

Before the fall: The economic case for early investment in ageing support

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Adjunct Professor David Cullen BA BSc (Hons) PhD
(ANU) FRSPH



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Acknowledgement of Country

The Office of the Inspector-General of Aged Care acknowledges the traditional owners of country throughout Australia, and their continuing connection to land, water and community. We pay our respects to them and their cultures and to elders both past and present.

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Requests and enquiries concerning the contents of the report should be addressed to:

Office of the Inspector-General of Aged Care
PO Box 350
Phillip ACT 2606

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The economy of care

This monograph begins with a simple but unavoidable problem: human need has no natural endpoint, yet the resources available to meet it are finite. The focus of the discussion is the long-term care of older people¹ in Australia, but the issues raised reach well beyond long-term care, older people and Australia. How should a just society order competing claims when not every need can be met at once? The argument advanced here is that priority must extend beyond responding to crisis and toward early investments designed to prevent avoidable harm and to prevent or delay for as long as is appropriate dependency and premature admission to residential care.

Needs without end

All people have physiological needs, such as the need for air, food, water and shelter; safety needs such as the need for health, personal security, emotional security and financial security; social needs such as the need for family, friendship, trust and acceptance; esteem needs such as the need for recognition, self-respect, and independence; cognitive and aesthetic needs such as the need for creativity, foresight, curiosity, and meaning; and self-actualisation needs such as the need to partner, to parent, to develop talents and abilities, and to pursue goals.²

These needs do not, of course, form a strict hierarchy.³ An individual's needs do not unfold in a simple sequence; they coexist, interact and compete at the same time.

Individuals often pursue 'higher level' needs even when 'lower level' needs are only partially satisfied. People living in poverty still seek love, belonging, creativity, and/or meaning; and individuals in unsafe environments may risk their safety for social bonds and/or personal purpose. Cultural values also influence how needs are prioritised. In some cultures, maintaining social relationships, fulfilling family responsibilities, and preserving group cohesion may take precedence over individual safety and security. Traditional Confucian-influenced Chinese culture provides one example. In this context, filial piety places strong moral weight on adult children caring for ageing parents, and decisions about care are often shaped by family duty, intergenerational obligation and the preservation of family harmony. This may mean that older people remain at home despite rising risks, because residential care can be perceived as inconsistent with family responsibility. This is not universal, and contemporary Chinese families vary considerably, but it illustrates how social relationship and group obligation may sometimes take precedence over individual safety or autonomy.⁴

¹ The term 'older person' is used in this monograph to mean someone who is aged 65 or older. The term 'very old person' is used to mean someone who is aged 80 or older.

² Maslow AH. (1943). A theory of human motivation. *Psychological Review*, 50(4):370–396.

³ Hofstede G. (1984). *Culture's consequences: International differences in work-related values*. Sage, Beverley Hills, California; Neher A. (1991). Maslow's theory of motivation: A critique. *Journal of Humanistic Psychology*, 31(3):89-112;

Deci EL, & Ryan RM. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4):227-68;

Tay L, & Diener E. (2011). Needs and subjective well-being around the world. *Journal of Personality and Social Psychology*, 101(2):354-65.

⁴ Xiao C, Patrician PA, Montgomery AP, Wang Y, Jablonski R, & Markaki A. (2024). Filial piety and older adult caregiving among Chinese and Chinese-American families in the United States: a concept analysis. *BMC Nursing*, 23(1):115.

Conceiving the hierarchy of needs as a dynamic and interactive system, rather than as a rigid sequence also better accounts for altruistic behaviour, resilience, and self-sacrifice, where individuals willingly endure hardship, risk, or deprivation in pursuit of deeply held values, social obligations, or meaningful relationships.

Although many older people remain independent throughout their life, some (like people of all ages) encounter challenges that affect their capacity to meet their needs without support. These individuals may require assistance from others to continue living safely and independently, and to maintain their wellbeing. Older people's need for assistance can also change over time. Some conditions become progressively worse. In other cases, older people can benefit from short term rehabilitation to improve or restore independence.

The types of assistance that older people may, at times, need include:

- Income and financial assistance, when they have insufficient financial resources to meet their living costs or care needs. This may include income support payments, assistance with housing costs, subsidies for health and aged care services, and transport, energy and tax concessions. Adequate income support can play a critical role in maintaining independence, accessing necessary services, preventing poverty, and supporting overall wellbeing in later life.
- Medical assistance, such as diagnosis, treatment, nursing care, palliative care, and ongoing management of acute illnesses, injuries, chronic diseases, and age-related health conditions.
- Functional assistance, when difficulties arise with either:
 - Activities of daily living – the basic self-care tasks necessary for personal survival and physical wellbeing. These may include bathing, dressing, eating, toileting, transferring, and maintaining continence.
 - Instrumental activities of daily living – the more complex activities required for independent living in the community. These may include shopping; preparing meals; managing finances; undertaking housework; using transport; managing medications; organising appointments; and communicating via phones, messaging, email, online portals, and other digital tools.
- Behavioural assistance, including support to manage behaviours that may accompany cognitive impairment, neurological conditions, or mental illness, such as aggression, wandering, disorientation, withdrawal, agitation, or compulsive behaviours.
- Psychological and cognitive assistance, including support for loneliness, depression, anxiety, grief, memory impairment, dementia, confusion, or other mental health and cognitive challenges that may affect wellbeing and daily functioning.
- Social assistance, arising from social isolation, reduced community participation, bereavement, limited contact with family and friends, or barriers to engaging in cultural, recreational, spiritual, or civic activities.
- Rehabilitation and restorative support, aimed at helping individuals regain or maintain function, independence, and quality of life following illness, surgery, injury, hospitalisation, or a disruption to their usual living arrangements.
- Housing-related assistance, when an older person's home is no longer suitable for their needs, requires modification to improve safety and accessibility, or when alternative housing arrangements are required to support independent living.

In practice, many older people experience multiple needs simultaneously. For example, a person living with frailty may require medical treatment, assistance with daily activities, home modifications, social support, and income assistance at the same time. Effective aged care and social support

systems must therefore adopt a holistic and integrated (and person-centred) approach that recognises the complex interaction between these needs for each individual, rather than managing them in isolation.

Like everyone else, some older people face challenges in meeting their needs and often do not have all their needs met. In the main, when older people in Australia need assistance, it is provided by their families and friends. Some older people purchase assistance using their own (or family) resources. Others receive assistance that is funded or subsidised by local governments, state or territory governments, or (primarily) the Australian Government.

Some government-funded or subsidised assistance for older people in Australia is provided through programs that are available to all Australians, like the public hospital system, and the Australian Government's Medical Benefits Scheme and Pharmaceutical Benefits Scheme. Older people receiving informal care are also helped indirectly by the Australian Government's programs to support carers.

Some government assistance is only available to older people, like the Commonwealth's age pension (where the eligibility age is 67) and the Commonwealth's aged care programs (where the eligibility age is 50 for people who are either an Aboriginal or Torres Strait Islander person or a person who is homeless or at risk of homelessness, and 65 for all other people).⁵

At the state/territory level, the New South Wales Government's Seniors Card, for example, is only available to people who are aged 60 or older (and who work 20 hours or less per week). It provides older people with concessional fares on public transport and some discounts on other government fees. Many local governments offer older people who are pensioners rebates on their council rates.

In some cases, older people are not permitted to access government programs for the support that they need even when they meet the program's qualification criteria (other than age). For example, people whose disability manifests after age 65 are not eligible for assistance through the National Disability Insurance Scheme (NDIS).⁶

Justice and competing claims

The British economist Lionel Robbins famously defined economics as the study of human behaviour in circumstances where competing ends must be pursued with scarce resources capable of alternative uses.⁷ Human needs are extensive, diverse and capable of expanding as social expectations, technologies and opportunities change. Public and private resources are, however, always limited. Society cannot provide every potentially beneficial service, and aged care systems cannot satisfy every preference of every person at every time. The central policy question is therefore not whether needs matter, but how competing claims should be ordered fairly.

In *A Theory of Justice*, John Rawls suggests that justice can be found in choices made behind a 'veil of ignorance' – the principles people would choose if they did not know their position in society (their wealth, health, age or abilities). Behind this 'veil of ignorance', Rawls argues, people would have reason to protect basic liberties and to design inequalities so that they benefit the least advantaged.⁸

⁵ The lower age for Aboriginal and Torres Strait Islander people is because they experience higher rates of chronic disease, disability and care need at younger ages than non-Indigenous Australians.

⁶ People who become NDIS participants before they turned 65 can continue receiving NDIS support after they turn 65 until they commence 'accessing ongoing funded aged care services on a permanent basis, other than under a specialist aged care program, and this first occurs only after the person turns 65 years of age'. See: §29(1)(b) of the *National Disability Insurance Scheme Act 2013*.

⁷ Robbins LC. (1932). *An Essay on the Nature and Significance of Economic Science*. Macmillan.

⁸ Rawls J. (1999). *A Theory of Justice (Revised Edition)*. Harvard University Press.

A just system must begin by securing a dignified minimum. Food, shelter, bodily safety, essential health care, freedom from violence and abuse, and assistance with basic activities of daily living have special priority because their absence can cause immediate and severe harm. A person who cannot eat, use the toilet, move safely or obtain necessary medication may be unable to exercise meaningful agency in any other domain. These needs therefore possess a threshold character: below a certain level, ordinary choice and participation become difficult or impossible. Public policy should guarantee that no person falls beneath this threshold merely because they lack income, family support or bargaining power. The dignified minimum should not, however, be reduced to biological maintenance. Keeping a person alive while leaving them frightened, humiliated or entirely subject to the convenience of institutions does not constitute adequate care.

But, as Amartya Sen argues in his *Equality of What*, equality cannot adequately be assessed solely by examining income, resources, utility or formally equal access to services. People differ greatly in their ability to convert resources into valuable ways of living.⁹ An older person with severe mobility limitations may require substantially more assistance than another person to achieve the same practical freedom to leave the house, maintain relationships or participate in community life. Priority-setting should therefore consider what people are able to be and do, rather than merely whether they have been offered an identical package of services. In aged care, Sen's approach supports allocating resources according to the assistance required to maintain substantive autonomy, social participation and control over everyday life. It also explains why equal expenditure may be inequitable when individuals face very different barriers to functioning.

Martha Nussbaum similarly argues, in her *Creating capabilities*, that a just society must protect central capabilities, including bodily integrity, practical reason, affiliation and control over one's environment.¹⁰ Applied to aged care, this means asking whether a person can maintain relationships, participate in cultural or spiritual life, make decisions about daily routines, move through their environment and retain a valued social role. These capabilities give practical content to dignity and continued self-creation in later life.

Consequently, priority-setting should be dynamic, rather than based on fixed categories. Urgency is important because an immediate risk of death, injury, or abuse demands rapid action. Severity also matters. Preventing profound suffering or complete dependency carries a stronger claim than producing a marginal improvement for someone who is already well supported. Capacity to benefit must also be considered because resources should ordinarily be directed towards interventions capable of making a meaningful difference. However, capacity to benefit should not become a reason to abandon people with complex disability or limited prospects of recovery. Interventions can be valuable when they relieve suffering, preserve dignity or support caregivers – even when they do not restore independence.

The effect of an intervention on future need is another relevant consideration. Preventive home modifications, falls prevention, rehabilitation, reablement, medication review and caregiver support may appear less urgent than crisis care, yet neglecting them can lead to injury, hospitalisation, functional decline and premature admission to residential care. A static hierarchy may continually direct resources towards visible emergencies while underfunding measures that prevent emergencies from occurring. A dynamic hierarchy instead recognises that meeting a currently 'higher' need, such as mobility, confidence or social participation, may preserve the capacity to meet

⁹ Sen AK. (1980) Equality of What? In: McMurrin SM. (Editor.) (1980). *Tanner Lectures on Human Values*, Vol. 1. Cambridge University Press.

¹⁰ Nussbaum MC. (2011). *Creating capabilities: The human development approach*. Belknap Press of Harvard University Press.

more basic needs independently in the future. Prevention is therefore not a luxury added after essential care has been funded; it is one means of protecting essential functioning over time.

Health economics provides a disciplined framework for evaluating such choices. Its starting point is opportunity cost: resources devoted to one service cannot be used elsewhere. Economic evaluation compares the additional costs and consequences of alternative interventions rather than asking only whether a program produces some benefit.¹¹ Cost-effectiveness analysis may express outcomes in quality-adjusted life years (QALYs), while aged care evaluations may also examine changes in function, dependency, hospital use, caregiver burden and the timing of residential care admission. This approach helps decision-makers identify interventions that produce greater benefits from a limited budget.

Conventional cost-effectiveness analysis is valuable but incomplete in aged care. QALYs capture changes in health-related quality and length of life, yet many central outcomes of care extend beyond health. An older person may value control over daily routines, security, companionship, the ability to contribute and freedom from becoming an excessive burden on family. Capability measures such as the Investigating Choice Experiments for Preferences of Older People program's Capability Measure for Older Adults (ICECAP-O) and the Adult Social Care Outcomes Toolkit (ASCOT) were developed to capture broader dimensions of wellbeing relevant to older people, including attachment, security, role, enjoyment and control.¹²

Economic evaluation should also account for caregiver outcomes because an intervention may transfer costs, responsibilities and pressures from the formal care system to families and informal carers, rather than genuinely reducing the overall burden of care.¹³

Efficiency must also be reconciled with equity. An exclusive focus on aggregate benefit may favour interventions for people who are easier or cheaper to assist, thereby disadvantaging those with severe disability, social isolation, cognitive impairment or limited informal support. Equity in health care requires attention to need and to the fair distribution of health.¹⁴ More recent distributional

¹¹ Drummond MF, Sculpher MJ, Claxton K, Stoddart GL, & Torrance GW. (2015). *Methods for the economic evaluation of health care programmes (4th ed.)*. Oxford University Press.

¹² ICECAP-O asks, in effect: What kind of life is this person capable of living? Its concern is broader wellbeing: relationships, security about the future, having a valued role, enjoyment and independence/control.

ASCOT asks more directly: What aspects of this person's quality of life are being affected by social care? Its eight domains include control over daily life, personal cleanliness and comfort, food and drink, personal safety, social participation, meaningful occupation, accommodation cleanliness and comfort, and dignity.

Engel L, Sokolova V, Faller J, Belay YB, Wang P, Olsen JA, & Mulhern B. (2026). Psychometric Performance of Preference-Weighted Instruments in Older Adults: A Systematic Review. *Value Health*, 29(9):1714-1724.

Coast J, Flynn TN, Natarajan L, Sproston K, Lewis J, Louviere JJ, & Peters TJ. (2008). Valuing the ICECAP capability index for older people. *Social Science and Medicine*, 67(5):874-82.

Couzner L, Ratcliffe J, Lester L, Flynn T, & Crotty M. (2013). Measuring and valuing quality of life for public health research: application of the ICECAP-O capability index in the Australian general population. *International Journal of Public Health*, 58(3):367-76.

Rand S, Smith N, Welch E, Allan S, Caiels J, & Towers AM. (2025). Use of the adult social care outcomes toolkit (ASCOT) in research studies: an international scoping review. *Quality of Life Research*, 34(9):2437-50.

¹³ van den Berg B, Brouwer WB, & Koopmanschap MA. (2004). Economic valuation of informal care. An overview of methods and applications. *European Journal Health Economics*, 5(1):36-45.

¹⁴ Culyer AJ, & Wagstaff A. (1993). Equity and equality in health and health care. *Journal of Health Economics*, 12(4):431-57.

approaches make it possible to examine who gains and who loses from alternative policies and to quantify trade-offs between maximising total benefit and reducing unfair inequality.¹⁵ In aged care, relevant dimensions include income, remoteness, culture, housing, disability, family support and the severity of existing need.

A fair allocation framework should therefore combine several principles rather than rely on a single numerical rule. It should first guarantee a dignified minimum. It should then give additional weight to urgency, severity and disadvantage; consider an intervention's capacity to preserve autonomy and prevent deterioration; and compare its costs and benefits with realistic alternatives. Remaining resources should be directed towards options that generate substantial and equitably distributed improvements in wellbeing. Public reasoning and transparent decision-making are essential because no technical measure can determine how much efficiency should be sacrificed for equity, how dignity should be valued or what society owes those who cannot benefit in conventional health terms.

Health economics does not remove politics or ethics from priority-setting. Rather, it clarifies the consequences of choices that might remain hidden. It can show the benefits forgone when resources are allocated to low-value services, reveal when apparent savings merely shift burdens to others, and identify policies that improve both outcomes and fairness. Ethical theory, in turn, establishes constraints on what may be sacrificed in pursuit of efficiency. Together, these perspectives support an aged care system that protects survival without reducing life to survival, values prevention as well as crisis response, and treats autonomy, belonging and identity as human needs.

The case for prevention and early intervention

Ageing is inescapable, normal and not necessarily an indication of frailty or decrepitude. It affects every person throughout their lifespan, but at different rates and in different ways, as each person is unique. Ageing can affect functional ability/disability, but age-related physical, emotional and social changes can be anticipated and managed by adopting a healthy approach to ageing throughout life, and by adapting to specific changes. Chronic conditions such as dementia and arthritis can diminish function; but integrated care systems and supportive environments can enable adaptation and help ensure that older people can live with dignity. At the same time, the attitudes of others and poorly-designed systems can hinder older people's ability to be and do what they value.¹⁶

This is because functional ability/disability is concerned not just with the individual's intrinsic capacity but also with their environment – the built environment in which they live; their relationships with others, and the attitudes and values of those other people; and the policies that govern the health and social systems that support them to live their life.

Australia's aged care system (and, in the main, its broader health and social care systems) have traditionally been organised around responding to frailty, disability, and dependency after these

¹⁵ Cookson R, Mirelman AJ, Griffin S, Asaria M, Dawkins B, Norheim OF, Verguet S, & Culyer AJ. (2017). Using Cost-Effectiveness Analysis to Address Health Equity Concerns. *Value in Health*, 20(2):206-12.

¹⁶ The term 'disability' is used in this monograph as an umbrella term encompassing the barriers that people can face to their full participation in society and in the economy. It encompasses:

- impairments – problems/differences in body function, including mental function, and alterations in body structure;
- activity limitations – difficulties in executing everyday activities such as self-care, mobility or communication; and
- participation restrictions – problems or barriers experienced in involvement in life situation, including facing discrimination in employment, transportation or participation in the community.

World Health Organization (WHO). (2001). [International classification of functioning, disability and health: ICF](#). WHO.

conditions have already emerged. Public expenditure on older people (other than the age pension) is therefore concentrated on residential care, home care services and hospital treatment once functional decline has occurred. This approach has improved access to care but has also created a system that is heavily oriented towards managing the consequences of ageing rather than preventing or delaying them.

As population ageing accelerates, the sustainability of the current approach to aged care is increasingly being questioned. In its 2017 report, [Shifting the Dial](#), the Productivity Commission argued that prevention and early intervention should become central organising principles across human services because many adverse outcomes can be delayed, mitigated, or avoided through earlier action. Although that report's recommendations were primarily directed at the broader human services sector, they provide a valuable framework for rethinking Australia's aged care system. In its 2025 report, [Delivering Quality Care More Efficiently](#), the Productivity Commission further recommended that the Australian Government work with state and territory governments to establish a National Prevention and Early Intervention Framework to guide investment decisions across the care economy.

There is some international evidence of a positive long-term relationship between effective preventive investment and healthier ageing. An analysis of 37 OECD countries between 1970 and–2019 found that greater public expenditure on preventive care was associated with lower mortality and with higher life expectancy at age 65.¹⁷

The broader evidence provides a credible causal pathway. The OECD argues that sustained investment in physical activity, falls prevention, early detection, nutrition and managing behavioural risks can delay chronic disease, cognitive decline and limitations in activities of daily living.¹⁸ It finds that such interventions are frequently cost-effective and can reduce falls by approximately 30-40% in well-designed exercise programs. Countries also differ markedly in healthy longevity after age 60, and the OECD argues that prevention and community-based support are necessary to convert longer lives into healthier lives.

Applying a Prevention and Early Intervention Framework to aged care in Australia would represent a significant shift in policy philosophy. Rather than viewing aged care principally as a system for supporting dependency, the new framework would view it as a system designed to maintain independence, functional capacity, and quality of life for as long as possible. Such a framework would emphasise investment in interventions that reduce the likelihood of residential care admission, delay the onset of disability, support carers, prevent avoidable hospitalisations, and maintain older people's participation in community life. The ultimate objective would be to compress disability into

¹⁷ Ammi M, & Davarzani F. (2025). Econometric analysis of the long-run relationship between preventive care spending and mortality: evidence from OECD countries, 1970-2019. *Empirical Economics*, 69(6):3019-44.

See also: Aytemiz L, Sart G, Bayar Y, Danilina M, & Sezgin FH (2024) The long-term effect of social, educational, and health expenditures on indicators of life expectancy: an empirical analysis for the OECD countries. *Frontiers in Public Health*, 12:1497794.

This study of 32 OECD countries over the period 2005 to 2021 similarly found that health expenditure was positively associated over the long term with healthy life expectancy at age 60. However, their measure covered total health expenditure rather than expenditure devoted specifically to prevention, making it difficult to isolate the contribution of preventive policies. The study also found that GDP per capita, public social expenditure and education expenditure were positively associated with healthy life expectancy, suggesting that longer healthy lives are shaped by both health-system investment and broader social and economic conditions.

¹⁸ Organisation for Economic Co-operation and Development (OECD). (2025). [The economic benefit of promoting healthy ageing and community care](#). OECD Publishing.

a shorter period at the end of life while simultaneously improving wellbeing and reducing long-term expenditure.

Many interventions require expenditure in the short term but generate benefits over many years. Falls prevention programs, home modifications, reablement services, and preventive home visits all involve upfront costs. However, they can also reduce future expenditure on hospital admissions, residential care, and intensive home support. A prevention framework requires governments to adopt a longer-term investment perspective rather than a focus on annual budget impacts.¹⁹

One of the challenges identified by the Productivity Commission is that prevention often suffers from fragmented accountability. Organisations that bear the costs of preventive interventions are frequently different from those that receive the benefits.²⁰ This problem is particularly evident in long-term care. Investments in falls prevention may generate savings for hospitals. Investments in reablement may reduce future residential care expenditure. Investments in housing modifications may reduce demand for home care services. Consequently, agencies often have limited incentives to invest in prevention because the financial benefits accrue elsewhere.

Addressing this challenge would require the development of funding mechanisms that reward long-term outcomes rather than short-term activity.²¹ Governments could establish prevention investment funds that support evidence-based interventions with demonstrated potential to reduce future expenditure. Outcome-based funding models could also be explored, whereby providers receive incentives for maintaining independence, reducing hospitalisations, or delaying residential care admission. Such approaches would be consistent with the Productivity Commission's recommendation to align incentives with prevention objectives.

Data and evaluation would be fundamental to the framework's success. Prevention initiatives should be subject to rigorous evaluation and continuous improvement. Historically, long-term care systems have often focused on service delivery outputs rather than outcomes. A prevention framework would require improved measurement of functional status, quality of life, frailty, social participation, caregiver wellbeing, and residential care admission rates. Longitudinal data collection would be particularly important because many prevention benefits emerge over extended periods.

Economic evaluation would also play a critical role in prioritising interventions. Unlike acute health care, long-term care outcomes extend beyond mortality and morbidity. Prevention initiatives may

¹⁹ Weisbrod BA. (1961). *Economics of Public Health: Measuring the Economic Impact of Diseases*. University of Pennsylvania Press.

Mushkin SJ. (1962). Health as an investment. *Journal of Political Economy*, 70(5, Part 2):129-57.

Cohen JT, Neumann PJ, & Weinstein MC. (2008). Does preventive care save money? Health economics and the presidential candidates. *New England Journal of Medicine*, 358(7):661-3.

Russell LB. (1986). *Is Prevention Better than Cure?* Brookings Institution.

²⁰ Marmot M, Allen J, Goldblatt P, Herd E, & Morrison J. (2020). *Build Back Fairer: The COVID-19 Marmot Review. The Pandemic, Socioeconomic and Health Inequalities in England*. Institute of Health Equity.

Musgrave RA. (1959). *The theory of public finance: A study in public economy*. McGraw-Hill.

²¹ Humphries R, Thorlby R, Holder H, Hall P, & Charles A. (2016). *Social care for older people: Home truths*. The King's Fund.

Giddens A. (1998). *The third way: The renewal of social democracy*. Polity Press.

Heckman JJ. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782):1900-2.

Porter ME. (2010). What is value in health care? *New England Journal of Medicine*, 363(26):2477-81.

improve autonomy, dignity, social engagement, and caregiver wellbeing while delaying institutionalisation. Consequently, economic evaluations should incorporate broader outcome measures, including QALYs, capability measures, and caregiver outcomes.²² Many interventions involve short-term expenditures but long-term benefits through delayed institutionalisation. Short evaluation periods therefore risk underestimating economic value. The Productivity Commission highlighted the importance of evidence-informed decision making, and this principle should guide investment decisions within the long-term care sector.

Workforce development would also be necessary. A prevention-oriented long-term care system requires different workforce capabilities from a traditional service delivery model. Staff would need expertise in health promotion, behaviour change, functional assessment, reablement, and preventive care planning. Occupational therapists, physiotherapists, exercise physiologists, nurses, social workers, and allied health professionals would play increasingly important roles.²³ Workforce reforms would therefore need to support multidisciplinary practice and preventive models of care.

Technology could also provide opportunities to support prevention objectives. Remote monitoring systems, telehealth services, medication management technologies, and smart home devices can assist older people to remain safely in their homes for longer. Although evidence regarding cost-effectiveness continues to evolve, technological innovations have considerable potential to support early identification of problems and to reduce avoidable crises.²⁴ A prevention framework would encourage systematic evaluation and scaling of technologies that demonstrate effectiveness.

Applying the prevention framework to aged care would also require better integration between health care and aged care. Many opportunities for prevention occur during transitions between sectors, particularly following hospital discharge. Poorly managed transitions can contribute to functional decline and increased institutionalisation risk. Transitional care programs that provide coordinated support following hospitalisation have demonstrated positive outcomes in reducing readmissions and supporting community living.²⁵ A prevention framework would encourage seamless coordination between hospitals, primary care providers, and aged care services.

The broader cultural implications of a prevention framework should not be underestimated. Australian aged care policy has historically been influenced by a deficit model that focuses on

²² Grewal I, Lewis J, Flynn T, Brown J, Bond J, & Coast J. (2006). Developing attributes for a generic quality of life measure for older people: Preferences or capabilities? *Social Science & Medicine*, 62(8):1891-901.

Brouwer WB, van Exel NJ, van Gorp B, & Redekop WK. (2006). The CarerQoL instrument: a new instrument to measure care-related quality of life of informal caregivers for use in economic evaluations. *Quality of Life Research*, 15(6):1005-21.

Bulamu NB, Kaambwa B, & Ratcliffe J. (2015). A systematic review of instruments for measuring outcomes in economic evaluation within aged care. *Health and Quality of Life Outcomes*, 13:179.

Makai P, Brouwer WB, Koopmanschap MA, Stolk EA, & Nieboer AP. (2014). Quality of life instruments for economic evaluations in health and social care for older people: a systematic review. *Social Science and Medicine*, 102:83-93.

²³ Tinetti ME, Fried TR, & Boyd CM. (2012). Designing health care for the most common chronic condition – multimorbidity. *JAMA*, 307(23):2493-4.

²⁴ Liu L, Stroulia E, Nikolaidis I, Miguel-Cruz A, & Rios Rincon A. (2016). Smart homes and home health monitoring technologies for older people: A systematic review. *International Journal of Medical Informatics*, 91:44-59.

²⁵ Naylor MD, Shaid EC, Carpenter D, Gass B, Levine C, Li J, Malley A, McCauley K, Nguyen HQ, Watson H, Brock J, Mittman B, Jack B, Mitchell S, Callicotatte B, Schall J, & Williams MV. (2017). Components of Comprehensive and Effective Transitional Care. *Journal of the American Geriatrics Society*, 65(6):1119-25.

impairment and dependency. Prevention requires a fundamentally different perspective that emphasises capability, resilience, and healthy ageing. Older people must be viewed not simply as recipients of care but as individuals capable of maintaining independence and contributing to society. This shift aligns closely with international healthy ageing frameworks promoted by the World Health Organization.²⁶

Ultimately, adapting the Productivity Commission's National Prevention and Early Intervention Framework to Australia's aged system would represent a major strategic reform. The framework would reposition aged care from a system focused primarily on managing dependency to one focused on maintaining independence.

It would prioritise:

- early identification of risk
- Investment in evidence-based interventions
- support for carers
- integration across sectors
- rigorous evaluation of outcomes.

Such a transformation would not eliminate the need for residential care or intensive support services. However, it could delay the onset of dependency, improve quality of life, reduce avoidable institutionalisation, and enhance the sustainability of the aged care system. As Australia confronts the challenges of population ageing, prevention and early intervention offer a pathway towards a more effective, person-centred, and economically sustainable model of long-term care.

From principle to policy

Historically, aged care policy has focused primarily on responding to the consequences of frailty, disability, chronic illness, and cognitive decline once they have occurred. While these services remain essential, growing evidence suggests that many of the factors leading to dependency and admission to residential care can be delayed, mitigated, or, in some cases, prevented altogether. As Australia's population continues to age and demand for aged care services increases, policymakers face the dual challenge of improving the quality of life of older people while ensuring the long-term sustainability of the aged care system. Prevention offers the prospect of achieving both objectives by helping older people maintain their health, functional capacity, independence, and social participation for longer.

While residential care will always remain an essential component of aged care, most older people prefer to remain living in their own homes and communities for as long as possible.²⁷ Supporting them to do this also makes economic sense. Residential care is among the most expensive forms of long-term care. Institutional settings require infrastructure, regulation, clinical oversight, and

²⁶ World Health Organization (WHO). (2015). [World Report on Ageing and Health](#). WHO.

WHO. (2023). [Progress report on the United Nations Decade of Healthy Ageing, 2021-2023](#). WHO.

²⁷ Aclan R, George S, Block H, Lane R, & Laver K. (2023). Middle aged and older adult's perspectives of their own home environment: a review of qualitative studies and meta-synthesis. *BMC Geriatrics*, 23(1):707.

Australia. Productivity Commission. (2015). [Housing Decisions of Older Australians](#). Commission Research Paper. Productivity Commission.

Gibson K, Brittain K, McLellan E, Kingston A, Wilkinson H, & Robinson L. (2024). 'It's where I belong': what does it mean to age in place from the perspective of people aged 80 and above? A longitudinal qualitative study (wave one). *BMC Geriatrics*, 24(1):524.

accommodation costs. They can, however, offer an efficient solution when around-the-clock staffing is required.

Admission to residential care is typically driven by a combination of medical, functional, cognitive, social, and economic factors. It is not just a consequence of clinical deterioration. Rather, it is an outcome shaped by caregiver capacity, service availability, funding arrangements, and long-term care system design.²⁸ Functional impairment in activities of daily living, dementia, frailty, falls, incontinence, multimorbidity, and social isolation are among the strongest predictors of institutionalisation.²⁹ Economic and system design factors also play a role. If home care services are limited or expensive, residential care may become the default option. Conversely, studies of subsidised home care programs indicate that expanded access to community-based supports may reduce the rate of institutionalisation or delay admission to permanent residential care.³⁰ Availability of informal care is particularly influential. Older people who have spouses or adult children who are able to provide assistance are significantly less likely to enter residential care.³¹ At the same time, caregiver distress can increase the likelihood that an older person will enter residential care, either because of the inability of the caregiver to continue to care, or because of the desire of the care recipient to relieve the burden on the caregiver.³² Health system failures can also accelerate admission. Fragmented services, delayed assessments, poor discharge planning and insufficient rehabilitation can all result in avoidable residential care admissions.³³

Delaying admission to residential care has several potential benefits. It may improve quality of life, preserve autonomy and social connectedness, reduce health care expenditure, and enhance allocative efficiency within long-term care systems. However, delaying institutionalisation is not universally beneficial. If community supports are inadequate, delayed admission may increase caregiver burden, worsen health outcomes, or result in avoidable hospitalisations. While most

²⁸ Challis D, & Hughes J. (2002). Frail old people at the margins of care: some recent research findings. *British Journal of Psychiatry*, 180:126-30.

Poo A, & Conrad A. (2015). *The age of dignity: Preparing for the elder boom in a changing America*. The New Press.

²⁹ Gaugler JE, Duval S, Anderson KA, & Kane RL. (2007). Predicting nursing home admission in the U.S: a meta-analysis. *BMC Geriatrics*, 7:13.

³⁰ Jeon YH, Simpson JM, Comans T, Shin M, Fethney J, McKenzie H, Crawford T, Lang C, & Inacio M. (2023). Investigating community-based care service factors delaying residential care home admission of community dwelling older people and cost consequence. *Age and Ageing*, 52(10):afad195.

Luker JA, Worley A, Stanley M, Uy J, Watt AM, & Hillier SL. (2019). The evidence for services to avoid or delay residential care admission: a systematic review. *BMC Geriatrics*, 19(1):217.

³¹ Freedman VA. (1996). Family structure and the risk of nursing home admission. *Journals of Gerontology, Series B, Psychological Sciences and Social Sciences*, 51(2):S61-9.

³² Argimon JM, Limon E, Vila J, & Cabezas C. (2005). Health-related quality-of-life of care-givers as a predictor of nursing-home placement of patients with dementia. *Alzheimer Disease & Associated Disorders*, 19:41-44.

Betini RSD, Hirdes JP, Lero DS, Cadell S, Poss J, & Heckman G. (2017). A longitudinal study looking at and beyond care recipient health as a predictor of long-term care home admission. *BMC Health Services Research*, 17(1):709.

³³ Kodner DL, & Spreeuwenberg C. (2002). Integrated care: meaning, logic, applications, and implications--a discussion paper. *International Journal of Integrated Care*, 2:e12.

people prefer to remain at home, the appropriateness of residential care depends on balancing autonomy, safety, caregiver wellbeing, and quality of care.³⁴

From an economic perspective, delaying admission to residential care (and reducing length of stay there) can potentially generate savings by substituting lower-cost home and community care for higher-cost institutional care. However, cost savings are not automatic. Community care may become expensive if individuals require intensive services over prolonged periods – particularly because labour use is less efficient when services are delivered intermittently across dispersed households. Furthermore, informal caregiving imposes opportunity costs on families through lost employment, reduced productivity, and caregiver burnout. The challenge for policymakers is therefore to identify interventions that safely and cost-effectively support ageing in place while maintaining quality of care and equity of access.

Cost-effectiveness analysis is essential. An intervention that delays admission to residential care by 6 months may not be economically worthwhile if the intervention itself is extremely costly or produces poor quality-of-life outcomes. Conversely, interventions producing modest delays at relatively low cost may represent excellent value for money. Importantly, delayed admission is not always beneficial. Some older people may experience better quality of life and safety in residential care than in unsupported home environments. Policymakers must therefore avoid viewing institutionalisation solely as a failure. The system design objective should instead be appropriate timing of admission based on the preferences and needs of the older person and their caregivers.

Economic evaluation in long-term care is, however, challenging because outcomes extend beyond mortality and morbidity. Quality of life, autonomy, dignity, caregiver wellbeing, and social participation are central considerations. Consequently, economists increasingly advocate broader outcome frameworks incorporating capability measures and caregiver utilities rather than relying solely on QALYs. It is also important that any cost effectiveness evaluation take a societal – rather than a public-payer – perspective. This is particularly important because informal caregiving contributes enormous economic value. Excluding unpaid caregiver time may underestimate true costs. Finally, economic evaluations need to have a long-term perspective. Many interventions involve short-term expenditures but long-term benefits through delayed institutionalisation.

The next chapter synthesises the evidence in the academic literature from randomised controlled trials, modelling studies, systematic reviews, and economic evaluations on interventions that seek to delay admission to residential care for older people. It is important to note that the literature demonstrates substantial heterogeneity in methods and outcomes, and meta-analyses do not produce uniformly significant results. The evidence is also limited by inconsistent definitions, variable program design and reliance on proxy outcomes. Nevertheless, the overall evidence suggests that many multifactorial community-based interventions are either cost-effective, or cost-saving, compared with usual care.³⁵

³⁴ Kane RL, & Kane RA. (2021). What older people want from long-term care, and how they can get it. *Health Affairs (Millwood)*, 20(6):114-27.

³⁵ Al-Hamad A, Yasin YM, Metersky K, Kokorelias KM, Yasin L, & Afzal F. (2025). Home Health care Services and Interventions for Older people: An Umbrella Review of Systematic Reviews and Meta-Analyses. *Journal of Ageing and Longevity*, 5(3):25.

Moody E, McDougall H, Paus Jenssen E, McArthur C, Affoo R, Weeks LE, Macdonald M, Mojbafan A, & Langman E. (2026). The effectiveness of alternatives to residential care for older people with on-going health and social care needs: a systematic review. *BMC Geriatrics*, 26(1):305.

Inacio MC, Harrison S, Schwabe J, Crotty M, & Caghey GE. (2025). Models of care across settings supporting ageing in place: a narrative review. *Medical Journal of Australia*, 223(4):218-25.

Ten types of interventions are discussed in the next chapter:

- [Assessment and care coordination](#)
- [Preventing functional decline: preventive home visits](#)
- [Preventing functional decline: falls prevention](#)
- [Restoring functional capacity](#)
- [Adapting the environment – home modifications](#)
- [Adapting the environment – assistive technology](#)
- [Hospital avoidance and transitional care](#)
- [Addressing social determinants of decline](#)
- [Dementia prevention and risk reduction](#)
- [Support for informal carers.](#)

These interventions can all improve physical functioning and support greater independence in daily activities. They can reduce the risk of falls and avoidable hospitalisations, helping older people remain safely at home for longer. Support for informal caregivers can also sustain community living by reducing caregiver burden and burnout. In addition, better coordination of fragmented health and care services can improve continuity of care and reduce crises that precipitate residential care admission. Some interventions can help manage dementia-related behaviours that can otherwise become difficult to support in the community. Others can reduce social isolation and strengthen social engagement, which is associated with improved wellbeing and functional capacity. Home modifications can further support safety, accessibility, and independence in the home.

Economic benefits can also arise from these interventions. By delaying or preventing admission to residential care, they can reduce demand for high-cost institutional services. Even where residential care is eventually required, interventions can shorten the length of stay. Improved health and functional outcomes can also reduce hospital use and lower rates of emergency department presentation. However, substitution effects are common. Increased home care expenditure may offset residential care savings.

The evidence suggests that many multifactorial, community-based interventions are capable of improving health and functional outcomes and are frequently either cost-effective or cost-saving when compared with usual care. While the strength of evidence varies across intervention types, the findings collectively support the proposition that prevention and early intervention can play an important role in reducing future demand for more intensive and costly forms of care.

The monograph ends with a discussion of the implications of the above for the design of the aged care system.

First, justice requires that resources be directed where they can achieve the greatest benefit and where need is greatest. Early investment can preserve capability, dignity, autonomy and time at home while also improving the allocation of scarce resources. It is not merely a way to save money; it is a way to use limited public funds more wisely and humanely.

Second, consumer choice, while important, cannot carry the full burden of aged care policy. Older people should have voice and control, but individual consumers cannot be expected to maximise outcomes across the whole system, identify the most effective preventive supports or minimise their own use of publicly funded care for the benefit of others. A purely consumer-led market is especially weak in aged care because information is imperfect, switching providers is difficult, care quality is hard to judge, and the benefits of good care extend beyond the individual to families, hospitals and the wider community.

The future of aged care should therefore move beyond narrow consumer control and cost containment. It requires guided services, public stewardship and intelligent prioritisation. Residential care should remain available when genuinely needed, but admission should not occur simply because earlier opportunities for prevention were missed. That is the promise of prevention, and the measure of justice in aged care.

As Laozi observed more than two millennia ago, 'Plan the difficult while it is easy' and as Tennyson reminded us centuries later, "Tis not too late to seek a newer world".³⁶

³⁶ Laozi. (1989). *The Tao Te Ching: A new translation with commentary* (E. M. Chen, Trans.). Paragon House.
Tennyson, A. (1842). *Ulysses*. In *Poems* (Vol. 2). Edward Moxon.

Ageing in place: Rethinking the path to residential care

The interventions discussed in this chapter are founded upon a diverse body of theoretical and empirical work drawn from disability studies, gerontology, psychology, public health, and rehabilitation science. Unlike traditional home care approaches that focus primarily on compensating for disability through ongoing support services, the approaches discussed are based on the premise that functional decline is not necessarily inevitable and that older people can often regain, maintain, or improve their capacity to perform everyday activities. This shift from a model of care based on dependency to one focused on capability and the potential for recovery reflects broader changes in thinking about ageing, disability, and long-term care.

One of the most important theoretical influences on this shift in the model of care is Fries' compression of morbidity hypothesis.³⁷ Fries argues that while life expectancy may continue to increase, the period of significant disability and dependency before death can be compressed through preventive health measures and interventions that maintain function. According to this perspective, ageing should not be viewed simply as a process of inevitable decline. Instead, many of the conditions associated with dependency can be delayed through appropriate interventions. The approaches discussed in this chapter reflect this philosophy by seeking to maximise functional ability and postpone the onset of disability, rather than merely responding to dependency once it has occurred. The basic assumption is that older people often retain substantial functional reserve capacity that can be mobilised through targeted support, rehabilitation, and environmental modifications.

The concept of functional reserve is central to understanding the rationale for this shift in the model of care. Research in gerontology has demonstrated that chronological age alone is a poor predictor of functional ability.³⁸ Many older people retain considerable physical, cognitive and psychological capacity despite chronic disease, because ageing involves not only loss but also adaptation, compensation and the selective use of remaining strengths.³⁹

A second major theoretical influence is the disablement model developed by Verbrugge and Jette.⁴⁰ This model distinguishes between pathology, impairment, functional limitation, and disability. Pathology refers to disease or injury; impairment refers to abnormalities in body systems; functional limitation refers to restrictions in performing basic actions; and disability refers to difficulty performing socially defined roles and activities. The disablement model emphasises that disability is not simply the direct consequence of disease. Instead, environmental factors, behavioural adaptations, social supports, and individual coping strategies influence whether impairment ultimately results in dependency. Functional decline can result not only from pathology but also from inactivity, loss of confidence, social isolation, environmental barriers, and inadequate opportunities to maintain skills.⁴¹ Successful models of care therefore need to address these broader determinants

³⁷ Fries JF. (1980). Aging, natural death, and the compression of morbidity. *New England Journal of Medicine*, 303(3):130-5.

³⁸ Rowe JW, & Kahn RL. (1987). Human aging: usual and successful. *Science*, 237(4811):143-9.

³⁹ Baltes PB, & Baltes MM. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In: Baltes PB, & Baltes MM. (Eds). (1990). *Successful Aging: Perspectives from the Behavioral Sciences*. European Network on Longitudinal Studies on Individual Development. Cambridge University Press.

⁴⁰ Verbrugge LM, & Jette AM. (1994). The disablement process. *Social Science & Medicine*, 38(1):1-14.

⁴¹ Bortz WM 2nd. (1982). Disuse and aging. *JAMA*, 248(10):1203-8.

Creditor MC. (1993). Hazards of hospitalization of the elderly. *Annals of Internal Medicine*, 118(3):219-23.

of function. Encouraging physical activity, promoting social participation, supporting nutrition, and enhancing confidence, are all important parts of preventing avoidable deterioration and restoring independence where possible.

This framework has important implications for aged care policy. Traditional care models often focus on the management of disease and impairment, whereas reablement seeks to intervene at the level of functional limitation and disability. For example, an older person with arthritis may experience pain and reduced mobility, but whether this results in dependency depends partly on environmental supports, exercise, assistive technologies, and behavioural adaptations. The approaches discussed in this chapter attempt to interrupt the progression from impairment to disability by enhancing functional capacity and modifying environmental barriers. In this sense, disability is viewed not as an inevitable outcome of illness but as a potentially modifiable condition.

Closely related to the disablement model are ecological theories of ageing, particularly the work of Lawton and Nahemow.⁴² The ecological model emphasises the interaction between an individual's competence and the demands imposed by the environment, often referred to as 'environmental press'. According to this theory, functional outcomes depend not only on personal capabilities but also on how well the environment supports those capabilities. Older people may function effectively in environments that accommodate their limitations but struggle in environments that impose excessive demands.

This perspective has profoundly influenced the design of aged care programs. Many interventions incorporate home modifications, assistive technologies, and environmental adaptations alongside therapeutic activities. Simple changes such as installing grab rails, removing trip hazards, improving lighting, or providing mobility aids can significantly improve independence. The ecological model suggests that functional decline is often the result of a mismatch between personal capacity and environmental demands rather than a consequence of disease alone. The models of care discussed in this chapter therefore seek to optimise both individual capability and environmental support.

Psychological theories have also contributed significantly to the development of these models of care. Bandura's theory of self-efficacy is another important conceptual foundation.⁴³ Self-efficacy refers to an individual's belief in their ability to perform specific tasks and achieve desired outcomes. Research has consistently shown that confidence plays a critical role in determining behaviour, motivation, and persistence. Among older people, loss of confidence frequently accompanies illness, injury, hospitalisation, or falls.

The consequences of reduced self-efficacy can be substantial. Older people who fear falling often restrict their activities, even when they remain physically capable of performing them.⁴⁴ This reduction in activity can lead to muscle weakness, reduced balance, social isolation, and further loss of function, creating a cycle of decline. The new models of care seek to break this cycle by enabling individuals to experience success through graded activities and goal achievement. By progressively rebuilding confidence and demonstrating capability, the new models can increase participation and

Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA, & Cardiovascular Health Study Collaborative Research Group. (2001). Frailty in older people: evidence for a phenotype. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences* 56(3):M146-56.

⁴² Lawton MP, & Nahemow L. (1973). Ecology and the aging process. In Eisdorfer, C & Lawton, MP. (Eds). (1973). *The psychology of adult development and aging*. American Psychological Association.

⁴³ Bandura A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.

⁴⁴ Tinetti ME, & Powell L. (1993). Fear of falling and low self-efficacy: a case of dependence in elderly persons. *Journal of Gerontology*, 48(Spec No.):35-8.

independence. The emphasis on personally meaningful goals is particularly important because successful achievement reinforces self-efficacy and motivates continued engagement in activities.

The theoretical foundations of the new models of care discussed in this chapter are also closely aligned with contemporary concepts of successful ageing, active ageing, and healthy ageing. Traditional models of ageing often focused on disease, frailty, and dependency. In contrast, contemporary gerontology increasingly emphasises participation, autonomy, capability, and quality of life. Successful ageing frameworks highlight the importance of maintaining physical and cognitive function, engaging in meaningful activities, and preserving social relationships. Similarly, the concept of active ageing developed by the World Health Organization (WHO) emphasises opportunities for participation, security, and health throughout later life.⁴⁵

The WHO's contemporary framework for healthy ageing has been particularly influential. Rather than defining health solely as the absence of disease, the WHO conceptualises healthy ageing as the process of developing and maintaining functional ability that enables wellbeing in older age. Functional ability encompasses an individual's capacity to meet basic needs, learn and grow, maintain relationships, contribute to society, and make decisions. This approach recognises that many older people live with chronic diseases yet continue to enjoy high levels of wellbeing and independence.

The new models of care discussed in this chapter align closely with this framework because their primary objective is the preservation and enhancement of functional ability. The interventions focus not on curing disease but on supporting older people to achieve goals that matter to them. This person-centred orientation represents a significant departure from traditional service models that often prioritise task completion over individual capability. By concentrating on what people can do rather than what they cannot do, the new models of care embody the principles of healthy ageing and capability-based approaches to welfare.

Another important theoretical influence comes from rehabilitation science. Rehabilitation has long emphasised the importance of goal setting, multidisciplinary intervention, task-specific training, and the restoration of function.⁴⁶ The new models of care adapt many of these principles to community and aged care settings. Unlike traditional rehabilitation, which is often delivered following acute illness or injury, aged care generally directed toward older people experiencing gradual functional decline. Nevertheless, both approaches should share a focus on maximising independence and reducing the consequences of impairment.

The integration of these theoretical perspectives creates a coherent rationale for the strategy for supporting ageing in place. Compression of morbidity theory suggests disability can be delayed. Disablement theory demonstrates disability is shaped by factors beyond pathology. Ecological models highlight the importance of environmental supports. Self-efficacy theory explains how confidence influences functional outcomes. Healthy ageing frameworks emphasise capability and participation rather than disease alone. Rehabilitation science demonstrates that function can be maintained or restored through goal-directed, multidisciplinary and task-specific intervention. Together, these perspectives challenge traditional assumptions that dependency is an inevitable consequence of ageing.

⁴⁵ World Health Organisation (WHO). (2015). [World Report on Ageing and Health](#). WHO.

⁴⁶ Wade DT, & de Jong BA. (2000). Recent advances in rehabilitation. *BMJ*, 320(7246):1385-8.

Intervention 1: Assessment and care co-ordination

One of the strongest evidence-based interventions for delaying admission to residential care is the provision of comprehensive geriatric assessment and case management to older people at risk of admission to residential care. This approach involves medical, psychological, functional, and social assessment and case management by interdisciplinary teams. The fundamental premise of this approach is that older people experiencing frailty, multi-morbidity, cognitive impairment and functional decline cannot be adequately assessed through conventional disease-specific medical models. Older people frequently present with multiple interacting conditions that collectively influence independence, quality of life and long-term care needs. A traditional medical consultation may focus on individual diseases such as heart failure, diabetes or arthritis, whereas the comprehensive geriatric assessment approach seeks to understand the broader determinants of functional capacity.

The importance of this type of intervention becomes clear when considering pathways into residential care. Admission is rarely triggered by a single disease. Instead, institutionalisation usually results from the cumulative effects of declining mobility, cognitive impairment, falls, medication-related problems, caregiver stress, social isolation and environmental barriers. The comprehensive geriatric assessment and case management approach was specifically developed to identify and address these interacting factors before they precipitate residential care admission.

USA: An early trial of annual in-home comprehensive geriatric assessment

A 3-year, randomised, controlled trial of the effect of annual in-home comprehensive geriatric assessments and follow-up for people living in the community was conducted in Santa Monica, California from December 1988 to June 1990.⁴⁷ All participants in both the control and the intervention groups were aged 75 or older. During the trial, participants in the intervention group received annual in-home comprehensive geriatric assessments from gerontologic nurse practitioners. The assessment covered medical history, physical examination, basic screening tests, functional status, oral health, depression, cognition, gait and balance, medication use, weight, vision, hearing, social network, social support, home safety and external access. After assessment, the nurse practitioners discussed each case with geriatricians, developed ranked recommendations, and made follow-up home visits every three months to monitor implementation and facilitate compliance.

Participants received an average of 5.9 self-care recommendations per year, including advice on exercise, sleep, urinary incontinence, nutrition, medication adherence, aids and devices, and home safety. They also received recommendations to discuss new problems or suboptimal treatment with their physicians and recommendations involving community services. Adherence was incomplete but meaningful: participants fully adhered to 47% of recommendations, partly adhered to 14%, and did not adhere to 39%.

The primary outcomes measured by the study were functional status and nursing-home admission. Functional outcomes were measured before randomisation and annually for 3 years. The central functional result was that the intervention reduced dependence in basic activities of daily living at 3 years. Among survivors, 12% of the intervention group were dependent in basic activities of daily living, compared with 22% of the control group. The adjusted odds ratio was 0.4 (95% CI: 0.2 to 0.8, $p = 0.02$). That is, the intervention was associated with substantially lower odds of needing help with basic self-care tasks such as bathing, dressing, feeding, grooming, transferring and mobility.

⁴⁷ Stuck AE, Aronow HU, Steiner A, Alessi CA, Büla CJ, Gold MN, Yuhas KE, Nisenbaum R, Rubenstein LZ, & Beck JC. (1995). A trial of annual in-home comprehensive geriatric assessments for elderly people living in the community. *New England Journal of Medicine*, 333(18):1184-9.

Over 3 years, 4% of the intervention group were permanently admitted to a residential care, compared with 10% of the control group. The adjusted odds ratio was 0.4 (95% CI: 0.2 to 0.9, $p = 0.02$). That is, the intervention group had less than half the odds of permanent nursing-home admission over the three-year follow-up.

The intervention did not significantly reduce the number of people dependent only in instrumental activities of daily living but not basic activities of daily living. Hospital and short-term nursing-home outcomes were not significantly different. Mortality also did not differ significantly.

The intervention did increase contact with medical practitioners. In year 2, intervention participants had 1.41 visits with medical practitioners per month compared with 1.11 among controls; adjusted relative risk 1.2 (95% CI: 1.1 to 1.4, $p = 0.007$). In year 3, the corresponding figures were 1.27 and 0.92 visits per month; adjusted relative risk 1.4 (95% CI: 1.1 to 1.6, $p = 0.001$). This suggests that the intervention worked partly by identifying unmet or undertreated problems and linking people more actively to ordinary medical care.

The trial estimated annual program costs at US\$480 per person (in year 2000 prices), additional physician-visit costs at US\$180 per person, and nursing-home savings at US\$420 per person, giving a net annual cost of US\$240 per person. The trial estimated 0.041 disability-free years gained per person per year, and 6.92 permanent nursing-home days avoided per person per year. This produced an estimated cost of about US\$6,000 per disability-free year gained and US\$35 per permanent nursing-home day avoided.

Canada: Integrated care model

Another early example of the comprehensive geriatric assessment and case management approach is the Canadian Program of Research to Integrate the Services for the Maintenance of Autonomy (PRISMA) integrated care model.⁴⁸ The PRISMA model is a system-level integrated service delivery model developed in Quebec to better coordinate health, social, and community services for frail, older people with the aim of preventing functional decline and delaying or preventing institutionalisation. The key features of PRISMA were a single entry-point, a single functional assessment tool, case management, service coordination, an individualized service plan, and a shared information system. A unique feature of the PRISMA approach was its coordination and case management feature, which called for the participating agencies to share responsibility for clients but did not require merger of any providers.

The evaluation of the PRISMA model followed subjects and their principal caregivers in the three experimental areas in Estrie and in three comparison areas elsewhere in Quebec for 4 years.⁴⁹

⁴⁸ Hébert R, Dubois MF, Raïche M, Dubuc N, & PRISMA-Estrie Group. (2008). The effectiveness of the PRISMA integrated service delivery network: preliminary report on methods and baseline data. *International Journal of Integrated Care*, 8:e03.

Hébert R, Durand PJ, Dubuc N, Tourigny A, & PRISMA Group. (2003). PRISMA: a new model of integrated service delivery for the frail older people in Canada. *International Journal of Integrated Care*, 3:e08.

MacAdam M. (2015). PRISMA: Program of Research to Integrate the Services for the Maintenance of Autonomy. A system-level integration model in Quebec. *International Journal of Integrated Care*, 15(6):e018.

⁴⁹ Hébert R, Raïche M, Dubois MF, Gueye NR, Dubuc N, & Tousignant M. (2010). Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in Quebec (Canada): A quasi-experimental study. *Journals of Gerontology, Series B, Psychological Sciences and Social Sciences*, 65B(1):107-18.

Raïche M, Hébert R, Blanchette D, Durand S, Dubois M-F, Gueye NR, & PRISMA-Estrie Group. (2008). RISPA overall performance: impacts on the use of health services, their costs and efficiency under the PRISMA-

Subjects were predominantly women (62%) with an average age of 83. After 4 years, those participants who had received care under the PRISMA model showed significantly reduced prevalence and incidence of functional decline, lower unmet needs, reduced emergency room visits and reduced hospitalisations. There was also a significant increase in client satisfaction and empowerment. However, there was no observed impact on rates of institutionalisation, consultations with health professionals or on the use of home care services. There was also no statistically significant change in costs. That is, the study indicated that PRISMA did not save costs but was cost effective because it produced improved results at no additional cost.

United States: Guided Care model

Another early example of the comprehensive geriatric assessment and case management approach is the Guided Care model that was developed in response to the growing number of older people living with multiple chronic conditions and complex care needs.⁵⁰ The motivation for the model's development was that the fragmentation of health care in the USA – with poor coordination between hospitals, primary care, specialists, and long-term care providers – was leading to avoidable hospitalisations, duplicated services, medication errors, and high costs.⁵¹ Guided Care sought to address these inefficiencies by embedding specially trained nurses within primary care practices to coordinate comprehensive care for high-risk older people.

Guided Care focuses on older people with multimorbidity, generally those with several chronic diseases such as diabetes, heart failure, chronic obstructive pulmonary disease, arthritis, or dementia. A registered nurse works closely with physicians and multidisciplinary teams to conduct comprehensive assessments, develop evidence-based care plans, monitor patients, coordinate transitions between settings, support family caregivers, and encourage self-management. The model reflects broader trends in integrated and person-centred care. Rather than treating diseases separately, Guided Care attempts to manage the whole person, including medical, functional, and social needs. The nurse serves as a central coordinator who ensures continuity of care across providers and settings. This approach is particularly important for older people because they frequently experience fragmented care pathways and are vulnerable to preventable decline during transitions between hospital, home, and residential care.

Evidence from early trials suggested that Guided Care improved the quality and coordination of care. In a cluster-randomised controlled trial involving multimorbid older people, participants receiving

Estrie study. Chapter 13 in: Hébert R, Tourigny A, & Raïche M. (Eds). (2008). *Integration of services for disabled people: research leading to action*. Volume II. Edisem.

Tourigny A, Durand P, Bonin L, Hébert R, & Rochette L. (2004). Quasi-experimental study of the effectiveness of an integrated service delivery network for the frail elderly. *Canadian Journal on Aging*, 23(3):231-246.

⁵⁰ Boulton C, Reider L, Frey K, Leff B, Boyd CM, Wolff JL, Wegener S, Marsteller J, Karm L, & Scharfstein D. (2008). Early effects of 'Guided Care' on the quality of health care for multimorbid older persons: a cluster-randomized controlled trial. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 63(3):321-7.

Boulton C, Reider L, Leff B, Frick KD, Boyd CM, Wolff JL, Frey K, Karm L, Wegener S, Mroz T, & Scharfstein D. (2011). The effect of Guided Care teams on the use of health services: Results from a cluster-randomized controlled trial. *Archives of Internal Medicine*, 171(5):460-6.

⁵¹ Bodenheimer T. (2008). Coordinating care – a perilous journey through the health care system. *New England Journal of Medicine*, 358(10):1064-71.

Kern LM, Bynum JPW, & Pincus HA. (2024). Care Fragmentation, Care Continuity, and Care Coordination-How They Differ and Why It Matters. *JAMA Internal Medicine*, 184(3):236-7.

Guided Care reported better quality of chronic illness care compared with those receiving usual care. Improvements were observed in communication, care planning, monitoring, and patient engagement. The model also appeared to improve patient and caregiver satisfaction because older people had more consistent contact with health professionals and clearer pathways through the health system.⁵²

Economic evaluations of Guided Care have produced mixed, but generally promising, findings. Some studies found reductions in home health episodes, skilled nursing facility (residential care) admissions, and hospital use among high-risk patients. Savings were particularly evident among patients enrolled in integrated delivery systems such as those managed by Kaiser Permanente.⁵³

The headline results for the first year of the Guided Care trial in Baltimore, Maryland, and Washington, DC, showed, after adjustment for baseline characteristics, that people who received Guided Care experienced, on average:

- 24% fewer hospital days (95% CI: 49% fewer, 13% more)
- 37% fewer skilled nursing facility days (95% CI: 65% fewer, 5% more)
- 15% fewer emergency department visits (95% CI: 38% fewer, 18% more)
- 29% fewer home health care episodes (95% CI: 53% fewer, 8% more)
- 9% more specialist visits (95% CI: 8% fewer, 29% more).

Based on the Medicare payment rates and Guided Care costs, these differences represent an annual net savings of US\$75,000 (95% CI: -US\$244,000, US\$150,900) per nurse, or US\$1,364 per patient (in 2009 US dollars). Note, however, these results were not statistically significant at the 95% level.⁵⁴

The 2-year study found a statistically significant reduction in episodes of home health care (odds ratio, 0.70; 95% CI: 0.53 to 0.93). Guided care also reduced residential care admissions (odds ratio, 0.53; 95% CI: 0.31 to 0.89) and days (odds ratio, 0.48; 95% CI: 0.28 to 0.84) among Kaiser-Permanente patients.⁵⁵

⁵² Wolff JL, Giovannetti ER, Boyd CM, Reider L, Palmer S, Scharfstein D, Marsteller J, Wegener S, Frey K, Leff B, Frick KD, & Boulton C. (2010). Effects of Guided Care on family caregivers. *The Gerontologist*, 50(4):459-70.

Boyd CM, Shadmi E, Conwell LJ, Griswold M, Leff B, Brager R, Sylvia M, & Boulton C. (2010). A pilot test of the effect of Guided Care on patient outcomes. *Journal of General Internal Medicine*, 25(7):697-704.

⁵³ Boulton C, Karm L, & Groves C. (2008). Improving chronic care: The Guided Care model. *The Permanente Journal*, 12(1):50-4.

Boyd CM, Boulton C, Shadmi E, Leff B, Brager R, Dunbar L, Wolff JL, & Wegener S. (2007). Guided care for multimorbid older people. *The Gerontologist*, 47(5):697-704.

Boyd CM, Reider L, Frey K, Scharfstein D, Leff B, Wolff JL, Groves C, Karm L, Wegener S, Marsteller J, & Boulton C. (2010). The effects of Guided Care on the perceived quality of health care for multi-morbid older persons: 18-month outcomes from a cluster-randomized controlled trial. *Journal of General Internal Medicine*, 25(3):235-42.

⁵⁴ Leff B, Reider L, Frick KD, Scharfstein DO, Boyd CM, Frey K, Karm L, & Boulton C. (2009). Guided care and the cost of complex health care: a preliminary report. *American Journal of Managed Care*, 15(8):555-9.

⁵⁵ Boulton C, Reider L, Leff B, Frick KD, Boyd CM, Wolff JL, Frey K, Karm L, Wegener S, Mroz T, & Scharfstein D. (2011). The effect of Guided Care teams on the use of health services: Results from a cluster-randomized controlled trial. *Archives of Internal Medicine*, 171(5):460-6.

United States: Program of All-inclusive Care for the Elderly (PACE)

One of the most influential comprehensive geriatric assessment and case management models is PACE, which shares many features with Guided Care but operates on a larger and more comprehensive scale. PACE provides integrated medical and long-term care services for frail older people who meet nursing-home eligibility criteria but are able to remain living in the community. Services include primary care, specialist care, rehabilitation, adult day services, transportation, home care, meals, and social support through interdisciplinary teams.⁵⁶

PACE has been described as the ‘gold standard’ of community-based integrated care in the USA.⁵⁷ According to recent reviews, more than 90% of PACE participants remain living in the community despite having care needs comparable to nursing-home residents. Participants typically have an average of 8 medical conditions and limitations in several activities of daily living, while around half live with dementia. Evidence suggests that PACE improves effectiveness through reductions in hospitalisations, including potentially avoidable hospitalisations, readmissions, and nursing-home placement. Participants have demonstrated better mental and physical health outcomes and higher quality of life compared with comparable populations receiving fragmented care, enabling them to reside in the community for an additional 4 years on average. Caregivers also report reduced stress and burden because services are coordinated through a single organisation.⁵⁸

⁵⁶ Williams CT, Morales VA, Schoo C, & Chandrasekaran S. (2025). [Program All Inclusive Care of the Elderly \(PACE\)](#). In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan–.

⁵⁷ McNabney MK, Fitzgerald P, Pedulla J, Phifer M, Nash M, & Kinoshian B. (2022). The Program of All-Inclusive Care for the Elderly: An Update after 25 Years of Permanent Provider Status. *Journal of the American Medical Directors Association*, 23(12):1893-9.

⁵⁸ Aggarwal N, Sloane PD, Zimmerman S, Ward K, & Horsford C. (2022). Impact of COVID-19 on Structure and Function of Program of All-Inclusive Care for the Elderly (PACE) Sites in North Carolina. *Journal of the American Medical Directors Association*, 23(7):1109-13.e8.

Arku D, Felix M, Warholak T, & Axon DR. (2022). Program of All-Inclusive Care for the Elderly (PACE) versus Other Programs: A Scoping Review of Health Outcomes. *Geriatrics (Basel)*, 7(2):31.

Fleet A, Simoun A, Shalev D, Spaeth-Rublee B, Patterson T, Wardlow L, Roth T, & Pincus HA. (2025). A Framework for Behavioral Health Integration in the Program of All-Inclusive Care for the Elderly (PACE). *Journal of the American Geriatrics Society*, 73(5):1566-75.

Friedman SM, Steinwachs DM, Rathouz PJ, Burton LC, & Mukamel DB. (2005). Characteristics predicting nursing home admission in the program of all-inclusive care for elderly people. *Gerontologist*, 45(2):157-66.

Gustavson AM, Falvey JR, LeDoux CV, & Stevens-Lapsley JE. (2022). Stakeholder and Data-Driven Fall Screen in a Program of All-Inclusive Care for the Elderly: Quality Improvement Initiative. *Journal of Geriatric Physical Therapy*, 45(3):154-159.

Gyurmey T, & Kwiatkowski J. (2019). Program of All-Inclusive Care for the Elderly (PACE): Integrating Health and Social Care Since 1973. *Rhode Island Medical Journal* (2013), 102(5):30-32.

Meunier MJ, Brant JM, Audet S, Dickerson D, Gransbery K, & Ciemins EL. (2016). Life after PACE (Program of All-Inclusive Care for the Elderly): A retrospective/prospective, qualitative analysis of the impact of closing a nurse practitioner centered PACE site. *Journal of the American Association of Nurse Practitioners*, 28(11):596-603.

Nadash P. (2004). Two models of managed long-term care: comparing PACE with a Medicaid-only plan. *Gerontologist*, 44(5):644-54.

From an efficiency perspective, PACE substitutes relatively expensive institutional and hospital care with coordinated community-based services. Studies indicate that PACE participants experience fewer potentially avoidable hospitalisations and shorter hospital stays. Delaying institutionalisation generates substantial savings because nursing-home care in the USA is extremely expensive. Although PACE involves high upfront costs due to multidisciplinary staffing and extensive service provision, these expenditures may be offset by reduced acute and residential care costs over time.⁵⁹

The evidence on cost-effectiveness is therefore cautiously positive. Several evaluations conclude that integrated geriatric care models can be cost-effective – particularly for very high-risk populations with complex needs. Cost-effectiveness depends heavily on targeting. Programs are most economically efficient when directed toward older people at greatest risk of hospitalisation or institutionalisation because they generate the largest avoidable costs under conventional care. Lower-risk populations may not produce sufficient savings to offset the costs of intensive care coordination.

Another important dimension of effectiveness is caregiver support. Older people in America rely heavily on unpaid family caregivers, whose contributions are often excluded from traditional economic evaluations. The Guided Care and PACE models recognise caregivers as integral components of care systems. Nurses and interdisciplinary teams provide education, counselling, and coordination support that may reduce caregiver stress and improve their ability to support older people at home. This has significant economic implications because unpaid caregiving substitutes for formal services and delays residential care entry.

Despite positive findings, the evidence is not universally favourable. Some studies report only modest cost savings or no statistically significant reductions in total expenditure. Coordinated care programs can also be difficult to implement because they require organisational integration, information sharing, workforce training, and alignment of financial incentives. In fragmented fee-for-

Oishi MM, Momany ET, Collins RJ, Cacchione PZ, Gluch JJ, Cowen HJ, Damiano PC, & Marchini L. (2021). Dental Care in Programs of All-Inclusive Care for the Elderly: Organizational Structures and Protocols. *Journal of the American Medical Directors Association*, 22(6):1194-8.

Segelman M, Szydlowski J, Kinoshian B, McNabney M, Raziano DB, Eng C, van Reenen C, & Temkin-Greener H. (2014). Hospitalizations in the Program of All-Inclusive Care for the Elderly. *Journal of the American Geriatrics Society*, 62(2):320-4.

⁵⁹ Chatterji P, Burstein NR, Kidder D, & White AJ. (1998). Evaluation of the Program of All-Inclusive Care for the Elderly (PACE) demonstration: The impact of PACE on participant outcomes. Prepared for the Health Care Financing Authority, HCFA Contract #500-96-0003/TO4. Abt Associates Inc.

Hirth V, Baskins J, & Dever-Bumba M. (2009). Program of all-inclusive care (PACE): past, present, and future. *Journal of the American Medical Directors Association*, 10(3):155-60.

Mukamel DB, Temkin-Greener H, Delavan R, Peterson DR, Gross D, Kunitz S, & Williams TF. (2006). Team performance and risk-adjusted health outcomes in the Program of All-Inclusive Care for the Elderly (PACE). *Gerontologist*, 46(2):227-37.

Wieland D, Boland R, Baskins J, & Kinoshian B. (2010). Five-year survival in a Program of All-inclusive Care for Elderly compared with alternative institutional and home- and community-based care. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 65(7):721-6.

Wieland D, Kinoshian B, Stallard E, & Boland R. (2013). Does Medicaid pay more to a program of all-inclusive care for the elderly (PACE) than for fee-for-service long-term care? *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 68(1):47-55.

Wieland D, Lamb VL, Sutton SR, Boland R, Clark M, Friedman S, Brummel-Smith K, & Eleazer GP. (2000). Hospitalization in the Program of All-Inclusive Care for the Elderly (PACE): rates, concomitants, and predictors. *Journal of the American Geriatrics Society*, 48(11):1373-80.

service systems, providers may have little incentive to invest in prevention if savings accrue elsewhere in the health system. Consequently, successful implementation often occurs within integrated organisations such as managed care systems. There are also concerns about scalability and equity. The implementation of PACE remains geographically limited and not available in all areas. Enrolment may require participants to change physicians or providers, which some older people resist. Furthermore, because programs target highly vulnerable populations, maintaining quality can be resource intensive.

The broader significance of Guided Care and PACE lie in their contribution to debates about health system reform and ageing populations. As longevity increases, many countries face rising prevalence of multimorbidity, dementia, and frailty. Traditional acute-care-oriented systems are poorly suited to these challenges. Guided Care and PACE demonstrate how integrated, multidisciplinary, person-centred approaches may improve outcomes while potentially containing costs. The key mechanism is substitution: investing in coordinated preventive and community care to avoid expensive hospital and institutional services later. Overall, the experience with Guided Care and PACE suggests that integrated care models for older people can improve effectiveness by enhancing continuity, reducing hospitalisation, delaying institutionalisation, and improving quality of life. Evidence on efficiency is more nuanced but generally indicates that these models may be cost-effective for high-risk populations, especially when savings from avoided acute and residential care are considered.

Sweden: Ambulatory geriatric assessment - A Frailty Intervention Trial (Age-FIT)

AGe-FIT was conducted in Norrköping, Sweden, between 2011 and 2013. Participants were community-dwelling adults aged 75 years and over who had multiple chronic conditions and high health care use. To be eligible, individuals were required to have at least 3 concurrent diagnoses and at least 3 hospital admissions during the preceding 12 months. This was therefore a population at particularly high risk of functional decline, recurrent hospitalisation, and eventual admission to residential care. A total of 382 participants were randomised either to receive usual care or to receive care from an Ambulatory Geriatric Unit in addition to usual services.⁶⁰

Participants received a multidimensional assessment conducted by an interdisciplinary team that included geriatricians, nurses, physiotherapists, occupational therapists, and social workers. The team evaluated medical conditions, medication use, physical functioning, cognitive status, psychological wellbeing, social circumstances, and environmental factors. The assessment was then used to develop an individualised care plan aimed at maintaining function and preventing health deterioration. Regular follow-up and coordination of services were also integral components of the AGe-FIT model.

The trial demonstrated that the AGe-FIT model of care generated significant health benefits. Compared with usual care, the intervention produced an average gain of 0.54 QALYs per participant over the modelled lifetime horizon. This is a substantial improvement in health-related quality of life and survival for a population with significant multimorbidity and frailty. The analysis suggested that much of this gain arose because participants receiving comprehensive geriatric assessment lived longer and maintained better health status during those additional years of life.

The intervention was associated with higher overall costs than usual care. Average lifetime costs increased by approximately €25,000 (in 2013 prices), per participant. The additional expenditure included the direct costs of providing multidisciplinary geriatric services and the health care costs associated with longer survival. The incremental cost-effectiveness ratio (ICER) was €46,000 per

⁶⁰ Ekdahl AW, Wirehn AB, Alwin J, Jaarsma T, Unosson M, Husberg M, Eckerblad J, Milberg A, Krevers B, & Carlsson P. (2015). Costs and Effects of an Ambulatory Geriatric Unit (the AGe-FIT Study): A Randomized Controlled Trial. *Journal of the American Medical Directors Association*, 16(6):497-503.

QALY gained. That is, each additional QALY generated by the intervention cost around €46,000 compared with usual care.⁶¹

To put this cost in context, the Dental and Pharmaceutical Benefits Agency in Sweden, which decides on reimbursement for prescription pharmaceuticals, is known to use the following thresholds: ~ €22 500 if the severity of condition being treated is low, ~ €45 000 if the severity is moderate, ~ €67 500 if the severity is high, ~ €90 000 if the severity is very high, and ~ €180 000 if the severity is very high and the condition is rare.⁶²

One of the most important contributions of the AGe-FIT study was its demonstration that the economic value of comprehensive geriatric assessment should not be assessed solely in terms of short-term cost savings. Earlier evaluations of geriatric interventions often focused on reductions in hospital admissions or health care expenditure. The AGe-FIT analysis showed that an intervention can be economically attractive even when costs increase, provided that meaningful improvements in survival and quality of life are achieved.

The findings also have important implications for long-term care policy. Participants in the study were at high risk of functional decline and institutionalisation. By improving health outcomes and supporting better management of chronic conditions, comprehensive geriatric assessment has the potential to delay dependency and postpone the need for residential care. Given the high costs associated with residential care, even modest delays in admission can generate substantial economic benefits for the funders of long-term care.

The AGe-FIT trial is also notable because it evaluated an ambulatory model of geriatric care. Much of the earlier comprehensive geriatric assessment literature focused on inpatient geriatric units or hospital-based consultation services. The Swedish study demonstrated that multidisciplinary assessment and management can be delivered effectively in an outpatient setting. This finding is particularly relevant for countries seeking to strengthen community-based care and reduce reliance on hospitals and institutional care. The intervention required a relatively modest reorganisation of existing services rather than a completely new model of care, suggesting that implementation may be feasible within existing health systems.

Australia: Veterans' Community Nursing program

A recent Australian study compared two nationally implemented community-based aged-care models: the Department of Veterans' Affairs (DVA) Community Nursing program and the mainstream Home Care Package program.⁶³ These programs differ significantly in their design. Home Care Packages are consumer-directed (the consumer decides what services to purchase with their funds), involves co-payments, and does not necessarily begin with an initial comprehensive nursing assessment for care planning. The DVA Community Nursing program differs in amount of support provided (generally less) and in the model of care. Comprehensive nursing assessment, regular care planning, clinical oversight, and a skilled nursing workforce are all design features of the DVA Community Nursing program. The study used a national, population-based retrospective cohort design, drawing on de-identified DVA claims data from 2010–2019 and the Registry of Senior

⁶¹ Lundqvist M, Alwin J, Henriksson M, Husberg M, Carlsson P, & Ekdahl AW. (2018). Cost-effectiveness of comprehensive geriatric assessment at an ambulatory geriatric unit based on the AGe-FIT trial. *BMC Geriatrics*, 18(1):32.

⁶² Klockhoff APH, Siverskog J, & Henriksson M. (2026). Pharmaceutical Pricing Evidence from a Healthcare System with Multiple Cost-per-Quality-Adjusted Life-Year Thresholds. *Value in Health*, 29(1):92-99.

⁶³ Jeon YH, Simpson JM, Comans T, Shin M, Fethney J, McKenzie H, Crawford T, Lang C, & Inacio M. (2023). Investigating community-based care service factors delaying residential care home admission of community dwelling older people and cost consequence. *Age and Ageing*, 52(10):afad195.

Australians historical cohort data from 2010–2017. The study included 21,636 DVA Community Nursing clients, of whom 20,980 were aged 65–100 years and were then compared with an age- and sex-matched sample of 20,980 Home Care Package clients.

The headline result was that people in the DVA Community Nursing program appeared to remain at home substantially longer than matched Home Care Package clients. Among those who entered residential care, the median time to care home entry was 28 months for DVA Community Nursing clients, compared with 14 months for Home Care Package clients. The interquartile ranges were 14 to 42 months for DVA Community Nursing clients and 6 to 27 months for Home Care Package clients. In dementia subgroups, median time to entry was 26 months for DVA Community Nursing clients with dementia compared with 12 months for Home Care Package clients with dementia; among those without dementia, the corresponding medians were 28 months and 15 months.

At 5 years after first service access, the probability that a Home Care Package client or a DVA Community Nursing client had been admitted to residential care was:

- 57.6% for Home Care Package clients (95% CI: 56.9% to 58.4%), compared with
- 26.6% for DVA Community Nursing clients (95% CI: 26.0% to 28.2%).

The difference was already apparent in the first year: the probability of residential care admission after one year was:

- 24.6% for Home Care Package clients (95% CI: 24.0% to 25.2%), compared with
- 5.2% for DVA Community Nursing clients (95% CI: 4.9% to 5.5%).

The cumulative incidence after two years was 39.7% for Home Care Package clients (95% CI: 39.0% to 40.4%), and 10.9% for DVA Community Nursing clients (95% CI: 10.5% to 11.3%). After three years, it was 48.4% versus 16.8%. After four years it was 53.9% versus 22.2%, and after five years it was 57.6% versus 26.6%.

Dementia substantially increased the probability of residential care admission in both programs, but DVA Community Nursing clients with dementia still had lower admission than Home Care Package clients with dementia. At five years, 76.0% of Home Care Package clients with dementia had entered residential care (95% CI: 74.1% to 77.9%), compared with 50.3% of DVA Community Nursing clients with dementia (95% CI: 48.7% to 52.0%).

Among clients without dementia, 5-year residential care admission was 55.5% for Home Care Package clients (95% CI: 54.8% to 56.3%), compared with 21.0% for DVA Community Nursing clients (95% CI: 20.3% to 21.6%). The paper also reports from the cumulative incidence curves that median time to care home admission was about 39 months for the Home Care Package cohort but over 60 months for the DVA Community Nursing cohort; among people with dementia, it was about 18 months for the Home Care Package cohort and 57 months for the DVA Community Nursing cohort.

The study also examined which features of the DVA Community Nursing model were associated with lower risk of residential care admission.

- Periodic rather than continuous service delivery was strongly associated with lower admission risk: Hazard Ratio 0.27 (95% CI: 0.24 to 0.31), in the first 18 months, and Hazard Ratio 0.89 (95% CI: 0.84 to 0.95), after 18 months.
- Majority care delivered by registered nurses, compared with personal care workers, was also associated with lower admission risk: Hazard Ratio 0.86 (95% CI: 0.75 to 0.99), in the first 18 months, and Hazard Ratio 0.91 (95% CI: 0.85 to 0.98), after 18 months.
- Combined clinical and personal care was protective in the first 18 months: Hazard Ratio 0.78 (95% CI: 0.68 to 0.88), compared with personal care only.

The cost results favoured DVA Community Nursing. Over five years, total estimated costs for the Home Care Package cohort were AU\$2.526 billion, or AU\$2.210 billion discounted, compared with AU\$1.271 billion, or AU\$1.100 billion discounted, for the DVA Community Nursing cohort. The estimated saving was AU\$1.255 billion undiscounted, or AU\$1.110 billion discounted, equivalent to AU\$59,821 per person undiscounted or AU\$52,885 per person discounted.

Table 1: Cost Effectiveness of the DVA Community Nursing Program

Year	Number alive at home at year end	Cost Home Care	Number alive in residential care at year end	Cost Residential Care	Total Cost	Discounted Total Cost (5% pa)
Home Care Package cohort						
0	20,980					
1	13,430	\$414m	5,146		\$414m	\$394m
2	9,049	\$265m	4,883	\$479m	\$744m	\$675m
3	6,394	\$178m	3,430	\$455m	\$633m	\$547m
4	5,020	\$126m	2,055	\$319m	\$445m	\$366m
5	4,303	\$99m	1,143	\$191m	\$290m	\$277m
TOTAL		\$1,081m		\$1,445m	\$2,526m	\$2,210m
DVA Community Nursing cohort						
0	20,980					
1	16,054	\$216m	1,204		\$216m	\$206m
2	12,999	\$165m	1,593	\$112m	\$277m	\$252m
3	10,385	\$134m	1,723	\$148m	\$282m	\$244m
4	8,646	\$107m	1,500	\$160m	\$267m	\$220m
5	7,667	\$89m	1,057	\$140m	\$229m	\$179m
TOTAL		\$711m		\$561m	\$1,271m	\$1,100m
Cost savings						
TOTAL		\$371M		\$884m	\$1,255m	\$1,110m+

The savings came from both a reduction in the rate of admission to more costly residential care and from the lower cost of the DVA Community Nursing program, even including the additional costs of the nursing assessment, regular care planning, and clinical oversight by a skilled nursing workforce that are all design features of that program.

Systemic reviews

A 2019 systematic review by Luker and colleagues of comprehensive geriatric assessment and case management programs in Australia, Canada, Denmark, Finland, France, Japan, Netherlands, New Zealand, Switzerland, the United Kingdom, and the USA found that multifactorial interventions incorporating assessment, care planning, regular review, case management, and coordination improved the likelihood of older people remaining at home (2% reduction in the likelihood of admission to residential care – 95% CI: 3% to 0%) and reduced functional decline over the 2 or 3 years after the intervention. Common successful elements included individualised care plans, close follow-up, and integration between health and social services.⁶⁴

⁶⁴ Luker JA, Worley A, Stanley M, Uy J, Watt AM, & Hillier SL. (2019). The evidence for services to avoid or delay residential care admission: a systematic review. *BMC Geriatrics*, 19(1):217.

A recent systematic review of 36 studies by Pilotto and colleagues found that, of the 17 studies that used a cost-analysis approach, 13 reported lower costs when comprehensive geriatric assessment was introduced. It also found that, of the 12 studies that used a cost-effectiveness approach and used QALYs as the outcome, 9 showed that introducing comprehensive geriatric assessment was cost effective, with 7 demonstrating dominance (i.e. the intervention was both more effective than the alternative and less costly than the alternative). It also found that, of the 7 studies that used a cost-effectiveness approach and used other outcomes, 5 showed the introduction of comprehensive geriatric assessment was cost effective and dominant. In the other 2 cases, higher costs and higher outcomes were achieved.⁶⁵

A 2022 systematic review by Klaehn and colleagues found that the overall evidence was favourable toward case management.⁶⁶ Of the 29 studies examined in the review, 6 found case management was the dominant intervention, meaning it produced better outcomes at lower cost than usual care. Three studies found the opposite result, with case management being both more costly and less effective. Two studies found lower costs but also poorer outcomes. The largest group of studies (17 of 29) found case management improved outcomes but increased costs. In these cases, the question is whether the additional benefits justified the additional expenditure through conventional cost-effectiveness thresholds. The review concluded that the balance of evidence supports case management as a generally cost-effective intervention. While results were not universally positive, most studies found either cost savings or improved outcomes at acceptable additional cost.

Lessons learned

The economic rationale for comprehensive geriatric assessment and case management programs lies in preventing avoidable deterioration. Early identification of frailty, falls risk, medication problems, malnutrition, depression, or caregiver strain, allows interventions before crises occur. Hospital admissions, functional decline, and institutionalisation may therefore be reduced. Case management is especially valuable for individuals with complex needs who navigate multiple fragmented services. Care coordinators can improve continuity, facilitate access to supports, and reduce service duplication. Evidence suggests that intensive case management is most effective for high-risk populations, rather than universally applied programs.

However, implementation challenges remain. Effective case management requires skilled multidisciplinary teams, adequate staffing, and interoperability across health and social care sectors. Poorly coordinated programs may increase administrative costs without improving outcomes.

Despite these limitations, comprehensive assessment and integrated care remain among the most promising policy options, as they address the multidimensional nature of institutionalisation risk.

Kono A, Kanaya Y, Fujita T, Tsumura C, Kondo T, Kushiyaama K, & Rubenstein LZ. (2012). Effects of a preventive home visit program in ambulatory frail older people: a randomized controlled trial. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 67(3):302-9.

Vass M, Avlund K, Lauridsen J, & Hendriksen C. (2005). Feasible model for prevention of functional decline in older people: municipality-randomized, controlled trial. *Journal of the American Geriatrics Society*, 53:563-8.

⁶⁵ Pilotto A, Ragusa FS, Veronese N, Custodero C, Titone PR, Vassallo G, Seminerio E, Morganti W, Botrugno A, Margilio B, Barbagallo M, Custureri R, & Hiligsmann M. (2026). Cost effectiveness of comprehensive geriatric assessment: a systematic review. *Health Economics Review*, 16(1):83.

⁶⁶ Klaehn AK, Jaschke J, Freigang F, & Arnold M. (2022). Cost-effectiveness of case management: a systematic review. *American Journal of Managed Care*, 28(7):e271-9.

Intervention 2: Preventing functional decline: Preventive home visits

The idea behind preventive home visiting is relatively straightforward. Rather than waiting until frailty or illness becomes severe enough to necessitate institutional care, professionals visit older people in their homes to identify risks and implement early interventions. These visits typically involve multidimensional assessments of physical health, mobility, medication use, nutrition, mental health, social participation, environmental safety, and access to support services. By identifying risks before they lead to significant deterioration, preventive home visiting aims to preserve functional independence, improve quality of life, reduce health care use, and ultimately delay entry into residential care.⁶⁷

Despite its intuitive appeal, the effectiveness of preventive home visiting has been debated. Over the past 3 decades, numerous randomised controlled trials and systematic reviews have reported varying results. Some studies have demonstrated reductions in mortality, disability, hospital admissions, and residential care admission, while others have found little measurable impact. These inconsistencies have led researchers to investigate which program characteristics contribute to successful outcomes and whether preventive home visiting can be considered cost-effective.

European approaches to prevention

The origins of preventive home visiting can be traced to public health nursing initiatives developed during the early twentieth century. However, contemporary home visiting programs emerged during the 1970s and 1980s as countries began confronting the implications of population ageing. One of the earliest investigations of preventive home visiting was conducted in the Netherlands in the early 1990s.⁶⁸ The study involved regular visits by trained public health nurses who assessed participants' physical health, functional status, social circumstances, environmental risks, and service needs.

The study found some evidence of positive outcomes, particularly among older people who perceived their health as relatively poor at baseline. Participants reported improvements in self-rated health and, in some cases, experienced less functional decline than those in control groups. The visits also appeared to increase awareness of available health and social services, thereby facilitating earlier intervention when problems arose.

Despite these encouraging findings, the study also highlighted important limitations. The benefits were generally modest and were not evenly distributed across the study population. Mortality rates and institutionalisation outcomes showed little improvement overall, suggesting that preventive home visits alone were unlikely to produce dramatic reductions in dependency or residential care admission. One of the most significant insights from the study was that vulnerable older people appeared to derive greater benefit than healthier individuals. This observation would prove influential in later research, as attention increasingly shifted toward identifying which populations were most likely to benefit from preventive interventions.

Denmark became the international leader in preventive home visiting following legislation in the 1990s requiring municipalities to offer preventive home visits to older citizens. The Danish model emphasised regular assessments conducted by specially trained nurses. One Danish study evaluated a municipality-randomised intervention involving more than 4,000 community-dwelling older people. Participants received structured preventive home visits delivered by trained health professionals

⁶⁷ Stuck AE, Egger M, Hammer A, Minder CE, & Beck JC. (2002). Home visits to prevent nursing home admission and functional decline in elderly people: Systematic review and meta-regression analysis. *JAMA*, 287(8):1022-8.

⁶⁸ van Rossum E, Frederiks C, Philipsen H, Portengen K, Wiskerke J, & Knipschild P. (1993). Effects of preventive home visits to elderly people. *BMJ*, 307(6895):27-32.

who assessed health risks, functional capacity, social circumstances, and service needs. The study found that participants receiving enhanced preventive visits experienced improvements in functional ability and maintained independence for longer than control groups. Benefits were particularly evident among older people who had not yet developed severe disability. The findings supported the view that preventive interventions are most effective when implemented before significant functional decline has occurred.⁶⁹

Another Danish study assessed the costs and outcomes associated with a 3-year preventive home visiting program targeting adults aged 75 and 80 years. The study measured outcomes in terms of active life-years (defined as years lived independently without major mobility limitations). The results indicated that preventive home visiting increased active life-years while generating only modest increases in expenditure. Although the intervention did not produce unequivocal cost savings, the study concluded that it represented a potentially efficient use of resources because improvements in independence were achieved at relatively low additional cost.⁷⁰

Systemic reviews

The evidence base expanded considerably during the 1990s. Elkan and colleagues undertook one of the first major systematic reviews and meta-analyses of home-based support programs for older people in 2001.⁷¹ The review encompassed a wide range of interventions, including preventive home visiting, multidisciplinary support programs, and community-based care initiatives. The findings were generally positive, although they also emphasised the complexity of the evidence.

The review found that home-based support programs could improve a range of outcomes, including mortality, institutionalisation, and functional independence. Some interventions were associated with reductions in mortality – particularly those involving comprehensive assessment, repeated follow-up visits, and ongoing professional involvement. Similarly, several programs demonstrated lower rates of admission to residential care. Functional outcomes also improved in many studies, with participants more likely to maintain independence in activities of daily living. Although these improvements were often modest, they were nevertheless significant because even small delays in functional decline can have major implications for quality of life and service use.

An important finding was that successful interventions often increased the use of community services. Rather than viewing this as evidence of inefficiency, the review argued that increased service use reflected the identification of previously unmet needs. Early intervention may require greater short-term investment but potentially prevents more costly problems from developing later. The review concluded that home-based support programs could be effective, but they stressed that outcomes varied considerably according to the nature of the intervention. The review challenged the assumption that all preventive home visiting programs were equally beneficial and highlighted the importance of program quality and implementation.

⁶⁹ Vass M, Avlund K, Hendriksen C, Philipson L, & Riis P. (2007). Preventive home visits to older people in Denmark – Why, how, by whom, and when? *Zeitschrift für Gerontologie und Geriatrie*, 40(4):209-16.

Vass M, Avlund K, Parner ET, & Hendriksen C. (2007). Preventive home visits to older home-dwelling people and different functional decline patterns. *European Journal of Ageing*, 4(3):107-13.

⁷⁰ Kronborg C, Vass M, Lauridsen J, & Avlund K. (2006). Cost effectiveness of preventive home visits to the elderly: Economic evaluation alongside a randomized controlled study. *The European Journal of Health Economics*, 7(4):238-46.

⁷¹ Elkan R, Kendrick D, Dewey M, Hewitt M, Robinson J, Blair M, Williams D, & Brummell K. (2001). Effectiveness of home-based support for older people: Systematic review and meta-analysis. *BMJ*, 323(7315):719-25.

By the mid-2000s, the evidence base had grown sufficiently to allow more comprehensive assessments of the broader category of interventions aimed at maintaining independence among older people. In 2008, Beswick and colleagues undertook one of the most influential reviews in the field.⁷² Unlike previous reviews that focused narrowly on home visits, the Beswick review examined a wide range of complex interventions designed to improve physical functioning and support independent living. Their meta-analysis included 89 trials involving almost 100,000 participants and incorporated interventions such as comprehensive geriatric assessment, rehabilitation programs, health promotion initiatives, multidisciplinary care models, and preventive home visiting.

The Beswick review found strong evidence that complex interventions can improve outcomes for older people. Participants receiving interventions were more likely to maintain mobility and preserve functional independence. Physical function was better in the intervention groups than in other groups (standardised mean difference -0.08, 95% CI: -0.11 to -0.06). Participants receiving interventions were also more likely to continue living at home. Interventions reduced the risk of not living at home (relative risk 0.95, 95% CI: 0.93-0.97); and reduced the risk of residential care admissions (relative risk 0.87, 95% CI: 0.83-0.90).

The Beswick review also identified reductions in falls, which are particularly important because falls often initiate a cascade of disability, hospitalisation, and residential care admission. Interventions that incorporated exercise, rehabilitation, and physical activity components were especially effective in improving physical functioning. The review found reductions in both the risk of hospital admissions (relative risk 0.94, 95% CI: 0.91 to 0.97) and of falls (relative risk 0.90, 95% CI: 0.86 to 0.95).

The Beswick review found relatively limited effects on mortality (relative risk 1.00, 95% CI: 0.97 to 1.02). It argued that mortality may be an inappropriate primary outcome for evaluating interventions aimed at promoting healthy ageing. For many older people, maintaining independence, mobility, and quality of life is more important than extending lifespan. The review therefore helped shift attention toward functional outcomes as the key measure of success.

Perhaps the most important conclusion of the Beswick review was that multidimensional interventions consistently outperformed single-component approaches. Successful programs combined assessment, rehabilitation, health promotion, and ongoing monitoring rather than relying on one-off visits or isolated services.

Published in the same year, the review and meta-analysis undertaken by Huss and colleagues focused on multidimensional preventive home visit programs for community-dwelling older people.⁷³ The Huss review's objective was not only to determine whether preventive home visits worked but also to identify which program characteristics contributed to success. The review provided a more nuanced interpretation of the evidence than some earlier studies. It found that preventive home visiting did not consistently reduce mortality or institutionalisation. However, closer examination revealed substantial variation between programs. Interventions that included comprehensive geriatric assessment, repeated follow-up visits, and professional expertise tended to produce better outcomes than simpler programs. Moreover, preventive home visiting appeared most effective when delivered before severe disability had developed. Older people who were

⁷² Beswick AD, Rees K, Dieppe P, Ayis S, Gooberman-Hill R, Horwood J, & Ebrahim S. (2008). Complex interventions to improve physical function and maintain independent living in elderly people: a systematic review and meta-analysis. *Lancet*, 371(9614):725-35.

⁷³ Huss A, Stuck AE, Rubenstein LZ, Egger M, & Clough-Gorr KM. (2008). Multidimensional preventive home visit programs for community-dwelling older people: a systematic review and meta-analysis of randomized controlled trials. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 63(3):298-307.

relatively independent but at risk of future decline often benefited more than those who were already significantly frail.

A particularly important contribution of the Huss review was the demonstration of substantial heterogeneity within the preventive home visiting literature. Programs varied widely in staffing, frequency of visits, assessment procedures, referral pathways, and follow-up mechanisms. As a result, the review argued that it was misleading to speak of preventive home visiting as a single intervention. Instead, the effectiveness of any program depended on its specific design and implementation. This conclusion marked an important shift in thinking within the field, moving the debate away from the simplistic question of whether preventive home visits work toward the more sophisticated question of under what circumstances they work.

A comprehensive assessment of the effectiveness of preventive home visiting was undertaken in 2014 by Mayo-Wilson and colleagues.⁷⁴ That review drew on decades of accumulated research, to evaluate the effects of preventive home visits on mortality, morbidity, and institutionalisation. Their conclusions were notably more cautious than those of some earlier reviews. The review found little convincing evidence that preventive home visiting reduces mortality. Similarly, the evidence regarding institutionalisation was inconsistent, with some studies demonstrating benefits and others finding no effect. Overall, the pooled results suggested that preventive home visits alone do not reliably prevent residential care admission or significantly extend life expectancy. The review also identified considerable variability in morbidity outcomes, reflecting differences in program design and implementation.

Rather than concluding that preventive home visiting is ineffective, the Mayo-Wilson review emphasised the heterogeneity of the interventions being evaluated. Programs grouped under the label 'preventive home visiting' often differed dramatically in terms of staffing, intensity, duration, assessment methods, and referral processes. Consequently, combining results across studies may obscure important differences between effective and ineffective models. The review argued that policymakers should avoid assuming universal benefits from preventive home visiting and instead focus on identifying specific intervention characteristics associated with positive outcomes.

Cost-effectiveness of preventive home visits

The economic attractiveness of preventive home visiting lies in the high costs associated with institutional care. Residential care and repeated hospital admissions account for a substantial proportion of long-term care expenditure in most developed countries. Consequently, even modest reductions in institutionalisation or hospital use can potentially generate significant savings. Four studies are particularly important in understanding the economic evidence surrounding preventive home visiting.

In 2006, Kronborg and colleagues conducted one of the most influential economic evaluations of preventive home visiting.⁷⁵ The study was undertaken alongside a large Danish randomised controlled trial involving older community-dwelling adults. The economic evaluation examined whether preventive home visits produced sufficient improvements in health and independence to justify their costs. Unlike many studies that focus exclusively on mortality or disease outcomes, Kronborg and colleagues used the concept of 'active life years' as the principal outcome measure.

⁷⁴ Mayo-Wilson E, Grant S, Burton J, Parsons A, Underhill K, & Montgomery P. (2014). Preventive home visits for mortality, morbidity, and institutionalization in older people: a systematic review and meta-analysis. *PLoS One*, 9(3):e89257.

⁷⁵ Kronborg C, Vass M, Lauridsen J, & Avlund K. (2006). Cost effectiveness of preventive home visits to the elderly: Economic evaluation alongside a randomized controlled study. *The European Journal of Health Economics*, 7(4):238-46.

This reflected a broader understanding of ageing in which maintaining independence and functional capacity is viewed as equally important as extending survival.

The results were cautiously encouraging. The intervention generated improvements in active life years, particularly among older participants and those at higher risk of decline. The costs of delivering home visits were relatively modest compared with the potential costs of hospitalisation or residential care. However, the economic findings were not unequivocal. While some subgroups appeared to benefit sufficiently for the intervention to be regarded as cost-effective, results varied according to age, baseline health status, and assumptions used in the analysis. A key contribution of the study was demonstrating that economic evaluation of preventative interventions requires a long-term perspective. The costs of home visits occur immediately, whereas many benefits emerge years later through reduced dependency and delayed institutionalisation.

The 2008 Swedish study by Sahlen and colleagues provides some of the strongest direct evidence supporting the cost-effectiveness of preventive home visiting.⁷⁶ Conducted over 4 years, the study evaluated preventive home visits from a societal perspective rather than solely from the perspective of the health care system. This distinction is important. Older people who maintain independence not only reduce formal health care costs but also impose fewer demands on family caregivers, social services, and community support systems. By adopting a societal perspective, the study captured a broader range of costs and benefits.

The Sahlen study found preventive home visits were associated with improved outcomes and favourable economic results. The intervention generated additional years of independent living while producing relatively small increases in direct expenditure. Under several scenarios, preventive home visiting was found to be cost-saving or highly cost-effective. One reason for these positive findings was that the intervention appeared to prevent expensive adverse events. Hospital admissions, emergency presentations, and accelerated functional decline are often associated with substantial costs. By identifying risks early and implementing preventative measures, home visitors could reduce the likelihood of such events occurring.

The study also reinforced the importance of targeting. The greatest benefits tended to occur among older people who were at elevated risk of decline but had not yet developed severe disability. Prevention is often most effective when implemented before substantial dependency develops.

The 2020 Finnish study by Liimatta and colleagues examined health-related quality of life outcomes and assessed cost-effectiveness using QALYs.⁷⁷ The use of QALYs is significant because it allows preventative interventions to be compared with other health care investments. Rather than focusing solely on survival or service use, QALYs incorporate both the quantity and quality of life experienced by participants.

The study found that preventive home visits generated modest improvements in health-related quality of life. Health-related quality of life declined much more slowly compared with the control group (-0.015), but there was no significant difference in QALYs gained between the groups. Participants reported better wellbeing and maintained higher levels of functioning compared with control groups. Although the intervention involved additional costs, these costs were relatively low because home visits are generally inexpensive compared with institutional services. Overall, there was no significant difference in baseline use of services or in the total use and costs of health care

⁷⁶ Sahlen KG, Dahlgren L, Hellner BM, Stenlund H, & Lindholm L. (2006). Preventive home visits postpone mortality—a controlled trial with time-limited results. *BMC Public Health*, 6:220.

⁷⁷ Liimatta HA, Lampela P, Kautiainen H, Laitinen-Parkkonen P, & Pitkala KH. (2020). The Effects of Preventive Home Visits on Older People's Use of Health Care and Social Services and Related Costs. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 75(8):1586-93

and social services during the 2-year follow-up between the two groups. However, the cost-effectiveness plane showed 60% of incremental cost-effectiveness ratios lying in the dominant quadrant, representing additional effects with lower costs.

The economic analysis suggested that preventive home visiting may represent good value for money, particularly when quality-of-life improvements are considered alongside reduced service use. Importantly, the study highlighted that the benefits of prevention extend beyond traditional health care outcomes. Maintaining confidence, independence, social participation, and wellbeing can generate substantial value even when effects on mortality or institutionalisation are modest.

In 2012, Tappenden and colleagues undertook a systematic review of the cost-effectiveness of nurse-led home visiting and health promotion interventions for older people.⁷⁸ Published as a Health Technology Assessment report, the review examined both clinical effectiveness and economic outcomes. The Tappenden review analysed evidence from multiple countries and health care systems. While findings varied across studies, several important patterns emerged. First, interventions that involved comprehensive assessment, repeated contacts, and active management generally produced better outcomes than one-off visits or purely educational approaches. Second, there was evidence that home visiting could reduce hospital use and delay deterioration in functional status.

The Tappenden review concluded that many interventions appeared potentially cost-effective, although uncertainty remained. The review noted that differences in program design, population characteristics, and evaluation methods made direct comparisons difficult. The review also highlighted the methodological challenges associated with evaluating prevention. Many studies had follow-up periods that were too short to capture the full benefits of intervention. Since the primary objective of preventive home visiting is often to delay dependency, hospitalisation, or institutionalisation, economic evaluations may need to extend over several years before the true value of interventions becomes apparent.

Taken together, these 4 studies suggest preventive home visiting can be a cost-effective component of long-term care systems, particularly when targeted toward older people at risk of functional decline. The strongest evidence comes from Scandinavia, where preventive home visiting has been integrated into broader ageing and long-term care policies.

Several consistent themes emerge across the literature. First, preventive home visiting appears most effective when delivered before substantial disability develops. Second, multidimensional. And third, interventions are generally more successful than simple information-based programs.

However, the evidence is not uniformly positive. Some studies report modest effects, and cost-effectiveness varies according to program design, target population, and duration of follow-up. Consequently, preventive home visiting should not be viewed as a universal solution to long-term care expenditure growth. Nevertheless, the literature demonstrates that prevention can generate measurable economic benefits. While the magnitude of savings varies across studies, the overall evidence suggests that relatively modest investments in preventive home visiting may reduce future expenditure on hospitals, residential care, and other intensive services. In ageing societies facing rapidly increasing long-term care costs, these findings provide a compelling rationale for incorporating preventive home visiting into broader strategies designed to maintain independence and support ageing in place.

⁷⁸ Tappenden P, Campbell F, Rawdin A, Wong R, & Kalita N. (2012). The clinical effectiveness and cost-effectiveness of home-based, nurse-led health promotion for older people: a systematic review. *Health Technology Assessment*, 16(20):1-72.

Lessons learned

The evidence suggests that preventive home visiting should not be viewed as a stand-alone intervention but rather as a component of broader reablement, restorative care, and comprehensive geriatric assessment strategies. Assessment without follow-up, referral, or intervention generally yields limited benefits. However, greater effectiveness is demonstrated within multidimensional systems of care that integrate assessment, rehabilitation, care coordination, health promotion, and ongoing monitoring.

Another important conclusion is that the most meaningful benefits often relate to function rather than mortality. While early advocates hoped preventive home visiting would reduce death rates and institutionalisation, the evidence suggests improvements in mobility, independence, and quality of life are more realistic and arguably more important goals. Maintaining the ability to perform daily activities and remain in one's own home may be of greater value to older people than marginal increases in life expectancy.

The research also highlights the importance of targeting. Universal programs delivered to all older people tend to produce modest effects, whereas interventions directed toward individuals at risk of functional decline appear more effective. Professional expertise, comprehensive assessment, and repeated follow-up emerge as critical components of successful programs. Finally, the available economic evidence suggests that preventive interventions may offer good value for money by delaying disability and reducing the need for costly long-term care services.

In conclusion, the literature on preventive home visiting has evolved from early enthusiasm to a more nuanced appreciation of what works, for whom, and under what circumstances. The studies reviewed here demonstrate that preventive home visiting should not be viewed as a simple stand-alone intervention. Rather, it is most effective when embedded within broader systems of multidisciplinary, person-centred, restorative care. Although evidence for reductions in mortality and institutionalisation remains mixed, substantial support exists for the capacity of well-designed programs to maintain functional independence, enhance quality of life, and potentially delay the need for residential care. These findings provide an important foundation for contemporary reablement and healthy ageing strategies.

Intervention 3: Preventing functional decline: Falls prevention

Falls among older people are common, recurrent, costly, and strongly associated with injury, hospitalisation, functional decline, loss of confidence, and increased reliance on formal and informal care.⁷⁹ In 2019-20, falls were the leading cause of hospitalised injuries and injury deaths among older people in Australia, making up 77% of all hospitalisations due to injury in this age group and 71% of deaths due to injury in this age group.⁸⁰

Falls also interact with frailty and disability in ways that can accelerate admission to residential care. A prospective cohort study in 1997 of a sample of residents of New Haven, Connecticut, found that

⁷⁹ Burns ER, Stevens JA, & Lee R. (2016). The direct costs of fatal and non-fatal falls among older people—United States. *Journal of Safety Research*, 58:99-103.

Rizzo JA, Friedkin R, Williams CS, Nabors J, Acampora D, & Tinetti ME. (1998). Health care utilization and costs in a Medicare population by fall status. *Medical Care*, 36(8):1174-88.

Scuffham P, Chaplin S, & Legood R. (2003). Incidence and costs of unintentional falls in older people in the United Kingdom. *Journal of Epidemiology & Community Health*, 57(9):740-4.

⁸⁰ Australian Institute of Health and Welfare (AIHW). (2022). [Falls in older Australians 2019–20: Hospitalisations and deaths among people aged 65 and over](#). AIHW, Canberra.

falls were a strong independent predictor of long-term nursing-home admission. After adjustment, the relative risk of admission was 3.1 after one non-injurious fall, 5.5 after two or more non-injurious falls, and 10.2 after at least one serious fall injury. The study estimated that the population attributable risk of long-term admission to residential care for these 3 groups (the proportion of admissions directly attributable to these categories of falls) was 13%, 3%, and 10%, respectively.⁸¹

Falls also have significant costs for the wider health system. A comprehensive study of the linked health, community and social care data sets of the Torbay Health Trust in the United Kingdom found:

- on average, the cost of hospital, community and social care cost services for each patient who fell were almost 4 times as much in the 12 months after admission for a fall as the costs of the admission itself.
- comparing the 12 months before and after the fall, the most dramatic increase was in community care costs (160%), compared to a 37% increase in social care costs and a 35% increase in acute hospital care costs.
- while falls patients in the study accounted for about 1% of the over-65 population, spending on their care accounted for 4% of the whole annual inpatient acute hospital spending, and 4% of the whole local adult social care budget.⁸²

For these reasons, falls prevention and physical activity programs occupy an important place in long-term care policy. They are not simply health promotion measures. Rather, they are preventive investments intended to maintain independence, reduce avoidable health service use, and defer the need for more intensive support, including admission to residential care.

New Zealand: The Otago Exercise Program

The Otago Exercise Program is one of the most influential examples in the literature.⁸³ The program consisted of an individually prescribed set of strength and balance exercises, together with a walking program. The exercises focused primarily on lower-limb muscle groups that are critical for mobility and postural stability. Typical exercises included knee extensions, knee flexions, hip abduction, calf raises, toe raises, sit-to-stand activities, tandem standing, backwards walking, sideways walking, turning, and stair practice. The exercises were progressively increased in difficulty over time so that participants continued to improve strength and balance. The program was delivered in the home and tailored to the individual's abilities. A physiotherapist or trained nurse conducted several home visits over 6–12 months, prescribed the exercises, monitored progress, and adjusted the program as the participant improved. Participants were encouraged to complete the exercises 3 times per week and to undertake walking activities on most days.

A 1988 economic evaluation found the program was cost-effective for older women.⁸⁴ When home visits were conducted by nurses, the study found falls were reduced by 46% (incidence rate ratio

⁸¹ Tinetti ME, & Williams CS. (1997). Falls, injuries due to falls, and the risk of admission to a nursing home. *New England Journal of Medicine*, 337(18):1279-84.

⁸² Tian Y, Thompson J, & Buck D. (2014). The cost of falls: Exploring the cost of the whole system pathway for older people in a rural community in England. *Journal of Integrated Care*, 22(4):165-73.

⁸³ Davis JC, Hsu CL, Cheung W, Brasher PMA, Li LC, Khan KM, & Liu-Ambrose T. (2022). Comparing the cost-effectiveness of the Otago Exercise Programme among older women and men: A secondary analysis of a randomized controlled trial. *PLoS One*, 17(4):e0267247.

⁸⁴ Robertson MC, Devlin N, Gardner MM, & Campbell AJ. (2001). Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. 1: Randomised controlled trial. *BMJ*, 322(7288):697-701.

0.54, 95% CI: 0.32 to 0.90). Five hospital admissions were due to injuries caused by falls in the control group and none in the exercise group. The program cost NZ\$1,803 (in 1998 prices) per fall prevented (if only program costs were considered) and NZ\$155 per fall prevented when hospital costs averted were also considered.

The Otago evidence shows that relatively simple and low-technology interventions can be clinically effective and economically attractive when they are targeted to older people at sufficiently high risk.

Canada: Action Seniors!

Canadian research has examined the cost-effectiveness of falls prevention in the population most relevant to long-term care prevention policy: high-risk older people who had already fallen and were referred to a specialist falls clinic. Participants in a trial in 2019 were older people referred to a fall prevention clinic after an index fall. They received either usual geriatrician-led falls care alone or usual care plus a home-based strength and balance retraining program delivered by a physical therapist. The trial found that exercise intervention significantly reduced subsequent falls: estimated fall rates were 1.4 falls per person-year in the exercise group compared with 2.1 falls per person-year in the usual-care group, with an incidence rate ratio of 0.64 (95% CI: 0.46 to 0.90; $p = 0.009$).⁸⁵ That is, the study found the program meaningfully reduced recurrent falls among people at high risk.

The economic evaluation is important because it tested whether the extra cost of adding a physiotherapist-guided exercise program to specialist falls-clinic care was justified by reductions in subsequent health-care use and fall events. The study found that the program cost CAD\$393 per participant to implement. When outcomes were expressed as falls prevented, the program was economically favourable: the incremental cost per fall prevented was reported as a saving of CAD\$2, meaning that the intervention prevented falls without increasing health-system costs overall. The study concluded that, compared with usual care, the intervention both saved health-system costs and prevented falls in older people attending a geriatrician-led falls clinic.⁸⁶

Australia: The Lifestyle-integrated Functional Exercise (LiFE) program

The Australian LiFE program provides a useful example of innovation in program design.⁸⁷ The program teaches older people to perform balance and strength challenges while undertaking routine activities such as standing on one leg while brushing their teeth, squatting while putting away groceries, rising from chairs without using their arms, walking sideways along hallways, or standing on tiptoes while reaching for objects. The difficulty of these activities is progressively increased over

Robertson MC, Devlin N, Scuffham P, Gardner MM, Buchner DM, & Campbell AJ. (2001). Economic evaluation of a community-based exercise programme to prevent falls. *Journal of Epidemiology and Community Health*, 55(8):600-6.

Robertson MC, Gardner MM, Devlin N, McGee R, & Campbell AJ. (2001). Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. 2: Controlled trial in multiple centres. *BMJ*, 322(7288):701-4.

⁸⁵ Liu-Ambrose T, Davis JC, Best JR, Dian L, Madden K, Cook W, Hsu CL, & Khan KM. (2019). Effect of a Home-Based Exercise Program on Subsequent Falls Among Community-Dwelling High-Risk Older people After a Fall: A Randomized Clinical Trial. *JAMA*, 21(21):2092-100.

⁸⁶ Davis JC, Khan KM, Hsu CL, Chan P, Cook WL, Dian L, & Liu-Ambrose T. (2020). Action Seniors! Cost-Effectiveness Analysis of a Secondary Falls Prevention Strategy Among Community-Dwelling Older Fallers. *Journal of the American Geriatrics Society*, 68(9):1988-97.

⁸⁷ Clemson L, Singh MF, Bundy A, Cumming RG, Weissel E, Munro J, Manollaras K, & Black D. (2010). LiFE Pilot Study: A randomised trial of balance and strength training embedded in daily life activity to reduce falls in older people. *Australian Occupational Therapy Journal*, 57(1):42-50.

time to ensure continued improvements in physical function. The intervention also encourages reduced sedentary behaviour and promotes greater overall physical activity.

A 2010 randomised trial found this approach reduced falls among older people at high risk who lived at home. It found a 31% reduction in the rate of falls for the LiFE program compared with controls – incidence rate ratio 0.69 (95% CI: 0.48 to 0.99). Static balance on an 8-level hierarchy scale, ankle strength, function, and participation were all significantly better in the LiFE group than in controls.⁸⁸

Tai chi programs

Tai chi is one of the most extensively studied physical activity interventions for falls prevention among older people. Originating as a Chinese martial art, tai chi involves slow, controlled movements that challenge balance, coordination, lower-limb strength, postural control, and body awareness. Unlike traditional strength training programs, tai chi combines physical, cognitive, and behavioural components, requiring participants to continuously adjust their posture and weight distribution while maintaining controlled movement.

Numerous randomised controlled trials have demonstrated that tai chi reduces falls among community-dwelling older people. A systematic review in 2017 examined 18 trials with 3,824 participants. It found that the tai chi group had a significantly lower chance of falling at least once (risk ratio 0.80, 95% CI: 0.72 to 0.88) and rate of falls (incidence rate ratio 0.69, 95% CI: 0.60 to 0.80) than the control group. Subgroup analyses suggested the preventive effect was likely to increase with exercise frequency (number of fallers: $p=0.001$; rate of falls: $p=0.007$) and Yang style tai chi was likely to be more effective than Sun style tai chi (number of fallers: $p=0.01$; rate of falls: $p=0.001$).⁸⁹

Systemic reviews

A Cochrane review in 2019 found high-certainty evidence that exercise reduces both the rate of falls and the number of people experiencing falls.⁹⁰ The most effective interventions are those that include balance and functional exercise. Programs that combine balance and functional exercise with resistance training were also found to be effective, but the evidence for walking programs alone was weaker. This distinction matters economically because a general physical activity message may not produce the same return on investment as a structured, progressive, falls-specific exercise program.

The cost-effectiveness literature reflects this clinical pattern. A 2022 systematic review of economic evaluations of fall prevention exercise programs concluded moderate-certainty evidence that these

⁸⁸ Clemson L, Singh MAF, Bundy A, Cumming RG, Manollaras K, O'Loughlin P, & Black D. (2012). Integration of balance and strength training into daily life activity to reduce rate of falls in older people: The LiFE study, randomised parallel trial. *BMJ*, 345:e4547.

⁸⁹ Huang ZG, Feng YH, Li YH, & Lv CS. (2017). Systematic review and meta-analysis: Tai Chi for preventing falls in older people. *BMJ Open*, 7(2):e013661.

⁹⁰ Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, Clemson L, Hopewell S, & Lamb SE. (2019). Exercise for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, 1(1):CD012424.

Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, Clemson L, Hopewell S, & Lamb SE. (2020). Exercise for preventing falls in older people living in the community: An abridged Cochrane systematic review. *British Journal of Sports Medicine*, 54(15):885-91.

Tricco AC, Thomas SM, Veroniki AA, Hamid JS, Cogo E, Striffler L, Khan PA, Robson R, Sibley KM, MacDonald H, Riva JJ, Thavorn K, Wilson C, Holroyd-Leduc J, Kerr GD, Feldman F, Majumdar SR, Jaglal SB, Hui W, & Straus SE. (2017). Comparisons of Interventions for Preventing Falls in Older people: A Systematic Review and Meta-analysis. *JAMA*, 318(17):1687-99.

programs are likely to be cost-effective.⁹¹ The review is important because it focuses specifically on exercise-based falls prevention rather than grouping exercise with medication review, home modifications, vision correction, or multifactorial assessment. It found exercise programs whose delivery costs were not excessive were more likely to represent good value when targeted to older people at increased risk of falls. This finding is consistent with standard health economic reasoning: interventions yield greater value when directed toward people with higher baseline risk because more events are prevented per dollar spent.

Earlier systematic reviews reached broadly similar conclusions. A 2010 review of 9 economic evaluations of falls prevention interventions for people aged 80 or older concluded that home-based strength and balance programs, particularly those similar to the Otago Exercise Program, appeared to be among the most economically attractive falls prevention strategies for very old adults.⁹² A 2018 systematic review of economic evaluations of falls prevention programs for older people, found that several intervention types could be cost-effective, but the evidence varied by setting, population, intervention design, and analytic perspective. The review again showed economic value depends on careful targeting and implementation rather than on the generic label of 'falls prevention'.⁹³

A major reason falls prevention can be cost-effective is that falls are expensive. Costs arise through ambulance use, emergency department presentations, hospital admissions, surgery, rehabilitation, residential care placement, informal care, and loss of independence. Hip fractures are especially costly because they often result in permanent functional decline and increased care needs. Falls among people in Australia aged 65 or over caused 133,000 hospitalisations in 2019-20 and \$2.3 billion was spent treating fall injuries in this age group. This implies an average health-system cost of about \$17,300 per hospitalised fall injury in 2019–20 dollars.⁹⁴

Even when falls do not cause injury, they can trigger fear of falling, reduced activity, deconditioning, withdrawal, and increased dependency. The economic benefits of exercise programs are not limited to avoided hospital costs. They may also include preserved mobility, reduced need for home care, reduced caregiver burden, and delayed institutionalisation. However, the literature cautions against overclaiming. Most falls prevention studies measure falls, quality of life, or health service use over short time horizons, and few studies directly measure admission to residential care. The causal pathway between falls and admission to residential care is plausible and supported by gerontological theory, but the direct economic evidence that falls prevention and exercise programs delay admission to residential care entry is less extensive than the evidence that they reduce falls.

⁹¹ Pinheiro MB, Sherrington C, Howard K, Caldwell P, Tiedemann A, Wang B, S Oliveira J, Santos A, Bull FC, Willumsen JF, Michaleff ZA, Ferguson S, Mayo E, Fairhall NJ, Bauman AE, & Norris S. (2022). Economic evaluations of fall prevention exercise programs: A systematic review. *British Journal of Sports Medicine*, 56(23):1353-65.

Pinheiro MB, Howard K, Oliveira JS, Kwok WS, Tiedemann A, Wang B, Taylor J, Bauman A, & Sherrington C. (2023). Cost-effectiveness of physical activity programs and services for older people: A scoping review. *Age and Ageing*, 52(3):afad023.

⁹² Davis JC, Robertson MC, Ashe MC, Liu-Ambrose T, Khan KM, & Marra CA. (2010). Does a home-based strength and balance programme in people aged > or = 80 provide the best value for money to prevent falls? A systematic review of economic evaluations of falls prevention interventions. *British Journal of Sports Medicine*, 44(2):80-9.

⁹³ Olij BF, Ophuis RH, Polinder S, van Beeck EF, Burdorf A, Panneman MJM, & Sterke CS. (2018). Economic Evaluations of Falls Prevention Programs for Older people: A Systematic Review. *Journal of the American Geriatrics Society*, 66(11):2197-204.

⁹⁴ Australian Institute of Health and Welfare (AIHW). (2022). [Falls in older Australians 2019–20: Hospitalisations and deaths among people aged 65 and over](#). AIHW, Canberra.

Lessons learned

The academic literature supports falls prevention and physical activity programs as cost-effective or potentially cost-effective interventions for older people, particularly when they involve balance and functional training, are targeted to people at elevated risk, and are delivered at sufficient dose. The evidence is strongest for reducing falls and fall-related injuries, moderately strong for cost-effectiveness, and more indirect for delaying residential care admission. The most defensible policy position is that such programs should be embedded in community aged care, reablement, primary care, and post-hospital services as part of a broader prevention strategy. They are not a substitute for adequate home care, rehabilitation, housing adaptations, or caregiver support, but they are one of the better-supported interventions for maintaining independence and reducing avoidable health and care costs in later life.

Physical activity programs have benefits beyond falls prevention. They can improve muscle strength, gait speed, balance, cardiovascular health, mood, cognition, social participation, and functional independence. These benefits are relevant to long-term care policy because physical inactivity contributes to frailty and dependency. A 2023 scoping review of cost-effectiveness evidence for physical activity programs for older people found physical activity interventions were generally more effective than no intervention but were also more costly. The review concluded that such interventions could be cost-effective but noted that the evidence base was limited and that more evaluations were needed.

The broader physical activity literature is important because not every program should be judged only by falls prevented. Some interventions may produce modest falls effects but important improvements in function, quality of life, social engagement, or independence. From a health economics perspective, this raises the question of which outcome should be used. Cost per fall prevented is intuitive for falls prevention, but it does not capture all benefits. Cost per QALY is more comparable across health interventions, but QALYs may not fully capture autonomy, confidence, social participation, and caregiver relief. Aged care policy therefore requires a broader evaluative lens than acute health technology assessment.

There are also important differences between group-based and home-based delivery. Group programs may be less expensive per participant and may generate social benefits, but they may not reach frail older people who cannot travel easily. Home-based programs can be better targeted and more accessible for high-risk individuals, but they are more labour intensive. The cost-effectiveness of either model depends on participant risk, adherence, staff costs, transport costs, and whether the program achieves sufficient exercise dose. Programs delivered too lightly, too briefly, or to people at low risk may not prevent enough falls to justify their cost.

Targeting is one of the strongest themes in the economic literature. Falls prevention programs usually produce better economic returns when directed toward older people with previous falls, impaired balance, frailty, or multiple risk factors. This does not mean low-risk older people should be inactive. Rather, it means that publicly-funded intensive falls prevention services should prioritise those most likely to benefit. For people at lower risk, lower-cost population approaches such as community exercise classes, digital supports, walking groups, and age-friendly environments may be more appropriate.

Another important issue is adherence. Exercise prevents falls only if performed regularly and with sufficient challenge to balance and strength. In health economics terms, poor adherence reduces effectiveness while many costs remain fixed. This worsens the incremental cost-effectiveness ratio. Program design therefore matters. Successful programs often include individual assessment, progression, behavioural support, follow-up, and integration into daily routines.

The evidence also suggests falls prevention should not be viewed only as a clinical intervention. It is part of a wider long-term care strategy. A fall can mark the transition from independence to

dependency. After a serious fall, an older person may lose confidence, become less active, require home care, enter hospital, or move into residential care. Preventing falls therefore helps preserve functional reserve. It also helps maintain the viability of informal care arrangements. Family carers may be able to continue supporting an older person at home if mobility and confidence are maintained, whereas recurrent falls may make home care feel unsafe.

Nevertheless, cost-effectiveness is not automatic. Staff-intensive programs can be expensive. Benefits may be diluted if programs are poorly targeted or if older people do not adhere. Some interventions may reduce falls but not generate measurable QALY gains within trial follow-up. Others may shift costs between sectors. For example, a community care provider may fund exercise support while hospitals receive much of the savings from avoided injury admissions. This creates a familiar problem in aged care economics: the budget holder paying for prevention may not be the budget holder receiving the savings.

The policy implication is that falls prevention and physical activity programs should be commissioned across health and aged care boundaries. They should be evaluated using system-wide costs and benefits rather than narrow program budgets. A hospital, insurer, aged care funder, or local authority may each see only part of the benefit. A societal or whole-of-government perspective is more likely to capture the full economic value of avoided falls, reduced hospital use, delayed dependency, and improved wellbeing.

For long-term care systems facing population ageing, the central policy question is not whether falls prevention works in ideal circumstances. It is how to implement it at scale while preserving effectiveness. Evidence-based programs require trained staff, participant screening, progression, monitoring, and follow-up. If scaled too cheaply, they may lose their active ingredients. If delivered too intensively, they may become too costly. The challenge is to find a delivery model that maintains sufficient clinical effect at a sustainable cost.

Digital and hybrid delivery models may help, but evidence should be treated cautiously. Remote coaching, apps, video classes, and wearable monitoring may reduce delivery costs and expand reach, but they may exclude older people with cognitive impairment, low digital literacy, sensory impairment, or severe frailty. They may be useful for some groups but are unlikely to replace face-to-face assessment for people at highest risk of falls.

Equity is another important consideration. Falls risk is not evenly distributed. Older people with low income, poor housing, limited access to transport, disability, social isolation, or chronic disease may face higher risks and greater barriers to participation. Programs that rely on private payment, travel to classes, or digital access may worsen inequities. Publicly-funded home-based or local community programs may be more equitable, although they require greater investment. Cost-effectiveness analysis should not be separated from distributional concerns, because a program can be efficient on average while failing to reach those with greatest need.

The relationship between falls prevention and residential care admission deserves particular caution. Falls are clearly associated with disability and care needs, and serious falls can precipitate institutionalisation. However, the evidence that exercise programs directly delay residential care admission is less conclusive than the evidence that they reduce falls. Many trials are not long enough or large enough to detect differences in institutionalisation.

A defensible conclusion is that falls prevention and physical activity programs address several major risk factors for residential care admission, including falls, mobility limitation, frailty, and functional decline. They are therefore plausible and important components of strategies to defer residential care but are unlikely to be a stand-alone solution.

Intervention 4: Restoring functional capacity

Among the most important innovations in aged care over the past two decades has been the emergence of reablement and restorative care.⁹⁵ These approaches differ fundamentally from traditional home care models. Rather than performing tasks for older people, the reablement approach seeks to improve older people's capacity to perform those tasks independently. Through goal-oriented, multidisciplinary interventions delivered over a limited period, reablement aims to restore or maximise physical, psychological, and social functioning. Interventions commonly include caregiver education, falls prevention, functional task retraining, goal setting, home modifications, medication review, nutritional support, occupational therapy, physiotherapy, and strength and balance training. The underlying philosophy is that older people should be supported to regain skills and confidence rather than becoming progressively dependent on services.

From a health economics perspective, the attractiveness of reablement is that it has the possibility of simultaneously improving outcomes and reducing long-term expenditure. By enhancing independence and reducing demand for ongoing support, it may generate savings that offset the costs of the intervention itself. A growing body of evidence suggests that reablement represents a promising strategy for supporting ageing in place and delaying admission to residential care.⁹⁶

Australia: The restorative care model

Australia has produced some of the most influential economic evaluations of reablement internationally. A series of studies conducted by Lewin and colleagues examined whether restorative home-care models could reduce long-term dependence on aged care services and generate savings for the health and aged care systems. These studies are important because they extended the follow-up period well beyond the immediate intervention, allowing assessment of whether any gains in independence were sustained and whether short-term investments in restorative care translated into long-term cost savings.

One of the most significant contributions to the literature was a retrospective cohort study that compared outcomes for older people who received a Home Independence Program (HIP) with outcomes for comparable individuals receiving conventional home-care services.⁹⁷ The HIP model was based on reablement principles and involved time-limited, goal-oriented interventions delivered by multidisciplinary teams. Rather than providing ongoing assistance with daily activities, the program focused on restoring the individual's own capacity to perform these activities. Interventions commonly included strength and balance training, occupational therapy, home modifications, education, assistive technology, and confidence-building strategies designed to encourage self-management.

⁹⁵ Terminology varies considerably across the world: 'Reablement' is commonly used in the United Kingdom, Scandinavia, and Australia; 'Restorative care' is widely used in Australia and New Zealand; 'Enablement' is sometimes used in Canada; 'Function-focused care' is common in the USA; and 'Reactivation' is used in parts of Europe.

⁹⁶ Rostgaard T, Parsons J, & Tuntland H. (Eds). (2023). *Reablement in Long-Term Care for Older People*. Policy Press, Bristol, UK.

⁹⁷ Lewin G, & Vandermeulen S. (2010). A non-randomised controlled trial of the Home Independence Program (HIP): An Australian restorative programme for older home-care clients. *Health & Social Care in the Community*, 18(1):91-9

Lewin GF, Alfonso HS, & Alan JJ. (2013). Evidence for the long-term cost effectiveness of home care reablement programs. *Clinical Interventions in Aging*, 8:1273-81.

The study followed participants for a median period of approximately 57 months, making it one of the longest evaluations of reablement conducted anywhere in the world. Participants who received restorative care were significantly less likely to require ongoing home-care services than those receiving conventional care. Perhaps the most striking finding was that these differences persisted throughout the entire follow-up period. Participants who received restorative care remained significantly less likely to be using personal care services during follow-up. This finding challenged the traditional assumption that increasing age inevitably leads to progressively greater dependence on formal care services and suggested that relatively brief interventions may alter longer-term trajectories of disability and service use.

The economic implications were substantial. Total government expenditure on aged care services was significantly lower among individuals who received restorative care. Median savings were estimated at approximately AU\$12,500 per participant over the follow-up period. Importantly, these savings accumulated despite the additional upfront investment required to deliver multidisciplinary restorative interventions. The study concluded that the restorative model was highly cost-effective because reductions in subsequent service use more than offset the initial intervention costs.

The mechanisms through which these savings were generated are also noteworthy. Traditional home-care services often substitute for lost function by performing tasks on behalf of the older person. While such services may address immediate care needs, they can inadvertently reinforce dependency by reducing opportunities for individuals to maintain or regain functional capacity. Reablement adopts the opposite approach. By focusing on rehabilitation, self-management, environmental adaptation, and confidence-building, it seeks to enhance functional reserve and enable individuals to perform daily activities independently. Consequently, reduced service use is not achieved through rationing or unmet need, but through genuinely improved functional ability.

A subsequent randomised controlled trial conducted by Lewin and colleagues strengthened the evidence by addressing some of the methodological limitations inherent in observational studies.⁹⁸ Randomisation reduces the risk of selection bias and provides a more rigorous basis for causal inference. The trial compared a restorative home-care service with conventional home-care provision among older people in Australia who had been referred for community care services.

The findings demonstrated consistent advantages for the restorative model. Participants receiving restorative care used fewer home-care hours and were less likely to require higher levels of ongoing support. They also experienced lower rates of emergency department presentations and unplanned hospital admissions, indicating that the benefits extended beyond the aged care sector into the broader health system. This is an important consideration because older people often interact with multiple service systems simultaneously, and interventions that improve functional capacity may generate savings across both the health and social care budgets.

⁹⁸ Burton E, Lewin G, & Boldy D. (2013). Barriers and motivators to being physically active for older home care clients. *Physical & Occupational Therapy in Geriatrics*, 31(1):21-36.

Burton E, Lewin G, & Boldy D. (2013). Physical activity levels of older people receiving a home care service. *Journal of Aging and Physical Activity*, 21(2):140-54.

Lewin G, De San Miguel K, Knuiman M, Alan J, Boldy D, Hendrie D, & Vandermeulen S. (2014). A randomised controlled trial of the Home Independence Program, an Australian restorative home-care programme for older people. *Health & Social Care in the Community*, 21(1):69-78.

Lewin G, De San Miguel K, Knuiman M, Alan J, Boldy D, Hendrie D, & Vandermeulen S. (2014). A randomised controlled trial of a restorative home-care service for older Australians. *Health & Social Care in the Community*, 22(6):571-9.

The economic outcomes were again striking. Average home-care expenditure during the first year was approximately AU\$4,096 for participants receiving restorative care, compared with AU\$5,270 for those receiving conventional services. At the 2-year follow-up, cumulative expenditure remained substantially lower, with costs of approximately AU\$5,833 compared with AU\$8,374. These figures represent reductions in expenditure of around 22% in the first year and approximately 30% over two years. Such differences are significant from a policy perspective because even modest reductions in average service costs can translate into substantial aggregate savings when applied across large populations of older people.

The randomised controlled trial findings also suggest that reablement may represent a rare example of what health economists describe as a dominant intervention—one that simultaneously improves outcomes while reducing costs. Many health care interventions improve outcomes but require additional expenditure, creating trade-offs that must be assessed through cost-effectiveness analysis. In contrast, the evidence from Lewin and colleagues suggests restorative home care may achieve both objectives simultaneously. Participants experienced improved functional outcomes and reduced dependence while governments incurred lower long-term expenditure.

Taken together, the studies by Lewin and colleagues provide some of the strongest evidence available that reablement can improve functional outcomes while simultaneously reducing long-term public expenditure. Their findings suggest that investments in restorative home care have the potential not only to enhance older people's independence and quality of life, but also to improve the sustainability of aged-care systems facing growing demand associated with population ageing.

United Kingdom: National Service Framework for Older People

The United Kingdom has been one of the most important international testing grounds for reablement. Beginning in the early 2000s, reablement was actively promoted by the central government as a strategy to improve outcomes for older people while addressing mounting pressures on social care budgets. Unlike many countries where reablement remained confined to small pilot projects, the United Kingdom implemented reablement services on a large scale through local authorities and National Health Service partnerships. This widespread adoption provided researchers with valuable opportunities to evaluate both the effectiveness and economic consequences of reablement in real-world service settings.

In 2001, the National Service Framework for Older People established a standard for intermediate care:

Older people will have access to a new range of intermediate care services at home or in designated care settings, to promote their independence by providing enhanced services from the [National Health Service] and councils to prevent unnecessary hospital admission and effective rehabilitation services to enable early discharge from hospital and to prevent premature or unnecessary admission to long-term residential care.⁹⁹

In 2014, Section 2(1) of the *Care Act 2014* required local authorities to:

... provide or arrange for the provision of services, facilities or resources, or take other steps, which it considers will: (a) contribute towards preventing or delaying the development by adults in its area of needs for care and support; (b) contribute towards preventing or delaying the development by carers in its area of needs for support; (c) reduce the needs for care and support of adults in its area; (d) reduce the needs for support of carers in its area.¹⁰⁰

⁹⁹ United Kingdom. Department of Health. (2001). [National Service Framework for Older People](#), p.13.

¹⁰⁰ United Kingdom. Parliament. (2014). [Care Act 2014](#). London: The Stationery Office.

The growth of reablement in the United Kingdom occurred against a backdrop of rising demand for social care services, increasing longevity, and growing concerns regarding the sustainability of publicly funded care systems. Traditional home-care models had become increasingly focused on maintenance and support rather than rehabilitation. Older people who experienced illness, injury, hospitalisation, or functional decline were frequently assessed for ongoing support services that often continued indefinitely. Policymakers became concerned that such approaches might inadvertently reinforce dependency and increase long-term expenditure.

Reablement emerged as an alternative philosophy. Rather than asking what services an individual required, practitioners asked what activities the person wished to regain and what support would enable them to perform those activities independently. Services were typically delivered over a short period, often 6 weeks, and focused on restoring functional capacity through goal-setting, skills retraining, environmental adaptation, confidence building, and the use of assistive technologies. A comprehensive study, that compared outcomes for older people receiving reablement services to those of individuals receiving conventional home-care support, demonstrated that reablement could improve outcomes while maintaining overall cost efficiency:¹⁰¹

- At a cost of £30,000 for each health-related quality of life gain, the study found there is 99% probability that reablement is cost-effective against total health and social care costs, and just under 100% probability against social care costs alone. At a more stringent threshold of £20,000 per health-related quality of life gain, the probability of cost-effectiveness is 98% for health and social care costs and 99% for social care costs only.
- For social care-related outcomes, at a cost of £30,000 per outcome gain, the study found there is 78% probability that reablement is cost-effective against both health and social care costs and 98% probability that reablement is cost-effective against just social care costs. At a lower threshold of £20,000 per social care-related outcome gain, the probability of cost-effectiveness is 68% for combined health and social care costs, but still 98% for social care costs only.

Users of reablement services experienced significant improvements in social-care-related quality of life, functional independence, and self-perceived well-being. Importantly, many participants required reduced levels of ongoing support after completing the intervention. In some cases, individuals required no continuing home-care services at all.

The study reported that reablement participants were significantly less likely than conventional service users to require ongoing care packages. They concluded that reablement enabled many older people to regain sufficient independence to reduce or avoid long-term dependence on formal support services.

The economic analysis produced nuanced findings that have become central to discussions of reablement policy. Initial costs associated with reablement were often higher than those associated with conventional home-care services because of the intensive and multidisciplinary nature of the intervention. Staff spent considerable time conducting assessments, setting goals, providing training, coordinating services, and monitoring progress. However, when researchers examined costs over a

¹⁰¹ Glendinning C, Jones K, Baxter K, Rabiee P, Curtis LA, Wilde A, Arksey H, Forder J, & Netten A. (2010). *Home Care Reablement Services: Investigating the Longer-Term Impacts (Prospective Longitudinal Study)*. Working Paper DHR 2438. Social Policy Research Unit, University of York, York.

Glendinning C, Jones K, Baxter K, Rabiee P, Curtis LA, Wilde A, Arksey H, & Forder J. (2011) Home care reablement services: investigating the longer-term impacts, *Research Works, 2011-01*. Social Policy Research Unit, University of York, York.

longer period, these higher upfront expenditures were substantially offset by reductions in subsequent service use.

The evaluation found reablement recipients generally required fewer hours of home care after completing the program. Many transitioned to lower levels of support than would otherwise have been anticipated, while others stopped receiving formal services altogether. The costs of the social care services (excluding the cost of reablement itself) used in the 12-month study period by people in the reablement group were 60% less than the costs of the social care services used by people in the conventional home care group. Consequently, overall expenditure during follow-up periods was comparable to, and in some circumstances lower than, expenditure on conventional care.

The researchers concluded that reablement appeared capable of generating improved outcomes without increasing long-term costs. This finding is particularly important within health economics because it suggests that reablement may increase the productivity of social care expenditure. Rather than simply purchasing additional services, governments are investing in interventions that reduce future demand for those same services. In economic terms, reablement can be viewed as a form of preventive investment that seeks to improve functional capital and thereby reduce future expenditure liabilities.

New Zealand: Assessment of Services Promoting Independence and Recovery in Elders (ASPIRE)

The ASPIRE program examined whether restorative approaches could improve physical functioning, enhance quality of life, reduce service use, and ultimately improve the efficiency of aged-care expenditure. The programme generated a series of randomised controlled trials and longitudinal evaluations that have become central to the international evidence base on reablement and restorative care.

One of the earliest major studies was the cluster-randomised controlled trial conducted by King, Parsons, Robinson, and Jörgensen. This study compared a restorative home-support service with conventional home-care provision among older people living in the community. The intervention focused on helping participants regain skills, confidence, and functional capacity rather than providing ongoing assistance with daily activities. Support workers received specialised training and worked with clients to establish goals and develop strategies for increasing independence.¹⁰²

The findings were encouraging. Participants receiving restorative care were more likely to be less dependent on services, and show improvements in quality-of-life measures compared with those receiving standard services. Although functional improvements were modest, the restorative model enabled a significantly more participants to reduce the level of support they required. From a health economics perspective, this finding is important because reduced service use represents the primary mechanism through which restorative care generates cost savings. When individuals need fewer

¹⁰² King AI, Parsons M, & Robinson E. (2012). A restorative home care intervention in New Zealand: perceptions of paid caregivers. *Health & Social Care in the Community*, 20(1):70-9.

King AI, Parsons M, Robinson E, & Jörgensen D. (2012). Assessing the impact of a restorative home care service in New Zealand: A cluster randomised controlled trial. *Health & Social Care in the Community*, 20(4):365-74.

Parsons J, Rouse P, Robinson EM, Sheridan N, & Connolly MJ. (2012). Goal setting as a feature of homecare services for older people: does it make a difference? *Age and Ageing*, 41(1):24-9.

Senior HE, Parsons M, Kerse N, Chen MH, Jacobs S, Hoorn SV, & Anderson CS. (2014). Promoting independence in frail older people: a randomised controlled trial of a restorative care service in New Zealand. *Age and Ageing*, 43(3):418-24.

hours of home support, cumulative expenditure falls and resources can be redirected to meet the needs of other service users.

Perhaps the most important New Zealand study from an effectiveness perspective was the randomised controlled trial that enrolled 205 older people and compared restorative home care with usual care.¹⁰³ Participants were assessed on measures of physical functioning, social support, and health-related quality of life. The study found individuals who received restorative care experienced significantly greater improvements in physical function than those receiving conventional services. Improvements were measured using the Short Physical Performance Battery, a validated assessment of lower-extremity function and mobility. Participants in the restorative-care group also reported significant improvements in health-related quality of life.

These findings have important economic implications. Functional capacity is one of the strongest predictors of future health care use and long-term care expenditure. Older people who maintain mobility, balance, and the ability to perform activities of daily living are less likely to require intensive support services, hospital admissions, or residential care. Consequently, improved physical functioning can be viewed as investments in future cost containment. Although the study did not undertake a comprehensive cost-effectiveness analysis, the results suggest that restorative care could improve outcomes in ways likely to reduce future expenditure.

Another important contribution of the New Zealand research has been the demonstration that restorative care can be delivered effectively using existing community-care infrastructure. Unlike some rehabilitation programs that rely heavily on specialist clinical staff, New Zealand's restorative-care models often used trained support workers operating within multidisciplinary teams. This approach potentially reduces implementation costs while maintaining effectiveness. From a cost-effectiveness perspective, the ability to achieve improved outcomes without substantial increases in staffing costs enhances the attractiveness of restorative-care models.

While New Zealand studies have generally focused more on effectiveness than formal economic evaluation, the available evidence suggests restorative care is likely to be cost-effective. Improved mobility, function, and quality of life are achieved through relatively short-term interventions. At the same time, reduced service dependency creates opportunities for long-term savings. The economic logic mirrors that observed in the Australian studies conducted by Lewin and colleagues: modest upfront investments in restorative interventions may be offset by reductions in future service use. Indeed, the Australian economic evaluations provide strong support for the assumption that the functional improvements observed in New Zealand are likely to translate into lower long-term costs.

A limitation of the New Zealand evidence base is the relative scarcity of comprehensive cost-effectiveness analyses. Few studies have tracked participants over periods sufficiently long to capture downstream savings associated with delayed institutionalisation or reduced health care use. Economic evaluations incorporating QALYs, health care costs, social-care costs, and caregiver outcomes remain limited. Consequently, while the direction of the evidence is highly favourable, estimates of the precise magnitude of economic benefits remain uncertain.

Nevertheless, the overall findings are remarkably consistent. Restorative care improves physical functioning, enhances quality of life, reduces dependency on support services, and may delay entry into more intensive forms of care. These outcomes are strongly associated with reduced long-term expenditure in ageing populations. The New Zealand studies therefore provide important support for

¹⁰³ Parsons JGM, Sheridan N, Rouse P, Robinson E, & Connolly MJ. (2013). A randomized controlled trial to determine the effect of a model of restorative home care on physical function and social support among older people. *Archives of Physical Medicine and Rehabilitation*, 94(6):1015-22.

the proposition that restorative care represents not merely a clinically effective intervention, but also a potentially cost-effective strategy for managing the growing demands of population ageing.

Taken together, the New Zealand evidence suggests that restorative care can improve outcomes for older people while enhancing the efficiency of aged-care systems. Although further economic evaluation is required, the work of Parsons, King, Senior, and colleagues provides compelling evidence that investments in restorative approaches could potentially generate health gains and economic benefits. As governments continue to seek sustainable responses to population ageing, New Zealand's experience offers valuable lessons regarding the capacity of restorative care to improve independence while containing future demand for long-term support services.

Norway: Reablement trials

Norwegian reablement approaches emphasise person-centred goals, participation in meaningful daily activities, and restoration of independence. Three major Norwegian studies – the randomised controlled trial by Tuntland and colleagues (2015), the multicentre controlled trial led by Langeland and colleagues (2019), and the economic evaluation by Kjerstad and Tuntland (2016) – provide strong empirical evidence supporting reablement as an effective intervention for community-dwelling older people.

The Tuntland trial examined whether a 10-week multidisciplinary reablement intervention improved outcomes for home-dwelling older people compared with usual care.¹⁰⁴ Sixty-one older people with functional decline were randomised either to reablement or standard home care. The intervention involved physiotherapists, occupational therapists, nurses, and care workers collaborating with participants to identify personally meaningful goals and develop tailored rehabilitation strategies. The intervention used the Canadian Occupational Performance Measure (COPM), which enabled participants to identify activities they personally considered important but difficult to perform. Rather than professionals determining rehabilitation priorities, older people themselves selected goals such as cooking, dressing independently, shopping, walking outdoors, or engaging in hobbies and social activities. This person-centred approach became a hallmark of Scandinavian reablement.

The results of the trial showed significant improvements in mean scores favouring reablement in COPM performance at both 3 and 9 months. Specifically, participants receiving reablement demonstrated significantly improved self-perceived activity performance and satisfaction with performance compared with the control group. Importantly, these improvements persisted over time, suggesting that benefits were not merely short-term effects immediately following intervention.

However, the study also demonstrated the limits of reablement. It found no statistically significant differences between groups in physical capacity or health-related quality of life measures. The evidence strongly supported improvements in occupational performance and independence in meaningful daily activities, but evidence regarding broader physical or quality-of-life outcomes remained less certain.

The theoretical framework underpinning the Tuntland trial was highly influential internationally. The trial was grounded in the Canadian Model of Occupational Performance and Engagement (CMOP-E), which conceptualises functioning as the interaction between individuals, their environment, and meaningful occupations. This philosophy distinguished Norwegian reablement from more standard rehabilitation approaches and reinforced the idea that successful ageing interventions should focus on meaningful participation rather than merely reducing physical impairment.

¹⁰⁴ Tuntland H, Aaslund MK, Espehaug B, Førland O, & Kjekken I. (2015). Reablement in community-dwelling older people: A randomised controlled trial. *BMC Geriatrics*, 15:145.

A second major Norwegian contribution was the multicentre controlled trial published by Langeland.¹⁰⁵ This study substantially expanded the evidence base by examining reablement across 47 Norwegian municipalities. The trial focused strongly on participant-defined goals and multidisciplinary intervention delivery. Occupational therapists, physiotherapists, nurses, and home-care personnel worked collaboratively with older people to improve functioning and independence in daily activities. Assessments occurred at baseline, 10 weeks, 6 months, and 12 months, allowing researchers to evaluate both short-term and longer-term outcomes.

The findings demonstrated improvements in occupational performance and satisfaction, similar to those identified in the earlier Tuntland study. Participants receiving reablement generally reported greater improvements in meaningful daily functioning than those receiving ordinary services. However, as with the earlier trial, outcomes varied between individuals, and improvements were not universal across all measures. This again reinforced the complexity of reablement interventions and the difficulty of producing consistent effects across heterogeneous older populations.

One of the most important aspects of the Norwegian evidence base was the integration of economic evaluation into the research. In 2016, Kjerstad and Tuntland published a cost-effectiveness analysis alongside the original randomised controlled trial.¹⁰⁶ The analysis found reablement was potentially more cost-effective than usual care. The interventions improved independence in activities important to older people while reducing long-term demand for home-based services.

The economic findings were influential internationally because policy makers increasingly viewed reablement as a possible strategy for addressing the financial pressures associated with population ageing. However, the Norwegian researchers again remained cautious in their interpretation. The study did not claim that reablement would universally reduce aged care costs. Instead, it demonstrated that improved independence outcomes could potentially be achieved without increasing overall expenditure.

Collectively, these Norwegian studies significantly shaped international reablement policy and research. Several themes consistently emerged across the literature. First, Norwegian reablement strongly emphasised person-centred goals and meaningful participation. Rather than focusing solely on clinical impairment, interventions aimed to help older people regain capacity to perform activities that mattered to them. Second, multidisciplinary teamwork was considered essential, with occupational therapists, physiotherapists, nurses, and support workers collaborating closely. Third, interventions were delivered within the home environment, allowing rehabilitation to occur within real-life contexts rather than institutional settings.

The Norwegian studies also highlighted the psychological dimensions of functional decline. By focusing on activities the participants themselves identified, reablement sought to improve not only physical functioning but also confidence, motivation, and autonomy. Although the trials did not always measure these concepts directly, the emphasis on self-perceived occupational performance reflected recognition that independence involves subjective experience as well as objective capacity.

Importantly, Norwegian researchers consistently adopted a cautious interpretation of evidence. The studies demonstrated significant benefits in occupational performance and satisfaction, but they did not claim that reablement improved every outcome. Physical functioning, quality of life, and health service use results were more mixed. This methodological caution strengthened the credibility of the Norwegian evidence base because conclusions remained proportionate to the findings observed.

¹⁰⁵ Langeland E, Tuntland H, Folkestad B, Førland O, Jacobsen FF, & Kjekken I. (2019). A multicenter investigation of reablement in Norway: A clinical controlled trial. *BMC Geriatrics*, 19(1):29.

¹⁰⁶ Kjerstad E, & Tuntland H. (2016). Reablement in community-dwelling older people: A cost-effectiveness analysis alongside a randomized controlled trial. *Health Economics Review*, 6(1):15.

Overall, the Norwegian trials by Tuntland, Langeland, Kjerstad, and colleagues provided some of the most important empirical foundations for modern reablement practice. Their work demonstrated that multidisciplinary, person-centred, home-based interventions could improve older people's ability to perform meaningful daily activities and potentially do so cost-effectively. At the same time, the research highlighted the complexity of restorative care and the need for realistic expectations regarding outcomes. The Norwegian evidence therefore remains highly influential because it combines rigorous evaluation with a balanced and conceptually sophisticated understanding of what reablement can – and cannot – achieve.

Lessons learned

The findings in Australia, New Zealand, the United Kingdom and Norway have been reinforced by numerous subsequent evaluations and systematic reviews.¹⁰⁷ Across different local authorities and service models, studies consistently demonstrate reductions in home-care use following reablement interventions. Although the magnitude of these reductions varies between studies, the overall pattern is remarkably consistent. Individuals receiving reablement typically require fewer home-care hours, experience delayed entry into intensive care services, and report greater confidence in undertaking activities of daily living.

Several studies have found the most significant economic benefits arise from delayed dependency. The costs associated with long-term home care and residential care are substantial and tend to accumulate over many years. Even relatively small delays in the onset of dependency can therefore generate significant savings for governments and care systems. Researchers have also highlighted broader benefits that may not be fully captured in traditional cost analyses. Reablement frequently improves confidence, social participation, and perceived control over daily life. Participants often report feeling more capable, less dependent, and more engaged with their communities. These outcomes contribute to quality of life and may have indirect economic benefits through reduced caregiver burden, improved mental health, and lower use of health services.

Experience also provides valuable insights into implementation challenges. Not all reablement programs achieve identical outcomes, and effectiveness appears to depend on factors such as workforce training, organisational culture, multidisciplinary collaboration, and fidelity to restorative principles. Programs that drift towards traditional maintenance-oriented home care often achieve weaker outcomes than those that maintain a strong focus on goal-setting, independence, and active participation. Consequently, the success of reablement depends not merely on the existence of a program but on the quality with which the reablement philosophy is implemented.

Intervention 5: Adapting the environment: Home modifications

Home modifications encompass structural and environmental changes designed to improve safety, accessibility, and functional capacity. Common modifications include grab rails, handrails, ramps, stair lifts, improved lighting, bathroom redesigns, widened doorways, and other adaptations that reduce environmental barriers. These interventions are grounded in the recognition that disability often results not only from individual impairments but also from interactions between individuals and their physical environments. Environmental barriers can transform manageable functional limitations into dependency, falls, hospitalisation, and ultimately residential care admission.

¹⁰⁷ Tessier A, Beaulieu MD, McGinn CA, & Latulippe R. (2016). Effectiveness of reablement: A systematic review. *Health Care Policy*, 11(4):49-59.

Zingmark M, Tuntland H, & Burton E. (2023). Reablement as a cost-effective option from a health economic perspective. In: Rostgaard T, Parsons J, and Tuntland H. (2023). *Reablement in Long-Term Care for Older People*. Policy Press, Bristol, UK.

Several pathways explain how home modifications may postpone institutionalisation. First, modifications reduce fall risk. The economic consequences of falls are significant. Falls are projected to reduce global output by 0.088% of the cumulative world gross domestic product over the period 2020 to 2050.¹⁰⁸ Falls are also a leading cause of injury, hospitalisation, disability, and residential care admission among older people.¹⁰⁹ Environmental hazards such as loose rugs, slippery or uneven surfaces, clutter, inadequate lighting, stairs, and inaccessible bathrooms contribute substantially to fall risk.¹¹⁰ Home safety assessment and modification programs have been shown to reduce both the rate and the risk of falls among community-dwelling older people – particularly those at high risk.¹¹¹ By addressing environmental hazards, home modifications reduce the likelihood of falls and their associated health and economic consequences.¹¹²

Second, modifications support activities of daily living. Older people frequently require assistance with bathing, toileting, dressing, transferring, and mobility. Environmental adaptations can reduce functional difficulties and enable older people to perform everyday activities more independently.¹¹³ Systematic reviews have found that home modifications improve occupational performance,

¹⁰⁸ Li J, Zhang R, Song Q, Gong Y, Chen S, & Yin X. (2026). Economic burden of falls for 190 countries and territories from 2020 to 2050 based on health-augmented macroeconomic modelling. *Nature Human Behaviour*, s41562-026-02451-2.

¹⁰⁹ Tinetti ME, & Williams, CS. (1997). Falls, injuries due to falls, and the risk of admission to a nursing home. *New England Journal of Medicine*, 337(18):1279-84.

Keleman AA, Li M, Wisch JK, Bollinger RM, Krauss MJ, Grant EA, Benzinger TLS, Ances BM, Morris JC, & Stark SL. (2026). Falls predict faster progression to Alzheimer's dementia. *Alzheimer's and Dementia*, 22(2):e71177.

Briggs R, Ward M, Scarlett S, van der Velde N, Hernandez B, Romero-Ortuno R, Tysinger B, May P, Ahern E, & Kenny RA. (2026). Determining the burden of falls amongst community-dwelling older people in Ireland to inform falls care delivery: secondary data analysis from the Irish longitudinal study on ageing - the defined study. *BMJ Open*, 16(1):e107647.

Dobash DS, Haddad YK, Rice K, & Bergen G. (2026). Older Adult Falls as a Predictor of Nursing Facility Placement. *American Journal of Lifestyle Medicine*:15598276251409755. Epub ahead of print.

¹¹⁰ Lord SR, Sherrington C, Menz HB, & Close JCT. (2007). *Falls in older people: Risk factors and strategies for prevention* (2nd edition). Cambridge University Press, Cambridge, United Kingdom.

Clemson L, Stark S, Pighills AC, Fairhall NJ, Lamb SE, Ali J, & Sherrington C. (2023). Environmental interventions for preventing falls in older people living in the community. *Cochrane Database of Systemic Reviews*, 3(3):CD013258.

Kim GS, Kim N, Shim M-S, Lee JJ, & Park MK. (2023). Understanding the Home Environment as a Factor in Mitigating Fall Risk among Community-Dwelling Frail Older People: A Systematic Review. *Health & Social Care in the Community*, 2023:8564397.

¹¹¹ Gillespie LD, Robertson MC, Gillespie WJ, Sherrington C, Gates S, Clemson LM, & Lamb SE. (2012). Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, 9:CD007146.

¹¹² Gitlin LN, Hauck WW, Dennis MP, Winter L, Hodgson N, & Schinfeld S. (2006). Long-term effect on mortality of a home intervention that reduces functional difficulties in older people. *Journal of the American Geriatrics Society*, 54(6):950-5.

Wang Y, Gibb K, & McCall V. (2022). [Evidence review of home adaptations in the UK and other OECD countries](#). UK Collaborative Centre for Housing Evidence (CaCHE) Report.

¹¹³ Golding-Day M, & Whitehead P (2020) Bathing adaptations in the homes of older people and their carers (BATH-OUT): a qualitative extended follow-up study with concurrent nested outcome assessments. *BMJ Open*, 10(11):e035701.

participation, and independence in daily activities, thereby reducing reliance on both formal and informal care services.¹¹⁴

Third, home modifications reduce caregiver burden. Family caregivers often provide substantial assistance when environmental barriers limit an older person's ability to perform everyday activities independently. Randomised controlled trials have found home environmental interventions, such as accessible bathrooms, grab rails and ramps and adaptive strategies, reduce caregiver burden, improve caregiver confidence, and decrease physical and emotional caregiving demands.¹¹⁵ Systematic reviews similarly conclude that home modifications can improve caregiver wellbeing and reduce reliance on informal care. Given that caregiver stress is a recognised predictor of residential care admission, reductions in caregiver burden may contribute to delaying institutionalisation.¹¹⁶

Fourth, environmental adaptations enhance confidence and social participation. Fear of falling frequently leads older people to restrict activities, reduce community engagement, and become socially isolated, which can contribute to further functional decline. Home modifications that improve accessibility and safety can increase confidence in performing daily activities and support continued participation in social and community life.¹¹⁷ Systematic reviews have found environmental adaptations improve independence, wellbeing, and social participation, thereby helping older people maintain functional capacity and remain in their own homes.¹¹⁸

Finally, home modifications can prevent hospital admissions and facilitate recovery following illness or injury. By reducing environmental hazards and improving accessibility, home modifications decrease the incidence of injury-related hospitalisations – particularly those associated with falls. Adaptations can also support earlier hospital discharge and improve functional recovery by enabling

¹¹⁴ Ernst J, Zwinge E, & König M. (2025). The relationship between home modifications and frailty among older people: a scoping review protocol. *PLoS One*, 20(11):e0335822.

¹¹⁵ Chandola T, Rouxel PLLM, Lou VWQ, Ng S, Tang WMY, Tsoi TCW, Lin W, Quan J, Chan WS, Lu P, & Yi X. (2026). Do home modifications reduce caregiver burden? A cross-sectional analysis of factors associated with caregiver burden and resilience in Hong Kong. *Innovation in Aging*, 2026:igag029.

Gitlin LN, Winter L, Corcoran M, Dennis MP, Schinfeld S, & Hauck WW. (2003). Effects of the home environmental skill-building program on the caregiver-care recipient dyad: Six-month outcomes from the Philadelphia REACH Initiative. *The Gerontologist*, 43(4):532-46.

¹¹⁶ Carnemolla P, & Bridge C. (2019). Housing Design and Community Care: How Home Modifications Reduce Care Needs of Older People and People with Disability. *International Journal of Environmental Research and Public Health*, 16(11):1951.

¹¹⁷ Delbaere K, Crombez G, Vanderstraeten G, Willems T, & Cambier D. (2004). Fear-related avoidance of activities, falls and physical frailty. A prospective community-based cohort study. *Age and Ageing*, 33(4):368-73.

Zijlstra GA, van Haastregt JC, van Eijk JT, van Rossum E, Stalenhoef PA, & Kempen GI. (2007). Prevalence and correlates of fear of falling, and associated avoidance of activity in the general population of community-living older people. *Age and Ageing*, 36(3):304-9.

Stark S, Keglovits M, Arbesman M, & Lieberman D. (2017). Effect of home modification interventions on the participation of community-dwelling adults with health conditions: A systematic review. *American Journal of Occupational Therapy*, 71(2):7102290010 p1-7102290010p11.

¹¹⁸ Cha SM. (2025). A Systematic Review of Home Modifications for Aging in Place in Older people. *Health care (Basel)*, 13(7):752.

Iwarsson S, & Isacson Å. (1997). Quality of life in the elderly population: An example exploring interrelationships among subjective well-being, ADL dependence, and housing accessibility. *Archives of Gerontology and Geriatrics*, 26(1):71-83.

individuals to safely undertake daily activities within their homes.¹¹⁹ Reviews of the literature indicate home modifications are associated with reduced reliance on health and support services and lower health care use overall.¹²⁰

International experience provides important support for the use of home modifications as part of broader strategies to support ageing in place. Although long-term care systems differ across countries, many governments have recognised that relatively modest investments in housing accessibility can improve independence, reduce injuries, and decrease demand for more intensive and costly health and care services.

United Kingdom: Disabled Facilities Grants

The United Kingdom has been one of the strongest proponents of housing adaptations as a means of supporting older people and people with disability to remain in their own homes. Through programs such as Disabled Facilities Grants, local authorities provide financial assistance for home adaptations including ramps, stairlifts, accessible bathrooms, handrails, and other accessibility improvements. Mandatory Disabled Facilities Grants are available from local authorities in England and Wales and the Housing Executive in Northern Ireland for essential adaptations to give people with disability better freedom of movement into and around their homes, and to ensure essential facilities within the home are accessible. The maximum grant payable under a Disabled Facilities Grant is £30,000 in England, £25,000 in Northern Ireland and £36,000 in Wales. The grant is paid when the work has been completed to the local authority's satisfaction and in accordance with the grant approval. The

¹¹⁹ Hitzig SL, Yuzwa KE, Weichel L, Cohen E, Anderson L, Athanasopoulos P, Best KL, Chow M, Kaiser A, Tomasella F, Guilcher SJT, Noonan VK, Joy R, Abdullah A, Bacchus-Misir F, Chan A, Courage M, Erdelyi N, Fletcher D, Galeazzi-Stirling S, Gladstone G, Green J, Hardy M, Harris E, Kerr J, Lytle J, MacGinnis K, Malkowski G, Rosenbaum D, Sawchuk J, Terashima M, Yin YL, VanDeVelde-Coke S, & Sheppard CL. (2025). Identifying priorities and developing collaborative action plans to improve accessible housing practice, policy, and research in Canada. *PLoS One*, 20(2):e0318458.

Hollinghurst J, Daniels H, Fry R, Akbari A, Rodgers S, Watkins A, Hillcoat-Nallétamby S, Williams N, Nikolova S, Meads D, & Clegg A. (2022). Do home adaptation interventions help to reduce emergency fall admissions? A national longitudinal data-linkage study of 657,536 older people living in Wales (UK) between 2010 and 2017. *Age and Ageing*, 51(1):afab201.

Hollinghurst J, Fry R, Akbari A, Watkins A, Williams N, Hillcoat-Nallétamby S, Lyons RA, Clegg A, & Rodgers SE. (2020). Do home modifications reduce care home admissions for older people? A matched control evaluation of the Care & Repair Cymru service in Wales. *Age and Ageing*, 49(6):1056-61.

Keall MD, Pierse N, Howden-Chapman P, Cunningham C, Cunningham M, Guria J, & Baker MG. (2015). Home modifications to reduce injuries from falls in the Home Injury Prevention Intervention (HIPI) study: A cluster-randomised controlled trial. *The Lancet*, 385(9964):231-8.

Petersson I, Kottorp A, Bergström J, & Lilja M. (2009) Longitudinal changes in everyday life after home modifications for people aging with disabilities. *Scandinavian Journal of Occupational Therapy*, 16(2):78-87.

Petersson I, Lilja M, Hammel J, & Kottorp A. (2008). Impact of home modification services on ability in everyday life for people ageing with disabilities. *Journal of Rehabilitation Medicine*, 40(4):253-60.

¹²⁰ Heywood FS, & Turner L. (2007). Better outcomes, lower costs: implications for health and social care budgets of investment in housing adaptations, improvements and equipment - a review of the evidence. Office for Disability Issues, Department of Work and Pensions.

Zhou W, Lyu X, Huang Y, Jiang B, & Jiang J. (2025). A Comparative Bibliometric Analysis of Global Research on Adaptation Interventions for Healthy Aging at Home. *SAGE Open*, 15(1).

Zingmark M, & Bernspång B. (2011). Meeting the needs of elderly with bathing disability. *Australian Occupational Therapy Journal*, 58(3):164-71.

actual amount of Disabled Facilities Grant that someone can get depends on the income and savings of the person with disability (and their partner), even if they have not actually applied for the grant (such as when an application is made by a landlord whose tenant has disability).

Mandatory Disabled Facilities Grants can cover such work as:

- making it easier to get into and out of the dwelling by, for example, widening doors and installing ramps
- ensuring the safety of the occupants by, for example, providing a specially adapted room in which it would be safe for a person with disability to be unattended, or improving lighting to ensure better visibility
- making access easier to the living room
- providing or improving access to the bedroom, kitchen, toilet, washbasin and bath (and/or shower) facilities; for example, by installing a stair lift or providing a downstairs bathroom
- improving or providing a suitable heating system in the home
- adapting heating or lighting controls to make them easier to use
- improving access and movement around the home to enable the person with disability to care for another person who lives in the property, such as a spouse, child or another person.¹²¹

The total funding provided by the United Kingdom Government to local authorities for 2025–26 was £761 million.¹²²

A comprehensive review undertaken for the United Kingdom Office for Disability Issues concluded that housing adaptations frequently generate benefits that exceed their costs.¹²³ The review found relatively small expenditures on home adaptations often reduced demand for more expensive health and social care services by improving safety, increasing independence, and reducing the need for ongoing support. It argued that delays in providing adaptations frequently resulted in higher public expenditure elsewhere in the system. The analysis suggested that timely investment in home modifications can represent a highly cost-effective preventative intervention.

The United Kingdom experience also illustrates an important issue in health economics. The costs of housing adaptations are often borne by housing agencies, whereas many of the benefits accrue to health and social care budgets. This fragmentation can discourage investment despite the existence of substantial societal benefits.

Scandinavia: Housing adaptation programs

The Scandinavian countries provide another important example of the integration of housing adaptations within broader community care systems. Housing adaptation programs are generally administered through local governments and are designed to support older people experiencing

¹²¹ Wilson W. (2023). [Disabled facilities grants \(DFGs\) for home adaptations](#). House of Commons Library.

United Kingdom. Ministry of Housing, Communities & Local Government; Department of Health and Social Care. (2022). [Disabled Facilities Grant \(DFG\) delivery: Guidance for local authorities in England](#).

¹²² United Kingdom. Ministry of Housing, Communities & Local Government. (2026). [Changing the way government allocates Disabled Facilities Grant funding to local authorities in England: Consultation response](#).

¹²³ Heywood FS, & Turner L. (2007). *Better outcomes, lower costs: implications for health and social care budgets of investment in housing adaptations, improvements and equipment - a review of the evidence*. Office for Disability Issues, Department of Work and Pensions.

mobility limitations or functional decline. Research from Sweden has demonstrated that housing accessibility is closely associated with independence, participation, and quality of life among older people. The Swedish approach reflects the broader ecological model of ageing, which recognises that disability often arises from interactions between individual impairments and environmental barriers rather than from health conditions alone.¹²⁴

Although the evidence directly linking housing adaptations to reduced residential care admission is limited, Scandinavian researchers have consistently reported positive effects on mobility, independence, and participation in everyday activities. These outcomes are important because functional decline is one of the strongest predictors of institutionalisation. Sweden and Denmark have historically emphasised home-based care and ageing-in-place policies, with long-term care systems that provide extensive support in people's homes and comparatively lower reliance on residential care than countries like Australia.¹²⁵ While this cannot be attributed solely to housing adaptation programs, it suggests environmental interventions can form an important component of comprehensive community care systems designed to support ageing in place.

New Zealand: Home Injury Prevention Intervention (HIPI) study

New Zealand has produced some of the strongest evidence regarding the effectiveness and cost-effectiveness of home modifications. The HIPI study examined a package of relatively inexpensive housing modifications including handrails, grab rails, improved lighting, non-slip surfaces, and step-edge improvements. The cluster-randomised controlled trial found a statistically significant reduction in medically treated fall injuries among residents of modified homes. Specifically, the intervention reduced fall injuries by approximately 26%, demonstrating that relatively modest environmental changes can produce substantial improvements in safety.¹²⁶

The economic implications of these findings are important. A subsequent cost-benefit analysis of the HIPI trial concluded the financial benefits generated by avoided injuries substantially exceeded the implementation costs. The social benefits of the program were estimated to be more than 6 times the implementation costs. The study provides some of the strongest available evidence that home modifications can generate positive returns on public investment through reduced health care use and injury-related costs.¹²⁷ Further New Zealand research reinforces these findings. The Māori HIPI trial evaluated similar home modifications in households occupied by Māori residents. The study reported significantly (31%) fewer fall injuries after housing modifications were implemented. These findings suggest home modifications can be effective across diverse populations and may help reduce health inequalities while lowering health care expenditure.¹²⁸

¹²⁴ Iwarsson S, & Isacson Å. (1997). Quality of life in the elderly population: An example exploring interrelationships among subjective well-being, ADL dependence, and housing accessibility. *Archives of Gerontology and Geriatrics*, 26(1):71-83.

¹²⁵ Rostgaard T, Jacobsen F, Kröger T, & Peterson E. (2022). Revisiting the Nordic long-term care model for older people—still equal? *European Journal of Ageing*, 19:201-10.

¹²⁶ Keall MD, Piers N, Howden-Chapman P, Cunningham C, Cunningham M, Guria J, & Baker MG. (2015). Home modifications to reduce injuries from falls in the Home Injury Prevention Intervention (HIPI) study: A cluster-randomised controlled trial. *The Lancet*, 385(9964):231-8.

¹²⁷ Keall MD, Piers N, Howden-Chapman P, Guria J, Cunningham CW, & Baker MG. (2017). Cost-benefit analysis of fall injuries prevented by a programme of home modifications: a cluster randomised controlled trial. *Injury Prevention*, 23(1):22-26.

¹²⁸ Keall MD, Tupara H, Piers N, Wilkie M, Baker MG, Howden-Chapman P, & Cunningham C. (2021). Home modifications to prevent home fall injuries in houses with Māori occupants (MHIPI): a randomised controlled trial. *Lancet Public Health*, 6(9):e631-40.

Australia: Evidence of care substitution

Home modifications do not just delay admission to residential care; they can also reduce the need for support in the community. An Australian study of 157 people who had received home modifications via an Australian Government-subsidised home modification program found strong evidence that home modifications reduced the need for:

- informal care provision: In this data set, informal care hours fell by approx. 6 hours per week, with a 95% confidence interval of between 4.12 and 7.8 hours per week savings.
- formal care provision: In this data set formal care hours were reduced by approx. 0.36 hours per week, with a 95% confidence interval of between 0.02 and 0.7 hours per week savings.
- total care provision (formal and informal care): In this data set, total care hours fell by approx. 6.32 hours per week, with a 95% confidence interval of between 4.48 and 8.15 hours per week savings.¹²⁹

Japan: Preventing care needs deterioration

Home modification can also prevent care needs level deterioration of older people with frailty. A Japanese study of individuals who were certified as having lower-level care support levels under the public long-term care insurance systems found that the incidence of care needs level deterioration was 19.3/1,000 person-month of older people who implemented housing adaptations, compared to 31.9/1,000 person-month of those who did not. The adjusted hazard ratio of care needs level deterioration was 0.69 (95% CI: 0.51 to 0.93). The adjusted hazard ratio was lower where the home modifications were more substantial: 0.51 (95% CI: 0.31 to 0.82) and 0.78 (95% CI: 0.57 to 1.07) in the maximum and other cost groups, respectively.¹³⁰

United States of America: Reducing functional difficulties

The USA has also generated important evidence supporting environmental interventions, particularly when integrated with occupational therapy and community-based care programs. Research has demonstrated that home environmental interventions can reduce functional difficulties, improve performance of activities of daily living, and decrease caregiver burden.¹³¹ Although these studies did not typically measure residential care admission directly, they addressed several of the key factors associated with institutionalisation, including declining functional ability, reduced confidence, and increasing dependence on caregivers.

The USA experience also highlights the importance of combining home modifications with broader rehabilitation and care coordination strategies. Environmental changes appear to be most effective when accompanied by occupational therapy assessments, training in the use of adaptive equipment, and interventions designed to improve physical functioning. This integrated approach aligns closely

¹²⁹ Carnemolla P, & Bridge C. (2019). Housing Design and Community Care: How Home Modifications Reduce Care Needs of Older People and People with Disability. *International Journal of Environmental Research and Public Health*, 16(11):1951.

¹³⁰ Tsuchiya-Ito R, Hamada S, Iwagami M, Ninomiya A, & Ishibashi T. (2023). Association of housing adaptation services with the prevention of care needs level deterioration for older people with frailty in Japan: a retrospective cohort study. *BMC Health Services Review*, 23(1):916.

¹³¹ Gitlin LN, Winter L, Dennis MP, Corcoran M, Schinfeld S, & Hauck WW. (2006). A randomized trial of a multicomponent home intervention to reduce functional difficulties in older people. *Journal of the American Geriatrics Society*, 54(5):809-16.

with contemporary reablement and restorative care models, which seek to maximise independence rather than simply compensate for disability.

Lessons learned

Taken together, the international evidence suggests home modifications can generate substantial health and economic benefits. The strongest evidence comes from the United Kingdom and New Zealand, where evaluations have demonstrated reduced injury-related health care use and favourable cost-benefit outcomes. Evidence from Sweden, Denmark, and the USA further indicates that environmental adaptations can improve independence, participation, and functional capacity.

While direct evidence demonstrating delayed admission to residential care remains relatively limited, the cumulative findings suggest home modifications address many of the pathways leading to institutionalisation, including falls, disability, caregiver burden, and loss of independence. Consequently, home modifications are increasingly viewed as a cost-effective component of long-term care systems seeking to support ageing in place while containing future expenditure on residential care.

From a health economics perspective, the intervention is particularly attractive because costs are generally incurred once, while benefits may continue for many years. Given the substantial costs associated with residential care, even modest delays in admission can generate significant

The evidence has important implications for aged care policy. First, home modifications should be viewed as preventative investments, rather than discretionary housing expenditures. Traditional distinctions between housing policy and health policy often obscure the substantial health care benefits generated by environmental interventions.

Second, timely access is critical. Delays in assessment or funding may allow preventable deterioration to occur, reducing potential benefits.

Third, home modifications should be integrated with broader reablement and restorative care approaches. Environmental changes are most effective when combined with occupational therapy, physiotherapy, falls prevention, and caregiver support.

Fourth, economic evaluations suggest governments should consider long-term system-wide savings rather than focusing solely on short-term program costs. Investments that delay residential care admission may generate substantial future savings.

Finally, population ageing is likely to increase the importance of housing adaptation programs. As the number of older people grows, cost-effective strategies that support ageing in place will become increasingly valuable.

Intervention 6: Adapting the environment: Assistive technology

Assistive technology is becoming increasingly prominent in long-term care policy because it appears to offer a plausible way to support older people to remain safely at home and to reduce reliance on residential care. The term ‘assistive technology’ covers a wide range of devices, including personal alarms, medication dispensers, fall detectors, location devices, environmental sensors, stove shut-off devices, communication aids, memory prompts, and mobility-related equipment. Smart home monitoring generally refers to more integrated systems that use sensors, alarms, remote monitoring, and sometimes algorithmic analysis to detect changes in activity, safety risk, or health status. The economic argument is that these technologies may reduce hospitalisation, improve safety, reassure caregivers, substitute for some face-to-face monitoring, and delay admission to residential care.

The theoretical case for assistive technology is strong. Many residential care admissions are precipitated not by a single diagnosis but by the accumulation of functional decline, safety risks, caregiver stress, falls, wandering, medication errors, and uncertainty about whether a person can

safely remain alone. Technologies that monitor movement, detect falls, remind people to take medicines, alert carers to emergencies, or reduce environmental risks may therefore address some of the pathways that lead to institutionalisation. For example, in dementia care, door sensors and automated prompts may reduce perceived risk and caregiver anxiety. In frailty and chronic disease, passive monitoring may detect deterioration earlier than periodic visits. In principle, these benefits could reduce emergency admissions, delay entry to residential care, and lower total system costs.

The difficulty is that plausible mechanisms do not necessarily translate into cost-effectiveness. Cost-effectiveness depends on whether the technology changes outcomes enough to justify the costs of equipment, installation, monitoring, maintenance, assessment, response, training, and replacement. It also depends on whether technology substitutes for care or merely adds another layer of service. If alarms generate additional visits, false positives, or professional responses without preventing costly events, expenditure may increase. If monitoring identifies unmet need, service use may increase.

The best available evidence suggests assistive technology may support independence and risk management, but robust evidence that it consistently delays institutionalisation or generates net cost savings remains limited and mixed.

United Kingdom: Assistive Technology and Telecare to maintain Independent Living at Home (ATTILA) trial

The most important evidence for people with dementia comes from the ATTILA trial. The trial evaluated the effectiveness and cost-effectiveness of assistive technology and telecare for maintaining independent living among people with dementia by comparing a full assistive technology and telecare package with a more limited basic package. The primary outcomes were time to institutionalisation and cost-effectiveness.

The results were sobering. Time living independently outside a care home was not significantly longer among participants who received the full package, and the intervention was not cost-effective.¹³² The larger Health Technology Assessment report reached the same conclusion: a full package of assistive technology and telecare neither significantly increased the length of time people with dementia remained in the community, nor reduced caregiver burden, depression or anxiety relative to the basic package. It did not reduce costs sufficiently to demonstrate cost-effectiveness.¹³³

¹³² Howard R, Gathercole R, Bradley R, Harper E, Davis L, Pank L, Lam N, Talbot E, Hooper E, Winson R, Scutt B, Ordóñez Montano V, Nunn S, Lavelle G, Bateman A, Benthams P, Burns A, Dunk B, Forsyth K, Fox C, Poland F, Leroi I, Newman S, O'Brien J, Henderson C, Knapp M, Woolham J, & Gray R. (2021). The effectiveness and cost-effectiveness of assistive technology and telecare for independent living in dementia: A randomised controlled trial. *Age and Ageing*, 50(3):882-90.

Comans T, Dao-Tran TH, Balasooriya N, Simpson D, Low LF, Barcenilla-Wong A, Vasquez P, Zhou J, & Nguyen KH. (2025). Cost-benefit analysis of interventions for dementia: a scoping review. *Innovative Aging*, 9(8):igaf084.

Paterson L, Elliott RA, Constantinidou F, David R, Dawes P, Frison E, Hann M, Hussain H, Leroi I, Politis AM, Thodi C, Camacho EM; & SENSE-Cog Study Team. (2025). The Cost-Effectiveness of an Intervention to Preserve Independence in People With Dementia (Vs. No Intervention): A Decision-Analytic (Markov) Model Analysis. *International Journal of Geriatric Psychiatry*, 40(7):e70132.

¹³³ Gathercole R, Bradley R, Harper E, Davies L, Pank L, Lam N, Davies A, Talbot E, Hooper E, Winson R, Scutt B, Montano VO, Nunn S, Lavelle G, Lariviere M, Hirani S, Brini S, Bateman A, Benthams P, Burns A, Dunk B, Forsyth K, Fox C, Henderson C, Knapp M, Leroi I, Newman S, O'Brien J, Poland F, Woolham J, Gray R, & Howard R. (2021). Assistive technology and telecare to maintain independent living at home for people with dementia: the ATTILA RCT. *Health Technology Assessment*, 25(19):1-156.

The ATTILA findings are especially important because dementia is one of the conditions for which assistive technology is most often promoted. If any group might be expected to benefit from monitoring, alarms, and safety technologies, it is people living with dementia whose risks include wandering, fire, falls, medication problems, and carer stress. Yet the trial showed technology alone was insufficient to produce a statistically significant delay in residential care admission. This does not mean assistive technology is useless. It may still reduce specific risks or provide reassurance in individual cases. However, it does mean that policymakers should not assume that broad provision of telecare packages will automatically defer residential care or save money.

The ATTILA trial also highlights a major implementation issue: problems of intervention fidelity, including variation in the match between assessment, recommendations, and installation. This matters greatly for economic evaluation. Assistive technology is not a single intervention like a drug. It is a service pathway involving assessment, prescription, installation, monitoring, response, and user behaviour. Poorly-matched devices may provide little benefit. Devices that are not used, not understood, or not trusted cannot produce meaningful outcomes. Conversely, highly personalised technology may be more effective but also more expensive. The economic question is therefore not whether ‘technology’ works in general, but which technology, for which person, at which point in the care trajectory, with what response system, and at what cost.

United Kingdom: Whole System Demonstrator (WSD) trial

The WSD trial examined telecare’s effect on health and social care use among people with social care needs. The intervention included remote and passive monitoring technologies, including pendant alarms, bed and chair occupancy sensors, fall detectors, medication dispensers, property exit sensors, smoke detectors, and flood detectors. The study found telecare did not significantly reduce hospital use, social care use, mortality, or admissions to residential or nursing care over 12 months.¹³⁴ Economic evaluation of the intervention was also unfavourable. It found that second-generation telecare was associated with higher costs and similar QALY outcomes compared with usual care. The estimated cost per additional QALY was approximately £297,000, and the probability of cost-effectiveness at a willingness-to-pay threshold of £30,000 per QALY was only 16%. Even under sensitivity analyses using lower support and equipment costs, the intervention did not become convincingly cost-effective.¹³⁵

Systemic reviews

A systemic review of the role of smart home health technologies in the care of older persons, found they may support continuous monitoring, self-management, independent living, safety, and caregiving. The review also identified important barriers, including usability, social acceptance, privacy, and cost. These findings suggest that smart home monitoring may be valuable in certain contexts – especially where continuous observation is needed and where informal carers derive

¹³⁴ Steventon A, Bardsley M, Billings J, Dixon J, Doll H, Beynon M, Hirani S, Cartwright M, Rixon L, Knapp M, Henderson C, Rogers A, Hendy J, Fitzpatrick R, & Newman S. (2013). Effect of telecare on use of health and social care services: findings from the Whole Systems Demonstrator cluster randomised trial. *Age and Ageing*, 42(4):501-8.

¹³⁵ Henderson C, Knapp M, Fernández JL, Beecham J, Hirani SP, Beynon M, Cartwright M, Rixon L, Doll H, Bower P, Steventon A, Rogers A, Fitzpatrick R, Barlow J, Bardsley M, & Newman SP. (2014). Cost-effectiveness of telecare for people with social care needs: the Whole Systems Demonstrator cluster randomised trial. *Age and Ageing*, 43(6):794-800.

reassurance from knowing that risks are being monitored. However, the review also reinforces the point that acceptability and implementation are central to effectiveness.¹³⁶

Lessons learned

For delaying residential care admission, the most plausible mechanism is not technology alone, but technology embedded in a care model. Smart home monitoring may be more effective when combined with case management, occupational therapy, reablement, caregiver support, and rapid response services. If a monitoring system identifies reduced mobility, night wandering, increased bathroom visits, or altered eating patterns, a coordinated care team must respond with assessment and intervention. Without that response, monitoring merely records risk. The economic value of smart home systems therefore depends on the surrounding service architecture.

Caregiver effects are particularly important. Residential care admission often occurs when informal carers can no longer manage risk, stress, sleep disruption, or uncertainty. Assistive technology may delay admission if it reduces caregiver anxiety or makes caring sustainable. However, it may also increase burden if carers receive frequent alerts or feel responsible for constant surveillance.

Privacy, autonomy, and consent also affect cost-effectiveness indirectly. Technologies that are intrusive, confusing, or stigmatising may be rejected or underused. Smart home systems collect intimate data about movement, sleep, toileting, exits from the home, and daily routines. Older people may value safety but also fear surveillance and loss of dignity.

The literature also raises questions about equity. People who might benefit most from assistive technology may also face the greatest barriers to using it. These include cognitive impairment, low income, sensory impairment, poor housing, limited broadband access, language barriers, and limited informal support. If technology programs rely on private purchase, digital literacy, or family monitoring, they may widen inequalities. Public funding can improve access, but only if accompanied by assessment, installation, training, and ongoing technical support. These service components increase costs and must be included in economic evaluations.

From a long-term care policy perspective, the appropriate conclusion is cautious support rather than rejection. Assistive technology and smart home monitoring should not be promoted as a substitute for residential care, nor should they be assumed to generate automatic savings. The strongest available trials do not support that claim. However, technologies may be useful as part of targeted packages for specific risks, especially when they are personalised, acceptable, integrated with human response, and focused on people for whom a specific risk threatens continued community living.

The economic case is strongest where 3 conditions are met. First, the person must have a clearly identifiable risk that technology can plausibly reduce, such as medication non-adherence, wandering, falls without timely detection, or safety hazards. Second, the system must include a reliable response pathway, because monitoring without response has little value. Third, the avoided event must be sufficiently costly or important to justify the intervention.

In conclusion, assistive technology and smart home monitoring are promising – but not yet proven – cost-effective strategies for delaying or deferring residential care admission. The most defensible policy position is that these technologies should be used selectively and as part of integrated care models, not as stand-alone solutions. Their value lies not in replacing care, but in improving the timing, targeting, and safety of care when embedded in well-designed community support systems.

¹³⁶ Tian YJA, Felber NA, Pageau F, Schwab DR, & Wangmo T. (2024). Benefits and barriers associated with the use of smart home health technologies in the care of older persons: a systematic review. *BMC Geriatrics*, 24(1):152.

Schneider JE, Cooper J, Scheibling C, & Parikh H. (2020). Economic evaluation of passive monitoring technology for seniors. *Aging Clinical and Experimental Research*, 32:1375-82.

Intervention 7: Hospital avoidance and transitional care

Residential care will always be necessary for some older people, particularly where care needs are complex and safety risks are high. The policy goal should therefore not be to prevent residential care at all costs, but to prevent premature, avoidable or crisis-driven admission. Hospital discharge is one of the most important points at which such admissions occur. An older person may enter hospital because of an acute illness, fall, fracture, infection, delirium, medication problem or carer crisis, but the decision about whether they can return home is often made while they are still recovering. At that point they may be weaker, more confused, less mobile and more dependent than they were before the event. Without timely rehabilitation, home support, and coordinated discharge planning, a temporary loss of function can become a permanent pathway into residential care.

Transition care, intermediate care and structured hospital discharge policies are designed to interrupt this pathway. They create a bridge between acute hospital care and long-term living arrangements. Their purpose is to give older people time, therapy, nursing support, personal care, equipment, environmental modification and care coordination before irreversible decisions are made about permanent residential aged care. In health-economic terms, they are preventive investments. They bring costs forward in the form of post-acute care, rehabilitation and coordination, but may reduce later costs by shortening hospital stays, preventing re-admissions, delaying residential care, reducing avoidable functional decline and preserving quality of life.

How these services delay residential care admission

Hospitalisation is not a neutral event for frail older people. Even when the acute medical problem is treated successfully, hospital admission can produce or accelerate functional decline. Immobility, bed rest, disrupted sleep, unfamiliar environments, poor nutrition, delirium, polypharmacy and reduced confidence can all erode an older person's capacity to return home. A large literature on hospital-associated disability shows that a substantial proportion of older people leave hospital with worse ability to perform activities of daily living than before admission.¹³⁷ This decline is not merely a clinical inconvenience. Loss of function after hospitalisation is associated with re-admission, greater use of formal care, carer strain and increased risk of institutionalisation.

Changes in functional status before and during hospitalisation are strongly associated with subsequent residential care admission.¹³⁸ The mechanism is straightforward. Residential care admission is rarely caused by diagnosis alone. It is usually triggered by the interaction between illness, disability, home environment, informal care capacity and service availability. An older person who could previously manage at home may become unable to transfer safely, bathe independently, prepare food, manage medication or use stairs. If the hospital discharge system treats these problems as evidence of permanent dependency rather than as potentially reversible consequences of illness and hospitalisation, residential care becomes the default solution.

This is why discharge planning must begin early and must be linked to active post-discharge support. A discharge summary and referral are not enough. The relevant question is not simply whether the person is medically fit to leave hospital, but whether they have a safe and supported pathway to recover function outside the acute ward. Transition care programs seek to create that pathway.

¹³⁷ Loyd C, Markland AD, Zhang Y, Fowler M, Harper S, Wright NC, Carter CS, Buford TW, Smith CH, Kennedy R, & Brown CJ. (2020). Prevalence of Hospital-Associated Disability in Older people: A Meta-analysis. *Journal of the American Medical Directors Association*, 21(4):455-461.e5.

¹³⁸ Fortinsky RH, Covinsky KE, Palmer RM, & Landefeld CS. (1999). Effects of functional status changes before and during hospitalization on nursing home admission of older people. *Journals of Gerontology, Series A, Biological Sciences and Medical Sciences*, 54(10):M521-6.

The terminology differs across countries. In Australia, the [Transition Care Program](#) provides short-term restorative care to older people after hospital discharge.¹³⁹ It is intended for people who are medically ready to leave hospital but would benefit from additional support before decisions are made about their long-term care needs. Care may be delivered at home, in a residential care setting, or through a mix of both. Services can include nursing, personal care, physiotherapy, occupational therapy, social work, case management and other allied health support. The program is explicitly restorative: its purpose is to improve independence and functioning, help people return home, and delay or avoid entry into permanent residential aged care where possible.

In the United Kingdom and other jurisdictions, similar services are often described as intermediate care, reablement, step-down care, community hospital care, hospital-at-home or discharge-to-assess. The National Institute for Health and Care Excellence defines intermediate care, including reablement, as support that helps people avoid unnecessary hospital admission, supports timely transfer from hospital, and prevents premature admission to residential or nursing care.¹⁴⁰ Home-based intermediate care and reablement usually provide short-term multidisciplinary support, often for up to 6 weeks, to restore confidence and daily functioning. Bed-based intermediate care may be used where the person is not yet ready to return home but no longer needs an acute hospital bed.

Despite differences in program design, these models share the following 4 features:

- They are time-limited and goal-oriented. They do not simply provide ongoing maintenance care; they seek measurable recovery in mobility, self-care, confidence and daily functioning.
- They are multidisciplinary. Effective transition care usually requires nurses, physiotherapists, occupational therapists, social workers, doctors, pharmacists, care coordinators and personal care workers.
- They are situated between hospital and long-term care. Their value lies in avoiding premature binary decisions between 'hospital' and 'residential care'.
- They depend on rapid access. A restorative service that begins weeks after discharge may arrive too late to prevent deterioration, carer breakdown or institutional admission.

Functional recovery

Many older people leave hospital below their pre-admission level of functioning, but some of that decline is reversible. Physiotherapy can restore strength, balance and gait. Occupational therapy can retrain daily activities and recommend equipment. Nursing can stabilise wounds, continence, medication routines and chronic disease management. Personal care can provide short-term support while the person regains capacity. A period of recovery, transition care can reduce the probability that a person will be assessed as requiring permanent residential care.

Better timing of assessment

Assessing long-term care needs in an acute hospital bed can exaggerate dependency. A person recovering from hip fracture, pneumonia or delirium may appear incapable of returning home when observed in the wrong environment at the wrong time. Discharge-to-assess models reverse this logic. They move the person out of hospital once they are medically stable, provide short-term support, and assess long-term needs after recovery has begun. This is especially important because residential

¹³⁹ Australia. Department of Health, Disability and Ageing. (2026). [Transition Care Program Guidelines](#). Department of Health, Disability and Ageing.

¹⁴⁰ United Kingdom. National Institute for Health and Care Excellence (NICE). (2017). [Intermediate care including reablement \(NICE Guideline NG74\)](#). NICE.

care admission is often a one-way transition. Once admitted permanently, people may lose confidence, housing arrangements may change, carers may reorganise their lives, and the system may treat the admission as settled.

Prevention of re-admission

Transitional care interventions such as nurse-led follow-up, medication reconciliation, early primary care review, home visits and self-management support have been shown to reduce readmissions in some populations.¹⁴¹ While reduced re-admission is not identical to delayed residential admission, it is an important intermediate outcome because repeated hospital use often signals that home living is becoming unstable.

Support for informal carers

Many residential care admissions occur not only because the older person's needs increase, but because family carers become exhausted, anxious or unable to continue. Transition care can reduce immediate carer burden by providing personal care, respite-like support, nursing advice, equipment and professional reassurance. It can also give carers time to adapt to new routines after an acute event. From a societal perspective, this matters because a policy that returns older people home without adequate support may appear cheaper to government but simply transfers costs to unpaid carers. A genuinely cost-effective transition care model must also seek to preserve carer capacity.

Home adaptation and equipment

A hospital discharge can fail because the home is not ready: the person cannot shower safely, use stairs, get on and off the toilet, transfer from bed, or prepare food. Grab rails, ramps, shower chairs, mobility aids, pressure care equipment and medication systems can make the difference between residential care admission and safe home living. These interventions are relatively low-cost compared with hospital and residential care, but they require coordination and speed. The economic value is greatest when they are in place before the person reaches a crisis point.

Australia: Transition care program (TCP)

Australian evidence suggests that the TCP plays a meaningful role in supporting older people to return to the community after hospitalisation. The program was introduced in 2005-06 and is jointly funded by the Australian Government, and the states and territories. Its purpose was to provide short-term restorative care after hospital discharge, improve independence and functioning, and delay entry to residential aged care.¹⁴²

A 2012 study used the TCP as a case study to consider whether post-acute care programs for older people could reduce overall health-system costs. It concluded that such programs may reduce

¹⁴¹ Coleman EA, Parry C, Chalmers S, & Min SJ. (2006). The care transitions intervention: results of a randomized controlled trial. *Archives of Internal Medicine*, 166(17):1822-8.

Naylor MD, Broton DA, Campbell RL, Maislin G, McCauley KM, & Schwartz JS. (2004). Transitional care of older people hospitalized with heart failure: a randomized, controlled trial. *Journal of the American Geriatrics Society*, 52(5):675-84.

Verhaegh KJ, MacNeil-Vroomen JL, Eslami S, Geerlings SE, de Rooij SE, & Buurman BM. (2014). Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health Affairs (Millwood)*, 33(9):1531-9.

¹⁴² Gray LC, Peel NM, Crotty M, Kurrle SE, Giles LC, & Cameron ID. (2012). How effective are programs at managing transition from hospital to home? A case study of the Australian Transition Care Program. *BMC Geriatrics*, 12:6.

pressure on acute hospitals, shorten length of stay, prevent some re-hospitalisations and defer residential care admission, but that evidence of overall cost reduction is more complex.¹⁴³ This distinction is central. A program can be valuable even if it does not immediately reduce total expenditure within a narrow hospital budget. If it improves function, delays residential care, reduces carer crisis and increases days lived at home, its value may appear across the aged care, health care and social care systems, rather than in one hospital ledger.

A 2020 study of the factors associated with success in Australia's transition care services found that more than half of users were discharged home and remained at home after 6 months.¹⁴⁴ However, outcomes varied. People receiving residential transition care were less likely to improve and more likely to move into permanent residential care than those receiving community-based transition care. This is an important policy finding. It suggests that the setting of transition care matters. Community-based transition care may be better aligned with the goal of restoring ordinary home routines, while residential transition care may sometimes function as a staging point into permanent care. This does not mean bed-based transition care has no role. Some people cannot safely return home immediately. But it does suggest that 'home first' should be the default where clinically safe, with bed-based care reserved for people who genuinely need it.

An analysis of transition care users using linked administrative data found that about 3 in 5 people returned to the community after transition care, while a smaller group moved directly into residential care.¹⁴⁵ Among those who returned to the community, many improved in functional independence, and fewer than 1 in 7 entered permanent residential care by the end of the following year. These findings do not prove what would have happened without transition care, because the analysis was not a randomised counterfactual evaluation. However, they are consistent with the program's policy purpose: for a substantial proportion of older people, post-acute restorative support can stabilise community living after hospital discharge.

Systemic reviews

The international literature supports the general logic of transition and intermediate care, while also showing that design matters. Cochrane evidence on discharge planning indicates that personalised discharge planning probably produces a small reduction in hospital length of stay and probably slightly reduces readmissions among medical patients, although evidence on costs and health outcomes is more mixed.¹⁴⁶ This suggests discharge planning is necessary but insufficient. Planning must be connected to actual services after discharge. Intermediate care has a broader evidence base. A Cochrane review of nursing-led inpatient units found that such units may improve some early outcomes, including discharge home rather than institutional care at 3 months, but cost implications were uncertain and length of stay could be longer.¹⁴⁷

¹⁴³ Hall CJ, Peel NM, Comans TA, Gray LC, & Scuffham PA. (2012). Can post-acute care programmes for older people reduce overall costs in the health system? A case study using the Australian Transition Care Programme. *Health & Social Care in the Community*, 20(1):97-102.

¹⁴⁴ Cations M, Lang C, Crotty M, Wesselingh S, Whitehead C, & Inacio MC. (2020). Factors associated with success in transition care services among older people in Australia. *BMC Geriatrics*, 20(1):496.

¹⁴⁵ Australian Institute of Health and Welfare (AIHW). (2024). [Exploring how transitional aged care supports older people leaving hospital](#). AIHW, Canberra.

¹⁴⁶ Gonçalves-Bradley DC, Lannin NA, Clemson L, Cameron ID, & Shepperd S. (2022). Discharge planning from hospital. *Cochrane Database of Systematic Reviews*, 2(2):CD000313.

¹⁴⁷ Griffiths PD, Edwards ME, Forbes A, Harris RG, & Ritchie G. (2007). Effectiveness of intermediate care in nursing-led in-patient units. *Cochrane Database of Systematic Reviews*, 2:CD002214

A 2010 systematic review of inpatient geriatric rehabilitation found that rehabilitation designed specifically for geriatric patients improved function and was associated with lower risk of residential care admission [relative risk 0.84 at 3–12 months post-discharge (95% CI: 0.72–0.99)] and mortality [relative risk 0.87 at 3–12 months post-discharge (95% CI: 0.77–0.97)].¹⁴⁸ This is consistent with the theory that restoration of function after acute illness can delay institutionalisation. A Cochrane review of ‘early discharge hospital at home’ programs also showed that significantly fewer from the intervention group were in residential care at six months [relative risk 0.63 (96% CI: 0.40 to 0.98)].¹⁴⁹

Reablement evidence is also relevant. Reablement differs from conventional home care because it seeks to help people relearn or regain activities rather than simply doing tasks for them. Economic modelling of home care reablement by the United Kingdom’s National Institute of Care Excellence concluded that it was highly likely to be cost-effective and potentially cost-saving for older people using home care, largely because some people required less ongoing home care and had fewer hospital admissions after reablement.¹⁵⁰ The lesson for hospital discharge policy is that the content of post-discharge care matters. A package of passive domestic assistance may maintain a person at home temporarily, but restorative care that improves capability can reduce future dependency.

Studies of transitional care interventions in the USA provide additional evidence. A 2004 study of an advanced practice nurse transitional care model for older people hospitalised with heart failure found the intervention reduced readmissions and lowered mean total costs compared with usual care.¹⁵¹ A 2006 study of a Care Transitions Intervention program, which used a transitions coach to improve medication self-management, follow-up and recognition of warning signs, found the program reduced hospital use and produced lower costs over 6 months.¹⁵² A 2014 systematic review found that high-intensity transitional care interventions – particularly those involving nurse coordination, communication between hospital and primary care, and timely home visits – were most effective in reducing readmissions.¹⁵³

Hospital-at-home models are another form of intermediate care that has been found to be feasible, safe and associated with shorter length of stay and lower costs than acute hospital care.¹⁵⁴ More recently, a 2022 study found that comprehensive geriatric assessment hospital-at-home was a cost-effective alternative to hospital admission for selected older people, with lower health and social care costs and no loss of quality-adjusted survival. The study reported significantly lower risk of living

¹⁴⁸ Bachmann S, Finger C, Huss A, Egger M, Stuck AE, & Clough-Gorr KM. (2010). Inpatient rehabilitation specifically designed for geriatric patients: systematic review and meta-analysis of randomised controlled trials. *BMJ*, 340:c1718.

¹⁴⁹ Gonçalves-Bradley DC, Iliffe S, Doll HA, Broad J, Gladman J, Langhorne P, Richards SH, & Shepperd S. (2017). Early discharge hospital at home. *Cochrane Database Systemic Reviews*, 6(6):CD000356.

¹⁵⁰ United Kingdom. National Institute for Health and Care Excellence (NICE). (2017). [Intermediate care including reablement \(NICE Guideline NG74\)](#). NICE.

¹⁵¹ Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, & Schwartz JS. (2004). Transitional care of older people hospitalized with heart failure: a randomized, controlled trial. *Journal of the American Geriatrics Society*, 52(5):675-84.

¹⁵² Coleman EA, Parry C, Chalmers S, & Min SJ. (2006). The care transitions intervention: results of a randomized controlled trial. *Archives of Internal Medicine*, 166(17):1822-8.

¹⁵³ Verhaegh KJ, MacNeil-Vroomen JL, Eslami S, Geerlings SE, de Rooij SE, & Buurman BM. (2014). Transitional care interventions prevent hospital readmissions for adults with chronic illnesses. *Health Affairs (Millwood)*, 33(9):1531-9.

¹⁵⁴ Leff B, Burton L, Mader SL, Naughton B, Burl J, Inouye SK, Greenough WB 3rd, Guido S, Langston C, Frick KD, Steinwachs D, & Burton JR. (2005). Hospital at home: feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients. *Annals of Internal Medicine*, 43(11):798-808.

in residential care at both 6- and 12-months, lower delirium at one month, and a 97% probability of cost-effectiveness at a £20,000/QALY threshold when health, social care and informal care costs were included.¹⁵⁵

The relevance to residential care is that hospital-at-home can avoid some of the functional harms of hospitalisation while maintaining clinical oversight. It is not appropriate for all patients, but for selected older people it can preserve home routines and reduce exposure to institutional environments.

Cost-effectiveness of transitional care and intermediate care

The cost-effectiveness of transition care should be assessed from a broad perspective. A narrow hospital perspective asks whether the program reduces acute bed days and re-admissions. An aged care perspective asks whether it delays or prevents permanent residential care. A health and social care perspective includes hospital, primary care, rehabilitation, home care and residential aged care costs. A societal perspective also includes informal carer time, out-of-pocket costs, housing impacts and quality of life. The broader the perspective, the more likely it is that the full benefits of effective transition care will be visible.

The main costs of transition care are program costs: staffing, therapy, nursing, personal care, care coordination, equipment, transport, administration and, where relevant, bed-based care. Bed-based models are generally more expensive than home-based models because they include accommodation, staffing and facility overheads. However, the relevant comparator is not 'no cost'. The real comparator is extended hospital stay, readmission, higher home care use, carer breakdown or earlier residential aged care admission.

The benefits can be measured in several ways. The most direct outcome is days lived at home before permanent residential care admission. Other outcomes include functional independence, QALYs, avoided re-admissions, hospital bed days avoided, carer burden, mortality, patient satisfaction and delayed entry into permanent care. In aged care policy, 'days at home' is especially important because many older people value remaining in their own home and community. A program that produces modest QALY gains but substantial additional time at home may be highly valued by older people and families.

A simple economic model can be expressed as follows. The net cost of transition care equals the cost of the transition care episode minus any savings from avoided hospital days, avoided readmissions, reduced ongoing home care, and delayed residential aged care. The incremental cost-effectiveness ratio is the difference in net costs divided by the difference in outcomes, such as QALYs gained or additional days at home. Transition care becomes cost-saving if the avoided costs exceed the program costs. It becomes cost-effective if the additional cost per QALY or per additional day at home is acceptable relative to the value placed on those outcomes.

The most favourable scenario occurs when a person is at high risk of residential care admission but has reversible functional decline. In such cases, a relatively short period of therapy, nursing and support can produce a large change in trajectory. The least favourable scenario occurs when the person has irreversible deterioration, severe unmet housing needs, advanced dementia without

¹⁵⁵ Singh S, Gray A, Shepperd S, Stott DJ, Ellis G, Hemsley A, Khanna P, Ramsay S, Schiff R, Tsiachristas A, Wilkinson A, & Young J. (2022). Is comprehensive geriatric assessment hospital at home a cost-effective alternative to hospital admission for older people? *Age and Ageing*, 51(1):afab220.

Shepperd S, Craddock-Bamford A, Butler C, Ellis G, Godfrey M, Gray A, Hemsley A, Khanna P, Langhorne P, Mäkelä P, Mort S, Ramsay S, Schiff R, Singh S, Smith S, Stott DJ, Tsiachristas A, Wilkinson A, Yu LM, & Young J. (2022). *Hospital at Home admission avoidance with comprehensive geriatric assessment to maintain living at home for people aged 65 years and over: a RCT*. NIHR Journals Library, Southampton, United Kingdom.

adequate carer support, or delayed access to services. In those cases, transition care may add an extra episode of care without changing the eventual outcome. Cost-effectiveness therefore depends heavily on targeting.

The empirical literature supports this conditional conclusion. A 2005 study found that nurse-led intermediate care in an acute hospital setting cost more than standard care over 6 months, illustrating that intermediate care can be poor value if it increases length of stay without producing sufficient downstream benefits.¹⁵⁶ A 2008 study found post-acute rehabilitation in community hospitals had similar cost-effectiveness to care in district general hospitals.¹⁵⁷ A 2012 Australian study found post-acute programs may defer residential care admission and reduce some hospital use, but overall system savings are not automatic.¹⁵⁸ These findings show that the model must be designed around recovery, flow and substitution rather than simply adding another layer to existing hospital care. The strongest cost-effectiveness case is for models that combine rapid discharge, rehabilitation, home-based support and prevention of readmission.

Lessons learned

Several design principles follow from the evidence.

- **Discharge planning** should begin at admission. Older people at high risk of functional decline, carer breakdown or residential care admission should be identified early using frailty, cognition, mobility, living arrangement and carer capacity indicators. Waiting until the day of discharge creates rushed decisions and increases the risk that residential care becomes the easiest option.
- **Hospital discharge** policy should adopt a 'home first' presumption where safe. This means the system should first ask what supports would allow the person to recover at home, rather than asking whether they can return home without support. Home-first policy should not be reckless; some people require bed-based care. But the default should be recovery in the least institutional setting consistent with safety.
- **Assessment for long-term care should occur after a period of recovery** whenever possible. Australia's move toward a Single Assessment System for aged care may help reduce duplication and improve navigation, but assessment quality still depends on timing, expertise and service availability. A person assessed during acute illness may appear more dependent than they will be after rehabilitation. Discharge-to-assess models recognise that long-term care decisions should be made when the person is medically stable, functionally recovering and observed in a realistic environment.
- **Transition care must include adequate allied health.** Programs that provide mainly personal care may help discharge people from hospital, but they are less likely to change the underlying trajectory of dependency. Physiotherapy, occupational therapy, speech pathology, dietetics, pharmacy, nursing and social work all address different causes of failed discharge. The program's economic value depends on whether it restores capacity, not merely whether it purchases time.

¹⁵⁶ Walsh B, Steiner A, Pickering RM, & Ward-Basu J. (2005). Economic evaluation of nurse led intermediate care versus standard care for post-acute medical patients: cost minimisation analysis of data from a randomised controlled trial. *BMJ*, 330(7493):699.

¹⁵⁷ O'Reilly J, Lowson K, Green J, Young JB, & Forster A. (2008). Post-acute care for older people in community hospitals--a cost-effectiveness analysis within a multi-centre randomised controlled trial. *Age and Ageing*, 37(5):513-20.

¹⁵⁸ Hall CJ, Peel NM, Comans TA, Gray LC, & Scuffham PA. (2012). Can post-acute care programmes for older people reduce overall costs in the health system? A case study using the Australian Transition Care Programme. *Health & Social Care in the Community*, 20(1):97-102.

- **Link transition care to ongoing community support.** A person may improve during a 6- or 12-week program but deteriorate again if ongoing services are delayed. This is particularly important where home care waiting times are long or informal carers are already strained. Transition care should therefore include active handover to home care, primary care, community nursing, falls prevention, dementia support, carer services and social prescribing where appropriate.
- **Policy should distinguish between successful delay and unsafe diversion.** Delaying residential care is valuable only when the older person is safe, supported and able to live with dignity. A program that leaves families to absorb unmanageable care is not cost-effective from a societal perspective. Carer outcomes should therefore be included in evaluations, and respite, training and practical support should be treated as part of the intervention rather than optional extras.
- **Data systems should measure outcomes beyond discharge destination.** The key question is not merely whether the person left hospital, but whether they remained at home, improved function, avoided re-admission, avoided premature residential care, and maintained quality of life. Linked hospital, aged care, primary care and mortality data are essential. Evaluation should compare similar people who did and did not receive transition care, using methods capable of estimating counterfactual outcomes.

Transition care, intermediate care and hospital discharge policy are central to any serious strategy to delay premature admission to residential care. Hospitalisation is often the moment when an older person's future living arrangement is decided. Without restorative support, temporary disability can become permanent dependency, and residential care can become the default response to a failed discharge. With timely transition care, the same episode can become a period of recovery.

The evidence does not show that every program is cost-saving or that every residential care admission can be delayed. However, it does show that well-targeted, multidisciplinary, restorative, home-first and rapidly available services can improve function, reduce re-admissions, support carers, shorten hospital stays and allow many older people to remain in the community for longer. Cost-effectiveness depends on targeting people with reversible decline, providing enough rehabilitation and home support to change outcomes, and measuring benefits across the health, aged care and social care systems.

The ethical and economic cases are therefore aligned. Older people should not be forced into permanent residential care because the system failed to provide timely recovery support after hospital. Nor should hospitals become holding institutions for people who no longer need acute care but cannot yet return home unsupported. Transition and intermediate care offer a more just and efficient pathway: treat the acute illness, restore function, support the home environment, give carers practical help, and make long-term care decisions only after the person has had a fair chance to recover.

Intervention 8: Addressing social determinants of decline

Residential care is often described as the final stage of a clinical trajectory. An older person becomes frail, develops dementia, loses mobility, falls, becomes incontinent, exhausts their informal carer, and eventually requires a level of care that can no longer be provided at home. That account is partly true, but it is incomplete. Admission to residential care is not caused by clinical impairment alone. It is also shaped by the social, economic, environmental and relational conditions in which older people live. Income, housing, family support, neighbourhood safety, transport, food security, cultural safety, social connection, digital access, service navigation and the availability of home support all influence whether an older person can continue living safely at home. These social determinants do not merely sit in the background. They can actively convert manageable impairment into institutional need.

The distinction matters because it changes the policy problem. If residential care admission is understood only as the consequence of biological ageing, then the aged care system is left mainly to

respond after dependency has become severe. But if admission is also the result of remediable social and environmental conditions, then prevention becomes central. The point is not that all residential care admissions are avoidable. Some older people need residential care, and for many it is the safest and only economically sustainable form of support. The point is that some admissions occur earlier than they otherwise would because the conditions required to make home life viable have failed. For example, a fall caused by an unsafe bathroom, a hospital discharge without adequate home support, untreated depression after bereavement, an adult child's exhaustion after years of dementia care for their parent, or the lack of transport to medical appointments can each become the tipping point that moves an older person from home into institutional care.

The social determinants of health

The social determinants of health are commonly defined as the social, economic, cultural and environmental conditions that shape health and wellbeing across the life course.¹⁵⁹ In later life, these determinants affect both the development of disease and the practical capacity to live with disease. Two people with the same diagnosis can have very different risks of residential care admission, depending on whether they own a safe and modifiable home, have a spouse or adult child nearby, can pay for transport and equipment, can navigate service systems, and live in a community where primary care, allied health and home support are accessible. Residential care entry is therefore a social event as well as a clinical event.

A useful way to understand the pathway into residential care is to distinguish between 3 broad domains:

- Need for care: physical impairment, cognitive impairment, frailty, falls, incontinence, behavioural symptoms, medication problems and multimorbidity.
- Personal and social context: informal carers, family networks, social isolation, income, housing tenure, cultural background, knowledge of services, confidence and perceived control.
- System and environment: the availability of primary care, home care, respite, rehabilitation, assistive technology, accessible housing, community transport and aged care assessment.

Residential care admission usually occurs when these domains interact. Clinical need rises, social capacity falls, and the service system is unable to close the gap.

The social determinants of decline influence not only health outcomes but also the timing and intensity of long-term care needs. This distinction is important because many social determinants are potentially modifiable through relatively low-cost interventions.

Poverty, income insecurity and the conversion of risk into dependency

Poverty does not automatically cause admission to residential care, but it increases the likelihood that manageable problems will become crises. Older people with low income have fewer options for purchasing help privately; adapting their home; using paid transport; replacing broken appliances; buying nutritious food; maintaining heating and cooling; or paying for dental, allied health and preventive services. An older person with low income may delay treatment, rely on emergency services, or continue living in an unsafe environment because alternatives are unaffordable.

The pathway is often cumulative rather than immediate. Low income over the life course increases the risk of chronic illness and disability. In later life, the same economic disadvantage reduces the

¹⁵⁹ Australian Institute of Health and Welfare. (2024). [Social determinants of health](#). Australian Government.

WHO. (2025). [World report on social determinants of health equity](#). WHO, Geneva.

resources available to manage those conditions. An older person with arthritis may need handrails, bathroom modifications, taxis to medical appointments, podiatry, exercise supervision, prepared meals and occasional domestic help. If those supports are missing, arthritis can lead to reduced mobility, reduced shopping, poor nutrition, social withdrawal, falls and loss of confidence. What begins as a manageable functional limitation can become a pattern of dependency.

Income also affects the bargaining power of older people within care systems. Those with financial resources can often assemble a patchwork of private services while waiting for public support. They can pay for cleaners, gardeners, personal alarms, physiotherapy, meal delivery or short-term respite. Those without financial resources are more dependent on formal assessment pathways and publicly subsidised services. Where those services are delayed, rationed or poorly coordinated, the person with low income is more likely to deteriorate while waiting. In this way, scarcity at the household level interacts with scarcity at the system level.

Economic disadvantage may also affect whether an older person is seen as able to remain at home. A person living in a well-maintained home with family support may be judged differently from a person living alone in poor housing with no informal carer, even if their functional impairment is similar. The latter may be admitted not because their body necessarily requires institutional care, but because their home and social environment do not provide the conditions needed for safe independence.

Housing, the built environment and environmental press

Housing is one of the most direct social determinants of residential care admission. The home is not simply the place where care is delivered; it is part of the care system. A safe, accessible and modifiable dwelling can compensate for impairment. An unsafe, inaccessible or insecure dwelling can magnify impairment.

Housing can contribute to admission through several mechanisms. First, it can increase the risk of injury. Loose rugs, poor lighting, slippery bathrooms, stairs, uneven paths and lack of grab rails increase the risk of falls. Falls are a major precipitant of hospitalisation, functional decline and loss of confidence. A fractured hip or prolonged hospital stay can trigger a reassessment of whether returning home is safe. Even when the older person survives the acute event, the combination of pain, fear, reduced mobility and family anxiety may accelerate residential care entry.

Second, housing can make personal care difficult. Toileting, bathing, dressing and transferring are highly sensitive to the physical environment. A person who cannot safely get in and out of a shower may require daily assistance. A person who cannot reach the toilet at night may become incontinent or fall. A person who cannot enter the house without stairs may become housebound. These problems are not purely medical. They are the result of a mismatch between the person's capacity and the design of the dwelling.

Third, housing tenure affects prevention. Home-owners may have more scope to install ramps, rails, bathroom modifications and smart home devices. Renters may face restrictions on modifications, fear eviction, or lack the incentive to invest in a property they do not own. Public and community housing tenants may depend on slow maintenance systems. Older people in insecure housing may move frequently, making continuity of care difficult. Housing insecurity can itself become a reason that home-based care is judged unviable.

Social isolation, loneliness and living alone

Social isolation is one of the most important social pathways into residential care. It matters both because social relationships directly affect health and because they provide practical support. An older person who either lives with a capable spouse or near supportive adult children is regularly monitored, and has informal help, emotional reassurance, transport, advocacy and crisis response. A socially isolated person may lack all of these.

Living alone does not inevitably mean loneliness or risk. Many older people successfully live alone. The risk arises when living alone is combined with frailty, cognitive impairment, poverty, poor housing, bereavement, depression or lack of community connection. In those circumstances, the absence of another person in the home becomes a safety issue. Who notices missed meals? Who checks medication? Who calls the doctor when confusion worsens? Who insists on follow-up after discharge? Who helps interpret aged care letters? Who notices that the fridge is empty, the shower is unsafe, or the person has stopped leaving the house?

Social isolation and loneliness are among the most extensively studied social determinants of decline. Numerous studies have found associations between loneliness and increased risks of mortality, depression, cognitive decline, dementia, disability, and hospitalisation.¹⁶⁰ A 2010 study found that entry to residential care in Australia was associated with older age, instrumental activities of daily living dependence, cognitive impairment, underweight body mass index and low social activity.¹⁶¹ New Zealand research has also linked loneliness, living alone, carer stress and negative social interactions with increased risk of aged residential care entry.¹⁶²

These findings show that admission risk is not reducible to diagnosis. Social participation and functional capacity are intertwined. There are multiple causal mechanisms. Socially isolated individuals are more likely to engage in less physical activity, experience poorer mental health, have reduced access to informal support networks, and delay seeking medical assistance. They may also have fewer opportunities for cognitive stimulation and social participation. Isolation may increase depression, reduce motivation, reduce physical activity and worsen cognition. It may reduce adherence to medication and diet. It may delay recognition of deterioration. It may increase the risk that minor events become emergencies. It also affects professional decision-making. Clinicians and assessors are more likely to support a return home if there is someone at home who can observe, reassure, prompt, transport and call for help. The absence of social support shifts the perceived balance of risk.

The economic consequences can be substantial. Increased health care use, greater risk of institutionalisation, and higher rates of mental health problems all contribute to public expenditure. Conversely, interventions that reduce loneliness may generate benefits across multiple domains. Examples include community visitor schemes, social prescribing programs, senior activity centres, volunteering programs, men's sheds, community transport services, and peer support initiatives. These programs are generally inexpensive relative to formal care services. If they delay institutionalisation by even a short period, the resulting savings may exceed program costs.

However, the economic evidence for social connection interventions is less mature than the evidence for falls prevention or home modification. Reviews of loneliness and social isolation interventions have often found heterogeneous programs, small trials, variable outcome measures

¹⁶⁰ Holt-Lunstad J, Smith TB, Baker M, Harris T, & Stephenson D. (2015). Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspectives on Psychological Science*, 10(2):227-37.

¹⁶¹ Kendig H, Browning C, Pedlow R, Wells Y, & Thomas S. (2010). Health, social and lifestyle factors in entry to residential aged care: an Australian longitudinal analysis. *Age and Ageing*, 39(3):342-9.

¹⁶² Jamieson HA, Gibson HM, Abey-Nesbit R, Ahuriri-Driscoll A, Keeling S, & Schluter PJ. (2018). Profile of ethnicity, living arrangements and loneliness amongst older people in Aotearoa New Zealand: A national cross-sectional study. *Australasian Journal of Ageing*, 37(1):68-73.

Jamieson H, Abey-Nesbit R, Nishtala PS, Allore H, Han L, Deely JM, & Pickering JW. (2020). Predictors of Residential Care Admission in Community-Dwelling Older People with Dementia. *Journal of the American Medical Directors Association*, 21(11):1665-70.

and limited long-term follow-up.¹⁶³ Some group-based programs, befriending models and community interventions show promise, but the evidence base is uneven. The difficulty is that social connection is hard to commodify. A neighbourhood centre, walking group, arts program, community transport service or culturally specific lunch program may improve wellbeing, but the effect on residential care admission may take years to observe and may depend heavily on local context.

Nevertheless, from a prevention perspective, it would be a mistake to dismiss social connection because the economic evidence is less definitive. Loneliness and isolation are risk amplifiers. They make other risks harder to manage. A social connection strategy may be most cost-effective when integrated with other supports: exercise groups that also reduce falls, meal programs that also identify deterioration, community transport that also enables health care, and home visiting that also links people to services. The economic value may lie not in companionship alone, but in the way social infrastructure helps detect and manage emerging need before it becomes crisis.

Transport and community access

Transport disadvantage is an often-overlooked determinant of decline. Many older people cease driving due to health conditions, sensory impairment, or reduced confidence. Without alternative transport options, access to health care, shopping, social activities, and community participation may become restricted. Reduced mobility can contribute to social isolation, declining physical activity, worsening mental health, and delayed access to health care. These factors may accelerate dependency and increase demand for formal services.

Community transport programs are generally inexpensive compared with health care and aged care services. By maintaining access to community activities and support networks, they may delay functional decline and reduce future service use. From a health economics perspective, transport should not be viewed simply as infrastructure. Rather, it functions as a preventive intervention that supports health, wellbeing, and independence.

Service access, navigation and system fragmentation

Social determinants operate not only through households but also through systems. Older people are more likely to remain at home when services are timely, coordinated and intelligible. They are more likely to enter residential care prematurely when services are delayed, fragmented or difficult to navigate.

Many older people and families struggle to understand aged care assessment, eligibility, waiting lists, package levels, fees, provider choices, service agreements and complaints processes. Those with high education, English fluency, digital access and confident family advocates may be better able to secure support. Those with cognitive impairment, language barriers, low literacy, no internet, no family advocate or distrust of institutions may miss out. The result is a form of administrative inequality. Services may formally exist, but they are not equally accessible.

Rural and remote location can compound the problem. Even when an older person is assessed as needing support, providers may be unavailable, allied health may be scarce, transport distances may be long, and workforce shortages may limit service frequency. In such settings, residential care

¹⁶³ Courtin E, & Knapp M. (2017). Social isolation, loneliness and health in old age: a scoping review. *Health & Social Care in the Community*, 25(3):799-812.

Fakoya OA, McCorry NK, & Donnelly M. (2020). Loneliness and social isolation interventions for older people: a scoping review of reviews. *BMC Public Health*, 20(1):129.

Gardiner C, Geldenhuys G, & Gott M. (2018). Interventions to reduce social isolation and loneliness among older people: an integrative review. *Health & Social Care in the Community*, 26(2):147-157.

admission may reflect service failure rather than unavoidable dependency. The person enters care because the community support infrastructure is too thin.

Fragmentation is also a major pathway to residential care admission after hospitalisation. Hospital discharge is a critical transition point. An older person admitted with a fall, infection, delirium or surgery may lose function quickly. If rehabilitation, home modifications, medication review, personal care and follow-up are not coordinated, the person may fail at home and be readmitted or transferred to residential care.

Lifestyle, nutrition, mental health and functional decline

Social determinants also shape the biological and behavioural pathways that lead to residential care. Physical inactivity, poor nutrition, smoking, alcohol misuse, depression, loneliness and low social participation all affect the risk of functional decline. These are often described as individual behaviours, but in later life they are heavily shaped by income, transport, neighbourhood safety, social support, disability, housing and access to appropriate programs.

Physical activity is a clear example. Exercise reduces falls, preserves strength and improves confidence, but participation requires opportunity. An older person needs safe walking environments, transport to exercise classes, affordable programs, culturally appropriate instructors and confidence that activities are suitable for their health status. Without these, advice to ‘exercise more’ is not prevention; it is moralising. Effective falls prevention programs, such as strength and balance training, Otago-style exercise, and and lifestyle-integrated exercise, work best when they are accessible, tailored and sustained.

Nutrition is another pathway. Underweight body mass index has been identified as a predictor of residential care entry in Australian longitudinal research (Kendig et al., 2010). Poor nutrition can reflect poverty, dental problems, depression, bereavement, inability to shop, inability to cook, medication effects, alcohol misuse or social isolation. Meal delivery may therefore be more than a convenience service. It can be nutritional support, social contact and informal monitoring. A driver who notices that meals are untouched may detect deterioration earlier than a formal service system.

Mental health is also central. Depression and anxiety can reduce motivation, appetite, activity, self-care and adherence to treatment. Bereavement can lead to rapid decline, particularly where a spouse was also the main carer. Dementia adds further complexity, because cognitive impairment reduces the ability to manage medications, finances, cooking, hygiene and appointments. The social environment determines whether cognitive impairment can be compensated for. A person with mild dementia and strong support may remain at home for years. A person with the same impairment but no support may become unsafe quickly.

Social prescribing as a response to social determinants

Social prescribing is one of the most explicit attempts to connect health and care systems with the social determinants of wellbeing. It generally involves a health professional or other trusted referrer identifying a person with non-medical needs and connecting them – often through a link worker – to community-based supports such as social groups, exercise programs, arts activities, volunteering, housing assistance, debt counselling, food support, transport services or carer supports.¹⁶⁴

¹⁶⁴ Bickerdike L, Booth A, Wilson PM, Farley K, & Wright K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open*, 7(4):e013384.

Drinkwater C, Wildman J, & Moffatt S. (2019). Social prescribing. *BMJ*, 364:l1285.

In aged care terms, social prescribing is important because it tries to build a bridge between clinical risk and the social infrastructure required to manage that risk. It is potentially relevant to residential care admission through several pathways. For example, it may:

- reduce loneliness and social isolation, both of which are associated with poorer health and, in some studies, higher risk of residential care entry.
- increase physical activity and confidence through referral to walking groups, strength and balance classes or community exercise programs.
- improve service navigation by connecting older people to transport, housing, welfare, carer and community services.
- support carers by linking them to respite, peer support or counselling.
- reduce avoidable health service use by addressing the social problems that drive repeated general practice visits, emergency department presentations or hospital admissions.

The evidence, however, needs to be interpreted carefully. Current studies vary substantially in design and quality. The evidence is limited by heterogeneity, small samples and risk of bias.¹⁶⁵ This does not mean social prescribing is irrelevant to aged care prevention. Rather, it means that social prescribing should be treated as a promising enabling mechanism, not a proven substitute for home care, reablement, carer support or housing adaptation. Its value is likely to be greatest when embedded in an integrated aged care model. A link worker who can connect an isolated older person to a local exercise group may help reduce loneliness and inactivity. But if the person also needs a bathroom modification, continence advice, transport, dementia support and carer respite, social prescribing alone will not be enough. It must be linked to funded services and practical follow-through.

Social prescribing also raises equity questions. Older people with dementia, severe frailty, language barriers, sensory impairment, poverty or no family carer may be most in need of connection, but least able to act on a referral. A generic model that merely gives a person a list of activities is unlikely to work for those with advanced cognitive impairment or severe social vulnerability. For social prescribing to contribute to delaying residential care admission, it must be more than signposting. It

¹⁶⁵ Carnes D, Sohanpal R, Frostick C, Hull S, Mathur R, Netuveli G, Tong J, Hutt P, & Bertotti M. (2017). The impact of a social prescribing service on patients in primary care: A mixed methods evaluation. *BMC Health Services Research*, 17:835.

Elston J, Gradinger F, Asthana S, Lilley-Woolnough C, Wroe S, Harman H, & Byng R. (2019). Does a social prescribing 'holistic' link-worker for older people with complex, multimorbidity improve well-being and frailty and reduce health and social care use and costs? A 12-month before-and-after evaluation. *Primary Health Care Research & Development*, 20:e135.

Ghogomu ET, Welch V, Yaqubi M, Dewidar O, Barbeau VI, Biswas S, Card K, Hsiung S, Muhl C, Nelson M, Salzwedel DM, Saragosa M, Yu C, Mulligan K, & Hébert P. (2024). PROTOCOL: Effects of social prescribing for older people: An evidence and gap map. *Campbell Systematic Reviews*, 20(2):e1382.

Lynch M, & Jones CR. (2022). Social prescribing for frequent attenders in primary care: An economic analysis. *Frontiers in Public Health*, 10:902199.

Percival A, Newton C, Mulligan K, Petrella RJ, & Ashe MC. (2022). Systematic review of social prescribing and older people: where to from here? *Family Medicine and Community Health Journal*, 10(Sup. 1):e001829.

Pick A, Wolverson E, Cross J, Fox C, Moniz-Cook E, Reeve J, Samsi K, Robinson L, & SPLENDID Collaboration. (2025). Social prescribing in primary care for people living with dementia: a qualitative exploration of different roles and services in England. *BMC Primary Care*, 26(1):346.

Vidovic D, Reinhardt GY, & Hammerton C. (2021). Can Social Prescribing Foster Individual and Community Well-Being? A Systematic Review of the Evidence. *International Journal of Environmental Research and Public Health*, 18(10):5276.

must include active support, accompaniment where necessary, carer engagement, cultural safety, and transport solutions. And it must be integrated with aged care assessment and care planning.

United States: CAPABLE, ABLE and the Home as a Platform for Prevention

The CAPABLE program is especially useful because it integrates several social determinants into a single preventive model. The program combines occupational therapy, nursing and handyman services to help low-income older people achieve self-identified functional goals. It recognises that disability is not simply located in the body; it is produced by the interaction between functional capacity, the home environment, chronic disease management and daily routines.

The earlier ABLE trial also combined occupational and physical therapy with home modifications for functionally vulnerable older people. The ABLE home-based intervention was found to be cost-effective in helping functionally vulnerable older people age in place. The cost per additional year of life was between \$13,179 and \$14,800 depending on the cost of implementing ABLE.¹⁶⁶ A later study reported Medicaid cost savings associated with CAPABLE—average Medicaid spending per CAPABLE participant was \$867 less per month than that of their matched comparison counterparts.¹⁶⁷

These programs are important because they do not treat home modification, nursing, occupational therapy and self-management as separate silos. They treat them as interacting components of independence. If an older person's difficulty bathing is partly caused by poor balance, partly by fear, partly by a poorly-designed bathroom and partly by lack of confidence, then a single service response is unlikely to be enough. CAPABLE-style models show the value of small, practical, person-centred investments that alter the conditions of daily life. They also show why prevention should not be restricted to clinical care. A handyman service may be as important to delaying dependency as a clinical consultation if it removes the environmental barrier that makes daily activity unsafe.

Lessons learned

Cost-effectiveness is difficult to gauge because the benefits of prevention are broad and distributed across systems. Home modification may reduce hospital costs, home care costs, carer burden and residential care risk. Caregiver intervention may improve carer mental health, delay admission and reduce crisis service use. Social prescribing may reduce loneliness, improve participation and reduce some health service use. If evaluation counts only one budget line, it may miss much of the value.

There are several methodological challenges:

- **Time horizon:** Preventive interventions often require upfront expenditure, while benefits accrue later. A one-year evaluation may underestimate value if the main benefit is delayed residential care over 3-5 years.
- **Perspective:** A health department may save money from fewer hospital admissions, while an aged care department bears the cost of home support. Families may save time, or they may provide more unpaid care. A narrow 'payer perspective' can make prevention appear less attractive than it is from a social perspective.
- **Outcomes:** Residential care admission is important, but it is not the only outcome. Older people may value independence, dignity, safety, autonomy, social participation and the ability to remain

¹⁶⁶ Jutkowitz E, Gitlin LN, Pizzi LT, Lee E, & Dennis MP. (2012). Cost effectiveness of a home-based intervention that helps functionally vulnerable older people age in place at home. *Journal of Aging Research*, 2012:680265.

¹⁶⁷ Szanton SL, Alfonso YN, Leff B, Guralnik J, Wolff JL, Stockwell I, Gitlin LN, & Bishai D. (2018). Medicaid Cost Savings of a Preventive Home Visit Program for Disabled Older people. *Journal American Geriatrics Society*, 66(3):614-20.

in familiar surroundings. Carers may value sleep, mental health and relief from fear. Economic evaluations that use only QALYs may miss some of these outcomes, while evaluations that use only aged care costs may miss wellbeing. Capability measures, carer quality of life, activities of daily living, instrumental activities of daily living, falls, hospitalisations, emergency presentations, days at home and time to residential care admission should all be considered.

- **Targeting.** Many interventions are more cost-effective among people at higher risk. Home hazard reduction is more valuable for people with previous falls. Dementia caregiver support is more valuable where carer stress is rising. Reablement is more valuable where function can be restored. But targeting must be designed carefully. If it relies on people already being well-connected to services, it may miss disadvantaged older people at high but less visible risk.
- **Equity.** A prevention strategy that benefits articulate homeowners with family advocates may improve average outcomes but widen inequality. Home modification grants must reach renters and public housing tenants. Exercise programs must be affordable and culturally safe. Carer programs must recognise carers who are themselves poor, ill, ageing or employed. Cost-effectiveness should therefore be interpreted alongside distributional questions: who benefits, who is missed, and who bears the burden?

The most promising interventions are those that directly change the conditions that make home life unsafe or unsustainable. Home modification and occupational therapy can reduce environmental barriers. Falls prevention can reduce injury and fear. Reablement can restore function and reduce ongoing service need. Dementia caregiver interventions can delay admission by strengthening the care relationship. Transitional care can prevent post-hospital decline from becoming permanent dependency. Integrated care can help when it is sufficiently intensive and connected to services. These interventions are practical, targeted and linked to mechanisms that plausibly lead to residential care admission.

The evidence is more mixed for broad, low-intensity preventive home visiting, generic case management and standalone social prescribing. These interventions may work when they are intensive, targeted and connected to real services. They are less likely to work when they consist mainly of assessment, advice, signposting or navigation without the capacity to change care. This distinction is crucial for policy. Prevention cannot be delivered by information alone. It requires resources, authority and follow-through.

Social prescribing should therefore be understood as part of the prevention infrastructure rather than a complete intervention in itself. It can identify and respond to loneliness, inactivity, transport barriers, carer strain, welfare problems and lack of community connection. But if the older person also needs home care, home modification, dementia support, medication review or respite, social prescribing must be integrated with those services. Its greatest contribution may be to make social risk visible and actionable.

A comprehensive prevention strategy would therefore combine five elements. First, systematic identification of social risk: living alone, carer stress, unsafe housing, low income, transport barriers, food insecurity, loneliness, recent bereavement and difficulty navigating services. Second, rapid access to practical supports: home modifications, equipment, transport, meals, personal alarms, allied health and domestic assistance. Third, carer support: counselling, respite, education, behaviour management and emergency backup. Fourth, restorative and transitional services: reablement after functional decline and coordinated support after hospitalisation. Fifth, equity-sensitive funding: mechanisms that ensure prevention reaches renters, low-income older people, culturally diverse communities, rural communities and people without family advocates.

Intervention 9: Dementia prevention and risk reduction

Dementia is costly because it is common, progressive, disabling and long lasting. It affects health services, aged care systems, families, informal carers, and labour markets. In Australia, dementia is a major driver of care need across the aged care and health systems: more than half of permanent residential aged care residents have dementia; people with moderate or severe cognitive impairment are disproportionately represented in higher-level home care; dementia is associated with higher risks of hospital-acquired complications such as falls, delirium, pressure injury and pneumonia; and caring for a person with dementia places substantial physical, emotional, financial and respite-related pressures on informal carers.¹⁶⁸

A preventive strategy that delays the onset of dementia, reduces its incidence, or slows the transition from mild impairment to dependency therefore has the potential to improve wellbeing and reduce future demand for residential care.

There is increasing evidence that it is possible, at least in some cases, to delay the onset of dementia or to slow the transition to dependence. The 2024 Lancet Commission on dementia prevention, intervention and care concluded that 14 potentially modifiable risk factors are associated with around 45% of dementia cases worldwide. Those factors comprise lower education in early life; hearing loss, high low-density lipoprotein (LDL) cholesterol, depression, traumatic brain injury, physical inactivity, diabetes, smoking, hypertension, obesity and excessive alcohol consumption in midlife; and social isolation, air pollution and untreated vision loss in later life.¹⁶⁹

This does not mean that 45% of dementia cases can be eliminated easily or immediately. Population attributable fractions are not the same as achievable policy effects. However, the estimate changes the policy question. Dementia should not be treated as an unavoidable cost of ageing. It must also be considered an outcome partly shaped by social, behavioural, clinical and environmental conditions that policy can influence.

The World Health Organization (WHO) has similarly framed dementia risk reduction as an important policy objective. Its 2019 guidelines on risk reduction of cognitive decline and dementia provide evidence-based recommendations on lifestyle behaviours and interventions intended to delay or prevent cognitive decline and dementia.¹⁷⁰ Recommended areas for useful early investments include physical activity, smoking cessation, hypertension management, diabetes prevention, nutritional improvement, hearing care, social participation and multidomain lifestyle programs.

The economic burden of dementia and the rationale for prevention

Dementia creates a distinctive economic burden because costs extend beyond the health system. Many diseases generate high medical costs, but dementia also generates major long-term care costs and large quantities of unpaid care. People living with dementia often need assistance with

¹⁶⁸ Australian Institute of Health and Welfare (AIHW). (2025). [Dementia in Australia](#). AIHW, Canberra.

Chróinín DN, Deane V, Pulikotil Zachariah R, Stott K, Shepherd B, Perkins M, Giang L, Shekhar R, Vueti V, Mayahi-Neysi M, Montgomery A, Rolls K, & Frost SA. (2024). The likelihood of hospital-acquired complications in older people with dementia: a matched cohort study. *Medical Journal of Australia*, 221(8):422-5.

¹⁶⁹ Livingston G, Huntley J, Liu KY, Costafreda SG, Selbæk G, Alladi S, Ames D, Banerjee S, Burns A, Brayne C, Fox NC, Ferri CP, Gitlin LN, Howard R, Kales HC, Kivimäki M, Larson EB, Nakasujja N, Rockwood K, Samus Q, Shirai K, Singh-Manoux A, Schneider LS, Walsh S, Yao Y, Sommerlad A, & Mukadam N. (2024). Dementia prevention, intervention, and care: 2024 report of the Lancet Standing Commission. *Lancet*, 404(10452):572-628.

¹⁷⁰ WHO. (2019). [Risk reduction of cognitive decline and dementia: WHO guidelines](#). WHO, Geneva.

medication, transport, meals, finances, personal care, supervision, behavioural support and eventually residential care. These needs may continue for years. The burden is therefore cumulative, progressive and distributed across government budgets, families and communities.

Global estimates show the scale of the burden. Wimo and colleagues estimated that the worldwide cost of dementia was US\$604 billion in 2010, with costs in high-income countries dominated by informal care and direct social care rather than direct medical care alone.¹⁷¹ Later estimates suggested that global dementia costs had increased to US\$818 billion in 2015.¹⁷² The WHO reported that dementia cost economies globally around US\$1.3 trillion in 2019 and that about half of these costs were attributable to informal care.¹⁷³ These estimates show why dementia prevention is economically important. If the largest costs occur in care, supervision and dependency, then economic evaluation must consider aged care and informal care as well as hospitals and doctors.

The projected growth in dementia prevalence further strengthens the case for prevention. The Global Burden of Disease dementia forecasting study estimated that the number of people living with dementia worldwide would rise from 57.4 million in 2019 to 152.8 million in 2050, largely because of population growth and population ageing.¹⁷⁴ Even if age-specific incidence rates were stable, the number of people affected would increase substantially as more people survive into older age groups. In high-income countries, this creates sustained pressure on long-term care systems. In low- and middle-income countries, it creates additional challenges because formal care infrastructure is often less developed and unpaid family care carries a greater share of the burden.

The Australian burden is also substantial. It is estimated that dementia cost Australia \$14.25 billion in 2016, equivalent to an average cost of \$35,550 per person with dementia.¹⁷⁵ The report projected very large cumulative costs over subsequent decades in the absence of effective prevention, treatment or care innovations. These estimates are particularly relevant to aged care policy because dementia is a major contributor to demand for residential care, high-level home care and carer support. Dementia costs should therefore be treated not only as health costs but also as aged care costs and family costs.

The burden-of-disease framework also supports prevention. Dementia reduces quality of life, autonomy and social participation. It increases mortality and disability. It also affects carers, who may experience anxiety, depression, sleep disruption, financial stress, social isolation and reduced labour force participation. Economic evaluations that use only health service costs therefore understate the social burden. A societal perspective is especially important in dementia because much of the burden is borne by households rather than formal institutions.

¹⁷¹ Wimo A, Jönsson L, Bond J, Prince M, Winblad B, & Alzheimer Disease International. (2013). The worldwide economic impact of dementia 2010. *Alzheimer's and Dementia*, 9(1):1-11.e3.

¹⁷² Wimo A, Guerchet M, Ali GC, Wu YT, Prina AM, Winblad B, Jönsson L, Liu Z, & Prince M. (2017). The worldwide costs of dementia 2015 and comparisons with 2010. *Alzheimer's and Dementia*, 13(1):1-7.

¹⁷³ WHO. (2025). [Fact Sheet: Dementia](#). WHO, Geneva.

¹⁷⁴ GBD 2019 Dementia Forecasting Collaborators. (2022). Estimation of the global prevalence of dementia in 2019 and forecasted prevalence in 2050: an analysis for the Global Burden of Disease Study 2019. *Lancet Public Health*, 7(2):e105-e125.

See also: Xiang F, Liu X, & Chen G. (2026). Dynamic trends, spatial clustering, and multi-model projections of the global burden of Alzheimer's disease and other dementias: an analysis of GBD 1990-2021 data to 2050. *Frontiers in Aging Neuroscience*, 18:1661370.

¹⁷⁵ Brown L, Hansnata E, & La HA. (2017). [The economic cost of dementia in Australia 2016–2056](#). Report Commissioned by Alzheimer's Australia. National Centre for Social and Economic Modelling, University of Canberra.

Prevention may produce economic benefits through several pathways. It may reduce the number of people who develop dementia. It may delay the onset of symptoms. It may slow progression from mild cognitive impairment to dementia. It may reduce behavioural and psychological symptoms that increase care intensity. It may also delay residential care admission. Delayed onset is especially important. Because dementia incidence rises steeply with age, even a modest delay can reduce the number of years a person lives with dementia and may reduce total lifetime care costs. Some people whose onset is delayed may die from other causes before reaching severe dementia. This is not a trivial economic effect. It is central to why prevention can reduce prevalence even when it does not eliminate underlying pathology.

The rationale for prevention is also strengthened by the high cost of late-stage care. Once dementia has progressed to severe dependency, interventions often manage symptoms and support safety rather than restore independence. Prevention and early risk reduction, by contrast, seek to alter the trajectory before dependency becomes entrenched. This is consistent with the broader economics of prevention: the earlier an intervention can avoid or delay a costly state, the larger the potential lifetime benefit. Dementia is therefore a paradigmatic case for preventive investment because the avoided state is both expensive and distressing.

The economic argument should nevertheless be stated carefully. Modifiable risk factors do not prove that every case attributed to those risks can be prevented. Associations may not be fully causal, and interventions may not achieve or sustain the required changes in risk exposure. Economic evaluation must therefore avoid translating epidemiological potential directly into fiscal savings. The correct conclusion is more modest but still important: because dementia is so costly, and because several risk factors are plausible targets for intervention, even partial prevention or modest delay may justify substantial investment.

Physical activity, exercise and cardiovascular risk reduction

Physical activity and cardiovascular risk reduction are central to dementia prevention because they influence both brain health and broader morbidity. Physical inactivity, hypertension, diabetes, obesity, smoking and high LDL cholesterol are all recognised risk factors for dementia or cognitive decline. They are also risk factors for cardiovascular disease, stroke, kidney disease, frailty, depression and disability. This gives them a distinctive economic advantage. Interventions that improve these risk-factors may be justified even before dementia benefits are counted; dementia prevention then adds further value.

The WHO recommends physical activity as part of risk reduction for cognitive decline and dementia.¹⁷⁶ The Lancet Commission similarly identifies physical inactivity and vascular risk factors as part of the modifiable risk profile across the life course.¹⁷⁷ The biological mechanisms are plausible. Physical activity improves vascular function, reduces inflammation, improves insulin sensitivity, supports neuroplasticity and may reduce depression and social isolation. It also preserves mobility and reduces frailty, which are themselves important determinants of long-term care use.

Van Baal, Hoogendoorn and Fischer modelled the long-term impact of preventing dementia by promoting physical activity and considered the effects on health and social care expenditure. Their study is important because it illustrates both the promise and complexity of prevention economics.

¹⁷⁶ WHO. (2019). [Risk reduction of cognitive decline and dementia: WHO guidelines](#). WHO, Geneva.

¹⁷⁷ Livingston G, Huntley J, Liu KY, Costafreda SG, Selbæk G, Alladi S, Ames D, Banerjee S, Burns A, Brayne C, Fox NC, Ferri CP, Gitlin LN, Howard R, Kales HC, Kivimäki M, Larson EB, Nakasujja N, Rockwood K, Samus Q, Shirai K, Singh-Manoux A, Schneider LS, Walsh S, Yao Y, Sommerlad A, & Mukadam N. (2024). Dementia prevention, intervention, and care: 2024 report of the Lancet Standing Commission. *Lancet*, 404(10452):572-628.

Physical activity may reduce dementia risk, but it may also increase survival, which can increase future costs in other areas. A full economic evaluation must therefore account for longer life as well as reduced disease. This is not a reason against prevention; rather, it is a reason for modelling the full lifetime consequences transparently. The study found that lifetime spending on health and social care related to dementia was highest for the physically inactive (£28,100/£28,900 for 40-year-old males/females), but spending on other diseases was highest for those who were physically active (£55,200/£43,300 for 40-year-old males/females) due to their longer life expectancies. The study also found that if the English population aged 40-65 were to increase their physical activity by one level, the life expectancy would increase by 0.23 years, and health and social care expenditures would decrease by £400 per person.¹⁷⁸

Exercise interventions may be especially attractive in older people and people with elevated risk because they generate short-term functional gains. Strength, balance and aerobic exercise can reduce falls, improve mobility and maintain independence. In aged care policy, these benefits matter even if long-term dementia effects are uncertain. A program that reduces falls, delays frailty and improves mood may be cost-effective because of those outcomes alone. If it also delays cognitive decline, the economic case becomes stronger.

Hypertension management is another major opportunity. Midlife hypertension is associated with later dementia risk, particularly vascular dementia, and treatment is already a standard component of primary care. The marginal cost of improving detection and management may be modest relative to the potential benefits across stroke, heart disease and dementia. Economic evaluations of hypertension programs often show favourable results because cardiovascular outcomes occur sooner than dementia outcomes. When dementia prevention is included, the incremental value increases.

Diabetes prevention and control follow a similar logic. Diabetes increases risks of vascular disease, disability and cognitive decline. Lifestyle programs that prevent diabetes through diet, physical activity and weight management can generate benefits across multiple diseases. For dementia prevention, diabetes interventions are economically attractive because they target a risk factor that is clinically measurable, commonly managed in primary care, and linked to broader health expenditure. However, as with obesity interventions, maintaining long-term behaviour change is a major determinant of cost-effectiveness.

Smoking cessation is one of the clearest examples of an intervention with broad economic returns. Smoking increases dementia risk as well as risks of cancer, cardiovascular disease, respiratory disease and premature mortality. Mukadam and colleagues modelled effective interventions for modifiable dementia risk factors and found that treatments for stopping smoking and provision of hearing aids reduced cost and that treatment of hypertension was cost-effective by reference to standard United Kingdom thresholds. The study estimated that the 3 interventions when fully implemented would save £1.9 billion annually in England, reduce dementia prevalence by 8.5%, and produce quality-adjusted life-year gains.¹⁷⁹

McRae and colleagues (2021) provide one of the most relevant Australian economic analyses.¹⁸⁰ They modelled dementia prevention interventions and found that, from a societal perspective, a notional

¹⁷⁸ Baal PHMV, Hoogendoorn M, & Fischer A. (2016). Preventing dementia by promoting physical activity and the long-term impact on health and social care expenditures. *Preventive Medicine*, 85:78-83.

¹⁷⁹ Mukadam N, Anderson R, Knapp M, Wittenberg R, Karagiannidou M, Costafreda SG, Tutton M, Alessi C, & Livingston G. (2020). Effective interventions for potentially modifiable risk factors for late-onset dementia: a costs and cost-effectiveness modelling study. *Lancet Healthy Longevity*, 1(1):e13-e20.

¹⁸⁰ McRae I, Zheng L, Bourke S, Cherbuin N, & Anstey KJ. (2021). Cost-Effectiveness of Dementia Prevention Interventions. *Journal of Prevention of Alzheimer's Disease*, 8(2):210-217.

intervention reducing a range of dementia risk factors by 5% was cost-effective at AU\$460 per person, and that interventions targeted at higher-risk groups could be cost-effective at much higher per-person costs. They also considered an online program and found that it could remain cost-effective under conservative assumptions about diminishing effect.

The policy implication is that cardiovascular and lifestyle prevention should not be seen only as acute disease prevention. In an ageing society, these interventions are also long-term care prevention. A person who avoids stroke, diabetes complications, frailty and dementia is less likely to require intensive home care or residential care. Economic evaluations that exclude aged care costs risk understating the value of these interventions. Conversely, aged care policy that ignores midlife prevention risks paying later for avoidable dependency.

Hearing loss, social engagement and cognitive stimulation

Hearing loss has become one of the most important dementia prevention targets. Lin and colleagues found that hearing loss was independently associated with incident dementia and argued that whether hearing loss is a marker of early-stage dementia or a modifiable risk factor deserved further study.¹⁸¹ Since then, the evidence base has grown substantially. The 2024 Lancet Commission concluded that evidence that treating hearing loss decreases dementia risk is stronger than it had been in earlier reports.¹⁸² Hearing loss is economically important because it is common, often untreated, and potentially addressable through hearing aids and hearing rehabilitation.

The mechanisms linking hearing loss to cognitive decline are plausible but complex. Hearing impairment may increase cognitive load, reduce social participation, contribute to depression, reduce cognitive stimulation and accelerate brain changes. From an economic perspective, hearing interventions are attractive because they generate immediate benefits in communication and quality of life even if long-term dementia effects remain uncertain. They may also reduce loneliness and caregiver strain. This makes hearing care a particularly good example of an intervention whose value should not be judged solely by dementia outcomes.

The ACHIEVE trial provides important contemporary evidence.¹⁸³ The trial tested a hearing intervention against a health education control in older people with untreated hearing loss. It found no overall cognitive benefit in the total sample but found a substantial slowing of cognitive decline in a prespecified group at higher risk of cognitive decline. This result is important for economic evaluation because it suggests that targeting may matter. Universal hearing intervention may produce broad quality-of-life benefits, but dementia-prevention effects may be larger in people with elevated baseline risk.

Economic evaluations of hearing aids for dementia prevention remain less developed than evaluations of smoking cessation or hypertension control. However, health technology reviews have

¹⁸¹ Lin FR, Metter EJ, O'Brien RJ, Resnick SM, Zonderman AB, & Ferrucci L. (2011). Hearing loss and incident dementia. *Archives of Neurology*, 68(2):214-20.

¹⁸² Livingston G, Huntley J, Liu KY, Costafreda SG, Selbæk G, Alladi S, Ames D, Banerjee S, Burns A, Brayne C, Fox NC, Ferri CP, Gitlin LN, Howard R, Kales HC, Kivimäki M, Larson EB, Nakasujja N, Rockwood K, Samus Q, Shirai K, Singh-Manoux A, Schneider LS, Walsh S, Yao Y, Sommerlad A, & Mukadam N. (2024). Dementia prevention, intervention, and care: 2024 report of the Lancet standing Commission. *Lancet*, 404(10452):572-628.

¹⁸³ Lin FR, Pike JR, Albert MS, Arnold M, Burgard S, Chisolm T, Couper D, Deal JA, Goman AM, Glynn NW, Gmelin T, Gravens-Mueller L, Hayden KM, Huang AR, Knopman D, Mitchell CM, Mosley T, Pankow JS, Reed NS, Sanchez V, Schrack JA, Windham BG, Coresh J, & ACHIEVE Collaborative Research Group. (2023). Hearing intervention versus health education control to reduce cognitive decline in older adults with hearing loss in the USA (ACHIEVE): a multicentre, randomised controlled trial. *Lancet*, 402(10404):786-97.

identified economic modelling studies suggesting that hearing aids may be cost-effective for delaying dementia, while also cautioning that the models rely on assumptions about clinical effectiveness. This is the correct interpretation. The economic case is promising, but the evidence is not definitive. Policy should improve access to hearing assessment and hearing care because of their direct benefits and plausible cognitive benefits, while continuing to evaluate long-term outcomes.

Social isolation and loneliness are also important targets. Social isolation is included among the modifiable risk factors in the Lancet Commission framework. Social participation may protect cognition by providing stimulation, emotional support, physical activity and routines. Conversely, isolation may increase depression, inactivity and functional decline.

Social prescribing, community groups, volunteering, day programs and peer support initiatives may be relatively low-cost when they build on existing community infrastructure. However, their dementia-specific cost-effectiveness is not yet as well established as the evidence for some clinical risk-factor interventions. This does not make them unimportant. It means that evaluations should include broader outcome measures and should avoid claiming more precise dementia-prevention effects than the evidence supports. In long-term care policy, social participation may be justified because it supports independent living and wellbeing even when dementia outcomes are uncertain.

Cognitive stimulation and cognitive training raise similar issues. Higher education and cognitive engagement are associated with cognitive reserve, and cognitive activity may help maintain function. Digital cognitive training programs may be scalable and low cost, but their long-term effect on incident dementia remains uncertain. Economic evaluation should therefore distinguish between short-term improvements in cognitive test scores and long-term prevention of dementia. The former may be valuable, but the latter requires longer follow-up or cautious modelling.

Multidomain interventions: FINGER and Maintain Your Brain (MYB)

Multidomain interventions are among the most promising approaches to dementia risk reduction because dementia risk is multifactorial. Most older people at elevated risk are not exposed to a single isolated risk factor. They may have physical inactivity, hypertension, hearing loss, poor diet, diabetes risk, depression and social isolation at the same time. A single intervention may therefore have limited effect, whereas a multidomain program can target several pathways together.

The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability, known as FINGER, is the leading example. FINGER is a multidomain intervention involving diet, exercise, cognitive training and vascular risk monitoring in at-risk older people. A 2-year randomised controlled trial of FINGER found that the intervention improved or maintained cognitive functioning compared with control.¹⁸⁴ Economic modelling of FINGER has demonstrated that it has the potential to be cost-effective in preventing dementia. A 2016 study found lifetime health costs were €174,580 and €172,963 for usual care and the FINGER program, respectively. At the same time, QALYs were 8.636 and 8.679 for usual care and the FINGER program, respectively. That is, the FINGER intervention resulted in savings of €1,788 and 0.043 QALY gains per person, supporting extended dominance for the FINGER program. A total of 1623 dementia cases were avoided with 0.17 fewer person-years living with dementia.¹⁸⁵

¹⁸⁴ Ngandu T, Lehtisalo J, Solomon A, Levälahti E, Ahtiluoto S, Antikainen R, Bäckman L, Hänninen T, Jula A, Laatikainen T, Lindström J, Mangialasche F, Pajananen T, Pajala S, Peltonen M, Rauramaa R, Stigsdotter-Neely A, Strandberg T, Tuomilehto J, Soininen H, & Kivipelto M. (2015). A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *Lancet*, 385(9984):2255-63.

¹⁸⁵ Wimo A, Handels R, Antikainen R, Eriksdotter M, Jönsson L, Knapp M, Kulmala J, Laatikainen T, Lehtisalo J, Peltonen M, Sködlunger A, Soininen H, Solomon A, Strandberg T, Tuomilehto J, Ngandu T, & Kivipelto M.

In brief, the intervention has modest individual-level effects but substantial societal benefits because the target population is large. This is a central insight for prevention economics. A small delay or risk reduction per person may produce large aggregate effects when applied to thousands or millions of people.

Australia's MYB program is a multidomain online intervention designed to reduce dementia risk by targeting modifiable risk factors including physical activity, nutrition, cognitive engagement, depression and cardiovascular risk. Individuals are given a personalised schedule of online coaching in physical activity, nutrition, cognitive activity, and depression or anxiety management.

A cost effectiveness study of the MYB Program found the online intervention was cost-effective for preventing cognitive decline and reducing dementia risk over the trial period, with no significant difference in overall health care costs and better effectiveness than control.

The two effectiveness outcomes for the MYB trial were global cognition composite (GCC) scores and the Australian National University-Alzheimer's Disease Risk Index -short form (ANU-ADRI-SF) questionnaire scores. Costs included MYB program costs and the direct healthcare costs incurred by the MYB participants. The total unadjusted program and healthcare costs over 3 years were similar between groups (AUD\$16,521 per person in the control group and AUD\$16,473 in the intervention group). After adjusting for baseline characteristics, the average difference between groups in total cost per person at 3 years was not statistically different. This was compared to a significant mean difference (improvement) in GCC z score at three years of 0.18 (95%CI: 0.13, 0.23) and -0.57 (95%CI: -0.95, -0.24) point difference in ANU-ADRI-SF for the intervention versus control. The base case ICERs were AUD\$2,568 per 1 standard deviation in z score and \$823 per reduction of 1 ANU-ADRI-SF point.¹⁸⁶

The policy appeal of multidomain interventions lies in their alignment with real-world risk. They do not require governments to choose between physical activity, diet, cognitive stimulation or vascular risk management. Instead, they combine them in a structured program. This may improve effectiveness and may also create economies of scope. A single assessment and coaching infrastructure can support several behaviour changes. However, multidomain programs can also be more expensive and harder to implement than single-component interventions. Their economic value therefore depends on careful targeting, efficient delivery and sustained adherence.

Population-level prevention and public policy approaches

Individual programs are important, but the largest dementia prevention gains may come from population-level prevention. Population approaches attempt to shift risk across whole communities rather than only treating individuals already at high risk. This is relevant to dementia because many risk factors are common. Small reductions in blood pressure, smoking, inactivity, alcohol misuse, hearing loss undertreatment or social isolation across a population may generate large aggregate benefits.

Population prevention is also economically attractive because some policies have low per-person costs. Tobacco taxation, smoke-free laws, alcohol harm reduction, urban design that supports walking, education policy, air pollution reduction, hearing screening, cardiovascular risk detection and public health campaigns can reach many people. These policies often produce benefits across

(2023). Dementia prevention: The potential long-term cost-effectiveness of the FINGER prevention program. *Alzheimer's & Dementia*, 19(3):999-1008.

¹⁸⁶ Welberry HJ, Ku LE, Shih ST, Jorm LR, Singh MF, Valenzuela M, Anupama Ginige J, Anstey KJ, Sachdev PS, McNeil JJ, Lautenschlager NT, Heffernan M, Chau T, & Brodaty H. (2025). The cost-effectiveness of an online intervention to prevent dementia: Results from the Maintain Your Brain (MYB) randomised controlled trial. *The Journal of Prevention of Alzheimer's Disease*, 12(6):100151.

multiple conditions. For example, reducing smoking lowers dementia risk but also reduces cancer, cardiovascular disease and respiratory disease. Increasing physical activity may reduce dementia risk but also reduces diabetes, cardiovascular disease, falls, depression and frailty.

Population strategies also address equity. Individual lifestyle programs can inadvertently widen inequalities if they are taken up mainly by people with higher income, education and health literacy. Population policies, when designed well, can reduce risk exposure more broadly. However, not all population policies are equitable. Digital programs, voluntary health information campaigns and user-pays hearing care may favour advantaged groups. A prevention strategy should therefore include explicit equity design, including low-cost access, culturally appropriate services, outreach to disadvantaged communities and integration with primary care.

Air pollution reduction and education policy illustrate the broader determinants of dementia risk. These are not usually thought of as aged care policies, yet they may influence future dementia prevalence. This creates a budgetary problem. The agency that funds education or environmental regulation may not receive the savings in health and aged care decades later. This is a classic prevention problem. Benefits are delayed, uncertain and spread across sectors. Economic evaluation can help by making cross-sector benefits visible, but institutional funding mechanisms must also support long-term investment.

Australia's policy environment is well suited to a whole-of-government prevention approach because dementia costs affect Medicare, hospitals, aged care, carers and social security. A national dementia prevention strategy could align cardiovascular health checks, hearing health, physical activity, diabetes prevention, falls prevention, social prescribing and carer support. Such a strategy would need rigorous evaluation and should combine high-risk interventions with broader population measures.

Lessons learned

Dementia imposes high costs on health systems, aged care systems, families and informal carers. Global and Australian estimates show that the burden is already substantial and will grow as populations age. Because dementia costs are concentrated in care, supervision and dependency, prevention has the potential to generate benefits well beyond the health sector.

The economic evaluation literature supports cautious optimism. Physical activity, cardiovascular risk reduction, smoking cessation, hypertension management, hearing care and multidomain lifestyle programs all have plausible economic value. Some interventions are likely to be cost-effective because they generate QALYs at acceptable cost. Some may be cost saving when long-term care and informal care benefits are included. Multidomain interventions such as FINGER and digital programs such as MYB are particularly promising because they address several risk factors simultaneously, although long-term follow-up remains important.

The strongest economic case is not that any single intervention will solve the dementia challenge. It is that dementia prevention should become part of a broader prevention and healthy ageing strategy. Investments in cardiovascular health, physical activity, hearing care, social participation, education and risk-factor management can improve wellbeing while potentially reducing future dementia and long-term care costs. In Australia, where dementia is a major driver of residential care and carer burden, the case for integrating dementia prevention into aged care, primary care and public health policy is compelling.

Dementia prevention should therefore be viewed as a long-term investment in independence, quality of life and fiscal sustainability. The evidence is not perfect, but waiting for perfect evidence would itself be costly. A prudent policy approach would invest in interventions with strong general health benefits, plausible dementia benefits, acceptable cost-effectiveness and rigorous ongoing

evaluation. Such an approach recognises both the human cost of dementia and the economic value of delaying or preventing avoidable dependency.

Dementia is one of the most important drivers of dependency in later life. It increases the need for supervision, behavioural support, personal care and safe living environments. It also increases caregiver burden, which is often a precipitating factor for residential care admission. Prevention that delays dementia may therefore reduce or defer demand for intensive home care and residential care.

This has major implications for Australia. Aged care expenditure is already under pressure from population ageing, workforce costs, quality reforms and rising expectations. Policies that reduce future care needs can contribute to fiscal sustainability without reducing entitlement or quality. Dementia prevention is not a substitute for high-quality dementia care, but it can reduce the number of people who need such care at any point in time or shorten the period during which intensive care is required.

Traditional economic evaluations may understate these benefits if they focus mainly on health costs. Hospital care is important, but dementia's largest costs often arise from long-term support and informal care. An intervention that does not save much in hospital expenditure may still be economically valuable if it delays residential care admission. Therefore, evaluations should include aged care costs, home care use, respite care, carer time and residential care entry where possible.

The long-term care perspective also changes how interventions are prioritised. A physical activity program may be justified not only because it reduces dementia risk but because it reduces falls, frailty and dependency. Hearing aids may be justified not only because they may reduce cognitive decline but because they improve communication, reduce isolation and support safer independent living. Social engagement may be justified not only because it may reduce dementia risk but because it supports wellbeing and reduces carer stress. The aged care system should therefore view dementia prevention as part of a broader strategy to maintain function and independence.

Reablement and restorative care can be linked to dementia risk reduction, although they usually operate later in the life course. Reablement aims to restore function and confidence after decline or crisis. For people with early cognitive impairment, reablement may help maintain routines, physical activity and independence. While reablement is not dementia prevention in the primary prevention sense, it may delay dependency and residential care admission. Economic evaluations of dementia prevention should therefore be integrated with economic evaluations of aged care prevention more broadly.

A practical Australian policy agenda would include dementia risk assessment in primary care and aged care assessments, improved access to hearing care, stronger cardiovascular risk management in midlife, physical activity programs for older people, digital and face-to-face multidomain prevention options, social prescribing and community participation programs, and support for carers. The economic case for such an agenda rests on the fact that dementia prevention benefits accrue across multiple budgets. This means governance and funding models must encourage joint investment across health, aged care and community services.

Intervention 10: Support for informal carers

Informal carers are central to the capacity of many older people to continue living in their own homes. Spouses, partners, adult children, relatives, friends and neighbours provide personal care, supervision, transport, medication assistance, household support, emotional reassurance and coordination with health and social care services. Their contribution is particularly important for people living with dementia, whose needs may include continuous supervision and assistance with behavioural and psychological symptoms as well as ordinary activities of daily living.

The economic significance of informal caring is substantial. An estimated 80% of older people in Australia who live at home and who receive assistance receive some or all of that assistance from informal carers. Indeed, almost all (98.8%) older people in Australia who live at home and receive assistance with communication received some or all of that assistance from informal carers.¹⁸⁷

Across the OECD, about 60% of older people who receive support with their care needs receive all of that support from informal carers.¹⁸⁸

The total replacement cost of all informal care provided to Australians of all ages is estimated to have been about \$77.9 billion in 2019-20.¹⁸⁹ About half (\$39 billion) of this support would have been provided to older people, given that they make up about half of all people with severe or profound disability.¹⁹⁰ By comparison, total expenditure by the Australian Government on the health and welfare needs of older people in 2017-18 is estimated to have been about \$97.8 billion, with about \$52.4 billion of that spent on care and support services – including \$21.4 billion on aged care.¹⁹¹

That is, informal care accounts for about a quarter of all the cost of all support provided to older people in Australia, if income support, health care and assistance with daily activities is included; and about two-thirds of the cost of all support with activities of daily living provided to older people.

Admission to residential care is usually the result of an interaction between the older person's needs and the resources available to support them. Cognitive decline, behavioural disturbance, incontinence, falls, impaired mobility, night-time waking and inability to perform activities of daily living can increase the amount and intensity of assistance required. Whether these problems result in residential admission depends partly on the availability, health, confidence and resilience of the person providing informal care.

While the older person's needs remain below the combined capacity of the older person themselves, their informal carer(s), formal home services and the physical environment, community living may remain viable. Admission to residential care becomes more likely when needs exceed that capacity. Prevention can therefore work on either side of the relationship. Rehabilitation, home modification

¹⁸⁷ Australian Bureau of Statistics (ABS). (2024). [Disability, Ageing and Carers, Australia: Summary of Findings](#), Tables 5.1 and 29.1. ABS, Canberra.

¹⁸⁸ Rocard E & Llena-Nozal A. (2022). [Supporting informal carers of older people: Policies to leave no carer behind](#). OECD Health Working Papers No. 140. OECD Publishing, Paris.

See also: Organisation for Economic Cooperation and Development (OECD). (2018). [Care Needed: Improving the Lives of People with Dementia](#). OECD Health Policy Studies. OECD Publishing, Paris.

¹⁸⁹ Deloitte Access Economics. (2020). [The value of informal care in 2020](#). Report commissioned by Carers Australia.

¹⁹⁰ Australian Bureau of Statistics (ABS). (2024). [Disability, Ageing and Carers, Australia: Summary of Findings](#), Table 2.1. ABS, Canberra.

¹⁹¹ Cullen DJ. (2020). [Estimate of 2017–18 expenditure on older people](#). Royal Commission into Aged Care Quality and Safety, Exhibit 21-1, Sydney Hearing 5, general tender bundle, tab 133, RCD.9999.0530.0001.

and treatment may reduce their care needs. Carer interventions increase the capacity, competence or sustainability of the care network. The two approaches can strengthen (magnify) each other.

Several mechanisms explain how carer interventions can delay admission. Education can improve understanding of dementia, disability and behavioural symptoms, reducing uncertainty and inappropriate crisis responses. Respite may provide temporary relief and prevent exhaustion. Case management can help families obtain services before problems become emergencies. Occupational therapy can alter activities and environments so that the older person is more independent and the carer performs fewer physically or emotionally demanding tasks. Skills training can teach carers how to simplify tasks, communicate more effectively, establish routines and respond to agitation or resistance. Psychological interventions can reduce depression, anxiety and feelings of helplessness. Family counselling may distribute responsibilities across a wider network rather than leaving one person to provide nearly all care.

The preventive effect of such interventions can be cumulative. A single counselling session is unlikely to reverse the progression of dementia or severe frailty. However, sustained improvements in coping, service coordination and family support may enable the carer to manage successive episodes that might otherwise precipitate admission. These episodes include hospital discharge, falls, wandering, aggression, incontinence, sleep disturbance and deterioration in the carer's own health.

United States: The New York University Caregiver Intervention (NYUCI)

The NYUCI provides strong evidence that programs that provide support to carers can delay residential admission. The NYUCI was initially developed for spouses caring for people with Alzheimer's disease and subsequently adapted for other family carers. It combined individual counselling, family counselling, participation in a support group and continuing access to telephone advice. The continuing availability of assistance was important because the needs of families changed as dementia progressed.

An analysis over 9.5 years of long-term nursing-home placements (residential care admissions) among participants in the randomised trial found the intervention produced a 28.3% reduction in the rate of nursing-home placement compared with usual care. The estimated median difference in time to placement was 557 days – the median time to residential care admission was 4.8 years in the intervention group versus 3.3 years in the usual-care group. The intervention did not achieve this result by changing the underlying progression of Alzheimer's disease. Instead, its effects were mediated partly through improved satisfaction with social support, better responses to behavioural symptoms and reduced depressive symptoms among carers.¹⁹²

In terms of cost, the NYUCI was relatively low in intensity compared with the cost of prolonged nursing-home residence. The intervention cost \$162 per dyad per month in the first year and then \$52 per dyad per month.

It also demonstrated that carer wellbeing is not merely a secondary humanitarian outcome. Improvements in carer depression and social support may change the location in which care can safely and sustainably be provided.

The trial evidence was subsequently used to model the potential effect of offering the intervention to eligible families in Minnesota between 2010 and 2025. That simulation predicted that approximately 5% more people with dementia would remain in the community from the third year of

¹⁹² Mittelman MS, Haley WE, Clay OJ, & Roth DL. (2006). Improving caregiver well-being delays nursing home placement of patients with Alzheimer disease. *Neurology*, 67(9):1592-9.

Mittelman MS, Ferris SH, Shulman E, Steinberg G, & Levin B. (1996). A family intervention to delay nursing home placement of patients with Alzheimer disease. A randomized controlled trial. *JAMA*, 276(21):1725-31.

implementation onwards. It also predicted that 19.3% fewer people with dementia would die in institutions over the 15-year period. Estimated direct-care savings were US\$996 million, although sensitivity analyses produced a wide range extending from US\$100 million to US\$2.64 billion.¹⁹³

The size of this range illustrates both the promise and uncertainty of economic modelling. Results depended on the number of eligible families, participation rates, program costs, the persistence of the treatment effect and the relationship between delayed admission and later care expenditure. The Minnesota analysis did not establish that every jurisdiction implementing the intervention would realise comparable savings. It demonstrated that a comparatively inexpensive carer-support program could generate a substantial return if the trial effect were reproduced at scale.

United States and Canada: Other informal carer intervention

One of the earliest economic evaluations of caregiver interventions was a randomised trial of a Canadian informal carer support program. The program included enhanced nursing support, education, assistance with problem solving and access to respite and community services. Costs were compared with changes in carer quality of life.¹⁹⁴ The study was methodologically important because it recognised that economic evaluation should include carer outcomes rather than examining only expenditure on the person with dementia. However, differences in costs and outcomes were imprecisely estimated, and the study did not provide definitive evidence of cost-effectiveness or delayed institutionalisation. Its limitations (i.e. small samples, heterogeneous needs and difficulty valuing informal care) remain relevant to contemporary evaluations.

The Resources for Enhancing Alzheimer's Caregiver Health intervention, known as REACH II, also used a multicomponent approach. It included risk assessment, education, behavioural-management training, stress-reduction techniques, social support and telephone contact. And analysis of the intervention found that it was cost-effective in producing improvements in caregiver outcomes in the Memphis trial site. However, the study was not designed to establish a long-term effect on nursing-home admission.¹⁹⁵

These studies support the intermediate stages of the causal pathway. Better skills, reduced burden and improved psychological health may increase the sustainability of caring. Yet evidence of improvement in these outcomes should not be converted automatically into an assumed number of residential-care admissions avoided. Long-term follow-up or credible modelling is required.

A more recent study modelled 4 evidence-based, non-pharmacological dementia interventions: the NYUCI, Maximizing Independence at Home, the Alzheimer's and Dementia Care program and Adult

¹⁹³ Long KH, Moriarty JP, Mittelman MS, & Foldes SS. (2014). Estimating the potential cost savings from the New York University Caregiver Intervention in Minnesota. *Health Affairs (Millwood)*, 33(4):596-604.

See also: Foldes SS, Moriarty JP, Farseth PH, Mittelman MS, & Long KH. (2018). Medicaid Savings from the New York University Caregiver Intervention for Families with Dementia. *Gerontologist*, 58(2):e97-106.

¹⁹⁴ Drummond MF, Mohide EA, Tew M, Streiner DL, Pringle DM, & Gilbert JR. (1991). Economic evaluation of a support program for caregivers of demented elderly. *International Journal of Technology Assessment in Health*, 7(2):209-19.

¹⁹⁵ Nichols LO, Chang C, Lummus A, Burns R, Martindale-Adams J, Graney MJ, Coon DW, Czaja S, & Resources for Enhancing Alzheimer's Caregivers Health II Investigators. (2008). The cost-effectiveness of a behavior intervention with caregivers of patients with Alzheimer's disease. *Journal of the American Geriatrics Society*, 56(3):413-20.

Day Service Plus.¹⁹⁶ Although these programs differed in design, they all involved the informal carer as an active participant. Their components included education, assessment, care planning, skills training, service coordination and professional support. The microsimulation followed people with dementia through community residence, Medicaid enrolment, nursing-home residence and death. All 4 interventions were estimated to be less costly and more effective than usual care from a societal perspective. In economic terminology, they were dominant: they generated quality-adjusted life-year gains while reducing total societal costs. The conclusion was robust across a range of one-way, 2-way, structural and probabilistic sensitivity analyses.

United Kingdom: The Strategies for Relatives (START) program

The START program provides an important counterpoint to the American evidence. START consisted of 8 manual-based sessions delivered to family carers by supervised psychology graduates. It incorporated education, behavioural-management techniques, cognitive reframing, communication skills, relaxation, planning for the future, and strategies for obtaining emotional support.

The START program has been found to be cost-effective in reducing carers' symptoms of anxiety and depression. Intervention costs were modest, and the program improved carer outcomes without producing an offsetting increase in health and social care expenditure. Mean HADS-T scores were lower in the intervention group than the usual treatment group over the 8-month evaluation period (mean difference -1.79 (95% CI -3.32 to -0.33)), indicating better outcomes associated with the START intervention. There was a small improvement in health-related quality of life as measured by QALYs (0.03 (95% CI -0.01 to 0.08)). Costs were no different between the intervention and usual treatment groups (£252 (95% CI -£28 to £565) higher for START group). The cost effectiveness calculations suggested that START had a greater than 99% chance of being cost effective compared with usual treatment alone at a willingness to pay threshold of £30,000 per QALY gained.¹⁹⁷

Follow-up analyses found the psychological benefits persisted, strengthening the case for structured coping interventions as an efficient use of resources. The 6-year follow-up study of the program is particularly instructive. It found carers originally allocated to START continued to have better mental health outcomes and that the intervention did not increase the cost of care. However, there was no statistically significant difference between the START and usual-care groups in the admission of people with dementia to care homes.¹⁹⁸

This does not mean START failed. Preventing depression and anxiety among family carers is a valuable outcome. The program may be cost-effective even without delaying institutionalisation. The result does, however, demonstrate that improved carer wellbeing does not automatically produce a measurable extension of community residence. Residential admission is influenced by many factors and an intervention focused primarily on psychological coping may not be sufficient to overcome these other determinants.

¹⁹⁶ Jutkowitz E, Pizzi LT, Shewmaker P, Alarid-Escudero F, Epstein-Lubow G, Prioli KM, Gaugler JE, & Gitlin LN. (2023). Cost effectiveness of non-drug interventions that reduce nursing home admissions for people living with dementia. *Alzheimer's and Dementia*, 19(9):3867-93.

¹⁹⁷ Knapp M, King D, Romeo R, Schehl B, Barber J, Griffin M, Rapaport P, Livingston D, Mummery C, Walker Z, Hoe J, Sampson EL, Cooper C, & Livingston G. (2013). Cost effectiveness of a manual based coping strategy programme in promoting the mental health of family carers of people with dementia (the START (STrategies for RelaTives) study): a pragmatic randomised controlled trial. *BMJ*, 347:f6342.

¹⁹⁸ Livingston G, Manela M, O'Keeffe A, Rapaport P, Cooper C, Knapp M, King D, Romeo R, Walker Z, Hoe J, Mummery C, & Barber J. (2020). Clinical effectiveness of the START (STrategies for RelaTives) psychological intervention for family carers and the effects on the cost of care for people with dementia: 6-year follow-up of a randomised controlled trial. *British Journal of Psychiatry*, 216(1):35-42.

Netherlands: Caregiver training

The Dutch More at Home with Dementia program provides evidence on intensive training for co-residing carers. The intervention adapted elements of an Australian residential training model and delivered a multicomponent program in a supportive setting. It included education about dementia, communication, management of behavioural symptoms, use of available services and attention to the carer's own wellbeing. An economic evaluation alongside a randomised trial of the program found that the intervention cost was about €1,090 per dyad. During the following year, the intervention group used significantly less health care and formal social care. The estimated reduction in total costs was €10,437 per dyad, although the difference did not reach the conventional threshold for statistical significance. The probability that the intervention was cost-effective compared with usual care was estimated at 96%. This suggests that concentrated training may enable carers to manage care more effectively and reduce reliance on formal services.¹⁹⁹

A related Dutch trial examined structured family meetings intended to prevent depression and anxiety among primary carers.²⁰⁰ The program involved individual preparation and a series of meetings designed to mobilise support from the wider family network. The trial found no significant difference between intervention and usual care in carer mental-health outcomes or total dyadic costs. Total annual costs were slightly higher in the intervention group, and the program was not considered cost-effective on the measured outcomes.

This negative study is important. Family involvement is theoretically attractive, particularly where care responsibilities are unequally distributed. However, organising meetings does not guarantee that relatives will provide practical assistance or that the primary carer's burden will fall. Interventions need sufficient intensity, follow-up and capacity to connect families with actual services rather than simply improving communication.

Netherlands: Dyadic occupational therapy

Some of the most persuasive evidence concerns interventions delivered jointly to the older person and carer. Community occupational therapy aims to improve the older person's ability to undertake meaningful daily activities while training the carer to use compensatory strategies, environmental modifications and more effective supervision.

In 2008, Graff and colleagues evaluated a Dutch program involving 10 occupational-therapy sessions over 5 weeks for people with mild-to-moderate dementia and their primary carers.²⁰¹ Therapists assessed the person's routines, abilities and environment, trained the person to use aids and simplified activities, and taught the carer problem-solving and coping skills. At 3 months, the intervention achieved significantly better combined patient and carer outcomes than usual care. Mean total costs were approximately €1,748 lower in the intervention group, largely because of reduced informal-care time. The number needed to treat to obtain one additional successful patient–

¹⁹⁹ Birkenhäger-Gillesse EG, Achterberg WP, Janus SIM, Zuidema SU, & van den Hout WB. (2022). Cost-effectiveness of dementia training for caregivers in caregiver-patient dyads: A randomized controlled study. *Alzheimer's and Dementia (New York)*, 8(1):e12281.

²⁰⁰ Joling KJ, Bosmans JE, van Marwijk HW, van der Horst HE, Scheltens P, MacNeil Vroomen JL, & van Hout HP. (2013). The cost-effectiveness of a family meetings intervention to prevent depression and anxiety in family caregivers of patients with dementia: a randomized trial. *Trials*, 22;14:305.

²⁰¹ Graff MJ, Adang EM, Vernooij-Dassen MJ, Dekker J, Jönsson L, Thijssen M, Hoefnagels WH, & Rikkert MG. (2008). Community occupational therapy for older patients with dementia and their care givers: cost effectiveness study. *BMJ*, 336(7636):134-8

carer outcome was approximately 2.8. The intervention was therefore both clinically effective and economically attractive during the trial period.

The occupational therapy study illustrates an important principle. Supporting carers does not necessarily mean asking them to provide more care. Well-designed interventions can reduce the time and difficulty involved in care by increasing the older person's independence and changing the way tasks are performed. This is preferable to achieving delayed admission through the intensification of unpaid labour.

The short follow-up period of the study limits conclusions about permanent residential admission. Even so, reductions in care time and improved daily functioning address factors that commonly contribute to institutionalisation. Dyadic interventions may therefore be an important component of a broader prevention strategy, especially when combined with case management and respite.

Respite and adult day services

Respite care is frequently proposed as a means of preventing carer exhaustion and delaying permanent admission. It can take the form of in-home assistance, adult day services, short residential stays or emergency respite. Its preventive logic is strong: temporary relief may allow the carer to rest, attend to employment or health needs and continue caring over a longer period.

The economic evidence is less consistent. Respite is sometimes introduced after the caring relationship is already close to collapse, making it difficult to demonstrate prevention. Families may use respite in preparation for permanent placement, producing an apparent but non-causal association between respite use and earlier admission. Carers may also be reluctant to use services because of concerns about quality, disruption, guilt or the resistance of the person receiving care.

Adult day services can provide supervision, activities and social engagement for the older person while creating predictable periods of relief for the carer. Their economic value depends on whether they substitute for other paid care, reduce carer time, prevent crises or delay admission. If day services are added to existing arrangements without changing other costs or outcomes, they may increase total expenditure. If they stabilise a high-risk caring situation, they may be cost-effective even when their immediate operating costs are substantial.

The difficulty is that these plausible mechanisms have not always translated into strong trial evidence. A major systematic review of community-based respite care for frail older people and their carers in 2007 found carers were often satisfied with respite and that respite might have small positive effects on carer outcomes, but it did not find reliable evidence that respite delayed entry to residential care.²⁰² The study also noted that the evidence base was methodologically weak, with heterogeneous models of respite, different target groups, limited follow-up and relatively little robust economic evaluation. This matters because respite is not a single intervention. It may include in-home respite, centre-based day care, residential respite, host-family care, overnight respite, emergency respite or dementia-specific services. It is therefore unsurprising that average effects across diverse programs are difficult to interpret.

A 2009 systematic review of respite care for frail older people found some evidence that respite could have positive effects on carers, but judged the evidence to be limited and weak.²⁰³ They also

²⁰² Mason A, Weatherly H, Spilsbury K, Arksey H, Golder S, Adamson J, Drummond M, & Glendinning C. (2007). A systematic review of the effectiveness and cost-effectiveness of different models of community-based respite care for frail older people and their carers. *Health Technology Assessment*, 11(15):1-157.

²⁰³ Shaw C, McNamara R, Abrams K, Cannings-John R, Hood K, Longo M, Myles S, O'Mahony S, Roe B, & Williams K. (2009). Systematic review of respite care in the frail elderly. *Health Technology Assessment*, 13(20):1-224.

observed that respite needs to provide a ‘mental break’ rather than merely a physical substitution of care. This is a crucial distinction for cost-effectiveness. A service that technically replaces the carer for several hours may have little preventive value if the carer remains anxious, if transport is unreliable, if the older person dislikes the service, or if the carer must spend more time organising respite than actually resting. By contrast, respite that is reliable, flexible, acceptable to the care recipient and available before crisis may be more likely to preserve the caring relationship.

A more recent (2020) systematic review of reviews found that caregiver support, respite care and adult day programs generally showed inconsistent effects or no clear overall benefit in preventing or delaying residential care admission.²⁰⁴ This does not mean respite has no value. Rather, it means respite should not be presented as a proven stand-alone substitute for residential care. Its effect on admission depends on timing, intensity, quality, carer needs, the condition of the older person and the availability of other supports. Respite offered only when the carer is already near collapse may come too late to prevent admission. In some studies, respite use may even appear associated with higher institutionalisation, not because respite causes admission, but because people seek respite when the caring arrangement is already fragile.

Dementia is the setting in which respite may have the strongest economic rationale. Dementia care is often prolonged, behaviourally complex and emotionally demanding. Carers may face night-time disturbance, wandering, aggression, continence problems, social isolation and progressive loss of reciprocal relationship. Because dementia is a major pathway into residential care, even a modest delay in admission could generate substantial savings if achieved without harming the person with dementia or the carer.

A decision-analytic Markov model based on a quasi-experimental study of in-home respite for informal carers of people with dementia, estimated a gain of 0.14 QALYs compared with standard community-based dementia care. Incremental costs were modest, and the estimated incremental cost-effectiveness ratios were approximately €9,042 per QALY from the third-party payer perspective and €8,690 per QALY from the societal perspective. On conventional European willingness-to-pay thresholds, this suggests that in-home dementia respite can be cost-effective.²⁰⁵

The distinction between respite alone and broader carer support is also important. Some evidence for delaying residential care comes from multi-component caregiver interventions rather than respite as a discrete service. Studies have found that enhanced counselling and support for spouse carers of people with Alzheimer’s disease reduced the rate of residential care admission, and delayed predicted median time to admission.²⁰⁶ This suggests carers may need more than a break. They may also need education, counselling, crisis advice, behavioural management strategies, peer support and

See also: Jones C, Edwards RT, & Hounscome B. (2012). A systematic review of the cost-effectiveness of interventions for supporting informal caregivers of people with dementia residing in the community. *International Psychogeriatrics*, 24(1):6-18.

²⁰⁴ Duan-Porter W, Ullman K, Rosebush C, McKenzie L, Ensrud KE, Ratner E, Greer N, Shippee T, Gaugler JE, & Wilt TJ. (2020). Interventions to Prevent or Delay Long-Term Nursing Home Placement for Adults with Impairments-a Systematic Review of Reviews. *Journal of General Internal Medicine*, 35(7):2118-29.

²⁰⁵ Vandepitte S, Putman K, Van Den Noortgate N, Verhaeghe N, & Annemans L. (2020). Cost-effectiveness of an in-home respite care program to support informal caregivers of persons with dementia: A model-based analysis. *International Journal of Geriatric Psychiatry*, 35(6):601-9.

See also: Huo Z, Chan JYC, Lin J, Bat BKK, Chan TK, Tsoi KKF, & Yip BHK. (2021). Supporting Informal Caregivers of People With Dementia in Cost-Effective Ways: A Systematic Review and Meta-Analysis. *Value in Health*, 24(12):1853-62.

²⁰⁶ Mittelman MS, Haley WE, Clay OJ, & Roth DL. (2006). Improving caregiver well-being delays nursing home placement of patients with Alzheimer disease. *Neurology*, 67(9):1592-9.

navigation assistance. Respite is likely to be more effective when embedded in such a package rather than offered as a disconnected episode of care.

In conclusion, respite for carers is potentially cost-effective, but not uniformly or automatically so. The evidence does not support a blanket claim that respite reliably delays admission to residential care. It does support a more nuanced claim: respite is most likely to be cost-effective when it is targeted to carers at high risk of burnout, provided early enough to prevent crisis, designed around the preferences of both carer and care recipient, and integrated with dementia support, case management and broader home-care services. Its value should also be assessed not only by whether it saves government money, but by whether it preserves carer wellbeing, protects the dignity of the older person and makes continued community living feasible for longer.

Lessons learned

Informal carers are a critical part of the infrastructure that allows older people with dementia, disability and frailty to remain at home. Interventions that improve carers' skills, health, confidence and access to services can therefore function as preventive long-term-care investments. The NYUCI provides strong evidence that a sustained, multicomponent program can materially delay residential care admission. Economic models suggest that reproducing such effects at scale could generate substantial savings. The broader evidence is encouraging but more qualified. START demonstrates that carer support can be cost-effective and produce enduring mental-health benefits without necessarily reducing care-home admission. Dutch caregiver training and occupational-therapy programs show that supporting the dyad may reduce health, social care or informal-care costs, although longer-term residential outcomes remain uncertain.

The international literature supports 3 broad conclusions:

- **It is possible for carer interventions to delay admission to residential care.** The NYUCI trial provides the clearest direct evidence, and American modelling suggests that successful dissemination could generate substantial societal and public-payer savings.
- **Not every effective or cost-effective carer intervention delays admission.** START improved carers' mental health over an extended period without producing a statistically significant reduction in care-home placement. Occupational therapy and Dutch caregiver training reduced costs or improved dyadic outcomes over shorter follow-up periods, but long-term institutional outcomes remain less certain.
- **The most promising interventions are generally sustained and multicomponent.** Education alone may increase knowledge without changing the carer's practical capacity. Respite alone may provide temporary relief without resolving behavioural or service-coordination problems. Counselling alone may improve emotional wellbeing while functional dependency continues to increase. Programs are more likely to affect admission when they combine psychological support, practical training, service coordination, family involvement and continuing access to professional advice.

A prevention strategy centred on informal carers should identify them early, assess their needs systematically and provide support before a crisis. Carer assessment should examine mental and physical health, confidence, employment, sleep, social support, financial pressures and willingness to continue providing care. Assessment should also identify risks to the older person, including unsafe manual handling, medication problems, neglect arising from exhaustion and inadequate supervision.

Interventions should be proportionate to risk. Families managing relatively mild needs may benefit from education, peer support and information. Those dealing with behavioural symptoms, severe functional impairment or repeated crises may need intensive case management, occupational therapy, regular respite and rapid access to specialist advice. Support should be reviewed as needs change rather than delivered as a single, time-limited episode.

Funding arrangements should recognise that the benefits of carer support may arise outside the budget paying for the intervention. A community organisation may fund counselling while residential-care savings accrue to a national government. A health service may fund occupational therapy while reduced home-care costs benefit a local authority. Fragmented funding can therefore lead to underinvestment even when the intervention is cost-effective from a societal perspective.

Finally, supporting carers should not become a rationale for transferring unlimited responsibility from government to families. Delaying residential care is desirable when it reflects the preferences and wellbeing of the older person and carer. It is not necessarily desirable when achieved through unrecognised exhaustion, loss of income or unsafe care. The appropriate objective is sustainable community living, not the postponement of residential admission at any cost.

A recurring question in long-term care economics is whether ageing societies can afford to rely heavily on informal carers when labour shortages are increasing and workforce participation is becoming more important to economic growth. Intensive caregiving often reduces employment, hours worked, earnings, and retirement savings among carers, particularly women.²⁰⁷ The OECD has argued that, while family caregiving reduces demand for publicly funded long-term care services, it may also reduce labour force participation and tax revenues.²⁰⁸ However, most economists conclude that the relevant policy challenge is not whether societies can afford informal care, but whether they can afford to lose it. Replacing the enormous volume of unpaid care currently provided by families with formal services would require very large increases in public expenditure and care workforce capacity. Consequently, contemporary long-term care policy increasingly seeks to support carers in ways that enable them to continue both caring and participating in the labour market.

²⁰⁷ Bolin K, Lindgren B, & Lundborg P. (2008). Your next of kin or your own career? Caring and working among the 50+ of Europe. *Journal of Health Economics*, 27(3):718-38.

Van Houtven CH, Coe NB, & Skira MM. (2013). The effect of informal care on work and wages. *Journal of Health Economics*, 32(1):240-52.

²⁰⁸ Colombo F, Llana-Nozal A, Mercier J, & Tjadens F. (2011). *Help Wanted? Providing and Paying for Long-Term Care*. OECD Health Policy Studies, OECD Publishing, Paris.

Building the upstream system of care

You know, he said, sometimes it feels like this. There I am standing by the shore of a swiftly flowing river, and I hear the cry of a drowning man. So, I jump into the river, put my arms around him, pull him to shore and apply artificial respiration. Just when he begins to breathe, there is another cry for help. So, I jump into the river, reach him, pull him to shore, apply artificial respiration, and then just as he begins to breathe, another cry for help. So back in the river again, reaching, pulling, applying, breathing and then another yell. Again and again, without end, goes the sequence. You know, I am so busy jumping in, pulling them to shore, applying artificial respiration, that I have no time to see who the hell is upstream pushing them all in.²⁰⁹

Residential care will always remain an essential part of aged care, and for some older people it will be the safest and most appropriate form of support. But a system that waits until an older person has fallen, lost function, exhausted their caregiver, or reached the point of institutional admission has already missed many opportunities to act. The central argument of this monograph has been that aged care should be organised not only around the management of dependency, but around the prevention of avoidable harm, avoidable loss of independence, and avoidable or premature admission to residential care.

The argument has 3 parts:

- **Evidence: prevention can work.** Not every early community-based intervention delays admission to residential care, and no preventive program can remove the need for residential care altogether. But there is strong evidence that well-targeted interventions can preserve function, reduce falls, support carers, improve transitions from hospital, adapt unsafe homes, manage dementia-related risks and sustain older people in the community for longer. The strongest evidence is not for a single magic-bullet service, but for coordinated, person-centred and clinically informed support that identifies emerging risks and responds before decline becomes severe or irreversible.
- **Ethics and economics: scarcity strengthens the case for prevention.** If resources were unlimited, the case for prevention would be simpler. But aged care, like every other part of the health and social care system, must operate in a world of finite public resources and effectively unlimited human need. Prevention matters because it can improve outcomes for individuals while also improving the allocation of resources across society. When early investment delays dependency, it does not merely save money. It preserves capability, dignity, autonomy and time at home. It allows limited resources to do the greatest good, for more people, before preventable decline becomes irreversible.
- **Efficiency: the limits of consumer choice as an organising principle:** Choice matters. But choice alone cannot carry the full moral and economic burden of an aged care system. Individual consumers cannot be expected to allocate resources in ways that maximise outcomes across the system, nor can they always identify the supports most likely to prevent future decline. A just aged care system must be efficient and must therefore do more than fund individual preference. It must guide resources toward the forms of support most likely to preserve independence, prevent avoidable harm and delay unnecessary admission to residential care.

²⁰⁹ Zola IK. (1970). Helping Does It Matter: The Problems and Prospects of Mutual Aid Groups. Address to the United Ostomy Association. Quoted in: Mckinlay JB. (1975). A Case for Refocusing Upstream: The Political Economy of Illness. Reprinted in: Jaco EG. (Ed.). (1979). *Patients, physicians, and illness: A sourcebook in behavioral science and health* (3rd ed., pp. 9-25). Free Press.

Preventing harm: Key conclusions from the literature

The evidence on interventions does not support the simple conclusion that any form of home care will prevent institutionalisation. The stronger and more defensible conclusion is more precise. Admission to residential care is usually the end point of several interacting forms of decline, including functional impairment, dementia, frailty, caregiver exhaustion, social isolation, unsafe housing, poorly managed transitions from hospital, and fragmented service systems. The implication is that early investment matters most when it is directed toward interventions that identify these risks before they become irreversible and responds with coordinated, person-centred and clinically informed support. The strongest case is therefore not for a single intervention, but for a layered system of early support that helps older people remain safely at home, or in a home-like community setting, for longer.

Evidence from the literature is that early investment should begin with assessment, not merely with service delivery. Admission to residential care is rarely caused by age alone. Frailty, functional impairment and limitations in activities of daily living are strongly associated with admission to residential care. This suggests that early investment should include systematic risk identification in the community. The purpose of assessment is not simply to ration services, but to detect the point at which modest, well-targeted intervention may prevent a later crisis. In policy terms, assessment should be understood as a preventive technology: it identifies people who are not yet in residential care, but who may already be on a trajectory toward it.

Comprehensive assessment is most effective when it leads to care planning and active coordination. A narrow response, such as domestic assistance alone, is unlikely to address the combination of factors that often drive entry to residential care, including declining mobility, medication problems, dementia-related symptoms, and caregiver strain. Early investment therefore needs to support coordinated, responsive care rather than simply fund additional hours of task-based assistance. What matters is not only the amount of support provided, but whether the right mix of services is delivered at the right time and adjusted as needs change.

Complex, multifactorial home and community care models offer the strongest general platform for delaying admission to residential care. The most consistent evidence favours person-centred models that address both health and social needs, include comprehensive assessment and care planning, and are delivered by multidisciplinary teams with appropriate clinical capability. This is an important corrective to a purely social-care view of aged care. Many older people enter residential care not simply because they need help with housework, but because clinical, functional and social problems accumulate in ways that exceed the capacity of uncoordinated community services. The models most likely to delay admission are therefore those that combine clinical oversight, functional support, personal care, social support and regular review. Clinically informed community care can identify deterioration, respond early and prevent escalation. This also suggests that the design of the community care system matters. A system that provides low-intensity support without timely reassessment is likely to be less effective than one that can rapidly adjust the balance of clinical, personal and social support as needs change.

Early investment should target functional decline before it becomes entrenched dependency. Functional impairment is one of the main pathways into residential care. Early investment should therefore include rehabilitation and restorative care after sentinel events such as hip fracture, falls, hospital admission or rapid deterioration in mobility and self-care. The aim is not simply to discharge people from hospital sooner; it is to prevent temporary loss of function from hardening into permanent dependency.

This point is especially important because residential admission often follows a crisis. A fall, fracture, hospital admission, delirium episode, carer breakdown or sudden escalation in dementia-related behaviour can convert a manageable home situation into an institutional placement. Preventive

investment should therefore be timed around known transition points. The post-acute period is one such point. Transitions between acute care, long-term care, complex continuing care and home care are shaped by health status, caregiver support, person-centred planning, system attributes and funding arrangements. Discharge planning is therefore not merely a technical administrative process; it is a decisive moment in the residential-care pathway. Early involvement of caregivers, realistic assessment of home supports, rehabilitation planning and coordination between hospital, home care and aged care can determine whether a person returns home safely or moves toward institutional care.

Dementia requires a dedicated prevention-of-admission strategy. Dementia is one of the most powerful drivers of residential admission, but entry to care does not necessarily follow directly from diagnosis. The need for admission, and the timing of admission, are both influenced by how effectively behavioural symptoms, functional decline, caregiver stress and environmental mismatch are identified and managed. The policy challenge is not simply to respond to increasing need, but to intervene early enough to sustain a safe and viable home environment for as long as possible.

The dementia evidence also points to the importance of person-centred care. Dementia-capable support must be organised around the person's preferences, routines and life history, and supported by trained staff, meaningful activity, appropriate environments and strong links with home-care services. This matters because dementia often leads to residential admission when ordinary environments and routines can no longer adapt to changing cognition and behaviour. Early investment in dementia-capable community care – including staff training, behavioural support, meaningful activity, environmental adaptation and family involvement – may delay admission by making the existing setting more able to absorb rising need. This is different from assuming that people with dementia must move whenever their needs increase.

Caregiver support is not peripheral to prevention; it is central infrastructure. Caregiver capacity, readiness and support are major determinants of transitions into and out of institutional settings. The absence of a primary caregiver is also an important predictor of residential care admission. This has major policy implications. Informal care is often treated as a free input into the aged care system, but it is really a fragile and decisive determinant of whether home care remains viable. Early investment should therefore include caregiver assessment, training, respite, counselling, practical backup and active involvement in care planning. Delaying residential care by increasing unsupported family burden is not prevention; it is cost shifting. Genuine prevention strengthens the caring arrangement so that both the older person and the caregiver can continue safely.

Place-based and housing-linked models deserve greater attention. Residential admission risk is geographically and socially patterned. Older people are not distributed randomly across the community; they live in certain buildings, neighbourhoods and housing forms that may either increase vulnerability or create opportunities for targeted support. Early investment can therefore be place-based. Supportive services delivered where older people already live may be more efficient than waiting for each person to present separately in crisis. Housing, neighbourhood design and local service availability are not background conditions; they are part of the prevention infrastructure.

Funding design matters. Reimbursement and funding policies influence transitions, including whether systems support return to home or continued institutional care. Different publicly supported community-care programs can have very different implications for time at home and cost. This suggests that early investment is not only a matter of spending more. It is a matter of spending earlier on the right service mix and aligning incentives with the goal of maintaining independence. Systems that underfund home care until dependency is severe may inadvertently make residential admission more likely. Systems that fund assessment, clinical oversight, rehabilitation, caregiver support and timely reassessment may reduce or defer that demand.

The overall conclusion is that early investment is most important when directed toward interventions that preserve function, stabilise the home environment, support carers, manage dementia, coordinate clinical and social care, and respond quickly after hospitalisation or other sentinel events. The evidence favours a shift from reactive aged care to anticipatory aged care. Instead of waiting until an older person can no longer cope at home, systems should identify rising risk, build supports around the person and caregiver, and adapt the environment as needs change. The purpose is not merely to reduce residential care expenditure. The deeper purpose is to buy time: more months or years in familiar surroundings, greater continuity of relationships, stronger preservation of autonomy and a better match between care and preference.

Early investment should therefore be understood as a form of risk management and capability preservation. It is not a single program, but a policy orientation. The strongest candidates for investment are comprehensive assessment and risk screening; multidisciplinary case management; clinically-informed home and community care; restorative and rehabilitative care after functional decline; dementia-capable community support; caregiver training and respite; adaptive housing and place-based supports; and funding models that reward successful ageing in place. Using these recent sources, the conclusion is clear enough for policy: residential admission is not determined solely by biological ageing. It is shaped by modifiable service, social, functional, clinical and environmental factors. Investing early in those factors is one of the most plausible ways to delay institutionalisation while improving the lives of older people.

Ordering need: Using scarce resources justly and effectively

The argument of this monograph has been that aged care cannot be understood simply as a system for delivering services to individuals. It is also a system for ordering competing claims on public resources. Human need is without end. Frailty, disability, loneliness, cognitive decline, caregiver exhaustion, unsafe housing, hospital discharge pressures and the desire for dignity in later life all create legitimate claims for assistance. Yet public resources are finite. No aged care system can meet every need, at every intensity, for every older person, at every moment. The ethical task, therefore, is not to pretend that scarcity can be abolished, but to decide how scarce resources can be used most justly and effectively.

Justice requires more than formal entitlement. It requires that resources be directed to where they can do the greatest good, and to where need is greatest. In aged care, this means giving priority to those whose independence, safety, dignity and continued life in the community are most at risk. It also means investing before crisis occurs, because the failure to act early often produces greater dependency later. A person who receives timely rehabilitation, home modification, clinical monitoring, carer support or dementia-capable community care may remain at home for longer. A person who receives only fragmented, delayed or poorly targeted support may move more quickly into hospital or residential care. Prevention is therefore not a soft addition to the system; it is a central principle of distributive justice.

The current aged care system is, however, poorly designed for this task. It has increasingly placed the consumer in charge of purchasing care, on the assumption that individual choice will generate efficiency. In general, this could lead to improved efficiency, and individualised budgets are the ultimate form of localisation. However, these efficiencies are predicated on the existence of a well-functioning market, and it is, at best, unclear to what extent the market for care goods and services is, and can be, efficient.²¹⁰

²¹⁰ Cullen DJ. (2025). *Soft Constraints and Hard Lessons: Market Power under the NDIS*. Seminar given at Macquarie University Centre for the Health Economy, 3 December 2025.

Cullen DJ, & Fels A. (2024). [Competition in the Care Economy](#). Paris: OECD.

The invisible hand, left to its own devices, is meant to ensure an efficient allocation of resources. In a well-functioning market, prices emerge from the interaction of supply and demand. When demand rises, prices tend to increase, encouraging more supply; when supply expands, prices tend to fall, encouraging greater consumption or discouraging further production. Through these adjustments, the market is expected to move toward a new equilibrium in which resources are directed to their most valued uses.

But this argument depends on a demanding set of assumptions that are rarely met in full, and that are especially unlikely to be met in aged care. Perfect markets require:

- buyers to pay sellers directly
- many buyers and sellers with no single party able to influence price
- products that are sufficiently similar for consumers to compare and substitute between them
- complete and immediate information about price and quality
- buyers who can judge what they are purchasing
- free entry and exit for providers
- resources that can be easily shifted between uses
- no wider effects on third parties (the absence of externalities).

Where these conditions break down, prices do not necessarily reflect true value, consumer choice does not necessarily produce efficient allocation, and markets may fail to direct resources toward the people and services where they are most needed.

The assumption that markets operate without externalities is especially weak in long-term care. When an older person receives high-quality aged care, the benefits do not accrue only to that individual. They also flow outward to families, health systems and the wider community. Adequate care can reduce the burden on family members who might otherwise have to provide intensive unpaid support, allowing them to remain in paid work, maintain their own health and continue contributing socially and economically. It can also help older people preserve function, independence and social participation, enabling some to remain active in volunteering, caring roles or community life. In addition, effective long-term care can reduce avoidable hospital admissions, emergency department presentations and premature use of more intensive services. These wider benefits are not fully captured in the private transaction between a care recipient and a provider. For this reason, aged care cannot be understood simply as a private consumer good. It produces public value, and that public value justifies a stronger role for collective funding, planning and stewardship.

Market failure in the care economy also arises from several structural features that make care unlike an ordinary consumer market:

- Consumers often lack reliable information about price and quality, particularly when they are frail, unwell, cognitively impaired or making decisions during a crisis.
- Even when quality is poor, high switching costs can make it difficult to change providers, weakening the disciplining effect that consumer choice is supposed to have in a competitive market. As a result, providers may be able to prioritise profit over staffing, training or service improvement without facing an immediate loss of clients.
- The market is also shaped by monopsony, or partial monopsony, because the Australian Government is often the dominant funder and purchaser of care.
- Supply is regulated as a tool of fiscal sustainability, which means prices, places and service availability are not determined by open market forces alone.

- Care is labour-intensive, with limited scope for productivity gains without reducing the quality or relational character of support.
- Finally, both demand and supply are highly heterogeneous. Older people require different types of support depending on their condition, preferences, location, culture, gender, family circumstances and timing of need, while providers differ in capability, workforce, geography and service model. This creates complex matching problems that are far removed from the assumptions of a simple market for homogeneous goods.

Justice: Allocative and distributive efficiency

Choice matters. Older people should have voice, control and dignity in the services they receive. But choice alone cannot carry the full moral and economic burden of an aged care system. Individual consumers are unable to maximise outcomes for the whole system. They do not have perfect information about future risks, comparative effectiveness, provider quality or the opportunity costs of different forms of care. Nor can they be expected to minimise their own consumption to preserve resources for people with greater need. That is not a failure of character. It is a predictable feature of any system that asks individuals to act as both care recipients and allocators of public resources.

The result is a tension between micro-efficiency and system efficiency. At the micro level, government can appear to manage costs by squeezing provider funding, tightening prices, reducing margins and expecting providers to deliver more care with fewer resources. But this is not true efficiency if the effect is to weaken the very services that prevent deterioration. A system that underfunds assessment, care planning, clinical oversight, workforce stability, reablement, dementia support and carer assistance may save money at the point of transaction while creating higher costs elsewhere. It may reduce the price of an hour of care while increasing the likelihood of hospitalisation, residential admission or caregiver collapse. That is not efficiency; it is deferred failure.

Nor is a purely consumer-led market likely to produce distributive efficiency. Individuals understandably seek services that meet their immediate preferences and pressures. Providers, operating under financial constraint, must survive within the rules and prices set for them. Government, seeking budget control, may focus on unit costs rather than long-term outcomes. Each actor behaves rationally within the system, yet the entire system may still allocate resources poorly. Some people receive support too late. Some receive services that are poorly matched to their risks. Some carers struggle until they fail. Some providers are pushed to the edge of viability. Residential care then becomes the default destination after preventable decline, rather than the last resort after effective community support has been tried.

This is why guided services are essential. Guidance does not mean paternalism, nor does it mean removing choice from older people. It means embedding choice within a framework of professional assessment, evidence, care coordination and public stewardship. Older people should be supported to make decisions, but those decisions should be informed by what is likely to maintain function, reduce risk, support carers and delay avoidable admission to residential care. A guided system would not simply ask, 'What does the consumer want to buy?' It would also ask, 'What does this person need to remain safe, capable and connected?' 'What support is required to prevent deterioration?' 'What will best preserve independence over time?' 'How should resources be targeted so that those at greatest risk are not left waiting until crisis?'

The case for early investment is therefore both economic and ethical. Economically, it recognises that late intervention is often more expensive than prevention. Ethically, it recognises that the fair use of public resources requires more than giving each person an individual budget and leaving them to navigate a complex market. A just aged care system must actively shape the conditions under which older people can continue to live with dignity. It must guide resources toward the forms of support most likely to prevent avoidable decline. It must protect providers from a false efficiency

that undermines quality. And it must accept that public stewardship is not the enemy of choice, but the condition under which choice can be made meaningful.

The future of aged care should therefore move beyond the narrow language of consumer control and provider cost containment. The deeper task is to build a system capable of intelligent prioritisation: one that recognises infinite need, finite resources and the obligation to use those resources wisely. Residential care will always remain necessary for some people. But a better system would ensure that admission occurs because it is genuinely needed, not because earlier opportunities for support were missed. That is the promise of prevention. It is also the measure of justice in aged care.

‘What do we live for, if it is not to make life less difficult to each other?’²¹¹

²¹¹ Eliot G. (2003). *Middlemarch* (R. Ashton, Ed.). Penguin Classics. (Original work published 1871–1872.)

About the author

Adjunct Professor David Cullen has extensive experience in the regulation, funding and financing of aged care, disability services and health care. Since his retirement from the Australian Public Service in 2022 he has been an Adjunct Professor at Macquarie University's Centre for the Health Economy.

Prior to his retirement, Professor Cullen was

- Chief Economist at the National Disability Insurance Agency from 2016 to 2022
- Principal Adviser to the Royal Commission on Aged Care Quality and Safety from 2018 to 2021
- Chief Economist at the Australian Department of Health from 2014 to 2016
- Head of Aged Care Policy at the Australian Department of Health from 2000 to 2014.

Professor Cullen also has extensive international experience. He was the President of the OECD's Expert Group on the Economics of Prevention from 2014 to 2015 and has served on several other OECD Expert Groups. He has also advised the World Bank on the development of inclusive and sustainable aged care systems.

Professor Cullen was elected a Fellow of the Royal Society for Public Health in 2013 and a Fellow of the Royal Statistical Society in 2014.

