suppressive treatment.[15 16] In the first of these some four fifths of patients treated with corticotrophin and high dose cyclophosphamide had shown stabilisation or improvement in their condition at one year, compared with half who had had plasma exchange, corticotrophin, and low dose cyclophosphamide and a fifth who had had corticotrophin alone.[15] In the second trial the two groups had been given prednisolone together with oral low dose cyclophosphamide and true or sham plasma exchange. In each group stabilisation and improvement was seen in over four fifths, with a statistically significant benefit in the plasma exchange group. The National Institutes of Health committee concluded that further studies are needed, but these results leave little hope that the technique will help much in routine treatment.

Plasma exchange is not effective in patients with motor neurone disease,[17 18] where it has been used in desperation rather than from any theoretical considerations. The post-infectious encephalomyelitides were not mentioned in the National Institutes of Health report, but, since they may have a similar pathogenesis to that of the Guillain-Barré syndrome,[19] such patients are certainly candidates for the procedure.

Finally, an uncontrolled trial of plasma exchange has been done in polymyositis/dermatomyositis.[20] Again, other forms of treatment were given, and the exchanges were done over a prolonged period so that the benefit claimed is difficult to accept. Yet again, in this group of disorders as well as in others, anecdotal accounts of excellent responses draw attention to the need for careful trials.

One of the points to emerge from the conference was the variable schedules of plasma exchange used—from one to two exchanges in one week only to exchanges carried out for up to a year. A satisfactory protocol, given for example in the Guillain-Barré syndrome, consisted of removing roughly one plasma volume per exchange (that is, 40-50 ml/kg) for three to five exchanges over seven to 14 days.[1] Immunosuppressive treatment is not given for the Guillain-Barré syndrome but is indicated for the other neurological diseases. Standardisation for future trials is recommended for not only the volume processed per exchange but also the frequency and total number of exchanges and the duration of treatment.[1]

Plasma exchange is not innocuous. Indeed, complications have been reported in almost half of patients, with an estimated three deaths per 10 000 procedures.[1] It must be considered only when experienced staff are available. Nevertheless, when it is successful plasma exchange also offers us new insights into the pathogenesis in these neurological diseases. Clearly it is beneficial in patients with some of these illnesses, and as we learn more of how it works and how the tissues are injured in the immune mediated nervous disorders we may expect it to be used with greater frequency and efficacy.

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Burnout

Concern about psychiatric disorders and substance abuse among doctors has led to elaborate procedures to help sick doctors and their families. Until recently, however, less interest has been shown in the less dramatic but much more common problems related to job dissatisfaction. These appear to be particularly common in obviously stressful settings, such as intensive care, neonatal paediatrics, and terminal care,[1 2] and most writers now use the term burnout, introduced in 1974 by Freudenberger to describe a syndrome that he believed was especially common among health workers.[3] Recent reports have continued to concentrate on health workers[4 5] and others such as teachers[6] and policemen[7] who work directly with people, but the problems are common in many other occupations, including business and management.[8]

The word burnout has become popular, but the syndrome itself has proved elusive and there is no agreed definition. It is usually seen as having three related but independent components: emotional exhaustion (tiredness, somatic symptoms, irritability, accident proneness, depression, and excessive alcohol consumption); depersonalisation (treating patients and other people as if they are objects); and low productivity accompanied by feelings of low achievement.[4 5] Whether these symptoms constitute a distinct burnout syndrome that can be distinguished from other forms of stress and job dissatisfaction is still uncertain.

Despite systematic research and the development of standard measures of burnout[9] little progress has been made in understanding the causes. The conclusion of a 1982 review still stands: "Thus far burnout has been primarily, if not entirely, a descriptive term yielding little insight into explaining its causes, prevention, and cures."[10] The most important factors are probably personality and characteristics of the job such as responsibility, variety of tasks, hours, support from others, and rewards. Proposals for prevention and treatment have concentrated on modifying these factors.

Although the results of research on burnout are disap-

pointing, we cannot ignore the descriptions by many health workers of a constellation of psychological complaints associated with their work. Undeniably common in high pressure settings, similar problems may arise from boredom with an unchanging routine, especially if there is professional isolation.[11] Many accounts have described how general practitioners, hospital doctors, and dentists have become demoralised by the lack of variety and new interests in their work.

What can be done to prevent and to treat burnout? The first essential is to acknowledge the problem. Commonsense recommendations include redesigning the job to increase variety, prevent excessive hours, and provide better support. Rewards should also be improved—both praise and interest from more senior staff and, more tangibly, working conditions, holidays, and opportunities for study leave. Although nurses and those who work in intensive care units have argued for regular support groups led by an outside psychiatrist or other counsellor, most units should be expected to organise adequate support from within their own resources. Many unhappy units have recognised their problems and solved them, either alone or with outside help; the resulting improvements have reduced staff turnover and improved morale and the quality of patient care.[12]

Awareness of burnout and other forms of job dissatisfaction has wider implications. Many simple measures could improve greatly the contentment and morale of health workers and so improve patient care. Working conditions, career structures, job descriptions, and rotas within hospitals and general practice need to be carefully thought out. All of us need to feel that our work is valued and not excessive and that it offers the variety, flexibility, and rewards to make it worth while and enjoyable over a working lifetime. Neither doctors nor the health service have so far recognised adequately the importance of morale.

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Pregnancy and opiate addiction

The 1980s has seen an upsurge in opiate addiction among the young, and the number of pregnant addicts is increasing.[1] In the mother complications are due to poor nutrition, general self neglect, and lack of antenatal care, as well as dirty needles and adulterants in street heroin.[2] In the baby problems such as low birth weight and prematurity may be minimised with a low dose methadone maintenance programme combined with good antenatal care.[13]

The features of heroin and methadone withdrawal in the infant are usually obvious in the first few days of life. Neonates show a distinctive pattern of hyperactivity, irritability, restlessness, tremors, and convulsions. Persistent high pitched crying and constant sucking and chewing of the fingers which cannot be relieved by swaddling and comforting are frequent. There is usually also a high level of arousal, with muscular hypertonia, which occasionally alternates with brief periods of hypotonia.[14] As a result these infants have problems in maintaining alertness, orienting their vision and hearing, and using proper motor control, and they do not respond to maternal comforting.[5] Hence a vicious cycle of infant passivity and maternal rejection is set up.[6]

Infants addicted to methadone may not develop the features for two to four weeks after withdrawal because of storage and prolonged metabolism and excretion of the drug. Some authors have noted restlessness, agitation, tremor, and sleep disturbance for as long as three to six months after birth, classifying this state as subacute withdrawal.[1] Most neonates show some features in varying degrees and may be treated with chlorpromazine, benzodiazepines, or phenobarbitone depending on what the mother has been receiving.[3,7,8]

Addicted infants are smaller with a reduced head circumference compared with controls.[1,6,9] As toddlers and children they are highly energetic, active, and talkative, tending to have difficulty in fine motor coordination and to lack persistence. They also have difficulties in self adjustment and relating socially. A prospective study,[4] in which age, education, gravidity, smoking, nutrition, race, and alcohol were controlled for, concluded that fetal opiate exposure had a direct effect in producing the small head size and thus the neurobehavioural outcome.[6] Nevertheless, "at risk" studies, which compare children exposed in utero to drugs with children not exposed, have their limitations.[6,10] They assume that any difference in behaviour between the groups is due to the toxic effects of the drug on the child during gestation. It is impossible to produce a sample matched for all influencing variables and many other factors might determine infant behavioural outcome, such as paternal drug use, maternal polydrug abuse, nutrition, quality of family life, and socioeconomic state. In general, moreover, infants at risk for poor development because of drug use during pregnancy are more likely than control infants to be affected by poor family resources and a poor obstetric history.

Most recent work has looked at the effect of methadone on the fetus, but longitudinal studies have not shown that it is appreciably teratogenic. The motor effects are transient, reversible, and due to cerebral irritation. Such effects may interreact with medical, obstetric, or psychosocial factors to cause attention deficits in a few children, but if the cycle of the irritable infant interacting with the vulnerable withdrawing mother can be broken, and intensive educational support given in a structured parenting programme, any remaining deficits in the child can be overcome.

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