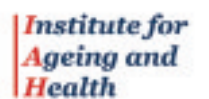




Understanding ageing



Thinking and dealing with ageing

Addressing the issues of ageing and demographic change...

At Newcastle University, the Institute for Ageing and Health has progressed over the past 15 years from a new multidisciplinary research institute to become Europe's leading organisation in its field.

The Institute brings together basic and clinical medical scientists, social gerontologists, technologists and a wide range of other research disciplines to address the issues of ageing and demographic change. It now includes in excess of 300 academics, researchers, students and support staff.

The Institute supports a number of important externally funded research centres, including:

- CISBAN – BBSRCs Centre for Integrated Systems Biology in Ageing and Nutrition, which brings together biology and computer science to reintegrate experimental data to model mechanisms of ageing and better understand the possibility for intervention in the ageing process;
- Newcastle Biomedical Research Centre – the UK's biomedical research centre in ageing seeks to improve translation of biomedical research into ageing and age related conditions to improve healthcare delivery;

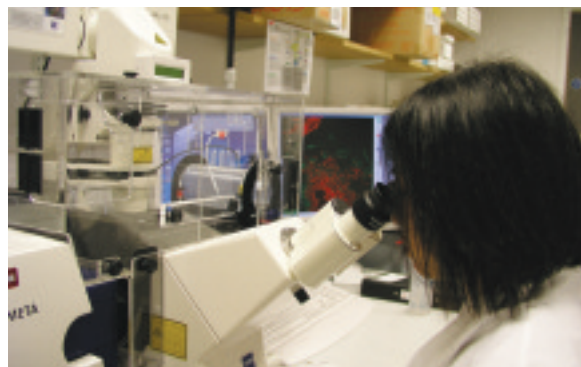


- Centre for Brain Ageing and Vitality – the RCUK funded CBAV seeks new understanding of dementia and cognitive decline, of the many age related conditions leading to reduced functional ability and of innovative treatments to address them.

World-class research

Our world-class research programme is brigaded into six themes of activity:

- Mechanisms of Ageing – investigates cellular ageing and uses the powerful capabilities of CISBAN to explore how this can be translated to the level of tissue, organs and organisms. This work has recently resulted in important insights into the complexity of the mechanisms of ageing which may have real potential to facilitate safe intervention with mechanisms of cellular senescence. The theme includes work to identify biomarkers of ageing, laboratory work and the Newcastle 85 plus study, a major community-based research project investigating a cohort of nearly 1,000 people born in 1921;
- There are two clinical themes, strongly linked to our NIHR Biomedical Research Centre on Ageing and Age Related Conditions, and undertaken in partnership with local NHS trusts:
 - Experimental Medicine – utilises capabilities such as the university's Clinical Ageing Research Unit to investigate the first use of new medical treatments for age related conditions;
 - Translation for Patient Benefit – investigates how new knowledge arising from clinical research can be best applied to improve the experience of treatment for patients;



- Health and the Ageing Society – investigates people’s experience of ageing and the impact on society and healthcare of age related conditions. It also encompasses issues such as the economic aspects of ageing and wider issues related to the wellbeing of older people and the public health aspects of healthy ageing;
- Oral Health and Nutrition – investigates the way in which healthy ageing is impacted by nutrition and by oral health. This theme also extends to investigations into the availability and accessibility of nutrition and food health claim evidence;
- Technology for an Ageing Society – seeks to understand how the use of technology can foster healthy ageing through information and support of appropriate behaviour, as well as aiding those damaged by ageing to live independently.

Working with the public

The Institute has a strong record of working with the public in a variety of ways. We have considerable expertise in the conduct of both clinical trials and community-based research, such as our Newcastle 85 plus study, which has given new insight into the lives of the oldest old.

More recently, our VOICE North engagement panel has given the Institute’s researchers and partners access to the opinions, interests and experience of a large number of people of all ages and backgrounds, and facilitated their involvement in a range of projects.

The university has recently launched a national campaign aimed at changing the negative perceptions that surround ageing and our growing ageing population. The campaign includes a charter, supported by key organisations and individuals, which can be found at www.ncl.ac.uk/about/changingage/charter.htm.

Innovation

If we are to achieve the full benefit from the scientific advances that have led and continue to drive rapid extension of longevity, and, at the same time, overcome the challenges of population ageing, we need new ways of thinking and dealing with ageing, supported by innovative products, solutions and systems. Much of what society at large thinks it knows about the ageing process is wrong. We need to build on what we are learning from research, to overcome the wide range of misapprehensions and ageist attitudes present in society, to identify and develop appropriate solutions for the future. The Institute for Ageing and Health is keen to work with a variety of

partners to support this and the university is investing in its ability to do so.

The headquarters of the Institute is at the heart of a fast developing Campus for Ageing and Vitality, being developed between Newcastle University and the Newcastle Hospitals NHS (Foundation) Trust. The Campus for Ageing and Vitality is already unique in its intimate co-location of clinical, biological and social research, including state of the art instrumentation and research facilities. This uniqueness will be extended further in 2011 by the addition of integrated space for new clinics, laboratories and industrial partners, and in the next few years by creation of novel linkages with the voluntary sector, technology and care industries, food and nutrition industries, and retail.

These facilities are supported by a small team that will manage and support projects with external organisations, to identify funding opportunities and to interface between researchers, partners and the university’s commercial team. We are keen to extend our work with a variety of partners from all sectors.

Together these elements provide a unique environment for collaboration between science, business, health and the public and volunteer sectors in ageing and demographic change, supported by strong involvement of the general public, driving real change in products and services suited to a differently shaped society.



Professor Tom Kirkwood
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A new age notion

As society delves deeper into a technological era, the digital divide is getting bigger, with older people in particular becoming increasingly segregated. Research and clinical trials to discover causes and new treatments for diseases are often centred on younger people, with those older often underrepresented due to the complex and varied nature of their health. *Public Service Review* speaks to a panel of experts about the way in which ageing is viewed today, and why it is so important to take the older generation into account...

The demographic dividend

The collective ageing of our populations is the biggest societal advance of the last decade. The hallmark of ageing is complexity, with the paradox of an ageing Europe where older people are both increasingly tough and increasingly frail. Addressing this complexity requires a new focus on determining the causes of the disease syndromes of later life – frailty, falls and gait disorders, Alzheimer’s disease, stroke, incontinence – and identifying effective strategies for prevention, health gain, health maintenance and palliation. An age attuned health system is the key to unlocking Europe’s demographic dividend.

The 15,000 geriatricians of the European Union Geriatric Medicine Society (EUGMS) represent the largest group of senior healthcare workers with formal training in gerontology (the sciences of ageing) in the EU, and are a valuable source of expertise and initiative. The society strongly supports pan-European and regional initiatives of joint action on the diseases of ageing, and argues strongly for not only translational research – from laboratory bench to bedside – but also for a wider perspective, which includes a better understanding of societal barriers to effective care. In particular, ageism must be combated so that Europe’s older people can have equal access to treatments that are effective at all ages (eg, breast cancer screening, which is age-limited in much of Europe), but also access to effective age specific treatments such as falls clinics, memory clinics and stroke units.

The EUGMS strongly supports the pan-European initiative to coordinate national medical research

councils working on a broad portfolio of areas of Alzheimer’s disease, and many of its members are active in developing these research activities. Particular EUGMS initiatives include the development of strategies on adult vaccination, sarcopaenia (loss of muscle mass and strength) and frailty, medications for older people (many medications have not been adequately tested in this more frail cohort), palliative care and diabetes (which is most common in later life). The input of geriatricians, and the science of geriatric medicine, is critical in these research initiatives, as the methodology needs to factor in the fact that most illnesses in later life occur in the setting of multiple illnesses, multiple medications, and frailty, all of which interact with each other.

The EUGMS is confident that the European Union can develop age attuned approaches to research into health in later life, and is determined to develop a key role in further age related research, supporting the philosophical approach of one of the early pioneers of academic geriatric medicine, Professor Bernard Isaacs: “If you design for the old, you include the young; if you design for the young, you exclude the old.”



Professor Desmond O'Neill MD
President EUGMS
European Union Geriatric Medicine Society



The gains in gerontechnology

How important is technology in enhancing the lives of older people?

Technology is enhancing the lives of all people including older adults. The latter are special in that their requirements and skills may be different and also because some have acquired bodily, mental, or social restrictions. The issue is: how can we cope with such issues and fully take into account their needs and aspirations in designing proper devices and services?

Can health and social care be improved by technology?

The health of older adults is of primary concern because the likelihood of restrictions and diseases increase with ageing. Optimal health is a basic condition for autonomy and independence and for following one's ambitions in daily life. Technology can support optimal health in many respects; examples are websites for information or for social contacts, whilst domotics, telecare, and telemedicine are presently emerging. However, older adults are often neglected by the health technology industry due to the lack of expertise in their physiological, psychological, social, and medical requirements and options. The demographic fact of the rising number of ageing adults is creating a substantial market for suitable gerontechnology products and services.

What corresponding research is being undertaken?

There is already a substantial body of research, which is reflected in the quarterly Gerontechnology journal and in the two-year international conferences on gerontechnology, this year in Vancouver. However, more suitable research is needed for building the necessary knowledge base, among others, for easing the demographic pressure on care provisions. Unfortunately, the interdisciplinary

nature of such research between human sciences and technology sciences makes it difficult for getting funding because of the current organisation of research funds and the underestimation of the social importance of gerontechnological solutions.

Are older people underrepresented in medical research, including clinical trials?

Unfortunately, the answer is yes. This is an important issue as the currently popular 'evidence-based' medicine is directed at single diseases and cannot take into account the complexity of the patients who have acquired individual medical records all their life with often quite a few chronic conditions. In that population the typical monopathological patient is an exception. Moreover, the regulations that protect cognitively impaired patients often translate into a limit to their right to participate in clinical trials. New methodologies including benchmarking, baseline studies, and risk analysis should be worked out as alternate proposals to evidence-based medicine.



Dr Pierre Rumeau, MD
Consultant Geriatrician



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International Association of Gerontology and Geriatrics (IAGG)

Positive ageing

In recent decades we have witnessed an increasing life expectancy and a rapidly increasing proportion of older persons in Western societies. These developments have sometimes been considered problematic, to the extent that old age is considered to be accompanied by poor health. Older people have too frequently been expected to be inactive and unproductive members of society. But recent research has shown that this perspective is no longer tenable. Many older persons are healthy and active, and on the whole are as likely to be caring for someone else as to be receiving care themselves. Besides adding markedly to the wealth of their localities and families, they contribute to societies through a wide variety of productive activities, such as volunteering and informal care giving. If we can strengthen these activities then ageing populations can have a more positive impact on families, society and welfare states.

Besides governmental support programmes and awareness raising, new technologies can strengthen the positive aspects of ageing and help to maintain independence and self-determination even in very old age. Today, new technologies and 'ambient-assisted living' for older people form a particularly exciting area of research. 'Gerontechnology' addresses, among other areas:

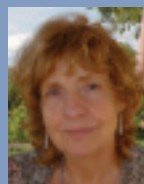
- Compensation for declining capabilities (such as cognitive, hearing or vision impairment);
- Chronic diseases (for instance, in continuous monitoring of vital parameters);
- Prevention (of falls, or in identifying long-term changes in behaviour);
- Comfort and safety (such as 'smart home' technologies or alarms);
- Care giver assistance (such as communication tools or lifting devices); and
- Professional healthcare (for example, telemonitoring or healthcare management).

However, most older people today have little experience with new technologies, and may sometimes even be hindered in everyday life by technological innovations – for example by ticket machines, banking terminals, or small mobile phones. It should also be kept in mind that technology acceptance and experience are distributed unequally in society (they are related to education, gender, income and culture); thus new technologies may exacerbate social inequalities which already exist.

Finally, technology cannot do everything. Electronic contact with the outside world should not replace old-fashioned neighbouring, and should not 'crowd out' family help. Currently, many technologies are being developed at some distance from the needs and preferences of older



people, and many are more influenced by stereotypes of old age rather than the real potentials of older people today. It is vital that technology development should start from a proper analysis of the problem to be solved and that outcomes are evaluated carefully. Furthermore, older people should be involved in all stages of product development. The post-retirement phase of life is a period of fruition, productivity, and wisdom from which we can learn. Hence more research on wisdom and values in older age, on positive aspects of ageing and enhancement, should be a priority.



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Trials, not tribulations

Insufficient research into ageing is being undertaken, particularly in the UK and in Europe generally. Ageing is the major risk factor for all of the major killer diseases of developed countries, including cancer, cardiovascular disease and dementia. It has now become clear from work with laboratory animals that amelioration of the ageing process itself – using genetic alterations, drugs or diet – produces a broad spectrum improvement in health during ageing. What is more, similar kinds of alterations can combat the effects of ageing in diverse organisms. Single-celled yeast and relatively simple worms and flies can hence be used to make discoveries about mammalian ageing. This research has shown, for instance, that pathways that sense the nutritional state of the organism and adjust its metabolic activities accordingly are also important in the ageing process. Tamping down their activity, with genetic alterations or with drugs, can extend healthy lifespan. Furthermore, reduced activity of these pathways has been shown to reduce the pathology associated with specific genetic models of human ageing related diseases, such as Alzheimer's and Parkinson's disease and cancer. Studies of humans have shown that genetic variants of genes encoding components of the signalling pathways that affect animal lifespan are also associated with human lifespan.

All the indications are, therefore, that we can tackle multiple ageing related diseases simultaneously by intervening in the underlying ageing process. However research into the translation of this approach into medical treatments is at present almost non-existent. Part of the reason is that these findings are still very new. But there is also considerable inertia from funding structures and the organisation of the medical profession. Research into ageing related disease is typically conducted on a single disease, partly because there are many disease specific funding organisations. Funding for basic or translational

research into ageing itself is extremely low. In the UK there is only a single, very small, charity that funds research into ageing, compared with the greater number of much larger charities conducting work on dementia, cancer and cardiovascular disease. This may reflect low public awareness of the output of research into ageing, and the fact that many people think of their loved ones as dying of a disease, rather than of ageing.

To translate basic research into ageing into prevention of ageing related disease, clinical trials will be needed. However, here again there are going to be obstacles. One is regulatory, in that ageing is not recognised as a disease and amelioration of its effects would not currently be recognised as a sufficient basis for a clinical trial. Even for currently used drugs and those in clinical trials, some of which would be good candidates for intervention into ageing, the effects on the older section of the population have generally not been explored. For the potential benefits of research into ageing to be realised, long-term clinical trials with older people will be essential. Indeed, all too often ageism plays a part in reducing the quality of medical care that is delivered to older people. Many can relate cases of being asked by doctors: 'what do you expect at your age?' But the major burden of ill health is falling on older people, and it is incumbent on those of us who can to do something to lighten this load.



Professor Dame Linda Partridge
Director
Institute of Healthy Ageing
University College London



He finds he gets out of breath more easily and more often these days.

Well, when you're in training for the 3 Peaks it's to be expected.

Say no to ageism.

The Newcastle Charter for Changing Age draws attention to one of humanity's greatest achievements: increased and increasing life span. Increased longevity offers huge new opportunities as well as challenges and the Charter questions a widely-held assumption that the increasing numbers of older people are a burden not a blessing. It also highlights the need for policy, products and services to be underpinned by improved knowledge and understanding of the needs, aspirations and abilities of older people. Please show your support for the Charter by adding your name to it at www.ncl.ac.uk/changingage, in confidence and with no other commitment.

The Charter was developed by Newcastle University as part of its Changing Age initiative and is rooted in the research of the University's Institute for Ageing and Health, one of the largest institutes in the world studying the challenges and opportunities of ageing. This research programme recently resulted in Newcastle university being awarded a prestigious Queen's Anniversary prize.

