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Towards a Comprehensive Public Health Response to Population Ageing

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Populations around the world are rapidly ageing. This demographic shift presents both opportunities and challenges. Most of us aspire to live a long and healthy life, and older people can be valuable economic, social, cultural, and familial resources. However, ageing populations are also likely to be associated with a shrinking workforce and higher demand for health care, social care, and social pensions.

Recent evidence suggests that many of the challenges associated with population ageing can be addressed by changes in behaviour and policy,¹⁵ especially those that promote good health in older age. Yet, to date, the debate on how best to achieve this transformation has been very narrow in scope.^{5[beardj1]} A comprehensive public health approach to population ageing - one that reflects the needs, capacities, and aspirations of older people and the changing contexts in which they function - is needed.

A number of factors make policy development on ageing difficult. First, the changes that constitute and influence ageing are complex.⁷ These alterations are only loosely reflected by chronological age, which changes at a steady rate, while the variations in function associated with ageing are neither smooth nor well defined.¹⁰ As a consequence, great inter-individual variability is one hallmark of older populations. This increased variation in physical and cognitive function as people age means that policies to meet the needs of older people must consider many different subpopulations. For example, while some older people may wish to continue to participate in social and occupational activities at levels similar to younger people, less healthy individuals in the same age group may require considerable health and social care and have limited capacity for social engagement. It is difficult to encompass such diversity in a single, simple policy framework.

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Second, this diversity is not random. Roughly 25% of the marked heterogeneity of health and function in older age is estimated to be genetically determined,¹¹ with the remainder dominated by the cumulative impact of health behaviours and inequities across the life course[beardj2]. Thus, someone born into a poor family with limited access to education, or in a marginalized cultural group, is also more likely to experience poor health in older age and earlier mortality. Recent research suggests there may even be an association between the ability to build financial security in older age and decisions that maintain healthy behaviours[beardj3].

Policymakers need to ensure their interventions do not reinforce these inequities. For example, a common policy response to increasing life expectancy has been to raise the age at which pensions may be accessed. This is consistent with recent U.S. surveys that suggest that a sizeable share of people desire some form of work beyond traditional retirement ages (with a preference for workplace flexibility).³ Yet there are widespread barriers to employment at older ages, including negative attitudes of some employers and limited access to training in new technologies. If these barriers are not addressed, increasing the pension eligibility age may weaken a crucial financial safety net. This may be particularly challenging for older individuals of low socioeconomic status who, in addition to being more likely to suffer significant health problems, often work in the most physically demanding jobs and have the fewest alternative job opportunities. Ensuring both economic sustainability and health equity will be a formidable challenge in developing a public health response to population ageing.

Major knowledge gaps make overcoming these complex challenges all the more difficult. For example, while life expectancy in older age is increasing in almost all countries, this *Series* highlights the fact that the quality of these additional years remains unclear.²¹ It seems incredible that we cannot yet tell decision-makers whether we are living longer and healthier lives or if we are simply experiencing extended periods of morbidity.

A host of major longitudinal studies now underway will help to fill these gaps. But we will also need to reframe how we collect and interpret information on ageing and health if we are to make meaningful progress.

For example, this *Series* reinforces that, regardless of a country's income level, the major causes of death and disability in older age are noncommunicable diseases (NCDs). Much of this burden can be prevented or delayed, and increasing emphasis is now being given to early life strategies of enabling healthy behaviours and controlling metabolic risk factors. But the risks associated with these characteristics continue into older ages (although this relationship may attenuate), and strategies to reduce their impact continue to be effective, particularly for hypertension, nutrition, and smoking. Yet despite the clear evidence of the importance of continued risk factor modification into older age, surveillance of health behaviours among older people is limited, and the data that are available suggest that behaviours that put them at risk remain widespread.⁴⁷ A greater emphasis on the neglected areas of health promotion and disease prevention in older age may yield significant benefits.

Furthermore, regardless of how effective we are at preventing or delaying NCDs, it remains inevitable that many older people will experience these conditions. Better systems are needed to provide the chronic management they require and to adequately address the consequences of these conditions. One barrier to building these systems and to identifying sound health promotion strategies in older age is the lingering perception that this chronic disease burden is made up of individual diseases that are best managed independently. In reality, older people are much more likely to experience multiple, co-existent, and interrelated problems, and this multi-morbidity is commonly felt through a loss of function and the broader geriatric syndromes of frailty and impaired cognition, continence, gait, and balance.³⁴ Functional assessments of these syndromes have been shown to be far better predictors of survival than the presence or number of specific diseases,³⁵ so it should not be surprising that comprehensive assessment and coordinated care provides the best outcomes in older adults.⁸⁶ Yet gerontologically-informed assessment and coordinated care remain the exception rather than the norm, and much research fails to consider these more holistic perspectives.

Nor should the importance of NCDs in older age obscure other health issues. While our understanding of the burden of communicable disease in older age is surprisingly limited, it is clear these conditions remain an important cause of morbidity and mortality in older populations, particularly in low- and middle-income countries. But outdated perceptions of behaviour in older age may limit both surveillance and response. For example, older people, particularly the unmarried, may not be viewed as sexually active, and so may be excluded from HIV screening programs or advice on safe sex practices. At the same time, individuals with HIV are living longer, increasing the likelihood that a sexually active older person will face exposure to the HIV via a potential sexual partner. HIV in older individuals may also require specific clinical management.⁵¹ If services addressing the prevention and treatment of HIV and other infectious diseases are to maximise their impact, they will need to adapt to changing demography.

While vaccination can reduce the burden of infectious disease across the life course, immune function, particularly T-cell activity, declines with age. These changes mean that the capacity to respond to new infections (and vaccinations) decreases in later life, a trend known as “immunosenescence.” Furthermore, an age-related increase in serum levels of inflammatory cytokines known as “inflammaging” has been linked to a broad range of outcomes including frailty, atherosclerosis, and sarcopenia (loss of muscle mass). Fresh consideration of these trends may provide innovative interventions for older age groups in the future.⁵⁴

A more comprehensive understanding starts with research. However, many established mechanisms for how we develop and evaluate clinical interventions have failed to adapt to population ageing. Despite being the most frequent users of many medications, older people are generally excluded from clinical trials.⁵⁶ Yet, their altered physiologic status means that the evidence we extrapolate from younger populations may not be directly applicable to older adults. Innovative approaches are needed to bridge this gap, to identify the optimum treatments for individuals with multiple disorders, and to minimise adverse drug

interactions. Until these methods are developed and adopted, better post-marketing research may provide some guidance.

Finally, population ageing is not taking place in isolation. Other broad social changes are transforming society and these, in turn, are interacting with ageing to influence social and intergenerational dynamics. Understanding the interplay between these trends is crucial if policymakers are to make the best decisions to promote the health and wellbeing of older people.

Foremost among these factors is the changing role of older people in society. Yet, in many parts of the world, policy often appears to assume a division of the life course into a series of stages based on chronological age and social roles - typically student, working age, and retirement - that have little physiologic basis. This rigid framework prevents the flexible types of participation older people are increasingly seeking³ and is exacerbated by ageist stereotypes of frailty and mental diminution. Effective health, social, and economic policy needs to acknowledge the changing aspirations of older people rather than reinforce outdated stereotypes.

At the same time, typical household composition is changing, along with attitudes about the obligations and responsibilities that might be expected of different generations. Increased spatial mobility and changes in family structure mean that, in many countries, older people are increasingly living alone or as part of a couple, rather than in the larger, multigenerational households of the past. In some European countries, for example, nearly 50% of women aged 65 or older now live by themselves. These trends present both economic and social challenges, since older people living alone have less opportunity to share the resources typically available in a larger household and may also be at increased risk of isolation, depression, and even suicide.

Changing household structures make it more difficult for families to provide the care and support needed by those older people with significant functional decline. This challenge is exacerbated by the increasing proportion of older people compared to younger family members, and internal and external migration of younger generations. This change in balance is even evident in sub-Saharan Africa, where the HIV epidemic has removed the potential support from younger generations for nearly one million older people.⁷⁴

These changes are stimulating increasing debate on the relative roles of government and family in providing the social care many older people need. Changing gender norms add a further layer of complexity to this debate. In most cultures, traditional caregiver roles are assigned to women, limiting their capacity to engage in the formal workforce. This places them at greater risk of poverty, abuse, and poor health in older age, while reducing their access to quality health care, social care services, and pensions. The increasing workforce participation of women will help overcome this inequitable burden and will have significant benefits for socioeconomic development. But it will also challenge traditional familial roles and limit the family's capacity to provide informal care at the same time that demand for it is growing. New, sustainable models of care that balance the role of family and government, and that overcome gender inequities, are urgently needed.

Advances in information and communications technology (ICT), assistive devices, medical diagnostics, and interventions are increasingly offering innovative avenues to boost the health and social participation of older people. For example, remote monitoring of health indicators and behaviours will allow for earlier and more subtle detection of negative functional trajectories. Furthermore, common assumptions that older people are out of touch with emerging technologies may be increasingly inaccurate. Better connectivity creates new possibilities for social engagement, lifelong learning, and telemedicine - the evaluation, diagnosis, and even treatment of patients via advanced telecommunications media such as video conferencing, which has the potential to decrease costs and wait times for patients and promote early detection of many health conditions. But if the benefits of these advances are to be fully realized, designers, too, must better understand the changing needs, capacities, and aspirations of older people. Especially useful would be further research into how technological innovations might meet the specific needs of older people in low- and middle-income countries.

Broader characteristics of the physical and social environment are crucial determinants of whether older people can continue to undertake the activities that are important to them. In recent years, a number of interventions have been developed to create environments that foster active and healthy ageing. These include the World Health Organization (WHO) Global Network of Age-Friendly Cities and Communities, which now has over 200 members responsible for close to 100 million people. Yet the evaluation of the impact of these approaches is very limited.⁷⁶

Thus, an effective public health response to population ageing must take into account the wide diversity in the health, social, and economic circumstances of older people, the disparities in the resources that are available to them, concurrent social trends, changing aspirations, and stark knowledge gaps.

To achieve this, it will be important to first conceptualise health in a way that is relevant to all older people. Given the likelihood of comorbidity and the centrality of geriatric syndromes in older age, a conceptual framework that focuses on function rather than disease may be most relevant. Public health policy on ageing could then be designed to maximise levels and trajectories of function in older age, and to maximise the ability of older people with *any given level of function* to do the things that are important to them.

This approach has a number of strengths. Fostering optimal function can take place at all stages of older age (and before) and is a worth while goal even for the frailest or most cognitively impaired. This approach would also require a thorough consideration of the contextual factors that are so fundamental to well being in older age, including issues of equity, and may encourage the development of the more coordinated systems of health and social care that have been shown to best address the needs of older people.

Such coherence is lacking from most current policy approaches, which have difficulty addressing key aspects of heterogeneity among older populations[beardj4]. Instead, policies often emphasise *either* the need to minimise the economic costs of population ageing (more

recently through maximising the labour participation and net contribution of older people) or the goal of meeting the needs of the most vulnerable.

In looking to optimise trajectories of function, health systems could be redesigned to better provide coordinated and gerontologically-informed services that enable older people, as much as possible, to “age in place.” Ideally, this framework would be seamlessly linked with social and long-term care to provide a continuum of care that extends from the community to, where indicated, institutionalised care. Core services would include prevention and early detection of disease; primary and acute care; rehabilitation; provision of assistive devices; and palliative care. The relative importance of each of these would differ between settings, depending on demographics and level of socioeconomic development.

While these services are largely lacking in low- and middle-income countries, there is an opportunity for existing health services to be adapted to better meet the unique needs of older people.⁸⁸ These adaptations might include basic geriatric training for all health staff, or practical steps such as reducing queuing time for frail older people. “Diagonal” approaches - an integration of vertical models that focus on a single disease and horizontal models that focus on health care delivery systems - might also be considered to meet emerging needs (for example, control of hypertension) by building on existing services (for example, chronic HIV care).

In all settings, a coherent public health strategy on ageing should seek to build and support an appropriately trained workforce, including both formal and informal caregivers. A significant concern here is that the continuation of current international migration patterns of health workers will result in increasingly acute health workforce shortages in many countries. Strategies to retain older health workers, and perhaps to recruit and train new health workers from the ranks of older people, will therefore be important. But for those now entering the workforce, a greater emphasis on geriatrics in core medical training curriculums, along with a rethinking of the culture of many clinical services that treat older people as generic vessels of single organ disease, is essential.^{88,91}

Finally, since functioning is inextricably linked with context, a comprehensive public health strategy would need to consider the physical and social environment. Not all the resulting strategies will require complex policy measures. For example, the WHO Global Network of Age-friendly Cities and Communities routinely identifies simple aspects of the urban environment, such as access to public toilets and seating in public spaces, as crucial to the activity and well being of older people.

Developing this comprehensive public health response will require a rigorous evidence base that can serve to counter entrenched stereotypes and identify the most cost-effective strategies for the future. Mechanisms will then be needed to ensure this evidence is translated into policy and practice. Some obvious knowledge gaps that urgently need to be filled include our understanding of the: (actual and potential) contributions and costs of older populations; changing patterns of morbidity in older populations; optimal clinical interventions in older age (particularly pharmacological interventions); optimal ways to manage comorbidities and complex issues such as frailty; quality of the additional years

engendered by increased life expectancy; and impact of strategies to create more “age-friendly” environments. A good start would be extending the collection of routine data to older ages in both institutional and home settings. More, better quality, and globally comparable data on physical, cognitive, and emotional function, social connectivity and living arrangements, economic and financial circumstances, and related features of the local environment will lend a better understanding to the many dimensions of this complex issue. This research will need to keep up with innovations in technology. For example, the advent of wearable devices that can continuously monitor physical activity may rapidly transform our understanding of functional capacities and trajectories.

This *Series* is a useful step towards filling many of these gaps. Recent work commenced by the WHO will also help: their World Health Assembly has agreed to prioritise work on ageing and to develop a World Report on Ageing and Health, followed by a Global Strategy and Action Plan. Such progress will build on existing initiatives, such as the ever-expanding Global Network of Age-Friendly Cities and Communities and projects on knowledge translation in Ghana and China, to help establish evidence-based policy on ageing and health. The world's demography is changing. To understand it, our thinking and research, and their manifestations in policy, must change with it.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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