Introducing assistive technology into the existing homes of older people: feasibility, acceptability, costs and outcomes

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Summary
We examined how far, and at what cost, the housing stock could be modified to accommodate the assistive technology (AT) necessary to enable older people to remain in their own homes. A multidisciplinary team devised seven hypothetical user profiles for 10 case study areas, with five local authorities and five housing associations in England and Wales. Each profile was considered at two times, five years apart, with the users’ functional abilities deteriorating in between. In addition, in-depth interviews were carried out with a sample of 67 older people in the case study areas about their use and experience of a wide range of AT. The interviews showed the need to listen to older people and that they welcomed AT when it addressed a perceived need. The results showed that the extent of adaptation required of buildings to accommodate a user’s needs varied greatly. It was also found that there was confusion about the terminology of AT, including the idea of the ‘smart house’. The study shows that the adaptability of the housing depends on a range of factors and costs.

Introduction
Research shows that most older people want to remain in a home of their own. Government policies are actively encouraging this, as places in institutions (nursing homes and residential care homes) are declining and expensive.¹ Whether older people with growing levels of disability can remain at home depends on many factors including health and social services and family support. Of equal importance is the housing they occupy. Assistive technology (AT), which can be fixed (e.g. lifts) or portable (e.g. bath seats, wheelchairs) or interactive (e.g. smoke detectors, alarms), can help overcome problems such as dexterity, locomotion and personal care. This has been recognized in policies such as the National Service Framework and the NHS Plan, and in Audit Commission reports.

The challenges presented when introducing AT into the homes of older people relate to the older people themselves (including their levels of disability and their perceptions of needs), the AT and the home itself.

Methods
The research was undertaken by a multidisciplinary team, which included social scientists, an economist, an occupational therapist, building surveyors and rehabilitation engineers. There were 10 case study areas, with five local authorities and five housing associations in England and Wales. Seven hypothetical user profiles were devised based on two national surveys of disability. Each profile was considered at two times, five years apart, with the users’ functional abilities deteriorating in between. The assistive technologies were specified for each of the profiles at each time. The users were nominally ‘fitted’ into 82 different homes (both mainstream and sheltered) drawn from the case study areas. These 82 homes were subject to a detailed audit and represented every type of housing, from bungalows to flats in multi-storey blocks. Costs were calculated for both periods.

In addition, in-depth interviews were carried out with a sample of 67 older people in the case study areas about their use and experience of a wide range of AT. All were aged 70 years and over. People with dementia were excluded.

Results
The interviews showed the need to listen to older people and that they welcomed AT when it addressed a perceived
need. While many of the older people had some AT, this was mainly fairly conventional – no ‘high tech’ devices were found. The value of quite small and inexpensive AT contrasts with the attention given in policy and research to the more expensive and complicated AT. Not only had the older people variable access to AT, and therefore variable help from it, but also there was evidence of unmet needs.

The interviews reinforced the evidence that older people wish to remain in a home of their own. The respondents said that AT had helped to promote independence and had facilitated tasks. The benefits included helping people feel secure, enabling tasks to be done more easily and promoting safety. However, AT must work properly, so its reliability and design are important. AT needs to be seen ‘in the round’ and cannot be divorced from the range of what older people experience, including other services and the involvement of families. The clear message was that older people are pragmatic and that users know best.

The results showed that the extent of adaptation required of buildings to accommodate a user’s needs varied greatly. The most adaptable properties were ground-floor flats and bungalows; the least were houses, maisonettes and flats in converted houses. Contraindications to adaptability included changes in floor level within the same floor, a small bathroom or no scope for enlargement, concrete structures, restricted accommodation layout and restricted areas around the property (e.g. for construction of ramps or scooter storage). Structural alterations cost far more than the installation of novel equipment and wheelchair accessibility was a major challenge. These findings underline the need for new housing to be designed so that people can remain there throughout their lives.

It was found that there was confusion about the terminology of AT, including the idea of the ‘smart house’. Users and professionals need information about opportunities for AT. Information is often in the wrong place and described using the wrong terminology. This includes unhelpful associations with ‘disability’. Nor is it always clear who pays for AT and how it is obtained. There are not enough builders in some areas to install and maintain AT. Providers need to take a holistic view of the older person’s needs. AT appeared to be installed as a response to particular health problems while little thought was sometimes given to other disabilities. The input of an occupational therapist is crucial. There is a danger of the latest AT being seen as different instead of widening existing opportunities.

The costs were built around the seven user profiles, a care package of personal home care, domestic home care, day care, community nursing and meals. Informal care was not costed. A range of AT costs were calculated based on Basic (essential), Care Reducing (assuming that some AT may substitute for human input) and Good Practice (with the potential to improve the quality of life of the user or carer). The packages of formal care (for example, home care) were Full and Reduced. These showed that for most profiles the total costs over the lifetime and reduced lifetime of the hypothetical users were lower for the realistic scenario, where Basic AT was augmented with Care Reducing AT, enabling the provision of Reduced rather than Full care services. An example is given in Figure 1. Generally, the investments in Care Reducing assistive technologies were recouped within one and three years through a reduction in care costs.

**Discussion**

 Appropriately selected assistive technologies can lead to important improvements in independence and potential savings in formal care services. This research may lead to a more informed choice by organizations when they are making decisions about both the current and future needs of their older tenants.

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Experience-based guidelines for the implementation of telemedicine services

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Summary

Many telemedicine projects fail to survive beyond the funded research phase. A review of seven Scottish telemedicine services was conducted to identify successes and failures. Qualitative interviews were conducted with key individuals in each project. All projects were partly successful. The main reasons associated with partial failure were: the service was not needs-driven; there was no commitment to provide the service; there was no suitable exit strategy after research funding expired; there was poor communication; there was a lack of training; there were technical problems; work practices were not updated; the protocols for use were poor or non-existent. Based on this, guidelines that might improve the chances of success in future projects were drawn up.

Introduction

In the history of telemedicine, there are many projects that have failed to survive beyond the funded research phase. Retrospective analysis often suggests that failure could have been avoided or predicted. The present work was undertaken to develop evidence-based guidelines to help identify projects that are likely to succeed and those that are doomed to fail.

Methods

A retrospective outcome review of seven Scottish telemedicine services was conducted to identify successes and failures. Qualitative interviews with key individuals in each project were also undertaken.

The telemedicine services were:
- accident and emergency;
- ultrasound;
- psychology;
- eating disorders;
- patient visiting;
- undergraduate education;
- postgraduate education.

These services provided over 5000 telemedicine sessions in total, at local, national and international levels, over a 10-year period.

Results

In reviewing the projects, varying degrees of success and failure were identified. All projects were partly successful. The main reasons associated with partial failure were:
- the service was not needs-driven;
- there was no commitment to provide the service;