# Healthy Homes
# Investing in Outcomes

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## Summary of Findings


- Research has shown improvements in housing (especially insulation) result in better physical and mental health and wellbeing.
- The Canterbury health system has worked with Community Energy Action (CEA) for a number of years. In 2011, the Canterbury District Health Board (DHB) invested in a Healthy Housing programme with CEA and other funders (EECA, ECAN, PHOs, Orion, Main Power and Rata Foundation) to improve housing conditions in greater Christchurch post-quake and help manage demand on reduced hospital bed numbers as a result of the quake.
- The majority of this investment focused on providing insulation to Canterbury people with high health needs; those with two or more admissions for diagnoses affected by cold living conditions, such as respiratory disease.
- From a list of people with high health need provided by Canterbury DHB, 900 homes were insulated.
- The health of this group of people was considerably improved following home insulation.
    - **There was a 29% reduction in the number of hospital bed days in the 12 months following insulation compared with the 12 months prior.**
    - **This equates to a reduction in hospital costs of over $900,000 in the first year – equivalent to the investment made by** Canterbury DHB **to insulate the homes of the high health need people.**
- The return on investment for Health was achieved within 12 months and, assuming similar benefits over time, the total return on investment for all funders will be achieved within five years based on hospital admission benefits alone.
- There are also numerous other unmeasured benefits for the high need population and their families.
- This targeted approach to the provision of insulation required cross-sectoral trust and collaboration. This programme has been extremely successful at providing support to those who can benefit most.

## Background to Programme

Housing is a key determinant of health and is well recognised by the World Health Organization as having a profound impact on people's physical and mental health, and overall well-being [1]. Research has shown low indoor temperatures, poor quality housing, dampness and mould in particular affect the respiratory health of children [2]. In New Zealand, two recent studies have demonstrated improvements in respiratory health with improved home insulation[3,4].

People who use the health system frequently, and those living with them, demonstrate better health if they live in warm housing. The health system in turn benefits from improved chronic care management, less use of acute primary and secondary services, reduced entry to aged residential care, and a reduction in medications dispensed.

The loss of 106 acute hospital beds as a result of the February earthquake created an imperative for Canterbury DHB to invest in strategies that could reduce demand on hospital beds. The Canterbury DHB had worked with CEA since the early 2000s, funding smaller projects. With housing compromised following the earthquakes in November 2011, the Canterbury DHB agreed to implement a joint initiative; the Healthy Housing Programme. The objective being a partnership model with health funding of up to $1.7m over 2.5 years with eligibility defined by high health need criteria. The Canterbury DHB and the three Canterbury Primary Health Care Organisations (PHOs) formed a strategic partnership with Environment Canterbury (ECAN), the Energy Efficiency Conservation Authority (EECA) and Community Energy Action Charitable Trust (CEA) to develop and implement the Healthy Homes Programme.

The programme initially focused on secondary care, with a list of 5000 patients supplied by Canterbury DHB, comprising those who had been admitted to hospital at least twice within a year prior to the programme starting. In July 2013, the programme was extended to include primary care patients, via general practice referrals, e.g. families with children under 17 years of age identified as being at risk and parents with newborn babies.

The $1.7m funding was split between the two programme elements, approximately $900k for hospital referrals and $800k for general practice referrals.

## Objectives and Criteria of the Health Homes Programme

- Identify, Target and Invite
    - A Memorandum of Understanding was signed between the Canterbury DHB and CEA to protect the confidentiality of patients.
    - A list of eligible health service users (Canterbury residents with two or more admissions to hospital between 2010 and 2012 with health conditions relating specifically to cold and damp, e.g. asthma and other respiratory illnesses, plus diabetes, coronary, pulmonary, rheumatoid arthritis, lung cancer and chronic depression etc) was provided by the Canterbury DHB.
    - Warm Families were identified via general practice referral.
- Appropriate healthy homes interventions; insulation, heating, Home Energy Check (HEC).

- Strategic Partnership
    - Utilising experience, funding and expertise for the benefit of the community (Government, private and non-government organisations in collaboration with CEA).

The objective was to provide insulation and/or heating installations to high health system users living in Canterbury. The Programme was developed in order to keep people in their own homes and communities rather than hospital services. In part this recognised Canterbury's compromised housing stock following the 2010 and 2011 earthquakes. The Canterbury DHB and partnering organisations understood the potential benefits for frequent users of the health system of living in warm and dry homes, including improved health and well-being.

Initially (from November 2011) the programme used the list of patients received from the CDHB. In July 2013, the programme was extended to include Warm Families, allowing GPs and other medical professionals to refer patients who met the cold-related, chronic health condition criteria regardless of hospital admission.

All eligible patients were contacted initially by Canterbury DHB to inform them of the initiative then contacted and assessed for eligibility. If eligible, a Home Energy Check (HEC) was done by CEA staff to determine interventions required (insulation, heating, curtains, advice, pipe and cylinder wrapping).

All of the partnering organisations, including CEA, provided funding for the Programme. CEA was also the provider of services.

## Programme Outcomes

The total programme provided over 1500 insulation installations and 450 heating appliances.

Qualitative analysis of the programme[5] was completed in April 2015. From that research, the following conclusions were drawn:

- The Programme was founded on existing research that showed warmer and drier homes to have a positive effect on health outcomes. These findings supported existing research, as respondents described the Programme interventions as improving the warmth of their homes and, in turn, their physical and mental well-being.
- The outcomes from living in a warm and dry home can exceed those of improved physical and mental well-being. The clients' descriptions highlight some of the additional "holistic" benefits that the interventions created for them and their families.
- The research suggested that other similar housing improvement programmes could create both improved health outcomes for high health needs people, as well as the wider benefits.

## Quantitative Analysis - People Identified as High Health Risk (Secondary Care Element)

The quantitative analysis focused on those identified from hospital admissions. Nearly 5,000 patients were contacted and initially assessed. A large number of these did not require assistance for various reasons.

The homes of eligible people were assessed and insulation and/or heating were installed as required. The Programme was originally targeted to the highest health need service users for two key reasons: one, to address those with the greatest need; and two, to (ultimately) reduce health dollar spend via reduced hospital admissions.

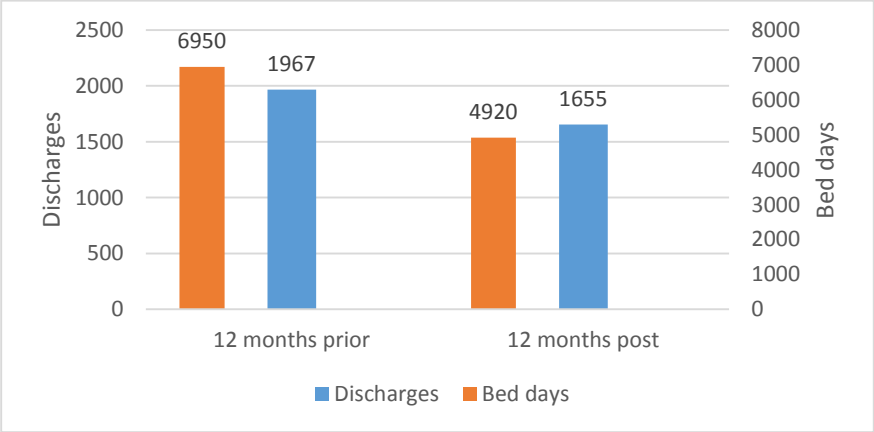
Nine hundred of the highest-need people had interventions generally comprising insulation and, in some cases heating, between November 2012 and November 2014. The ethnicity of this group reflected the Canterbury population. As expected, the largest group was aged over 65 years and there was an approximate 60%:40% split between homeowners and tenants.

Of the Canterbury DHB funding, approximately $900,000 was allocated to this part of the programme representing 22% of the total cost, with other funders (EECA, CEA, Orion, MainPower and Rata Foundation) providing the remaining 78%. EECA funding during the course of the programme came from both the Heat Smart Scheme and the Warm Up New Zealand scheme.

## Impact and Financial Benefits

For the patients identified by the Canterbury DHB as being at risk of health-related admission who received home insulation, there was a significant decrease in hospitalisation and associated bed days in the 12 months following the insulation installation compared with the twelve months prior (see Figure 1).

Figure 1 **Discharges and bed days prior to and post insulation**




The figure above shows that discharges fell by 15.9% when comparing the year prior to and the year following the CEA intervention. This resulted in 312 fewer people having a hospital stay.

There was **a 29.2% reduction in hospital bed days**, which allows foregone financial costs associated with hospital utilisation to be calculated. This programme has resulted in a reduction of 4.7 beds per annum which equates to a **savings of approximately $945,000 per annum** (assuming the operating costs per ward is approximately $5 million annually).

A control group of over 20,000 with no intervention showed no reduction of discharges or bed days over the same period.

## Qualitative Analysis – Other Benefits

The above analysis only takes into account one (i.e. hospitalisation) of a number of benefits which result from home insulation. There are other considerable benefits to this program including:

- Hospital benefits after the first 12 months – a single intervention has a 40 year life span;
- Benefits to partners and others living in the same dwelling;
- Benefits to future occupants;
- Reduction in other primary and community services required for intensive post-discharge rehabilitation;
- Reduction in absenteeism from work/school for all home occupants due to improved overall health;
- People living in their own homes with better wellbeing and feeling safer; and
- Empowerment through improved physical health, mental health and/or an improved general state of mind/well-being.

## Concluding Remarks

Without continued support from the EECA's Warm Up New Zealand programme, this activity would not generally be viable. The success of the EECA programmes working in collaboration with other like-minded organisations achieved significant results. Aligned to EECA research, CEA identified that there are still over 30,000 homes in Canterbury with inadequate or no insulation.

CEA is able to meet consumer's needs for readily available and impartial energy advice. Research from the European Union shows that non-government organisations are important intermediaries between household communities and government[6]. In many cases personalised advice can lead to appropriate solutions and overcome barriers to action[7].

Based on the success of the Healthy Homes Programme, New Zealand Red Cross joined with CEA to undertake two partnership programmes to provide insulation, heating, advice and fuel cost support to vulnerable families.

The success of the Healthy Homes Programme also contributed to the Christchurch City Council undertaking a partnership with CEA to upgrade insulation of their social housing complexes.

During the course of the programme, earthquake affected clients were identified who were awaiting earthquake assessments and repairs. An MOU was developed between the PHO's, CEA and EQC to refer vulnerable high health-need clients to EQC or their private insurer for prioritisation. Partnerships among the organisations enabled service provision to be leveraged; many Healthy Homes clients were linked into other organisations and services, as additional needs were identified.

# References

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