

**Age UK's response to the House of Lords Science and Technology Committee's
consultation on Ageing: Science, Technology and Healthy Living**

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About the consultation

The Government have committed to ensuring that older people are able to enjoy an additional five years of healthy, disability-free life by 2035. In response to this the House of Lord's Science and Technology Committee have launched a consultation to explore what needs to happen to make this ambition a reality. This response lays out recommendations from Age UK on how to ensure older people can live as well as possible for as long as possible.

Key recommendations

While we are living longer than ever before, increases in life expectancy have not been accompanied by an increase in the number of years we spend in good health. People aged over 65 can expect to live half of their later years with a life-limiting condition and by 2040 the total number of disabled older people is projected to increase by 67 per cent to 5.9 millionⁱ. It is essential that we support older people to live as well as possible for as long as possible. This is not only better for individuals but has the potential to bring enormous benefits to society as a whole. To achieve this we are making the following recommendations:

- Older people's health is impacted by a range of factors and technology should not be seen as a silver bullet. Cross-department investment is needed in public health, housing, communities, transport, and welfare, alongside investment in the NHS and social care to help older people live well for longer. Technology can support strategies but should not be seen as a solution in itself.
- Traditionally older people's needs have not been considered in technology design, meaning that the heterogeneity of older people has not been reflected. This needs to change, with a range of products and services, supported by information and advice in a variety of formats, including offline, to ensure that no older person is left behind.
- Older people are experts in their own experiences and their views should be central in the development of new sciences and technologies. Without involving older people, we cannot expect to develop solutions which meet their needs.
- It is essential that the needs of older people are included and funded in public health strategies and messaging.

Throughout this submission we have focussed on those major research projects with which we are most familiar. However, there is a wide range of relevant research, and we refer the Committee to the 2019 report, "Transforming the Future of Ageing," a major evidence review report by Science Advice for Policy by European Academies (SAPEA), which is part of the European Commission's Scientific Advice Mechanism providing independent scientific advice to the College of European Commissioners to inform their decision-makingⁱⁱ. The report contains evidence and recommendations on many of the topics included in the Committee's Inquiry.

Scientific basis

1. How complete is the scientific understanding of the biological processes of ageing and their epidemiologies (including the relative roles of genetics, epigenetics, lifestyle, environment, etc.)?

In the last two decades, an upswell in recognition of ageing and age-related health conditions, hand in hand with dedicated investment in ageing research from public and private sources, has brought about welcome progress in understanding of the ageing process and specific conditions. However, there is still far to go to advance research to enable people to live in good health, independence and quality of life for more years of longer lives at individual and population level. Achievement of these improved outcomes by 2035 requires intensified funding and effort in research across all disciplines.

The complexities of ageing mean that multidisciplinary approaches are key. This is demonstrated by research, funded by Age UK and others, at the University of Edinburgh with the Lothian Birth Cohorts of 1921 and 1936, who are probably the most intensively-studied groups of older people in the worldⁱⁱⁱ. The research relates phenotypic data to genetic and epigenetic data, biological markers, health and mortality data, lifestyle data, cognitive data, psychosocial and wellbeing data, childhood data, and imaging data. Further, given that ageing is not something that starts in later life, and how well or poorly we age is influenced by factors across life, life-course approaches to research are crucial, and learnings from all stages need to be translated into policy and practice. For example, the Lothian Birth Cohorts studies have shown that while the single biggest determinant of cognitive function at age 70 is cognitive function in childhood, this is malleable: some people age with better cognitive function, overall, , probably due to an accumulation of factors acting across the lifecourse. Ageing as a lifecourse phenomenon is demonstrated by other studies, including the Healthy Ageing Across the Lifecourse Study, which combined multidisciplinary data from a range of research cohorts^{iv}.

There is a plethora of conditions that jeopardise independence and quality of life in older age, and for which improved interventions are urgently needed but that remain under-researched owing to historical relative under-funding. Continence issues are an example, as set out in the report, “My bladder and bowel own my life,” a report of a 2016 collaborative workshop addressing the need for continence research^v. Significant dedicated investment in multi-disciplinary research on such conditions, guided by a full understanding of what is really important to older people, is vital if a real difference is to be made for older people by 2035.

2. How firm is the scientific basis for public health advice about healthy lifestyles as a way to increase health span, including physical health and mental health?

Behaviour change programmes are always hard to evaluate and evidence, because the change often takes place over a long timescale and may be attributable to a number of different factors. However, there is compelling evidence that change can be achieved: see for example, the long-term decline in heart disease following public health campaigns about the health implications of smoking^{vi}.

However, to increase health span through healthy lifestyles, we need a robust basis for public health advice not only for physical and mental health (the latter interpreted as conditions such as depression and anxiety) but also for cognitive and brain health. In relation to the latter, we mean age-related cognitive impairment, i.e. loss of cognitive skills greater than the relatively small decline in thinking skills seen in normal cognitive ageing. Age-related cognitive impairment may range from mild to severe; for some people, mild impairment may herald dementia. It is estimated that up to 2.4 million people over the age of 65 in the UK have some form of mild cognitive impairment^{vii}.

In the continuing absence of effective disease-modifying therapies for cognitive impairment, reducing the risk of age-related cognitive decline and promoting cognitive health remain important approaches and public health targets. The evidence in this field currently enables advice about healthy lifestyles based on association, but more work is needed to firmly establish causation. To date, an overall finding is that risk and protective factors for cognitive and brain health are similar to those for physical health. Public health messages should therefore be based on the whole person, bearing out the adage, “healthy body, healthy mind.” Another message is that people should take a *range* of steps based on the risk and protective factors that they can modify themselves, with no one single factor being a “magic bullet,” as has been found in the Lothian Birth Cohort studies^{viii}. The referenced paper by Corley et al contains a mass of evidence on lifestyle and health-related factors that might mitigate age-related cognitive decline.

a. What are the practical impediments for this advice being acted on?

Following a healthy lifestyle can help to reduce the risk of many of the most common physical conditions which we are at risk of developing in later life, yet there are many impediments to older people acting on this advice.

- The majority of public health guidelines aim to promote healthy behaviours in children and working adults, with older people often being overlooked^{ix}. For example, 1.6 million older people are at risk of malnutrition yet public health messaging around diet focuses on obesity in children and working age adults. Many of these messages are unsuitable for older people^x.
- There are common misconceptions around ageing, with the public tending to believe that age-related conditions are inevitable or that your health in later life is dependent on your genes. Such beliefs can be a barrier to taking action. People may be aware that there are things they can do to maintain aspects of health, but find it difficult to “convert” this to action¹.
- For some health improvement activities older people may need support, such as someone to drive them to an exercise class, or someone to walk with if they are worried about falling. There is rarely any funding targeted specifically at these activities, and the crisis in social care funding means that care packages can only focus on the essentials such as meals and toileting, without any time for help with mobility^{xi}.
- There is significant variation across the country in the availability of services to stay well, such as strength and balance classes or foot care services. These services are frequently provided by the voluntary sector, but deprived areas tend to have fewer such organisations operating in their communities^{xii}. Without this provision it is harder for older people to follow public health advice. While social prescribing is a very welcome move forward, primary care providers need relevant activities and services to which they can prescribe patients.

¹ For example, a UK-wide 2016/17 survey of over 3,000 people aged 40 to over 90 on beliefs and attitudes about changes in thinking skills with age, found that nearly nine out of ten respondents believed there are things they could do to maintain or improve their thinking skills, but fewer than six out of ten were sure what those things were¹.

Understanding what people believe about ageing, education about ageing well, and effective programmes of communication are essential. However, the Government must take steps to support older people to stay healthy. It is essential that the needs of older people are included and funded in public health strategies and messaging. Barriers to healthy ageing, including insufficient or inaccessible services must also be addressed.

b. Are there examples of good practice in the UK/devolved nations, or elsewhere?

Age UK have joined together with 14 leading health charities, including the Alzheimer's Society, Stroke Association, Parkinsons UK, and Sport England to develop a campaign to inspire and encourage people living with long-term conditions to be more physically active. While the campaign is targeted at adults over 30 years of age, 80% of people over 65 are living with a long-term condition^[1], making them a key audience for this campaign. The campaign features a wide range of people living with long term conditions, including several older people, who have found a way to be active that suits them. The campaign consists of films highlighting those case study stories as well as a suite of other assets, including GP and pharmacy resource packs available via the PHE resource centre. The messaging for the campaign has been based on robust research with people living with long-term conditions.

Age UK also has a suite of web pages, "Staying Sharp"², which present information on the brain and cognitive ageing to raise awareness and present evidence on the risk and protective lifestyle factors involved in a positive and accessible way. The pages, based on evidence from the Lothian Birth Cohorts studies and other research, were developed in collaboration with the Cohorts study team at the University of Edinburgh.

The Global Council on Brain Health³, which is administered by the AARP (the USA's major organisation for ageing and older people) and in which Age UK is a founding collaborator, also publishes evidence-based practical information for the public on lifestyle factors in relation to brain and cognitive health.

3. Which developments in biomedical science are anticipated in the coming years, in time to contribute to the Government's aim of five more years of healthy and independent life by 2035? Research areas may include:

- **Treatments based on new approaches e.g. senolytics, epigenetic therapy**
- **Drug repositioning**
- **Treatment of co-morbidities and polypharmacy**
- **Diagnostics, particularly early diagnostics for ageing-related diseases**
- **Biomarkers for diagnostics and for monitoring effectiveness of treatments**
- **Personalised medicine for ageing-related diseases and multi-morbidities**

Although there is the potential for developments in biomedical science to support the Government's aim of five more years of healthy and independent life, there are non-technological solutions already available which are not being implemented.

Inappropriate polypharmacy is a significant issue, with estimates suggesting that one in five prescriptions for older people living at home are inappropriate. When older people are prescribed medications in excessive numbers or which aren't suitable for them there can be serious health implications:

² For more information, see: www.ageuk.org.uk/stayingsharp

³ For more information, see: <https://www.aarp.org/health/brain-health/global-council-on-brain-health/>

- Nearly 1,000 older people a day are admitted to hospital because of falls^{xiii}, and their chance of falling again goes up the more medicines they take^{xiv}
- Up to 10% of hospital admissions in older people are medicines related^{xv}
- An estimated one in three older people suffer a medicines-related harm within 30 days of hospital discharge^{xvi}

Age UK's report, 'More Harm than Good', found that lack of time and information, together with insufficient communication between GPs and hospitals, contributes to older people being prescribed inappropriate medications. Meanwhile, insufficient training around polypharmacy can mean that signs of medicine-related harm are missed or older people are prescribed more medicines in order to address the side-effects of medication that they are already taking^{xvii}.

Technology may have a role to play in reducing polypharmacy but in the short-term there are immediate steps which should be taken to prevent medicine-related harm. Ensuring that polypharmacy is a core competency for all health practitioners working with older people and providing older people with routine medicine related reviews would help to reduce instances of inappropriate polypharmacy. Crucially, older people should be fully informed and involved in any decisions about their medicines, supported to understand the risks and benefits of treatments and able to define goals from care that are meaningful to them. Technology should be a complement to this process not a solution in its own right, supporting effective use of shared decision-making.

4. How complete is the understanding of behavioural determinants and social determinants of health in old age, and of demographic differences?

We refer the Committee to important work on social determinants of health by Prof Michael Marmot.

An area where we are starting to better understand the link between social factors and health is loneliness. A technical report of Age UK's most recent work in this area can be found on our [website](#).

Age UK has also constructed an [index of wellbeing](#) which seeks to put together subjective and objective indicators. The most striking conclusion from our Index is the importance of maintaining meaningful engagement with the world around you in later life – whether this is through social, creative or physical activity, work, or belonging to some form of a community group. However, it is also clear that there is an unacceptable gap between older people with the highest levels of wellbeing, and those with the lowest – who were disproportionately composed of people on low incomes and in poor health. Members of this group are relatively inactive and also big users of local public services, including the NHS and public transport. They are also often highly disconnected, isolated and alone: tragically, one in eight of them have no friends at all.

Technologies

5. What technologies will be needed to facilitate treatments for ageing and ageing-related diseases, and what is their current state of readiness? For example:

- **Drug delivery devices, for existing or future treatments**
- **Technologies for monitoring conditions and providing personalised medical advice**
- **Technologies for monitoring healthy living e.g. fitness, diet, etc.**

There is still some way to go before technologies will be able to facilitate treatments for ageing and ageing-related diseases. Age UK's position on digital assistive technology lays out that any technology to support older people with age-related diseases must:

- Be offered to older people at an appropriate time, rather than waiting until the older person's condition has escalated. For example, it will not be appropriate to offer an older person in the late-stages of dementia new technology to manage their condition.
- Be accompanied by training and ongoing support to ensure that older people have the skills to make optimum use of the technology.
- Meet the needs of older people and respond to the ways in which they choose to live their lives. This may mean creating bespoke versions of mainstream technology which is adapted to older people. For example, ensuring that sports watches set realistic targets of exercise for older people suffering from long-term conditions, rather than generic targets.
- Be available to all older people who could benefit from it, irrespective of their age or socioeconomic status^{xviii}.

6. What technologies will be needed to help people to live independently for longer, with better health and wellbeing? What is the current state of readiness of these technologies, and what should be done to help older people to engage with them?

For example:

- **Digital communications for services, social interactions, etc.**
- **Devices, machines, etc. for daily living in the home**
- **Transport, infrastructure, services, etc. for involvement in community**
- **Accessible public spaces**
- **Smart homes**

Technology can play a role in helping people to remain independent and stay in their homes, but it should not be seen as a silver bullet and needs to be accompanied by high-quality services. For example, while smart alarms have the potential to help keep older people safe, in some areas there is a lack of clarity about who should respond to alarm calls^{xix}. This risks giving a false sense of security.

It is also important that technology is developed in collaboration with older people and in response to their needs, rather than making assumptions about what older people will find helpful. The National Institute of Health Research has identified that when technology is developed for older people, designers focus on developing the systems they believe will work, instead of finding out what people need and testing with user's solutions which could meet these needs^{xx}. As a result, take-up of technology is often low, with as much as 40% of technology which is installed in the home never being used^{xxi}. To ensure that health technology makes a difference for older people, it is essential that their views and experiences are brought in from the start of the design process.

7. How can technology be used to improve mental health and reduce loneliness for older people?

Evidence around the impact of technology on older people's mental health and loneliness is patchy, but there are promising signs that technological solutions could benefit some older people if appropriately developed, introduced and supported.

Some of the ways in which technology is currently supporting older people includes:

- Some older people use the internet to maintain existing relationships with friends and family and this is the main reason older people give for wanting to be online^{xxii}. They may also use the internet to find out about activities in their local area, which helps them connect socially with people with shared interests.
- Technology can be an effective way to deliver befriending services for some older people. For example, Age UK's national service 'A Call in Time', offers weekly befriending from volunteers over the phone. This approach has many benefits, including offering service users anonymity which makes them more inclined to sign-up to the service and ensuring that people who are housebound or living in geographically isolated areas can still benefit from befriending. 'A Call in Time' has been positively evaluated, with results showing that the phone calls increase perceived mood and wellbeing, with many recipients reporting a reduction in loneliness. While it should not be seen as a substitute for face-to-face contact, it can act as a bridge while older people are waiting to be referred to local services.
- Programmes to improve older people's computer skills help to reduce isolation and support older people to develop social connections. They can be seen as less daunting to attend than services which are specifically marketed as reducing loneliness but have many of the same benefits^{xxiii}.

It is important to recognise that technology should not be a replacement for human contact and traditional face-to-face services. While technology helps older people to maintain existing relationships, it is less often used to develop new ones. Furthermore, older people experiencing chronic loneliness or serious mental health problems should always be referred to appropriate services for support.

8. What are the barriers to the development and implementation of these various technologies (considered in questions 5-7)?

a. What is needed to help overcome these barriers?

b. To what extent do socio-economic factors affect access to, and acceptance of, scientific advice and use of technology by older people and those who care for them?

Many older people are digitally excluded and do not have the skills, confidence, or money to access technological solutions. 3.7 million older people aged 65+ have never used the internet, while 56% of people aged 75+ have not used the internet in the past 3 months^{xxiv}.

Certain groups of older people are less likely to have access to the internet:

- People on the lowest income are over 2.5 times less likely to be using the internet than those in the highest income brackets^{xxv}. Older people with limited financial resources are also more likely to have a narrow use of the internet, with minimal use of new technologies.
- Older people aged 75+ are five times more likely not to be using the internet than older people aged 65-74^{xxvi}.
- Older people with mobility problems are 1.44 times less likely to be using the internet than those without mobility difficulties^{xxvii}.
- Some older people may not be able to develop the skills needed to access technological solutions. For example, an older person in the late stages of dementia will struggle to adapt to new technology.

Lack of digital access or ability to use health technologies, regardless of the reason, can have a negative impact on health outcomes and may widen inequalities:

- Health information and services are increasingly accessed online, making digital technology a form of health literacy. Lower health literacy has been shown to lead to worse health outcomes^{xxviii}.
- Older people without access to the internet may find it more difficult to access health services. For example, online referral forms have been identified as a key barrier to older people being able to access Improving Access to Physiological Therapies talking therapy^{xxix}. Digitally excluded older people are also unable to book GP appointments or order prescriptions online.

Even when older people are able to access technology, the health technologies they are provided with often fail to meet their needs. Older people are rarely seen as targets for fitness and health applications, which means that devices are not suitable for them^{xxx}. If they are provided with technology from health and care services, it tends to be once their health needs have already escalated, which reduces the potential benefits and increases the likelihood that older people will reject using it^{xxxi}. Technology also regularly comes at a cost, which isn't affordable for all older people.

To address these obstacles, health technology needs to be affordable and accessible to all older people, irrespective of their age, socioeconomic status, or health. Older people should be included throughout the design process to ensure that new technology appropriately meets their needs and reflects the diversity of older people. They should be provided with ongoing support and training so they are able to make the use of any technological device.

Alongside this, there should be greater recognition that not all older people are able or willing to access technological solutions. Efforts should be made to increase digital inclusion for older people, but all services should also be available in a variety of formats, including offline, so that no older person is left behind.

Healthier ageing

11. How feasible is the Government's aim to provide five more years of health and independence in old age by 2035?

a. What strategies will be needed to achieve the Government's aim?

b. What policies would be required, and what are their potential costs and benefits?

c. Which organisations need to be involved ?

d. Who should lead the work?

The Government's aim requires a cross-departmental approach, which properly addresses the different factors which impact on older people's health. This will include investing in public health, housing, communities, transport, and welfare, alongside investment in the NHS and social care. We believe the following actions are required:

Public health services: Older people should be able to access services which help them to stay well, such as strength and balance classes, foot care services, and opportunities for physical activity. This is not only positive for individuals but can produce financial savings: preventative activities through the public health grant are up to four times more cost-effective than NHS spending^{xxxii}. However, cuts to local authorities and the public health grant mean that older people are missing out on vital services. The Government should develop a comprehensive and funded strategy which lays out how they will improve public health for older people.

Suitable housing: all older people should be living in housing which meets their needs and enables them to remain independent for as long as possible. This will require local authorities to ensure all older people in their locality can access adaptation and repair services which reduce the chances of falls and excess cold and for new housing to be built under age-friendly design-principles.

Age-friendly communities: older people should be able to participate fully in their communities and take part in activities which give their lives meaning. This takes many forms but should include ensuring that older people can access public transport; that there are green spaces and appropriate facilities, such as toilets, seats and street lighting; and that older people are able, if they wish, to take part in economic, social, and civic activities.

Welfare: There are currently 2 million older people in the UK living in poverty, with over half of these living in severe poverty^{xxxiii}. Poverty impacts on a person's ability to make healthy choices, such as being able to afford to eat healthily, take part in physical activity classes, or live in suitable accommodation which meets their needs. The effect of this is obvious: the poorest people aged 50 and over are four times more likely to struggle with activities of daily living than the wealthiest^{xxxiv}. The Government must act to reduce pensioner poverty and set clear targets for achieving this. They should also work to simplify the benefits system to support older people to claim what they are entitled to.

13. What would be the implications of a paradigm shift to people leading healthier lives for longer, and spending less time suffering ill health?

Older people already make a significant contribution to society: by caring for other older people or grandchildren; volunteering in the community formally or informally; and within the economy, through continued involvement in the workforce. Despite this, an ageing population is frequently represented as a threat to our health and social care system and the economy.

When people are supported to lead healthier lives for longer, an ageing population presents opportunities, not just to individuals but to society as a whole.

- As our population ages, we will see an increase in the average age of the workforce, and an increasing economic dependence on older workers. This is a positive development- older people have significant experience, industry-specific knowledge, and networks which are all valuable to employers. However, as it stands, there are one million older people aged 50-64 who want to be in work but are unable to^{xxxv}. The primary reason for forced retirement is poor health^{xxxvi}, with people on the lowest incomes most significantly impacted. Nearly half of older people in the poorest quintile say they have given up work because of their health, compared to just 15% in the wealthiest quintile^{xxxvii}. Supporting all older people to work for longer would have a significant financial impact: if everyone worked for one year more then GDP would increase by 1%.
- Older people are already contributing their skills, experience and knowledge through volunteering: the most likely age group to volunteer are aged 65-74, with one in three volunteering at least once a month^{xxxviii}. However, older people living in poor health are five times less likely to volunteer than those in excellent health^{xxxix}. Rates of volunteering in the most deprived areas of England are half of those in the wealthiest areas, with this thought to be a result of ill health and disability in more deprived communities^{xl}. Breaking down health inequalities and supporting everyone

to live well to longer would widen participation and increase older people's ability to volunteer.

- It is anticipated that a growing population will lead to a higher prevalence of ill-health and disability. At the current rate of healthy life expectancy, the Office for Budget Responsibility estimates that spending on health will increase from 7.3% to 8.3% of GDP by 2064/65, primarily as a result of an ageing population. However, the World Health Organization estimates that more than half the burden of disease in people aged 60 and over could be prevented. Investing in healthy ageing would reduce demand for the NHS and care services, as well as improving older people's quality of life.

ⁱ R. Wittenberg et al (2018), Projections of Demand and Expenditure on Adult Social Care 2015 to 2040. Personal Social Services Research Unit, London School of Economics. <https://www.pssru.ac.uk/pub/5421.pdf>

ⁱⁱ Science Advice for Policy by European Academics (2019), Transforming the future of ageing, Berlin: SAPEA. <https://www.sapea.info/wp-content/uploads/tfa-report.pdf>

ⁱⁱⁱ M. Taylor., A. Patten, I. Dreary (2018), Cohort profile update: the Lothian Birth Cohorts of 1921 and 1936. *Int J Epidemiol.* 2018;47:1042–1060. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6124629/>

^{iv} Healthy Ageing Across the Life Course (2014), A life course approach to healthy ageing: how to keep moving, keep thinking, and keep your spirits up, London: Healthy Ageing Across the Life Course.

https://www.closer.ac.uk/wp-content/uploads/Halcyon_A-life-course-approach-to-healthy-ageing-brochure.pdf

^v Age UK et al (2018), "My bladder and bowel own my life": a collaborative workshops addressing the need for continence research. <https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/health--wellbeing/incontinence-report/incontinence-needs---2018-report-v9.pdf>

^{vi} Imperial College London (2019), 'Heart disease deaths nearly halved in UK.

<https://www.imperial.ac.uk/news/191414/heart-disease-deaths-nearly-halved-uk/>

^{vii} Alzheimer's Society, Mild cognitive impairment (MCI). <https://www.alzheimers.org.uk/about-dementia/types-dementia/mild-cognitive-impairment-mci>

^{viii} J. Corley, S.R. Cox, I.J. Deary, Healthy cognitive ageing in the Lothian Birth Cohort studies: marginal gains not magic bullet, *Psychol. Med.*, 48 (2018), pp. 187-207. <https://doi.org/10.1017/S0033291717001489>

^{ix} Public Health England (2016), *Changing risk behaviours and promoting cognitive health in older adults*, Cambridge: Cambridge Institute of Public Health.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/571471/changing_risk_cognitive_health_report.pdf

^x Malnutrition Taskforce, State of the Nation: older people and malnutrition in the UK, London: Malnutrition Taskforce. <https://www.malnutritiontaskforce.org.uk/sites/default/files/2019-09/State%20of%20the%20Nation.pdf>

^{xi} Age UK (2019), Briefing: health and care of older people in England 2019, London: Age UK.

https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/health--wellbeing/age_uk_briefing_state_of_health_and_care_of_older_people_july2019.pdf

^{xii} The King's Fund (2018), Social prescribing: a part of something bigger.

<https://www.kingsfund.org.uk/blog/2018/12/social-prescribing-part-something-bigger>

^{xiii} Local Gov, (2019), Hospital admissions due to falls set to rise 'dramatically' to 1000 a day.

<https://www.localgov.co.uk/Hospital-admissions-due-to-falls-set-to-rise-dramatically-to-1000-a-day/44953>

^{xiv} Freeland KN et al. (2012). Medication use and associated risk of falling in geriatric outpatient population. *Ann Pharmacother.* 2012 Sep;46(9):1188- 92

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- xv NHS England (2019), NHS Long Term Plan. <https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf>
- xvi N. Parekh et al., Incidence and cost of medication harm in older adults following hospital discharge: a multicentre prospective study in the UK. *Br J Clin Pharmacol*. 2018 Aug; 84(8): 1789–1797.
- xvii Age UK, More harm than good: why more isn't always better with older people's medicines. London: Age UK. https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/health--wellbeing/medication/190819_more_harm_than_good.pdf
- xviii Age UK (2019), *Digital assistive technology*. https://www.ageuk.org.uk/globalassets/age-uk/documents/policy-positions/care-and-support/ppp_telehealth_and_telecare_uk.pdf
- xix National Institute for Health Research (2018), Help at home: use of assistive technology for older people. Available at: <https://www.dc.nihr.ac.uk/themed-reviews/Help-at-home-WEB.pdf>
- xx Ibid
- xxi Ibid
- xxii Age UK (2018), Digital inclusion evidence review, London: Age UK. https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/age_uk_digital_inclusion_evidence_review_2018.pdf
- xxiii Ibid
- xxiv Ibid
- xxv University of Essex. Institute for Social and Economic Research, NatGen Social Research, Kantar Public. (2017). Understanding Society: Waves 1-7, 2009-2016 and Harmonised BHPS: Waves 1-18, 1991-2009. [data collection]. 9th Edition. UK Data Service. SN: 6614
- xxvi Age UK. Digital inclusion evidence review.
- xxvii Ibid
- xxviii NHS Digital (2019), Digital inclusion guide for health and social care, NHS Digital. [file:///agepdcp03.uk.age.local/vdi_profiles\\$/charlotte.lynnch/Downloads/Digital+inclusion+guide.pdf](file:///agepdcp03.uk.age.local/vdi_profiles$/charlotte.lynnch/Downloads/Digital+inclusion+guide.pdf)
- xxix Department of Health (2013), *How to make IAPT more accessible to older people*. <https://www.uea.ac.uk/documents/246046/11919343/older-peoples-compendium.pdf/c4b23dad-a332-47d5-b7af-6be290222737>
- xxx Centre for Ageing Better, *Industrial strategy challenge fund*.
- xxxi British Geriatric Society, 'Spring speakers series: getting it wrong? Technologies and telehealth for an ageing population': <https://www.bgs.org.uk/blog/getting-it-wrong-technologies-and-telehealth-for-an-ageing-population>
- xxxii Centre for Health Economics (2019), Is an ounce of prevention worth a pound of cure? Estimates of the impact of English Public Health Grant on mortality and morbidity. York: University of York. https://www.york.ac.uk/media/che/documents/papers/researchpapers/CHERP166_Impact_Public_Health_Mortality_Morbidity.pdf
- xxxiii Age UK (2019), Later life in the United Kingdom, London: Age UK. https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/later_life_uk_factsheet.pdf
- xxxiv *Centre for Ageing Better (2019), The state of ageing in 2019: adding life to our years*, London: Centre for Ageing Better.: <https://www.ageing-better.org.uk/sites/default/files/2019-04/The-State-of-Ageing-in-2019.pdf>
- xxxv A Thomson (2018), Silver Lining for the UK Economy: The Intergenerational Case for Supporting Longer Working Lives', London: Centre for Ageing Better.
- xxxvi Centre for Ageing Better, The state of ageing in 2019.
- xxxvii Ibid
- xxxviii NCVO, UK civil society almanac 2019. <https://data.ncvo.org.uk/>
- xxxix James Nazroo and Katey Matthews (2012), *The impact of volunteering on well-being in later life*, WRVS. https://www.royalvoluntaryservice.org.uk/Uploads/Documents/Reports%20and%20Reviews/the_impact_of_volunteering_on_wellbeing_in_later_life.pdf
- xl NCVO, UK civil society almanac 2019.