Thus chromosomal changes may be useful in the early detection of the risk of leukaemia and for selecting cytotoxic combinations with a low risk.

The studies of Kaldor *et al* emphasise the importance of the long term consequences of the treatment of cancer.^{6,7} In ovarian carcinoma the challenge is to develop more effective treatment; the induction of second malignancy is of subsidiary importance, at least in advanced disease. But now that Hodgkin's disease is cured in about 70% of cases the problem of second malignancy and other long term consequences is assuming much greater importance.²¹ The challenge here is to modify treatment to reduce the risk of leukaemia and other complications while maintaining effectiveness; for instance, less leukaemogenic combinations already developed also reduce the incidence of sterility in men and are as effective as the conventional four drug regimen mechlorethamine, procarbazine, vincristine, and prednisone—MOPP. Other strategies, such as avoiding splenectomy, may need to be considered. As a research tool chromosomal changes may prove to be helpful in the early selection of chemotherapy regimens least likely to induce malignancy.

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Sensorineural deafness

Cochlear implants are now available but research continues

Cochlear implants are back in the news again. At the beginning of this year the secretary of state announced that he had freed £3m for their introduction into the NHS.

Patients who can benefit from a hearing aid are not suitable for a cochlear implant. It is only the very profoundly deaf who should be referred. The special government funds are on the point of being distributed, but centres where these patients can be considered include Manchester, Nottingham, Cambridge, and three hospitals in London: University College Hospital, St Mary's, and Guy's. The list will no doubt increase continuously as the commercial application of this work is extended.

The publicity surrounding the secretary of state's announcement showed the way that advances occur in our society: through a shifting coalition of pressure groups presided over by governments anxious to follow prevailing trends. Publicity does, however, sometimes create confusion as to the facts. People with severe sensorineural deafness cannot be helped by conventional surgery and have to rely on hearing aids. Even these are useless to patients who have no hearing left at all, but in such patients electrical stimulation of the cochlea will be perceived as buzzing sounds. Efforts over the past 10 years have concentrated on making these sounds meaningful and related to the speech that has initiated them. The apparatus used has consisted, therefore, of an implanted electrode and an external box (about the size of a pocket calculator), which processes sounds into electrical signals.

Ten years ago several research groups throughout the world began work on these problems in different ways—in most cases in association with one of several important commercial

companies that began to produce appliances. Facing inordinate costs in both production and marketing, many of these groups fell by the wayside, and, though there are competitors, by far the most successful has been the Australian company Cochlear.¹ It has marketed a multichannel prosthesis that gives consistent results and it also provides technical support through a widespread marketing operation. Cochlear's prostheses are the ones most likely to be implanted in Britain in any numbers. The electrodes are inserted part of the way along the cochlea through the round window, and speech sounds are processed to extract the fundamental frequencies, thus presenting the patterns of speech.

Another prosthesis, this time from the United States, uses four intracochlear electrodes presenting speech sounds filtered into different bands, and this, too, has given excellent results (D K Eddington, National Institutes of Health consensus development conference on cochlear implants, Washington, DC, May 1988). It has no substantial marketing network in Britain and may find it difficult to establish itself.

Prostheses using cochlear electrodes cost around £10 000 each, not counting other costs. Virtually all patients find that they are helped in lip reading by the sounds they hear, and perhaps a quarter to a third may be able to follow conversation without lip reading. One or two have communicated on the telephone.

Nevertheless, anxieties about invasion of the cochlea have led some research groups to try another approach—extracochlear stimulation. This has been investigated in Britain by a group from University College Hospital and the Royal National Institute for the Deaf by using a single channel.²

Though the device is considerably cheaper than cochlear electrodes, the results are not as good.

Research has been funded continuously by the Medical Research Council through the External Pattern Input Group formed by Guy's Hospital, the department of phonetics at University College London, and the department of psychology at the University of Cambridge (J R Walliker *et al*, international cochlear implant symposium, Duren, 1987). This is the group that introduced both speech pattern presentation by using fundamental frequencies of the voice and external stimulation without direct invasion of the cochlea, and its work has influenced the development of virtually all prostheses. At present the External Pattern Input Group is studying the results of experimental multichannel

electrodes implanted at the apex and second turn of the cochlea, where they had not previously been tried, and it has also introduced a "neural network" computer to process speech. These advances break new ground and they should greatly reduce the cost of prostheses, but they are not commercially available as yet.

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Stress in junior doctors

1—Stress and support

Long hours are not the problem; lack of support is

Over the years Dr Jenny Firth-Cozens has given us two accounts of stress and distress in students and junior hospital staff.^{1,2} Now we have a third, which corroborates and extends her previous findings (p 89). Many house officers claim that there are times when they wish they had never taken up medicine, that their seniors give them inadequate support, and that, as we all know, the hours are too long. These long hours have become the major focus of complaint and their reduction the panacea.³

Long hours are indeed a problem, and to ask people to make crucial decisions when they are tired and miserable is not to get the best results. Though it is 25 years since Masterton showed how short of sleep an acute surgical team could become,⁴ little has been done to correct this and still not enough is known about its effect on performance (as distinct from morale). But I wonder if we are not using the issue of long hours to cloak deeper ills that affect the way we run acute hospital units.

Senior staff tend to look back on their time in residence as a period of enjoyment and character building despite the long hours and the hierarchical nature of the system. What we forget is that, though there were troubles and stresses, we also had a more settled and supportive environment. There was nearly always a caring domestic structure, with clean laundry and hot food, and the houseperson was also regarded with affection and respect by his or her patients. Time and social change have swept all this away. It is pointless to argue whether we are better or worse off for the loss of a comfortable environment based to some degree on servitude. All I am saying is that if you are in the front line and under stress it is not helpful to come back to base and fail to find the creature comforts that make life worth living.

Members of my generation also received support from above. Though the system was ruthlessly pyramidal, help was always available, and it was usually emphasised that you should always ask for it. You could take decisions on your own but you did not need to. The assurance of help seems now not so universally available, and juniors are expected to take action without the right of upward referral. We must blame this on inadequately defined rules.

Such indeterminacy is closely related to British clinicians' dislike of cross responsibility. To some extent they are

supported by studies that suggest that cross cover is counter-productive because of the times required in junior staff getting from ward to ward,⁵ but the dislike is also based on the premise of personal and continued involvement from consultant down to house officers for "our" patients. This is an honourable attitude but is exaggerated in importance by the anarchic idiosyncrasy of methods of patient care. The belief that what we do on the academic unit is different from (and better than) what Mr G or Mr R do in their firms is largely nonsense but difficult to eradicate. Thus it is hard to achieve the "standard operating procedures" that are so much a part of service and business life. The American residency system has worked harder on this than we have and provides a good model. There the emphasis is on clinically effective divisions of care with common standards and goals. Just as Delamothe claims that we should look to specialist bodies for a lead in legislating for shorter hours,³ so we should turn to them for guidance on standard operating procedures, however much these seem to undermine the clinical freedom of their fellows and members. We have to generate a trade off between personal and corporate responsibility that is based on the needs of patients and ensures a high standard of delivery of care and a reasonable life for junior staff.

The other element that juniors today often lack is leadership. It is a tenet of leadership that you must not ask others to do what you are not prepared to do yourself. Though responsibilities and skills change with seniority, there are certain qualities that should persist. These include: being on time; coming at once on request (and distinguishing clearly between a request and a call for advice); and being seen to be as committed as you wish others to be. Concepts such as leadership and esprit de corps are now at a discount, but it is easy to see their manifestation when one visits a high class clinical unit. Furthermore, complaints about terms and conditions of service are unlikely to come from such units—and this is not entirely because the system suppresses them.

At the risk of being classed as the civilian equivalent of Sassoon's staff officer—"fierce and bald and short of breath, living with scarlet Majors at the base and speeding glum heroes up the line to death"—I think we should also distinguish between stress and distress. Because we do not sufficiently acknowledge the existence of stress in clinical