

The Housing, Heating and Health Study

Preliminary Results May 2007

What we did

We aimed to see whether installing more effective and less polluting heaters in the homes of children with asthma had an impact on the health of those children, the health of their families, as well as on the households' energy consumption. There were 412 children and their families/whanau in this study. In each of these families, there was a child aged 6-12 years with doctor-diagnosed asthma and the existing main form of heating was a plug-in electric heater or unflued gas heater. We carried out the study in five communities: the Hutt Valley, Porirua, Christchurch, Dunedin and Bluff, in partnership with primary health organisations and asthma service providers.

How we did it

Our previous *Housing, Insulation and Health Study* showed that insulation made a significant difference to health and energy efficiency. So, in the winter of 2005, we insulated any houses in this study that were uninsulated, and then collected baseline measures on them all. We then randomly allocated the households to a heating 'intervention' or a 'control' group. Before the 2006 winter, we installed new heaters of choice, for the intervention group. Heaters were either a heat pump, wood pellet burner or a flued gas heater. A year later, the new heaters were also installed in the control group houses. During the winters of 2005 and 2006, we took measures of indoor temperature and nitrogen dioxide (an indoor air pollutant) in the living room and the bedroom of the child with asthma. The children measured their lung function each morning and evening and filled in a symptom diary. The children's families/whanau also filled out a detailed health questionnaire and the heads of households completed a questionnaire on the characteristics of the households' energy use. We collected objective measures on the households' fuel bills, the children's attendance at school and the families' attendance for health care; these results will be reported after June 2007.

What we found

Provisional results from data provided by heads of household and children with asthma showed:

- 85% of households (349/412) 1,750 people, stayed in the study the whole time.
- Most households (297) chose heat pumps, some (58) chose wood pellet burners, and a few (9) chose flued, mains gas heaters (only available in the North Island).

In the intervention group

All these results were statistically significant.

- The average daily temperature increased between one and two degrees Celsius and people felt warmer.
- Condensation was reduced.
- There was less mould and mouldy smells.
- Levels of nitrogen dioxide were halved.
- Nitrogen dioxide was associated with coughing in children with asthma.
- Children with asthma reported less coughing and wheezing.
- Children reported fewer episodes of cold and 'flu'.
- Children had on average one day less off school during the winter.
- Children had on average fewer visits to the GP.

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This Study was carried out by a multi-disciplinary team of researchers from the Universities of Otago, Massey, Victoria and Auckland and BRANZ.



Many thanks to all the children and their families/whanau who agreed to take part in the study and generously gave us their time. We are also very grateful to the community coordinators, interviewers, general practitioners, energy companies, retrofitters and heater suppliers. For the full list of names of the researchers and community collaborators who took part in the study see our website: www.wnmeds.ac.nz.healthyhousing.html

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