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Pharmacogenetics and ethnically targeted therapies

New drug BiDil marks the return of biology to the debate about race and ethnicity

In modern conceptions of race and ethnicity, biology has been relegated to a minor underlying factor. Instead, these concepts have been cast as largely social constructions. For example, race traditionally distinguishes between groups according to a mixture of physical characteristics (including skin colour), which reflect ancestry and hence biology. A modern conception of race would place the emphasis primarily to genetic differences. If this is shown to be true it will undermine a postwar consensus emphasising the social construction of race and ethnicity. Largely social categories of race and ethnicity may be useful indicators of genetic variations because they are largely based on biological characteristics. If everyone were the same physically—skin colour and so on—racial and ethnic categories would not exist. This raises fundamental and controversial questions. Do race and ethnicity reinforce existing social divisions in society or leads to discriminatory practices? Should such classifications be used in this way? If so, will race science see a resurgence?

Many researchers and policy makers argue against the use of racial or ethnic categories in medicine, saying that classifying people according to race and ethnicity reinforces existing social divisions in society or leads to discriminatory practices. Others cite

research showing that genetic differences are greater within socially defined racial groups than between groups. The relation between features that traditionally define race and contribute to ethnicity, such as skin colour, and genetic differences has been found to be inconsistent. In addition, by focusing on biological factors as the explanation for differences in response to drugs, researchers risk ignoring other possible environmental, psychosocial, and economic factors, and lifestyle factors such as diet, that are important in producing illness. If important genetic variations exist between currently defined racial and ethnic groups, drug treatments may be tailored for greater effect.

In a review of the research on the effects of cardiovascular therapies carried out by Taylor and Ellis, the evidence for ethnic variations in response to such drugs seems modest—a conclusion we reached in our own review in July 2004 and presented at the conference in Brisbane. Diuretics were found to be beneficial for both black and white patients with heart failure. Black patients were found to respond equally well to angiotensin receptor blockers, spironolactone, digoxin, and carvedilol (β-adrenoceptor antagonists). Compared with white patients, black patients were found to respond less well to angiotensin converting enzyme inhibitors (enalapril), though this conclusion has been contested. Yu et al showed that Chinese patients required lower dosages of heparin and warfarin than those usually recommended for white patients.

The new genetics has reopened the debate on the biological basis of race and ethnicity. Pharmacogenetics is growing fast, and it will lead to a more refined understanding of ethnic and racial differences in drug response. Many claims and counterclaims will be made. Doctors need to take an open mind but critical stance. A historical perspective is likely to be helpful—claims of a biological basis to racial or ethnic variations in health and disease, including therapeutics, have proved to be overstated.

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Competing interests: RSB was an invited speaker at the 8th world congress on clinical pharmacology and therapeutics, giving a presentation on concepts of ethnicity and race, and his expenses were met by both the congress and the James Lance GlaxoSmithKline Medicines Research Unit in Sydney.

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Prevalence of asthma
Is no longer increasing in some countries, but the reasons for this are unclear

A broad consensus exists that in most Western countries the prevalence of asthma increased over the last four decades of the 20th century. This is based largely on repeat studies of school age children. Evidence is emerging that in recent years this trend has flattened or fallen in some countries. For example, as part of the UK arm of the international study of asthma and allergies in childhood (ISAAC), repeat studies found that self reported symptoms of asthma in 13-14 year old children had fallen by about 20% in the United Kingdom between 1995 and 2002. This trend was also observed in the health survey for England between 1996 and 2001. Over the same period a similar fall in symptoms of asthma in 6-7 year old children reported by parents was seen in Melbourne. On the other hand, the only available repeat survey of preschool children noted a major increase in prevalence between 1990 and 1998. A global picture of recent trends in children will soon be provided by the results of ISAAC phase 3, which has obtained trends in prevalence between 1995 and 2002 in more than 100 centres in 58 countries. Little information exists about long term trends in adults, but recent trends in the UK seem to be flat. The data are limited by the lack of an objective measure of asthma in large populations and the reliance on surveys to elicit symptoms of wheezy breathlessness, which are likely to represent a heterogeneous group of disorders. Questions about lifetime prevalence are subject to serious recall bias, and the usual compromise is to rely on the 12 month period of prevalence in an attempt to capture the intermittent nature of symptoms experienced by most people with asthma, while limiting the recall entailed and avoiding problems with labelling. Trends in the cultural perception and naming of symptoms might explain the trends observed in prevalence studies, and while it remains true that without objective measures we cannot be certain how much is real and how much artefact it seems unlikely that artefact would completely explain the observed trends.

If the trend is indeed flattening or decreasing, might it be explained by trends in health care? The use