CORRESPONDENCE

Nurses have dilemmas too Alison R McTaggart, SRN, and others....	1214	Out in the cold I Logan, MRCGP.....	1216	No objection to proper training J G Ball, FRCP.....	1217
Ventilation in operating rooms O M Lidwell, DPHIL, and others; P D Meers, FRCPATH.....	1214	Generic substitution E S Snell, FRCP.....	1216	Points Modification of prescription labels (N Higson); ABC of healthy travel (F M Owers; M Goldman; S Lucas); Auto-transfusion in the treatment of a ruptured uterus (Joanna Peacock); "Cancer Surveys" (W Jarvis); Letters to a young doctor (C Reisner; Karin Englehart); Blunt injury to the heart (D Lindsey and P Finley); Doctors and the drug industry (R D Mann)	1218
Health problems in former prisoners of war K C Hutchin, MD; R J Kerry, FRCPsych....	1215	Adverse reactions to new drugs W H W Inman, FFCM.....	1217		
Does halothane cause liver necrosis? G R Venning, FRCP.....	1216	The obstetric list R M Feroze, PRCOG.....	1217		
		Nursing career structure M J Jolley, SRN.....	1217		

We may return unduly long letters to the author for shortening so that we can offer readers as wide a selection as possible. We receive so many letters each week that we have to omit some of them. Letters should be typed with double spacing between lines and must be signed personally by all their authors, who should include their degrees. Letters critical of a paper may be sent to the authors of the paper so that their reply may appear in the same issue.

Correspondents should present their references in the Vancouver style (see examples in these columns). In particular, the names and initials of all authors must be given unless there are more than six, when only the first three should be given, followed by et al; and the first and last page numbers of articles and chapters should be included.

Nurses have dilemmas too

SIR,—We would like to express our appreciation of the series *Doctors' Dilemmas* shown on television during January and February this year (26 February, p 715). As nurses there were many issues raised which we recognised as important, and valid points were made. There were also some discussions during these programmes which we found disturbing.

The first related to the need for nurses to be aware of the extent to which patients suffering from inoperable cancer (or other conditions with a poor prognosis) have been informed by doctors of their diagnoses and prognoses. One programme featured a case where such a patient was given censored information, and the relatives were given a fuller version, and the desirability of bringing a nurse in to support both patients and relatives was discussed. The presence of a nurse at such interviews was not seen to be necessary by the doctors. We agree that the nurse's presence is not necessary or even desirable in all circumstances. If, however, a nurse is not subsequently informed about the sort of explanation given to the patient and his relatives the nursing staff are left in a very difficult position. Many patients feel that their anxieties and fears cannot be shared with busy doctors. Indeed, unfortunately in the hierarchical National Health Service the person to whom the patient relates most easily is the most junior nurse working in the ward. If she (or he) can obtain no guidance from seniors because they are themselves in ignorance of what transpired between doctor, patient, and relatives, how is this junior nurse, often only in her late teens, equipped to cope? In practice coping takes the form of avoiding the question and subsequently, if possible, the patient, thus increasing the patient's anxiety and distress.

The second point relates to the programme concerning trials of drugs on patients with a

very poor prognosis. The medical ethics committee featured in the programme comprised representatives of doctors, the chaplaincy, and the hospital administration but no nurse. During the discussion a panel member commented on the narrowness of representation on the committee and suggested that a nurse could bring a useful perspective to bear on the committee's discussions—possibly perhaps a nurse teacher. One of the doctors on the committee expressed amazement that a nurse could be of any assistance whatsoever and as for the suggestion of a nurse teacher—why not *any* teacher. We would like to draw attention to the fact that it is the senior nurses who are required to help student nurses upset by problems such as giving drugs with distressing or unpleasant side effects to patients with a very poor prognosis. The ward sister and the nurse teacher bear the brunt of coping with such distress.

We want to point out most emphatically that nurses are concerned with ethical issues and that it is important for doctors and nurses to be seen by the patients as a team working together for their benefit. The subject of ethics has concerned the Royal College of Nursing for many years and has been included in all full time postregistration courses which the college provides. The college has also issued publications giving guidance on this subject.¹⁻³ We would draw attention to section II.4 in the discussion document on the code of professional conduct, where it is stated: "Although choice of treatments and the initiation of clinical research projects is usually solely a medical responsibility nurses have the right and the duty to express opinions about the effect of such procedures on the patients under their care."

We would also draw our medical colleagues' attention to their own handbook⁴ section 6.9-6.11, where the mutual responsibilities of doctors and nurses are outlined. Section 6.10

states: "A nurse may on occasion be more aware of the needs of a patient than a doctor, and the relationship between nurses and doctors should be based on respect for each other's area of expertise within the framework of ultimate responsibility." We accept that the doctor is the leader of the team providing medical care but would like to see appreciation for the insight nurses gain through continuous contact with patients and the often close relationships developed through the provision of intimate personal care.

Many hours are devoted to ethical issues during our preparation for the diploma in nursing education leading to registered nurse tutor status. We as a group would like to see more nurses involved in the ethical discussions that concern our patients. That this is possible was illustrated admirably during the series in the discussion relating to the care of a patient suffering from renal failure, where nurses, social workers, and dieticians were all involved with the medical staff in decision making.

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¹ Royal College of Nursing. *Code of professional conduct: a discussion document*. London: Royal College of Nursing, 1976.

² Anonymous. *Ethics related to research in nursing*. London: Royal College of Nursing, 1977.

³ Anonymous. *Guidelines on confidentiality in nursing*. London: Royal College of Nursing, 1980.

⁴ Anonymous. *Handbook of medical ethics*. London: British Medical Association, 1980.

Ventilation in operating rooms

SIR,—Dr P D Meers (22 January, p 244) draws conclusions from the results of the Medical Research Council study of ultraclean air in operating rooms¹ which we think are misleading.

The results of the study do not show that "the contribution of airborne microbes to postoperative sepsis is very small"; on the contrary, they show that it is usually predominant in the important context of joint replacement operations, which, unlike operations in some other types of surgery, are not exposed to appreciable risk of endogenous infection.

In assessing the reduction in joint sepsis associated with perioperative antibiotic prophylaxis he makes no allowance for statistical variation in the data but asserts that while the reduction was substantial in conventionally ventilated operating rooms, it was minimal in ultraclean rooms, but very large when the air contamination in such rooms was still further reduced by the wearing of body exhaust suits by the surgical team. In fact the data conform rather well to the simpler hypothesis that antibiotic prophylaxis reduced the sepsis rate to about a quarter of the rate without antibiotics in all three circumstances and that this proportionate reduction combined, multiplicatively, with a halving of the rate for operations done in ultraclean air (with conventional clothing) or a reduction to 1/4.5 when body exhaust suits were worn (see tables II and IV in our paper).¹ This is shown in the table below, where the expected numbers of joint infections and, after the shilling stroke, the sepsis rate (%) calculated on these assumptions are shown in brackets.

Influence of prophylactic antibiotics on rate of sepsis

Ventilation	Clothing	Number of septic joints and rates of sepsis	
		Without prophylactic antibiotics	With prophylactic antibiotics
Control	conventional	39(39.5/3.4)	24(25.2/0.85)
Ultraclean	conventional	8(8.8/1.7)	9(5.4/0.42)
Ultraclean	body exhaust	5(4.1/0.76)	1(3.0/0.19)

For this table $\Sigma \chi^2 = 4.06$, with two degrees of freedom, a probability of about 0.2.

Dr Meers's discussion of the value of possible reductions in the incidence of sepsis as a consequence of the combined use of antibiotics and ultraclean air is confusing. There is, as he says, little doubt that antibiotic prophylaxis is the most cost effective single measure. The probable reduction from 3.4% to 0.85% is equivalent to the prevention of sepsis in 255 of every 10 000 operations. The use of an ultraclean air system in addition to the antibiotic might then be expected to reduce the sepsis rate to about 0.42%, preventing sepsis in an additional 43 patients; with body exhaust suits as well the sepsis rate could be as low as 0.19%, preventing sepsis in a further 23 patients. In view of the large number of joint replacement operations now being done (more than 30 000 a year) even the smallest of these figures is by no means insignificant, least of all to the patients who might be affected. In some respects these figures underestimate the possible benefits of these prophylactic measures: they include only those cases that required reoperation, because of sepsis, within the first two to two and a half years after operation, and even within this time there was an approximately equal additional number of patients in whom the surgeons suspected the development of deep sepsis within the joint. The figures are also average results from the 19 hospitals studied. They probably therefore represent the better institutions and sepsis rates may be appreciably higher elsewhere.

Because of the very high cost of septic breakdown after these operations (many thousands of pounds for each patient in direct hospital costs alone) all the procedures described above as leading to a reduction in sepsis are cost effective in hospitals where a reasonably large number of joint replacements are done. The benefit to the patients is an unquantifiable gain.

There is no way of telling whether improvement in antibiotic prophylaxis or other means of preventing infection might, at some future time, render the bacterial contamination of surgical wounds an irrelevance. It is important, however, to bear in mind that complete reliance on antibiotic prophylaxis carries with it the risk of failure in the presence

of resistant bacteria and that to establish the increased effectiveness of any improvement in the results of antibiotic prophylaxis would need a further study at least as extensive and prolonged as the MRC study.

It would indeed be an interesting, although quite expensive, experiment to observe, as Dr Meers suggests, an operating room in which all the staff, maybe 10 or more, wore body exhaust suits continuously attached to the extract system. There is, however, enough evidence to show that the resulting reduction in airborne contamination would be less than that achieved by simple ultraclean air ventilation.

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¹ Lidwell OM, Lowbury EJL, Whyte W, Blowers R, Stanley SJ, Lowe D. Effect of ultraclean air in operating rooms on deep sepsis in the joint after total hip or knee replacement: a randomised study. *Br Med J* 1982;285:10-4.

* *We sent a copy of this letter to Dr Meers, who replies below.—Ed, *BMJ*.

SIR,—I am grateful to you and to Dr O M Lidwell and others for an opportunity to discuss further the ventilation of operating rooms. I think this is useful because the present financial state of the National Health Service demands that expensive conclusions are not reached without full, informed debate.

My statement concerning the minimal contribution of airborne microbes to postoperative sepsis was not made in the context of the Medical Research Council trial, which has shown that such microbes are relevant in the special circumstances of deep postoperative sepsis in prosthetic orthopaedic surgery. I wished to point out the danger of extrapolating from these results to the higher sepsis rates in general surgery.

In their letter Dr Lidwell and others tabulate figures for deep sepsis as numerators only, accompanied by indirectly derived rates. I think it is helpful to clarify these by adding the denominators (taken from their original paper) and the directly derived rates of deep sepsis they observed, calculated for convenience and conformity with their text to the base of 10 000 operations. The table then reads 39/1161 (336 cases of deep sepsis for each 10 000 operations), 8/516 (155), and 5/544 (92), respectively, for operations done without prophylactic antibiotics under the three environmental conditions, and 24/2968 (81), 9/1279 (70), and 1/1584 (6), respectively, with prophylaxis.

Although the use of antibiotics was not controlled during the MRC trial, the salient fact to emerge is that prophylaxis on its own prevents 255 cases of deep sepsis for each 10 000 operations done. The question that inescapably then arises, and no matter that the trial was not constructed to answer it, is how to assess the cost benefit of adding ultraclean air to prophylaxis? Dr Lidwell and others compute the benefit as the saving resulting from 43 extra patients without deep sepsis for each 10 000 operations, against the reduction they observed of only 11. The acceptance of the higher figure

depends on the validity of the model they have used to interpret their findings. Other, perhaps more relevant, models are possible, and therefore the figure 43 is, to use their own term, hypothetical. This is important, because the size of the difference heavily influences the strength of any argument supporting the use of ultraclean air without exhaust ventilated suits, or even the use of exhaust ventilated suits on their own. If exhaust ventilated suits are used as well as ultraclean air when performing operations on patients receiving prophylaxis, 66 computed or 75 directly calculated patients benefit for each 10 000 operations performed. At either of these levels there is little doubt that the expense of clean air systems could be justified if all orthopaedic prosthetic surgery were to be concentrated in a few large centres where surgeons are prepared to wear the suits. The cost benefit equation becomes more difficult, however, if the operations are done in every district general hospital, and the outcome becomes even more obscure if the suits are not worn especially if or when prophylaxis is made more effective.

The cost benefit dilemma presented to us by Dr Lidwell and others is not unfamiliar. My point was, and is, that in resolving it the very clear, large effect of antimicrobial prophylaxis deserves the most urgent attention, and while it is receiving this the much more difficult problem relating to the use of clean air can be assessed. This may entail competition between rival models, but for the present I suggest that the valuable facts and figures Dr Lidwell and others observed should be allowed to speak for themselves, unclouded by hypothesis.

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Health problems in former prisoners of war

SIR,—May one of the many doctors who had personal and professional experience of avitaminosis in Japanese prisoner of war camps from February 1942 to September 1945 comment on your leading article on the persistent effects of malnutrition (19 March, p 917)? The time-scale of their onset may have topical relevance to the famine conditions prevailing in some Third World countries.

Signs of thiamine deficiency appeared in about eight weeks on a diet consisting almost entirely of boiled polished rice. The first cases were of neuritic beriberi in previous heavy drinkers, but soon afterwards neuritic, cardiac, and oedematous beriberi were occurring generally. There were also a few cases of encephalopathy. Riboflavin deficiency presented in the form of angular stomatitis, cheilitis, glossitis, and scrotal dermatitis from July 1942 onwards. Ophthalmic manifestations appeared about three months later, firstly as "granular cornea" but before long retrobulbar neuritis became common; the vision of many was permanently impaired.

The onset of florid nicotinic acid deficiencies dated from the end of 1942. Typical skin pellagra was fairly common, while psychosis was rare. With diarrhoea rife from other causes it was uncertain how much could be attributed to this deficiency.

"Burning feet," mentioned in your leading article as still being present in some cases 40 years on and prevalent from the end of 1942, was thought to result from nicotinic acid deficiency. This is a most trying condition consisting of a burning pain deep in the feet, especially at night or when the feet become warm. The feet, and sometimes the legs, be-