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Foreword

To anyone involved in adapting disabled people's homes, the enormous benefits in terms of individuals' quality of life are self-evident, as are the impacts on reduced social care need and the extension of independent living.

However, in light of the major changes taking place in the NHS, and the drive to integrate health and care, there is a growing demand for research which quantifies home adaptations' impact on health and care costs.

Home adaptations are multifaceted. They can range from installation of a small grab rail to building a tailored home extension. Likewise, disabled people are a heterogeneous group with a wide range of housing adaptation requirements, and so no single study can ever provide a definitive figure for all of the cost-benefits of all home adaptations.

The last definitive home adaptations evidence summary, *Better outcomes, lower costs** concluded that while not all adaptations save money (some 'just' improve quality of life) 'where they are an alternative to residential care, or prevent hip fractures or speed hospital discharge; where they relieve the burden of carers or improve the mental health of a whole household, they will save money, sometimes on a massive scale'.

Studies of aspects of home adaptations have demonstrated the importance of an adapted home to well-being, independence and health, with some identifying cost-benefits, particularly to social care. What has been less studied is the preventative nature of home adaptations. Quantifying the potential cost-benefits of particular home adaptations specifically to the NHS, for example reducing the risk of an acute incident which results in greater health care need, is therefore a high priority.

The Department of Health is now the main provider of state funding for home adaptations, with the budgets of Disabled Facilities Grants now incorporated into Better Care Funds, which in turn are managed by Health and Wellbeing Boards. While there is broad acknowledgement of the preventative role of adaptations, for example in reducing falls, those faced with difficult funding decisions are looking for hard evidence of the cost-benefits of particular interventions.

It is notable that the *NHS Five year forward view*† called for both a 'radical upgrade in prevention' and also for expansion of evidence-based action. This BRE report is timely as it takes a new approach to modelling the medium to longer term potential cost-benefits to the NHS of pro-active modification of hazardous homes lived in by people with long-term health conditions and/or disability.

BRE is at the forefront of quantifying the costs to the NHS of poor housing. In this new research reported in this publication, BRE demonstrates again how its approach to modelling and data analysis can contribute to an evidence base around the cost-benefits of prevention, demonstrating the potential role of pro-active housing interventions in reducing NHS costs.

Care & Repair England, and other members of the national Home Adaptations Consortium, will continue to champion the key role of home adaptations in improving the lives of disabled people and we welcome this contribution to the evidence base that can help to support those efforts.

Sue Adams OBE, CEO

Care & Repair England and Chair of the
Home Adaptations Consortium

* Heywood F and Turner L (2007). *Better outcomes, lower costs: implications for health and social care budgets of investments in housing adaptations, improvements and equipment. A review of the evidence*. London, Office for Disability Issues.

† NHS England (2014). *NHS Five year forward view*. London, NHS England. www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf.

Executive summary

In 2014 a 'Bletchley Day' workshop organised by Care & Repair England, was tasked with considering ways to demonstrate the investment value of home adaptations and modifications through the production of better evidence. Previous health cost-benefit assessments of home adaptations have largely examined these for individual household scenarios. BRE Trust agreed to fund the research, which attempts to model the cost-benefit of some common preventative home interventions on a larger scale using national data sources. It is important to stress from the outset that this research was not designed to demonstrate the economic benefits to the state of Disabled Facilities Grants (DFGs) at the national level.

Unlike previous research into home adaptations, the main aim of this BRE research project was to consider the cost-benefits of preventative home interventions by reducing the need for NHS treatment and reducing the subsequent need for reactive home adaptations in as many cases as possible. The NHS treatment and adaptations relate to households with known health problems and who are living in homes with serious hazards assessed through the Housing Health and Safety Rating System (HHSRS). This reduction in the need for home adaptations that result from a preventable health problem allows the DFG budget to provide help to those households where preventative action is not applicable. The cost-benefits of DFG-funded adaptations to the NHS and social care, particularly when compared to the cost of residential care (highlighted in the literature review in the Appendix) continue wherever such adaptations are carried out.

This research discussed in this report uses the same basic methodology developed to calculate the data published in *The real cost of poor housing* (Roys et al, 2010) and summarised in BRE Information Paper 16/10 *Quantifying the cost of poor housing* (Nicol et al, 2010). Using HHSRS information from the English Housing Survey (EHS) on the risk of a home incident occurring and its likely impact on health, combined with information from the NHS on treatment costs, BRE research estimated that it was costing the NHS some £600 million per annum, in first year treatment costs, to leave people living in the poorest housing in England (a home with at least one of the most serious hazards). Following improvements to the modelling, including a broader definition of poorer housing to include all substandard homes, this estimate has been revised to £1.4 billion (Nicol et al, 2015).

For this research, households containing someone with a long-term sickness or disability were identified as the most appropriate group for the new national model, namely the group of households most likely to be in need of some form of home intervention owing to their physical and medical circumstances. In 2012, the EHS estimates that this group comprised 6.4 million of all English households. Of these, around 854,000 lived in a home with at least one Category 1 HHSRS hazard. Furthermore, around 2.2 million of these households lived in homes with less serious hazards but which presented a higher than average risk of harm. In total, therefore, around 3 million of these households had significantly higher than average risks of a harmful event occurring within the next 12 months.

A number of assumptions have been tested during the costing exercise, but our best estimate suggests that leaving long-term sick and disabled occupants in homes with significant hazards is costing the NHS nearly £414 million per annum in first year treatment costs alone. Furthermore, if we add the costs of installing a potentially more costly home adaptation following a harmful event, such as a fall on stairs, because remedial action has not been undertaken, the economic cost rises to around £529 million per annum. The potential savings to the DFG budget are important given the increasing need for home adaptations as a result of, for example, our ageing society, and the pressures on public expenditure.

The largest NHS costs occur due to the treatment of harms arising from excess cold. Although excess cold comprises 8% of all the hazards identified among the homes of long-term sick and disabled households, it comprises 34% of the £529 million cost to the NHS identified in this research. In addition, lack of remedial action to address the risk of falls, particularly those associated with stairs, incurs notably higher NHS treatment costs. Falls on stairs comprise 38% of Category 1 hazards and 22% of other significantly worse than average hazards and comprise around a quarter (24%) of the NHS costs identified.

The total cost of remedial works to mitigate the risk associated with these hazards in homes occupied by someone at risk of harm is estimated to be £6.4 billion. Although a huge cost, the expenditure should benefit people in all 3 million houses to which it is applied. Furthermore, the average cost of work per household is just £2,130.

On average the payback period to the NHS to mitigate each type of harm through a large-scale preventative programme of targeted interventions in homes with Category 1 hazards is 15 years. The best paybacks come from mitigating falls on the level (5.2 years), falls on stairs (5.9 years), falls in baths (6.5 years) and excess cold (6.9 years). It is important to note that there are potentially additional savings resulting from such a preventative approach, including savings to social care. It is also important to note that these payback periods are not intended to represent the timescale of any benefit to the individual household. Indeed the household will receive the benefits of a home intervention, such as a reduction in risk of harm and a likely improvement in the quality of life, at any time after the intervention. These benefits are demonstrated through the case studies contained in this report.

The estimated incidence of prevented DFG demand in the modelling is likely to be small compared to the number of households who need adaptations through a DFG, most of whom live in homes without a serious hazard and require an adaptation in order to carry out activities of daily living, for example wash, dress and prepare food. This research shows that over half of the 6.4 million long-term sick and disabled households live in a home where the risk of serious harm, as assessed through an HHSRS assessment, does not exceed the national average. Nonetheless a significant proportion of these households will still require a home adaptation due to their difficulties in maintaining independence on a daily basis because of their physical and medical circumstances.

As previous BRE research for DCLG cited (BRE for DCLG, 2011), while an estimated 1 million households require adaptations to their home, there is no robust and definitive means to establish the potential demand for DFGs in the future, let alone the scale and cost of adaptations paid for by households themselves or other via charitable sources.

Some harmful events in the homes may result in either the introduction or extension of home-care, but the new national model is unable to assess the cost-benefit of home interventions to social care. Heywood and Turner's review (2007) into the benefits of investment into home adaptations highlights that savings from adaptations can vary from £1,000 to £29,000 per annum depending on the level of care needed. Falls in the home may also precipitate a move into long-term care for older people. In the case of young children or younger adults, there may be other economic costs to both the individual and the state resulting from an injury at home, for example loss of potential earnings or loss of income due to absence from work and subsequent loss of taxation revenue or increased need for state benefits. Consequently, although not quantifiable, the preventative home interventions advocated in the report will have a positive impact in reducing social care costs and other societal costs.

This research has, therefore, demonstrated some of the potential cost-benefit to the NHS of undertaking preventative, pro-active home interventions for households with a long-term sickness or disability, where the risk of accidents in their home are significantly worse than the national average. Furthermore, it has been possible to demonstrate how the cost of this preventative action is partially offset through subsequent savings to the DFG budget, so providing an additional payback to the state and society for the preventative work. It is hoped that this research will enable a more informed case for investment in preventative housing interventions and adaptations. These improve people's health and make sound economic sense, as well as saving public money in the longer term. Furthermore, it is important to recognise that many important benefits of home interventions are associated with an improvement in people's quality of life, such as feelings of dignity and independence. The case studies used in this research will demonstrate the importance of this outcome.

It may be possible to adapt or enhance the methodology used for the report so that it can be developed into a practical tool to enable local housing and health providers to demonstrate the value of all forms of preventative housing interventions where there are perceived risks to the safety of people in their homes. There are several issues that would need to be considered for such a practical tool including:

- the current uncertainty in the estimate of the total number of adaptations being undertaken (from all sources) and the average cost of these adaptations
- the feasibility of 'creating' a single method of assessing the need for home adaptations that can be applied by professionals involved in assessing risks in the home and the mitigations that could reduce that risk as well as making it easier for people to live safely and independently at home
- how the need for adaptations arose; if the need was due to previous harm, ie a fall resulting in referral for adaptation from a GP or from a hospital, what the total cost of that harm was, and who covered this cost.

It is evident, however, that more research is required into the economic benefits of home adaptations and other interventions, particularly into the potential wider costs savings to NHS/social care budgets so that these are better understood.

1 Introduction

In 2014 a Bletchley Day workshop organised by Care & Repair England, was tasked with considering ways to demonstrate the investment value of home adaptations and modifications through the production of better evidence. One outcome of this workshop was a request for BRE Trust to provide research that contributed to this evidence base.

Building on the methodology of previous BRE Trust research into the costs of poor housing, the key objectives of this research were to:

- provide a general overview of the support available for disabled and older people
- review existing research that has attempted to measure the cost-benefit of home interventions
- estimate the nature and quantity of hazards that exist in the homes of households who are most at risk of harm from these hazards
- estimate the reduction in cost to the NHS which would arise from undertaking remedial work/home modifications to mitigate the risks of these hazards
- estimate to what extent the costs of mitigation work can be offset by savings to the Disabled Facilities Grant (DFG) adaptations budget
- consider some additional costs to society of not undertaking remedial work/home modifications in the homes of those who have the potential to benefit from this action
- provide further empirical evidence of the benefits of home interventions through case studies.

Like its predecessors, this research aims to demonstrate that enabling people to live safely in their home makes economic sense, by reducing NHS expenditure, as well as improving the quality of lives of the people who benefit from them. In making the case for government investment in home interventions to keep people in their own homes, it is hoped that the research will also help local authorities and charities with limited resources to target funding where it offers the best value.

It is hoped that the research will be of particular interest to all government departments responsible for health and housing, Public Health England, the NHS, local authorities, social housing providers, Age UK, Home Improvement Agencies, the Chartered Institute of Housing and the Chartered Institute of Environmental Health and students of public health and housing.

Further information on the research methodology underpinning this research will be available in a forthcoming BRE Trust publication, *The full cost of poor housing* (FB 81).

This publication has been funded by BRE Trust

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Leaving long-term sick and disabled occupants in homes with significant hazards is costing the NHS nearly £414 million per annum in first year treatment costs alone.

In 2014 a 'Bletchley Day' workshop was organised by Care & Repair England. BRE was tasked with considering ways to demonstrate the investment value of home adaptations and modifications through the production of better evidence.

This report illustrates that significant savings can be made by undertaking preventative home interventions where risks of harm are known to exist. Find out how this would make homes safer and warmer and reduce the likelihood of NHS treatment and the need for adaptation required as a result of injury.

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