

Medicine for an ageing population

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In the 21st century we are living longer, healthier and more prosperous lives. This is a great achievement reflecting long-term progress in improving standards of living and health through individual endeavour and social investment. More people are living longer after the age of 50 and each generation expects more from the future than their parents and grandparents. But our attitude to ageing and our public services have not yet caught up with the changing aspirations of older citizens or with the projected changes in society for the next decade. Ageing is therefore wrongly seen as a threat rather than an extension of opportunities for individuals and society as a whole. Older age is something to celebrate not to fear. Although medicine has been successful in fulfilling the needs of ageing populations in the past, we nevertheless face major challenges. This multidisciplinary conference held jointly with the British Geriatrics Society discussed ways to equip people to deal with these challenges in a knowledgeable and informal way.

Demographic changes in the population

Over the next 50 years, the UK and the rest of the developed world will experience an unprecedented societal change as life expectancy increases and the birth rate remains low. The proportion of the population aged over 65 will increase dramatically. The Government Actuary's Department projects that by 2051 the average man of 65 is likely to have around 22 years of life ahead of him, compared with only 12 years for a 65-year-old man in 1950 and 19 years in 2006. By 2051 the average woman of 65 years will expect to almost reach 90 years with long-term improvements in health. By 2051 people over 65 are likely to represent over a quarter of the world's population.¹ In addition, the proportion of over 85s will also increase. At present, those aged over 85 form just 2% of the population and 12% of the population are over 65, by 2050 they will account for nearly 4 in 10 of the over 65s and 6% of the total population. Demographic changes also impact differently in different parts of the country as well as between rural and urban areas. Wales has the oldest population in the UK, while Scotland has both the lowest birth rate and lowest life expectancy. Demographic changes of this magnitude are challenging but we are not unique. Ageing is a global issue and changes are

not beyond the nation's capacity to cope provided that we understand ageing and plan sensibly.

Ageing and health

In the recent past there has been a reduction in death rates from coronary heart disease, cancer and stroke among older men but there is an increased burden of chronic diseases on the community. We need to make sure that the effect of living longer does not cause ill health and physical dependency which for most people are usually concentrated in the last years of life for a relatively short period.

There are, however, strong socio-economic inequalities in the ageing process. People from richer, better-educated, professional backgrounds tend to live longer and experience better health than others and these inequalities have the potential to increase in future. To improve the health of our ageing population we need to improve income security for older people. Work undertaken by the Audit Commission and other research has identified some key areas which should be secured in order to maintain independence in older people:

- housing and the home
- social activities, social networks and keeping busy
- getting out and about
- income
- information – the key to choice
- health and healthy living.

The effect of ageing population on health was stressed in the inaugural lecture of the conference which features on pages 68–72 of this issue.

Biology of ageing

There is no genetic programme for ageing. We age because in our evolutionary past it would have been too expensive to build a body that might last for ever.² Life is constantly threatened by a wide array of internal and external factors. Keeping the soma going requires constant effort which is eventually unsustainable. Thus, programming for survival ultimately fails, and it is this that results in ageing. Ageing is due to molecular damage, which is random in nature and is regulated by genetic mechanisms for maintenance and

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repair. Molecular or cellular defects result in age related frailty, disability and disease. Thus ageing is due to a combination of genetic, environmental and intrinsic factors.³

Ageing and therapeutics

Biological ageing processes result in altered drug handling, altered physiological reserve and pharmacodynamic responses. Age related reduction of hepatic blood flow and hepatocyte mass as well as age related changes in hepatic sinusoidal endothelium result in reduced hepatic drug clearance. Although primary renal ageing is evident, reduction in renal clearance in older people is mainly because of the disease.

In the absence of dosage guidelines for older people, individualisation and dosage titration is required. Pharmacodynamic changes occur with ageing in the autonomic system, drug receptors and endothelial function resulting in change in cardiovascular tone and its responses to stimuli such as postural change and feeding. The prevalence of disease, disability and mortality increases with old age and can result in an increase in medication use. Polypharmacy occurs in 20–40% of older people⁴ and as many as one in five hospital admissions are medication related in older people.⁵ It is of concern that the population which receives the most medications may not always have a favourable risk–benefit ratio. Medicine has been slow to adapt to

the needs of the increasing numbers of older people, in terms of service design, clinical practice and of research. Older people benefit probably more than the young from treatments because of the greater risk of immediate death. Thrombolysis in acute myocardial infarction saves more lives if given to older than to younger patients.⁶ Older people are poorly represented in clinical trials and this should be addressed. Older people therapeutics should also take into account geriatric syndromes and the growing use of anti-ageing medication. Therapeutics is commonly informed on the basis of organ systems and this does not always relate to geriatric syndromes.

Ageing and age-related diseases

Many diseases are age related and it is important to recognise these illnesses early to prevent long-term consequences. Delirium is a particularly common presentation of acute illness among older people admitted to hospital and, in some cases, it may be the only sign of acute illness. Delirium is often unrecognised or misdiagnosed and is commonly mistaken for dementia, depression, mania, or acute psychotic reaction, or is wrongly attributed to old age. What makes delirium so important is that it carries a poor prognosis and is an independent predictor of poor outcome in terms of increased mortality and length of hospital stay, loss of independent function and a greater likelihood of transfer to long-term institutional care.⁷ Delirium is also associated with increased risk of hospital-acquired complications including pressure sores, incontinence and falls.⁸ The adverse effect on outcome in delirious patients is evident after discharge from hospital. Delirium which occurs during hospital admission with a hip fracture is associated with increased mortality two years after discharge.⁹ There are several factors that predispose older people to the risk of developing delirium during hospital admissions and it is possible to identify at-risk patients at the time they are admitted to the hospital. Care plans for those at risk of developing delirium can help reduce the incidence in hospitals while early identification and treatment will reduce the severity of illness and improve outcome.

There are several other diseases whose incidence increases with age for example Parkinson's disease (PD). The cause of PD is unknown but it is one of the most common neurological conditions to affect older people. Both prevalence and incidence of PD are age related with an overall prevalence in the general population of around 160 per 100,000 and an annual incidence of 13 per 100,000. It is a frequent cause of falls, fractures and hospital admissions. Many researchers believe that several factors like free radicals, accelerated ageing, environmental toxins and genetic predisposition in combination are involved in PD. Age related attrition and death of dopamine-producing neurons may also factor in the development of PD.¹⁰ Dysfunctional antioxidative mechanisms that occur in some older people may accelerate age related changes in the dopamine production and may factor in the development of the disease. Management of PD in older patients is made more challenging by the common occurrence of comorbidity, both physical and psychiatric. This not only makes diagnosis more difficult but also presents

Conference programme

■ What an ageing population means for health

Professor Shah Ebrahim, London School of Hygiene and Tropical Medicine

■ What the biology of ageing adds to medical practice

Professor Tom Kirkwood, University of Newcastle upon Tyne

■ Frailty: an emerging clinical paradigm

Professor Howard Bergman, McGill University, Montreal, Canada

■ How age is important in therapeutics

Dr Sinead O'Mahony, Cardiff University

■ Recognising delirium

Dr Shaun O'Keefe, Galway University Hospitals, Ireland

■ FE Williams Lecture: Myths of ageing

Professor Graham Mulley, St James's University Hospital, Leeds (see page 68)

■ The challenge of rehabilitation in the older patient

Professor John Young, Bradford Teaching Hospitals NHS Foundation Trust

■ Parkinson's disease – an age related disease

Dr John Hindle, North West Wales NHS Trust, Llandudno

■ The challenge of the ageing population, education and training

Professor David Black, Kent, Surrey and Sussex Postgraduate Deanery

■ A new ambition for old age

Professor Ian Philp, National Director for Older People

management problems. Parkinson's disease is a progressive condition and patients gradually deteriorate over time. This can be insidious with increasing impairment and handicap going unrecognised. Regular, planned follow-up by the specialist team is therefore advised.

Several other diseases are more common in older people and with the ageing population more and more people will suffer from age related diseases; our health systems must adapt to these changes and become more user-friendly for older people.

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