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Scientific aspects of ageing: a lordly report

The Science and Technology Committee of the House of Lords has published an excellent and finely drafted appraisal of prospects and problems in the scientific aspects of ageing.[1] It explores '. . . how science and technology can help improve people's prospects of healthy and active life expectancy and whether Government policy is in place to achieve this'. The Committee was able to conclude that there was 'little evidence that policy has been sufficiently informed by scientific understanding of the ageing process' (para 2.16). The evidence provided to the Committee (Volume II) includes a mind-numbing catalogue of the numerous government and research council committees and working parties set up, one might almost suppose, to prevent any useful research in the field. As the Committee concludes '. . . attempts at coordination so far made under the aegis of the research councils are woefully inadequate . . . a series of ill-thought-out initiatives which have long titles, short lives, vague terms of reference, little infrastructure, and no sense of purpose' (para 8.58) . . . 'The situation needs to be transformed' (para 8.83).

Part of the problem lies in government ambivalence towards research that might increase longevity and the proportion of older people in the community. The widely-held idea that this would increase health costs is a myth based on a misunderstanding of statistics,[2] but there can be no doubt that the UK's ageing population urgently needs a radically revised pensions system. This calls for long-term comprehensive and disinterested measures that our politicians seem incapable of either conceiving or delivering. Population ageing is inevitable[3] and the Lords' Committee was concerned to see how to make old age a pleasanter and more productive time of life. The focus is on the disability that can make old age miserable and expensive, and which can undoubtedly be reduced in prevalence.[4] Disability arises in an ecological gap between what an individual can do and what his or her environment demands. The gap can be closed therapeutically by biological improvement of the individual and prosthetically by technological improvement of the environment.[5] The Lords' enquiry was timely in terms of newly opening opportunities in both biology and technology.

There are three established traditions of geratology[6] in the UK. Born as the clinical specialty of geriatrics in the first few months of the National Health Service medical geratology is numerically dominant. Biological study of ageing in Britain almost died in the 1960s but now flourishes anew in the warm glow of molecular biology. The social and behavioural sciences have pursued their own productive pathways. The three traditions have their three professional societies and their different career structures. Every so often the three societies hold joint meetings but there has been little interaction at a scientific level. For practical reasons, geriatricians have in general been more aware of developments in social than in biological geratology. Study of the longevity of fruit flies and nematode worms can seem rather marginal to the geriatrician's preoccupation with quality rather than mere length of life. This is now changing as molecular and genetic science recognize homologies between the determinants of longevity in *Caenorhabditis elegans* and the mechanisms of illness in *Homo sapiens*. At last we will be able to bury the unhelpful distinction between 'ageing' and 'disease' that has for so long retarded interaction between basic science and medicine.[7] As a concept unifying the effects of all the processes of age-associated loss of adaptability, 'biological age' could become a measure of how near an organism is to death. The Committee was enlightened in advocating research into biomarkers of ageing (para 3.47) as a means of individualizing medical treatment in later life, where cost–benefit ratios are crucially dependent on how long the patient is likely to survive.

Geriatrics has quietly revolutionized British medicine but has been a disappointment academically. In Lord Turnberg's phrase (Vol. II, p. 21) it has been 'good for patients but not for the research assessment exercise'. It has produced little research of international quality and relevance and has not developed a definable science base. Professorial departments of geriatrics have withered on some university vines; as an academic discipline rather than a service specialty, the subject in its present form has perhaps served its time. The Committee recognized that the desirable new synthesis of clinical and biological geratology will need to overcome the differences in career structures and emoluments between biologists and doctors. One scientific setting where the two can meet on equal terms is the Academy of Medical Sciences—perhaps the Academy could play an important part in developing the new field.

The Committee proposes (para 8.83 et seq.) that a new body be created by the Department of Trade and Industry and the Office of Science and Technology. 'Among the most important responsibilities of this body will be to promote research into ageing as a career for the best young researchers, and to supervise career development' (para 8.89). Unfortunately this suggestion is likely to be deflected by the government's new proposal[8] to make the NHS itself into a research organization. The idea of the NHS and the public as a national population laboratory would once have been welcomed; now we have reason to dread yet more political control of medical research. The Medical Research Council's experience with AIDS has showed that the best way to encourage research in a new field is to provide a ring-fenced budget and let the researchers get on with it. The Committee is wise, however, to stipulate that if dedicated funds for ageing are provided the panels dispensing it must contain a majority of people with interest and expertise in the field (para 8.32).

Information technologies such as videocamera scanning of text on to computer VDUs for people with macular degeneration have been developed but it can be difficult for sufferers to obtain relevant information (Vol. 2, p. 358). Charities and local authorities are not always up to date and British industry has failed to respond to the market presented by the needs of older people (para 6.17). Smart houses and telemedicine could move on from remote alarm systems to problem prevention and management. Intelligent monitoring could reduce nurse numbers on intermediate dependency units. British academic units often have a problem in funding 'proof of concept' studies for this type of developmental research, and are not yet attuned to working comfortably with industry.

The report is rightly critical of the quality and relevance of British statistics. 'The Department of Health must set out clear and measurable standards for assessing the health of older people . . . Claims that those standards have been met should not be made unless they are supported by hard evidence' (para 7.13). After nearly 60 years of the NHS, and 40 years after the foundation of the Oxford Record Linkage Study[9] our routine service databases are inferior to those of the USA for the purposes both of research and service evaluation. This is a particular problem for older people who may not do as well in real life as in randomized controlled trials.[10] We do not even know if our increasing longevity is associated with a decline in the prevalence of disability as in some other countries.[4,11] The Committee recommends that the Office for National Statistics should be funded to carry out the surveys necessary to assess trends in disability-free life expectancy (para 4.12).

How much of this, and all the other good advice in the report, is likely to be implemented? There are reasons to doubt the good intentions of government strategy with regard to older people,[12] especially now that NICE is proposing to endorse age discrimination in the treatment of individuals in the NHS.[13] The report notes that the Department of Health sent no delegate to the Committee's opening seminar and the designated ministerial 'Champion of Older People' did not feel moved to submit evidence. Perhaps if we ever do get round to parliamentary reform it is the House of Commons we should abolish.

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Venous thromboembolism in medical inpatients—the silent epidemic of neglect

Why is the use of venous thromboembolism (VTE) prophylaxis for acutely ill medical patients so poor among internal medicine physicians?[1–5] What can be done to improve practice?

The first requirement is to recognize the burden of VTE in medical inpatients. The baseline risk of VTE in patients admitted to hospital with medical disorders is around 15%.[6] Hospitalization for an acute medical illness accounts for around one in five cases of all symptomatic VTE events in the general population.[7] This would suggest that effective prophylaxis of medical inpatients represents an important measure available to reduce the burden of VTE in the general population.

The next requirement is to recognize the efficacy and safety of prophylactic measures to reduce the recurrence of VTE in this clinical situation. There is now substantive evidence that in medical inpatients, the use of low molecular weight heparin (LMWH) reduces the risk of symptomatic VTE by over 50% across the broad spectrum of disorders including sepsis, heart failure and respiratory disease.[6] The use of LMWH has been shown to be safe with a minimal increase in the absolute risk of major bleeding. There is also likely to be some benefit, although less substantial with the use of graduated compression stockings.

The third issue is that of cost-effectiveness. In this regard several economic analyses have concluded that LMWH is a cost-effective prophylactic intervention in medical inpatients.[8,9]

The fourth issue is whether clear evidence-based guidelines are available. A number of consensus guidelines have been promoted, the most up-to-date being the American College of Chest Physicians guidelines[6] which state:

> *In acutely ill medical patients who have been admitted to the hospital with congestive heart failure or severe respiratory disease, or who are confined to bed and have one or more additional risk factors, including active cancer, previous VTE, sepsis, acute neurologic disease, or inflammatory bowel disease, we recommend prophylaxis with LDUH (Grade 1A) or LMWH (Grade 1A).*
>
> *In medical patients with risk factors for VTE and in whom there is a contraindication to anticoagulant prophylaxis, we recommend the use of mechanical prophylaxis with graduated compression stockings or intermittent pneumatic compression.*

With this evidence base, it should be of concern to all physicians to read the findings of Rashid *et al.* published in this issue of the *Journal*.[10] They report a gross under-utilization of thromboprophylaxis in medical patients admitted to two NHS teaching hospitals in England. Less than one in three moderate to high-risk patients received any form of prophylaxis and the intervention (which involved a single presentation of both the audit results and recommended guidelines to a large clinician group) was ineffective.

The authors considered the possible reasons why there is not a better uptake of thromboprophylactic measures by physicians. They propose that there is likely to be a perception that VTE is very uncommon, given that most events are subclinical. There may also be an overestimation of the perceived bleeding risk, or the cost of routine LMWH use. It is also conceivable that when doctors are admitting medical patients with complex problems, the need for thromboprophylaxis assumes a lesser priority than management of the severe illness.

The authors also raised the approaches that might be considered to improve current practice, recognizing that their intervention was unsuccessful in increasing the rate of thromboprophylaxis. They suggest that we might follow the example of our surgical colleagues who have successfully employed a number of strategies, including the use of risk assessment protocols with prophylactic strategies recommended at each level of risk, targeting of vulnerable patient subgroups and undertaking regular audit. There are also a number of initiatives that have been implemented in medical inpatients with successful outcomes. One approach has been the use of a single page evidence-based risk assessment tool incorporated in the standard admissions packs promoted through medical training programmes.[11] More recently it has been shown that an automatically generated computer alert to physicians which includes both magnitude of risk and recommended prophylactic measures not only increases thrombophrophylaxis, but also a reduction in the overall rate of VTE.[12]

Ultimately however, it comes down to each individual physician taking responsibility for being aware of the evidence base and responding accordingly. Given that guidelines are so widely available, and agreed by experts internationally, the current low level of thromboprophylaxis can be considered unacceptable.

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