	Current user*	Past user	Never used
<i>Nurses' health study^a</i>			
Current smoker (%)	11.2	14.7	14.5
% With hypertension	23.2	25.0	21.8
% With diabetes	2.7	3.8	3.5
% With high serum cholesterol	9.9	11.2	7.6
% With parental myocardial infarction before age 60	10.6	10.0	9.3
% Taking vigorous physical activity $\geq$ once per week	48.2	43.1	42.4
% With body mass index ≥ 29 kg/m ²	9.8	13.3	15.0
<i>Lipid Research Clinics programme**</i>			
< High school education	16		25
% Smokers	33		31
% Taking regular exercise	12		10
% Drinking alcohol	82		79
Mean body mass index (kg/m ²)	24.7		25.7
Mean age (years)	53.8		52.6
Mean systolic blood pressure (mm Hg)	129.0		127.7
Mean diastolic blood pressure (mm Hg)	79.9		79.5
Mean cholesterol	234.8		235.2

*In Lipid Research Clinics programme data for current and past users were combined.

would be greater than those in the relatively homogeneous populations from which much of our understanding of the epidemiology of hormones and heart disease derives. The table shows the distribution of risk factors for two large epidemiological studies that have provided data on oestrogen replacement therapy and heart disease; the differences in the profiles of risk factors are fairly modest. Moreover, adjustment for these differences has not materially altered the estimates of relative risk. Hence selection of healthier women for hormone treatment is unlikely to explain a major portion of the reduction in coronary heart disease.

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Benefits women with established cardiovascular disease

EDITOR,—Ward F M Posthuma and colleagues postulate that the reported benefits of hormone replacement therapy in reducing the risk of cardiovascular disease in postmenopausal women may be due to unintended selection of relatively healthy women.¹ The implication of this is that, had sufficient women with cardiovascular disease been present at the start of the epidemiological studies, a result with a lower significance would have been obtained. It is relatively simple to analyse this hypothesis by using data that were only partially considered in their review.²

Sullivan *et al* presented findings from a cohort of 1822 women with cardiovascular disease documented angiographically.³ Over 10 years the relative risk of death from cardiovascular disease fell by 89% among women using oestrogen compared with non-users. This implies that there is a greater benefit for postmenopausal women with established cardiovascular disease than for healthy women. It should also be remembered that premenopausal women with oestrogen deficiency resulting from a surgical or premature menopause have a risk of cardiovascular disease roughly three times that of women with normal oestrogen concentrations.

A second fundamental flaw in Posthuma and colleagues' paper is that the authors chose total cancer as being a disease that is "unlikely to be influenced by oestrogen." This assumption may be unsound. Fotsis *et al* showed that 2-methoxy-oestradiol, an endogenous oestrogen metabolite, is a potent inhibitor of the proliferation and migration of endothelial cells and an inhibitor of angiogenesis both in vitro and in vivo.⁴ Angiogenesis is essential for successful tumour growth, and the antiangiogenic properties of interferon alfa have been shown to be promising in the treatment of haemangiomas.⁴ Such findings in no way confirm a protective effect against cancer in oestrogen users after the menopause but may go some way to explaining the absence of the much predicted increase in breast cancer in such women. More fundamentally, it shows that one must be careful about making assertions about the impossibility of an observed effect.

Although the degree of protection that oestrogen replacement therapy offers against cardiovascular disease may be subject to selection bias favouring healthy subjects, whether this results in an overestimate or an underestimate of the true benefit cannot be stated with certainty. It remains to be elucidated whether oestrogen replacement therapy may also reduce the risk of all cancers in postmenopausal women through an effect on angiogenesis.

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- 1 Posthuma WFM, Westendorp RGJ, Vandenbroucke JP. Cardio-protective effect of hormone replacement therapy in postmenopausal women: is the evidence biased? *BMJ* 1994;308:1268-9. (14 May.)
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Authors' reply

EDITOR,—For reasons other than David Spiers suggests, the paper by Sullivan *et al* clarifies the subject. The figure, based on their data, shows the percentage of women using oestrogens at the time of cardiac catheterisation for each year of the study. The downward trend in the late 1970s indicates that the prescription of oestrogens was omitted in patients with signs and symptoms of coronary artery disease. The authors ascribed this reluctance to prescribe oestrogens to the increased frequency of myocardial infarction observed in men receiving oestrogens for secondary prevention. Most probably, oestrogen replacement therapy was stopped in patients who developed coronary artery disease and continued only in those with a favourable course. This differential prescription may explain why the effect of use of oestrogen was not significant when the data were analysed by treatment received at the time of

Percentage of women receiving oestrogen replacement therapy at time of diagnostic coronary angiography (data from Sullivan *et al*'s study¹)

angiography. It also explains the lower mortality in women who subsequently used oestrogens.¹

Even more fundamental than making assertions about the (im)possibility of an effect is weighing arguments for a plausible biological explanation.² Here we have to consider the possible beneficial effect of 2-methoxyoestradiol as an antiangiogenic compound not only for haemangiomas but, as stated in the original paper, also for rheumatoid arthritis, psoriasis, and diabetic retinopathy. As 2-methoxyoestradiol is an endogenous oestrogen metabolite the concentrations are probably higher in women. 2-Methoxyoestradiol is unlikely to have an important action because in most of these diseases neither sex predominates, whereas rheumatoid arthritis is almost exclusively a disease of women. On the other hand, recent Swedish evidence has led to the conclusion that the high oestrogen concentrations associated with pregnancy have a long term protective effect against breast cancer by inducing differentiation of normal mammary stem cells but increase the risk by stimulating the growth of cells that have undergone the early stages of malignant transformation.³

Now we know that the observational studies on cardiovascular diseases have been subject to selection of healthy subjects we should realise that their results are difficult to interpret.⁴ They give us clues for further development of scientific ideas on the relation between sex hormones and cardiovascular disease. An inference about preventive measures is a step too far.

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Supervision registers for mentally ill people

EDITOR,—Glynn Harrison and Peter Bartlett set out several anxieties concerning the implementation of supervision registers for mentally ill people.¹ In particular, they question the clarity of the Department of Health's guidance about which patients should be included on the registers.

Registers are being introduced, in line with recommendations made after the Spokes inquiry into the care of Sharon Campbell,² to ensure that patients most at risk of committing serious violence or suicide or of severe self neglect are identified by services so that their care needs can receive appropriate priority with the care programme approach in both the planning and delivery of care. The decision on whether a patient should be placed on or taken off the register must always be a clinical one; the role of guidance is to define the questions that should be asked to determine this. Harrison and Bartlett's argument that the guidance is loose and will be open to overinclusive interpretation rests on clauses quoted out of context.

The main statement is set out in paragraph 4 of the guidance note requiring the implementation of registers.³ This describes a set of increasingly narrow requirements, all of which must be met. Inclusion on the register is appropriate (a) if a person is a patient under the care of the specialist psychiatric services and (b) if a meeting of staff to review the patient's care programme concludes (c) that he or she is suffering from a severe mental illness and (d) is, or is liable to be, at appreciable risk of one of the three adverse outcomes (e) in some foreseeable circumstances (the specific circumstance should be specified) which (f) it is thought might arise in the particular case.

Hence the criteria excludes several groups. People who are not patients or have not been thoroughly reviewed fall at criteria (a) and (b). This does not imply that clinicians have no responsibility for these people; the supervision register is not, however, the appropriate tool. People who have deliberately taken a drug overdose and are thus at greater statistical risk of suicide may reach criterion (d) but may fall at criterion (e) or (f). Supervision of patients with dementia usually has a clear structure, and appropriate care plans should mean that these patients' potential risk of self neglect is not likely to be realised. These patients would thus usually fall at criterion (f).

Patients with personality disorders (including psychopathic disorder) were considered carefully during the development of the guidelines. Not all of them should be included on supervision registers: some offending behaviour is more appropriately considered within the criminal justice system. Some patients, however, are treated by the psychiatric services. Implicitly the services thus accept some responsibility for them, and their needs must be weighed when priorities are set and services planned. A third group of patients is those for whom the differentiation between psychosis and personality disorder is unclear for a time; this was the case with Sharon Campbell. The guidelines adopt the pragmatic approach that the test of whether a person who is not considered to be suffering from any other sort of mental illness might be considered to satisfy criterion (c) is the judgment by the local psychiatric services that he or she need to be the subject of continuing care.

Thus the Department of Health does not accept that the guidelines are ambiguous. It welcomes Harrison and Bartlett's advice to both purchasers and providers of health care that the task of prioritising the allocation of resources to those most at risk and in need of most care is important and pressing.

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2 Department of Health and Social Security. *Report of the committee of inquiry into the care and after-care of Miss Sharon Campbell. Presented to parliament by the secretary of state for social services by command of Her Majesty, July 1988.* London: DHSS, 1988. (Chairman J Spokes.) (Cm 440.)

3 NHS Management Executive. *Introduction of supervision registers for mentally ill people from 1 April 1994.*

Medical ethics

Identifying futile treatment is ethical

EDITOR,—I find it extraordinary that the British Medical Association's medical ethics committee should condemn a computerised system for predicting outcome in the intensive care unit as unethical without attempting to contact the doctor involved in its application.¹ The facts of the matter are simple. Intensive care beds are in short supply in Britain, and many patients are refused admission to the intensive care units. Because of this shortage of resources, difficult decisions have to be made about the appropriateness of treating patients who are critically ill. Any system that allows the attending physician to identify earlier a patient who is hopelessly ill deserves attention. The doctors' goals are twofold: to identify futile intensive care earlier so as to alleviate the suffering of patients who are inevitably going to die and to withdraw treatment in such hopeless cases earlier so as to make more efficient use of the scarce resource.

I believe that the challenge for those of us who work in intensive care in Britain is not only to argue strongly for more resources (which I do incessantly at Guy's Hospital) but also to improve the way we practise our medicine. How can this be unethical?

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1 Pryer N. Hospital bans the doomsday machine. *Evening Standard* 1994 Aug 24:1-2.

New technology will always pose dilemmas

EDITOR,—The debate in the media about the computer program that calculates prognoses for patients in intensive care has shown yet again the "Luddite effect" which so often obscures ethical debate in medicine. As with the confidentiality of faxes and the use of videotaped consultations in assessing doctors, fear of new technology provokes an irrational reaction against an advance that should be considered within an established moral framework.

The debate about how to decide when further treatment is futile and precisely when that point is reached is important. It has moral and empirical dimensions, which have received much attention, and no doubt much is still to be done in the ethics of this. Most people would agree, however, that decisions on whether further treatment is futile are sometimes necessary. The moral implications do not differ, whether these difficult decisions are made by the doctor using his or her brain unaided, using a stethoscope, or using a computer to help determine the probabilities. Indeed, since computers tend to calculate probabilities better than do clinicians, use of a computer is likely to be preferable so long as the empirical and moral presuppositions built into the software are sound.

While technology does produce new situations (such as in vitro fertilisation) that pose new moral problems, more often it just provides a new way of doing something familiar: computers are better calculating machines than the backs of envelopes, faxes are faster than the post, videos are a new type of medical record in essence no different from a paper file. Therefore the moral principles that govern the established technique also govern the

new one. The sender has the responsibility of ensuring that a letter is posted or a fax transmitted to the correct address; the recipient has the responsibility of ensuring that the letter or fax is received and opened in a confidential setting. The maker, holder, and transmitter of a medical record has responsibilities to respect the rights of the person whose record it is and to ensure that his or her confidentiality is maintained, whether that record is held on paper, a computer, or a videotape.

Principles may have to be clarified and may even be challenged by new technology, but they are not altered by it. The tendency to see the introduction of a new technique as posing a threat to established moral practice characterised several contributions to the recent debate. It seems to arise whenever new technology is involved, and it adds an irrational element that confuses the debate. Medicine often entails difficult and unpalatable decisions, and deciding when further intensive care is futile must be one of the hardest. While a computer program may affect the accuracy of the empirical predictions on which these decisions are based, it is irrelevant to the moral issues.

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1 Mihill C. Doctors defend use of a computer that predicts if patients live or die. *Guardian* 1994 Aug 25:2.

BMA's response

EDITOR,—The medical ethics committee has not formulated a policy on D J Bihari's computer system. The British Medical Association has consistently taken the view that computers are invaluable in medicine but must remain under the clinical control of the doctor. In short, they must be medicine's servant, not its master.

Bihari is less than charitable to BMA spokespeople who are asked to respond to the latest story in the media. In Bihari's case, the morning papers claimed that shortage of resources in his unit might result in a situation in which life and death decisions were taken by a computer rather than by the clinician responsible. At lunchtime Bihari said on the radio that the system was merely a diagnostic tool to help him with the difficult decisions he had to face each day. The trust in which he works issued a press statement insisting that the system was a research project and that there were no plans to introduce it into clinical practice. In the evening a television programme interviewed a patient who apparently owed his life to Bihari's decision to override the computer's prediction. Throughout the day the BMA's approach was consistent; it was the story that changed.

I agree with Peter D Toon that moral principles do not change with advancing technology, but it is simplistic to imply that the application of those principles do not do so. Sometimes new technology may show flaws in existing practice that require changes to be made; the confidentiality of paper medical records is a classic example. Similarly, there are major differences between a doctor's record of a consultation and a full videotape record. I am far from convinced that doctors recognise all the procedures that need to be in place to ensure that a videotape record is as secure as the doctor's record or that patients' consent is genuinely freely given and informed.

Confidentiality is a particular issue in which the application of a principle collides with advancing technology, and Toon refers to it. Over 10 years ago the BMA made proposals that would safeguard the principle of confidentiality and still allow computer technology to progress. The government refuses to implement the proposals despite steadily increasing evidence of abuse. Does Toon believe that doctors should either now meekly acquiesce or