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Briefing Paper

The cost of poor housing to the NHS

Simon Nicol, Mike Roys, Helen Garrett, BRE

This Briefing Paper has been produced by the Building Research Establishment (BRE) on behalf of the BRE Trust as an update to The Real Cost of Poor Housing 2010. Based on the 2011 English Housing Survey and 2011 indicative NHS costs, the paper widens the definition of 'poor housing' to include all 'sub-standard' housing. It also provides an updated estimate of the cost of poor housing and provides readers with the economic justification for investing in improving the existing housing stock.

BRE Trust

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Supporting statement from the Chartered Institute of Environmental Health

This is a significant and very welcome publication.

The CIEH historically has been in the vanguard of national efforts to improve housing stock and tenancy condition, not least through its central role in the development of the housing health and safety rating system, whose methodology is used in the Housing Act 2004.

The UK's housing stock is ageing and policies in the last 20 years have insufficiently addressed replacement, improvement and new housing. The private rented housing sector is expanding and the focus on affordability for many people in the community coupled with security of tenure make housing and health concerns a high priority.

This briefing containing the improved and revised estimates, include in the calculations for the first time both category 1 and 2 hazards and are particularly important. The focus on improved data on excess cold is vital at a time when there have been delays in the publication of regulations under the Energy Act 2011 concerning energy efficiency standards in the private rented sector.

The new information presented in Table 4 places the costs to the NHS of substandard housing into the context of other common health hazards – and suggests that the quality of people's housing has a similar impact on health as does smoking or alcohol.

The revised estimates give renewed emphasis to our long-held view that some of the most significant public health gains can be achieved by focusing on the most cost-effective improvements to the poorest housing, usually occupied by the most vulnerable people. We know already that the private rented sector houses a disproportionate number of the most vulnerable people and has the poorest standard accommodation.

Environmental Health Practitioners play a vital role in addressing poor housing and this new information will help to provide the evidence base to support the value judgements that must be made to support the allocation of public funds to the continuation of this vital work.

Graham Jukes OBE CFCIEH
Chief Executive
Chartered Institute of Environmental Health

Chartered Institute of Environmental Health

In 2010 the BRE Trust published the results of a research project which sought to quantify the cost of people living in poor housing in England to the National Health Service. This was possible because of the availability of information from the English Housing Survey on the risk of a home incident occurring and its likely impact on health, measured through the Housing Health and Safety Rating System (HHSRS), combined with information from the NHS on treatment costs.

Introduction

Using the methodology developed for the study, it was estimated that it was costing the NHS some £600m per annum in first year treatment costs to leave people living in the poorest housing in England.

The research was very well received and the figure of £600m pa has been widely quoted. It has also been questioned. Some have re-worked the assumptions from the original research to come up with alternative figures. Others have taken a different approach to measurement, in particular by examining the reasons why people had been treated by the NHS and making assumptions about how much of this was caused by the home, without actually having any information on the design and condition of the dwellings themselves. One such study suggested that the cost to the NHS was some £2.5bn per annum (NHF). However, it should be pointed out that the £600m and £2.5bn figures are not contradictory but are measuring different things. The BRE Trust figure only considers the worst housing stock in England (that which has a HHSRS Category 1 hazard) and then calculates the initial treatment costs if the hazards are not dealt with. The NHF estimate is based on all NHS treatment costs applied to the total UK housing stock.

The BRE Trust figure represents the cost of preventative action – it calculates the statistical risk and associated costs of a health incident occurring before it does. Of course, such an approach will inevitably lead to investment in situations where an incident is never going to happen. A number of intervention studies have looked at the impact of housing improvements as a cure to pre-existing problems and come up with even more encouraging benefits – particularly in the area of energy efficiency improvements. However, few would argue that preventing the development of respiratory and circulatory diseases through living in a warm, dry home should only happen when we have improved all the homes of people who already have such problems. Certainly, the fitting of handrails on the stairs of a vulnerable person's home to prevent a fall will be far more cost-effective (and humane) than waiting for an accident to happen before intervening.

Various advocates have picked up on the BRE Trust research, seeing the value of using the methodology to promote their own agendas. For example, Shelter Wales co-sponsored a report which applied the methodology to the cost of poor housing in Wales . The Northern Ireland Housing Executive co-sponsored a report which applied the methodology to Northern Ireland , and the Chartered Institute of Environmental Health promoted a report on the cost of poor housing in London. A BRE Trust report even extrapolated the results to the whole of the United Kingdom, by modelling data for Scotland and combining it with results from the other national reports. A summary of these figures is presented in Table 1, below.

The methodology has been promoted to local authorities as a means of targeting housing interventions and measuring their health cost-benefits, for example through the Housing Health Cost Calculator, which can be accessed through the following web site www.housinghealthcosts.org.

Table 1: The costs and benefits to the NHS, of reducing HHSRS Category 1 hazards to an acceptable level in the United Kingdom

Country	Number of Category 1 HHSRS hazards	Average cost per dwelling (£)	Total Cost of remedial action (£)	Savings to NHS pa if hazard fixed (£)	Payback (years)
England*	4,752,000	3,710	17.6bn	602m	29.3
Wales**	363,433	3,030	1.5bn	67m	22.9
Northern Ireland***	144,458	2,146	0.4bn	33m	12.8
Scotland†	458,434	3,348	1.5bn	58m	26.4
United Kingdom	5,718,325	3,697	21.0bn	760m	27.8

* Data from The real cost of poor housing, based on 2005+2006 EHS data for occupied and vacant dwellings.
** Data from The cost of poor housing in Wales, based on 2008 Living in Wales data for occupied dwellings only.
*** Data from The cost of poor housing in Northern Ireland, based on 2009 NIHCS data for occupied and vacant dwellings
† EHS relationships between housing and health modelled to the Scottish housing stock

New research

The original research was limited in its ambitions and used available data which is now out of date. The HHSRS figures came from the 2006 EHS while the NHS costs dated back to 2001. So, in 2014 the BRE Trust commissioned further research with the following objectives:

1. To update the BRE models and calculations using 2011 EHS and 2011 indicative NHS treatment costs.
2. To widen the definition from 'poor housing' to include all 'sub-standard' housing.
3. To include treatment and care costs beyond the first year.
4. To include other costs to society beyond treatment and care costs – eg the impact on educational and employment attainment of living in sub-standard housing.
5. To report in Quality Adjusted Life Years (QALY's) as well as cost-benefits, to compare with other health impact research.

This paper briefly reports on the first two objectives, which are now complete. The other work is on-going and the whole work-stream will be reported in detail in mid 2015. But it was felt important to release the early key findings as they have become available. We do not attempt to describe the complex methodology in this note. Rather it is assumed that readers have some knowledge of the original report (i) and will be prepared to wait for the full research to be published.

Updating the existing poor housing model

Table 2 shows the updated estimates for 2011. As with the earlier figures, the hazards of excess cold and falls are those which have the most impact on health. In terms of the costs of remedial action, excess cold dominates, while some hazards might be remedied for a relatively small cost – for example installing handrails on unsafe stairs or changing dangerous cooker positions.

The new estimate for the cost of poor housing is £1.4bn, compared to £600m in the 2010 report.

Why is the estimate so much higher than before?

While the proportion of poor condition homes has reduced since 2006, largely due to improvements in home energy efficiency, the overall cost of poor housing has increased. This is due to a number of factors:

Firstly, the 2006 EHS only measured 15 of the 29 HHSRS hazards, the 2011 survey measured 26 hazards (only asbestos, volatile organic compounds and biocides are currently not covered by the survey due to the difficulties of measurement and disturbance).

Second, the excess cold model has been improved. This previously under-counted the impact of cold homes due to the use of the historically low average SAP as the post work energy efficiency target, rather than the current average.

The third improvement has been to the NHS treatment cost base. Key NHS treatment costs would appear to have increased by around 50% between 2001 and 2011, in particular, the treatment costs for paralysis resulting from a bad fall in the home, which is now estimated to be around £90,000 for the first year alone. This is well above the rate of inflation.

The new figures suggest that if we could find £10 billion now to improve all of the 3.5 million 'poor' homes in England, this would save the NHS £1.4 billion in first year treatment costs alone. It is estimated that such an investment would pay for itself in just over seven years and then continue to accrue benefits into the future.

Table 2: The costs, and benefits to the NHS, of reducing HHSRS Category 1 hazards to an acceptable level (using median harm proportions and revised cost estimates)

Hazard	Number of Category 1 Hazards	Average repair cost per dwelling (£)	Total cost to rep (£)	Savings to the NHS per annum if hazard fixed (£)	Payback (years)
Excess cold	1,325,088	4,574	6,061,192,123	848,398,538	7.14
Falls on stairs	1,352,837	857	1,159,516,031	207,099,936	5.60
Falls on the level	543,848	780	424,061,206	127,832,318	3.32
Falls between levels	239,930	927	222,382,484	84,308,287	2.64
Fire	128,590	3,632	466,975,191	25,082,026	18.62
Collision and entrapment	74,054	692	51,274,568	15,789,110	3.25
Falls - baths	78,132	521	40,679,153	15,739,628	2.58
Dampness	53,349	7,382	393,817,237	15,585,129	25.27
Hot surfaces	107,168	2,436	261,065,812	15,061,744	17.33
Lead	112,051	1,661	186,099,748	13,883,487	13.40
Entry by intruders	47,284	1,063	50,244,016	13,179,469	3.81
Radon	107,603	1,126	121,124,474	9,028,719	13.42
Sanitation (Personal hygiene)	35,222	1,154	40,639,168	4,086,230	9.95
Food safety	32,283	2,461	79,460,523	3,742,720	21.23
Pests (Domestic hygiene)	28,355	1,921	54,481,109	3,401,754	16.02
Overcrowding	23,871	16,100	384,325,757	2,295,332	167.44
Noise	6,161	1,411	8,691,034	1,751,983	4.96
Carbon monoxide	15,336	506	7,753,023	1,489,008	5.21
Structural collapse	15,394	812	12,507,557	1,324,343	9.44
Electrical problems	9,204	2,360	21,722,172	1,230,900	17.65
Ergonomics	8,201	483	3,963,825	985,487	4.02
Un-combusted fuel gas	7,545	489	3,688,692	713,935	5.17
Lighting	5,453	1,947	10,619,508	624,548	17.00
Water supply	4,894	1,202	5,882,826	606,428	9.70
Excess heat	1,369	470	642,918	129,321	4.97
Explosions	–	–	–	–	–
Any	3,472,765	2,875	10,072,810,155	1,413,370,381	7.13

The cost to the NHS of all homes with significant HHSRS hazards

While the greatest cost-benefits will be achieved by targeting poor housing and improving this first, it is not just the worst housing that impacts on people's health. This study defines poor housing as that having at least one Category 1 hazard (scoring over 1,000 on the HHSRS scale*). But there are also many homes that score between 500 and 999 on the HHSRS scale (referred to below as Category 2 hazards), which require improvement. And there are a further group of homes that fall below the average for their age and type which might also be considered to require improvement. It is possible to apply the methodology developed for this study to these two other groups of housing to produce the first year treatment costs, as set out in Table 3, below.

When we include the cost of Category 2 HHSRS hazards in our calculations, we estimate that the cost-benefit of improving these homes to an acceptable level will save the NHS an additional **£428m** in first year treatment costs.

When we include the cost of improving all of the remaining homes with significant HHSRS hazards up to that of the current Building Regulations, this will save the NHS an additional **£160m** in first year treatment costs.

The full cost to the NHS of all homes with significant HHSRS hazards in England might therefore be estimated at £2.0bn in first year treatment costs (£1,413m + £428m + £160m).

Table 3 shows that it is still far more cost-effective to target improvements on the poorest housing. Nevertheless, it should be noted that all well planned home improvement schemes will improve health and wellbeing, even in a small way, and this will have a cumulative effect in saving NHS costs over time.

Table 3: The cost to the NHS of all homes with significant HHSRS hazards

	No. dwellings	% housing stock	Cost to NHS (£ pa)
Homes with at least one Category 1 HHSRS hazard (poor housing)	3,472,765	15.3	1,413m
Homes with at least one Category 2 HHSRS hazard, but no Cat 1 hazards)	2,476,655	10.9	428m
Homes with at least one significantly worse than average HHSRS hazard, but no Cat 1 or Cat 2 hazards	2,433,939	10.7	160m
All homes with significant HHSRS hazards (any of the above)	8,383,359	36.9	2.0bn
All housing in England	22,718,266	100	*

* There will still be hazards in the 14 million homes in England that are considered average (or better!) for their age and type, but the impact of these on costs to the NHS have not been quantified. For example, every home that has a staircase contains a potential fall risk.

* 'poor housing' should not be confused with the 'Decent Homes' standard, which includes Category 1 HHSRS hazards but also other indicators, such as the age of the kitchen and bathroom amenities, urgent repairs and thermal comfort.

Comparison with other health hazards

Table 4 shows a comparison between our estimates of the cost of poor housing to the NHS and other common health hazards. These are included for illustrative purposes only, as the figures will be based on different data sets, methodologies and points in time. For example, the smoking figures are based on the treatment of all smoking related illnesses in the UK, while the lower housing figures is just based on the first year treatment costs for people living in poor housing in England. Nevertheless, the estimates do suggest that the quality of people's housing may have a similar impact on health to smoking or alcohol.

Table 4: Comparison with other common health hazards

Risk factor	Total cost burden to NHS
Physical inactivity	£0.9 - £1.0 billion
Overweight and obesity	£5.1 - £5.2 billion
Smoking	£2.3 - £3.3 billion
Alcohol intake	£3.2 - £3.2 billion
Housing	£1.4 - £2.5 billion*

£1.4bn = poor housing, England. £2.5bn = all homes with significant HHSRS hazards, UK (with Wales, Northern Ireland and Scotland figures extrapolated from Table 1)

Non housing costs are taken from Scarborough et al

Conclusions

A review of the methodology and data sources suggests that our earlier figure of £600m for the cost of poor housing was an underestimate. The equivalent figure using the latest available datasets is £1.4bn. This represents the first year treatment costs to the NHS of leaving people in the poorest 15% of the housing stock in England.

When we expand our definition to include all homes which have a significant HHSRS hazard, this figure rises to £2.0bn per annum, for England. This figure is estimated to equate to £2.5bn for the United Kingdom.

This is still an under-estimate of the true picture. Minor hazards of the sort that are found in the majority of homes have not been costed, and there will be health and care issues which linger long after the immediate NHS treatments costs. There will be other losses to society of leaving people in poor housing, such as the impact on educational attainment and economic performance. These are the subject of on-going research, but earlier estimates suggest that this would add at least two-and-a- half times the first year treatment costs.

The total cost of poor housing on health is perhaps similar to that of smoking or alcohol. This will be a little known fact, which suggests that a programme to educate people on the health and safety risks in their own homes would pay dividends and reduce potential distress.

With limited budgets available, local authorities and other agencies would reap the greatest health benefits by focusing on the most cost-effective improvements to the poorest housing occupied by the most vulnerable people.

However, it is clear that the continued raising of housing standards in both the existing and new housing stock will also accrue health benefits, which the NHS and society as a whole will benefit from.

References

1. Roys M, Davidson M, Nicol S, Ormandy D and Ambrose P. The real cost of poor housing. BRE FB 23. Bracknell, IHS BRE Press, 2011.
2. National Housing Federation. Housing for health. London, National Housing Federation, 1997.
3. Gentoo Group. Boiler on prescription. 2014.
4. Davidson M, Nicol S, Roys M, Beaumont A. The cost of poor housing in Wales. BRE FB 32. Bracknell, IHS BRE Press, 2011.
5. Davidson M, Nicol s, Roys M, Garrett H, Beaumont A, Turner C. The Cost of Poor Housing in Northern Ireland. BRE FB 45, Bracknell, IHS BRE Press, 2012.
6. Garrett H, Davidson M, Nicol S, Roys M, Summers C. The cost of poor housing in London. BRE FB 65, Bracknell, IHS BRE Press, 2014.
7. Piddington J, Garrett H, Nowak K. Housing in the UK. BRE FB 62, Bracknell, IHS BRE Press, 2013.
8. Scarborough et al. The economic burden of ill health due to diet, physical inactivity, smoking, alcohol and obesity in the UK: an update to 2006/07 NHS costs. Journal of Public Health, May 11, 2011.

BRE Trust
Watford, Herts
WD25 9XX

T +44 (0)333 321 8811
E enquiries@bre.co.uk
W www.bre.co.uk

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