

France (38.2), Japan (37.8), and Germany before unification (48.2).<sup>8</sup>

Given these figures, it is unsurprising that the implications of an aging population for spending on welfare are not dramatic. It has been estimated that if Britain spent the same as it does now on welfare for each person of a given age, but had the age structure that will exist in 2041, the total spending on welfare would rise by just over 11%, equivalent to about 2.5% of the gross domestic product.<sup>9</sup> Another estimate confined to health and social services concludes that aging will add only 10% to per capita spending on these services by 2026.<sup>10</sup>

Moreover, the assumption that we shall continue to spend the same amount per person on the care and support of elderly people as we do now may be unjustified. This is particularly true with respect to health care. It is a matter of controversy whether elderly people at any given age are getting more or less healthy.<sup>11</sup> But an increased awareness of the different cost effectiveness of treatment for people at different ages, coupled with pressures to allow people to "die with dignity," may lead to a shift of spending towards younger age groups.<sup>12</sup>

In fact, it could be argued that the real British crisis is quite the reverse of that commonly portrayed. A social phenomenon whose importance is difficult to exaggerate is the growth in inequality and poverty over the past decade. The personal disposable income of the average household after housing costs rose by 35% between 1979 and 1990-1; but that

of the bottom 10% of the population fell by 14%, and their share of the national income was halved. The proportion of people living in households with an income below half the average income in 1979 was 9%; by 1990-1 it had increased to 24%.<sup>13</sup> Without the welfare state the situation would be far worse. Welfare services are arguably the only bulwark against increasing poverty and ill health, social misery, and perhaps social instability. The question is not whether we can afford to have a properly funded welfare state; it is whether we can afford not to have one.

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## Atopy and its inheritance

### *Genetics is building a bridge between the immediate and delayed components of atopy*

It took a philologist to invent the word "atopy." Coca and Cooke launched it in 1923,<sup>1</sup> but they had been supplied with the word, custom built, by Professor Perry of Columbia University. Since then atopy has more than lived up to its linguistic derivation as a "strange" disease: it has been slippery to handle, and establishing its mode of inheritance has sometimes seemed almost impossible. Nevertheless, a strong genetic component was obvious from the start. But so too was a contribution from the environment, creating an awkward tangle that has taken 70 years and the full might of the new genetics to unravel even to the present limited extent.

Atopy is a state in which an exuberant production of IgE occurs as a response to common environmental allergens, and atopic subjects may or may not develop one or more of the atopic diseases such as asthma, hay fever, and eczema. Investigators into the genetics of atopy therefore have two options: to look at IgE concentrations or to look for the atopic diseases themselves; and, of course, the two do not always correspond. Up to a third of those with undoubted atopic eczema, for example, have normal IgE concentrations.

In 1988 a multidisciplinary group in Oxford interested in respiratory allergy defined atopy on the basis not of clinical disease but of positive response to a prick test, a positive specific IgE titre, a high total concentration of IgE, or any combination of these.<sup>2</sup> It proposed an autosomal dominant mode of inheritance and mapped a gene important in atopy to chromosome 11q13.<sup>3</sup> Inheritance via this locus was found to occur only through the female line.<sup>4</sup> Atopy can, of course, be inherited paternally, and the authors thought that the proportion attributable to the locus on chromosome 11 was only about 60%.

Several other groups have since failed to confirm the

linkage in the families of either those with atopic eczema<sup>5</sup> or those with respiratory allergy<sup>6-8</sup> though the reasons for this are still not clear.<sup>9,10</sup> Atopy is a complex condition: genetic heterogeneity and differences in definition, selection, and race may all have played some part.

Nevertheless, such contradictions are familiar to those who followed the earlier wave of clinically based inheritance studies. Atopic eczema, for example, with a reported concordance rate of 0.86 in monozygotic and 0.21 in dizygotic twins,<sup>11</sup> has in its time been said to follow autosomal dominant, recessive, and polygenic modes of inheritance. This confusion remains, but recent studies, using more precise clinical definitions, have shown two interesting phenomena.

Firstly, atopic diseases tend to run true to type within each family: in some families most of the affected members will have eczema while in others asthma or hay fever will predominate.<sup>12,13</sup> This constancy has still to be explained. Secondly, some studies confirm that atopic diseases, whether respiratory or eczematous,<sup>14,15</sup> are inherited more often from the mother than from the father, and this, of course, echoes the findings of the Oxford group and the locus on chromosome 11q13.

The Oxford group have now put forward a candidate gene which looks all the more plausible because of the group's IgE based definition of atopy.<sup>16</sup> The high affinity receptor for IgE is composed of  $\alpha$ ,  $\beta$ , and  $\chi$  subunits. The  $\beta$  subunit gene lies on chromosome 11q13 and is closely linked to the suspected gene for atopy. The high affinity IgE receptor is found both on mast cells, which are important in immediate hypersensitivity, and on Langerhans cells, which are important as antigen presenting cells in the skin. The Langerhans cells are the only

cells in the epidermis to express the high affinity IgE receptor<sup>17</sup> and do so especially in atopic eczema,<sup>18</sup> in which IgE may play a part in antigen presentation.<sup>19</sup>

These strands of information still have to be woven into a coherent theory, and it remains likely that many genes and environmental factors play a part in the pathogenesis of atopic diseases. Nevertheless, at last a bridge is being built between the immediate hypersensitivity components of atopy, such as asthma and hay fever, and the delayed ones, such as eczema. We must wait for the next instalment of this still shadowy but important story. Meanwhile, the prevalence of atopy continues to rise.

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## Deaths from stroke in younger people

### *Audit can identify the avoidable factors*

The idea that "avoidable" deaths can be identified to serve as a quantitative negative index of health, reflecting possible deficiencies in the provision of health care, is an appealing concept. As with all such outcome measures, however, attention should be given to potential confounding factors. At best avoidable deaths may serve as a warning signal that all may not be well in the health service.<sup>1</sup>

In the United States the preventable and manageable disease working group devised some quantitative negative indices of health based on unnecessary and early deaths due to conditions in which single occurrences would justify inquiry and on conditions for which increases in rates of disease, disability, or untimely death could serve as indices of the quality of care.<sup>2</sup> In the United Kingdom and the European Community similar indicators have been developed for 14 conditions in people aged under 65.<sup>1,3</sup>

League tables of districts' standardised mortality ratios for these conditions have attracted a lot of interest. The public health common dataset, which contains district and regional standardised mortality ratios for these conditions,<sup>4</sup> shows substantial differences between and within regions in Britain.<sup>3,4</sup> The House of Commons Committee of Public Accounts recommended that the Department of Health should stimulate managers and clinicians to investigate avoidable deaths and remedy any deficiencies.<sup>5</sup>

Local investigation has varied from inactivity through reviews of case notes to confidential inquiries and case control-studies.<sup>6</sup> The two well established national confidential inquiries into maternal and perinatal deaths and the voluntary inquiry into surgical deaths (CEPOD) are examples of the detailed methods that can be used to investigate such warning signals.<sup>7,8</sup> Though there may be little objective evidence to prove that the confidential inquiry into maternal deaths has been an important cause of the pronounced decline in maternal mortality in the past 50 years, it has led to changes in obstetric practice and training.<sup>8</sup>

A reduction in the mortality from stroke in people aged under 75 is a target in the *Health of the Nation*, and districts

with a high standardised mortality ratio for this supposedly avoidable condition should be considering how to achieve it.<sup>9</sup> Death from hypertensive disease and stroke is considered to be avoidable because hypertension can be both readily detected and effectively treated.<sup>1,3,9</sup> Nevertheless, though hypertension has the highest population attributable risk, it is only one of several eminently treatable risk factors (such as atrial fibrillation) that should be considered in inquiries into deaths from stroke.<sup>10</sup> And while hypertension can be detected and adequately treated in trials, there are many reasons, such as the willingness of patients to take drugs and the adequacy of treatment and follow up in practice, that may lead to failures.

This week, on p 1027, Payne *et al* have drawn on the methods used in the confidential inquiry into perioperative deaths (CEPOD) to investigate deaths from hypertension and stroke in a district health authority.<sup>11</sup> This may be a somewhat costly and labour intensive means of study, but it is one that could be used by other districts with high standardised mortality ratios for such avoidable deaths. The findings are broadly similar to those of an inquiry in Walsall in the mid-1980s, which more clearly defined the role of the patient and different parts of the service in the deaths.<sup>12</sup>

In the current study only 27% of deaths were associated with avoidable factors, according to the investigators, but this is not surprising as in only half the deaths from stroke was there definite evidence of hypertension, and avoidability did not relate to other risk factors. Had the inquiry's net been cast wider to incorporate more detailed findings on smoking, atrial fibrillation, alcohol consumption, obesity, and, if relevant, ethnic group, more deficiencies in the provision of health services might have been highlighted.

Investigation of such factors may become more feasible as general practitioners increasingly maintain records of their health promotion activities. The strength of this inquiry, which took account both of avoidable factors and of minimum standards of practice, is that decisions were not made on the basis of avoidability alone. On the other hand, inquiries without control subjects are not able to establish the contribu-