BODY POLITIC **Nigel Hawkes**

Are some patients more equal than others?

When it comes to determining health need, age counts for something, but other factors usually count for more

Age is what really determines health need, the health secretary for England believes. When the new clinical commissioning groups are up and running, areas with lots of old people will no longer be penalised by the way the NHS allocates resources, he promised in a speech last month (*BMJ* 2012;344:e3391). This is the kind of thing you expect a Conservative minister to say, since the current formula favours young but deprived Labour voters in the cities over better-off but elderly Tories in the shires—but I was struck by the absence of reaction to Andrew Lansley's claim. He seems to have got away with it.

Maybe his many opponents are simply too exhausted by the struggle over the Health and Social Care Bill to open a new front. Maybe they are adopting my default position on all NHS reform, which is that there is less in it than meets the eye. But if this policy is actually implemented it will have substantial effects across the NHS.

Its effect will be to reverse a key pledge entered into by Labour in 1999. This was that the allocation of resources should aim not to provide patients with equal access to health "care" but equal access to "health." Resources should be directed towards areas of high health inequality to try to narrow the gaps. The fact that this policy has largely failed may, I suppose, account for the silence that greeted Lansley's rejection of it. Even the faithful no longer put much trust in the ability of doctors to undo the consequences of lifestyle choices entered into by individuals of their own free will (or, more likely, forced on them by poverty and circumstance).

Yet the NHS Commissioning Board does not seem to be singing from the same hymn sheet. It has announced that it has identified the need for an additional director, at a salary of £200 000 (€250 000; $320 000), to focus on inequalities. And the spokeswoman for the Commissioning Board Authority (the NHS Commissioning Board in shadow form) said, in responding to Lansley's remarks, "Our allocation decisions will be made after taking a range of views into account and supported by the best available evidence in how to secure improvements in outcomes and tackle health inequalities."

Nobody questions the link between social deprivation and poor health. The evidence is abundant. The issue is whether this is a problem that is best tackled by directing more money at medical services in deprived areas or, as Lansley prefers, giving the earmarked money to public health.

At present, funds are allocated to primary care trusts by a complex formula that takes account of age, socioeconomic factors, health need, and the local cost of providing care. In general, socioeconomic factors trump those of age. A young population, such as that of central Manchester, scores so heavily on these "additional needs" that it is allocated more money than an older population such as that of north Dorset—more than 40% more. In most areas of England, age and poverty tend to work in opposition, since demography and social deprivation are not independent of one another: areas with older populations tend to be more affluent, those with younger populations more deprived. (I am indebted to Mervyn Stone of University College London for his step by step elucidation of the effects of each of the factors applied in the formula and to Sheena Asthana and Alex Gibson of the University of Plymouth for an elegant explanation of what it means.)

Lansley's breezy judgment that "age is the principal determinant of health need" does not reflect how resources are currently allocated. Age counts for something, but other factors usually count for more (*BMJ* 2011;343:d6608). Included among these other factors are age standardised measures of morbidity, which do no favours to areas with large numbers of relatively healthy older people. In absolute terms their health needs are great, but age standardisation tends to obscure this.

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So, Lansley can perhaps make a case for giving age demography greater importance in determining allocations. In the past, changes of allocation policy have had their sharp edges blunted by the need to keep the show on the road. Nobody expected primary care trusts to adjust instantly to a large change in funding, so they were introduced gradually over a period of years. The trusts were told how far away they were from "target," with the aim of gradually narrowing the gap.

However, we now face a different situation in which the NHS Commissioning Board will have the responsibility of allocating budgets to entirely new organisations—the clinical commissioning groups—which will not be coterminous with the old primary care trusts. There is therefore an opportunity to make a more abrupt change, should Lansley's prescription be followed.

His aim, as he explained it to a clinical commissioners' conference, was for resource allocation to ensure that patients everywhere had "equivalent access to NHS services" and for public health funding to take account of indices of deprivation. The Health and Social Care Act spells it out: the duties of clinical commissioning groups in reducing inequalities are restricted to reducing inequalities between patients "with respect to their ability to access health services" and "with respect to the outcomes achieved for them by the provision of health services." Similar duties are laid on the NHS Commissioning Board. They must provide equal access, and equal outcomes, as near as they can: reduce unacceptable variation, in other words. One could argue that to achieve equivalent outcomes, deprived areas need more resources. But that is not what Lansley is saying. We haven't heard the last of this argument.

Nigel Hawkes is a freelance journalist, London
nigel.hawkes1@btinternet.com

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MEDICINE AND THE MEDIA

Could a simple blood test really predict breast cancer?

Media coverage of a complex paper looking at epigenetic markers for breast cancer was widespread but too simplistic. Are the tests accurate and useful, asks **Margaret McCartney**, and where is the discussion of the potential harms?

The Radio 4 *Today* programme heralded a day of wall to wall epigenetics. "Every now and then a new word emerges from scientific journals that lay people have to get used to. Such a word is epigenetics," said presenter John Humphrys. Changes within genes resulting from environmental factors that may be linked to breast cancer "may be able to be detected early, many years before the cancer develops," he explained. James Flanagan, corresponding author of the study under discussion, was asked about the implications and agreed that it was a breakthrough. "We've found something that we can detect before breast cancer develops." People with a high level of abnormalities are at high risk.

Humphrys asked, "So you're going to be able, potentially, fairly soon, to be able to assess the level of risk and thereby take precautions; an individual can be screened regularly or whatever." Flanagan replied, "Yes, this is the hope." He expressed a further hope that more genetic markers could be found, and that women could have their risk stratified. He expects that epigenetics research will lead to more blood testing for "early detection" of breast cancer, with an expectation that molecular risk profiles will be available in five to 10 years, "which would be quite simple and therefore quite cheap . . . It would be groundbreaking, because it will decrease the incidence of breast cancer and thereby the mortality."[1]

This is far from a definitive test, with a substantive risk of false positives, and it does not follow that there are effective prophylactic treatments that can then be given

But is it really so simple? The paper, published in the journal *Cancer Research*, was titled "Intragenic ATM methylation in peripheral blood DNA as a biomarker of breast cancer risk."[2] It describes three cohort studies, one of which was of women at high familial risk of breast cancer, and DNA methylation at specific loci on white blood cells.

For one set of statistically significant results, in women aged 21-49, 90 out of 258 women were in the highest quintile for methylation and developed breast cancer, compared with 39 out of 217 of controls—that is, 35% versus 18%. This is, therefore, far from a definitive test, with a substantive risk of false positives, and it does not follow that there are effective prophylactic treatments that can then be given. Far from finding a simple blood test that could decrease mortality, this would come with considerable uncertainties attached.

Delyth Morgan is chief executive of the Breast Cancer Campaign. For a seemingly obscure study, it scored top media coverage. "I was really pleased," she said. "I remember years ago debating how to encourage the public to engage with science more. We need the public to understand risk, and a lot of the coverage was about risk, which I thought was really interesting." The charity wants to remind people that age is the biggest risk factor for breast cancer and remind them about modifiable lifestyle factors. But is it worth presenting research as straightforwardly good when the implications are likely to be complex? "The challenge for charities is always to get the balance between communicating the results of what we found and confusing people about what we've done. If we are too 'techy' we don't get anywhere—if we are too bland we don't say anything."

But what should we be hearing? The original paper's discussion began, "Our findings indicate that high levels of methylation in the ATM DMR [differentially methylated region in the ataxia-telangiectasia gene (ATM)] might be a biomarker of breast cancer risk." However, interventions were not tested in women epigenetically defined as at high risk, and neither were the limits of certainty of using this method to detect risk nor the reliability of doing so in women at low risk. The press release issued by the Breast Cancer Campaign said that the research provided "strong evidence" that epigenetic risks were associated with breast cancer and stated that the women with the most methylation were "twice as likely" to get breast cancer.[3]

The *Guardian* reflected the uncertainties by reporting the "possibility of developing a simple blood test to help identify women most at risk."[4] The *Daily Mail* headlined with "Gene test that could predict breast cancer years before it strikes," and in the text was clear that it would have to be "combined with other information such as a family history of breast cancer" and then it "could help identify women who might benefit from monitoring or pre-emptive action involving surgery or other drugs."[5] The *Telegraph*'s article said that a blood test "could detect breast cancer years in advance," which was incorrect, and also said that the test could allow women at high risk to "take preventative medicines and switch to healthier lifestyles."[6]

Mainstream media coverage lacked any deeper analysis of the accuracy or usefulness of risk assessments using this new genetic research. It would perhaps have been better to quote directly from the paper: "Adequately powered studies with blood samples collected before diagnosis will be critical for the success of . . . approaches to discover epigenetic biomarkers of cancer risk." So, too, will be a fair assessment of the potential harms.

Margaret McCartney is a general practitioner, Glasgow
margaret@margaretmccartney.com

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