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Discovering the causes of atopy

Patterns of childhood infection and fetal growth may be implicated

See pp 999,1003

The marked increase in the prevalence of childhood asthma, eczema, and hay fever in Britain over the past 30 years or more is largely unexplained. However, it is likely to be attributable to a rise in the prevalence of atopy. This is characterised by exaggerated Th2 cell responses to common allergens with production of raised concentrations of allergen specific IgE. Although we now understand more about the genetics of atopy and the role of Th1 and Th2 cells in the control of IgE, the environmental causes of atopy have eluded us. Of increasing interest is the potential roles that patterns of childhood infection and fetal growth and maturation might have in the inception of atopy.

The number of older siblings has been shown to be inversely related to the prevalence of adult hay fever and infant eczema.[1] This observation led Strachan to propose in the *BMJ* in 1989 that atopy may have increased because of a fall in exposure to infections in early childhood through improved hygiene and reductions in family size and overcrowding in the home.[1] Children are likely to experience more severe infections at an earlier age when the number of their older siblings is greater. Thus, it was suggested that infections in early childhood might protect against atopy and that successive cohorts of children have progressively lost this protection.

Several studies have since confirmed that family size, and birth order in particular, are associated with hay fever and atopy.[2] A mechanism has been proposed by which early infection by viruses and bacteria, through the preferential induction of Th1-type cytokines, could prevent atopic sensitisation,[3] although these effects may depend more on infective dose[4] than on age at infection.

More direct evidence that childhood infection might prevent atopy comes from a recent historical cohort study in Guinea-Bissau, West Africa, which found that young adults who had experienced measles in childhood during a severe epidemic were significantly less likely to be atopic than those who had been vaccinated and not had measles.[5] We do not know whether the findings for measles may apply to other respiratory viruses which are more difficult to study in population based studies. However, measles may be special in that it can cause severe damage to the thymus[6] and has been associated with reductions in cell mediated immunity three years after infection.[7]

In this week's *BMJ* Matricardi and colleagues (p 999) describe how Italian military students who were seropositive for hepatitis A were less likely to be atopic and to have atopic disease than those who were seronegative.[8] Adult seropositivity for hepatitis A is likely to be a marker of predominantly childhood infection. This suggests that hepatitis A infection, and perhaps other enteric infections in childhood, might prevent atopy. However, after hepatitis A status was controlled for, a substantial association between birth order and atopy remained, suggesting that the number of older siblings may tell us about the effects of infections other than hepatitis A.

There are several puzzles concerning the "infection hypothesis."[9] It is not clear, for example, why studies have not found consistent associations between family size and asthma,[2] nor why preschool nursery attendance, which is known to promote cross infection and more severe infection, does not seem to be associated with a reduction in atopy.[10] Further insights may be gained by more detailed studies in countries where there is greater variation in the burden of childhood infectious disease. Virologists and immunologists must collaborate with epidemiologists if we are to really understand the role of infections in the development of atopy.

The growing body of evidence linking patterns of fetal growth to adult disease[11] has focused attention on the role of the prenatal environment in the aetiology of atopy and atopic disease. Babies who develop atopy in infancy have evidence of an altered T lymphocyte phenotype at birth.[12] Also, Olesen and colleagues report the findings from two historical cohort studies in Denmark in this week's *BMJ* (p 1003).[13] They observed in one study that babies who weighed 500 grams or more above average at birth were at increased risk of atopic dermatitis in childhood, compared with babies of average birth weight. In both studies they found that babies whose gestational age at birth was ≥41 weeks were also at increased risk compared with babies born at term.

These findings are in keeping with a previous study of adults, which also found that higher birth weight and postmaturity were associated with a raised concentration of serum total IgE, a marker of atopy.[14] Interestingly, that study found that larger head circumference at birth was a more powerful predictor of raised adult IgE than was birth weight and explained the association between birth weight and IgE. It has been argued that a larger head circumference for a given birth weight indicates a disproportionate pattern of fetal growth arising as a consequence of undernutrition in late gestation in a fetus on a fast growth trajec-

tory. This could lead to impaired growth of the trunk and thymus. It is speculated that disproportionate growth and postmaturity, which are associated with a reduction in thymic weight, may alter the balance of Th1 and Th2 cell populations in the thymus in favour of Th2 cells.[14]

In contrast to these intriguing findings, however, other studies have either reported no association of birth weight and gestational age with atopy[10] or have found that lower birth weight[15] and lower gestational age[16] were associated with increased risk. Recently initiated prospective studies, which have recruited women early in pregnancy, are likely to unravel the complexities of these associations and greatly increase our understanding of the relations of prenatal nutrition and growth to atopy and atopic disease in children. This will hopefully bring us nearer to our ultimate goal of primary prevention.

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Patients in the community

General practitioners need guidance and training

The Mental Health (Patients in the Community) Act 1995 introduced a power of "supervised discharge," with important implications for psychiatrists, social workers, community psychiatric nurses, and general practitioners.

About 7% of psychiatric admissions (about 5000 at any one time) are compulsory. Figures from the Department of Health suggest that up to two thirds of these patients could be suitable for community supervision.[1] There are three possible roles for general practitioners: making a recommendation in support of an application for supervision, acting as a patient's "supervisor" in the community, or influencing decisions about a patient's care in the community.

Supervised discharge has been described as a hybrid between the care programme approach and the legal power of guardianship, which already existed under the 1983 Mental Health Act.[2] Its aim is to tackle the problems of those "revolving door" patients who are over 16 years old; detained in hospital under sections 3, 37, 47, or 48; at substantial risk of serious harm to themselves or others; and more likely to receive aftercare under supervision.

Supervision is initially for six months, renewable for a further six months and annually thereafter. Patients can appeal to the mental health review tribunal once during each period. Patients are required to comply with a care plan drawn up by their care team in consultation with them. Requirements such as residing at a specified place or attending for treatment may be included, although there is no power to enforce medication in the community.

A key worker (usually a community psychiatric nurse) and a supervisor (who can be any member of the care team including the general practitioner) are allocated to ensure the delivery of aftercare. The supervisor must ensure the patient complies with the plan and has the power to convey a patient, or arrange conveyance, to a place where he or she is required to reside or attend for medical treatment. If the patient does not comply the supervisor should ensure that the care plan is reviewed.

The application for supervision must be made by the patient's responsible medical officer to the responsible health and local authorities and should detail the aftercare to be provided and any requirements to be placed on the patient. The responsible medical officer must ensure that the patient and those responsible for providing aftercare are consulted. An application must be accompanied by a recommendation from an approved social worker and a further medical recommendation — preferably from the doctor who will be "professionally concerned with the patient's medical treatment in the community."[3] This should normally be the patient's community responsible medical officer (who may be the general practitioner) approved under section 12 of the Mental Health Act. Department of Health guidance issued last year suggests that, where this is the patient's hospital responsible medical officer, the patient's general

practitioner should assess the patient and, if appropriate, complete the supporting recommendation.[5]

If it is not possible to identify another doctor who will be involved with the patient's treatment in the community then any doctor can complete the recommendation as long as he or she does not work under the direction of the responsible medical officer. The community responsible medical officer has the power to reclassify the patient's mental disorder and renew or terminate the patient's supervision.

As a minimum, good practice requires that the patient's general practitioner be kept informed of care arrangements and, when possible, be involved in decisions. The general practitioner should receive a copy of the care plan, details of the community responsible medical officer and supervisor, and emergency contact details.

Department of Health guidance outlines good practice that purchasers (including fundholders) should meet through contracts for service provision.[3] This places responsibility on purchasers to ensure successful local implementation of the care programme approach, and to establish arrangements for monitoring and evaluation.[4] Supervised discharge is expected to attract no additional resources as it merely codifies existing provisions; responsibility for its implementation therefore clearly rests with the purchaser. Additionally, contracts for delivering mental health care must specify levels of staff training in the care programme approach, risk management, and assessment and ensure that suitable arrangements are made for the management and clinical supervision of staff in community health teams.

There seems to be some reluctance among general practitioners to be directly involved in supervised discharge, particularly in the roles of supervisor or community responsible medical officer (Royal College of General Practitioners, personal communication). Although the financial cost implications are expected to be negligible, this reluctance may reflect concerns about additional workload. There is currently no training available despite recommendations from the Department of Health.[1] The Royal College of General Practitioners has said that it will look into this matter, but it has not yet issued guidance on general practitioners' roles under the 1995 act. Surely, given the importance of this role, guidance and training are prerequisites for the successful implementation of the act.

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The views expressed in this article are those of the author and do not necessarily reflect those of the Bethlem and Maudsley NHS Trust.

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Should we screen for prostate cancer?

Men over 50 have a right to decide for themselves

Routine screening for any condition is unwarranted without evidence that the test accurately detects early disease, that early detection improves outcomes, and that benefits outweigh harms. Unfortunately, such evidence is lacking for prostate cancer.

Although the test for prostate specific antigen (PSA) has reasonable sensitivity, it produces false positive results in two thirds of asymptomatic men.[1] About a third of tumours detected by the test are localised and more likely to progress, but there is no good evidence that treatment improves outcomes.[1] Moreover, the complications from screening and treatment may offset the potential benefits. Two recent reviews commissioned by the NHS Health Technology Assessment programme[2 3] and a summary by the NHS Centre for Reviews and Dissemination[4] came down against routine screening for prostate cancer and discouraged purchasers from paying for it. The reports instead encouraged further research to evaluate its effectiveness.

Are these recommendations reasonable? The answer differs for populations and individuals. Deciding whether to screen a population requires an assessment of the benefits and harms to society. The average preferences of the population, rather than those of individuals, must be considered. Although some men might prefer to be screened, the interests of the majority should prevail. Other population concerns apply: it may be unethical to recommend potentially harmful interventions in healthy people, and since NHS resources are limited the public good may be better served by diverting resources to services of proved value. From the population perspective, the recommendations against screening and the call for better research are appropriate. Other countries have reached the same conclusions.[5-8]

But do the reports, which call on general practitioners to discourage screening, provide good counsel for individual patients? Should a man who wants the prostate specific antigen test be told that it is inappropriate? If a patient does not bring up screening, should the doctor remain silent and let the omission pass? Should doctors who favour screening suspend their beliefs? Proponents of evidence based medicine might respond that the answer is obvious: patients should be advised against screening, and doctors who believe otherwise should be corrected.

But is this advice evidence based? To be sure, the benefits of screening are unproved, but lack of evidence of effectiveness does not prove ineffectiveness. Although the harms of screening and treatment are known, without information on benefits we cannot know which outcome prevails. To tell all men that screening causes net harm is no more evidence based than claiming it is beneficial. That screening might reduce mortality remains a plausible hypothesis, unrefuted until a proper randomised trial is completed. Prostate cancer is the third leading cause of cancer deaths in British men (10 000 deaths annually). If the potential for screening to save lives remains unrefuted, do not men have a right to know about it? Should not patients (who will face the consequences of being or not being screened) be informed of their options and allowed to choose for themselves?

Patient empowerment generates several concerns. Firstly, some might argue that it invites patients to request any intervention irrespective of its effectiveness or safety. But shared decision making should be reserved for situations in which the superiority of one option over another is uncertain and depends on patient preferences. If modelling studies are to be believed, whether prostate screening results in net harm or good depends largely on the values patients place on different aspects of quality of life.[9] Which choice is "right" or "wrong" for an individual turns on personal preferences.

Secondly, requests for screening could burden the NHS, threatening resources for other patients and more effective care. Of course, the NHS need not cover screening if it is not considered cost effective; patients who want testing could pay for it themselves. Moreover, the concern that empowering patients would drive up use may be unwarranted. Studies find that educating patients about the benefits and limitations of the prostate specific antigen test reduces rather than promotes requests for the test.[10 11]

Thirdly, free choice could be awkward for doctors. Patients who want to be screened force doctors to confront their competing responsibilities as patient advocates and as stewards of societal resources. Doctors working in areas where health authorities have an official position against prostate cancer screening can escape this dilemma by blaming the policy on the authority. However, most general practitioners will have to decide for themselves whether to offer screening under the NHS. They must fulfil both responsibilities: as caregivers, they must encourage patients to choose what is best for them; as gatekeepers, they must explain that the NHS cannot afford the service. The positions are awkward but compatible.

Fourthly, busy doctors lack the time for long talks with patients, and the outcomes data they should discuss are poorly known. Other problems with shared decision making are reviewed elsewhere.[12] Fortunately, the NHS Centre for Reviews and Dissemination has prepared a patient education leaflet for just this purpose.[13] It reviews the facts about screening, giving data on the likely outcomes of each option to help patients make more informed decisions.

The Health Technology Assessment programme's report wisely steers Britain away from a repetition of the United States' experience, where the introduction of uncontrolled prostate specific antigen screening spawned a prostate cancer "epidemic," a sharp rise in biopsies and prostatectomies, and the establishment of a new standard that makes curtailment of screening unlikely for medicolegal and ethical reasons.[14] Whether the American approach will lower mortality and offset the rise in iatrogenic complications remains to be seen. Until compelling evidence becomes available, healthcare systems have good reason to defer prostate screening in lieu of other priorities. But individual doctors must also fulfil their responsibilities to patients. Men aged over 50 have a right to know about screening, regardless of whether the NHS funds it, and to decide for themselves which option to pursue. Whether patients will (or can) act on the information bears little on this duty.

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Correction

Drug delivery from inhaler devices

An author's error occurred in this editorial by Hans Bisgaard (12 October 1996, pp 895-6). The fourth sentence in the third paragraph should have read: "During simulated breathing by a ventilator, the relative fine particle masses delivered by a pressurised metered dose inhaler plus a NebuChamber spacer (budesonide), an inhaler plus Babyhaler (fluticasone), and an inhaler plus AeroChamber (budesonide) were 2.5, 1.5, and 1 [not 1, 1.5, and 2.5] respectively." The conclusion drawn in the editorial is correct—that is, "that the nominal dose for an inhaler plus AeroChamber should be 2.5 times higher than that for an inhaler plus NebuChamber to obtain the same clinical effect."

Facial disfigurement

The last bastion of discrimination

Facial disfigurement and deformity are common causes of human suffering, much more common than a walk down the high street may suggest as many afflicted will choose to hide from public gaze. Accurate figures do not exist, but—given the known incidences of congenital, traumatic, and malignant facial conditions, together with skin diseases—every general practitioner will frequently encounter this problem.[1] At the root of the patient's distress lies the pressure in modern cosmopolitan society to confirm to an idealised appearance.[2] Image and beauty are marketing tools portraying a particular "supermodel" as the desired "look," diminishing the value of individuals who deviate from the face or form of the moment.

Stigmatisation by appearance is reinforced at every stage in education, from characters children's books such as Big Ears or Mr Nosey. Pantomime Ugly Sisters equate ugliness with evil, and film and video villains such as Freddy (in *Nightmare on Elm Street*) reinforce this definition. Were film makers to tackle race or sex in the way that they tackle beauty or ugliness they would be subject to prosecution. Yet incitement to pick on the disfigured is widespread—Chris Evans' "Ugly Bloke" feature in his *TFI Friday* television programme is a gross example. More subtle judgments based on appearance are widespread; recent media attention to the hairstyle of Tony Blair, leader of the Labour party, is an example. This obsession with appearance devalues and marginalises those who do not match the perceived ideal, and those with a visible disfigurement, being furthest down the ladder of beauty, are challenged most.

An interesting twist in this tale has been the suggestion that symmetry of body or facial form implies attractiveness[3]; symmetrical men have more sexual partners than asymmetrical people, and more satisfactory relationships. There must be doubt, however, about the measurement of symmetry.

Victims of society's cultural attack may simply adopt a defensive style of behaviour.[4] Alternatively, they may approach their general practitioner with a complaint that is clearly directed towards a specific anatomical or pathological facial feature, or the true problem may be obscured as part of a depressive or anxiety state. It should be appreciated that the impact on a patient is not proportional to the magnitude of the disfigurement but depends on other psychological parameters, family adaption, and how much it interferes with his or her life. These are not frivolous complaints, and as many tears may be shed in the doctor's surgery as when confronting a fatal illness.

Negative coping strategies may include avoidance of social contact, alcohol misuse, and aggression, but these patients are not "psychiatric." It is as dangerous for the doctor to dismiss a complaint of this type as it would be to ignore haemoptysis, as both may ultimately result in fatality; dissatisfaction with appearance seems to be a factor in many suicides. As with other conditions—such as heart disease—some patients may imagine that they have a problem where none exists, and minor degrees of pathology may require no action other than reassurance.

However, to take the stance, as some purchasers have done, that "cosmetic" (a term open to all sort of definitions) treatments will not be provided seems an extreme view that may deprive patients of an improved quality of life. It is difficult to categorise problems in to the morally worthy and the unworthy; even removal of a facial tattoo may return a patient to gainful employment. Having diagnosed a disfigurement, the doctor should assess its impact on the patient. The patient's general practitioner will generally be more successful at this than a specialist relying on a brief consultation. It is then appropriate to consider what sorts of help may be available. Referral to a plastic surgeon may be appropriate, not with a promise to remove the blemish or scar (in fact, contrary to suggestions in soap operas, scars cannot be removed) but to consider in a balanced way whether surgery can offer a physical improvement.

It is becoming clear, however, that surgery alone is not sufficient: such patients also require informed supportive counselling. At this point there is often a vacuum in the provision of service, which has been partly filled by a plethora of patient support groups. One such group, Changing Faces, provides training in social skills and a useful range of publications for patients and health professionals.[5] A more extensive booklet, *Counselling People with Disfigurement*, informs doctors about the psychological management of this problem.[6]

The challenge now is to audit and scientifically evaluate various forms of counselling and to lobby politicians to ensure that resources are made available. Research is required in all aspects of patient care, from healing of the wound to coming to terms with the result. Society at large must also be educated to understand disfigurement and deformity. To achieve all of these aims, the various interest groups should be encouraged to unite their strengths in a foundation that works towards the healing of the whole patient.

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Authorship: time for a paradigm shift?

The authorship system is broken and may need a radical solution

Anthony Trollope, one of England's greatest nineteenth century novelists, rose at 5 am every morning, wrote for several hours almost every day of his life, and so completed more than 50 books. That was authorship. The words, characters, and plots all came from him, and his was the glory and the criticism. Producing a scientific paper is completely different. Some people conceive the study, often within a broad programme of work conducted by others. Different sets of people may design it, collect the data, and analyse and interpret them. The paper may include techniques as diverse as molecular biology and economic evaluation, all carried out by different people. The person who writes the paper may have done nothing but the writing. Who then will be an author? This becomes a matter of politics, not science. Often the powerful will be authors and the powerless ignored or simply acknowledged. We need to scrap the notion of authorship in science and try something else.

Disquiet about authorship in science has been growing for years. In the early 80s John Darsee "co-authored" papers with distinguished researchers.[1] When the papers proved fraudulent some coauthors refused to accept responsibility. This was clearly unsatisfactory: authorship must bring accountability as well as credit. The International Committee of Medical Journal Editors (Vancouver group) thus drew up guidelines (see p 1009) based on the principle that each author should be able to defend the work publicly.[2] Several studies have shown, however, that the guidelines are not working.[3-5] Many "authors" do not meet the criteria. Work that we publish today from Newcastle shows that many researchers did not know of the Vancouver criteria and (when told about them) did not think them workable (p 1009).[6] Most researchers had experienced problems with authorship: many had assigned inappropriate coauthorship, and many had been excluded when they thought they deserved it.

Perhaps we need further data on the problems with authorship, but all the studies so far have found problems. A meeting on the subject held in Nottingham last June also concluded that the concept of authorship was broken,[7] while all the conversations I have had with researchers convince me that the current Vancouver criteria are not working.

What action might we take? One option is to publicise the existing criteria and work harder to enforce them. But the Newcastle study confirms that most researchers think the Vancouver criteria too restrictive. Furthermore, the *BMJ*'s attempts to enforce them—by asking all corresponding authors to sign that the criteria are met by all authors and that nobody meeting the criteria has been excluded—have been unsuccessful: almost no changes in authorship result, despite our knowing that many authors do not meet the criteria.

Secondly, we could tinker with the criteria—make them clearer and, according to taste, more or less restrictive. But any system that depends on separating people into sheep (authors) and goats (non-authors) will lead to arguments and will be decided ultimately on the grounds of power.

See p 1009, 1046

A third, radical, response is to scrap the concept of authorship. Instead, we would have a descriptive system something like film credits and talk about contributors rather than authors. This solution was advocated by Drummond Rennie—deputy editor (West) of *JAMA* and doyen of researchers into scientific publishing—at last year's meeting in Nottingham[7]; his paper is likely to be published soon in *JAMA*. It should be possible for researchers to agree easily on who did what, particularly if they keep a record from the beginning. Readers can then judge for themselves the relative importance of the contributions.

One problem with the radical solution is over who will take ultimate responsibility for the study. Without a "guarantor" (Rennie's term) there is a danger that overall responsibility will be lost. Clearly the contributor who analysed the data must take responsibility for a wrong analysis or for doing it badly, but who will take responsibility when it emerges that the data were invented? The idea of ultimate responsibility is not a difficult one. Ministers must take ultimate responsibility for everything done in their departments and editors for all that is in their journals.

Another argument against "film credits" is that they "take up too much space." But this is trivial. A stronger objection is that it will undermine systems of academic credit—such as citation indices. But undermining these would be no bad thing: credit should depend more on thought and less on number crunching.

At its last meeting the Vancouver group decided only to encourage debate on authorship. In May it will consider the three options outlined above. This editorial, the paper from Newcastle, and two letters are the *BMJ*'s contribution to the debate. We want to hear from readers about this issue—to avoid editors proposing a solution that is unacceptable to readers and those who produce papers. We also encourage those who send us papers to experiment with the system of contributors and guarantors. We will be happy to publish these credits—in addition, for now, to traditional lists of authors. Depending on what you tell us, we may soon ask all who send us papers to try describe themselves as contributors and guarantors.

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