Llywodraeth Cymru
Welsh Government

RESEARCH

The impact on health of the Welsh Government Warm Homes Schemes

Findings produced by analysing data from the Welsh Government Warm Homes Schemes linked with routine health records.

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1. Main points

This evidence brief compares the health of recipients of the Warm Homes Nest and Warm Homes Arbed home energy efficiency schemes.

This report is about Nest recipients for 2011-17 and comparing Nest and Arbed recipients for 2011. We chose to focus on 2011 because the majority of Arbed homes received their measures in 2011.

Further analysis looking at additional outcomes will be published in future.

We compared health outcomes for Nest recipients 2011-17 and for Nest and

Arbed 2011 with control groups who had not received measures.

The study showed there was no impact from either scheme on whether recipients experienced a health condition in the first place. However, for people who were already experiencing either respiratory or infection health events, the following was found:

- For both Nest and Arbed, a reduction in General Practice (GP) events for respiratory health when compared with their respective control groups. The consistent pattern in reductions across schemes, whilst not always reaching statistical significance, suggests both schemes improve respiratory health. As would be expected, this impact appears to be greater among recipients of the demand-led scheme, Nest.
- As expected, there was no significant effect of either scheme on the average number of GP prescriptions for Asthma. This is expected because most prescribing for asthma is preventative and would likely be continued regardless of the number of acute episodes.
- However, for those receiving more than one GP prescription for an infection, we estimate a positive impact of both Nest and Arbed. Possibly due to small numbers, none of these findings reached the level of statistical significance. However, the consistent pattern across schemes suggests a positive effect on prescribing for infection for individuals with more severe or repeated infections.

The '**Technical report**' provides more detailed information about the methods used in the study.

2. Introduction to Administrative Data Research (ADR) Wales

ADR Wales is a new innovative partnership that brings together specialist teams, data science experts, and statisticians. It is a partnership between Swansea University Medical School, Wales Institute of Social and Economic Research, Data and Methods (WISERD) at Cardiff University, and the Welsh Government. Together they develop new evidence which supports the Welsh

Government's national strategy, Prosperity for All.

ADR Wales uses the SAIL Databank at Swansea University, to link and analyse anonymised data. It provides the Welsh Government insight into the relationship between different areas of public service delivery and people's experiences of different services. This supports the development of collaborative and integrated policy to improve the lives of people in Wales.

3. Policy background

In Wales, a household is considered to be in fuel poverty if it needs to spend more than 10% of its net income on household fuel to maintain a satisfactory heating regime. Fuel poverty is particularly challenging in Wales due to the poor housing stock in many areas and the rural nature of much of Wales.

The research literature suggests living in a cold or damp home increases the risk of a range of health impacts. Impacts for which there is evidence range from colds and sore throats to cardiovascular and respiratory conditions.

As part of its strategy to reduce fuel poverty in Wales, Welsh Government developed the Warm Homes schemes. The schemes provide home energy efficiency improvements to those most likely to be in fuel poverty, including low-income and vulnerable households. Improvements include home insulation and more efficient boilers. Warm Homes Nest is a demand-led scheme providing improvements to low-income and vulnerable households since 2011. Warm Homes Arbed was established in 2009 to improve the energy efficiency of homes in low-income areas identified by social housing providers. The first phase of Arbed took place in 2010 and 2011.

The main aim of the Warm Homes schemes is to reduce or eliminate fuel poverty. However, Welsh Government was interested in any positive impacts the schemes might have on the health and well-being of residents. This article summarises the findings from a project to examine the health impacts of the Welsh Governments Warm Homes schemes. The study is the first to directly compare the health impacts of a demand-led and an area-based energy

efficiency scheme. The findings will inform future fuel poverty schemes in Wales.

4. Methods

The majority (70%) of Arbed homes received their measures in 2011. We therefore chose to compare the effects of Nest and Arbed for households who received their measures in 2011. We compared recipients' health events in the winter of 2010 to 2011 with events in the winter of 2011 to 2012. Recipient numbers for Nest in 2011 ('Nest-2011') were relatively small, so figures for Nest recipients 2011-17 ('Nest overall') are presented alongside. A pattern in Nest or Arbed 2011 consistent with the pattern for Nest 2011-17 would give us more confidence in the results.

We used the analysis method developed for our **previous analysis** of the health impacts of the Nest scheme. The method examines how the number of health events change between the winter before households receive a measure and the winter after. We compare recipients with control groups of similar people who had not received measures. Control groups allow us to conclude that any differences we find between recipients and controls are most likely attributable to the scheme.

We obtained data for both GP events and emergency admissions to hospital. We looked at the number of emergency admissions to hospital for both respiratory and cardiovascular disease. For both conditions, we **previously reported** that the data suggests a positive impact for Nest overall. However, emergency admissions are relatively rare events. For the smaller Nest-2011 and Arbed groups too few admissions were available for analysis. We have therefore focussed only on the GP data.

For both Nest and Arbed, we looked at the number of:

- respiratory GP Events (excluding prescriptions)
- GP Events for asthma (excluding prescriptions)
- prescriptions of asthma medication

- prescriptions related to infection e.g. respiratory infection, ear infection or fungal infection.

We looked at health events in two ways:

- the proportion of people who had each kind of event – in other words, whether they had a health condition in the first place
- only for those who did have a health condition recorded by a GP, we looked at the number of health events they had. In other words, we looked at whether their medical history become more or less eventful. This can be an indication of how severe people's health conditions are.

Nest is demand-led i.e. individual households perceived themselves to be in need of measures. In contrast, Arbed is area-based and may therefore include households that did not have an immediate need. We would therefore expect any health impacts to be greater for Nest.

Please see the '**Technical report**' for more detailed information about the methods used in the study.

5. Impact of the Warm Homes Schemes on health

Looking at whether recipients experienced a health event in the first place, there was no impact from either scheme. Having an existing health condition, or being at risk of developing one, was not an inclusion criterion for either scheme. Although living in a cold or damp home increases the risk of health issues, many recipients will not develop a health issue. In other words, not everyone whose house is cold will get ill. Even people who develop a health issue will not necessarily develop it immediately. Simply put, people may live in a cold house for several years before they get ill, if they get ill at all. Therefore, seeing a preventative effect in a single year would be an unrealistic expectation. The following sections report on the numbers of health events experienced by scheme recipients who did experience a health condition.

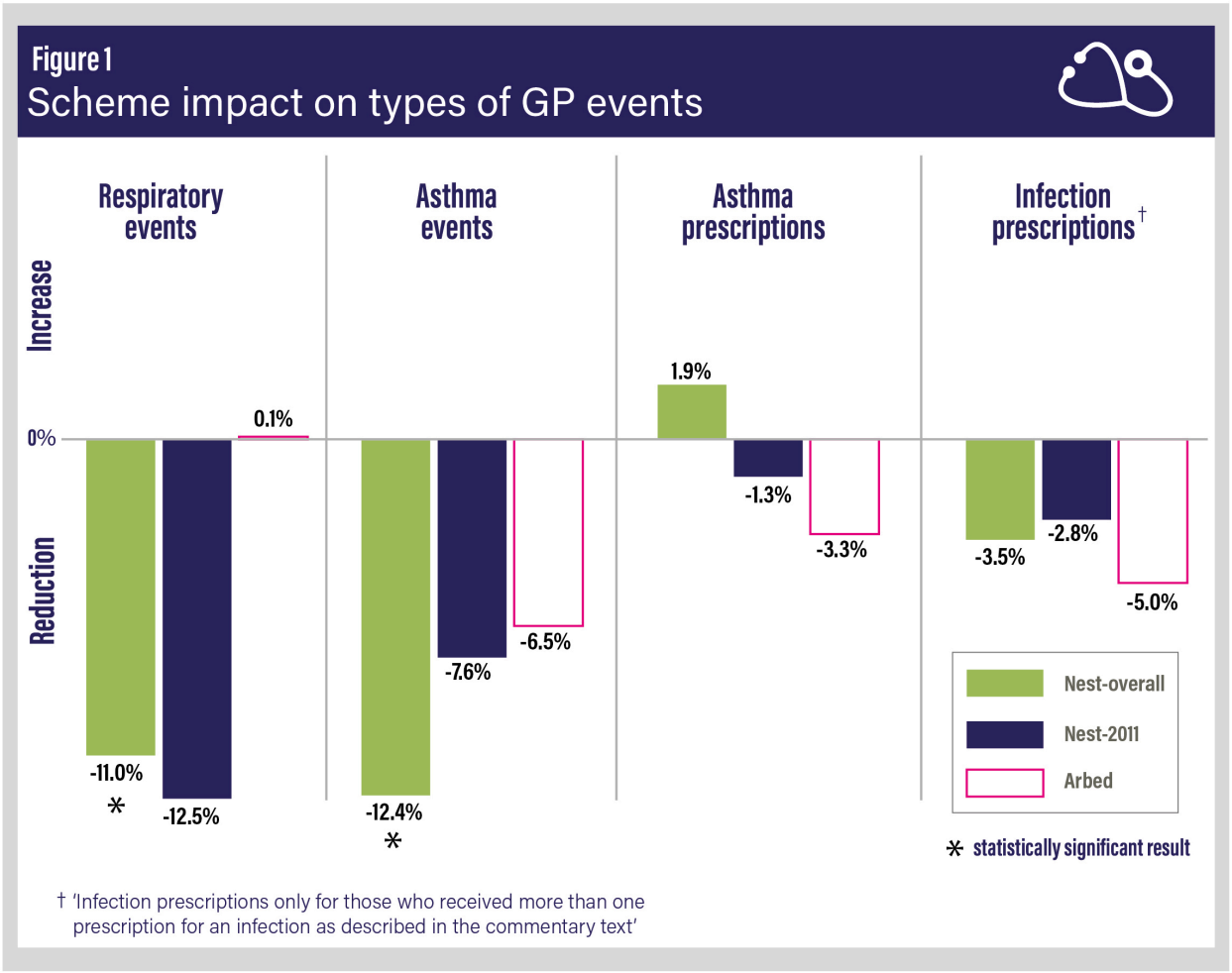
For people with one or more health events, the study considered whether the schemes impacted on the number of those events. Simply put, we looked at

whether their GP medical history became more or less eventful as a result of receiving a measure.

Figure 1 shows the estimated impact of each scheme for each health event. This is displayed as a ‘percentage difference’ between the intervention group and the control group. For example, both groups could have had an increase but one group might have increased less. Equally, both groups could have seen a decrease but one group might have decreased more. A ‘negative percentage difference’ is one that falls below the central horizontal line. It means that the estimated reduction in GP health events in recipients was greater compared with controls. In other words, the scheme is being estimated to have a positive effect on recipients by decreasing the number of health events.

Those marked * are those where the difference is statistically significant. Patterns of findings that do not reach the level of statistical significance but are consistent across schemes are nevertheless worthy of note. These are reported using the phrase ‘the data suggests’ and should therefore be interpreted with caution.

Please note that the '**Technical report**' provides a more detailed explanation of the analysis presented in Figure 1.



Impact on GP respiratory events

This section reports findings for those who had at least one respiratory issue recorded by their GP in the first place. Compared with controls, we estimated reductions in the average number of respiratory events for Nest-2011 of 12.5% and Nest-overall of 11.0%. We found almost no estimated change in respiratory events for recipients of Arbed. The reduction for 'Nest overall' was statistically significant. Although a reduction was found for Nest-2011, it did not reach the level of statistical significance possibly due to small numbers.

Compared with controls, we estimated reductions in the average number of respiratory events for Nest-2011 of 7.6% and Nest-overall of 12.4%. For Arbed, we found an estimated reduction of 6.5% in the average number of asthma events. The reduction for 'Nest overall' was statistically significant. However, the

reductions for Nest-2011 and Arbed were not statistically significant possibly due to small numbers.

In summary, compared with control groups, we found a reduction in GP events for respiratory health for both Nest and Arbed. The consistent pattern in reductions, whilst not always reaching statistical significance suggests both schemes improve respiratory health. As would be expected, this impact appears to be greater among recipients of the demand-led scheme, Nest.

Impact on GP prescribing

There was no significant effect of either scheme on the average number of prescriptions for asthma. This was as expected because most prescribing for asthma is preventative and would continue regardless of the number of acute episodes.

Our **earlier work** suggested the Nest scheme overall may have had a positive impact for those who had received prescriptions for infections. Looking more closely, approximately 60% of people in each group had received a single prescription for an infection in each winter period. However, the proportion of people requiring a single prescription did not change significantly between winters for any group. We therefore theorised that the suggested impact was due to changes for those individuals requiring more than one prescription. In other words, the intervention may have been having an effect on more severe or repeated infections.

To investigate this, we conducted our analysis on only those individuals receiving more than one prescription for an infection in a winter. Both schemes had a positive impact among those who received more than one prescription for an infection. We estimated a positive impact of 3.5% for Nest-Overall, 2.8% for Nest-2011 and 5.0% for Arbed. None of the impact reached statistical significance, possibly due to small numbers and we therefore cannot conclude a definitive effect. However, this pattern suggests the interventions had a positive effect on GP prescribing for individuals with more severe or repeated infections. We recommend further investigation into this once additional data e.g. for additional years or interventions, becomes available.

6. Future releases

The next evidence brief for the Fuel Poverty Data Linking Project is planned for publication by Christmas 2019. It will report on mental health outcomes for scheme recipients.

7. Key quality and methodology information

Please see the '**Technical report**' for more detailed information about the methods used in the study and any limitations.

8. Acknowledgments

The lead author and analyst was Sian Morrison-Rees (Swansea University), who worked collaboratively with other members of the ADR Wales team to produce this article.

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9. Contact details

Researcher: Sarah Lowe
Telephone: 0300 062 5229
Email: **ADRUWales@gov.wales**

Media: 0300 025 8099

We welcome any feedback on any aspect of this report. Please send your feedback by email to **ADRUWales@gov.wales**.

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