

## European silver paper on the future of health promotion and preventive actions, basic research, and clinical aspects of age-related disease

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### Introduction

Ageing of populations is one of the highest achievements of humankind, and Europe is leading this successful story. However, ageing and age-related disease is also a mounting challenge for individuals, for health care systems and for biological, psychosocial, epidemiological, medical and public health sciences. Many scientists from

every single area of knowledge and science are actively working to better understand ageing and tackle the challenges that it brings to twenty-first century individuals.

These challenges cannot be confronted from a single point of view. A coordinated, active, united front of many disciplines is needed to face them, and a strategy that, starting from basic research, reaches every single aspect of ageing is needed. This means that translational research is a fundamental requirement, and that advances coming from research should flow rapidly, through the education of professionals, to the promotion of healthy lifestyles, and to health and social care meeting the

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needs of older persons. Evidence-based lifespan strategies for successful ageing must be adopted, with appropriate adaptation for older people to cater for the heterogeneity and complexity of later life.

A better understanding of molecular mechanisms of ageing, embedded in a translational matrix of gerontology<sup>1</sup> and geriatric medicine, is an absolute requirement for the design of new clinical procedures for improved prevention and management of age-associated dysfunctions and diseases. Moreover, placing greater stress and increasing research on public health issues (including health promotion and protection, prevention of disease, disability and frailty, improving quality of life, quality of care, health care organisation and health economy aspects) will result in better application of results from basic and clinical research into everyday practice (i.e. from efficacy to effectiveness). Connecting public health research with research in other sciences may result in translating knowledge to health policy and strategic plans concerning older persons and their family caregivers.

Major advances in basic ageing research have been made possible by recent breakthroughs showing that the mechanisms underlying ageing are conserved in evolution so that the biology of ageing can now be studied by looking at the causal mechanisms at work in ageing, integrating approaches from senescent cells in vitro to model systems and human studies. We now have the tools and resources, in the form of tractable experimental systems ranging from the sub-cellular, through animal models (such as nematodes, insects or rodents) to humans, in order to investigate the molecular mechanisms that cause ageing. The identification of the basic mechanisms determining ageing will enable the generation of novel prognostic markers and therapeutic means

to promote healthy ageing and prevent age-associated disease.

Clinical and public health research has also offered new insights about prevention and care of age related-disease. Much is known about the prevention and treatment of many acute and chronic diseases that result in disability and impaired quality of life. However, many European citizens are not receiving up-to-date care and rehabilitation of these diseases, and are suffering an avoidable burden of suffering and disability. Older people are not obtaining benefits from many advances in clinical gerontology and in disease prevention. Public health policies addressing the specific needs of older persons, and changes in the way that medical advances are delivered to this population are needed, in order to obtain more efficient, financially sustainable systems of health and social care. Moreover, research is needed to better define the role of many relevant social and economical aspects of ageing and disease.

In our modern society, older people are frequently subject to ageism, suffering discrimination relating to the scale and scope of services they receive in comparison to younger people. Even the terminology used towards older people is often inappropriate, and we concur with the proposal of the Human Rights Commission of the United Nations in 1999 to adapt our vocabulary, by not using the word “elderly”, and using instead the term “older people”, a more respectful approach. This change has to be adapted to every language.

The following is a brief overview, in tabular format, of the current European situation in basic biological research on ageing, in health promotion and preventive action, and in clinical care for older people, and the recommendations for future actions.

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#### Basic research

##### We know

A fundamental but poorly understood aspect of ageing is the asynchronous deterioration of organs and tissues within an individual. How *the intrinsic rate of ageing* within the different tissues is determined, how the whole body copes with this asynchronous deterioration, and how the later diverges in old individuals, remains elusive

##### We recommend

A multidisciplinary and integrated approach is recommended, in organisms ranging from simple models to humans, aiming to address the question of *how ageing is modulated at system level*. The fact that the rate of ageing differs considerably between tissues is of high clinical relevance. Understanding the basic molecular mechanisms responsible for asynchronous ageing and the natural mechanisms that might counteract these deteriorations will provide the basis for novel diagnostic, preventive and therapeutic strategies. This programme could be supported through an *INTEGRATIVE PROJECT*: “*Call text—LSH: Asynchrony in tissue ageing*”

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<sup>1</sup> Gerontology, the science of ageing, is classically divided into four sub-disciplines: (1) social sciences of ageing, (2) psychology of ageing, (3) biology of ageing, and (4) clinical gerontology (within which are positioned the disciplines of geriatric medicine, old age psychiatry, gerontological nursing, among others). It deals with the globality of normal ageing in the first instance.

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Basic research

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We know

We recommend

Intrinsic as well as external (nutrition and environment) factors regulate the progression and conditions of ageing and age related disease by modulating gene expression at epigenetic and posttranscriptional level. In the post-genomic era, it is becoming increasingly clear that epigenetic factors are critical determinants of ageing in diverse organisms ranging from yeast to humans. *Epigenetic modulation of ageing* has not been systematically addressed so far

Epigenetic contributions to ageing and age-related dysfunctions and diseases should be studied in a comprehensive way. This should be done in an integrated, multidisciplinary approach, using experimental systems ranging from simple animal models to humans, in order to address the question of *how ageing is modulated by epigenetic mechanisms*. Experimental models should be developed in a way allowing the translation of basic research into health care at different levels, including preventative care, diagnosis and therapeutics. This knowledge would add significantly to the competitiveness of European ageing research. This programme could be supported through an *INTEGRATIVE PROJECT*: “*Call text—LSH: Epigenetic modulation of ageing processes*”

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Health promotion and preventive action

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We know

We recommend

The *altered demography* of the world requires the incorporation of the principles of gerontology and geriatric medicine into those of public health

*Training of public health professionals* and academics should routinely incorporate clinical gerontology as a core component of undergraduate and postgraduate curricula

*Compliance (adherence)* is a major factor limiting the effectiveness of health promotion and preventive interventions. Older people may not respond well to interventions when they do not match with their beliefs, attitudes, preferences, expectations, and aspirations

Public health strategies to promote health and quality of life should be based on a *life course approach*. They should also take into account older people’s views as well as new information from longitudinal studies on ageing, rather than being paternalistic

*Strategies of successful ageing* consist of having the opportunity to make and making healthy lifestyle choices, implementing various self-management techniques, being offered and taking advantage of immunisation, injury prevention, early detection interventions and correct treatment of disease. Maintaining social network and activities is also critical to adapt successfully to aging health challenges

Selection of the appropriate evidence based *screening tests* for older people is of great importance in order to reduce disability, morbidity and mortality, and avoid unnecessary, expensive and potentially harmful diagnostic and treatment procedures

Adaptations of *vaccine recommendations for older adults*, and different subgroups such as those living in the community and the institutionalized oldest old are needed. The main aim should be to promote preventive aspects in primary and secondary care, as well as in geriatric medicine, relating to both life threatening-diseases, and diseases that adversely impact the patient’s independence and quality of life. Efforts should be made to guarantee a lifelong approach to adequate vaccinations to improve immunological response to infectious diseases

Appropriate *nutrition and nutritional care* are key indicators for quality of life, disease prevention and sustainable health. Nutritional care is not just a cost item but part of the health care solution

Older persons should be encouraged to maintain good nutritional habits. They should be screened for *nutritional status* and should be proposed adequate nutritional interventions. All health and allied care professionals should be trained in nutritional care. European countries should consider developing national nutritional care plans

*Physical activity* is one of the most important factors alleviating the age-related decline of biological potential and enabling ‘successful ageing’. Maintaining independence, reducing morbidity and increasing quality of life are important beneficial effects of physical activity in older people

On a population/public health basis, encouraging physical activity and the *provision of a range of exercise opportunities* as part of a wider campaign on prevention of falls and maintenance of independence should be popularised. Exercise recommendations should also be implemented as a secondary preventive measure in the recommendations of disease management. The use of published evidence-based recommendations for engagement of older people in preventive health care and the training of a wide range of health, social care, and leisure professionals in order to meet the full range of needs, abilities and preferences of older people is important

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*Falls* are more common in older people with poor balance; decreased strength and mobility are important risk factors. Falls are not an inevitable consequence of ageing: there is good evidence that progressive balance and strength interventions reduce risk of falls amongst older people

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Health promotion and preventive action

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We know

We recommend

*Injuries* are an important cause of morbidity, disability and mortality among older people, impacting the quality of life and representing an increasingly large proportion of the health expenditure. Despite the fact that almost half of the injuries are now foreseeable and preventable; efforts to reduce the injury toll in this age group have so far been limited, inconsistent, and dispersed across different settings

Strengthening *capacity building* in the training of professionals working with older people; networking of researchers, practitioners and policy makers across Europe; and implementation of preventive programmes can significantly contribute to the reduction and prevention of both intentional (like suicide, abuse, violence) and unintentional (like falls, traffic accidents, poisoning, and burns) injuries among community-dwelling and institutionalised older persons. These targets can be achieved through coordinated actions at European, national or local level, by providing state-of-the-art information on evidence-based practices for injury prevention that have proven to be effective

*Mental stimulation* using cognitively challenging activities is a means to facilitate neural plasticity, which can increase cognitive reserve and result in maintained or improved cognitive functioning

On a population, public health basis, the use of memory training, mental stimulation and *mental compensation strategies*, and the training of a wide range of health professionals in order to promote cognitive stimulation activities in older people should be encouraged

*Social activity* and social inclusion of older people is a complex and still under-appreciated issue with regard to successful ageing. Social activities include professional work, recreation, voluntary activity, family life, as well as a sense of duty towards disabled older persons or small children

Facilitating and enhancing social activity in older people is important for society, not only in the sphere of labour market, but also in other social (voluntary) initiatives, and as a preventive measure against social exclusion. The enormous reserve of human capital offered by *older people's activity* should be recognised by policy makers and adequately supported. To improve the quality of retirement in future generations, teaching of initiatives that promote social activity and engagement should start at school, from a life course perspective

*Informal care giving* has an important role in health promotion, prevention, and care of frail, disabled, older individuals. In the future, demographic aging in most European countries may also result in a substantial reduction of the number of informal caregivers available to care for disabled older persons

Measures to improve *public and governmental appreciation* of the immense unpaid work performed by informal caregivers should be developed (i.e. a European Caregivers' Day). Support, training, and incentives (including financial incentives) should be offered to informal caregivers, based on the needs expressed by themselves through their organisations, and the insights offered by social and clinical gerontology

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Clinical care

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We know

We recommend

*Geriatric medicine* is the specialty concerned with health related problems in older people, including acute, chronic and rehabilitation problems, in the community, long-stay and hospital settings. It is of proven efficacy in the health promotion, health gain, health maintenance and palliative care for older people. Geriatric medicine is an independent medical specialty in a majority of European countries, but not in all, although the number of older patients and the complexity of their medical conditions are growing fast. Old age psychiatry is also largely underdeveloped in most European countries, while some mental health diseases have a growing prevalence and impact on the quality of life of older individuals. Specialist gerontological nursing is an enormously important means of ensuring better care of older people within the healthcare system

European countries should encourage the universal recognition and further *development of geriatric medicine* as a medical specialty. An appropriate number of specialist physicians in geriatric medicine should be trained, certified and incorporated into national health systems. Old age psychiatry should also be developed

There is clear need for *specialist training* across all health and social care professions (including nursing, social work, physiotherapy, occupational therapy, clinical psychology, and public health practitioners) to meet the challenges of successful ageing

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Clinical care

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We know

The *use of drugs* in older people is complex. Age related changes in pharmacokinetics and pharmacodynamics, polypharmacy, multiple comorbid diseases, and drug-drug, as well as drug-diseases interactions all increase the number and severity of adverse drug reactions (ADR). Moreover, non-adherence to treatment may limit the success of any therapy. Many hospital admissions are due to ADR in this population. Discrimination against older people by their exclusion from clinical drug trials limits the body of evidence on which therapeutic decisions can be correctly made. In many cases, evidence-based life-saving therapies are not offered to older individuals

*Multifactorial interventions* led by geriatricians (i.e. hospital acute geriatric assessment units, models of integrated care, old age psychiatry, rehabilitation, home care) have been shown to result in *better patient outcomes* (such as lower disability and mortality, reduced need for long term care, etc.) at a similar or lower cost than usual care

Services for *health care for older persons* are heterogeneous, and availability of acute care, rehabilitation, long term care, palliative care, old age psychiatry, home care and nursing homes differs greatly not only between European countries, but even within most of them. Often, these services do not incorporate the fundamentals of modern clinical gerontology. This is a breach of the UN Convention of Human Rights, which mandates the right to the highest achievable standard of health care. The right of an older European citizen to receive comprehensive, up-to-date geriatric medical and social care currently depends greatly on his/her place of residence

*Care for specific groups* of older patients is also extremely heterogeneous between and within European countries

*Long-term care* for older people is an under-funded and under-resourced area of practice in most European countries. Many individuals do not get a comprehensive assessment to determine their therapeutic and rehabilitation potential, frequently resulting in a failure to recognise the complexity of health and social care needs. A huge amount of care rests on family members who bear costs and responsibility, usually for long periods of time

We recommend

A *Geriatric Medicine Committee* should be established within the *European Medicines Agency (EMA)* to improve research on every aspect of drug use in older people, to improve appropriateness of drug treatments in complex situations, and to reduce patient risks

*Multidimensional comprehensive geriatric assessment* should be made available to every older person, and fitted to each individual's profile. A comprehensive management plan should be elaborated, implemented, and periodically reviewed. The objective is not only to restore health, but to restore and maintain the highest possible level of independence and physical and mental autonomy. Interventions that have been clearly shown to improve health outcomes should be offered to affected older people. Outcomes should be adapted to the needs of each individual, who may prefer autonomy to longevity

In the very near future, older patients admitted to hospitals in the European Union should have *access to specialist geriatric care*, which will offer coordinated and integrated multidisciplinary care, adapted to the needs of each individual, their families and caregivers. In case of illness, frail and complex older people in Europe should have access to treatment provided by geriatricians and their teams. Technological aids have to be gradually incorporated in all aspects of care of older people

Each European country should develop a *full spectrum of high quality services* for older people, which includes health care (both in- and out-patient, acute and chronic), home care and care homes, and make them financially sustainable, available and accessible to all those in need

*Palliative and end-of-life care*, informed by evidence and the principles of clinical gerontology and geriatric medicine should be made available for older individuals who have diseases in their late and final stage, at the moment they need it. Palliative medicine should not be targeted to cancer patients only

*Old age psychiatry* should also be developed to address adequately in the future the large share of mental health problems that affect older persons (dementia, delirium...)

Older people should receive a comprehensive assessment to determine the *need for long-term care* and the possibility of recovering enough function to live in a less complex environment. This needs assessment should lead to appropriate investigation, treatment and support, using a bio-psycho-socio-spiritual model informed by modern clinical gerontology and geriatric medicine principles. Long-term care professionals should be trained in an effective use of validated comprehensive assessment tools and individual care plans for residents

A *quality of care assurance* system should be implemented in long-term care facilities to protect older people against discrimination, marginalisation and malpractice. *Informal caregivers* should be supported emotionally, socially, financially and with technological innovations, and should have access to support services

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Clinical care

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We know

A big share of health care of older patients depends on *general practitioners/family physicians*, and on *mono-specialists*. However, most of these physicians receive very little, if any teaching on the multiple aspects of care of older people

*Health services research* rarely includes frail older individuals. Research outcomes that are relevant for younger populations (i.e. mortality) may lose importance at advanced age. Health services research is limited, and the impact of changes in organization and delivery of health services on function and health of older people is rarely considered

*Research in old age health and disease* is fragmented, with limited interactions between basic, epidemiological, preventive, clinical, and health service research. Translational research is particularly sparse, despite evidence of the difficulties to translate demonstration projects into routine health care delivery. Ineffective treatment strategies are wasteful of ever scarcer resources

We recommend

Medical schools should have *academic departments of geriatric medicine* to provide leadership in undergraduate and postgraduate training and research. Every student of medical, nursing or allied health professions (physio-occupational and other therapies, social work...) should receive teaching and be trained in old age medicine and psychiatry, and this should become a mandatory part of academic curriculum and postgraduate training of all health care professionals

Research in the prevention and treatment of disabling and chronic disorders should: (a) include *the full spectrum of people* who are likely to benefit from it (including frail older people and taking into account gender differences in ageing), (b) use *relevant outcomes*, which include not only mortality, but also disability, use of health care and community services, quality of care, and quality of life, (c) be *informed by evidence* and the principles of modern clinical gerontology and geriatric medicine, and (d) include *public health* issues. There is also an obvious and continuing need for research in the way that health services have to adapt to meet the new challenges brought about by changes in demography, diseases, demands, disability and social support

A *European Institute of Ageing* would be an excellent answer, able to improve basic, translational and applied research in the ageing process, and in the prevention, treatment and rehabilitation of diseases of older people. It would bring awareness, funds, leadership and coordination. In view of our as yet limited understanding of the benefits and challenges of an ageing Europe, it would also contribute to the vision of the Lisbon declaration that Europe would have the most competitive knowledge based economy in the world by 2010

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This is a consensus report of the outcome of the European Summit on Age Related Disease (Wrocław, 11–13 September 2008), held under the French Presidency of the European Union. It was based on reports by:

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