*Policy*brief

UNECE

Innovative social services and supportive measures for independent living in advanced age

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Contents

Challenging context

The rapid increase in the oldest-old population aged 80 and over brings with it critical challenges for individuals, families, communities and policymakers. Finding innovative and sustainable solutions to help individuals of advanced old age to continue living at home independently is critical in the context of both demographic change and budgetary constraints. Reaching advanced old age takes a different form for different individuals, as their intrinsic capacity interacts with their living environment to affect their functional ability. Supporting such diversity in the experience of advanced old age requires smart, integrated and customized innovations, and results in resource efficiencies for the system of service provision.

Suggested strategies

Fostering innovation in areas which safeguard and promote the independence of oldest-old persons requires:
- strong coordination between a wide range of stakeholders in the community, including formal and informal actors;
- a customized, person-centred approach to the assessment of needs and mechanisms aimed at identifying need and abuse among oldest-old persons;
- greater use of community engagement and resources with 'bottom-up' approaches, making the most of multidisciplinary stakeholders and intergenerational exchange;
- the engagement of oldest-old persons and their families in designing their home environment, monitoring their well-being, as well as using technology to maintain communication with individuals outside the home.

Expected results

Enhanced ability of oldest-old persons to continue living at home in a manner which satisfies their diverse needs, and to engage with society outside their home.

With good practice examples from:

Belarus, Bulgaria, Canada, Croatia, Cyprus, Denmark, European Union, Finland, Germany, Ireland, Israel, Latvia, Malta, Netherlands, Republic of Moldova, Russian Federation, Slovenia, Spain, Sweden, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, and Uzbekistan.

This policy brief addresses **Commitments 1, 2, 7, 8, 9 and 10** of the **Regional Implementation Strategy of the Madrid International Plan of Action on Ageing (RIS/MIPAA), Goal 1 "Recognizing the potential of older persons"** and **Goal 3 "Ensuring ageing with dignity"** of the 2017 Lisbon Ministerial Declaration, as well as Sustainable Development Goals 3, 9, and 10.**

United Nations

Introduction

Independent living includes the freedom to choose where and with whom one is living. For the majority of older people, this means living at home for as long as possible. Research on the perspectives of individuals aged between 85-98 in the United States for example showed that many are happy to live at home independently, as long as they have someone to call upon at times of crises[1]. In turn, living at home offers the opportunity to reside with one's family and within a familiar environment. However, as individuals reach advanced old age, they are likely to need greater support to achieve independent living. Given rapid population ageing, policymakers need to evaluate and address the needs of oldest-old individuals, supporting their independent living for as long as possible.

Population ageing is a cause for celebration but also poses key challenges for individuals, families, communities and policymakers alike. A major element of increasing life expectancy is the rapid increase in the proportion of the population aged 80 and over, often referred to as 'the oldest old' or those in the 'fourth age'[2]. Between 1990 and 2015, this part of the population has grown significantly (Figure 1), with women making up the majority of such increase, and it is projected to continue growing at a faster pace than the rest of the population by 2060[3]. These averages mask significant variation within the UNECE region. The proportion of women aged 80 and over is highest in Italy, France, Estonia, Lithuania and Spain, and lowest in countries such as Azerbaijan, Kazakhstan and Kyrgyzstan[4]. Such variation demands customized policy responses in different country contexts, which aim at supporting independent living whilst making the most of policy resources and being cognisant of the views and preferences of oldest-old persons and their families.

Figure 1
Number of men and women (in thousands) aged 80+ in UNECE-52, 1990-2060
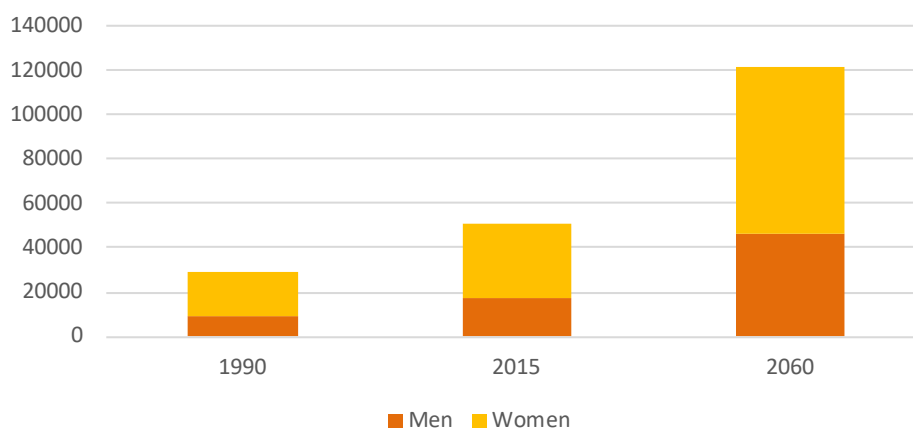
Source: UN World Population Prospects (2017 Revision)

Challenges for persons aged 80 and over

From a biological viewpoint, individuals experience changes as they age, which are related to the gradual accumulation of damage in terms of molecules and cells, resulting in a decrease in functional ability and an increase in the risk of being diagnosed with multiple medical conditions[5, 6]. However, the experience of living into advanced old age can vary greatly between individuals. For some individuals, living beyond the age of 80 is synonymous with independent living for the most part and only a low need for support. For others, living into advanced old age requires support within and outside their home in order to continue maintaining a level of functional ability which is conducive to ageing with dignity and, where possible, living independently.

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[1] Hinck, 2004.

[2] UNECE, 2017b, Policy Brief No.19.

[3] UNECE, 2017a.

[4] Ibid.

[5] WHO, 2015.

[6] Formiga et al., 2013.

The extent to which individuals will be affected differently by the ageing process, and the effect of such changes on individuals' ability to live independently, also depends on the interaction between individuals and the environment in which they live. Safeguarding individuals' right to quality of life throughout the life course and in advanced old age is enshrined in the UNECE Regional Implementation Strategy of MIPAA[7]; and more recently the 2017 Lisbon Ministerial Declaration[8]. However, living into advanced old age presents particular challenges related to individuals' continued ability to live independently and ways in which the community and policy contexts can support them in this respect.

Living alone

Not only are oldest-old persons more likely to live alone, but in this respect, gender differentials are stark. Figure 2 shows data for men and women aged 65+ and 80+ in countries that conduct the Survey of Health, Ageing and Retirement in Europe (SHARE), highlighting, firstly, that living alone is a much more common experience for the oldest-old compared to younger-old persons, and secondly, that it is more common for women than for men. For instance, 78 per cent of women and 45 per cent of men aged 80+ in Denmark live alone.

Figure 2
Percentage of men and women aged 65+ or aged 80+ living alone in selected countries
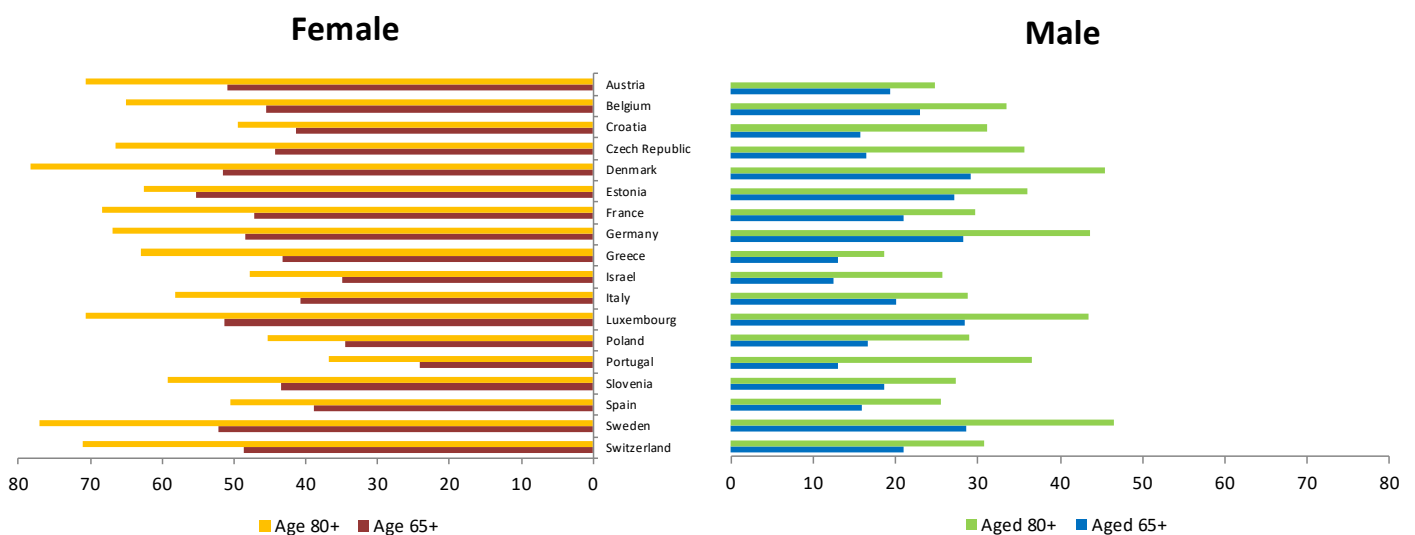
Source: SHARE data wave 6 (2015). Weighted by calibrated cross-sectional individual weight - wave 6

Living alone in advanced old age may carry with it a higher risk of developing needs which go unnoticed; or even experiencing abuse which is left undetected. The experience of abuse or neglect by older persons is a direct threat to independent living[9]. A 2017 study based on 52 studies in 28 countries from diverse regions found that over the past year, almost 16 per cent of people aged 60 and over had been subjected to some form of abuse[10]. Such percentages mask important gender differences, with older women generally being more likely to experience abuse overall, although older men were more likely than women to experience specific types of abuse, such as emotional abuse.

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[7] Commitment 7 of RIS/MIPAA.

[8] Goal 3 of the Lisbon Ministerial Declaration.

[9] UNECE, 2013 Policy Brief No.14.

[10] Yon et al., 2017.

Supporting older individuals living alone requires a strong coordination of services provided by both formal and informal stakeholders, such as the local government, the local community and the older person's family. This is particularly important in the context of economic migration of adult children who may not be available to provide daily support to oldest-old persons.

Physical and/or mental frailty

At the same time as rising longevity increases the oldest-old population, there is also an increase in healthy life expectancy. Increases in healthy life expectancy however lag behind, indicating a decline in individuals' functional capacity over time. This affects women of advanced age the most. On average, women tend to have a higher life expectancy at all ages compared to men, but a larger proportion of it is expected to be spent in ill health. While life expectancy at 65 is increasing for both men and women, this increase is currently larger for men. The gender gap is also narrowing in healthy life expectancy as rising longevity for men is often accompanied by disability and mobility problems[11].

As a result, oldest-old persons face a higher risk than younger-old persons of living with health conditions. In addition, Figure 3 shows that the prevalence of dementia increases dramatically after the age of 80, for both men and women. Developing frailty and living with dementia can directly affect an oldest-old person's capacity to maintain their daily functional status and live independently.

Figure 3
Age-specific prevalence of dementia, Western Europe and the United States
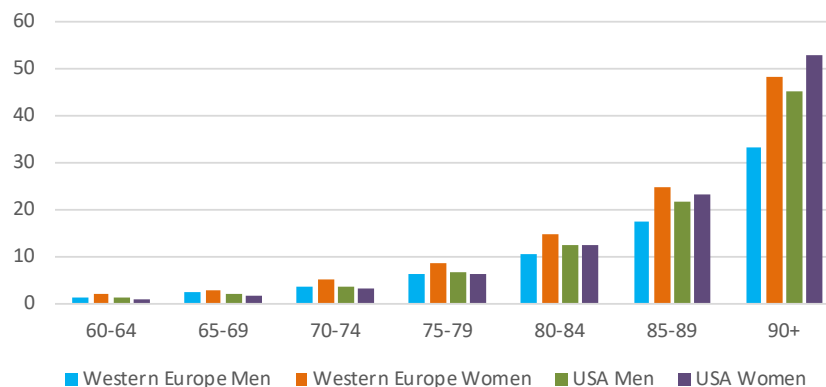
Source: WHO (2012) (Selected results from Table 2.1). NB: Western Europe includes Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom

Loss of spouse, family members or friends

Living into advanced old age can also result in oldest-old persons experiencing the death of their spouse, close family member or friend; and this can have implications for their ability to continue living independently. Research has shown that losing one's spouse, child, close friend, and most commonly one's sibling, in advanced old age is an experience which can result in a worsening functional status and enduring depressive symptoms[12]. Such decline in functional status can directly affect individuals' ability to live independently, as the bereaved person faces a high risk of becoming isolated and cut-off from the community. Interviews with men and women aged 85 and over who had experienced widowhood highlighted that in spite of receiving increased levels of social support, bereaved individuals experienced social isolation, loneliness and, in some cases, unwanted informal support[13].

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[11] Sundberg et al., 2016.

[12] Lalive d'Epinay et al., 2010.

[13] Isherwood et al., 2017.

Feelings of loneliness and the proximity of death[14]

The combined effect of being more likely to live alone and facing a higher risk than younger-old people of losing one's spouse, close family member or friend can result in a higher risk of feeling lonely in advanced old age. Loneliness in later life is an increasingly important topic both for academics and policymakers alike. Research from Finland shows that feeling lonely is directly and statistically associated with worse subjective well-being, which in turn can create a barrier for independent living in later life[15]. A recent scoping review of social isolation, loneliness and health in old age noted that almost all studies that were reviewed showed a detrimental effect of isolation and/or loneliness on older people's health, however it also warned that the causal mechanisms in this relationship require further research[16].

The challenges described above reflect oldest-old individuals' declining intrinsic capacity, made up of "all the physical and mental capacities of an individual"[17], and such decline is a direct threat on individuals' ability to live independently. However, as Figure 4 shows, policymakers can compensate for reducing intrinsic capacity by enhancing oldest-old individuals' functional ability through supportive services and environments, including the built environment, people and their relationships, attitudes and values, health and social policies. Functional ability "...comprises the health-related attributes that enable people to be and to do what they have reason to value. It is made up of the intrinsic capacity of the individual, relevant environmental characteristics and the interactions between the individual and these characteristics"[18].

Figure 4
A public-health framework for Healthy Ageing:
opportunities for public-health action across the life course
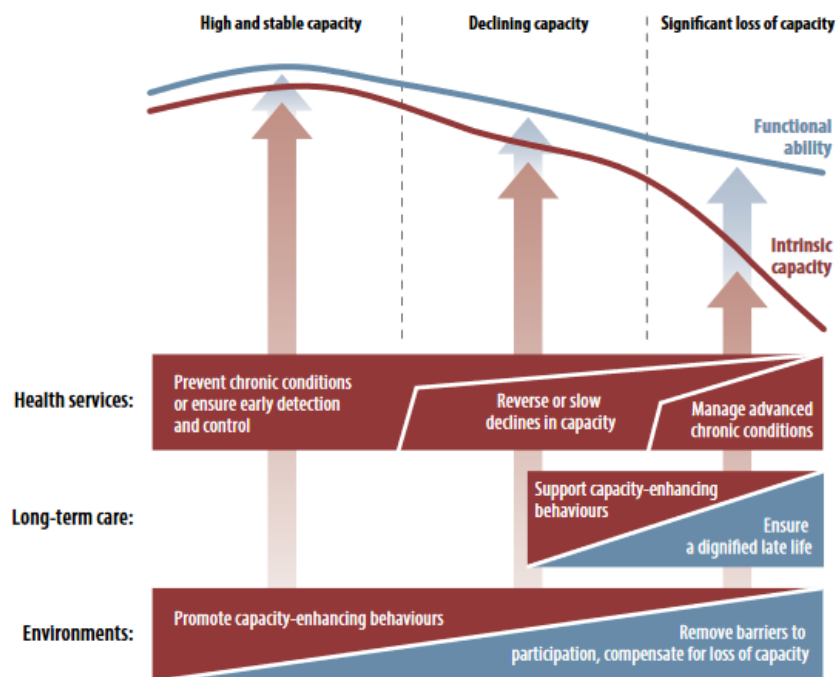
Source: WHO World Report on Ageing and Health (2015), Fig. 2.4

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[14] Cherry et al., 2013.

[15] Ahlqvist et al., 2015.

[16] Courtin and Knapp, 2017.

[17] WHO, 2015: 41.

[18] WHO, 2015: 41.

Policy responses aimed at improving oldest-old individuals' functional ability also need to be cognisant of the vast diversity within this population, inequalities in terms of accessing resources and services, and the importance of oldest-old individuals having choice over their living and care arrangements[19]. In addition, protecting older individuals' ability to function safely within their home environment is of paramount importance at a time when 'ageing in place' is increasingly becoming an alternative of choice, for older persons and their families and for policymakers alike.

Meeting the challenges of a rapidly increasing oldest-old population in a way that facilitates independent living for as long as possible, requires new ways of thinking in terms of how individuals' needs are assessed and provided for. It also requires new ways of including oldest-old individuals, their families, communities and service providers as part of sustainable solutions which protect and promote independent living. This is where the role of innovation in supporting independent living in advanced old age is critical.

What is innovation in supporting independent living in advanced age?

Innovation in terms of supporting independent living in advanced age is crucial at a time when the increase in the oldest-old population combines with budgetary constraints which affect public services across the UNECE region. In this context, "providing new solutions to pressing social demands while making better use of available resources" is more and more seen as an effective way forward[20]. But how do we know innovation when we see it? Innovation is "...increasingly being seen as a way of compensating for the ineffectiveness of both the state and the economy in addressing not only deprivation, but greater challenges such as ageing societies..."[21]. Innovation is not merely a 'new way' of tackling social challenges – rather inventions in the areas of social services and support are considered innovative when they provide sustainable benefits for the user population[22].

A framework for identifying innovation

Drawing on existing definitions[23, 24], interventions, programmes or measures are considered innovative if they:

- suggest a new way of identifying need, integrating service provision or use technology for the purpose of supporting independent living;
- promote the integration and/or collaboration of heterogeneous stakeholders in these areas (e.g. oldest-old persons' families, volunteers) that have hitherto not co-operated; thereby promoting a multi-disciplinary approach;
- create structures and processes that are sustainable and could potentially realise new growth potentials in terms of regular employment;
- involve oldest-old individuals as end-users and co-producers of services or products.

An absence or lack of any of the characteristics outlined above can result in a barrier to innovation, for example the lack of communication between different stakeholders involved in caring for oldest-old persons. In addition, the lack of adequate and secure funding and rigid regulatory frameworks, which could prevent new ideas from being developed, can also halt innovation in the provision of support services for independent living in later life[25].

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[19] Ibid.

[20] BEPA, 2011: 9.

[21] Eurofound, 2013: 1.

[22] Ibid.

[23] Heinze and Naegele, 2012.

[24] MOPACT, 2014: 7.

[25] MOPACT, 2015.

Understanding what innovation means in the context of social services and support for individuals of advanced age is key to empowering older people to continue living independently, but also to ensuring that service provision and support in this area continues to be sustainable and efficient into the future. Three areas are the focus of this brief: innovation in identifying the needs of individuals in advanced age; innovation in integrating formal service provision with informal support; and innovation in technology and design to support independent living in old age. The remainder of this policy brief examines each of the three areas of innovation in turn.

Innovation in identifying the needs of individuals in advanced age

Identifying the needs of older individuals is the first step in ensuring that appropriate services are put in place to support them in their daily life at home for as long as possible. Beyond this, both the management of financial resources in a targeted manner, and the delivery of person-centred care in the home of oldest-old persons, offer opportunities for collaboration between service providers, the oldest-old person and their family to ensure that the 'end-user' of services is at the heart of care management and the design of assistive solutions in their home. Adopting a case-by-case approach which affords similar rights to oldest-old persons with cognitive impairment as to those without, is also of paramount importance, as is supporting oldest-old individuals through the process of bereavement; and protecting all individuals' dignity and independence as they age through novel ways of preventing and addressing elder abuse.

Innovation in needs assessment and eligibility criteria

Identifying the needs of oldest-old persons requires innovative ways of assessing need at the first point of contact with this group, and applying eligibility criteria for the receipt of support services, which can have a knock-on effect on the subsequent organisation of care and associated costs for service providers. Assessing the gap between an oldest-old individual's intrinsic capacity and their potential functional ability can be a useful way of identifying ways to address older persons' needs. The difficulty in establishing consistency in the criteria used to assess need and allocate support has long been recognised as a context-specific weakness of social care systems around the world[26].

Walcheren Integrated Care Model: a new way of needs assessment in the Netherlands

The use of a pioneering, integrated model which is applied in a consistent manner from beginning to end and overcomes the challenges of system fragmentation has measurable benefits. In the Netherlands, the Walcheren Integrated Care Model which is used to assess the needs of frail older persons living independently, involved approximately 900 persons aged 75 and over. Such assessment was then used to put in place care plans, and led to high satisfaction and life quality among older people and their caregivers, and a perceived improvement in the working environment for professionals[27]. This model is innovative in terms of promoting coordination of services and collecting four perspectives (oldest-old persons, informal carers, care providers, society) at three time points as part of the needs assessment process. Therefore, it allows policymakers to have a continuous view of the process of identifying and addressing need from beginning to end, thereby offering a more holistic approach to needs assessment which can in turn contribute to a more sustainable care plan for the oldest-old person.

For more details see: http://www.medicaldelta.nl/society/eip-active-andhealthy-ageing/best-practices

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[26] Van Eenoo et al., 2016.

[27] EC, 2013.

Using 'community connectors' to identify and tackle vulnerability

The idea of mobilising individuals in the community in order to identify pockets of vulnerability and alert formal systems of support is not a new one[28]. The critical role of peer support networks and family relationships for tackling vulnerability and promoting better health among older individuals is well-known in the literature[29]. However, the organisation of so-called 'community connectors' or 'community catalysts' has recently become more systematic, with networks of community actors producing positive and lasting results particularly in rural and remote areas[30, 31]. Such programmes offer a sustainable solution to the difficult challenge of identifying need in the most remote areas.

Community connectors in the United Kingdom

Innovative programmes which emanate from the community, make use of previously unused resources for the benefit of isolated oldest-old persons and rely on strong coordination of such resources, have been practiced for some time. Examples of community connector programmes in the United Kingdom, such as *Shared Lives*, *Community Catalysts* or *Community Circles*, reflect an efficient and cost-effective strategy to ensure that older individuals who lack access to social services and support do not 'fall through the cracks'. Volunteers can sign up online, detailing their availability in terms of time and/or extra space in their home, and are then 'matched' with individuals in the community who need extra support.

For more information, see https://sharedlivesplus.org.uk; https://www.communitycatalysts.co.uk; http://www.community-circles.co.uk

Dementia-friendly spots in Slovenia

Dementia-friendly spots are info points in the community that provide information on dementia, including how to detect first signs of dementia, how to communicate with a person with dementia and where to find additional support and services. The service is targeted at persons with dementia, their caregivers and actors in the local community such as police, firefighters, retailers, employees of banks, post offices, community health centres, hospitals and pharmacies.

With the help of the local community persons with dementia can stay active in their home environment longer. The sensitization of key actors in the local community contributes to creating a dementia-friendly environment where people with dementia can maintain their autonomy, contribute to society and get help, support and understanding accessing the services they are used to.

For more information: https://www.spomincica.si/demenci-prijazne-tocke

Putting mechanisms in place to detect and deter abuse of oldest-old persons

Identifying abuse against oldest-old persons requires the mobilisation of strong social support[32]. The coordination of multi-disciplinary teams who visit oldest-old persons at home and who are easily accessible to oldest-old persons, but who also can share information and resources in order to safeguard oldest-old individuals, remains

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[28] UNECE, 2010a Policy Brief No. 7.

[29] Reblin and Uchino, 2008.

[30] UNECE, 2017c Policy Brief No. 18.

[31] Commitment 9 of RIS/MIPAA.

[32] Pillemer et al., 2016.

[33] Ibid.

the most promising avenue to a lasting solution to this challenge[33]. The *Action Plan against Elder Abuse 2017-2022* in Quebec, Canada, for example includes financial support for community-based programmes that help identify older persons in need and at risk of abuse. Other areas of innovative interventions for policymakers to prevent and address abuse include the provision of respite care for caregivers; the establishment of money management programmes for oldest-old persons; the availability of helplines which oldest-old persons can access with ease; and the provision of emergency shelters[34].

Facilitating information sharing on abuse among multi-disciplinary stakeholders in Malta

The identification and prevention of abuse of oldest-old persons in many cases rely on the effective and timely exchange of information between heterogeneous agencies who work with or on behalf of oldest-old persons and their families. Coordinating the services of a range of multi-disciplinary agencies to provide innovative training for health and care professionals is a direction followed by a number of countries, and it is an area where local policymakers can take the lead on. For example, in Malta in 2015, the National Commission for the Promotion of Equality developed a guide for professionals working with older people on prevention and intervention in cases of abuse[35].

Innovation in integrating formal service provision with informal support

The integration of services from different sectors (formal state, formal paid, informal) is highlighted as key to addressing shortages in service provision and ensuring that individuals of advanced old age are empowered to continue living independently for as long as possible. Innovation in this area refers to the potential of using resources more efficiently by bringing different stakeholders together, as well as making greater use of community engagement and 'bottom up' approaches, which often hide untapped resources in the community. The role of families is critical in such initiatives, as they often are the closest to oldest-old persons and generally have a good understanding of their needs and expectations.

Integrating formal and informal providers of quality care in Sweden and the Netherlands

The region Skåne in Sweden established Regional Improvement Leaders to act as key points of knowledge between home care, primary care and hospital care with the aim of improving the quality of life for the most ill older people. Improvement Leaders are also tasked with sharing good practice between regions and monitoring results. This project has now been implemented in 21 other counties across Sweden, overcoming concerns about scale-ability which are often raised with the introduction of small-scale innovative practices (http://bit.ly/11Itwce)[36]. In the Netherlands, the '*Yes to Informal Care*' programme (*In voor Mantelzorg*) also facilitates better collaboration between informal caregivers and healthcare providers, where such collaboration did not exist before[37]. Both programmes offer evidence to policymakers that support agencies with diverse expertise can successfully collaborate to protect and promote older persons' well-being.

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[34] Ibid.

[35] National Report of Malta http://www.unece.org/pau/mipaareports2017.html.

[36] EC, 2013.

[37] National Report of the Netherlands http://www.unece.org/pau/mipaareports2017.html.

Providing person-centred care at home

The provision of person-centred care at home can also offer opportunities for innovation which result in cost efficiencies as well as improved satisfaction and well-being on the part of the older person and their family[38].

Mobilising stakeholders to offer person-centred care in Bulgaria, Spain and the United States

In Bulgaria, 'social assistants' and 'home helpers' are hired through national programmes to provide a range of services to older persons at home, such as food delivery, personal hygiene, errands, etc.[39] What is innovative about this scheme is that unemployed persons are hired and trained in order to provide support to vulnerable persons at home, thereby creating new labour market opportunities and economic growth potential. The Basque Country (Spain), which has the largest older population in that country, is currently running a pilot project called '*Extean Ondo*' which focuses on person-centred care and case management specifically among older persons who are at risk of moving into a nursing home or at risk of falling (http://www.osasun.ejgv.euskadi.net/r52-ghhome00/eu/)[40]. The innovative element of this project is the greater collaboration of multi-disciplinary stakeholders, including medical professionals and carers, informal carers and the older person themselves. Finally, in the United States, the *Older Americans Act Nutrition Programs* provide nutritious, safe, appealing means to older adults at risk of food insecurity and food insufficiency, most of whom tend to be older, poorer, living alone, and in poorer health[41]. This programme involves end-users in the design of food options and 'co-producers' of solutions in addressing their needs.

Offering prevention and rehabilitation in Cyprus, Germany, Israel, and Latvia

Cyprus has introduced the Exercise in Third Age programme, which offers opportunities for physical activities to older people; and other countries such as Israel, are following suit[42]. The innovative element of such projects is the more custom-made approach to a programme of exercises specifically aimed at oldest-old individuals. In other cases, enhancing such functional abilities means bringing social services and support closer to home for the older person, which is a less frequent policy solution thus far. For example, the Geriatric Concept developed by the Saxon State Ministry for Social Affairs and Consumer Protection in Germany is currently running four pilot centres where older patients can access high-quality and efficient care diagnosis, treatment and rehabilitation (www.mk3.uniklinikum-dresden.de/html/de/praevention/index.html)[43], placing them at the centre of policies aimed at supporting their independent living. A similar direction is under consideration in Latvia, where policymakers are considering converting redundant municipal hospitals into community centres offering a range of long-term care and rehabilitation services, which could also be provided at the home of oldest-old persons[44].

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[38] UNECE, 2015a Policy Brief No. 15.

[39] World Bank, 2010.

[40] EC, 2013.

[41] National Report of the United States of America http://www.unece.org/pau/mipaareports2017.html.

[42] UNECE, 2017a.

[43] EC, 2013.

[44] World Bank, 2010.

Receiving advice from older people themselves, Germany

The German project called '*Self-Determined in Old Age! Support in taking precautions*' is aimed at supporting older people, who are in need of help but who don't require legal guardianship yet. Senior citizens' offices in 15 municipalities are developing nationwide innovative models to maintain independence and self-determination. They provide information and advice in an accessible manner with respect to all questions relating to getting older, to taking precautions and to maintaining self-determination. In addition, Senior Citizens' Offices qualify and accompany volunteers who support senior citizens individually at home in their everyday lives, with financial and health issues. If required, they arrange further assistance in the local network in consultation with the senior citizens' office. This individualised outreach support for older people and the combination of professionals and volunteers is unique. An evaluation shows that the project in fact promotes self-determination. Many seniors say: "I get exactly the help I need" and "I do not feel so alone anymore."

For more information, see www.seniorenbueros.org

Improving older persons' home environment in Uzbekistan and Turkey

Facilitating oldest-old persons to live at home independently can also take the form of improving their environment. For example in Uzbekistan, territorial programmes between 2015-2017 were developed in order to improve the housing conditions of older people, including repairs and yard maintenance[45]. Such programmes create employment opportunities among local residents and younger persons, and also coordinate contributions from both civil society and charity organisations who did not collaborate previously[46], which is the innovative element of this project. In Turkey, the 'Elder Living Homes' introduced in 2012, are assisted-living arrangements for 3-4 people of the same gender, where domestic help with housework and food preparation is provided, as well as personal and nursing care where required[47].

Supporting oldest-old persons through bereavement	Services which are aimed at evaluating oldest-old individuals' needs after they experience loss are as much about communication as they are about providing monitoring support in the period immediately after the bereavement. A 2015 survey of 370 palliative care services in 25 European countries showed that 82 per cent of services were offering bereavement support, primarily through information materials and telephone support[48].
Managing public financial resources effectively against a background of increasing demand for support	Locating 'smarter' ways of managing and distributing financial resources to support older persons in a context of increasing demand may be linked to the services provided to older persons and their families, as well as to the environment in which the older persons live. Some literature has suggested that greater integration of health and social care can potentially save policymakers' funds. A review of evidence on integrating health and social care in Australia, Canada, Sweden, the United Kingdom and the United States noted that although such integration may potentially uncover unmet need in the community which can increase overall costs, nevertheless "provided that integration delivers improvements in quality of life, even with additional costs, it may, nonetheless, offer value for money"[49]. Customising support provision at the home of oldest-old persons can also provide efficiencies by ensuring that the diverse needs of this group of the population are met in a targeted manner.

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[45] National Report Uzbekistan http://www.unece.org/pau/mipaareports2017.html.

[46] Ibid.

[47] National Report Turkey http://www.unece.org/pau/mipaareports2017.html.

[48] Guldin et al., 2015.

[49] Mason et al., 2015.

Targeting resources to focus on oldest-old individuals who are most in need can also yield dividends and contribute towards financial efficiencies. For example in Poland, policymakers are debating whether a care-supplement cash transfer for which all individuals aged 75 and over are eligible, is aimed at those most in need, or whether it acts as an additional tool for poverty alleviation in later life, as only 11 per cent of 75-79 year olds who receive this supplement do so due to frailty[50]. A similar policy debate is ongoing in Serbia, where a 2012 survey showed that 72 per cent of the recipients of the attendance allowance did not use it to obtain services, but rather to contribute to their family income[51].

Investing in intergenerational projects and exchange

Using intergenerational exchange as part of integrating different sources of support for oldest-old persons and promoting greater engagement and participation on the part of persons in later life has been addressed in Policy Brief No. 8 on advancing intergenerational solidarity and Commitment 9 of RIS/MIPAA[52, 53]. Intergenerational projects can engage multiple stakeholders from the community, offering opportunities for oldest-old members of society both to contribute to and benefit from social networks. In addition, intergenerational exchange can help reduce the demand for formal care support: research on oldest-old adults living in rural areas has emphasised the role of intergenerational support and family networks in helping them to continue living at home for as long as possible[54].

Foster families in Belarus, Croatia and Russian Federation

The concept of family, whether biological or not, is central to supporting oldest-old persons to live independently. In Croatia, so-called 'foster families' for older persons who have no family, home or income, is a new way of integrating support from different parts of society in order to facilitate older persons' independence within the community[55]; and similar arrangements are in place in the Russian Federation and Belarus[56]. Such arrangements can be particularly beneficial for oldest-old individuals living alone and preferring not to move into institutional care in later life[57].

Empowering decision-making on support among oldest-old individuals

Empowering older persons to make decisions as part of formal/informal collaborations to support their independence into later life is a central element to maintaining older persons' dignity and protecting their agency during times of vulnerability[58]. The benefits of shared decision-making, during which individuals with complex health and care needs are involved in the design of their care, are recognised in the literature[59], as are the associated challenges[60]. Again, the role of family members who are close to oldest-old persons, is crucial in this context.

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[50] World Bank, 2010.

[51] ILO, 2016.

[52] UNECE 2010b Policy Brief No. 8.

[53] Commitment 9 RIS/MIPAA.

[54] Kivett et al., 2000.

[55] World Bank, 2010.

[56] UNECE, 2017a.

[57] UNECE, 2017c Policy Brief No. 18.

[58] UNECE, 2015a Policy Brief No. 15.

[59] Bunn et al., 2017.

[60] Bynum et al., 2014.

Oldest-old persons having a say in care and end-of-life arrangements in Canada, Ireland, Israel, Republic of Moldova and Ukraine

Placing oldest-old persons at the centre of the design of services is increasingly being recognised as an innovative approach. One aspect of empowering oldest-old persons is allowing them to have a say about their care arrangements, and this is exemplified by the Irish '*Let Me Decide*' *Advance Care Planning and Palliative Care Programme in Long-term Care* which is aimed both at increasing older people's independence and reducing unnecessary treatments which might have a negative impact on their well-being (www.collage-ireland.eu)[61]. Facilitating self-determination and dignity in advanced old age can also be achieved through programmes focusing on palliative care – Ukraine introduced a *National Program for People in End-of-Life Situations and for Palliative Care* in 2016, which covered education, training and research among professionals[62]. Programmes with similar aims are established in Finland (*Advanced Healthcare Directive*), Israel (*Legal Capacity and Guardianship Law*), Canada (training provided through Pallium Canada)[63], and in the Republic of Moldova.

Innovation in technology and design supporting independent living in advanced age

A separate aspect is about capacity-building in advanced age, so that older individuals themselves can maintain control of their daily life and contribute to the prevention and treatment of ill health in an informed manner. The Languedoc-Roussillon region in Southern France offers an example of such capacity-building mechanisms by operating an early management and coaching system called Trans Innov Longévité, which mobilises public and private providers to offer training on ageing, frailty and independent living (www.macvia.cr-languedocrousillon.fr)[65].

Technology can support independent living in advanced old age in a number of ways. Firstly, through assistive devices such as aids and adaptations installed at the oldest-old person's home, technology can prolong 'ageing in place' and staying at home for as long as possible. Secondly, technology can directly contribute to the monitoring of the health status of oldest-old persons, and offer critical information on improving such persons' functional ability within and outside the home. Thirdly, by allowing the monitoring of oldest-old persons' health, technology can maintain oldest-old persons and their families at the centre of decision-making about future care plans. Finally, technology can directly help oldest-old persons to remain in contact with the outside world, which can in turn increase their feelings of belonging to a community and reduce feelings of social isolation. The ways in which technology can be used to support independent living are discussed further below.

Using technology to tackle complex needs at home in Denmark

The project "SAM:BO" refers to the use of digital technologies in Denmark, which enhance the well-being of older people with complex needs living at home. The innovative element of this project is a new agreement to collaborate between different health and social care providers in Southern Denmark, representing different services who are in contact with oldest-old persons, who share information through an ICT system called 'Shared Care'. This system enables the direct monitoring of patients with complex needs from their home, resulting in a positive impact on their mental health and quality of life (www.regionsyddanmark.dk/wm258038)[66]. A key point for policymakers to take away from this example is the agreement on central principles on how to monitor the quality of the service provided and to support health care management processes by electronic communications.

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[61] EC, 2013.

[62] UNECE, 2017a.

[63] Ibid.

[64] Republic of Moldova, Ministry of Labour, Social Protection and Family, 2016.

[65] EC, 2013.

[66] EC, 2013.

Promoting technological innovation in the context of ageing populations in the European Union

The European Union is leading the way in identifying ways in which governments and policy stakeholders can effectively respond to ageing populations and an increasing demand for more complex health and social care provision. Key initiatives in this context include the European Innovation Partnership on Active and Healthy Ageing; the eHealth Action Plan and dedicated parts of the Horizon 2020 Challenge on Health, Well-being and Active Ageing. In addition, the Digital Single Market contributes to the transformation and innovation of health and care; while the Active and Assisted Living Joint Programme aims at exchanging good practice across the region.

For more details, see: https://ec.europa.eu/digital-single-market/en/news/growing-silver-economy-europe

Fostering mobility, safety, autonomy and empowerment through the use of technology

The use of technology can go a long way towards facilitating independence in advanced old age. Evidence from a study of individuals aged 90 and over who lived in their home in purpose-made retirement communities in the United States showed that they tended to be healthier, measured through a range of variables such as not being diagnosed with a cognitive impairment, not using a wheelchair and having a good functional ability[67].

Safeguarding and promoting older people's agency within their home is of paramount importance in achieving and sustaining their independence in advanced age, and technology can play a central part in this endeavour[68]. Technology can be used in different ways by persons of advanced old age. Adaptations to the built environment can facilitate oldest-old individuals to perform activities of daily living. Mobility, vision or hearing aids and other assistive devices can both enhance individuals' independence and social functioning and safeguard their well-being within and outside the home. Technologies can also help oldest-old individuals to socialise or to monitor their own health, placing them at the centre of the design of solutions aimed at maintaining their independence and 'ageing in place' for as long as possible.

Involving oldest-old persons in their health evaluation in Finland and the United Kingdom

Placing oldest-old persons at the centre of assessments of their needs ought to be a key part of future policymaking in the area of independent living. The city of Oulou in Finland has advanced the development and application of 'wellness' technology, aiming for 92 per cent of people aged 75 and over to live at home by 2020. Older people themselves evaluate their well-being using an online tool, which helps to identify challenges early and facilitate timely intervention (www.ouka.fi/oulou/english/older-people)[69]. The use of technology to monitor older persons' health status does not only lead to greater satisfaction among the older population – evaluation of England's Yorkshire and the Humber Regional Telehealth Hub in the United Kingdom showed significant financial savings (c. £1,000 per patient per annum) resulting from hospital admissions and face-to-face appointments being avoided (http://www.airedaledigitalhealthcarecentre.nhs.uk/Telehealth_Hub/). Savings were also estimated through the application of the *National Telecare Development Programme* launched in 2006 in Scotland, aimed at helping people to live at home safely for longer (http://www.sctt-wp.scot.nhs.uk/)[70].

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[66] EC, 2013.

[67] Paganini-Hill, 2013.

[68] Robinson et al. 2013.

[69] EC, 2013.

[70] EC, 2013.

The Samaritan Mobile Care Complex in Latvia

This project places the oldest-old person at the centre of care plans and represents a new type of social care service for older people in rural areas. It does not take people to social care centres; instead, it uses technology and customized vehicles – "health care centres on wheels" – to keep in touch for 24 hours per day and bring the social care centre to people's homes along with all services, staff and infrastructure it provides. The Samaritan Mobile Care Complex can provide care for people who live at home without amenities in rural areas far away from town and city centres. This new approach has encouraged municipalities to change their attitude towards the older population and create alternative services for people, thereby enhancing independent living in rural areas.

For more information see https://goo.gl/GJtEbV

At the same time, promoting the use of technology among persons aged 80 and over can be challenging, as a result of the combination of individual characteristics and the environment in which oldest-old persons live. For example, research comparing users of mobility devices aged 80 and over in Latvia and Sweden showed that the greater use of technology in the Swedish context could be understood with reference to how the physical, institutional and sociocultural environment affects very old persons' opportunities to engage in activities outside their home[71]. Research also shows that assistive technology can be of indirect benefit to oldest-old persons living with cognitive impairment by facilitating the person's carer to continue providing care at home effectively[72].

Another important aspect of the use of technology in advanced old age is the extent of acceptability by older persons themselves, as oldest-old individuals carry cohort-specific characteristics of technology use compared to younger-old individuals. A qualitative study of persons aged 70 and over in the United Kingdom showed that respondents were already using technology to maintain their independence, but that they would benefit from more assistive technology in their home. The study argued that "none [of the respondents] were technophobic but they made essentially pragmatic judgements"[73]. Strategies to promote technology use among persons of advanced old age need to also promote an active involvement of older people as well as their carers, in the choice of such technology.

The voice of older people in the development of services and technology in Finland

The Valli Technology for the Older Centre in Finland is aimed at making the voice and needs of older people heard when developing services and technologies. An annual questionnaire to map the needs and challenges the older persons have with technology and the digitalization of services is implemented, and the questionnaire is always distributed both on paper and through the Internet. In 2017, 866 responses were received on how older persons access digital services and what could be done to increase their participation in the digital society. In 2018, the survey asked about on-line banking and received 2,890 responses. In addition to placing older people's views on technology at the centre of service design, the response rates in the surveys show that they want to be active actors in the society and want to make a difference. The results of the surveys also show that older people are a very heterogeneous group and therefore it is important that they are consulted so that services can be accessible for all.

For more information see www.valli.fi and www.ikateknologiakeskus.fi

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[71] Kylberg et al., 2017.

[72] Gibson et al., 2015.

[73] McCreadie and Tinker, 2005: 104.

Promoting self-determination among older persons with cognitive impairment

The prevalence of cognitive impairment, including dementia, increases dramatically among the oldest-old population[74] as illustrated earlier in Figure 3. At the same time, promoting self-determination among persons with cognitive impairment enhances their participation in social and community life[75], which is in line with Commitment 7 of RIS/MIPAA and Goal 3 of the 2017 Lisbon Ministerial Declaration.

Using technology in a way which makes older persons with dementia feel comfortable, Canada

British Columbia, Canada, supported the development of a suite of innovative technologies, including the 'Wandering Deterrent System' which uses computer screens that flash personalized video message to discourage a person from leaving the house late at night[76]. Such programmes, when woven systematically into daily life, are innovative not only in terms of placing oldest-old individuals at the centre of a personalised system of support, but also in terms of using technology to create a safe and comfortable environment for persons with dementia. This can in turn help them to develop their confidence and engage with meaningful activities within and outside the home.

Source: National Report 2017 for Canada http://www.unece.org/pau/mipaareports2017.html

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Facilitating social connections and relationships and reducing loneliness

The use of technology for developing and maintaining social connections and relationships across the life course and especially in advanced old age requires particular support from local service providers and older persons' networks alike. Analysis of comparative European data shows that social networks are important across the life course, however the impact of social networks on individuals' well-being appears to be different and of lower magnitude for persons aged 80 and over, compared to younger-old persons[77].

Encouraging oldest-old persons to remain socially connected in the Netherlands

Innovative technology can help oldest-old individuals to stay in touch with the world when they are unable to leave their home. The AchterhoekConnect project in the Netherlands is a technology connecting the Medical Call Centre 'MooiZo' to individuals mostly over the age of 80 who live on their own. This system provides "a window to the outer world" for the older people, facilitating communication, monitoring of health needs, as well as contributing to preventing loneliness (http://www.health-valley.nl/)[78].

Conclusion

The rapid increase in the oldest-old part of the population is a cause for celebration, however it also comes with significant challenges for older individuals themselves, as well as their families and service providers. Fostering innovation in areas which safeguard and promote the independence of oldest-old persons requires strong coordination activities between a wide range of stakeholders in the community, including formal and informal carers. It is clear from examples across the UNECE region that innovation in this context increasingly means placing the oldest-old persons at the centre of practices and interventions which take into account their diverse circumstances, and which respect their preferences. Such coordination can help establish sustainable practices which offer oldest-old persons the opportunity to continue living at home in a manner which on the one hand satisfies their diverse needs, and on the other hand allows them to engage with society outside their home.

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[74] OECD/EU 2016. Data from the United Nations and from Prince, M. et al. (2013). The Global Prevalence of Dementia: A Systematic Review and Metaanalysis. Alzheimer's and Dementia 9 (2): 63-75.

[75] UNECE, 2015b Policy Brief No. 16.

[76] National Report 2017 for Canada http://www.unece.org/pau/mipaareports2017.html.

[77] Litwin and Stoeckel, 2013.

[78] EC, 2013.

Suggested strategies

Innovation in identifying the needs of individuals in advanced age involves the adoption of a customized, person-centred approach to the assessment of needs and the design of support solutions for oldest-old persons, where the oldest-old persons, their dignity and independence are at the heart of support activities. This includes promoting the independence of persons with cognitive impairment and establishing innovative methods of preventing and addressing elder abuse.

Innovation in integrating formal service provision with informal support requires a greater use of community engagement with 'bottom up' approaches, which make the most of untapped resources. Such approaches can also promote pioneering projects fostering intergenerational exchange for the purpose of involving oldest-old persons in society.

Innovation in technology and design supporting independent living in advanced age offers opportunities for oldest-old persons and their families to become engaged in designing their home environment, as well as using technology to maintain communication with individuals outside the home. Technological innovation can also help oldest-old individuals to monitor their own health, and it can also address loneliness among oldest-old persons.

Acknowledgement

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	Checklist:	
	Innovative social services and supportive measures for independent living in advanced age	

Main areas	**Areas of implementation**	**Key elements**
Innovation in identifying the needs of individuals in advanced age	Needs assessment and eligibility criteria	Promote greater consistency and integration
	Encourage person-centred care	Promote greater collaboration between stakeholders
	Identify and deter elder abuse	Encourage greater training, collaboration and information sharing
	Use community connectors	Identify and tackle vulnerability
Innovation in integrating formal service provision with informal support	Effective management of public financial resources	Promote greater integration of health and social care services
		Customize service provision to target resources effectively
	Promote intergenerational exchange	Engage younger and oldest-old persons in intergenerational projects
	Empower oldest-old persons	Involve oldest-old persons in decision-making
Innovation in technology and design supporting independent living in advanced age	Enhance oldest-old persons' mobility, functioning and safety	Promote and evaluate technology use by oldest-old persons
		Involve oldest-old persons and their families in choice of technology
	Promote autonomy through technology	Encourage oldest-old persons to self-monitor their health
		Combat loneliness

ECE/WG.1/28