

made for measuring apolipoprotein B concentration, which is sometimes raised in patients with coronary heart disease but with normal low density lipoprotein cholesterol concentrations,<sup>12</sup> especially if they are hypertriglyceridaemic. Lack of prospective data and difficulties in standardising assays, however, have been used as counter arguments.<sup>13</sup> In case-control studies lipoprotein (a) has proved to be a powerful discriminant between those with and without coronary heart disease,<sup>14</sup> but as with apolipoprotein B prospective data are scanty and there are problems with its assay. Once these limitations have been overcome, however, measurement of these and other emerging risk factors, including subspecies of high density lipoprotein,<sup>15</sup> may help define more precisely the risk of coronary heart disease and thus enable decisions on whether to treat, for example, premenopausal women with hypercholesterolaemia, to be more soundly based.

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- 1 Shepherd J, Betteridge DJ, Durrington P, *et al*. Strategies for reducing coronary heart disease and desirable limits for blood lipid concentrations: guidelines of the British Hyperlipidaemia Association. *BMJ* 1987;295:1245-6.
- 2 British Cardiac Society Working Group on Coronary Prevention. Conclusions and recommendations. *Br Heart J* 1987;57:188-9.
- 3 Study Group, European Atherosclerosis Society. Strategies for the prevention of coronary heart disease: a policy statement of the European Atherosclerosis Society. *Eur Heart J* 1987;8:77-88.
- 4 National Cholesterol Education Program. Report of the expert panel on detection, evaluation, and treatment of high blood cholesterol in adults. *Arch Intern Med* 1988;148:36-9.
- 5 National Cholesterol Education Program. Recommendations regarding public screening for measuring blood cholesterol. Summary of a National Heart, Lung, and Blood Institute workshop, October 1988. *Arch Intern Med* 1989;149:2650-4.
- 6 Leitch D. Who should have their cholesterol concentration measured? What experts in the United Kingdom suggest. *BMJ* 1989;298:1615-6.
- 7 Smith R. Expert committee wants opportunistic cholesterol screening. *BMJ* 1990;301:138-9.
- 8 Naylor CD, Basinski A, Frank JW, Rachlis MM. Asymptomatic hypercholesterolaemia: a clinical policy review. *J Clin Epidemiol* 1990;43:1029-1121.
- 9 Blackburn H, Watkins LO, Agram WS, Carleton RA, Falkner B. Task Force 5: primary prevention of coronary heart disease. *Circulation* 1987;76(suppl 1):164-7.
- 10 Garber AM, Sox HC, Littenberg B. Screening asymptomatic adults for cardiac risk factors: the serum cholesterol level. *Ann Intern Med* 1989;110:622-39.
- 11 Mann JI, Lewis B, Shepherd J, *et al*. Blood lipid concentrations and other cardiovascular risk factors: distribution, prevalence, and detection in Britain. *BMJ* 1988;296:1702-6.
- 12 Sniderman AD, Silberberg J. Is it time to measure apolipoprotein B? *Arteriosclerosis* 1990;10:665-7.
- 13 Vega GL, Grundy SM. Does measurement of apolipoprotein B have a place in cholesterol management? *Arteriosclerosis* 1990;10:668-71.
- 14 Seed M, Hoppichler F, Reaveley D, *et al*. Relation of serum lipoprotein (a) concentration and apolipoprotein (a) phenotype to coronary heart disease in patients with familial hypercholesterolemia. *N Engl J Med* 1990;322:1494-9.
- 15 Puchois P, Kandoussi A, Fievret P, *et al*. Apolipoprotein A-I containing lipoproteins in coronary artery disease. *Atherosclerosis* 1987;68:35-40.

## Unemployment: here we go again

### *Unemployment rising, evidence of harm strengthening*

Next week's official unemployment figures are likely to show unemployment again rising above two million in Britain. Using different definitions the Unemployment Unit calculates that it is already nearly three million, while the National Institute of Economic and Social Research uses the government definition to estimate that there will be another 500 000 on the dole by next Christmas. The unemployment rate is even higher in Spain, Belgium, Canada, Australia, France, Italy, and some of the American states, and many countries may be in for a deep and prolonged recession. The rapid reappearance of mass unemployment (which has, of course, never gone away in Britain) has reawakened medical interest in the effects of unemployment, and while our attention was diverted by what J K Galbraith calls "an era of explosive securities speculation and financial manipulation" the evidence of harm has hardened.<sup>1</sup>

Galbraith, the world's most literate economist by far, gave evidence on unemployment to the Senate Committee on Labor and Human Resources in January and said: "Let us remind ourselves what lies behind those numbers—personal and family trauma, the loss of self esteem, the tight lipped fear about the future, the wonder as to whether there will be a job and income soon or ever again."<sup>1</sup> He identified financial and real estate speculation and "the heavy transfer of spendable income from the poor to the rich" as causes of the recession. This year has also seen the publication of the most detailed study yet of the causes of unemployment over the past decade in Britain, and Professor David Worswick concludes that the best evidence refutes the classical economic wisdom that unemployment is caused by high real wages.<sup>2</sup> He also points out that the monetarist medium term financial strategy of the British government was a failure and carried a cost in terms of persistent and prolonged unemployment that was inordinately high. In other words, unemployment is not as inevitable as many governments would have us believe. This matters to doctors because all the radical solutions to the pain of unemployment lie with economists and politicians.

The evidence that unemployment kills—particularly the middle aged—now verges on the irrefutable. The classic

spinoff from the longitudinal study of the Office of Population Censuses and Surveys showed that mortality was roughly a third higher in men seeking work at the time of the 1971 census compared with the whole group over the next decade.<sup>3</sup> The study based on the 1981 data confirmed these results,<sup>4</sup> which were further supported by similar studies from Italy<sup>5</sup> and Denmark.<sup>6</sup> Then last year saw the publication of a Finnish study that found mortality to be 90% higher among the unemployed than the employed after controlling for all background variables<sup>7</sup>; the study also showed a "dose-response" relation, with mortality increasing with duration of unemployment. In all the studies death rates are particularly high from suicide, accidents and violence, and circulatory diseases. Further inroads into the mechanism of the increased mortality were produced by last year's Swedish study showing raised serum cholesterol concentrations and blood pressure in unemployed men, particularly those sleeping badly.<sup>8</sup>

The evidence of sleep disturbance ties in with the strong evidence of how unemployment harms mental health, which was admirably and completely summarised by Peter Warr, the leading researcher in the subject, in a monograph published in 1987.<sup>9</sup> A recent study of 80 men normal at the time of redundancy found that 14% developed a "case" disorder of depression and anxiety and a further 17% developed a borderline case in the months after losing their jobs; pre-existing economic difficulty was one of the factors that made clinical depression more likely.<sup>10</sup>

During the time that unemployment has dropped in Britain the study of Beale and Nethercott of redundancy in a meat products factory in Wiltshire has come to further fruition, building on the original finding that men and women and their families threatened with redundancy increased consultation rates by 20% and outpatient hospital visits by 60% compared with controls.<sup>11</sup> They have now shown that many of the increased consultations resulted from chronic conditions (requiring treatment for over one year), which were six times more common among the unemployed.<sup>12</sup> Cardiovascular disorders were particularly common in the unemployed men. In a follow up study men who remained unemployed were

compared with men who got jobs; the unemployed men consulted general practitioners 57% more often about 13% more illnesses, were referred to hospital outpatient departments 63% more often, and visited hospital twice as often.<sup>13</sup> These results fit with data from the general household survey showing that men seeking work consult general practitioners 80% more than those in employment, and those who have been out of work for five years or more consult even more often.<sup>14</sup>

How should health workers respond to this hardening evidence on the harm of unemployment? They must place it before politicians because the appalling human cost of unemployment must not be forgotten in the economic discussions that Worswick's study shows to be less certain than some monetarist economists might pretend.<sup>2</sup> Training and temporary employment are crucially important, and the evidence is that the government's employment training scheme is not working well: more than half of those completing the scheme are unemployed three months later.<sup>15</sup> Social security payments should be improved because poverty is one of the main mediators of the damage caused to health by unemployment. Doctors need to be sensitive in their consultations with the unemployed and encourage independence rather than dependence on prescription drugs. Fineman suggests that this may be done in a book published last year.<sup>16</sup>

Finally, it may be that the contracts of the new health service could provide mechanisms for responding to the health problems of the unemployed.

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- 1 Galbraith JK. Owing up to the recession. *Harper's* 1991;March:21-5.
- 2 Worswick GDN. *Unemployment: a problem of policy*. Cambridge: Cambridge University Press, 1991.
- 3 Moser KA, Fox AJ, Jones DR, Goldblatt PO. Unemployment and mortality: further evidence from the OPCS longitudinal study 1971-81. *Lancet* 1986;i:365-6.
- 4 Moser KA, Goldblatt PO, Fox AJ, Jones DR. Unemployment and mortality: comparison of the 1971 and 1981 longitudinal study census samples. *BMJ* 1987;294:86-90.
- 5 Costa G, Segman N. Unemployment and mortality. *BMJ* 1987;294:1550-1.
- 6 Iversen L, Andersen O, Andersen PK, Christoffersen K, Keiding N. Unemployment and mortality in Denmark, 1970-80. *BMJ* 1987;295:878-84.
- 7 Martikainen PT. Unemployment and mortality among Finnish men, 1981-5. *BMJ* 1990;301:407-11.
- 8 Mattiasson I, Lindgarde F, Nilsson JA, Theorell T. Threat of unemployment and cardiovascular risk factors: longitudinal study of quality of sleep and serum cholesterol concentrations in men threatened with redundancy. *BMJ* 1990;301:461-6.
- 9 Warr PB. *Work, unemployment, and mental health*. Oxford: Clarendon Press, 1987.
- 10 Eales MJ. Depression and anxiety in unemployed men. *Psychol Med* 1988;18:935-45.
- 11 Beale N, Nethercott S. Job loss and family morbidity: a study of factory closure. *J R Coll Gen Pract* 1985;280:510-4.
- 12 Beale N, Nethercott S. The nature of unemployment morbidity. 2. Description. *J R Coll Gen Pract* 1988;38:200-2.
- 13 Beale N, Nethercott S. The health of industrial employees four years after compulsory redundancy. *J R Coll Gen Pract* 1987;38:390-4.
- 14 Yuen P, Balarajan R. Unemployment and patterns of consultation with the general practitioner. *BMJ* 1989;298:1212-4.
- 15 Anonymous. *ET leavers survey. Working brief*. London: Unemployment Unit, 1991:4-5.
- 16 Fineman S. *Supporting the jobless*. London: Tavistock, 1990.

## Corticosteroids in bacterial meningitis

### *Not yet justified for all patients*

Death rates from bacterial meningitis have remained largely unchanged despite a bewildering portfolio of potent antibiotics. Mortality from *Haemophilus influenzae*, meningococcal, and pneumococcal meningitis is about 5%, 9%, and 20% respectively.<sup>1</sup> The picture is even more gloomy for neonatal Gram negative bacillary meningitis, in which almost half of those infected die<sup>2</sup> and non-fatal sequelae affect 10-20% of the survivors.<sup>3</sup> The early complications include relapse of infection, hydrocephalus, subdural effusion, brain abscess, and cranial neuropathies. Long term complications such as epilepsy, psychomotor retardation, and, in particular, poor hearing may show themselves only at school age.<sup>4</sup>

Much has been learnt about the pathophysiology of bacterial meningitis from experimental injections in rodents and rabbits. Speaking immunologically, the cerebrospinal fluid is a deprived environment, deficient in phagocytic cells, complement, and immunoglobulins.<sup>5</sup> The cellular response to infection includes evidence of altered polymorphonuclear cell function and impaired phagocytosis.<sup>6</sup> The rise in hydrostatic pressure in the cerebrospinal fluid, an inflammatory vasculitis, and the accompanying cerebral oedema act together to impair the blood supply to sensitive nerve cells, especially within learning centres such as the hippocampus.<sup>7</sup> Neuronal function is further compromised by the fall in glucose in the cerebrospinal fluid which accompanies the change to anaerobic glycolysis and lactate accumulation.<sup>8</sup>

For many years great emphasis was placed on microbial virulence to explain these events. The spotlight is now firmly on the host response to infection, however, and in particular an increasing array of signal molecules. Identification of cytokines such as tumour necrosis factor (cachectin), interleukins (especially interleukin 1 and interleukin 6), interferons, prostaglandins (PGE<sub>2</sub> and PGI<sub>2</sub>), and platelet

activating factor have increased our understanding of the complex pathophysiology (C Cabellos *et al*, interscience congress on antimicrobial agents and chemotherapy, Atlanta, Georgia, 1990).<sup>9-11</sup>

Microbial products play a critical part in triggering these cytokine cascades. These include pneumococcal peptidoglycan and teichoic acid, cell wall oligosaccharide from *H influenzae*, and cell wall lipid A (endotoxin) in Gram negative bacteria.<sup>12</sup> Indeed, much of the inflammatory response can be provoked by administration of endotoxin, and in experimental meningitis in animals this leads to a vigorous increase of tumour necrosis factor, lactate, and IL-1 in the cerebrospinal fluid.<sup>13</sup> Release of endotoxin and IL-1 $\beta$  has also been shown to occur in humans being treated for meningitis and is in part brought about by lysis of microbial cells in response to antibiotics.<sup>14</sup>

In pharmacological doses adrenal corticosteroids down regulate many components of the inflammatory response and also lower cerebrospinal fluid hydrostatic pressure.<sup>15</sup> Despite their chequered history in the treatment of serious sepsis corticosteroids are under investigation once again in the treatment of acute, non-tuberculous bacterial meningitis. This is in spite of much published work showing no firm evidence of an improved outcome: a recent meta-analysis of published randomised concurrently controlled studies of steroids in the treatment of meningitis failed to support their use in bacterial meningitis in either children or adults.<sup>16</sup> This result may not, however, have been unexpected owing to the variation in choice of steroid, dosage regimen, duration, and timing of treatment. Nevertheless, while recent progress in understanding the pathophysiology of meningitis and the role of cytokine mediators has stimulated the investigation of a range of inhibitors of these signal molecules—such as