Letters

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Is CS spray dangerous?

CS is a particulate spray, not a gas

EDITOR—The most recent edition of the *British National Formulary* reviews the emergency treatment of patients exposed to 2-chlorobenzylidene malononitrile (CS) spray.[1] It is important to note that as used in the United Kingdom CS is not a gas but a particulate spray formulated for use against a violent individual. Law enforcement agencies have expressed concern about the use of CS spray.[2,3] The Department of Health has issued a comprehensive report on CS spray, concluding that there are no health concerns about the effects of CS when used appropriately.[4]

In the context of law enforcement, using chemical restraints is safer than hands-on contact or using other weapons that have a higher probability of causing death.[5] CS has been used in the United States and has a long history of safe and effective use. No consistent adverse effects from acute exposure have been documented, nor has excessive or unfounded use been a problem. In Memphis, Tennessee, the introduction of chemical restraints in the police department dramatically decreased the number of injuries to police officers and to prisoners as well as decreasing the number of complaints of excessive force made against officers.[5] In Tennessee all officers undergo training in which they are exposed to both CS and oleum capsicum, and no significant injuries from exposure have been reported.

The most important aspect of managing a patient who has been exposed to CS is to practise good hygiene by removing any contaminated clothing and to ensure that the individual is exposed to air and is not placed in a confined space before decontamination. Special attention should be paid to limiting secondary exposure by using protective clothing such as gloves and by putting contaminated clothing into bags. In most cases this is all the treatment that is needed. Left untreated, most symptoms will resolve within minutes of exposure.

Washing with soap and water is not recommended unless symptoms persist. The particulate form of CS can dissolve in the irrigant and exacerbate irritation or contaminate other surfaces, such as the eyes. In the rare instances when irrigation is required, normal saline, not water, is the best choice. If symptoms persist then evaluation by a physician is warranted. The most common persistent complaint is ocular irritation, and this is usually the result of a particle of CS becoming embedded in the ocular surface. In this instance, copious irrigation with saline and a thorough slit lamp examination should be carried out.

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1 British Medical Association, Royal Pharmaceutical Society of Great Britain. *British national formulary.* London: BMA, RPS, 1999:25. (No 38.)
2 Fraunfelder FT. Is CS gas dangerous? *BMJ* 2000;320:458-9. (19 February.)
3 "Safety" of chemical batons [editorial]. *Lancet* 1998;352:159.
4 Committees on Toxicity, Mutagenicity and Carcinogenicity of Chemicals in Food, Consumer Products, and the Environment. *Statement of 2-chlorobenzylidene malonitrile (CS) and CS spray.* London: Department of Health, 1999. (www.doh.gov.uk/pub/docs/doh/csgas.pdf.)
5 Less lethal weapons. *Law Enforcement Satellite Academy of Tennessee* 2000;9 Feb. (Continuing lecture series for officers.)

Formulation affects toxicity

EDITOR—Fraunfelder's editorial contains several misconceptions stemming from the question posed in the title of whether CS gas (2-chlorobenzylidene malononitrile) is dangerous.[1] At room temperature, CS is a solid and cannot be described as a gas. When used for riot control purposes, it is dispersed as a microparticulate cloud produced by a pyrotechnic device. CS has a very low aqueous solubility and is in fact hydrolysed to inactive products. Thus, to deploy CS as a spray, a non-aqueous solvent needs to be used, which in the sprays used by British police is methyl isobutyl ketone.

Methyl isobutyl ketone is an industrial degreasing agent that will remove lipid from the skin, causing reddening, scaling, blistering, and peeling as well as irritating the eyes and respiratory tract. In the chemical industry the use of skin and eye protection is advised when handling the substance,[2] yet, paradoxically, the British police are trained to spray this chemical directly into a person's face. Their delivery device is not an aerosol akin to that which dispenses hair lacquer but should be described as a "squirt can" from which a stream of liquid is released similar to that which dispenses windscreen de-icer.

It is important to consider the physicochemical properties of CS when treating patients contaminated with it. Patients should be advised to stay in the open air, ideally facing into the wind, and any contaminated clothing should be removed. To treat ocular exposure, irrigation and removal of any solid fragments is to be recommended because CS is hydrolysed to inactive products and "blow drying" will not cause CS to evaporate and may contaminate the medical facility by blowing residual CS away from clothing.

Although much research confirms the safety of CS when used at low concentrations (1 part per 100 000 000) as a microparticulate cloud for riot control purposes,[3] experimental studies have found that ocular damage occurs after the application of high concentrations of CS to the eye, especially when applied in solution.[4] There have also been case reports of significant ophthalmological sequelae.[5] I have seen many cases in patients and police constables occurring after the use of CS incapacitant, some of these are still under judicial consideration for the award of damages. CS thus has health and safety implications for those who use it at work.

The key issue with regard to the safety of CS is not CS toxicity itself but that of its formulation.

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Letters will be edited and may be shortened.

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1 Fraunfelder FT. Is CS gas dangerous? *BMJ* 2000;320: 458-9. (19 February.)
2 World Health Organization. *Methyl isobutyl ketone health and safety guide*. Geneva: WHO, 1991.
3 *Report of the enquiry into the medical and toxicological aspects of CS (orthochlorobenzylidene malononitrile). Part II. Enquiry into toxicological aspects of CS and its use for civil purposes.* London: HMSO, 1971. (Cmnd 4775.)
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5 Petersen KK, Schroder HM, Eiskjaer SP. CS-taregasspray som skadevoldende middel. *Ugeskrift for Laeger* 1989; 151:1388-9.

Hazards are being hidden

EDITOR—It might have been more appropriate for Fraunfelder to ask not if CS (2-chlorobenzylidene malononitrile) is dangerous but if, as the British government has consistently maintained, it is genuinely safe.[1] In assessing the hazards of CS aerosols, the Himsworth committee recommended that the dose-effectiveness relation of an agent used for riot control should be akin to that of a drug and be tested accordingly.[2] Questions to ministers in both houses of parliament referred specifically to CS spray, a formulation introducing a pharmacological dimension wholly different from CS. Replies disingenuously claimed that CS "had been tested to a level similar to that required for a new pharmaceutical drug."[3] This is misleading and irrelevant.

The recent report from the Department of Health is disturbingly flawed.[4] Firstly, despite citing the Himsworth report, the drug analogy was completely ignored. Secondly, by emphasising the lack of data on the effects of the formulated product, the report deprived its conclusions of authority. Thirdly, the report confined itself almost entirely to separate considerations of CS and its spray solvent, largely discounting the only description of the effects of the spray in humans.[5] Erythematous dermatitis and extensive blistering have been described in humans, and some patients developed keratitis.[5] Fourthly, no field tests or follow up studies were conducted. In the sharpest contrast, Himsworth et al voluntarily exposed themselves to CS aerosol from a munition, providing a vivid first hand account of its actions.[2] There is no description of the excruciatingly painful effects of the spray on eyes and face. Instead the report states that "systematic studies in volunteers to investigate the toxicity of CS spray may present insurmountable difficulties."[4]

However, allergic contact dermatitis from repeated exposure to CS was authenticated.[4] Sufficient references were provided to indicate that allergic dermatitis arising from multiple exposures, an experience with which many police are familiar, will pose a problem, at least for some among junior officers. Ironically, CS spray, ostensibly introduced with the intention of protecting officers, may be damaging to health.

When politicians and the public discover that there has been absolutely no testing of CS spray in the sense intended by Himsworth and realise the extent to which they have been misled by the Home Office, the political repercussions, as well as costs and damages arising from litigation, are likely to prove substantial and hugely embarrassing.

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1 Fraunfelder FT. Is CS gas dangerous? *BMJ* 2000;320:458-9. (19 February).
2 Himsworth H, Dornhorst AC, Thompson RHS. *Report of the inquiry into the medical and toxicological aspects of CS (orthochlorobenzylidene malononitrile). Part I. Enquiry into the medical situation following the use of CS in Londonderry on 13 and 14 August, 1969.* London: HMSO, 1969. (Cmnd 4173.) (The Himsworth Committee.)
3 *House of Commons official report (Hansard)* 1997 June 10:col 261; 1998 July 27:col 1190.
4 Committees on Toxicity, Mutagenicity and Carcinogenicity of Chemicals in Food, Consumer Products, and the Environment. *Statement of 2-chlorobenzylidene malonitrile (CS) and CS spray.* London: Department of Health, 1999. (www.doh.gov.uk/pub/docs/doh/csgas.pdf.)
5 Parneix-Spake A, Theisen A, Roujeau JC, Revuz J. Severe cutaneous reactions to self-defence sprays. *Arch Dermatol* 1993;129:913.

Effects of multiple courses of antenatal steroids are uncertain

EDITOR—Spencer and Neales highlight the uncertainty surrounding the risks and benefits of giving multiple courses of antenatal steroids to pregnant women at risk of preterm delivery.[1] They refer to our survey of practice carried out in 1997,[2] and it would be helpful to clarify some of the figures that they quote.

Firstly, the survey did not find that 98% of women at risk of preterm birth receive prophylactic antenatal corticosteroids; rather, it found that 98% of obstetric units prescribe repeated courses for at least some women at risk.

Secondly, the meaning of the statement that "74% of UK maternity units give repeated doses on a weekly basis" may not be clear. The survey found that among units that use multiple courses the interval between repeated courses was seven days in 74% of units. Other units used intervals of 10-14 days.

Spencer and Neales discuss the evidence from observational studies for beneficial and harmful effects of multiple courses of antenatal steroids. These studies may be open to serious biases. The number of courses that an infant is exposed to will be influenced by the gestational age at birth; infants exposed to more courses will tend to be born at greater gestational ages, which will tend to improve their outcomes. Conversely, infants exposed to multiple courses may remain in a high risk situation for longer and hence have poorer outcomes. Observational studies may be biased in either direction, which may explain some of the inconsistency among their results.

This editorial and another published recently[3] highlight the lack of any randomised controlled trials of single versus multiple courses of antenatal steroids. Several trials are planned or in progress, and until they are completed—including evaluation of both short term outcomes (death and the respiratory distress syndrome) and children's long term neurodevelopment—the uncertainty about the risks and benefits of multiple courses will remain. The best policy for obstetricians would therefore be to contribute to resolving this issue by participating in the current trials.

In the United Kingdom the Perinatal Trials Service has recently started a large trial of single versus multiple courses of antenatal steroids (trial of the effects of antenatal multiple courses of steroids versus a single course (TEAMS)); the initial part of this trial has been funded by Action Research. Any obstetric units that would like to participate should contact the trial's coordinating centre by telephone (01865 227122) or email (teams@perinat.ox.ac.uk).

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1 Spencer C, Neales K. Antenatal steroids to prevent neonatal respiratory distress syndrome. *BMJ* 2000;320:325-6. (5 February.)
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Patient information on cancer

Access to the information should be made easier

EDITOR—Jones et al found that patients with cancer preferred a computer system giving personalised information to one that gave general information.[1] This raises questions about the usefulness of the internet as a source of primary information for these patients. Cost, technological barriers, and information retrieval are other reasons to question the use of the internet as a primary source of information.

To encourage home access the government has announced a scheme for cheaper computers. Telephone costs, however, are still relatively high. There may also be technological barriers: 18% of patients in one American practice (mean age 27) were initially unable to perform any computer functions on their own and required help from a medical student to use the internet.[2] Computer experience among older British patients is much lower: among 200 gastroenterology outpatients in Glasgow (mean age 54) 68% had never used a computer before.[3]

Good quality information for patients with cancer does exist on the internet but may be difficult to find if users do not have suitable "gateways." Using a simple medical search term and a range of popular search engines, I identified 49 707 indexed cancer

Locally developed criteria used to evaluate information websites for patients with cancer

Authority (reputation, credibility, trustworthiness of source)
Scope (depth and breadth of information content)
Completeness (includes gaps or omissions in coverage and content)
Disclosure (of authors, sponsors, and site developers; includes privacy and security)
Accuracy (correctness and quality of information)
Validity (explains accuracy of information, provision of references)
Objectivity (includes balance of arguments, states possible bias and conflicts of interest)
Uniqueness (originality of information)
Currency (date of creation of information, date and patterns of update, stability of resource)
Audience (intended users and ability of resource to meet users' needs)
Accessibility (required computing environment, fee/passwords required)
Navigation (usability, user support)
Information structure and design (functionality)
Aesthetic features (use of graphic and multimedia design)
Links (availability, integrity, currency, and quality of internal and external hyperlinks)
Interactivity (feedback mechanisms, mechanisms of interaction with site and other users)

web pages. For each engine I recorded the first 10 documents retrieved. Altogether I reviewed 292 web pages, which gave 126 unique sites. Only eight (three British and five American) were patient information resources. I evaluated these using DISCERN[4] and a locally developed rating scale (table). Two sites—CancerHelpUK and CancerBACUP—achieved maximal scores in these evaluations. Unhelpfully for naive users looking for information on cancer, these sites were not among the first five sites retrieved by four of the eight commonly used search engines.

To overcome these barriers one possibility would be to use the internet as a secondary source of information, primary access being gained with touch screens on stand alone computers in public libraries. I redeveloped one section (on colorectal cancer) of CancerHelp UK for use on stand alone touch screen computers. This redesign entailed use of bigger buttons and division into screens of information that did not require scrollbars. It seemed acceptable to some professionals and patients, but more formal evaluation is needed and the redevelopment was time consuming. Either more intelligent internet browsers that can reconfigure web pages for simpler use are needed or providers of health information on the internet should be encouraged to produce CD Roms for offline access.

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Competing interests: This letter is based on work undertaken in a BSc clinical medicine intercalated project supervised by Ray Jones and Robin Knill-Jones at Glasgow University.

1 Jones R, Pearson J, McGregor S, Cawsey AJ, Barrett A, Craig N, et al. Randomised trial of personalised computer based information for cancer patients. *BMJ* 1999;319:1241-7. (6 November.)
2 Al-Barwani F, Jones RB, Cawsey A, Knill-Jones RP. A randomised trial of different patient-computer interactions. In: *HC97*. Weybridge: BJHC Books, 1997:77-84.
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Newspaper read is good predictor of information needs

EDITOR—Jones et al suggest that the type of newspaper read (broadsheet or tabloid) could be used as an indicator of information need among patients.[1] In a postal survey I compared the information needs of hypertensive patients by deprivation category, housing tenure, employment status, and newspaper read.

Patients diagnosed with essential hypertension were identified through case notes at two Glasgow practices. One practice, serving a mainly deprived population, had 239 eligible patients. The other, serving an affluent population, had 209 eligible patients. Random samples of 100 from the affluent practice and 150 from the deprived practice were contacted with postal questionnaires asking about needs for information, self perceived knowledge, and risk behaviours.

After one reminder I obtained 106 (71%) responses from the deprived practice and 65 (65%) from the affluent practice. I used four measures of social difference: Carstairs deprivation category,[2] housing tenure (owner *v* other), employment status (paid employment *v* not working), and newspaper read. Seven people who had not read a newspaper were included with tabloid readers.

All patients in the affluent practice who responded were in deprivation categories 1-3, and 97 (92%) in the deprived practice who responded were in deprivation categories 6-7. No patients were in deprivation categories 4 and 5. Deprivation category was strongly associated with employment status (36 patients (49%) in deprivation categories 1-3 reported that they were in paid employment compared with 20 (21%) in deprivation categories 6-7), with housing tenure (home owners 66 (90%) *v* others 40 (42%)), and with newspaper read (broadsheet 46 (75%) *v* tabloid 15 (25%)).

The table shows differences in self perception or behaviour by sex, age, and the four social or economic indicators, indicating those that were significant predictors in a stepwise multiple logistic regression analysis.

Broadsheet readers living in more affluent areas were more likely to know their blood pressure readings, to consider that they had a good knowledge about high blood pressure, and to obtain information from more than one source. Newspaper read was a better predictor of these outcomes than deprivation category. Deprivation category was a significant predictor of alcohol use and exercise.

Although used extensively in market research, the newspaper read has rarely been used in health research. Deprivation category is widely used when determinants of health are looked at but is not an individual characteristic. When information needs are being considered, it seems logical to ask which newspaper is read as it can be a good predictor.

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Competing interests: This project was carried out as a requirement for the degree of master of public health at Glasgow University. Ray Jones supervised the project.

1 Jones R, Pearson J, McGregor S, Gilmour WH, Atkinson JM, Barrett A, et al. Cross sectional survey of patients' satisfaction with information about cancer. *BMJ* 1999;319:1247-8. (6 November.)
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Differences in self perception or behaviour of patients with hypertension, assessed by sex, age, and four social or economic indicators (values are percentages)

Differences	Sex (M *v* F)	Age (years) (<60 *v* ≥60)	Deprivation category (1-3 *v* 6-7)	Newspaper read (broadsheet *v* tabloid)	Employment (working *v* not working)	Housing (owner *v* other)
Those who knew their last blood pressure reading (n=98)	62 *v* 55	69 *v* 53	74 *v* 47	79 *v* 47*	73 *v* 51	69 *v* 40*
Those who thought that, in general, they had a good knowledge about high blood pressure (n=61)	36 *v* 37	45 *v* 31	50 *v* 25	58 *v* 24*	49 *v* 30	44 *v* 24
Those who had their blood pressure checked by more than one type of clinician (n=88)	55 *v* 51	51 *v* 54	66 *v* 42*	64 *v* 46	50 *v* 54	59 *v* 43
Those who had received information about high blood pressure from more than one source (n=65)	47 *v* 39	55 *v* 37*	54 *v* 34	62 *v* 33*	57 *v* 37	52 *v* 29
Those who knew of friends or family with high blood pressure (n=107)	61 *v* 68	67 *v* 63	75 *v* 56*	69 *v* 62	70 *v* 62	70 *v* 55
Those who were current smokers (n=37)	28 *v* 17	26 *v* 21	16 *v* 28	18 *v* 25	21 *v* 23	23 *v* 21
Those who drank alcohol daily (n=31)	29 *v* 7*	20 *v* 17	30 *v* 10*	26 *v* 14	26 *v* 15	23 *v* 11
Among those who drink, those who drank ≥6 units on each occasion (n=36)	40 *v* 9*	46 *v* 15*	19 *v* 30*	15 *v* 31	32 *v* 22	26 *v* 25
Those who took part in any hobbies that involved physical exercise (n=87)	57 *v* 47	49 *v* 53	78 *v* 32*	83 *v* 34*	64 *v* 46	64 *v* 31
Those who thought that they got enough exercise to keep healthy (n=86)	49 *v* 56	38 *v* 61*	56 *v* 51	54 *v* 52	42 *v* 58	48 *v* 61

*Indicators that were significant predictors from multiple logistic regression (P<0.05).

Radiosensitive tissues can be shielded during CT scanning

EDITOR—Rehani and Berry point out the rising contribution that computed tomography has made to the collective radiation dose in the United Kingdom and give possible ways to limit this development.[1] Patients and clinicians often have little incentive to forgo a quick, painless, and accurate computed tomography study to check the remote possibility of neoplasia.[2] Refusing to perform procedures involving radiation is often difficult to justify on grounds of risk alone, apart from in certain groups (for example, children and pregnant women).

As the authors suggest, a partial solution to this problem may be to shield radiosensitive tissues during the examination, a technique already widely practised for relatively low dose plain radiography. The reduction in patient dose by shielding radiosensitive organs during computed tomography has been the subject of two papers.[3,4] In our study, reductions in gonad dose of 77% and 82% were achieved during abdominal and pelvic scan protocols in a phantom by protecting the testes from scattered radiation. The protection device, which retailed at less than £100, did not impair image quality.[3] We are currently carrying out a further study to examine the practicality and patient acceptability of this device in a busy tertiary referral centre.

The current enthusiasm for computed tomography examinations continues unabated. Radiologists and referring clinicians must ensure that each patient receives maximum benefit from this invaluable imaging technique while minimising the attendant risks.

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1 Rehani M, Berry M. Radiation doses in computed tomography. *BMJ* 2000;320:593-4. (4 March.)
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Changing face of refractive surgery

EDITOR—The article by Shah and Dua on refractive surgery does not mention that most of this surgery is done on young people, mostly women, for reasons of vanity.[1] Most of the work is done privately for profit, and because of this I believe that the consumer needs some added protection from the biased advice of the companies offering refractive surgery.

While I was a surgical houseman two years ago I had both my eyes operated on with an excimer laser. I wanted the operation so I could stop wearing glasses. I thought I looked ugly in them. I was moderately myopic in my left eye, +2.5D, which was perfectly corrected by glasses. After the operation I have suffered severe haze and my myopia, although initially corrected, has deteriorated to +4D. The severe haze and continued myopia in my left eye make life quite difficult. When reading I have to close one eye. Driving now feels dangerous, and I am a worse driver because of the poor vision in my left eye. The haze is not correctable with glasses. I regret on a daily basis my decision to have the operation. My vision is irreparably damaged, and all because I was vain and did not like glasses.

I believe that it is unethical to operate purely for reasons of vanity when the potential for serious damage to vision is so large. I did not need to be referred by my general practitioner to have the operation. I simply went to the clinic. A sensible general practitioner might have put me off.

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1 Shah S, Dua HS. The changing face of refractive surgery. *BMJ* 2000;320:395-6. (12 February.)

Behavioural counselling in general practice about risk of CHD

Study was grossly underpowered

EDITOR—Steptoe et al draw unreliable conclusions from their randomised controlled trial of a brief behavioural counselling intervention, led by nurses, to promote healthy behaviour among adults at increased risk of coronary heart disease.[1] Because of considerable difficulties in recruitment and retention the study is grossly underpowered, with only 316 intervention patients and 567 control patients recruited against the required target of 2000. The authors cannot therefore report that "brief counselling on the basis of systematic applications of behavioural principles is more efficacious in stimulating lifestyle modification than conventional counselling."

The authors have further overinterpreted these unreliable data, since the only changes in behaviour were self reported reductions in dietary fat intake and number of cigarettes smoked and increases in physical activity. Objective measurements, such as body mass index, weight, blood pressure, and smoking cessation (validated by cotinine assay), did not change. Given the unreliability of self reporting as a primary outcome, it is inappropriate to draw positive conclusions.

Furthermore, the authors conclude that "there may be an important role for this counselling" among hard pressed service practitioners and that "more extended counselling . . . may be required." These seem extraordinary assertions given the negative findings from the study. The authors also ignore their own findings that this "brief" intervention was actually rather substantial: nurse training took four days, and counselling sessions lasted up to 20 minutes on two or three occasions, with one or two follow up telephone calls. This is a considerable time commitment, and the researchers were able to get nurses to recruit only one third of patients needed in intervention practices. In addition, it is inappropriate for researchers to make recommendations on the implications for service practice without conducting any sort of economic analysis.

Given the wealth of unequivocally evidence based interventions that help to reduce coronary heart disease, busy practitioners would have been served better had the authors been more cautious in their conclusions from this negative trial. The paper made an interesting contrast with another randomised controlled trial published in the same issue of the *BMJ*, which used the stages of change model[2] for smoking prevention among schoolchildren.[3] That virtually fully powered study (8352 recruited of 8500 needed) produced a reliable negative result.

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Competing interests: None declared.

1 Steptoe A, Doherty S, Rink E, Kerry S, Kendrick T, Hilton S. Behavioural counselling in general practice for the promotion of healthy behaviour among adults at increased risk of coronary heart disease: randomised trial [commentary by S Day]. *BMJ* 1999;319:943-8. (9 October.)
2 Prochaska JO, DiClemente GC, Norcross JC. In search of how people change. *Am Psychol* 1992;47:1102-14.
3 Aveyard P, Cheng KK, Almond J, Sherratte E, Lancashire R, Lawrence T, et al. Cluster randomised controlled trial of expert system based on the transtheoretical ("stages of change") model for smoking prevention and cessation in schools. *BMJ* 1999;319:947-53. (9 October.)

Study had several methodological flaws

EDITOR—Steptoe et al's paper seems to show for the first time that behavioural counselling using the stages of change model in primary care leads to sustained improvements in dietary fat intake, regular exercise, and the number of cigarettes smoked.[1] But several methodological flaws in the study raise doubts about the validity of these conclusions.

Firstly, the target sample size was 2000, with 10 intervention and 10 control practices and 100 patients per practice. The sample size achieved was only 883 patients. The study had insufficient power to detect the improvements in biological risk factors that the authors considered to be clinically important.

Secondly, patients in the intervention arm had much greater contact with the practice nurses than did controls, with the counselling sessions and telephone contacts to consolidate them. The results would have been more convincing if patients had had equal contact with the practice nurses.

Thirdly, the authors had planned to recruit equal numbers in the intervention

and control groups. They achieved only 316 patients in the intervention practices and 567 in the control practices. This difference will also have had an adverse effect on the power of the study.

Fourthly, 626 of the 883 patients completed the four month assessment and only 520 completed the 12 month assessment. Patients lost to follow up tended to be younger and were more likely to be smokers—for example, only 40 of the 124 smokers in the intervention arm completed the 12 month assessment. The authors do not perform any sensitivity analyses to investigate the impact of these differential dropout rates on their conclusions.

Claiming a lifestyle change without any concurrent change in biological risk factors in a self selected group is questionable, as it is known that many people underreport dietary intake and overreport exercise frequency.[2] We recognise that carrying out large education based studies in primary care is difficult. Because of the problems listed here, however, this study adds little to the literature on this topic. We do not consider that a convincing case has been made for use of the stages of change model in preference to other systems for providing health education information.

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1 Steptoe A, Doherty S, Rink E, Kerry S, Kendrick T, Hilton S. Behavioural counselling in general practice for the promotion of healthy behaviour among adults at increased risk of coronary heart disease: randomised trial [commentary by S Day]. *BMJ* 1999;319:943-8. (9 October.)
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Non-attendance for follow up distorts results and shows that people don't like counselling

Editor—Attempts to modify the risk of cardiovascular disease through individually based health education activities have proved disappointing. [1] The report of the apparently successful trial of behavioural counselling seems to provide just what is needed to improve the efficacy of health promotion.[2]

A paragraph in This Week in the BMJ (issue of 9 October) provides the paper's "take home" message—that brief behavioural counselling resulted in reductions in risk factors and could be a useful strategy. Unfortunately, this conclusion does not follow from the study's findings. The follow up rates were low and were related to the group to which the patients were assigned.

By far the most dramatic result—more so than the results highlighted in the paper—is the influence of counselling on people not attending follow up. The odds ratio of non-attendance among baseline smokers in the intervention compared with the control group at 12 months is 2.35 (95% confidence interval 1.48 to 3.76; P = 0.0001). This suggests that a large proportion of smokers assigned to the intervention did not attend follow up, probably because they had failed to stop or reduce their smoking. Thus comparison of smoking behaviour in only those who attended follow up is misleading. A similar effect is seen with physical activity: a smaller percentage of the people engaging in little activity at baseline returned in the intervention than the control group.

Trials with such major losses to follow up are difficult to interpret. Analytical options include assuming that all those not returning to follow up continued to smoke or that smoking rates were similar to those in the control group. Simply examining the effects of counselling among those attending for follow up will give a biased result. Randomised controlled trials of health education interventions that achieve reasonable follow up (closer to 90% among smokers than the authors' 30%) show much less influence on risk factors than this trial.[1]

The poor recruitment and follow up do not support the trial's efficacy but do show that many high risk patients and primary care teams do not want brief behavioural counselling. Although the counselling methods used may be considered promising, before extended counselling and support are tested in randomised controlled trials further work is needed to find out why brief counselling failed. Better means of achieving change in mass lifestyle behaviours may be found by focusing on the larger forces (the food industry, tobacco promotion, transport policy) that shape the way we live.

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1 Ebrahim S, Davey Smith G. Systematic review of randomised controlled trials of multiple risk factor interventions for preventing coronary heart disease. *BMJ* 1997;314:1666-74.
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Authors' reply

Editor—The authors of these letters make some legitimate points in commenting on our paper, although they are perhaps guiltier than us in overinterpreting what we actually claimed in reporting our findings.

Hobbs takes us to task for overinterpreting our positive results, when difficulties in recruitment left us with an underpowered trial. We accept the loss of power, and discuss it in the paper. This, however, is of less relevance to our significant findings in reported behaviour change than to the likelihood of a type II error. The loss of power may partly explain the non-significant changes in biological risk factors—a point made by Frost and Doré. We were not funded to carry out an economic analysis, although we agree that this would have been desirable.

Davey Smith et al refer to the "apparently successful trial"—not a claim made anywhere by us. We believe that our conclusions and comments on implications for primary care were appropriately cautions. We certainly do not disagree with Davey Smith et al about the need for policy changes, but even if these occur they are unlikely to remove the need to identify effective health promotion and disease prevention activities for primary care.

All authors comment on the apparent unacceptability of the behavioural counselling method to staff and patients. Recruitment to this study started around the time of publication of two influential studies on primary prevention of coronary heart disease in general practice,[1 2] and we have little doubt that there was an atmosphere of scepticism regarding health promotion. Staff attitudes have been reported elsewhere and are less negative than asserted by Hobbs and Davey Smith et al.[3]

We do not believe that the time expected of practice nurses (if the method was shown unequivocally to be effective) is unrealistic. Much of it related to assessments for the analyses and would not translate to routine care. Training and practice time is no more than that for nurses offering respiratory care on a routine basis in recent years. We are addressing Frost and Doré's concern about disparate time allocation by practice nurses to the control and intervention groups in a separate trial.

We entirely accept the concerns expressed about the high dropout rate of smokers and that this might vitiate differences found in those followed up. We stand by our conclusion that, if appropriately targeted, this method of counselling may have an in important role in primary care prevention.

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Brave new technologies issue

***November* (with apologies to Thomas Hood)**

No sun—no moon!
No morn—no noon!
No dawn—no dusk!
No fruits, no flowers, no leaves, no
birds—November.

No scientific editorials—no news!
No papers—no book reviews!
No letters, no fillers, no obits,
Minerva alone to serve our wits.

No proper time of day,
No proper *BMJ*.
November 13th brought no satisfaction.[1]
Please not again—no repetition!

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Noble but dismal

EDITOR—Oh dear! The special issue on new technologies in medicine . . . what can I say?[1]

Noble, brave, trendy—but dismally uninteresting.

Unreadable. Contentless. Annoying.

Still, the paper makes for useful you-know-what in the smallest room in the house.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Someone should be sacked

EDITOR—The *BMJ* of 13 November is dreadful.[1] It is almost impossible to read because the text has been overlaid by absurd pictures on almost every page. To start asking readers of bmj.com about readability *v* appraisability completely misses the point when the corresponding paper version is totally unreadable. Just because you can put background graphics on each page doesn't mean that you should. Just because you can use different typefaces, font sizes, and colours of type doesn't mean that you should. Did any of the editorial staff watch the spoof news series *The Day Today*, in which increasingly absurd graphics were used for each news item? Such graphics distract the reader from the meaning and don't enhance it.

Perhaps the staff hopes that nobody will want the paper version any more and that only a web version is required? Well, I don't want a paper version like the monstrosity of 13 November. I want my familiar old *BMJ*, with the obituaries, letters, Minerva, etc, all instantly to hand. I'll curl up in bed with this. I wouldn't even allow the gaudy new version into my bedroom.

The new version seems to have dozens more advertisements, is too thick to bind, and contains innumerable spelling mistakes—for example, oxymetry in the diagram on p 1309.

Someone should be sacked.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Clever technology looking for a purpose

EDITOR—The special issue on new technologies in medicine illustrates perfectly the result of using clever technology without a purpose.[1] The presentation of the printed journal is distracting and demanding, like a hyped up adolescent. The content is meagre and the language jargon ridden and imprecise. In this issue technology is clearly not being used creatively to solve some of the medical and ethical problems that face us as healthcare professionals. Rather we are going to have to conform to the narrow minded vision of the technophile and squeeze our thoughts into a conformist cybernetic view of medicine and ethics.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Sad example of inappropriate use of new technologies in publishing

EDITOR—The 13 November issue of the *BMJ* on the impact of new technologies in medicine is a sad example of the potential negative impact of new technologies in publishing.[1]

The journal has all the style of a 13 year old's first attempt with the school's desktop publishing software. We are treated to a full house of bizarre, meaningless, and unnecessary graphics, text in unreadable colours, and fonts set on a background of zany photos poached from the *Star Trek* website, plus an assortment of colourful blobs and boxes. The content may be excellent, but it is totally obscured by an amateur and clumsy overuse of computerised publishing. Perhaps in future issues we will be treated to a dramatic electronic melody and a lump of dry ice when we turn the first page.

New technologies in medicine are crucial and will have an enormous impact. By presenting them in this hopelessly unreadable form technophobes will be further distanced, without any new understanding of the potential of new technologies being brought to bear. A clear and important message needs no fancy graphics. They may seem new to the over 35s, but anyone who presented a lecture in this style to a room full of medical students would have them falling about laughing. I have seen it happen many times.

Perhaps the biggest thing we have to learn about new technology is how to judge when its use is appropriate.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

On a road to nowhere

EDITOR—I received the 13 November issue of the *BMJ* (old-fashioned, boring, paper version) with the utmost dismay.[1] My dismay was heightened further by reading that you are considering a policy of publishing "electronic long, paper short" versions of papers. To coin a phrase, are you serious?

I do not understand your obsession with the fool's gold that is electronic journal publishing. What about countries which cannot afford computer technology to access medical information? What about people who like to read a paper journal on the train on the way to work or in the office while taking lunch or who simply don't like reading from a computer screen and prefer to read from the printed page?

This week's printed issue is a disaster: the paper is poor, the production cheap, the layout dreadful and migraine inducing. The whole thing looks like a 1960s issue of *Rolling Stone* on a bad day.

If you persist in this nonsense I will have no hesitation in asking the BMA to take my name off the mailing list for the *BMJ*.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Support from the future

EDITOR—The 13 November paper issue of the *BMJ* caught my attention immediately—I even read it on the bus to work.[1] The well-bound, acid-free paper meant that the journal did not disintegrate on handling, as frequently occurs with normal editions. The pages were easy to turn without missing any. The use of further, detailed versions of articles on the website was excellent, as were the links to extra resources.

Style is always controversial. However, the success of more colourful and easily read newspapers is strong support for using an attractive format and interesting language. The *BMJ* is a general medical journal so should be widely read and aimed at a common denominator. The use of different fonts, coloured text, and variable backgrounds can only further this cause.

However, none of the usual scientific content was published in the 13 November issue. This was rectified on the website by having nine different versions of articles on a previously published trial about the effectiveness of prophylactic co-amoxiclav before percutaneous endoscopic gastrostomy,[2] with the opportunity to vote for the most suitable. The only regular feature was Minerva, which was well presented, as interesting as ever, and a lot easier to read. Distinguishing between editorial content and advertising did prove difficult, though this should not be a reason to forgo the myriad of advantages of this experiment.

Access to the internet should be considered when deciding which format to use for the paper *BMJ*. In the developed world doctors have good access as computers are

readily available in medical practice. Knowledge of how to use the internet is also increasing, especially among junior doctors. Hence a more appealing format is likely to be more successful as readers can further access information and print only those articles that are relevant to them. In the underdeveloped world technological access is more difficult, so the traditional version would be better suited to conveying scientific knowledge to a wider audience.

A new format for the *BMJ* also raises the possibility of increasing access outside the medical profession. Allowing direct access to the public means that accurate medical information is more readily available, without the political bias that may be present in the daily press. However, all versions of the paper journal must retain the same information overall (such as title, author, key points) to allow for proper referencing and access to the main article (on the web or in the traditional version).

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)
2 Preclik G, Grüne S, Leser H G, Lebherz J, Heldwein W, Machka K, et al. Prospective, randomised, double blind trial of prophylaxis with a single dose of co-amoxiclav before percutaneous endoscopic gastrostomy. *BMJ* 1999;319:881-4. (2 October.)

Revolutionary delivery and management of information

Editor—I am prompted to write because of the surprisingly negative responses I have read about the unique and exciting issue of 13 November.[1] Unlike the bathroom and bedroom readers who curl up with their paper formats, I read bmj.com exclusively and am impressed at how readable and conducive to learning and contemplation the web version is. I can read a little or delve almost infinitely into the information, clicking on all the links, and feel myself being transported through space and time like a time traveller or astronaut. The closest thing it resembles is reading science fiction as a child, which allowed me to soar above the mundane world of my middle class neighbourhood in Queens New York. I feel as if I am experiencing a revolution in information delivery and management.

I deeply appreciate the *BMJ*'s efforts to allow open access and its spirit of discovery and progress. I particularly enjoyed the analysis of Weed and Weed on clinical judgment—I am certain they have it right.[2]

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)
2 Weed LL, Weed L. Opening the black box of clinical judgment—an overview. bmj.com 1999;319 (bmj.com/cgi/content/full/319/7220/1279).

Snoozing with the journal may not be informative

Editor—When I opened the journal of 13 November I hated it, but the more I looked the more I realised that the amount of information it contained was amazing: I keep going back to it to see how different things have been tackled.[1] I suspect that the medical public needs educating that information will come to them in a different form and that a snooze with the journal might not inform them.

I look forward to more such issues.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

Step towards doing medicine with people rather than for or to them

Editor—Well that was brave. Just as I thought that medicine would never get back on to the front foot the *BMJ* did it with its issue of 13 November.[1]

By making the *BMJ* become an online source of information and simplifying the paper version, more non-medically qualified people will read it. This, believe it or not, is a good thing. There will be pain in the medium term as patients grapple with a little knowledge (a very dangerous thing), but that pain is here. We as a society need to educate people to take care of themselves whenever possible so that more time can be devoted to those who need more help.

We need to stop doing medicine to and for people and do it with them. Transparency is crucial. If the medical profession seizes this opportunity now it will not only start to repair the damage of a daily diet of scare stories in the media but be among the first professions to shape the future rather than avoid it. I am not a doctor, but I can see that many doctors are ready to move forwards and give medicine the status it should rightly hold. I look forward to working with them and reading a *BMJ* that will allow me to appreciate and fit in with their working style.

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1 New technologies in medicine. *BMJ* 1999;319 (7220). (13 November.)

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Summary of responses

The new technologies issue of the *BMJ* evoked a huge response. We posted more than 70 rapid responses on our website. In addition, well over 100 people contacted us by writing, phoning, or emailing. Reactions were extreme.

About two thirds of the people were horrified by the issue. They objected to the design, the paper, the confusion between editorial pages and advertisements, and the whole idea of having very different paper and electronic versions of the journal. Another third was excited by the experiment and read the *BMJ* as never before.

We are generally pleased with our experiment. The only reaction that would have upset us would have been no reaction at all. We are grateful to all those who were sufficiently stirred by the experiment to contact us.

There begins to be a consensus that the future is not paper or electronic, but both. The challenge will be to use effectively the benefits of each medium—the readability, portability, high resolution, attractiveness, and familiarity of paper and the immediacy, reach, unlimited space, connectivity, interactivity, searchability, and low marginal cost of the electronic medium. Our special issue jolted people by catapulting them into an imagined vision of the future. In fact, we will evolve into it at a speed that is comfortable for most of our readers, recognising that it will be too fast for some and too slow for others.

Although the future is likely to be paper and electronic versions of the journal, we are currently in the interesting position of having audiences for the two that are of roughly equal size and yet which hardly overlap. The weekly paper journal is sent to 115 000 people, most of them in Britain. Only about 5-10% of those receiving the paper journal access bmj.com in any given week. Around 120 000 people access bmj.com each week, most of them from outside Britain. Only about 5-10% of them receive a paper copy of the journal. Editorial decisions on what will please our readers are thus becoming more complicated. We would like it if everybody took the paper journal and accessed bmj.com, but that's unlikely to happen.

We do, however, urge those who read only the paper version to access bmj.com. One reason among many why they might do this is to look at the rapid responses to articles. These are posted every day (including at weekends), and many articles spark fascinating debate. One of the commonest complaints we hear about the paper *BMJ* is that the letters are too slow and dull. We are acting on this problem, but rapid responses are immediate and often very far from dull. We urge those who read the paper journal to look at them.

One of the ideas behind our experimental new technologies issue was to encourage people who are reading only the paper journal to access bmj.com for the first time. Our success with this aim was limited, but we will persist. The new medium has so much to offer.

Richard Smith *editor, BMJ*

Acute medicine needs to be available 365 days a year

Editor—The inexorable rise in medical admissions in the United Kingdom is well documented if poorly understood.[1] The increased activity has produced inevitable

stresses at a time when bed numbers have fallen, the hours of work for doctors in training are being reduced, and the importance of formalised education in addition to experiential training is being increasingly recognised.[2 3]

The working practices of doctors and nurses in many acute units are changing radically in an attempt to cope with the increasing pressures.[2 4 5] However, the management of acutely ill patients depends on many other groups as well, such as physiotherapists, radiographers, clerical staff, laboratory technicians, social workers, and hospital porters.

Patients do not present at hospitals exclusively on weekdays, when staffing levels are at their optimum. They become ill at weekends and on public holidays, when most hospitals run at minimum staffing levels. It is not surprising that hospitals have difficulties at the end of the year, when there are only four or five "normal" working days out of 14 at a time when admissions are at their highest. The time has come when this is no longer acceptable; staffing levels for all people involved in acute medicine must be consistent across the (seven day) week.

Efficient and safe medical care requires rapid availability of plain radiography and more sophisticated imaging such as ultrasound scanning and computed tomography as well as various biochemical, haematological, and bacteriological investigations. The pattern of availability varies, but many of these investigations are difficult to obtain at weekends. This is not acceptable if clinicians are to make correct diagnostic, therapeutic, and discharge decisions seven days a week.

Acutely ill patients deserve access to the best available technology according to clinical need and not to the day of the week. Moreover, tomorrow's doctors should be trained to practise medicine for this millennium rather than with facilities that may have been acceptable in the 1970s.

This is a critical problem that must be addressed if the NHS is to manage the increasing numbers of medical emergency admissions with the high bed occupancy rates that are found. It is essential that "seven days a week" medicine is practised if we are to provide an acceptable and safe level of acute care to our patients.

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Optimum treatment for young women with breast cancer needs to be determined

EDITOR—The paper by Kroman et al on factors influencing the effect of age on prognosis in breast cancer has important implications for service delivery,[1] increased amounts of chemotherapy being required for young women. The authors imply that only women at high risk received adjuvant chemotherapy. In all, 36.3% of their 867 patients under 35 were in the low risk group, an excess mortality being associated with not receiving chemotherapy.

We used the Yorkshire Cancer Registry (now part of the Northern and Yorkshire Cancer Registration and Information Service) to investigate the uptake of chemotherapy in this group of patients over the 15 years from 1980 to 1994 and determine its effect on survival.

Only 304 (19.8%) of the 1534 patients under 35 received adjuvant chemotherapy. Their overall five year survival rate was 60% (95% confidence interval 54.8 to 65.8) compared with 63% (60.6 to 66.0) in those who did not receive chemotherapy. When 41 patients who presented with overt metastatic disease were excluded from the analysis the five year survival rates increased to 63% and 64% respectively. The paper from Denmark does not give five year survival rates, so we cannot compare data.

We found no significant improvement in survival for those receiving chemotherapy in either the individual time cohorts or the group as a whole. A Wilcoxon (Breslow) test for equality of survivor functions showed no significant differences between the groups receiving chemotherapy and those who did not ($P = 0.31$). The rate of chemotherapy use in this age group increased from 8% in 1980-4 to 17% in 1985-9 and 32% in 1990-4.

Reasons for the lower use of chemotherapy in Yorkshire over this time may be related to the comparative lack of surgical specialisation and lack of non-surgical oncology. The Danish patients were all included in trials in which chemotherapy was used. We previously found large variations in the use of chemotherapy and radiotherapy in Yorkshire,[2] all patients with breast cancer population receiving suboptimal treatment.[3] Chemotherapy may have been given only to those under 35 with conventionally poor prognostic features, so no overall effect of treatment would be seen.

With the end of high dose chemotherapy as an evidence based option the optimum type of chemotherapy for this group of patients needs defining.

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1 Kroman N, Jensen M-B, Wohlfahrt J, Mouridsen HT, Andersen PK, Melbye M, et al. Factors influencing the effect of age on prognosis in breast cancer: a population based study. *BMJ* 2000;320:474-9. (19 February.)
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Burns after photodynamic therapy: manufacturer's response to second authors' reply

EDITOR—Scotia Holdings notes the publication of a response on bmj.com by two of the authors of a drug point headed "Burns after photodynamic therapy,"[1] originally published in the *BMJ* of 6 May.[2] [This response was also published as a letter in last week's journal.[3]] These authors suggest that a contributing factor to the skin burns seen in six out of 14 men treated with Foscan (temoporfin) may have resulted from the drug being given in a new solvent formulation.

Foscan was originally formulated as a powder that had to be reconstituted with water before its administration, and the addition of a solvent has enabled the drug to be administered as a ready-mixed fluid to patients, resulting in greater convenience for the administering doctor.

In clinical studies around the world, other than in the study conducted by the Charterhouse Clinical Research Unit and reported by Hettiaratchy et al,[2] 100 patients have received the new formulation and no patients have suffered injuries as described in the Hettiaratchy et al study.

The directors of Scotia believe that it is reasonable to conclude that, with an incidence of 0% in 100 patients so far (excluding the Charterhouse study), the new formulation is unlikely to be associated with a true incidence of adverse events that is different from the overall incidence of 2.3% (serious adverse drug reactions attributable to photosensitivity, including burns) recorded to date in 957 volunteers and patients.[4]

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1 Täubel J, Besa C. Reply from authors at Charterhouse Clinical Research Unit. Electronic response to Drug points: Burns after photodynamic therapy. bmj.com 2000;320 (bmj.com/cgi/eletters/320/7244/1245#EL14; accessed 21 June).
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