

# THE HEALTH STORY

*Housing for Health – the Guide* is based on safety and health principles called the Healthy Living Practices. *The Guide* is firmly based on the living environments and health of Indigenous Australians living in urban, suburban, rural and remote areas.

The Healthy Living Practices link your health and the place where you live, anywhere in the world. Over time *the Guide* will allow access to the health principles more broadly, and be informed by those using the principles worldwide.

As climates and types of living environment vary, some Healthy Living Practices may be more important than others, and solutions will always need to relate to local community health issues, resources and culture.

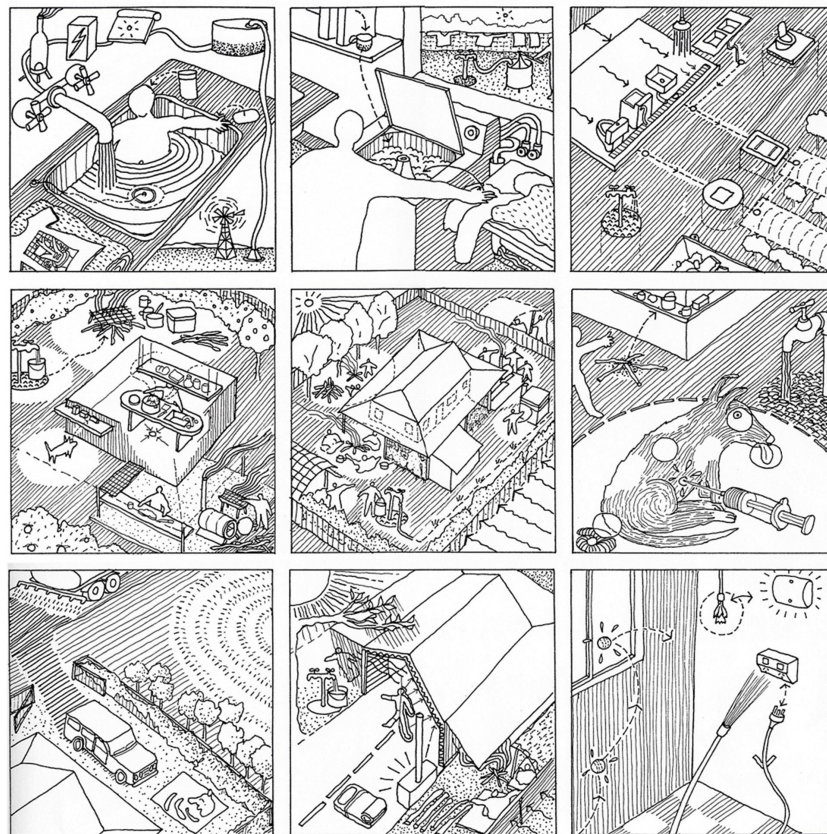


Image: The Nine Healthy Living Practices from top left, Washing people, Washing clothes and bedding, Removing wastewater safely, Improving nutrition, Reducing the impact of crowding, Reducing the impact of animals, insects and vermin, Reducing the impact of dust, Improved temperature control, Reducing minor trauma

## **A brief history of the Healthy Living Practices and how they form the core of Housing for Health follows.**

# 1. INTRODUCTION AND BRIEF HISTORY

For almost a century political and public health commentators, have been linking the poor health of Australian Aboriginal people to their living environment. (1,2,3) However, during this time there have been no substantive attempts to detail the elements of the living environment that are likely to contribute to poor health, what health problems they are likely to cause, and how they might be corrected.

In 1985 on the Anangu Pitjantjatjara Lands, in the north-west corner of South Australia, we began a process of addressing these questions. In 1986 we undertook a detailed study of the living environment of Aboriginal people (Anangu) in this region. In this project we assessed the safety of the houses and determined a range of Healthy Living Practices (HLPs) that would be necessary for anyone living in this environment, regardless of background, if they were to keep themselves and their family healthy (4). In addition to urgent safety issues these were:

1. Washing people, especially children
2. Washing clothes and bedding
3. Removing wastewater safely
4. Improving nutrition
5. Reducing the impact of crowding
6. Reducing the impact of animals, insects and vermin
7. Reducing the impact of dust
8. Improved temperature control
9. Reducing minor trauma

These Healthy Living Practices were prioritised on the basis of existing public health knowledge and their likely impact on health status. We placed life threatening safety issues highest and then washing and waste disposal, then storing, preparing and cooking food to improve nutrition.

Housing and immediate surrounding living environment was tested to determine if there was functioning “health hardware” (a term borrowed from the late Professor Fred Hollows) necessary to carry out these healthy living practices. During this work we defined reasonable targets for each of the HLPs. For example, we developed an objective that mothers should be able to wash their children once a day and wash hands and face frequently all year round. Our assessment focused on testing the functional capacity of households to conduct these HLPs. The report prescribed a range of design and implementation recommendations for the provision of health hardware. A major finding of this work was that maintenance programs

were crucial to sustaining any health supporting function of housing. When maintenance programs were absent or failed, housing infrastructure often became a health hazard. These decisions about priorities and health hardware were made given our knowledge of Aboriginal health problems at the time and also of the existing public health literature. It is important to review the relevance of our approach 25 years later.

## 2. ABORIGINAL HEALTH STATUS

In the 1980s infectious disease rates for remote Aboriginal children were extremely high. In children under 2 years of age, invasive pneumococcal disease rates in central Australia, an important child health problem, were the highest reported in the world literature and 30-40 times the rate for Caucasian Australian children (5). Although these rates have improved markedly since then, infectious disease overall remains a major health problem for Aboriginal children in remote regions O'Grady (2010) has shown that rates of acute respiratory infection in NT Aboriginal children are as high as any reported internationally (6). Ear disease remains highly prevalent with approximately 90% of young children having abnormal middle ears (7). Overall rates of hospital admission for infectious disease in children in remote Australia remain very high (8)

There are very few studies of infectious disease rates in regional and urban populations. However it is likely that even in urban centres the disease burden is still higher than for non-Aboriginal children.

Chronic disease associated with the metabolic syndrome: cardiovascular disease, diabetes mellitus, renal failure, hypertension rates are all very high, and the major contributors to mortality.(9,10)

The third major disease problem is in mental health, substance abuse and family violence. (9,10)

## 3. EVIDENCE LINKING HOUSING AND HEALTH

Major improvements in mortality occurred during the 19th century in concert with improvements in hygiene and health hardware infrastructure (11). The broad conclusions from this period are consistent with the large number of hygiene and health studies performed in low-income countries and other disadvantaged populations. In 1983 Blum and Feachem published a review of studies examining the impact of water and sanitation on diarrheal disease. They found methodological problems with all studies but the review still showed a

consistent and substantial effect on disease rates (12). A comprehensive systematic review in 2005 again found a substantial reduction in diarrheal disease by water and sanitation projects (13). While the evidence for sanitation and hygiene interventions is strongest in diarrheal disease, there are data for its importance in many infectious diseases of childhood.

In the early 20th century there was considerable interest and publication on housing in the medical literature (14,15,16,17,18). None of this work involved controlled trial interventions but its strength was trying to define the problems with housing for the poor and a focus on change.

Particularly in the last 30 years studies have also emphasised the deleterious mental health effects of poor housing. In a cohort study with 33 year follow up, Marsh et al concluded that poor housing in childhood leads to poorer mental and physical health in later life. They also reported a ‘dose-response effect’. (19). Another more recent cohort study also found that the adverse health consequences of poor childhood housing were independent of socio-economic status (20).

In a systematic review of the relationship between housing and health Thompson et al. reviewed the literature from 1887 to 2000 (21). Reflecting the major methodological, logistic and ethical difficulties in such work they found only 11 prospective studies and only 6 of these with a control group. Their conclusion is likely to apply to work in Indigenous communities,

*“many studies showed health gain but small study population and a lack of control for confounders limits generalisability”*

A further area of evidence relevant to this work is the importance of maternal practice in both the antenatal period and the first 2 years of life. David Olds has performed 3 randomised controlled trials of a nurse home visiting intervention in the antenatal period and the first 2 years of life (22). The target population were women who were young, single and first time mothers. These interventions produced significant reductions in accidents and emergency department presentations for children . It seems probable that improving the functioning and the safety of the house environment would facilitate improved maternal practice for such mothers. In addition these studies also provide additional evidence that ‘control’ and ‘mastery’ are key issues for health status.

There is a major body of work now emphasising the importance of control and mastery in influencing both physical and mental health (see Ref.23 for excellent summary). The

foundational Whitehall studies by Marmot (24) established that ‘lack of control’ in a persons work environment is associated with increased mortality. While this effect exists across social class, it has a strong association with socioeconomic status. There is increasing evidence that control/mastery are factors which may mediate the negative effect of low socio economic (25) status on health as well as acting as an independent driver of health outcomes. There is also some evidence that the importance of control and mastery exists across age groups (26,27))

## 4. HOW MIGHT HOUSING FOR HEALTH PROJECTS IMPROVE HEALTH?

There are 5 mechanisms by which these projects may improve health:

### 4.1. Reduction life threatening safety risks

#### **Electrocution**

With national survey data from over 7,000 houses showing that only 10 per cent of houses have safe electrical systems, electrocution has to be considered a serious risk to residents. The reason for failure could be as simple as one faulty light switch or one faulty power point, or could be an extreme combination of mice severed cabling, no earth connection of the house, faulty safety switches giving no earth leakage protection and exposed electrical cables.

#### **Gas explosion and asphyxiation**

Data shows that gas is only available in a quarter of houses surveyed. The most common system was bottled gas (not reticulated mains gas) and less than 50 per cent of these systems were safely installed and maintained.

#### **Injury from fire**

The causes of fire may be greatly increased in overcrowded houses where data show gas installations are poor, with only 48 per cent safe. Electrical faults may also lead to fires and data show that only 42 per cent of houses had all power points tested as safe. The impact of vermin attacking electrical cables can also increase fire risk and data show that mice and rats were present in almost 15 per cent of houses.

Detection of fire is limited by the fact that 57% of houses have any smoke detectors fitted and, of those houses with any detector fitted, only 36% of houses had one smoke detector functioning.

Escape from house fires will be difficult if, as data show, security screens are often fixed to

windows resulting in 46 per cent of houses with the only emergency escape route possible through external doors.

### **Structural collapse**

The immediate collapse of buildings causing injury to people is rare in Australia, but termites, reactive soils and water damage over prolonged periods has resulted in data that indicate many houses need urgent repair.

### **4.2. Reduction in infectious disease, especially in children, many of which impact on health in later life.**

The strong focus on hygiene and washing is primarily targeting infectious diseases in children. We have set as a goal that every mother would have the functioning hardware to wash their child every day and wash their hands and face frequently. There are studies which support an effect of washing and hygiene practice in reduction of all the major infectious diseases in childhood including acute respiratory infection, diarrhoeal disease, ear disease, trachoma and skin infection. Acute respiratory infections can lead to chronic respiratory disease in adult life; chronic ear disease can lead to hearing impairment in later life and trachoma can have long term consequences. In addition chronic inflammation is a possible contributor to vascular disease and in such populations may be one cause of the very high rates of coronary artery and cerebrovascular disorders.

### **4.3. Provision of the essential prerequisites for improved nutrition.**

There are of course many factors which influence eating patterns in poor communities. High fat and sugar containing take away foods are increasingly consumed by Aboriginal people in remote communities (28). One issue which drives this behaviour is the lack of ability to store, prepare and cook food in houses. Our nutrition focus is on this area of health hardware provision. Poor nutrition is important in its role in infectious disease in children but is a major determinant of diabetes and vascular disease in adults. There is also increasing evidence that poor nutrition in pregnancy is a major driver of the foetal origins of adult chronic disease (29,30) The risk of developing conditions such as diabetes and renal failure are substantially determined in pregnancy and early life. In addition these effects often involve epigenetic changes and the initiation of increased genetic risk that will be intergenerational (29,30)



#### **4.4. Improved ‘control’ of the living environment and reduction in the daily ‘problem list’ for Aboriginal people in communities.**

Poor housing is often discussed as a potential confounder in studies linking low socioeconomic status. However it may be that poor housing is one of the factors which mediates the negative effect on health of low socioeconomic status. There are obviously a large number of major stressors on people living in Aboriginal communities. But poor housing, which we would define as lack of functioning health hardware, is one obvious, constant and profound stressor. Since psychosocial resource – resilience, is tested by stressors, it seems reasonable that reducing stressors is likely to enable control and agency. We hypothesise that improving health hardware will have a beneficial effect on control and mastery. Consider a mother in a house with her children and grand children. She will have to deal with children who have chest infections, diarrhoea, skin sores and they will all need feeding; adolescents and young adults with drug and alcohol problems; general community violence; the demands of multiple government departments to attend meetings and of course her own chronic health problems.

If we could provide a house environment where the toilet works, children can be consistently washed and food can be stored, prepared and cooked, then we could substantially reduce the number of major stressors for that mother and others in the household.

#### **4.5. Providing employment and transferable competencies.**

It is commonly proffered that Aboriginal housing programmes should be key drivers of Aboriginal employment. One major problem with this approach is that these programmes are time limited, usually with a small number of houses being constructed in any community. External building contractors have difficulty in training, and hence employing, local staff when the projects are only likely to last for a period of months. On the other hand, maintenance work is a constant need in communities and the skills learnt in Housing for Health programmes can serve as a basis for long term employment in addition to the short term benefits of real work on the projects themselves. Lack of employment is of course associated with poorer health status.

## **5. CRITICISM OF THE HOUSING FOR HEALTH PROGRAM**

There have been two major critiques of this work.

The first is that it is possible to carry out hygiene practices with less than the health hardware standards we define. At the 2007 National Indigenous Housing Conference in Australia, this was succinctly raised by a prominent anthropologist when he stated that he could keep himself “clean” in the bush with minimal water and a bucket. Of course this might be true. However this ignores the fact that managing a family of children is an order of magnitude more difficult. In addition it implies that encouragement and facilitation of healthy living practices is unnecessary or even somehow unwarranted. It seems to us that in populations who live in poverty and have a mass of health and social problems, we should do everything that can be done to encourage and facilitate healthy living practices. We should try to make it easy not hard!

The second is the proposition that the work should not proceed unless we can prove a health benefit in all communities. Measuring health outcomes in disparate, small denominator communities is fraught with multiple methodological problems. In our view this should not detract from the implications of these findings since there are two centuries of public health literature on the relationship between housing and health. The bulk of this evidence confirms that improved housing improves health. What varies is effect size and the precise nature of the health benefit demonstrated in a very heterogeneous literature all of which has methodological limitations.

Sixty years ago in a conclusion that should be noted by some current researchers and policy makers in Australia, Britten observed, “the inability to define the precise influence of the various elements of bad housing must not be an excuse for failing to make progress in improving housing conditions” (16).

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