



BRIDGING THE CARE GAP 2024

How Service Robotics Meets
the Growing Demand for
Social Care in England



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"There is a desperate and immediate need for significant increases in funding to keep pace with the cost-of-living crisis, to help retain staff and to help inject both domestic and overseas recruits into the sector ahead of catastrophic failure caused by government underfunding." [9]

Executive Summary

Everyone has the right to a fulfilling life. Social care plays a vital role in helping vulnerable individuals — who often need assistance with daily living — live their fullest lives. It provides life-changing physical, emotional, social, and financial support to these individuals, preventing social isolation and boosting their confidence and wellbeing. [1]–[3]

In England, care is formally provisioned under the Health and Social Care Act 2012 and the Social Care Act 2014. [4], [5] The legislation allows for central government to distribute funds to local authorities, which then become responsible for provisioning care (mostly through independent providers).

Within the social care sector, adult social care represents a large chunk of the services provided in England. It is a broad sector which encompasses care and support for individuals with a physical, mental, or learning disability. This support may include help with daily activities such as eating, personal care, cooking, or shopping, as well as support for other aspects of life, such as working and socialising. Care may be provided in people's homes, in assisted living facilities, residential care homes, or day care centres. [1]

More than 800,000 adults in the UK are recipients of long-term, publicly funded, social care. [1] Care in England forms part of a complex network of interrelated public services, with associated challenges in delivering these services. [6]

It may be tempting to think of health and social care as one service. However, there remain huge differences in how each is delivered: while health and social care were both created in 1948, the first was envisioned as universal but the latter only as a means-tested service. [7] There are growing efforts to unify these two services, as most experts agree that is the best way forward if we are to tackle the growing shortages in the delivery of social care services.

Experts also agree that automation and service robotics, coupled with artificial intelligence and big data, are to play a crucial role in enabling cost-effective and scalable adult social care services. [8]

The Social Care Crisis

When the National Health Service Act was passed into law in 1946, it provided for the establishment of a comprehensive health service for England and Wales, uniting a wide range of medical services under one organisation, from doctors to pharmacists to dentists and more.^[10] Aneurin Bevan, Minister of Health, and key architect of the act, envisioned a service that not only provided a safety net for the most disadvantaged but “universalised” the best healthcare Britain could offer, also being “free at the point of delivery.”^[11]

The National Health Service Act came into force on July 5, 1948 — in the same year as the National Assistance Act (1948).^[12] However, whereas the National Health Service Act sought to promote physical and mental health through the prevention, diagnosis, and treatment of illnesses, the National Assistance Act mostly sets out the broad responsibilities of local authorities in providing accommodation, with few provisions for wellbeing and health.

Furthermore, while healthcare was set up as a service for all, social care became a means-tested residual provision.^[7]^[13]

By the mid 1970s, the challenges created by these

disparities were becoming apparent. However, early attempts to re-integrate the health and social care sectors only served to widen this gulf.^[Z] The Griffiths Report of 1988, recognising the difficulties created by fragmented services, marked the beginning of an extended period of proposed reforms. ^[Z] Most notably, it cited a “complex network of relationships and responsibilities at the local level between the various authorities, voluntary groups, [and others]”.

It also observed that “community care is a poor relation [to central government]; everybody’s distant relative but nobody’s baby.” Shortly thereafter, the 1989 white paper “Caring for People” — formally enacted by the Community Care Act (1990) — stated that local authorities should be the enablers of social care but not the end providers.

This led to an explosion of independent care providers which currently provide the majority of domiciliary and residential state-funded care: Out of a workforce of 570,000 employed in domiciliary care services, 550,000 work within the independent sector. These are spread across 19,400 local authorities and 10,850 registered service providers. ^[14]

The rising costs of care

Currently, there are 11 million people aged 65 or over living in the UK. This figure is forecast to reach 14.5 million by 2043 — a 32% increase.^[15] Furthermore, the population aged 85+ (which is most likely to need care) is forecast to rise 8% over the next five years — and 67% by 2043. ^[15] Consequently, the number of adults living with long-term conditions such as heart disease, arthritis, and dementia will also increase.

This is in addition to an excess of one in four adults currently living in England who suffer from two or more long-term health conditions, bringing an increased risk of functional decline and a poorer quality of life.^[15] Furthermore, incidences of disability will double as people reach the state pension age and beyond.^[16]

In practical terms, a growing and ageing population increases the demand for social care, while funding

for the sector has also declined (one third in real terms).^[16] The parliamentary Health and Social Care Committee estimates that an additional £7 billion per year will be needed to offset the rise in population, increase staff pay, and provide additional services to the most vulnerable in society. ^[15]

To make the situation worse, 1.6 million adults aged 65 and over currently have unmet care needs, including hundreds of thousands unable to complete three or more Activities of Daily Living (ADLs).^[15]

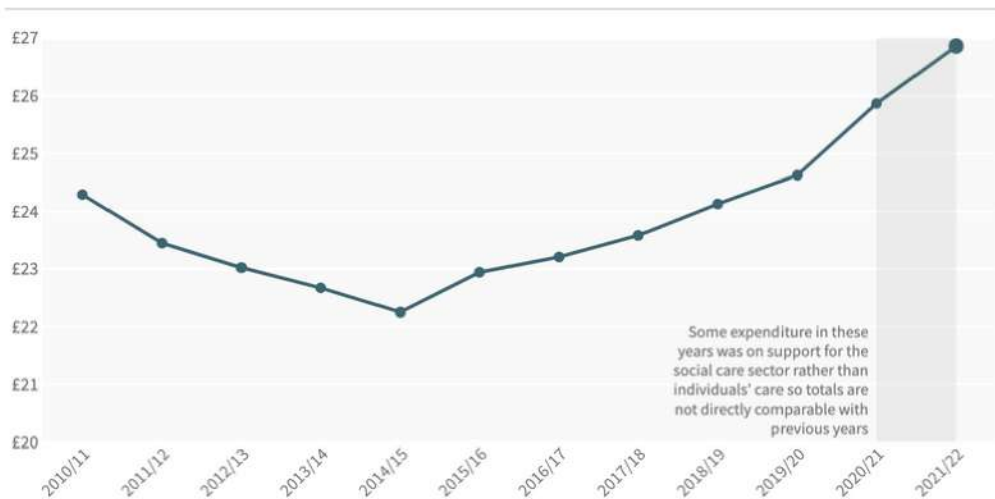
NIALL DICKSON, CHIEF EXECUTIVE, NHS CONFEDERATION

"Social care remains the Achilles' heel. It has been consistently underfunded, neglected and unloved by politicians over many years and the extra funding announced is clearly inadequate."^[17]



Total expenditure on adult social care in England is now more than £2 billion more than in 2010/11

Yearly total expenditure (£ billions), adjusted for inflation



Source: NHS Digital

Inflation calculated using September 2022 GDP deflators from HM Treasury. The GDP deflator in 2020/21 was heavily affected by the impact of Covid-19 on the economy.

TheKingsFund

Chart: Total expenditure on adult social care in England (2010–2021)[18]

Impact of underfunding on adult social care

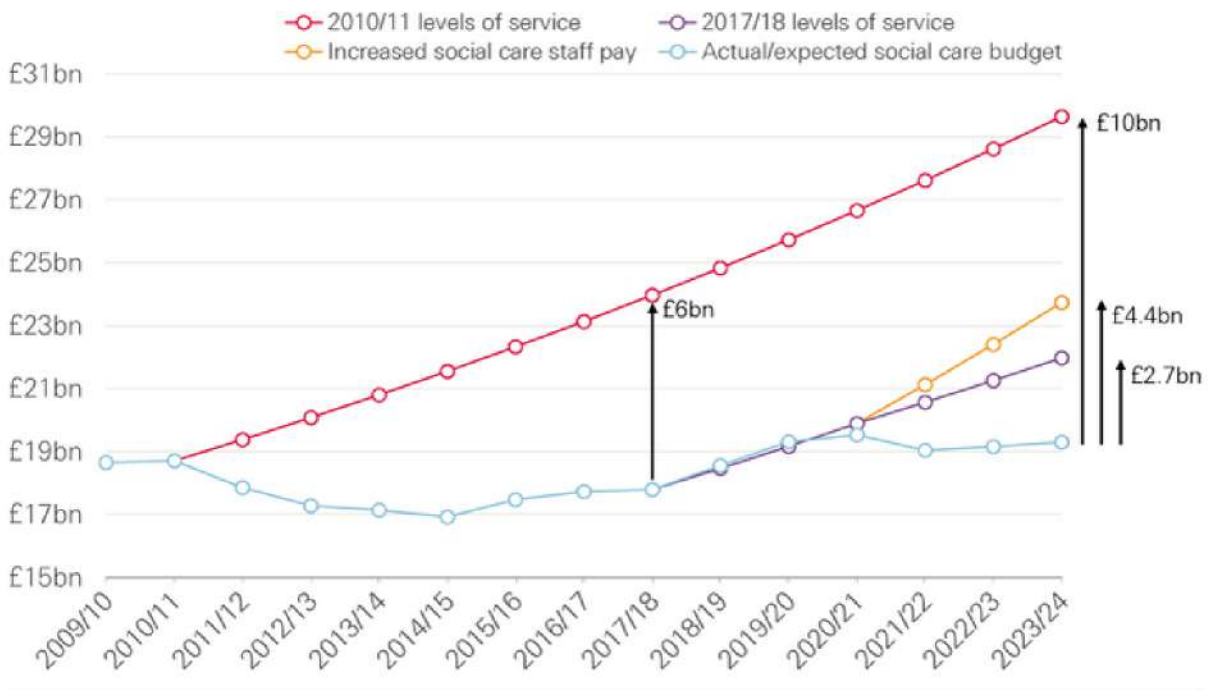
Despite five independent commissions (and several white papers), successive governments have avoided the issue of social care reform. [6] Unfortunately, without decisive political action and adequate funding, many of the most vulnerable adults in society will find themselves living without the support they need.

In fact, social care spending on older people in England has fallen 14% in real terms over a decade while fewer people are eligible to access social care. [6], [19]

Systematic failures in social care are having a significant impact on the provision of care with some reports stating that “the current model has broken down in some areas of the country and is no longer capable of delivering care to people in need” — the Competition and Markets Authority reports that a quarter of care homes in the UK (those with 75% or more of their residents funded by their local authority) are at risk of failure, with the worst hit local authority losing 58% of its nursing home beds. [20], [21]

In 2018/19, Directors of Adult Social Care reported plans to make savings of £700 million in order to balance their budgets; developing self-help approaches to reduce the demand for long-term care, efficiency savings, and a reduction in personal budgets were the most commonly cited approaches. [20]

Social care funding gap in 2023/24



 **The Health Foundation**
© 2019

Source: NHS Digital, Adult social care activity and finance report (2017/18), Provisional local government finance settlement, Wittenberg et al (2018): Projections of Demand expenditure on adult social care 2015 to 2040, PSSRU (<https://www.pssru.ac.uk/pub/5421.pdf>).

Chart: Social care funding gap in England (2023/24)[22]

The total number of older people who will need care and support services – publicly or privately funded – will grow from **657,000 in 2015 to nearly 1.2 million by 2040.** [23]

PARLIAMENTARY COMMITTEE ON HEALTH AND SOCIAL CARE

“In its present state, the system is not fit to respond to current needs, let alone predicted future needs as a result of demographic trends.” [24]



Significant workforce challenges

One of the salient features of the adult social care sector is its consistently high vacancy rates — 9.9% (152,000 posts) across England in 2022/23 against a national average of 3.4%. [25] This rate has remained consistently at twice the national average over the past five years; staff turnover has hovered around 30%. [25], [26].

Furthermore, adult social care workers accumulated a total of 8.1 million sick days over 2022/23. [25] Pay and working conditions (including distance travelled to work) being the top two reasons cited for leaving the sector. [27]

Pay conditions, in particular, are likely to become a contentious issue, with the parliamentary Health and Social Care Committee recently noting that “social care providers are consistently being outbid by the retail and hospitality sectors.” [28]

The King's Fund backs this finding in its own research, estimating that 50% of care workers earn within 30 pence of the national minimum wage. In real terms, this means that 9 out of 10 of the UK's largest supermarkets offer better pay. This constitutes a reversal of trends when, in 2012, retail assistants received an average of 16 pence per hour less compared to care workers. A decade later, they are receiving 21 pence an hour more. [29], [30]

“Pay is a key reason for the social care workforce crisis. There has been no progress on delivering a strategy [on pay progression and professional development] in adult social care and no sign that the government is seriously interested in developing one.” - Simon Bottery, Senior Fellow for Social Care, the King's Fund [30]

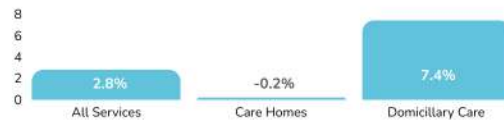
1.67m Jobs

1.54m people in adult social care

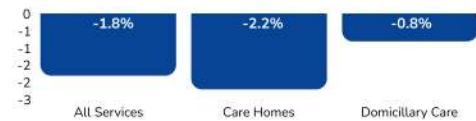


Jobs (filled posts) trends

Change in jobs between 2019/20 and 2020/21



Changes in jobs since March 2021



Between 2019/20 and 2020/21 the number of adult social care jobs increased by 45,000. Since March 2021 the number of jobs (filled posts) has started to decrease

105,000 Vacancies

were being advertised on an average day in 20/21



Staff vacancy rates decreased during the pandemic in 2020/21. Since March 2021, the vacancy rate has increased and is now back above pre-pandemic levels. This suggests that the fall in jobs is related to recruitment and retention difficulties rather than a decrease in demand.

Care Worker Turnover

Leavers in the previous 12 months



Absence

Average days in the previous 12 months



Nationality

% of starters arriving from outside the UK



Source: Skills for Care workforce estimates and ASC-WDS data, 2020/21

Local authorities are struggling to cope

Local authority finances have been under significant pressure over the last decade. Meanwhile, government funding has declined 55%, resulting in a 29% real-term reduction in spending power for local authorities.[32] What's more, in the aftermath of the COVID-19 pandemic, the Competition and Markets Authority estimates that local authorities will need an extra £1 billion of funding per year if they are to cover the full cost of adult social care.[32]

Local authorities understand their responsibilities (under the Care Act 2014) to provide diversified, high-quality social care services but many feel they lack the resources to do so; they have limited confidence in their budgets, which they can only balance through cuts to services and the use of reserves. Furthermore, uncertainty over long-term funding is making it difficult to plan for future care needs. [32]



Lack of a clear strategy

For several years the Department of Health and Social Care (DHSC) has focused on high-level objectives that ensure that vulnerable adults can live independent lives for longer. However, underlying performance measures have focused on actions rather than outcomes. In its 2021 report “The Adult Social Care Market in England,” The National Audit Office (NAO) found that:[32]

- DHSC acknowledges that most local authorities pay care providers a less than sustainable rate for the provision of care but has failed to challenge local authorities.
- DHSC projects that 29% more adults aged 18 to 64 — and 57% more adults aged 65 and over — will require care in 2038 compared with 2018. This corresponds to an increase in care costs of 90% (£9.6 billion to £18.1 billion) for 18- to 64-

year-olds and 106% (£18.3 billion to £37.7 billion) for 65s and over. Despite this, the DHSC cannot demonstrate it has adapted these projections to potential changes in care delivery.

- DHSC has no concrete plans for a care workforce strategy and has not delivered on commitments to enhance training and career development to mitigate recruitment and retention shortfalls.

Crucially, the NAO has concluded that better integration at the local level is integral to delivering person-centred, preventative care.

Faced with these seemingly insurmountable challenges, it is clear that new models of care delivery, especially those based on technology (particularly service robotics and automation) are needed.[33]

Current Challenges in Reforming Adult Social Care

Reforming adult social care presents major challenges, not least because many confuse social care with the “free at point of use” NHS, making it difficult to sell reforms. Furthermore, views differ on what needs reform — whether it is cost, quality of service, fairness of delivery, or wellbeing of carers.[34]

Recommendations

The NAO suggests that a holistic, cross-governmental approach is needed that avoids delivery of care in siloes. It also notes that:[32]

- Key stakeholders have called for better integration of services, specifically focusing on person-centred, preventative care. — the Local Government Association estimates that we can derive £7 in benefits from every £1 invested in prevention.
- The Local Government Association (LGA) and the Association of Directors of Adult Social Services (ADASS) have identified the care workforce as key to reforms.
- Advances in technology will shape the demand for and type of care delivered.

- Digital technology and data will be key to driving system performance, connecting services, and improving outcomes.

Government proposals

In its 2006 white paper “Our Health, Our Care, Our Say,” the Department of Health (later the Department of Health and Social Care) echoed many of the suggestions made by the NAO. It proposed a set of reforms which would make recipients centre-stage in care delivery rather than forcing them to conform to what’s on offer. In the paper, the Department recognises that: [35].

- We need to ensure more years of health and wellbeing in an ageing population, starting early, while also combating the causes of isolation.

- We must meet future demographic challenges by focusing on prevention and the promotion of health. This means more services must be delivered closer to where people need them the most, giving people greater flexibility and control over the services they receive.
- Rapid technological advances are enabling procedures — once only performed in a specialist setting — to be performed in the community. This means assistive technology can support more people in their homes, noticeably transforming their quality of life.
- People want more social care delivered in the community. This not only promotes long-term health and wellbeing but also provides better value for money for the public.





Service Robotics in Social Care

Robots have been used in industrial manufacturing and warehouse automation for decades. However, service robots that help humans complete service-related tasks or enhance the user experience are a relatively new concept, only making their appearance in the last decade.[36] In that time, consumers have become familiar with Google Home and Amazon Alexa (for managing devices in their home) as well as Siri and Bixby (virtual assistants for their smartphones).

With recent years bringing rapid advances in

artificial intelligence, robots are poised to deliver the most important innovations of the 21st century, filling important gaps in the delivery of health and social care.[8]

This has prompted the Secretary of State for Health and Social Care to launch a review into the potential applications of A.I. and robotics in the health and social care systems.[37]

Robots and autonomous systems powered by data and artificial intelligence are set to revolutionise the delivery of social care.

Impact of robotics in social care

The UK-Robotics and Autonomous Systems (UK-RAS) Network envisions a "Connected Care Network for Independent Living" that connects users living at home or in residential care, with health and care professionals. This would promote a joined-up care system that makes the transition from hospital to home a lot smoother and easier to manage.[16]

Service robots in social care will:[38]

- Drastically reduce the cost of social care by automating a greater number of tasks. They will also help older and vulnerable adults prevent illness, stay at home longer, and free up

valuable hospital beds. The Institute for Public Policy Research estimates savings of up to £6 billion per year.

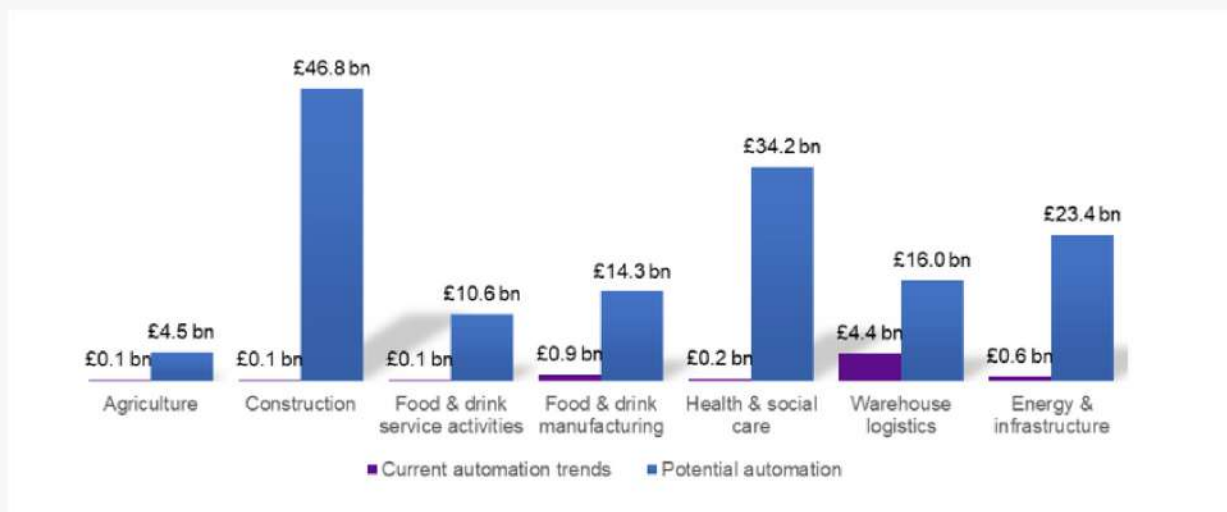
- Significantly improve quality of care, freeing up care workers' time to deliver a better quality of service and better fulfil the pastoral and emotional needs of recipients of care.

Social care forms a complex web of interconnected services, covering a wide range of activities, which include assistance with daily living, child protection services, and support for physical or learning disabilities.

Several studies have shown that service robots can provide effective physical, social, and cognitive support with a positive impact on mobility, mental health, and cognitive skills.[38]

The economic impact of RAS across the UK

The size of the prize: Potential value of GVA that could be attributable to RAS, by 2035, if potential rates of automation were achieved.



Note: The figure provides, for each selected sector, a rough estimate of the potential value of GVA that could be attributable to RAS, by 2035, if the potential rates of automation were achieved. These rough estimates are the result of a simple calculation multiplying 2035 baseline GVA by the potential rate of automation from PwC (2018b).

Chart: The economic impact of robotics and autonomous systems (RAS) across UK sectors[39]

Use of robotics in social care

Care providers are showing a growing interest in using service robots to improve the quality of care and ease the pressure on resources. It is suggested that service robots provide three types of assistance in social care, namely:[16]

1. **Physical assistance** to help with tasks such as eating, washing, walking, lifting, and carrying. These types of robotics include:[38]

- Semi-autonomous wheelchairs
- Robotic toilets that adjust to the user
- Robotic vacuum cleaners
- Wearable devices that assist with rehabilitation and walking
- Exoskeletons that assist caregivers with lifting

2. **Social assistance** to provide reminders and companionship, assist with social engagement and

loneliness, and monitor wellbeing. These types of robotics include:[38]

- Human-like (anthropomorphic) robots
- Robotic pets in the form of dogs, rabbits, seals, and others
- Remote monitoring robots connected to remote monitoring services and emergency call handlers, as well as family and friends of users

Several reviews have noted the positive impact of devices such as Amazon Echo and Alexa in reducing feelings of loneliness, isolation, depression, and agitation.[38], [40]–[46]

3. **Cognitive assistance** to help improve memory, deliver behavioural training to people with learning disabilities, or provide support to patients with dementia.

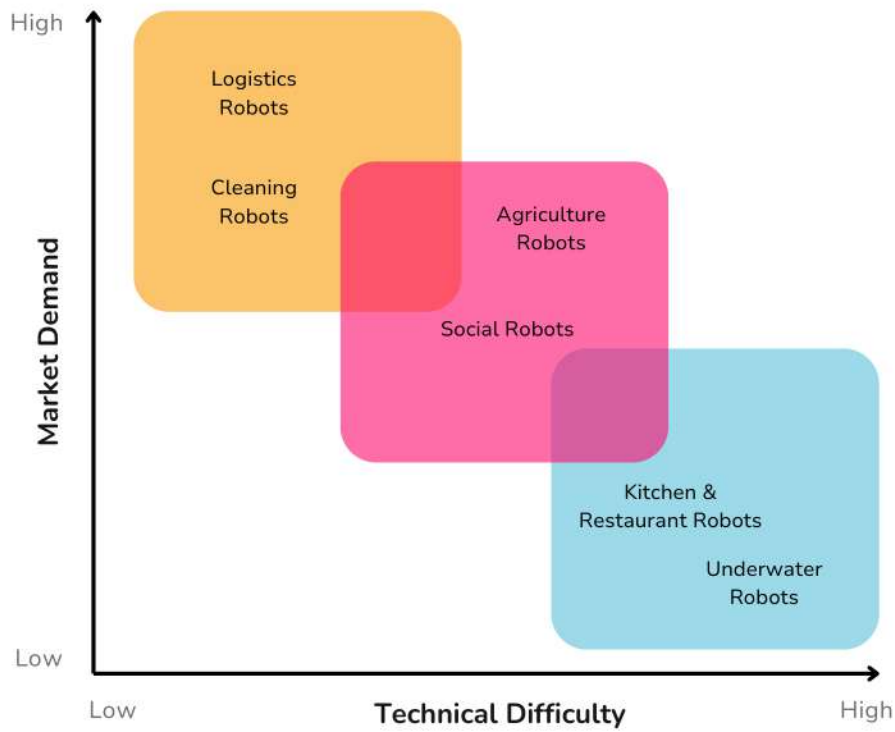


Illustration: Overview of service robots categorised by technical difficulty and market demand[47]

"I started to read a lot about robots and A.I. being used in healthcare settings and, the more I read, the more I realised how beneficial these advancements can be." - Gwen Vardigans, Royal College of Nursing [37]

"We need to prepare and look into how we are going to shift as a [nursing] profession to keep up with these changes." - Jennifer Charlewood, Royal College of Nursing [37]

"The robotic animals have been received by our residents incredibly positively. Even though they recognise that they aren't real, residents still seem to enjoy all the same benefits as they would from having a real pet. We've noticed quieter residents become much more engaged and more anxious residents become calmer." - Sarah Small, Clinical Lead, Care South [37]

Examples of Robots Used in Care

Robots come in different shapes and sizes. In health and social care, they serve various applications, including surgery, logistics, rehabilitation, and assisted living. Some are commercially available, while others are in various stages of development.

In recent years, there has been a progression from costly, task-specific robots that perform well-defined tasks (usually surgical) to more generic platforms capable of softer human-robot interactions. Besides assisting with medical conditions, these robots also help with general health and quality of life, helping fill gaps in social care delivery.

What follows is a brief overview of robotic solutions currently under development or on the market:[8], [33], [38]

Logistics support robots

Some robots provide logistical assistance in hospital and social care environments, ranging from general logistical support to more specialised tasks.

- HelpMate and Atheon TUG are robots that deliver supplies to hospital staff using proximity sensors to navigate and avoid obstacles.
- Roomba is a robotic vacuum cleaner that helps with domestic chores, freeing up time for caregivers and recipients of care.
- Cody and RI-MAN are two developments that provide more specialised support in lifting and handling patients by, respectively, using a tactile interface that improves control or using a touch-sensitive covering that improves patient safety. Robear is a collaborative robot (cobot) that also helps carers lift patients.
- Bestic is a commercially available robot that supports feeding patients while enabling research into issues of social isolation.
- Care-o-bot has been deployed in assisted living facilities in Germany to help carry meals to residents while providing entertainment. The robot is programmed to respect residents' personal space and use gestures to show its intentions.

Telepresence robots

Non-tactile human-robot interactions enable remote monitoring and companionship. They provide a channel for socialising and communication between health and care professionals, patients and recipients of care, and their friends and family.

- GiraffPlus is a mobile video-conferencing platform with a built-in webcam and monitor dubbed "Skype on wheels." Remotely controlled via the internet, it can move around a patient's home, allowing communication via videoconferencing. It also integrates with other telehealth systems, monitors, and alarm systems. A study revealed that a crucial factor in this robot's success was its ability to support independence in everyday living.
- Hector and CareBot™ help monitor patients and prevent falls. Hector is integrated with remote monitoring services, while CareBot™ monitors vital signs such as blood pressure.



Companion and educational robots

Studies have shown that service robots can help improve the cognitive skills of disabled or vulnerable individuals.

- Kaspar is a robot that displays different play scenarios based on disability type and skill area targeted.
- Paro is a robotic seal (exhibiting simple behaviours such as sleeping regularly) that has been shown to reduce social isolation and the effects of stress on the vital organs of elderly people in a care home.
- Nao is a remotely operated humanoid robot that has helped children recover from surgery through its entertainment features.
- Pepper and MiRo are humanoid and rabbit (or dog-like) robots, respectively, that have been trialled on people with dementia and in care homes. Robotic pets have been shown to reduce feelings of loneliness and increase levels of happiness.



Source: <https://www.cnet.com/home/smart-home/robots-retirement-seniors-parents-folks-can-get-high-tech-help/>

Personal (home assistance) self-care robots

The ageing population and the increased incidence of long-term illness within developed countries is encouraging a shift of responsibility away from hospitals and healthcare professionals towards individuals, encouraging them to take responsibility for their personal wellbeing. Self-care robots usually incorporate some elements of persuasion or coaching, tackling behavioural or self-care issues, such as personal hygiene or smoking.

- AutomTM is a talking mini robot specialising in personal weight management. Featuring a touch screen and connections to pedometers and bathroom scales, it learns about its users to provide tailored advice and motivation.
- iRobiQ is a tabletop, multipurpose, educational robot that provides a range of functions, from user entertainment through pictures, videos, and multimedia, to blood pressure monitoring and medication reminders.
- iDress is a proactive robot that helps users dress.



Source: <https://techxplore.com/news/2020-10-voice-healthcare-robots-humans.html>

Where next with service robotics?

Social care robots mark a new beginning in human-robot interactions. While humans remain the primary channel for social interaction, robots are poised to fill widening gaps in the delivery of care. In order to address the public's anxiety around the use of robots, mechanical, physical, and emotional safety will be crucial to their deployment in homes, community, and clinical settings.

Desirable Features of Service Robotics in Social Care

Despite their higher complexity and cost when compared to industrial robots, properly designed service robots can significantly improve efficiency and outcomes in health and social care. Service robots can help:

- Free up time for caregivers and workers so they can devote more of their time to higher level care tasks
- Improve mental wellbeing by reducing feelings of social isolation and loneliness by providing 24/7 connectivity with friends, family, care workers, and the wider community
- Improve physical wellbeing by providing medication reminders, fall monitoring capability, and more
- Improve cognitive ability through games and activities
- Increase independence by assisting with tasks such as eating, dressing, and walking

Elements of successful service robotics include:[8]

- Sustainability and reliability: Robots operating in people's homes must be easily configurable via an internet connection with minimal need for onsite intervention. There should also be adequate contingencies for safe operation in the event of, for example, an interruption in internet connectivity.
- Autonomy: Service robots must be able to operate autonomously and safely in unstructured environments (such as homes) where required. They must also operate unobtrusively.
- Personalisation: For robots providing companionship, they must be personable and highly interactive, adapting to a wide range of user profiles.

User acceptance of robots

User acceptance of service robots is critical to their successful deployment. It incorporates cultural elements (such as anxiety about robots replacing humans), contextual elements (such as whether the robot is useful in specific scenarios), and aesthetic elements.

Variances in age, gender, education, or prior computing experience also play a role. [48], [49] Older people, for example, may have less experience with technology and may also be more sensitive to the loss of privacy, dignity, and personal liberty.[8]

Several studies have attempted to uncover design approaches that would render service robots more acceptable: It has been shown that biomorphic designs (resembling living organisms) are preferable to mechanomorphic designs (presenting the qualities of a machine). Incorporating life-like features such as speech and breathing also helps.[50]

Besides further research into anthropomorphic (human-like) and zoomorphic (animal-like) designs, other design considerations include:[51]

- Improving mobility on uneven surfaces
- Improving battery life
- Improving soft features, such as aesthetics, voice recognition, and accent interpretation

Workforce acceptance of robots

Within developed economies, the increased incidence of long-term illnesses and the ageing population are placing unsustainable demands on resource-constrained health and social care systems. Nonetheless, there is growing anxiety about the role robots may play in replacing humans in the workplace, in effect “stealing” jobs from humans.

There is an argument that any robotic “workforce” will always need skilled workers to operate them.

However, it may be tempting to ask how cost-effective these robots can be compared to their human counterparts.

Despite this, workers can rest assured that robots will only ever be suited to repetitive, tedious tasks, leaving humans to focus on more fulfilling, higher level work.[53]–[55]

“We have found that the initial fears about technology replacing human work are not well-founded. We are currently less afraid of the dangers and see more good examples of how it can work very well.” - Jan Willem Velthuisen, Chief Economist, PwC[55]



Cost Effectiveness

A robotics procurement plan must carefully balance costs against the clinical and quality of life outcomes desired. For example, the Autom™ personal robot requires an investment of £125 per unit plus a 12-month subscription of £10 per month; Giraff and RP-VITA (both telepresence platforms) come in at £4,000 and £200,000 per unit respectively.[8]

Additional costs include home modifications, internet subscriptions, battery replacements, equipment replacement/recycling/upgrades, power consumption, and related staffing costs.

Nonetheless, it has been recognised that service robots attract huge cost savings, being able to complete a large number of repetitive tasks in a given timeframe with minimal supervision or maintenance. By enabling efficiency and standardisation, service robots minimise wastage and labour, and reduce risks — e.g., insurance costs associated with staff injuries.[56], [57]

Combining Assisted Living with Robotics

Service robotics provide the vital technological link between health and social care. This link has long been promoted as vital to realising the benefits of Ambient Assisted Living (AAL).[8], [58] Service robots can help fill the social care gap by helping vulnerable adults lead more independent lives. They can assist them with their daily living activities and also provide some of the vital companionship they need.

In real-world scenarios, such as care homes, hundreds (possibly thousands) of vulnerable individuals need to be monitored and cared for. This triggers concerns about scalability, serviceability, and legal responsibility. Service robotics are robust enough to leverage a range of software drivers, sensors, hubs, servers, and artificial intelligence technologies that generate useful and reliable outputs for health workers, care workers, and recipients of care.[59]

Case Study: Anthropomorphic Assistive Robot Alleviates Pressure on Adult Social Care

GenieConnect® is an anthropomorphic service robot which was originally designed to provide support and companionship to socially isolated older adults. [60] Benefits identified include support in:

- Medication compliance
- Independence in daily living
- Personal hygiene regimes
- Emotional resilience
- Connectivity

A further evaluation — authored by Rachel Wilson PhD — aimed to explore the potential of GenieConnect® in adults with learning disabilities to evidence its value and impact on their daily lives and to examine usage characteristics, benefits, and barriers to use.[60]

This evaluation involved four male subjects between the ages of 28 and 52 who were invited to participate in the study. All had learning disabilities and lived in a communal home owned by Ordinary Living in Cornwall.

“Finding proven methods of delivering some care remotely is game-changing for the care industry. By doing this, we are enabling care workers to do what they tell us they want; to deliver more and better care.” - Rob Parkes, CEO, Service Robotics Ltd

Methods

One House Support Officer at Ordinary Living participated in setting up and supporting the subjects in using their Genie robot. A further two House Support staff provided feedback.

All four participants agreed to be set up as 'Genie Buddies' so they could video-call each other. Genie reminders and prompts were personalised for each user based on suggestions from the participants themselves and with input from the House Support Officer, in areas they felt Genie reminders could support them.

Each participant was trained to use Genie in a face-to-face session and then used Genie for approximately four weeks in their communal home, during which feedback was collected (also face-to-face) during a weekly visit. Two scales were used to record changes in the following parameters:

- Managing time/routines
- Keeping in touch with family and friends
- Taking medication/looking after health
- Personal care and hygiene
- Being aware/expressing feelings (Alexithymia)
- Staff time saving (scored by staff only)
- Staff productivity (scored by staff only)

Tackling Challenges in Learning Disabilities

Identified as model subjects, each of the four individuals selected for the study were experiencing very personal challenges in the completion of their daily activities. Each required continuous reminders from a support worker to achieve these, for example:

- Peter needed reminders to perform safety checks on his motorbike, to shower after work, to check the temperature of his medicine fridge, and to take his diabetes medication.
- Jack needed help keeping up with his personal hygiene, including brushing his teeth. He also suffered from digital exclusion, with limited access to internet services.
- Mike needed help keeping up with his medication schedule, such as applying his prescribed eye drops. He also required assistance with his personal hygiene.
- Brian needed help in choosing appropriate clothes for work and in completing house chores. He also needed help cleaning his teeth.

Automated Reminders and Enhanced Collaboration

Dr Wilson and her team at Service Robotics Ltd worked collaboratively with the study subjects and staff at Ordinary Living. Personalised reminders and prompts were programmed into Genie robots to support medication management, personal care routines, house chores, and other daily activities. The Service Robotics team were particularly careful to involve the study subjects in deciding on objectives and setting up automated prompts, including:

- Hourly application of eye drops
- Hydration reminders
- Daily cleaning of teeth
- Gradual reduction of cigarette breaks (promoting health awareness)
- Cleaning and tidying up communal spaces (promoting social awareness)
- Making video calls and listening to music (promoting digital inclusion)



Promoting Independence

Significant improvements in personal care, medication management, and confidence were noted in the subjects over the four-week study. Mike, for example, showed a

50% improvement in his medication routine

remembering to apply his eye drops. Jack, on the other hand, showed a

33% improvement in managing his personal hygiene.



“All these small things have a knock-on effect on health. Small independence and daily living tasks have a compound effect.”

Lisa Warilow, Registered Manager, Ordinary Living



“This has opened up new technologies for [the participants] to use in their daily lives which wouldn’t have been possible before.”

Lisa Warilow,
Registered Manager,
Ordinary Living

Promoting social connection and companionship

The study participants enjoyed using Genie’s entertainment features, including Spotify and BBC iPlayer. Added to the mood reminders (which encouraged self-reflection), this improved their sense of emotional wellbeing. Periodic video calls with loved ones or their approved ‘Genie Buddies’ further enhanced their sense of social connection.

Enhancing confidence

The study subjects felt empowered to take ownership of their tasks, resulting in a sense of achievement and greater self-sufficiency. They had been communicating better in communal spaces and had fun with Genie prompting them to complete their tasks.

Nonetheless, they also felt compelled to complete these tasks. One of them went as far as dramatically reducing their smoking habit — from smoking 20 cigarettes a day to three a week. The subject was so impressed with the result that they requested to extend their use of Genie. Four weeks after the study, the subject has completely stopped smoking and has not relapsed,

Support workers also felt more empowered. With much of the load of task reminders being taken over by Genie, they were able to use their time more productively with the individuals.

“It gives them more confidence; keeps a routine and structure when we’re not here. It’s something they can do themselves rather than having a person telling them what to do and giving them more independence. They also listen to music; they all have great fun (with Genie). Rather than me prompting them as a human ... Sometimes it’s easier if it comes from something else – it takes the pressure off.”

Claire, Support Worker, Ordinary Living



About GenieConnect®

GenieConnect® — developed by Service Robotics Ltd, a Bristol-based home robotics pioneer — is contributing to the adoption of the hybrid care model, thereby giving health and care providers access to the best of virtual and in-person care technology through video conferencing, multimedia, reminders, remote monitoring, and more.

With GenieConnect®, health and social care providers are discovering new ways to deliver light-touch, remote, residential, and domiciliary care solutions that bridge the gap between resources and demand, improving operational and financial performance while delivering high-quality care. To learn more about GenieConnect®, please visit <https://www.genieconnect.co.uk/latest-news/> or contact our team on information@serviceroboticsltd.co.uk

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