family contacts before offering chemoprophylaxis is unnecessary and does not contribute useful information; on the other hand, when clusters of cases occur, estimates of the prevalence of carriage of virulent strains may be required to help in developing a control strategy. Such incidents should be discussed with the Communicable Diseases Surveillance Centre (01 200 6868) or the Public Health Laboratory Service meningococcal reference laboratory, Manchester (061 445 2416) (or in Scotland the Communicable Diseases (Scotland) Unit or the meningococcal reference (Scotland) laboratory (041 946 7129)).

If meningococcal infections are due to either group A or C organisms (but not group B) vaccinating the contacts may be considered for children in schools where more than one case has occurred and in households of cases where there are children or teenagers, given the prolonged increased risk of disease in household contacts.[9] The use of vaccines should be discussed beforehand with the Communicable Diseases Surveillance Centre or Public Health Laboratory Service meningococcal reference laboratory, Manchester (or in Scotland the Communicable Diseases (Scotland) Unit or the meningococcal reference (Scotland) laboratory).

In controlling the disease in the community close communications must be maintained among clinicians, microbiologists, and public health doctors so that suspected cases are reported immediately by telephone and subsequently by formal notification. The community physician responsible for infection control should keep a register of all suspected cases of meningococcal disease, both as a record of actions taken and to facilitate early recognition of clusters of cases.

In the long term we hope that meningococcal disease will be controlled by developing vaccines that give prolonged protection against all groups of meningococci. Currently the first field trials of group B vaccines are in progress in Chile and Cuba.

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Alcohol and the immune system

A causative agent in altering host defence mechanisms

A 20 year old man with a drink problem became bedridden with pneumonia and severe peripheral neuropathy. *Pneumocystis carinii* and tubercle bacilli were isolated from his sputum, and it was thought that he might have AIDS. The results of a test for HIV were negative, however, and his condition gradually improved over many months with his abstention from alcohol.

Although the immune system may be suppressed in alcoholic liver damage[1] or malnutrition,[2] the possibility that excessive alcohol alone may damage the immune system has received less attention.[3,4] Heavy intakes of alcohol may alter the production and turnover rates of lymphocytes in the thymus or spleen, or both, with a resultant shift in the relative concentrations of the lymphocyte subpopulations.[5] These include B cells, which are precursors of the plasma cells that secrete specific antibody, and T cells, which mature under the influence of the thymus and are concerned with cell mediated immunity. Alcoholic subjects with leucopenia also have a low absolute lymphocyte count, which is reversed when they stop drinking.[6] When compared with values in control subjects the circulating T lymphocyte counts are significantly reduced in alcoholic subjects, as is their ability to undergo blastic transformation on mitogenic stimulation.[7,8] Furthermore, non-specific activation of B lymphocytes occurs in all patients who drink alcohol regularly in excess.[9] In vitro alcohol alters both the development and the sensitivity of lymphocytes as a result of decreased natural killer cell activity,[10] which is also depressed when assayed in the presence of alcohol.[11] β Endorphins in the brain normally enhance killer cell activity but are reduced by the chronic abuse of alcohol,[12,13] and this may be a further cause of impaired immunity.

Prolonged drinking disturbs the reticuloendothelial system of the liver by interfering with the mobilisation and activation of macrophages and their phagocytic activity.[14] In vitro alcohol impairs the chemotaxis and adherence of granulocytes to capillary walls. Impaired adherence might prevent diapedesis of granulocytes through the capillary walls to sites of injury, and locally impaired phagocytosis and intracellular killing of bacteria in lung tissue might partly account for lowered resistance to pulmonary infections among alcoholic subjects.[15]

Alcohol appreciably inhibits cell mediated immunity, and this may contribute to the high prevalence of tuberculosis among alcoholic subjects.[16] Antiviral immunity requires natural killer cells and antibody directed cytotoxicity,[17] both of which are suppressed by alcohol, so that alcoholic subjects may be at an increased risk of both hepatitis and HIV infection.

Other factors might also be concerned with altered immunity in alcoholism. Undernutrition, associated with a reduced intake of protein, vitamins, and sources of energy, may lead to an increased production of corticosteroids, which might then suppress cellular immune function.[4] The synthesis of immunoglobulin G by peripheral blood mononuclear cells in vitro and serum IgG concentrations in vivo are abnormal in alcoholic subjects, even when they have no clinical or biochemical features of liver damage.[6,9] Raised concentrations of IgA might result from damage to the gastric and the intestinal mucosa leading to stimulation of the immune system.[18] An outpouring of primed T helper cells or B cells into the circulation, together with reduced phagocytic activity of the Kupffer cells, would result in an "antigenaemia,"[9] with a constant stimulation of the immune

system. Overt disease might then follow from impaired suppressor T cell function and the deposition of immune complexes in the liver and lung.

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Being bullish about medical research

The need to accept concentration

Deep gloom has been the prevailing mood among medical researchers for a long time. In some at least it is lifting. The government's policies of selection, concentration, and exploitation have created some winners as well as some losers. The winners are those who have taken up the tremendous opportunities offered by the new biology, reorganised themselves into larger—often interdisciplinary—units, done well in the selection exercises, accepted life on short term contracts confident that they will be good enough to win more, and recognised the importance of seeking funds not only from governmental sources but also from charities and industry. The losers are those left in shrinking, old fashioned departments, overwhelmed by teaching and service commitments, and finding it impossible to do innovative research: the new elitism has left them behind. Today's report from the Academic Medicine Group (p 573) contains the voices of both winners and losers, making it somewhat bland and contradictory. We believe the painful consequences of concentration must be accepted.

The good news about medical research has not received as much attention as it should—perhaps because the losers have understandably been shouting louder than the winners. But there is good news. The arguments over the new National Centre for Clinical Research have finally been settled, and the government has in the past month agreed to pay £2m for site development at Hammersmith. More money is almost certain to follow, and it is crucial to the future of clinical research in Britain that the centre be made to work. But the centre is accepting that it cannot go it alone and must cooperate fully with other organisations, including the British Postgraduate Medical Federation and the undergraduate medical schools in London. The federation is now working hard to link together London's unique collection of research institutions and specialist postgraduate hospitals, and the University of London is looking at further linking its constituent parts. Meanwhile, great intellectual excitement is being generated by the Medical Research Council's directed research programme on AIDS, and basic and clinical scientists from different disciplines are being brought together in a way that may serve as a model for attacking other medical problems.

Also in the past month extra government money has been given to fund interdisciplinary research centres (p 550): the Medical Research Council is now funding four—in cell biology, toxicology, protein engineering, and molecular science—and three more are planned—in neurodegeneration, the brain and behaviour, and molecular genetics. There is strong theoretical and empirical evidence to support the thinking behind these interdisciplinary research centres,[1 2] and they will probably proliferate.

There is also good news on the horizon for training. Although the funding of intercalated BSc degrees is being squeezed, the first British MB-PhD programme is likely to begin next October—at Cambridge University, and others are likely to follow. In these programmes undergraduates train in basic science and medicine simultaneously, thus preparing them to be the people that link the two disciplines. Such programmes started in 1964 in the United States and have expanded rapidly till there are now around 1000 students taking the courses. It may be that money is better invested in these programmes than in the shorter intercalated BSc degrees, although fewer medical schools will be able to offer the more intensive degrees. Certainly, MB-PhD degrees will probably bring richer returns than MD degrees, which are often undertaken unwillingly by doctors with little interest in research. Many MD degrees result in either no publications or none that are worthwhile; often they are not completed.[3] There has been too much "Mickey Mouse" research undertaken in British medical schools.

The bad news for British medical research is less about money[4] and more about manpower. Although the data are sketchy, most senior researchers believe that fewer bright young graduates are entering careers in research than in the past, being deterred by the inadequate facilities, the salaries, and the poor career prospects. Medical graduates in particular recognise that an NHS career combined with private practice offers much richer rewards and more stability than a career in academic medicine. The Academic Medicine Group is thus right to support the call for 250 new career posts in academic medicine, but the posts need to be concentrated. The manpower proposals of *Achieving a Balance* also threaten to make it more difficult for young doctors to combine research and service work, which may not be bad if it separates those who are serious about research from those who are doing it simply to decorate their curriculum vitaes.[5] The government