should be interpreted in the light of national and local changes relating to drugs in medicine, law, society, and coverage by the media. From this and other studies, however, it is clear that an increasing proportion of young people are in contact with illicit drugs from their early teens; that a greater variety of drugs are more widely available both socially and geographically; and that young people expect to enjoy the pleasurable effects with minimal harm. If prevention of drug misuse through education is to have a sustained impact then adequate resources of both trained teachers and suitable materials must be available. The health education coordinators should again

be funded centrally if their vital coordinating and training role is to be implemented.

The authors thank D Dervos; D F Goda; K Grice; L Fisher; Dr K Hackett; I Handley; J Hatton, from the Institute for the Study of Drug Dependence; T M Page; A Parkes; E L Price; P Tilstone; and the three participating schools. We thank also the Royal National Institute for the Blind's express reading service for reading on to tape many of the articles referenced.

- 1 Government Statistical Service. *Home Office statistical bulletin*. London: HMSO, 1993. (Issue 15/93.)
- 2 Wright JD. Knowledge and experience of young people regarding drug abuse between 1969 and 1974. *Med Sci Law* 1976;16:252-63.
- 3 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse between 1969 and 1979. *BMJ* 1981;282:793-6.
- 4 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse between 1969 and 1984. *BMJ* 1986;292:179-82.
- 5 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse, 1969-89. *BMJ* 1990;300:99-103.
- 6 Davies OL. *Design and analysis of industrial experiments*. London: Longman, 1978.
- 7 Department of Public Health Sciences. *Trends in deaths associated with the abuse of volatile substances 1971-1991. Report No 6*. London: St George's Hospital Medical School, 1993.
- 8 Balding J. *Young people in 1993*. Exeter: Schools Health Education Unit, University of Exeter, 1994.
- 9 Brown C, Lawton J. *Illicit drug use in Portsmouth and Havant*. London: Policy Studies Institute, 1988.
- 10 Bean PT, Wilkinson CK, Whyne DK, Gigg JA. Knowledge of drugs and consumption of alcohol among Nottingham 15-year-olds. *Health Education Journal* 1988;47:79-81.
- 11 Measham F, Newcombe R, Parker H. The post heroin generation. *Druglink* 1993;8(3):16-7.
- 12 Smith C, Nutbeam D. Adolescent drug use in Wales. *British Journal of Addiction* 1992;87:227-33.
- 13 Swadi H. A longitudinal perspective on adolescent substance abuse. *European Child and Adolescent Psychiatry* 1992;1:156-70.
- 14 Cohen J. Achieving a reduction in drug-related harm through education. In: Heather N, Wodak A, Nadelmann E, O'Hare P, eds. *Psychoactive drugs and harm reduction: from faith to science*. London: Whurr, 1992.
- 15 Fraser A, Gamble L. Reducing drug related harm in young recreational drug users. In: Bennett T, ed. *Drug misuse in local communities*. London: Police Foundation, 1991.
- 16 Advisory Council on the Misuse of Drugs. *Drug education in schools*. London: HMSO, 1993.
- 17 Department of Health. *Drugs and solvents—you and your child*. London: HMSO, 1993.
- 18 Francis LJ, Mullen K. Religiosity and attitudes towards drug use among 13-15 year olds in England. *Addiction* 1993;88:665-72.
- 19 Allen FA, Jekel FJ. *Crack and broken promise*. London: Macmillan, 1991.

(Accepted 4 November 1994)

Arterial versus capillary sampling for analysing blood gas pressures

Khavar Dar, Tim Williams,
Richard Aitken, Kent L Woods,
Susan Fletcher

Department of
Medicine and Clinical
Biochemistry, Kettering
General Hospital
NHS Trust, Kettering
NN16 8UZ

Khavar Dar, *medical
registrar*
Tim Williams,
consultant physician
Richard Aitken, *top
grade biochemist*

Department of
Medicine and
Therapeutics,
University of
Leicester, Leicester
Kent L Woods,
senior lecturer
Susan Fletcher,
research assistant

Correspondence to:
Dr Williams.

BMJ 1995;310:24-5

Arterial puncture is carried out to obtain samples for analysis of blood gas pressures. Although painful¹ and not without hazard,² arterial puncture is done routinely despite reports that similar information about blood gas pressures can be obtained from capillary samples.³ We quantified patients' perception of the discomfort of sampling from radial arteries compared with that of capillary sampling and compared the biochemical data obtained with these two methods.

Methods and results

We recruited 55 patients requiring measurement of blood gas pressures from patients admitted urgently to Kettering General Hospital. The study's protocol was approved by the district's ethics committee, and informed written consent was obtained for the blood sampling. The clinical diagnoses were exacerbation of chronic obstructive airways disease (22 patients),

asthma (10), pneumonia (5), pulmonary oedema (4), pulmonary embolism (4), diabetic ketoacidosis (4), bronchiectasis (3), fibrosing alveolitis (2), hyper-ventilation (1).

We took a capillary and arterial sample in random order from each patient. For capillary samples we rubbed a proprietary rubefacient on the ear lobe and after about three minutes made a stab about 1-2 mm deep with the point of a size 11 scalpel in the fleshy part of the ear lobe. We collected the blood (which had become more like arterial blood because of the rubefacient) in a heparinised capillary tube held horizontally against the puncture site. A small metal rod was placed in each tube, and after both ends had been sealed with plastic plugs the sample was agitated with a magnet. We took arterial samples from the radial artery using a 22 gauge needle. For the first 29 patients no anaesthetic was used. For the next 26, 1% lignocaine was infiltrated over the radial artery before puncture.

As soon as a patient's second blood sample had been taken, the patient completed a simple questionnaire, rating the discomfort associated with each procedure on a scale from 0 ("no pain at all") to 10 ("worst pain imaginable") and stating which of the two techniques he or she preferred. The pain scores were analysed with non-parametric tests.

Blood gas pressures and acid-base state in the arterial samples were compared with those in the capillary samples with the paired *t* test.

	Arterial	Capillary
Without anaesthetic for arterial puncture (n=29):		
Median pain score (interquartile range)	7.0 (5.5 to 8.0)	3.0 (1.5 to 4.0)
Median difference (interquartile range)	5.0 (3.0 to 6.0)	
Significance	P < 0.001	
No of patients preferring either sampling method*	1	25
With anaesthetic for arterial puncture (n=26):		
Median pain score (interquartile range)	2.0 (0 to 3.25)	1.0 (0 to 2.25)
Median difference (interquartile range)	0 (0 to 2.0)	
Significance	P < 0.02	
No of patients preferring either sampling method†	2	12

*Three patients had no preference.
†Twelve patients had no preference.

The table shows the results of the patients' pain scores and preferences of sampling technique. Arterial puncture without local anaesthetic was much more painful than capillary puncture; most patients preferred the capillary technique. Even with local anaesthesia arterial puncture was significantly more painful, with half the patients preferring the capillary technique; only two preferred the arterial technique. Mean differences (arterial minus capillary) were trivial and non-significant for partial pressure of oxygen (0.09 kPa, SD 0.59, P > 0.2) and partial pressure of carbon dioxide (0.01 kPa, 0.3, P > 0.7 and significant but clinically unimportant for acidity (0.007 pH, 0.02, P < 0.01) and standard bicarbonate (0.64 mmol/l, 1.17, P < 0.001).

Comment

Our findings indicate that radial arterial blood sampling is painful, and even with local anaesthesia the procedure causes more pain than sampling from the ear lobe. The pain scores for capillary sampling may have been lower in the patients given local anaesthetic because of a "carry over" effect—that is, patients who did not receive local anaesthetic found the whole process considerably more uncomfortable and marked up the pain scores for capillary sampling as an indirect consequence of this. In addition, a small but definite risk exists of local complications from arterial puncture.² As similar biochemical data are obtained from capillary sampling from the ear lobe this method should be used in routine clinical practice. The method of sampling may be particularly important to patients with recurrent respiratory illness such as asthma. Several studies have shown delay to be an important factor contributing to deaths from asthma.^{4,5} Reluctance to present to hospital because of a previous painful experience could be catastrophic.

We thank Dr James Falconer-Smith for helpful discussion and Mrs Helen James for typing the manuscript.

- 1 Turner JS, Briggs SJ, Springhorn HE, Potgieter PD. Patients' recollection of intensive care unit experience. *Cr Care Med* 1990;18:966-8.
- 2 Mortensen J. Clinical sequelae from arterial needle puncture, cannulation, and incision. *Circulation* 1967;35:1118-23.
- 3 Langlands JHM, Wallace WFM. Small blood samples from ear lobe puncture—a substitute for arterial puncture. *Lancet* 1965;iii:315-7.
- 4 British Thoracic Association. Deaths from asthma in two regions of England. *BMJ* 1982;285:1251-2.
- 5 Johnson AJ, Nunn AJ, Somner AR, Stapleforth DE, Stewart CJ. Circumstances of death from asthma. *BMJ* 1984;288:1870-2.

(Accepted 17 October 1994)

Antiplatelet treatment in elderly people with transient ischaemic attacks or ischaemic strokes

result that was also seen in the European stroke prevention study.² No study has, however, investigated the protective effect of antiplatelet drugs in patients older than 70 or 80. We analysed a subgroup of the 1306 Finnish patients participating in the European stroke prevention study to evaluate the effectiveness of drug treatment in different age groups.

Subjects, methods, and results

The European stroke prevention study investigated whether the combination of 75 mg dipyridamole and 330 mg aspirin three times a day was more effective than placebo in the secondary prevention of stroke or death in patients with previous ischaemic cerebral lesions. It was a randomised, placebo controlled, double blind study with parallel groups. Sixteen centres from six countries participated. The treatment groups showed a 33% decrease in the combined end point (the sum of stroke and death) compared with the placebo group.³ The study design has been described in more detail elsewhere.^{2,3} Of the 2500 patients recruited, 1306 were from a single centre in Kuopio,

Department of Neurology,
University of Kuopio,
University Hospital,
PO Box 1627, SF-70211
Kuopio, Finland
Juhani Sivenius, associate
professor
Paavo J Riekkinen Sr,
professor of neuroscience

Juhani Sivenius, Paavo J Riekkinen Sr, Markku Laakso

Strokes and transient ischaemic attacks become more common with advancing age, and their prognosis becomes worse. Because of the increase in the number of elderly subjects in most Western societies, atherothrombotic cerebrovascular disease is a significant health problem. It is important, therefore, to find effective treatments for both primary and secondary prevention.

The Antiplatelet Trialists' Collaboration found that the reduction in vascular events as an end point in patients with a previous stroke or transient ischaemic attack was 22%.¹ Antiplatelet drugs were equally effective in patients older and younger than 65 years, a

Department of Medicine,
University of Kuopio,
Kuopio, Finland
Markku Laakso, professor

Correspondence to:
Dr Sivenius.

BMJ 1995;310:25-6

Effect of antiplatelet treatment on the risk of death or stroke in patients with transient ischaemic attacks or strokes in different age groups*

	Age (years)					All patients
	≤50	≤60	>60	>70	>80	
Aspirin and dipyridamole: No of deaths + strokes/ total no (%)	2+7/901 (10.0)	8+16/287 (8.4)	28+34/365 (17.0)	12+15/156 (17.3)	1+3/20 (20.0)	36+50/652 (13.2)
Placebo: No of deaths + strokes/ total No (%)	2+10/75 (16.0)	8+35/254 (16.9)	34+63/400 (24.3)	18+28/149 (30.9)	6+6/20 (60.0)	42+98/654 (21.4)
End point reduction (%) (95% confidence interval)	37.5 (32.2 to 42.8)	50.3 (47.4 to 53.2)	30.0 (27.1 to 32.9)	43.9 (39.1 to 48.7)	66.7 (52.6 to 80.8)	38.4 (36.3 to 40.5)
Significance (P value)	0.22	0.004	0.023	0.018	0.032	<0.001

*Intention to treat analysis.