The health care needs during extreme weather of Adelaide inner-city people who are homeless:
Final research report

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Acronyms used in this report

ABS     Australian Bureau of Statistics  
BOM     Bureau of Meteorology  
DFC     Department for Families and Communities [is now the Department for Communities and Social Inclusion (DCSI)]  
PTSD    Post Traumatic Stress Disorder  
PHC     Primary Health Care  
RAH     Royal Adelaide Hospital  
RDNS    Royal District Nursing Service  
SPs     Service Providers  
SCIE    Social Care Institute for Excellence  
SES     State Emergency Service  
SAAP    Supported Accommodation Assistance Program
Executive Summary

Background
Exposure to high or low temperature extremes pose a threat to public health and can precipitate a crisis for vulnerable populations for whom such exposure can be a matter of life or death. People experiencing homelessness are susceptible to the adverse health effects of extreme weather (McMichael 2009) and those sleeping rough are particularly vulnerable. Although epidemiological evidence shows a strong association between increased mortality and extreme temperatures for homeless populations, there is less morbidity data relating to the impact of extreme weather. There is a dearth of prevalence data relating to specific adverse health effects/events in people experiencing homelessness, and even less is known about the effectiveness of health interventions for this vulnerable population during extreme heat or major storms (Medina-Ramon, Zanobetti et al. 2006; Bassil and Cole 2010).

The intensity, duration and frequency of extreme heat are predicted to increase in future years. People can, and do die of heat-stroke before they connect with health workers, but the effects of extreme cold and wet weather in Adelaide are less well documented. Exposure to extreme weather is one of the numerous risks faced by people who are homeless even though it can be a matter of life or death for them. In South Australia (SA) there are a number of categories of extreme weather:

- extreme storm: heavy rainfall, which can be conducive to flash flooding damaging wind and/or damaging hailstones
- extreme heat: with extended periods of high temperatures, related but not confined to heatwave conditions
- extreme cold: near freezing temperatures

(South Australia State Emergency Services 2011)
Aim
The aim of this study is to:

• identify health care needs of homeless people in the inner city of Adelaide, South Australia, during extreme weather events;

• identify what services government and/or non-government organisations are able to provide during extreme weather; and

• undertake a gap analysis of the health issues impacted by extreme weather events on homeless people.

Ethics
This research was approved by Flinders University Social and Behavioural Research Ethics Committee.

Method
This study used qualitative data gathered through semi-structured interviews and was carried out in a number of phases:

Phase 1—A literature review to identify the needs of homeless people during extreme weather events, including interviews with homeless people.

Phase 2—A mapping exercise to identify the government and/or non-government organisations providing services to this client group in the inner city area of Adelaide.

Phase 3—Semi-structured interviews of representatives from organisations already providing services to this client group during extreme weather events.

Phase 4—Gap analysis. The findings of the interviews regarding the services delivered were compared with the identified needs of this client group, with areas of deficiency identified.

Phase 5—Consideration of the way in which RDNS and other services for the homeless may respond to the identified needs of this client group during extreme weather events.
Findings

The aim of the literature search was to examine and synthesise available literature concerning the impact of extreme weather on the health of people who are homeless. Literature focusing directly on the relationship between extreme weather and its health impact on people who are homeless was limited, despite the recognition that this population is vulnerable. There were only three papers with a direct focus on this topic. It is thought that the lack of information is in part due to the difficulty of data collection among transient populations such as the homeless (Zufferey and Kerr 2004; Raymond 2009; D’Onise, Wang et al. 2007). In addition, adverse health impacts of exposure (other than mortality) are quite difficult to measure (National Coalition for the Homeless 2010).

This study has shown that both hot and cold weather extremes have been experienced by the participants in the inner city of Adelaide and that these extremes impact on their health, as well as on the service providers’ ability to deliver extra relief at these times.

Providers of services for the homeless in the inner city area of Adelaide are well aware of the response required to assist the homeless during extreme hot weather, provided they have the staff and resources to do so. They can have difficulty maintaining their staff and volunteer numbers, particularly during times of extreme heat. This in turn will impact on their ability to extend opening hours for the purpose of providing access to a cooler, supportive environment for those who are sleeping rough.

Service providers indicated that in addition to seeing people present at their services during summer with dehydration, insect bites, sunburn and an increased number of vector-borne infections, they also noted an increase in alcohol consumption. This increase in drinking along with days of extreme heat often led to ‘shorter temper’ and ‘less tolerance’, and therefore an increase in the number of violent incidents, assaults and injuries.

The need to individualise responses to specific clients was well recognised by the service providers. The higher-risk groups within this homeless
population are able to be identified by the service providers in this study. They indicated that they monitor these clients more closely and initiate responses early during extreme weather, especially for those considered to have less ability to self-care and follow guidelines. In this way they greatly minimised the adverse effects of the prevailing weather conditions on this particular group of individuals.

Service providers were all aware of the South Australian *Extreme Weather Management Plan* developed by Department for Families and Communities (DFC), which is aimed at minimising the risk of the harmful effects of extreme heat on vulnerable clients (South Australia State Emergency Services 2011). The Bureau of Meteorology (BOM) in South Australia forecasts extreme cold during winter months, but owing to South Australia’s temperate climate, *extreme cold* has not been included in the *South Australian Extreme Weather Hazard Plan*.

In Adelaide, service responses are geared towards extreme heat rather than extreme cold, so those living in the cold and wet, with little opportunity to dry out and warm up, do experience an exacerbation of their chronic medical conditions.

Heat waves usually affect the whole community, because after a few days of excessive heat all houses store the heat and become uncomfortable. Even those who are not homeless experience this discomfort; whereas in the cold and wet weather most sheltered people can turn up the heat in their homes and they can layer up their clothes and dry out their wet footwear; therefore there tends to be less generalised discomfort in the population at large and therefore less recognition of the cold weather as a problem that requires specific interventions.

The literature review undertaken for this study identified that the temperature effects, in winter, on mortality can persist with a 'lag' period beyond two weeks. This is important to note because homeless people may not present to health services for treatment with acute respiratory or cardiovascular problems until several weeks after the extreme weather event, making it
difficult to correlate weather events with specific health issues. Additionally, people suffering from heat or cold-related conditions may have impaired judgement and may not be able to perceive their need for medical care, shelter or fluids, making pre-emptive action a necessity (Ramin and Svoboda 2009; Raymond 2009; National Coalition for the Homeless 2010).
Considerations
In responding to the impact of extreme weather on the homeless additional early interventions could be implemented to improve outcomes. These initiatives could include:

Planning
- The South Australian Extreme Weather Management Plan encompassing a cold weather plan for a Mediterranean climate.

Timely information
- Providing easy to read information about services open-times, accessible accommodation and self-care options available during extreme weather events.
- Providing maps of water access points and toilet facilities that are open and close to shaded areas during summer months. These could be made available at day centres and health clinics so they are readily accessed by homeless people.
- Information on suitable air-conditioned public buildings such as the bus terminal, public library, and community halls that allow people who are homeless to get relief from the heat and cold.

Services
- Lobbying for additional resources to be made available from government on an ‘as needs’ basis when the ‘heat plan’ is enacted. This will enable service providers to recruit suitable additional staff to meet increased demand during extreme weather.
- Expanding the existing nurse-led clinics available in the inner-city of Adelaide. This service could provide specific summer and winter ‘wellness' clinics providing flu vaccinations, medication compliance and self-care strategies during periods of extreme weather.
- Instigate foot clinics. These could be staffed by university health care students, such as nursing, podiatry and physiotherapy students, whereby clients could receive free services while the students obtain valuable clinical work experience.
- During wet weather, increase access to facilities for drying clothes and shoes.
- Providing more storage options during the winter months to keep bedding and spare cloths dry.
- During extreme weather, provide an on-call transport service that can move people between places when they are ill, or need to attend important appointments.
Providing additional temporary emergency accommodation options to take in more clients during surges in demand due to extreme weather.

Training
- Developing support materials and coordinated education programs to ensure that all the relevant workers in key service provider groups are aware of the policies, plans and processes for their services during extreme weather events.

Further Research
- Research to investigate client numbers, resources used, service(s) delivered and outcomes achieved, and to gauge the efficacy of targeted early intervention for ‘at risk’ clients during times of extreme weather.
A. Introduction

This project identified the health care needs of people who were homeless in the inner-city area of Adelaide, South Australia during extreme weather events. Many of the homeless population are known to have pre-existing medical conditions that are impacted by environmental weather extremes (Hwang 2001; O’Connell 2004; Martins 2008). These weather events include extreme heat during summer and extreme cold (near freezing temperatures and/or storms) during winter.

This report summarises the findings of the four phases of this research project. The aim is to understand the health, care and support needs of this population during the stated extreme weather conditions. This was achieved by surveying the published literature and by the qualitative interviewing of 25 people who were homeless and 16 service providers to this population. Data were compared against the planned and informal activities and responses of government and non-government organisations. In order to identify potential health-related issues, a gap analysis was undertaken to consider the best methods of support from government and/or non-government organisations to assist people who are homeless in preparing and coping with extreme weather conditions.

The project was a collaboration between Flinders University, School of Nursing and Midwifery and the Royal District Nursing Service (RDNS) SA.

Background

Since homelessness affects people of all ages, ethnicities, and both genders, the population of homeless people in Adelaide is diverse. The largest groups are those with drug, alcohol and gambling problems; people who are the victims of family violence/chaos/breakdown and sometimes their children; adolescents unable to live at home for various reasons; and people with intellectual disability, mental health disorders and other acquired brain injury (National Coalition for the Homeless 2010). The main common characteristic of all these groups is poverty. They not only lack homes, but they lack money and safety and support networks.
The serious consequences of homelessness include difficulty recovering from illness, exposure to violence, theft of possessions, social isolation, exposure to extremes of weather, malnutrition, low self-esteem, poverty and poor continuity of needed health care—mainly because of the difficulty in locating the person, or their failure to keep appointments (South Eastern Sydney Area Health Service 2003). Physical and mental health issues are common: with substance-use disorders, injury, poor dental health and blood-borne infections, with gastrointestinal, respiratory and cardiovascular disorders being among the most common conditions (South East Health 2000 p.18). Consequently, health services to people who are homeless must focus on the prevention of poor nutrition, the prevention of the spread of infectious diseases in the community, and the maintenance or improvement of function for those who are chronically ill or behaviourally challenged (South East Health 2000 p18).

Such an approach to health improvement requires a broad social strategy that is inter-sectoral and can cross many government departments as it seeks to improve the capacity of service providers to supply or broker crisis-accommodation, medium-term accommodation and long-term housing. It requires primary and secondary disease-prevention and health-promotion strategies to respond to homelessness in ways that improve the situation for this population. A Primary Health Care (PHC) approach provides a philosophical position that takes a more holistic approach to health and well-being. Such an approach to health and well-being aims to develop strategies that promote sustainable health services, using a philosophical framework that seeks inter-sectoral collaboration, community engagement and sound political governance to provide health care that is available, affordable, acceptable, accessible and sustainable (Lawn, Rohde et al. 2008; Keleher 2009a; Keleher 2009b).
B. Definitions

In this section we define homelessness and extreme weather events to ensure that there is a shared understanding of these terms within this project. Homelessness is defined first, followed by extreme weather events.

What is 'Homelessness'?

The traditional view of homelessness is based on ‘a lack of secure accommodation’, where living conditions range from sleeping on the street, to temporary or unstable accommodation; it is characterised by uncertainty, lack of safety, security, and accommodation transience (O’Connell 2004; Zufferey and Kerr 2004; Moore, Gerdtz et al. 2007). The categories of homelessness used by the Australian Bureau of Statistics (ABS) and the South Australian Social Inclusion Unit differentiate between primary, secondary and tertiary homelessness. In Australia, the Australian Bureau of Statistics (ABS) assesses the level of a person’s homelessness by using census data. The ABS (Chamberlain and MacKenzie 2009) acknowledges that this is a complex task, so to assist in this process they classify three different levels of homelessness, and these definitions are:

- **primary homelessness**: all people without conventional shelter, e.g. people living on the streets, sleeping in parks, squatting in derelict buildings, or using cars or improvised dwellings for shelter. In the census, people in these circumstances are recorded under the category ‘improvised dwellings, tents and sleepers out’.

- **secondary homelessness**: includes people who are moving from one form of temporary shelter to another. On census night it includes all people staying in emergency or transitional accommodation under a supported accommodation assistance program (SAAP). It also includes people staying temporarily in other households because they have no housing of their own and those staying in boarding houses for a period of 12 weeks or less.

- **tertiary homelessness**: refers to people living in single rooms in boarding houses on a medium- to long-term basis defined as 13
weeks or more. These people are classed as homeless because their accommodation does not meet the minimum community standard of a small self-contained flat—without their own bathroom, kitchen or security of tenure—on a medium- to long-term basis (Homelessness Australia 2011; Social Inclusion Board 2003a; Chamberlain and MacKenzie 2009).

It should be noted that there is difficulty categorising Indigenous and non-Indigenous homelessness in the same way, as the above concept of homelessness does not count as homeless those who are living in overcrowded or sub-standard housing. It does not provide culturally-specific definitions of homelessness that respond to the needs of Indigenous people. The ABS categorisation of homelessness has been criticised for using a ‘middle class’, ‘white’ definition of ‘home’, claiming homelessness for Indigenous people must recognise that the issue extends beyond housing and accommodation, to include loss of country and kin. They argue for the inclusion of categories such as ‘public place dwellers’, those ‘at risk of homelessness’, and ‘spiritually homeless’ people as three broad categories that will encompass Indigenous understandings of ‘homelessness’ (Memmot, Long et al. 2003).

In this project we interviewed people who were experiencing ‘primary homelessness’ even though many had moved between primary, secondary and tertiary levels of homelessness over many years. In fact, the majority of our cohort would be considered to be ‘rough sleepers’.

**What is 'Rough sleeping'?**
Rough-sleeping is the most visible and extreme aspect of homelessness. It includes rough forms of shelter such as squats, or a 'lean to'. 'Rough sleepers' are known to have extremely poor physical health, experiencing health problems at a rate that is two to three times greater than the general population. The average life expectancy for rough sleepers in Australia is 42 years (Read 2008; Tansley 2008; Homelessness Australia 2011).
What is 'Extreme weather' in South Australia?

Extreme weather conditions can be a threat to the health and well-being of homeless people. Their lives could even be at considerable risk (Kalkstein 2000; Ibrahim and McInnes 2008). The South Australian State and Emergency Service (South Australia State Emergency Services 2011) (South Australia State Emergency Services 2011 p3) defines extreme weather in the following categories:

**Extreme Storm**—heavy rainfall conducive to flash flooding (in excess of 30 mm/h), damaging wind (average of 63 km/h or greater, or gusts of 90 km/h or greater) and/or damaging hailstones (2 cm in diameter or greater).

**Extreme Heat**—is an extended period of very high temperatures, which is related but not confined to heat wave conditions. There are no absolute criteria for heatwaves. In South Australia the Bureau of Meteorology have a definition of a heatwave as; “5 consecutive days with maximum temperatures of 35°C or more, or 3 days of 40°C or more”. (Bureau of Meteorology South Australia 2010).

**Extreme Cold**—in regions relatively unaccustomed to winter weather such as South Australia, near freezing temperatures are considered ‘extreme cold’. Extreme cold is exacerbated whenever temperatures drop decidedly below normal and as wind speed increases (South Australia State Emergency Services 2011 p3— adapted from the US Dept. of Health and Human Services, Centre for Disease Control and Prevention definitions.)
C. Literature review

Literature search
The aim of the literature search was to examine and synthesise available literature about the impact of extreme weather on the health of people who are homeless. Literature focusing directly on the relationship between extreme weather and its health impact on people who are homeless was limited, despite recognition that this population is vulnerable. There were only three papers with a direct focus on this topic. It is thought that the lack of information is in part due to the difficulty of systematic data collection among transient populations such as those who are homeless (Zufferey and Kerr 2004; Raymond 2009; D’Onise, Wang et al. 2007). In addition, adverse health impacts of exposure (other than mortality) are difficult to measure (National Coalition for the Homeless 2010).

Literature search guidelines
The literature search was carried out using the Social Care Institute for Excellence (SCIE) guidelines which recognise the complexities of social research (Rutter, Francis et al. 2010).

The electronic databases that were searched included: Medline and OVID (included a search of Psych Info), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Proquest, Informit, Sage, Wiley, Scopus, Google Scholar and PubMed. The reference lists of relevant articles were perused to help locate other relevant literature.

A search of the grey literature included the World Health Organization, Red Cross, Edith Cowan University and various social service websites, government reports and publications.

Keywords
The search keywords used included: ‘homeless’, ‘weather’, ‘climate’, ‘extreme heat’, ‘extreme cold’, ‘storm’, ‘health’, ‘health interventions’, ‘healthcare’ and ‘service provision’. These were altered when necessary to suit the different databases. The subject term ‘homeless’ was individually combined with all of the other keywords.
Inclusion limits were papers published after the year 2000, in English, that focused on the health or health service delivery for an adult homeless population, and an aspect of extreme weather. The inclusion and exclusion criteria used to screen the search is outlined in Table 1.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
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<tbody>
<tr>
<td>Publication date</td>
<td>Published from 2000 to 2011</td>
<td>Published prior to 2000</td>
</tr>
<tr>
<td>Language</td>
<td>Studies available in English.</td>
<td>Non-English text.</td>
</tr>
<tr>
<td>Literature focus</td>
<td>Homeless and extreme weather and health or service provision.</td>
<td>Main topic does not encompass homeless and health or service provision and an aspect of weather.</td>
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<td></td>
<td>Data on the impact of extreme weather on the health of the homeless population.</td>
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<tr>
<td>Study population</td>
<td>Homeless adult population</td>
<td>Age of participants—youth, children, babies.</td>
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<td>Service providers to homeless adults.</td>
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<tr>
<td>Publication type</td>
<td>Journal or research report.</td>
<td>Books, trade magazines.</td>
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<td>Reviews citing evidence</td>
<td>Editorial commentary.</td>
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<td>Grey literature-policy documents or guidelines.</td>
<td>Opinion pieces.</td>
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<td></td>
<td>Full text available.</td>
<td>Insufficient details to identify reference or make an informed decision.</td>
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<td></td>
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<td>Full text not available.</td>
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Adapted from (Rutter, Francis et al. 2010 p89)

Table 1 Inclusion and exclusion criteria

The context

**Homelessness in South Australia**

The distribution of homeless people in South Australia differs from the national homeless population. In 2006 in South Australia there were 11% of people sleeping rough (compared with 16% nationally), but more people living in the Supported Accommodation Assistance Program (SAAP) (26% compared to 19% nationally). South Australia’s homelessness rate was 53
per 10,000 people in 2006, which is similar to the 2001 census. Within the city of Adelaide the rate of homelessness rose from 457 to 762 homeless people in the inner city in 2006. Overall there were 5,213 homeless people in Adelaide and 2,743 homeless people in regional and remote South Australia (Chamberlain and MacKenzie 2009).

The SA homeless population was significantly younger than the national population, with 66% aged 34 or younger.

A quarter of the homeless in South Australia were teenagers between the ages of 12 and 18. Fifteen percent were children under the age of 12 who were with one or both parents. A further 11% were aged between 19 and 24, and 13% were aged 25 to 34. In all 34% of the homeless in South Australia were 35 years or older. Men outnumber women in all Australian states, but there are more females in the 12 to 18 year group and the 19 to 24 year age group. Indigenous people are over-represented in all categories of homelessness in South Australia (Chamberlain and MacKenzie 2009).

The causes

*Issues leading to homelessness*

The single largest contributing factor to the increasing problem of homelessness in South Australia is the lack of affordable housing. However, the causes of homelessness are diverse and unpredictable. Identified triggers include relationship breakdown; family violence; unemployment; leaving home/institution e.g. hospital or prison; death of a partner; addictions to alcohol, drugs, gambling; and mental illness (Hwang 2001; Whiting 2007; Read 2008; Tansley 2008).

The conditions

*Health and homelessness*

People experiencing homelessness carry a greater disease burden and are disadvantaged in all the social determinants of health (Daiski 2007; D’Onise, Wang et al. 2007). A review by Ramin and Svoboda (2009) found extensive
data regarding the inadequate health status of the homeless, yet little is known about the effectiveness of health interventions for this vulnerable population during extreme heat or major storms.

In Australia, a disproportionate number of people who are homeless are also Indigenous Australians. The health of Aboriginal and Torres Strait Islanders is markedly lower than that of the rest of the Australian population, with Indigenous adults having a greater death rate for several diseases such as diabetes, which has a death rate six times higher in Indigenous populations than it is in non-Indigenous populations (Australian Institute of Health & Welfare 2010). It is known that 72% of people who are homeless in Toronto, Canada, report difficulties in managing diabetes as the logistics of obtaining and coordinating meals with medications is a problem (Hwang 2001), therefore it may be assumed that this is also a difficulty for Indigenous Australians who are sleeping rough.

Homeless people are more likely to have chronic, co-morbid illness. They are at higher risk of respiratory infections, gastro-intestinal problems, musculo-skeletal problems and poor dental health (Trevena, Nutbeam et al. 2001; Wright and Tompkins 2006; Martins 2008; Tansley 2008). In addition, up to 50% of people who are homeless have mental health issues (Tansley 2008) and experience high levels of drug and alcohol abuse and consequent violent and anti-social behaviours (White 2000; Biem, Koehncke et al. 2003; Social Inclusion Board 2003b; Wright and Tompkins 2006).

Despite their poor health status, maintaining personal health is not an immediate priority for homeless people. The daily struggle for shelter and food often relegates health needs to a lower priority; therefore, when homeless people do seek help and access health services they are typically sicker than the general population because they often put off seeking help until the situation becomes urgent or emergent (Power and Hunter 2001; O’Connell 2004; Martins 2008).

People experiencing homelessness have their health adversely impacted by problems accessing healthcare services (White 2000; Power and Hunter
2001; Zufferey and Kerr 2004; Darbyshire, Muir-Cochrane et al. 2006; Moore, Gerdz et al. 2007). Two Adelaide studies, Darbyshire et al (2006) and Zufferey (cited in Zufferey and Kerr 2004) found prior negative experiences and lack of trust in the system deterred people who are homeless from accessing services. The literature highlights complaints from people who are homeless about their treatment in public hospitals and community health services, with recurring themes of exclusionary practices and lack of respect from health practitioners mentioned time and again (White 2000; Power and Hunter 2001; Zufferey and Kerr 2004; Darbyshire, Muir-Cochrane et al. 2006; Wright and Tompkins 2006; Daiski 2007; Martins 2008).

**Risk and homelessness**

Homelessness contributes to the loss of social connection and support, particularly when there is alcohol, drug, or gambling misuse issues (Daiski 2007). People who are homeless have often witnessed, or been a victim of, family violence and street violence (Read 2008). Many have experienced significant childhood trauma and abuse, and consequently have increased emotional and behavioural difficulties (Waterford 2005; Wright Oldman et al. 2005). Many younger people who are homeless have been socially isolated as children, experiencing social and educational deprivation and disruption (Read 2008; Tansley 2008; Whiting 2007).

Homeless people are more prone to accidents. Accidents are a leading cause of morbidity and mortality, particularly among homeless men (Hwang 2001). Reasons are associated with exposure to an unpredictable environment and practising high risk behaviours that lead to substance abuse, motor vehicle accidents, falls, and overdoses of drugs and/or alcohol. Additionally, homeless people are often the victims of violent crime (Read 2008).

**Policy, service delivery and homelessness**

There is widespread recognition of the complexity of homelessness in Australia in the literature analysed for this review (Power and Hunter 2001;
Darbyshire, Muir-Cochrane et al. 2006; Daiski 2007; Australian Government 2008; Australian Institute of Health & Welfare 2010). Providing services that meet the needs of homeless individuals is recognised to be difficult in South Australia because the system is considered complex, and contested in both policy and service delivery areas, making coordination and seamless service delivery problematic (Social Inclusion Board 2003a; Social Inclusion Board 2003b). Two Adelaide studies (Zufferey and Kerr 2004; Darbyshire, Muir-Cochrane et al. 2006) noted problems in coordination of the many services aimed at supporting people who are homeless. In many cases the challenges of multiple stakeholders working in different ways has made collaboration and communication challenging, with reports of fragmented service systems and complex issues that cross several policy departments—such as health, emergency housing, and family services. Known issues in providing health care to people who are homeless include caring for people with multiple and complex co-morbidities and delivering health services to those who are transient (Schanzer, Boanerges et al. 2007). Additionally, many public hospitals and other health professionals fail to consider the implications of the person’s homelessness on their ability to understand their condition and the need for self-management, in tandem with their capability to self-care after discharge from health services/hospitals (Moore, Gerdtz et al. 2007; Schanzer, Boanerges et al. 2007; Martins 2008). Health workers may not offer some interventions because they don’t understand the capacity of the homeless person to benefit from some of these treatments/interventions (Moore, Gerdtz et al. 2007).

**Extreme weather and homelessness**

There is extensive literature on climate, climate change, weather and the anticipated and verified impacts on human health. There is also a great deal of information about the vulnerability and health status of the homeless population (Hwang 2001; Power and Hunter 2001; O'Connell 2004; Martins 2008), with consensus that this population has significant rates of physical and psychiatric morbidity (Hwang 2001; O'Connell 2004; Martins 2008). There is also widespread recognition that the high chronic disease burden,
coupled with exposure to the elements, renders the homeless population more vulnerable to adverse health impacts from climatic extremes (Australian Government 2008; Ramin and Svoboda 2009; National Coalition for the Homeless 2010; Bambrick, Capon et al. 2011; South Australia State Emergency Services 2011).

Exposure to weather, and in particular, extreme weather, is a major hazard. The risk of frostbite (Mechem 2010) and hypothermia (Edelstein 2009) are well-documented, with 700 people dying annually from hypothermia in the United States of America (National Coalition for the Homeless 2010). While deaths in freezing temperatures are more relevant to the northern hemisphere, in Australia heat waves have also resulted in deaths in vulnerable populations (Ibrahim and McInnes 2008).

Heat wave itself is a topic of increased public health interest, with extensive guidelines being developed globally due to the documented increase in heat-related mortality that has become evident in the past decade.

In particular, the 2003 European heat wave was said to have contributed to the deaths of 70,000 people (Garssen 2005; Robine 2008). The increase in heat wave-related mortality has highlighted the need to improve the adaptive behaviour of the community, and in particular behaviours and interventions for those most vulnerable to succumb to heat related illness (Poumad'ere, Mays et al. 2005).

There is some thought that the mortality rates may be increased by people who might have been approaching end of life anyway, and that the extreme weather has merely hastened their death. There is no evidence to confirm this 'harvest effect' hypothesis. Australian studies have found that excess deaths after extreme heat are directly attributable to the effects of excess heat (McInnes, Ibrahim et al. 2008; Hansen, Bi et al. 2008b; Victorian Government Department of Human Services 2009; Nitschke, Tucker et al. 2011; Saniotis et al. 2011). It is the exceptional heat factor (or chill factor in winter) that creates the most challenges to health. The problems arise when there is a rapid and extreme shift in environmental temperature away from
what the body has become used to through the process of acclimatising (Helman and Habal 2010).

Adelaide is well known for its hot summers, but in 2009 it experienced the longest heat-wave it has had since 1908, with temperatures over 40°C for five consecutive days and an additional six days with temperatures between 33 and 37°C (Bureau of Meteorology, Adelaide 2009). Unpublished data by Saniotis et al (2011) reports that Adelaide hospitals saw a 14-fold increase in admissions, with the highest admission rates occurring on days 3 and 4 of the heat-wave. Morbidity rose by 9.5% and a mortality rate of 186 people was contributed directly to heat. Just how many of those affected were people sleeping rough or homeless cannot be verified. In 2007 (Nitschke, Tucker et al. 2007) reported that during heat waves, ambulance transport increased by 4%, hospital admissions increased by 7% and mental health admissions increased by 13%. Ischemic heart disease admissions increased by 8% among people aged 65-74 years, demonstrating the morbidity-effects of prolonged heat.

**Health effects of extreme heat**

1. **Pathophysiology of heat-related illness**

Humans maintain their body temperature by thermo-regulation at 37°C, regardless of the ambient environmental temperature (Matthies, Bickler et al. 2008). The hypothalamus works to keep the core body-temperature at 37°C by increasing blood flow, and sweating. The circulatory system releases heat from the body via conduction towards the skin. When heat reaches the skin surface it is released to the air via evaporation of sweat which cools the body. When the air temperature is higher than the skin temperature, sweating is the only way the body can lose its heat. If the air is saturated with water (high humidity) evaporative cooling of skin from sweat is less efficient, and it may even cease to function. This will increase the thermal load of the body. Some level of acclimatisation of the body can be achieved with exercise for 60-90 minutes in the heat, each day for 9-14 days (Health Canada 2011). There are many people who may not be able to acclimatise, and examples include the
elderly, those with chronic conditions, pregnant women, the obese, the malnourished, children, and people taking particular medications that tend to make them more vulnerable to heat-related stress.

a. **Compounding risk factors for heat-related illness**

A Victorian (McInnes, Ibrahim et al. 2008 p8) report suggests that 'the characteristics of individuals found to be most strongly associated with an increased susceptibility to poor health outcomes during heat waves are:

- aged 65 years or older;
- socially isolated;
- dependant on others for care—particularly if confined to bed;
- poor;
- homeless; and
- have a pre-existing illness.' (p8)

Having several risk factors evident in one person compounds the risk. For example, Mary is a 62 year-old woman who is obese and has type 2 diabetes. Mary is socially isolated and sleeping rough because she has lost all family connection due to long-term misuse of drugs and alcohol. She now lives in the parklands of Adelaide. Mary has a pre-existing mental illness for which she is taking Phenothiazine. During heat wave conditions Mary is at extremely high risk of heat-related illness. The diagram below illustrates some of the known risk factors that combine to create this 'compounding risk possibility'.
Figure 1. The compounding risk of heat related illness in the homeless

b. Vulnerability of people who are homeless to heat-related illness

The homeless are at greater risk of heat-related illness because they often have compounding risk factors that include poverty, being under-nourished, being socially isolated, having compromised health status which often includes the presence of co-morbid diseases (Canada Health 2011 p33). High levels of mental illness and substance abuse compound their risk. Many people who are homeless live in the urban centres where the built environment is known to retain heat. They have limited access to water and others ways to cool down, although in Adelaide people can, and do move into the parklands surrounding the CBD during hot weather.

Rampulla (2004) contends that the incidence of heat-related illness is actually higher than reported, since there is a lack of epidemiological data due to deaths that occur during periods of high temperature not being recognised and categorised as heat-related (Meusal, Menne et al. 2004; O’Connell 2004; National Coalition for the Homeless 2010). Research carried out in
Australia, Europe and the United States of America has identified that during prolonged periods of heat, the impact from pre-existing health conditions is exacerbated, with morbidity and mortality increasing substantially during excessive heat from problems such as heat stroke; dehydration; cardiovascular, cerebro-vascular and respiratory events (McMichael 2009). Specific conditions that increase the risk of illness, and/or death from extreme heat include: cardiovascular disease (hypertension, coronary artery disease, conduction problems of heart); mental illnesses such schizophrenia and depression; conditions that reduce mental capacity such as dementias, Alzheimer’s, alcoholism and substance abuse; neurological conditions such as Parkinson’s; and pulmonary conditions such as bronchitis, asthma, and chronic obstructive pulmonary disease; renal failures and renal impairment; metabolic conditions such as diabetes and obesity (Health Canada 2011 p75).

c. Factors contributing to heat-related illness

A number of factors contribute to the extent of adverse health effects, and these include the timing of heat events—for example, a higher mortality is associated with early-summer heat-wave conditions (Smoyer-Tomic and Rainham 2001; Weir 2002; Medina-Ramon, Zanobetti et al. 2006; Nitschke, Tucker et al. 2007; McMichael 2009). The heat-bank effect of the inner-city urban environment - where building materials absorb and trap daytime heat causing higher overnight temperatures and a consequent lack of respite from extremely hot conditions, increasing the risk of dehydration and heat-related illness (Meusal, Menne et al. 2004; Kovats and Kristie 2006; Medina-Ramon and Schwartz 2007; Bassil and Cole 2010)(Meusal, Menne et al. 2004; Kovats and Kristie 2006; Medina-Ramon and Schwartz 2007; Bassil and Cole 2010; Health Canada 2011). Humidity exacerbates high temperatures and ongoing high daily minimum temperatures tend to be more stressful to health than isolated hot days (Bambrick, Capon et al. 2011; Maller and Strengers 2011).
Ramin and Svoboda (2009, p.655) found the mortality and morbidity from extreme heat correlate closely with the living characteristics of homeless individuals, with the elderly, and with those living with a psychiatric illness and/or substance use disorders at increased risk of death from extreme heat (Hansen, Bi et al. 2008a). Additionally, those who sleep outdoors during hot weather are also exposed to more violence (Smoyer-Tomic and Rainham 2001; Kovats and Kristie 2006; Bassil and Cole 2010; Bambrick, Capon et al. 2011), insect bites and vector-borne infections such as Ross River Virus (Daiski 2007), because insects such as mosquitoes increase in number over the summer months with activity being the highest at night.

Some people with mental illness do not drink sufficient water during extreme heat, and this interferes with medication metabolism. There are a number of factors that disturb convective and evaporative heat loss, such as decreased cardiac reserve from reduced cardiac performance; drug therapy; reduction in blood volume as a result of severe exertion or diuretic therapy; systemic vaso-constriction; and drugs that result in anhidrosis—such as anticholinergic medications and phenothiazine (Lugo-Amador, Rothenhaus et al. 2004). Drugs known to impair the body’s ability to dissipate heat and put people at risk of heat illness include anticholinergic, antihistamines, beta-blockers, tricyclic antidepressants, diuretics, and neuroleptic/anti-psychotic and psychotropic medications, which all interfere with the body’s ability to lose heat (Rampulla 2004:200). Additionally, many people living on the streets misuse cocaine and amphetamines, which increase adrenergic and muscle activity, which in turn increases heat production. They misuse alcohol and barbiturates and other sedatives which compounds the effect on reduced central nervous system response, placing them at even greater risk of heat stroke (Rampulla 2004; Helman and Habal 2010).

**Health effects of cold weather**

Increases in adverse health effects from the cold are evident with mean temperatures below 11°C (Yu, Hu et al. 2011). Therefore, it is not surprising that countries with mild winters have high winter mortality with large numbers
of deaths of susceptible individuals (Victorian Government Department of Human Services 2009; Bassil and Cole 2010).

In regions relatively unaccustomed to winter weather, near freezing temperatures are considered ‘extreme cold’. Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your body more rapidly. These weather-related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people, such as those without shelter or who are stranded, or who live in a home that is poorly insulated or without heat.

US Dept. of Health and Human Services, Centre for Disease Control and Prevention cited in (Carder, McNamee et al. 2005; Medina-Ramon and Schwartz 2007; Rocklov, Ebi et al. 2010).

Homeless populations have little protection from the elements, and this increased exposure heightens their vulnerability to the adverse effects of extreme cold. Moisture and wind increase the negative health impact of cold temperatures, so wearing wet clothing increases heat loss. When this effect is combined with wind effect, the heat loss can increase twenty-fold (South Australia State Emergency Services 2011).

Cold temperatures elevate mortality rates from respiratory and cardiovascular causes with the adverse effects of cold often less immediate than those of heat, with a lag period of up to 15 days being common (Carder, McNamee et al. 2005; Barnett, De Looper et al. 2008). The time-scale for adverse respiratory manifestations is typically longer than cardiovascular. A study by Carder et al (2005) found the cold temperature effects on mortality can persist with a ‘lag’ period beyond two weeks.

Life-threatening cases of hypothermia often occur at above freezing temperatures, when temperatures are between 32°F and 40°F (0–4.4°C) (Biem, Koehncke et al. 2003; O’Connell 2004; National Coalition for the Homeless 2010). Hypothermia can impair judgement, inhibiting the person’s perception of the need to gain additional health support. The elderly have an increased risk because of their decreased capacity to produce heat. People with diabetes who have peripheral neuropathy may be unaware of cold and
frost affecting their peripheral circulation. Other known factors contributing to hypothermia include inebriation, some medications, wearing wet/damp clothing and footwear for extended periods of time, and the presence of co-morbid chronic conditions, along with inadequate clothing and shelter for the conditions (Biem, Koehncke et al. 2003).

Alcohol affects the body’s thermo-regulation, which inhibits shivering and accelerates heat loss (Biem, Koehncke et al. 2003; O’Connell 2004; National Coalition for the Homeless 2010). Alcohol, opioids and sedative drugs may impair judgement and dull the mental awareness of cold, limiting the individual’s ability to recognise the need to seek shelter or put on warm, dry clothing. The use of alcohol or drugs to numb pain or to help one sleep, may contribute to the risk of death from hypothermia, which is often secondary to drug-induced sleep (Biem, Koehncke et al. 2003).

Many of the underlying conditions that increase susceptibility to cold and hypothermia are prevalent in people experiencing homelessness, and significant numbers of homeless people die from hypothermia and exposure-related conditions (Wright, Oldman et al. 2005). The North America based National Coalition for the Homeless (2010) recommends provision of shelter to allow homeless people to escape from the cold whenever the temperature falls below 40°F (4.4°C).

**Information re weather conditions to homeless populations**

Australian information relating to extreme heat has been designed for 'housed' populations to mitigate the adverse effects of extreme temperatures. During a heat wave in Melbourne in 2009, the official advice was to stay indoors and drink plenty of water. Access to cool water was difficult for the homeless population with either hot water flowing from public drinking fountains, or parkland tap water being turned off. Shelter was limited, with reports of people being turned away from air-conditioned public buildings such as libraries, toilets and businesses—such as fast food outlets. Additionally, specific Day Centres had limited opening hours and shopping areas were closed due to power outages. These factors increase the
homeless population's susceptibility to the adverse effects of extreme weather (Bassil and Cole 2010; National Coalition for the Homeless 2010).

Current advice to reduce the risk of hypothermia includes recommendations to wear dry clothing, carry emergency supplies and avoid not only alcohol, but also mood- and cognition-altering drugs. These recommendations require support and resources not readily available to the homeless population. Most people who are homeless do not have emergency supplies of extra clothing to change into whenever they are wet. Keeping footwear dry is particularly difficult when the weather is wet for an extended time, making access to clothes driers and clothing supplies essential (Ramin and Svoboda 2009; Raymond 2009; Bassil and Cole 2010; National Coalition for the Homeless 2010).

**PHC approach to extreme weather reduces impact on health**

There has been an increase in PHC extreme weather initiatives, which include health promotion, illness and injury prevention initiatives, early diagnosis and treatment, and specific medical/health services aimed at dealing with known problems (Hansen, Bi et al. 2008a; Hansen, Bi et al. 2008b). In Australia and globally these have focused more on heat than cold (Department of Health—National Health Service 2007; Matthies, Bickler et al. 2008; McInnes, Ibrahim et al. 2008).

**Extreme weather planning in South Australia**

A developing area of responsibility for service providers and governments includes planning for community needs, particularly during extreme weather events (Smoyer-Tomic and Rainham 2001; Meusal, Menne et al. 2004).

The South Australian *Extreme Weather Management Plan* was developed by Department for Families and Communities (DFC) aiming to minimise the risk of the harmful effects of extreme weather on vulnerable clients by:

- ensuring a well-coordinated and effective response to extreme weather;
- effectively integrating and coordinating DFC divisional management plans;
strengthening DFC communication, cooperation and coordination with the stakeholder organisations as well as the funded non-government agencies; and;

- ensuring activities are occurring that promote resilience and assist adaptation to extreme weather for vulnerable clients.

(South Australia State Emergency Services 2011)

The Bureau of Meteorology (BOM) in South Australia forecasts extreme cold during winter months, but because South Australia has a temperate climate, extreme cold has not been included in the State Extreme Weather Hazard Plan.

Communication of these health risks to vulnerable populations, and increasing the uptake of preventative measures among high-risk groups is imperative if plans are to be successful (South Australia State Emergency Services 2011). However, not all individuals identified as ‘vulnerable’, by those responsible for implementing the plans, would consider themselves to be at high-risk of adverse health effects from extreme heat or cold.

For example; the elderly, or people suffering from cardiovascular disease are considered vulnerable, but many would be reluctant to take preventative action (Smoyer-Tomic and Rainham 2001). One of the strategies identified in the extreme weather management plan is to identify those people known to health and community services that are considered to be most ‘at-risk’, and to prepare a list of these clients.

People who are homeless are one of the most at-risk groups that may have adverse health effects from extreme heat and cold. However their transient life style and the lack of accurate contact data for this group make them a difficult population to contact for their needs to be incorporated into action plans (South Australia State Emergency Services 2011).

One example of health promotion activities is one undertaken by the State Emergency Services in South Australia. They publish a fact sheet on the
website with 'General Heat Advice' to the public. There is also information specifically provided to people who are homeless which says:

*there are agencies across the inner Adelaide CBD that extend their services during extreme hot weather. Day centres across Adelaide provide bottled water, basic amenities and storage facilities. Most agencies can also provide access to sunscreen and hats as required. The Bus Depot is open 24-hours a day for people to have access to a free indoor air-conditioned environment.* (South Australia State Emergency Services 2011).

It advises them to:

- drink plenty of water throughout the day;
- stay in the shade or indoors as much as possible;
- avoid drinking too much alcohol;
- wear lightweight clothing;
- use sunscreen and a hat during the day; and
- seek medical assistance if required.

It provides the phone numbers for the 'Street to Home' outreach service to people who are rough sleeping; the Crisis Care after-hours crisis response service and Housing SA 13 12 99 for assistance with emergency accommodation, and directs clients to the [Department for Families and Communities](https://www.dfac.sa.gov.au) website for more housing options. However, the homeless participants in this study reported that many of these options, especially emergency housing, is often unavailable to the homeless population. It is therefore important that information provided to this group is both accurate and realistic.

**Summary**

Exposure to high and low temperature extremes pose a threat to public health, and can precipitate a crisis for vulnerable populations for whom such exposure can be a matter of life or death. People experiencing homelessness are vulnerable to the adverse health effects of extreme weather (McMichael 2009) and those sleeping rough are particularly vulnerable. Epidemiological evidence shows a strong association between
increased mortality and extreme temperatures for homeless populations; but there is less morbidity data relating to the impact of extreme weather. There is a dearth of prevalence data relating to specific adverse health effects/events in people experiencing homelessness (Medina-Ramon, Zanobetti et al. 2006; Bassil and Cole 2010).

There is an increase in death from cardiovascular-related conditions in hot and cold temperature extremes. However the cold temperature effects on mortality can persist, with a 'lag' period beyond two weeks. This is important to note because homeless people may not present for treatment with acute respiratory or cardiovascular problems until several weeks after the extreme weather event, making it difficult to correlate weather events with specific health issues. Additionally, people suffering from heat or cold related conditions may have impaired judgment and may not be able to perceive their need for medical care, shelter or fluids, making pre-emptive action a necessity (Ramin and Svoboda 2009; Raymond 2009; National Coalition for the Homeless 2010). In recognising this issue, preventative and early interventions could be implemented to reduce the impact of such weather events, as there are currently few targeted primary health care (PHC) initiatives in the Adelaide CBD aimed at this problem.

E. Research method & data analysis

Research method
The research project, 'Health care needs during extreme weather of Adelaide inner-city people who are homeless' was undertaken in five phases.

Phase 1—involved identifying the needs of homeless people during extreme weather events in inner city Adelaide. This was undertaken via means of a literature review of previous research on the needs of homeless people during extreme weather events. Additionally, the literature review was supplemented by qualitative data gathered via face-to-face, or in small-group semi-structured interviews. The choice of individual or small-group interviews was provided to participants so they were able to participate in a research environment in which they felt comfortable.
The interviews with homeless people (n=25) were conducted at the Hutt Street Centre with the permission of that organisation. The RDNS nurse recruited people into the project after explaining the project to them, offering them an explanatory flier (see information flier Appendix 1) and obtaining verbal consent. The participants were invited to book an interview time and written consent was obtained after a complete explanation was provided, and before the interview was commenced by the researcher (see Appendix 2 for copy of consent form). At interview they were asked to identify any health care needs they may have experienced during extreme weather conditions (see interview questions Appendix 3). The qualitative descriptive data obtained from 25 people who were living rough, or homeless, were transcribed and analysed to locate issues and themes re the ways people cope and live in extreme weather to maintain their health, and the services that they deem most useful to assist their health and well-being during extreme weather events in the inner city of Adelaide.

The analysis of these qualitative interviews from 25 people who are homeless was used to formulate specific questions to ask the service providers during phase 3 of this project.

**Phase 2**—mapped the key government and non-government organisations that provide services to homeless people in the inner city area of Adelaide. This information was garnered from internet searches and discussions with key workers in the field.

**Phase 3**—identified activities and resources provided by government and non-government organisations to homeless people during extreme weather events.

Managers of the organisations identified in phase 2 were contacted via a letter (see letter of introduction Appendix 5) to ask if they, or a representative, would consent to either a face-to-face interview or a telephone interview (n=20). The participants were asked to identify the kind of activities and resources they were able to provide during weather extremes for the homeless population in the inner city of Adelaide. They were asked to
comment on the needs identified from the phase 1 data from the homeless participants. Issues based on these questions and associated with service delivery were explored during these interviews (see Appendix 4 for copy of interview questions.

**Phase 4**—was a gap analysis comparing findings from the homeless participants with the findings from the participant organisations to identify gaps between needs and actual service delivery during extreme weather conditions. On the basis of the gap analysis, recommendations are made on the types of activities and resources homeless services could provide in response to the identified needs of homeless people at times of extreme weather conditions.

**Phase 5** involved making recommendations and dissemination of the findings outlined in this final report, which will be disseminated to the participant organisations and published in the literature.

**Ethics**

The project was approved by the:

Flinders University Social and Behavioural Research Ethics Committee.

**Data analysis**

The *phase 1* participant data was collected via face to face interviews with 25 people who are homeless. The data was audiotaped, transcribed verbatim and then analysed. We looked for recurring themes that described the strategies and approaches individuals used to self-care during times of extreme weather, and the health issues they faced as well as the services they perceived as useful in helping them to self-care at these times.

The service provider participant data was collected via telephone interviews, which were again audio-taped, transcribed verbatim and analysed to locate specific health needs identified by services and issues relating to service provision and health care during such times. In analysis we looked for points of *agreement, tension,* and *contradiction* regarding themes. We sought to find out where and what methods were used to make self-care decisions
regarding their health during times of extreme weather conditions, and identified which issues were promoting and which were hindering the service-delivery and service-uptake that most affected client health outcomes at these times.

In this report verbatim quotes have been used to highlight thematic points. This ensures authenticity of the data and provides testimonials and exemplars to illustrate various themes. The quotes have been corrected grammatically to facilitate communication and promote understanding, but they have not been altered in any other way.
F. Phase 1—Data summary interviews with people who are homeless

Demographics

A total of 25 persons who were homeless were interviewed in February 2011 at the Hutt Street Centre. There were 20 males and 5 females interviewed. The ages of participants are shown in Table 1, which indicates the mean age of people is the 30-40 age group.

<table>
<thead>
<tr>
<th>Age</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>&gt;50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>10</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2. Age distribution of participants

Participants were asked how long they had ‘lived on the streets’ and this distribution is shown in Table 2, which indicates 40% would be considered long term homeless; that is, with more than 10 years of living on the streets.

<table>
<thead>
<tr>
<th>Time On Street</th>
<th>&lt;6 months</th>
<th>6-12 months</th>
<th>1-2 years</th>
<th>3-5 years</th>
<th>5-10 years</th>
<th>&gt; 10 years</th>
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<tr>
<td></td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 3. Length of time living on the streets of participants

Health conditions
At each interview the participants were asked what health conditions they were currently living with. It was not surprising to find that 72% (n= 18) of the participants had reported a diagnosed mental health issue, which included depression, post traumatic stress disorder, bipolar disease, and
schizophrenia. Sixty percent (n=15) said they also had other chronic conditions which included respiratory illnesses such as asthma, cardiac conditions, diabetes, arthritis and cancers. Four participants had been diagnosed with cancers, two of whom were awaiting surgical intervention. There were two men with healing fractures, one of the leg and the other of fractured ribs sustained after injuries and assaults on the streets. There were five Indigenous participants and they all said they had diabetes.

When asked if they had ever had heat-related hospital admissions 20% (n=5) of the participants (2 women and 3 men) had been hospitalised with heat-stroke in the past. All of these people had mental health issues as well as alcohol misuse problems.

When the 25 participants were asked if they had any hospitalisations relating to the colder weather many complained of having colds, bronchitis and respiratory illnesses over winter. Six people said they had experienced pneumonia, and all of these people had been homeless for over 10 years. However, it was unclear whether or not the pneumonia was an effect of exposure to cold or damp conditions or the result of other issues.

It was not easy to discuss alcohol misuse directly in a short interview, but based on the conversation and answers to other questions around homelessness, it can be assumed that 20 of the 25 participants (80%) had alcohol misuse issues and some were also users of other drugs/substances.

It appears as if heat-related conditions may be under-reported by the homeless population. The presence of chronic illness is associated with a higher risk of death in heat-wave conditions (Rampulla 2004).

**Barriers to accessing health care**

The attitude of health personnel can be an impediment to accessing health care for people who are homeless. Many participants spoke of the 'disrespect' afforded to them when they were spoken to by people in authority, such as police and health workers, and particularly those in public
hospitals. These two comments represent the sentiment expressed by many participants:

'I've only been homeless for 11 months and I've been working for the last 9 years, but I've noticed in those 11 months that I haven't been working and have been living on the streets there is a difference in the way people talk to me and treat me. Yeah it’s full-on. It’s demeaning.' N21

'You don't want to go to the hospital 'cos they don't give a flying f___ if you live or die. They hate homeless people and they treat you like sh___. I would rather wait and see the RDNS nurse or see one of the doctors here. The hospitals and the police treat homeless people like low life's and scumbags, and less than they are.' N18

The sentiment in the latter comment was echoed by many participants. Positive comment about the health services targeted specifically for people who are homeless were provided without prompting, or soliciting comments on the health service providers in the inner city of Adelaide. Health services that are staffed by people who respect clients who are homeless, have a positive impact on client attendance and adherence to medication regimens, which is especially important for the stability of the many clients with serious and persistent mental illness. The following comments illustrate:

'I find talking to the nurse at X easier than talking to the social workers. I don't get enough time to get to know the social workers, but I know the nurse. It’s good for me. I visit her for my medicine and we talk. She knows me and when I am angry and stuff. … Yeah she’s the best one that I’ve spoken to, you know if something bad happens, she’s always there. N14

Participants also used the nursing clinics as a first port of call to see if they needed to act on particular health issues, as this response indicates:

'There’s someone here between 7 and 1. It’s good to be able to see someone here and find out the general idea of what it is, what the problem is so you know if you need to see a doctor. N7
In this way the nurses are screening people and ensuring they know when something requires further action. The RDNS nurse in the homeless service sees many clients for varied issues such as medication management, diabetes management, dressings for minor wounds and even postoperative wound care (such as a compound fracture with an infected wound).

The attitude of health workers is important for this group, as a negative attitude is a barrier for them to access health care. This is particularly important during times of extreme weather when their health may be further compromised by either excessively hot or cold and damp weather.

**Difficulties of heat**

The participants raised a number of health and social issues that they have experienced due to the heat. These include:

- **Allergies**: participants say their allergies are aggravated by hot weather, especially asthma when it is dusty, due to hot windy weather. Several participants commented on acute exacerbation of asthma during hot weather.

- **Sleeping problems**: people struggle to sleep in the heat so tempers can become shortened and people’s anger is more readily provoked. As this comment illustrates:
  
  … hot weather causes friction of any kind, you know what I’m saying … N1.

- **Problems with mosquito bites**: many participants commented on the problems of mosquito bites as the main difficulty experienced during hot weather. Several participants commented that they had suffered from mosquito-borne diseases such as Ross River virus and Barmah Forest virus.

- **Lethargy**: most people commented that excessive and prolonged heat was draining and made them lethargic with no energy and slower reaction. This has almost led to an accident, as this participant comments:
... it really makes me really slow ... I've almost been hit by a couple of cars 'cos of my slow reaction time. N9

- **Heat exhaustion and heat stroke**: five people reported to have been hospitalised with heat stroke in the past. Common symptoms of heat-related conditions experienced by the participants include lethargy, dizziness, nausea, fainting and feeling 'dry and parched'.
  I've had heat-stroke big time. I was in hospital for 2 days just putting water through me system. N11

- **Family relational pressures**: There were four men interviewed who commented that their family relationships were always under more strain over summer. This was viewed as related to heightened expectations of family time around Christmas and the depression that they experienced about their lack of family relationship as this man comments:
  
  *In summer my relationships go bad. I seem to get quite emotional around Christmas time. I left home at 14. The advertising and Christmas spirit is all around and when you don’t have family or a social network it seems to put pressure on you. Everyone seems to be celebrating with other people whereas you’re by yourself, so the pressure’s on.* N12

- **Drug and alcohol use in hot weather**: Some participants said their patterns of drug and alcohol use changed during hot weather. Two people said they could not drink hot beer so they drank less alcohol during hot weather. Another couple said:
  
  *We don't take drugs or alcohol when it’s that hot, cos your body is already warmed up as it is, if you start drinking or using, it makes it worse.* N21.

  Several participants say they believe alcohol increases fluid loss in hot weather, as this man notes:
  
  *... alcohol dehydrates you anyway and if you’ve got this kind of weather, people need more water, but they don't get it.* N4.
Participants said that many homeless people will continue to drink alcohol regardless of the weather, which places them at increased risk because they are incapable of locating drinking water … as this comment suggests:

*I think you can make sure people have got enough vitamins and fluids in summer and blankets and clothes in winter, 'cos quite often at night I can go past alcoholics, and find they’ve just passed out with nothing to cover them. You know they don’t know how to hold on to anything. They’re abusing their body so they need more help and protection. They need water and covers. That’s a health matter if you ask me.* N3

- **Sunburn:** Most participants said they did not have access to sunscreen unless it was provided by the homeless clinics, so sunburn was a common problem. This young man explains:

  *I’ve got some major sunburn. I went to the RAH and went to Fast-track and have to go back to the Burn Unit today.* N10

- **Medication effects in heat:** It is well understood that people taking anti-psychotic medications need to drink more water as their body temperature is increased by the medications. The RDNS nurse said that she has to remind many clients who come to her clinic for their medication to drink more water in the heat.

**Accessing water**

There was a mixed reaction to the ability to access water in Adelaide City. Some participants said there was no problem, stating that they had ready access from petrol/service stations, toilet block taps and public water fountains around the city. They said free bottled water was provided during extreme heat by welfare agencies. Others said public water fountains were in disrepair, claiming there was no ‘*free cold water fountains that worked*’. The following comments illustrate the various viewpoints:

*I usually get water through service stations or public toilets, or yeah just try to get water from wherever I can, the bottlos that are around the place.* N12
Oh there is access to water, but we usually go through about at least 4 or 5L within an hour or two in really hot weather so you have to track back and forth a long way sometimes. N14

… there are very few drinking fountains in the city, you don’t really notice until you need it. I’ve got a water bottle but it’s difficult to fill it. I think there’s a few on the terraces, and then there’s really nothing on the streets. N7

I don’t drink from the bubblers water ‘cos it tastes funny anyway. N13

They’ve cut out all the drinking taps so it’s making it harder for people who are homeless to go and get water. N21

You have to line up here to fill your bottle with cold water. N2

I know X stays open most of the time until about 4.30 every day and they have a cool water fountain there so you can come and get cold water with your water bottle. N14

…

you can’t get enough water ‘cos there’s no place to get water unless X open or down at the hospital. Sometimes you get in trouble if you go to the hospital, cos it’s a private hospital or something. N19

… you need to re-hydrate but it’s hard to get some people to do that, some people drink alcohol and won’t drink anything else. I’m not sure exactly what the situation is with people like that. I assume they get dehydrated pretty bad but I don’t know how you go getting them to drink water. It’s hard but I think if people really want help they can get it to be honest. N24

There were several participants that suggested bringing cold water into the parklands during extremely hot weather would be useful and helpful. There were some suggestions that this was being undertaken by one of the homeless services.

When it was hot weather, ‘Street to Home’ used to come out with bottles of water into the parklands. N2
An important point was raised that if services were going to provide cold water that it needed to be located where the people stayed during the day (which was most often in the parklands) and this fact needed to be communicated with those living on the streets. These comments expand:

… going around dropping water 2 or 3 times a day, at certain stops. You see a lot of people down at the south parklands, so just chucking bottles of water to them and not the little ones 'cos they don’t last long enough. It would have to be a litre or 2 litres 'cos you do drink a lot of water in the heat. N13

… if you provide it you have to be in the right places with it and people have gotta know about it. If people don’t know about it they’re not going to use it for a start. Others will over-depend on it, or abuse it, and others will be too scared to come and get it.' N3

**Barriers to accessing water**

Participants complained that the Council had removed the handles from taps within the parklands area.

They’ve taken the taps off in the parklands. That’s not really convenient to go off looking for a tap. They used to have one in the middle of the park, just over here (South Parklands). There was a tap in the middle of the oval 'cos people always sat there so now they've taken it out and there’s hardly any places to get water any more. N21

Others said the toilet blocks close at 6pm so there was reduced opportunity to get water, or to go to the toilet safely.

… the new one’s close about 6pm and don’t open up till 6 o’clock in the morning which is a bit ridiculous really… even on Friday or Saturday nights, they close 9pm. N6

Most participants recognise this as a safety issue or based on the need to prevent vandalism. No participants have suggestions as to how to prevent such problems to toilet blocks so that better access can be provided.
Most people know they need to find a cool spot in the shade and find ways to cool their body down as this woman notes:

_What I’ve had to do now at night time in my car, is to get a big bottle of water and pour it over me. There are often times when I’m in the park, I pour it over my head. I’m 64 and I’m starting to wear a bikini! I put on my bikini and go in the car and pour water over me, otherwise I’d collapse._ N16

**Accessing shelter in summer**

Finding a cool spot during extreme heat was a problem for people who are homeless in the inner city. The most common places to cool down were the parklands to rest under a shady tree during the heat of the day or to go to the state library, which is a public place where many people seek refuge from the heat. They were generally moved on if they sat in shopping centres or in cooler spots within the business and shopping precincts. The following comments illustrate the ways people sought shelter to keep cool during extreme heat:

_When you’re homeless there’s no facility you can go and cool down, and just relax and take a load off while it’s hot._ N21

_You try and get shade, that’s all we can do, look for shade._’ N18

_When it’s really hot days, I come to places like this one (Hutt Street Centre) where it’s air conditioned and you get meals and that. If it wasn’t for places like this it would be a lot harder for me._’ N5

_… we were just sitting inside on the pathway, you get the breezes come down but security told us to go, so we went. We weren’t doing anything. It’s the same if we are sitting in the park, police come up and say ‘move on’. You’ve got to be polite, if you are not polite, you get into trouble._ N8

_… you walk around the city all day, go to the library, you can only stay there a certain amount of time and you have to move on. You do_
the same thing every day, go from Hutt St to Bryon Place, trying to get to everything that’s open on time. N11

Many participants found it a problem that some centres closed at 1pm, even when the weather was hot saying:

‘… in the heat of the day there’s nothing open.’ N8.

They said the hours made it difficult for some people as it was always a rush for access to facilities provided at the centre. As these comments suggest:

Basically the only time you can get sleep during the heat is at night time around 3 or 4 am so you don’t get moved on. Of course you’d love to be able to sleep in a bit later but you can’t ‘cos all the service providers are open for breakfast and you need to eat something. By the time you get to these places you’ve often only got time for a shower and then you’re out the door again. N8

… there’s queues to use the showers. It gets difficult to make an appointment. If you make a morning appointment you probably won’t get a shower so it’s difficult to make appointments with doctors in the short time they are here.’ N9

Many participants requested that the Centre stay open longer during extreme heat as it was hard to find places where you could safely relax in the heat as this man says:

It would be good to have the Centre here open on hot days. The air-conditioner is good in here, so maybe staying open longer during the hot days so people can just chill out somewhere without fear of being moved on all the time. N24

It would be good to have a place where you can hang out during the day, I know the bus station do that a lot when it’s over a certain degree they keep it open all night, so the people can go in and sleep. But yeah they could have like someone who goes out and checks on everyone out in the park too … People would really appreciate
someone if they did that, and handed out water bottles or what not. That would mean a lot I reckon. N11

Yeah last year there was a thing in Whitmore Square when it was real hot for about 8 days in a row. That was good. Plus they opened the bus station so everyone could stay there and sit down and put their feet up for a sleep. N8

Another participant said that there was nowhere to go which made it more tempting to go to hotels and pokie places as these were air-conditioned. He said:

That’s my downfall at 4 o’clock in the afternoon it’s cool at the pokies places, so I end up giving away my $50 rent money not even thinking there’s a chance of winning. N8

**Barriers to appropriate accommodation during extreme weather**

Participants noted access to safe and appropriate accommodation was a barrier to their health and this was underscored during times of extreme weather.

It is difficult for people to find temporary accommodation because housing options are in great demand during times of extreme weather. This example demonstrates: an older man with a serious leg fracture could not find suitable and safe accommodation following discharge from hospital during the middle of summer. He said:

... I got sick of the nursing staff at the hospital saying ‘You’ve gotta go’ and I had this social worker saying ‘You have to stay’. I just conned me way out between both of them so I could get out. Then I come to this place (Hutt Street Centre) to try and organise something, but there was just nowhere for me to go. In the end I broke 2 pins out of the 4 pins in me leg ‘cos I had nowhere safe to go … N3

Some participants suggested a temporary 'sleep centre' could be established during extreme weather—a place where a person could drop into a bed and sleep for a few hours in safety. It could be a marquee or similar, so that it
could be moved if needed. When asked about how services could maintain safety in this marquee, the participants said there should be no internal walls and no other services in there—just a bed to sleep in. The only rules should be no drugs, no alcohol, no violence. These participants describe the idea:

    Oh yeah but sometimes it can get pretty scary out there. You’ve gotta have an old boarding house or a big tent or something like that. Just throw 20 beds in it, say ‘Come in, no drugs, no alcohol, just come in and rest and go’. People would appreciate that. N8

    Somewhere central you can go, like a daytime centre or something that you can go in. You know do a drug/alcohol test and if you are OK you can get some sleep in the afternoon. Somewhere you can go and get warm when it’s cold or cool when it’s hot. N10

**Problems with supported accommodation during extreme weather**

There were many comments made about supported accommodation and shelters, with the general view being that they were unsafe and dispiriting places to be housed, but there were additional problems that occurred during times of excessive hot, cold and damp weather.

    I guess um the only thing is, it’s hard to get decent accommodation. I’ve got somewhere but I wouldn’t say it’s the best. Actually it’s really hot in summer and it leaks water. I have water leaking into my room, I mean they have tried to fix it but it still hasn’t been fixed. I’m lucky it doesn’t drip on my bed, but it is an ongoing problem. The facility is starting to go mouldy in one wall, the paint is starting to lift on it and they only just painted it before I went in there, so it’s obviously an ongoing problem. I do quite often wake up with a sore throat in that room. N19

One participant stated that people would rather spend their money on alcohol and get a free bed in the sobering-up unit when it was really hot or really cold instead of spend their money on a bed at an emergency shelter. He explains:
The only other place to go when it’s really hot or cold is detox, and I think the incentive to go there is wrong. You go there when you’re pissed so people save their $7, you buy a cheap bottle of port, wait until night time and then scull down your port, get pissed and go and push the buzzer at the X centre and get a bed there for the night. There are people who do this on a daily basis you know! ... N21

Problems with safety during extreme heat

The health of people who are homeless is affected by the violence that occurs on the streets. Both the participants and the service providers who were interviewed recognised there was a rise in violent incidents during times of extreme heat. It appeared to be associated with increased alcohol misuse and fuelled by interpersonal conflict, anger, robbery of possessions, or mental health issues. The following comments from participants highlight the stress they live under and the actions they take to mitigate their situation:

If you see someone who’s drunk, you say ‘hello’ and keep walking, then there’s really no problems. A lot of people have conversations with them. I don’t know why they do it. Someone says ‘You idiot’ and they can’t ignore it, so they respond and it’s on! It’s like primary school the way they start shouting at each other. N7

... don’t feel safe anywhere really. I take the risk away by moving around and stuff. It does bring on a lot of stress. There is so much drug and alcohol use and violence, and also the mood swings of people. You have to keep moving around so you don’t get too involved. N3

... it affects your mental health. It’s a toss-up between the stress and the pressures of your home environment or of living on the street, or whatever. You know, family environment versus being off on your own. You’ll probably find most of the people here have got some family history, which is why they’re on the streets. ... so you learn how to survive and become self-reliant, and when there is any pressure building up you go “Oh well! No worries, I’ll just split the
scene!” Then you get out of the way and you avoid confrontation that way. N23

Most of them (people with serious mental health issues) seem to be medicated. You see a lot of people talking to themselves, muttering to themselves late at night, but people with mental illness are medicated. There’s a difference between someone doing something when they’re drunk to someone with a mental illness. I haven’t seen anyone going stupid or being violent without alcohol being involved. N7

It’s not safe but it’s better if you join forces for safety. Sometimes you might sleep for half an hour to an hour and you’re awake to look around, then you fall asleep again. It’s broken sleep all the time you know. You can come here (Hutt Street Centre) and sleep in a chair for a while to catch up. N8

Accessing food during weather extremes
Most participants said that accessing food was not difficult in Adelaide. Those who have travelled around Australia and been homeless elsewhere claim Adelaide is well serviced.

… if we’re hot or cold they give us clothes, give us jumpers, they give us scarves, they give us gloves, they give us anything. You can ask and they’ll bring it next time or whatever. Put it this way you never go hungry in Adelaide. N1

No-one in Adelaide should starve really, there’s that many free services around, I think we’re fortunate really as it goes, from what I’ve seen. N19

Summary of suggestions to prevent heat related illness in homeless populations
The following suggestions have been summarised from the participants’ answers to the interview questions.

•
Nurses located in homeless services are trusted so they could be educated to detect early signs of heat-related illness and intervene appropriately. There could be proactive assessments with regard to heat from specific clinics.

Continue with the proactive water distribution at venues where people who are homeless go for breakfast, recreation or accommodation.

Simple and factual educational material developed and distributed at commencement of anticipated extreme heat wave. This material could include where to go for shelter and water, the signs of heat-related illness to watch out for, and how to prevent heat-related illness.

Information regarding lavatory access points, as some people are unwilling to drink more at night because there are not many toilets available for people to use after hours, as many public toilets are locked after 6pm.

Develop sheltered cooled environments or a community cooling centre when the environmental temperature is >35degrees.

Providing a home visit/phone call or information to newly-housed people who have been homeless a long time to ensure they understand how to keep cool.

Increase access to more free bus services on hot days.

Have free sunscreen available during extreme heat.

Develop a day time ‘sleep centre’ with only beds in it. People can go and catch up on some sleep in the afternoons. May need to test that people are drug and alcohol free before they get a bed.

One participant made an important point that no matter what services are provided the person has to want to receive that help and they need to be in a state of mind that is not completely affected by substances and/or alcohol to accept support or hear what is being said. He comments:
You’ve got to want to help yourself … I mean there’s plenty of places out there willing to help if you’re willing to help yourself, programs or getting housed. I speak to lots of guys and I can’t comprehend why they continue to live on the streets. It’s always drugs, gambling and alcohol. For some it’s just become their life and they can’t help themselves any more. N4

**Difficulties of cold and/or wet weather**

There is a general consensus that excessive heat is easier to tolerate than prolonged cold or wet weather, as these participants say:

* I like the heat! You can always go into the shade of a tree and you’re cool, but once you’re cold, you’re cold all night. N17

* Your camp gets wet, and there is some mental and physical and psychological effects. N8

* You feel more isolated. You have to think a lot more and you can have waves of depression and stuff like that. I think cold weather hits you like that. N12

* I find it very hard to breathe, the colder it is the harder it gets to breathe, it seems to make the air really heavy. N13

**Increased illness**

There is a much higher incidence of illness during cold weather, and respiratory issues appear to be the most common complaint, as this person’s comment suggests:

* … but the biggest problem is cold weather and catching a cold, you can never get rid of it, weeks and weeks with it. N7

For some, those respiratory illnesses progressed to become pneumonia. This older participant fears a lengthy and possibly fatal illness if they were to get pneumonia again, as this statement indicates:

* … winter really scares me now, it does worry me. If I get a cold this year and then pneumonia that’ll be the end for me. Last time both
lungs collapsed. That was 2001. A week and a half in intensive care and a couple of weeks in hospital to get back on track. N10

The suggestion was made that people require education on how to prevent flu and pneumonia and other respiratory conditions as this person suggests:

*You need to make people more aware of how easy it is to catch pneumonia and how they can prevent it.* N14

When asked about having a flu vaccination, most participants have not received or do not want to take up the offer of a free flu vaccination. The most common reason is that they do not want to get sick from the vaccination. Some said they have had them and still got sick, and others do not trust the vaccination not to give them flu. Clearly some myth-busting education needs to occur if uptake is to increase in this population.

**Increased alcohol consumption**

Others said their consumption of alcohol escalated in cold weather as they drank more alcohol to get warm so they were able to sleep; as this man says:

*I keep myself warm... buy a bottle of port or whisky, get yourself drunk to sleep.* N12

**Problems drying out wet clothing and bedding**

One of the major issues about wet weather was drying out clothes, shoes and bedding once it was wet as these people explain:

*One of the main problems is drying out shoes. You see people carrying bags around, they don't have anywhere to store their stuff.* N7

*I had pneumonia when I was staying out in the parklands. It just got too cold. You get wet 'cos you have to walk around and you cannot dry out.* N14

*There is nowhere to dry your clothes if Hutt Street is closed and you get wet, you stay wet.* N1
Wait until here is open and then try and get here before everyone else is in to dry my clothes. I like coming down here and do washing and I catch up with ___ (RDNS nurse) and the people I know in here. N24

There is an increase in foot problems during wet weather, as these people explain:

The main thing I want to avoid is getting my feet wet. You walk around with bare feet to try and dry them out. You get blisters with wet feet, like if you’ve been in a bath too long. Dead skin and white skin all crinkly and blisters develop and shoes wear out. N7

… you get wet feet and your feet shrivel up and it gets so painful. N11

Having places to dry clothes or having access to dry and suitable socks and shoes is important. This is particularly so for those people with diabetes who are living on the street in wet weather, because they need to protect their feet from becoming damaged and increasing the risk of infection.

Some participants plan for wet weather and ensure they have sufficient clothing and the correct type of clothing. They ensure their ‘camp’ is high and dry and locate dry places to sleep. Several people commented on the importance of thermal underwear in keeping the body warm in cold weather. These comments explain:

Getting wet is probably the biggest issue. Like, for example on a Friday, you’ve just gotta make sure that you’ve got a spare set of clothes, you just have to think about it. N2

I try to keep enough in me bag to cover all 4 seasons. N17

It depends on how the land is, if you’re on a slope the rain will come down and you’ve gotta keep high mate. N18

What I’ve found that has changed everything for me in the cold and wet weather, is thermal underwear. It keeps you very warm. N24

You have to wear thermals and wear layers, then you are alright. N16
Problems with storage

There were several suggestions made about the need for some more accessible and secure storage space for bedding to keep it dry. Discussions occurred about the provision of lockers:

Having access to a locker would be great. I know people go and use the State Library and put their bags in there and wander off, but you can't do it every day. N7

Somewhere to leave your stuff and not be charged for it would be useful. You can rent a locker at the bus station but you get charged $8 for 2hrs and overnight is $24! ... N8

Others highlighted that a locker was likely to get abused as people could use it to store drugs and alcohol safely. It would be difficult to police; therefore it was not likely to work. Another participant suggested shed storage was useful to place swags and backpacks in wet weather. It was noted that there is a shed provided at X for this purpose, but perhaps more sheds are needed. Information could be provided to the homeless during winter months about storing their bedding to keep it dry and where they can go to do this.

Swags are seen as comfortable, warm and weather proof, but awkward, bulky, heavy and difficult to store and transport.

Swags are good but they are huge, so they're not very practical. I use a backpack and a small sleeping bag and a little mat and then wear thermals underneath my clothes at night and I can carry it all in a small backpack. N23

Most participants said they had few problems accessing blankets, and even swags when needed—providing they had a health care card.

I asked for a swag off the soup man and next night he had a swag for me and couple of nights later I asked for a sleeping bag and got that too. That was excellent. I had a swag and sleeping bag when I had nothing else, so I had something to sleep in. N21
**Problems with boredom during extreme heat**

A significant number of participants (particularly those who are younger) say they are bored.

*The hardest part for me has been the incredible boredom day in day out just existing and having nothing meaningful to do. I have worked most of my life and I would even do it voluntarily for a few hours a day just to feel like I was doing something worthwhile.* N25

This boredom increases when they cannot move around freely due to extreme weather. It was particularly difficult in times of extreme heat, when participants said:

*The boredom is a big thing. Using just passes the time 'cos there’s nothing else to do.* N15.

*They kick us out of the parklands so we just sit in the car. Most people sleep during the day. I reckon it’s 'cos they’re bored. There’s nothing to do.* N17

Some participants said how much they appreciate the art programs offered by some of the centres. Most activities are costly and homeless people do not have the money to participate. Others recognise they are not entirely reliable as regular volunteers themselves, but they would like the opportunity to help out in a meaningful project from time to time.

**Communicating with people who are homeless about extreme weather warnings and/or information**

The participants were asked what would be the most appropriate way to communicate information to people living on the street during extreme weather. Some of the suggestions included:

**Via the services/charities**

*Send messages via the key services/charities ...* N5

*They could pass it on via social workers, men’s group or women’s group.* N12
It’s best to tell it through the churches, priests, X van … and they let people know. N16

Newspapers (especially free ones)

There’s a lot of ways to get it out, like putting signs up, posting info in free newspapers and into magazines like ‘The Big Issue’… N15

Websites

... have a website … I know it’s hard for people to access websites, but if they had one specific website on a poster then people who have a computer, or access one from places like this or the library can get info. N6

Posters

You could get a pole permit and have a poster blitz during hot weather. N21

Soapboxes

They could have a ‘soapbox’! They have soapboxes in Sydney where you stand up and talk about things. Word of mouth that comes from the soapbox will spread. If there was a soapbox somewhere and a weekly spot or a meeting somewhere that everyone can gather round and listen in. N12

Television

TV advertising, people do tend to hover around TV quite a bit. N23

Sponsor adverts on water bottles

You could put info about hot weather on water bottles! Everyone seems to have some sort of water bottle, so you could have advertising or information sponsored on those bottles. People walk around and pickup 10c bottles and they look at the bottles and see what’s on them. N12
Shopper dockets or discount vouchers

You could put information on the back of a shopper docket or in discount voucher book. N12

Suggestions to prevent illness related to extreme cold and/or wet weather in homeless populations

Mobile service

A number of participants suggested continuing with homeless mobile services that go to known sleeping areas, such as the parklands, to check up on people during extreme weather events.

You could have people just going through the park, checking on people. When I was out there they used to come through every 2nd day and check on you, not just me though, everybody. They get out of their cars and come over and talk to you. N13

Just going around and seeing if people need extra blankets. Or a tarp or plastic bag to keep the rain off. N21
G. Phase 2: Identifying key services to homeless people

Phase 2 of this study identified key government and non-government organisations that provide services to homeless people in the inner city of Adelaide.

A comprehensive mapping exercise identified the organisations that provide services to this client group. Information regarding service providers was gained from the homeless population who had been interviewed in phase 1; the inner-city network that RDNS SA is linked into; and internet searches of service providers; as well as services on the Homelessness SA website, which identified 72 non-government agencies in South Australia who receive funding to provide support and accommodation for people who are homeless, with 17 of these identified as having been within the inner city of Adelaide.

The research team nominated (n=20) service providers to be interviewed in the study. All were provided with a letter explaining the study and requesting their input. Follow-up letters were sent to those who did not respond. Follow-up phone calls were commenced when service providers had not responded to take up the second written offer. Further repeat phone calls were made to those considered critical service providers who had not yet responded. Eventually 10 (46%) services elected to participate. These service providers (SP) delivered a diverse range of services, with a number of them providing multiple services and support mechanisms to people experiencing homelessness. Programs and services included community nursing, primary health information and support, meal provision, drug and alcohol-related services, counselling, crisis accommodation, transitional housing, outreach services, emergency treatment, transport, day centre and Indigenous programs.

Anonymity was assured as part of the ethics process and discussed on the Introduction letter to service providers (see Appendix 4). Because the study covers a small geographical area, the specific detail of the service providers is not provided so that anonymity can be preserved.
H. Phase 3: Interviews with service providers to the homeless

Phase 3 identified planned and informal activities and resources provided by government and non-government organisations during extreme weather events to people who are homeless in the inner city of Adelaide.

The managers of the organisations (n=20) identified in phase 2 were contacted via a letter of introduction to ask if they, or a representative, would consent to either a face-to-face interview or a telephone interview. Ten organisations responded (n=10) and all the interviews with service providers (SPs) were conducted via telephone at their request.

The research team reviewed and revised the questions to be asked after the homeless participant data was analysed to ensure that any issues raised by this group were addressed when interviewing SPs. This second participant group were asked about the kind of activities and resources they provide during weather extremes for the homeless population in the inner city of Adelaide. SPs were asked to identify the type of health issues they witnessed in their clients who were homeless, and issues associated with service delivery to that population during extreme weather were explored during interviews (see question guide Appendix 5).

Data analysis

The data was analysed by looking for recurring themes in the strategies and approaches each organisation used to provide services to people experiencing homelessness during times of extreme weather. The impact from the service providers’ perspective of extreme weather on the health of the client experiencing homelessness was explored. We sought to find out what services were provided and what influenced decisions re service provision in extreme weather to meet the clients’ health care needs.

In this report verbatim quotes have been used to highlight thematic points. The quotes have been corrected grammatically to facilitate communication and promote understanding, but they have not been altered in any other way.
Health status of the homeless population

There was widespread recognition among all the SPs that the homeless population in Adelaide has extensive health issues that impacted on their ability to cope with extreme weather conditions. All SPs commented on the vulnerability of this client group, with the comments below representative of this recognition:

*an absolute commonality with all of our clients is extensive health issues, mental and physical.* SP8

*Many of our groups may already have chronic conditions which are compounded by homelessness and not having access to good nutrition. People eat poorly and haven’t got access to services in poor conditions so when the weather turns, they’re at much higher risk of coming down with pneumonia, or exacerbating their pre-existing conditions. Often there’s a higher percentage of people drinking alcohol, so we see examples of that and issues around dehydration.* SP4

SPs said drug and alcohol abuse was prevalent in this client group and the effect of intoxication and drug use impacted the individual’s physical ability to cope with extreme weather as well as impairing their judgement and ability to self-care.

A number of SPs noted the resourcefulness and resilience of the client group, despite being at an extremely high risk of the adverse effects of extreme weather.

*Most of our clients are great survivors with great resilience… SP10*

*Our guys are pretty resourceful, which is why they’re still moving around, otherwise they wouldn’t still be on the street … they wouldn’t be able to survive, literally …* SP7

Despite this resilience it was noted that deaths due to extreme heat or cold-related factors can and do occur, and in fact they are not at all a rare occurrence.
**Barriers to accessing health care**

SPs noted that their clients experienced multiple barriers that tend to isolate and impede them from accessing services.

**Knowledge of and access to services**

Outreach services said there was an increased vulnerability for some of their clients because they did not access or communicate with any services. In extreme weather the outreach services try to inform these clients and support them; however this population ...

*Often won’t present or request support, so they’re hidden. They miss out on support and many other services that they may not be aware of that are available to them.* SP4

SPs recognised the importance of increasing engagement with this population via meal centres etc. SPs said a number of services provide meals and hot/cold drinks to clients and actively seek out those who are rough sleeping during extreme weather.

Access to services was also dependent on the services reputation among the homeless. SPs said the majority of their clients know about the service by its reputation. They hear by ‘word of mouth’ and this reputation takes time to develop. Developing trust with the clients was seen as imperative to the success of service provision.

*Our service is really well known particularly through the aboriginal population. They are aware of it because we’ve had a very long standing association with them … they tell each other family to family, friend to friend, so people know that we’re here and that we are trustworthy.* SP7

Four SPs noted the importance of influencing access through having culturally-appropriate services and the importance of feeling safe as this comment illustrates:

*Services must be where clients choose to be and feel safe.* SP2
Services need to be aware of the cultural issues of Indigenous people and provide services that are acceptable and easily approached because of their location and their cultural sensitivity.

**Transport**
Transport was seen to be a major issue for the clients because most have to walk to reach services and in extreme weather they may be impaired in getting from one place to another. Several said lack of transport made it difficult for people who were homeless to get to their appointments, as this SP comments:

*transport is needed to get clients to where they've gotta go to ensure they go and actually get there.* SP5

**Duty of care to staff and volunteers**
Three SPs noted that they, themselves, had difficulty maintaining their staff and volunteer numbers during times of extreme weather. They highlighted that they had additional responsibilities to the health and wellbeing of their own volunteers and staff during such weather events, before they could even begin to consider increasing or extending opening hours.

**Extreme heat response plans**
SPs understood extreme heat as an extended period of very high temperatures related to, but not confined to, heat-wave conditions. Each SP was asked what services they were able to provide to the homeless population during, or after extreme heat.

Five SPs indicated that their organisation had a heat-wave response plan that was initiated when there were forecast high temperatures, or when their staff assessed the need to enact the response because local conditions were extremely hot.

While acknowledging that heat and cold were problematic one of the SPs indicated that they were not sure that additional policies would really address the health issues of the homeless during extreme weather, because they felt the primary issue was a lack of access to appropriate accommodation where the clients could feel cool and safe. This SP noted that people who are
homeless may be hospitalised because there is a lack of alternative, safe, cool environments that could provide respite and early intervention to prevent the adverse effects of excessive heat.

SPs responded positively about the complementary functions between government departments and their services, saying they were working together to provide 'synergy' and 'coordination' to services. They had a good awareness of what services were available to their clients. Four SPs had notified their clients of the availability of the Franklin Street bus shelter during hot weather. Six SPs had processes in place to refer clients to places where there was respite from the heat and where they could receive health assessments or treatment. However, transport to get people to these places was not always available, unless it was a medical emergency.

Only one SP was not aware of any planned services provided by other SPs, other than an assumption that facilities would stay open and the outreach services would be going out and checking on clients. This assumption is not true, as most day centres are still closing at the usual time. They cannot open for extended hours in heat wave conditions because they say they cannot provide a safe environment due to pressured staffing/volunteer levels.

It was noted by three health SPs that formal communication channels open when the State initiates the heat wave warning; however, many strategies in the plan cater for people who can travel to shelters to get respite from the conditions. These strategies rely on timely messages delivered to clients, which in turn depends on reliable contact details for each client so the communication can be expedited. This is difficult to achieve with a transient population. The problem in obtaining contact details from people who are homeless is compounded by their general lack of trust of ‘the system’ because policies that involve contacting the police to check on a client when they cannot be otherwise contacted, are not considered acceptable to most people who are homeless.
**Effects of extreme heat on the health of the homeless**

It was recognised by six SPs that their clients were at risk of heat-related conditions, and in particular dehydration and heat exhaustion which could lead to heat stroke. Heat was noted to...

*increase drug use and intoxication by up to three-fold which affected the client's ability to access services and locate their things …* SP7

One SP explained by saying:

*we predominantly see issues such as dehydration, sunburn, and a large numbers of people with insect bites, which can be quite extreme.* SP6

Insect bites can result in severe infections and the occurrence of increased numbers of vector-borne infections/diseases.

A range of issues were identified in addition to dehydration, indicating that extreme weather affected the homeless population in other ways. One important issue was that of changed drinking patterns and consequent behaviour changes during extreme heat, which often led to 'shorter temper' and 'less tolerance' and an increase in the number of violent incidents, assaults and injuries during heat waves. These SPs explain:

*obviously if they’re drinking when it’s incredibly hot without drinking lots of water, they become more dehydrated and there are usually a few more incidents out in the park and around the centre.* SP10

*… tempers are much quicker in the heat.* SP7

Two SPs said 'a lot of clients on psychiatric medication are at a much higher risk of dehydration', noting the increase in dehydration for clients on anti-psychotics such as Clozapine, during heat waves (Alexopoulos, Streim et al. 2004). The other client groups identified to be at high risk of dehydration by SPs included those drinking alcohol or taking other toxic substances.

Several of the centre-based services said they did not see many cases of illness due to extreme the heat because …
to get to us they have to be on foot, so we don’t see the extreme cases because they actually can’t get here. Sometimes one of their friends will let us know they’re not well and they are in the parklands, so then we’ll make calls to get them looked at … SP7

One SP saw dehydration affect their clients, but didn’t consider it to be a problem.

… I mean, people are affected in different ways but because we’re air-conditioned it doesn’t affect them so much. If they’ve been out and about all morning, or have walked to the RAH, they might suffer a bit from dehydration, but we just need to rehydrate them again, but apart from that it’s not really a problem … SP3

Sunburn was a problem because clients don’t practice preventative measures, nor do they get treatment for it. Additionally, certain mental-health medications such as Phenothiazine (Chlorpromazine) and Tricyclic antidepressants are phototoxic and cause increased sun sensitivity which can give clients adverse skin reactions when exposed to UV rays (Nabili and Stöppler 2011). Some people do not come for treatment because they recognise that they should have had sun protection on and they didn’t, or they may have fallen asleep in the sun when they were intoxicated and they do not want to draw attention to this fact.

**Strategies used to help during extreme heat**

The need to individualise responses to specific clients was well recognised by the SPs, and a number of them noticed that their staff knew their clients quite well, which was important because it enabled them to individualise care. Six SPs recognised high risk groups within their population, and five stated that they monitored clients more closely and initiated early management during heat waves, especially for those considered to have less ability to self-care and follow guidelines. In this way they minimised the adverse effects of heat. For example, they asked themselves *are they able to go and get what they need to rehydrate?* SP7
Information

Providing information about the impact of heat was considered to be an important ongoing strategy of the SP role by seven SPs. This changed with the seasons. One SP provided sun-block and ensured that handouts about coping and staying healthy in the heat were readily available. Another SP saw the provision of sunblock as important but had insufficient resources to provide it. Four SPs said they increased the amount of 1:1 information given to clients—especially those most at risk.

Water

All service providers recognised the importance of water being readily available, and provided water to their clients at their centres. However, where and how clients accessed water outside of these centres was unclear. It was stated that:

… because clients who are sleeping rough, or even those in boarding houses or accommodation don’t have access to air conditioning, we make sure we’ve got bottles of water for people and that they have access to a water supply, because it’s amazing, but people forget that for homeless people water can be a scarce commodity. SP10

One SP stated their organisation:

… has been known to hand out cold water bottles during extreme heat. SP7

Outreach services stated they took water to clients but the transient nature of people who were rough sleeping made it difficult to know their whereabouts at times of extreme heat.

Respite from the heat

The centre-based SPs all had air-conditioned facilities and provided these for respite from the heat when they were open. Two outreach services approached had increased social work intervention to try to assist clients to
access accommodation, or to help transport clients to appropriate locations during extreme heat.

Resource availability directly impacted on service provision in extreme heat. It was recognised that there was a need to increase resources to enable day centres to extend their opening hours. Three SPs indicated that they extended opening hours if they had sufficient staff available to provide a safe environment.

It was noted that prolonged heat-waves raised the need for respite dramatically. SPs said there was a dramatic increase in heat-related conditions on the third day of a heat wave, but only two SPs said they had a planned strategy to increase staffing resources to meet that demand during heat waves.

**Extreme cold or storm**

Extreme cold in Adelaide is understood as ‘near freezing temperatures” and ‘extreme storm’ as heavy rainfall, conducive to flash flooding; damaging wind and/or damaging hailstones (South Australia State Emergency Services 2011 p3). The impact of extreme cold is made worse when wind speed increases, which raises the chill factor. SPs were asked what services they were able to provide to the homeless population during, or after, an extreme cold/storm.

**Extreme cold response plan**

Four SPs said cold did not trigger the same service usage as heat. The effect of cold was seldom as extreme, nor as immediate as that of heat, as this SP suggests:

> You don’t get the big spike with the cold, because large slabs of the community seem to be able to cope with the cold ‘cos they’ve got the ability to warm their houses and wear more clothes etc. SP2

Only one SP stated they had a service specific plan for extreme winter conditions. The majority of the SP-initiated action based on individual staff or volunteers’ judgment regarding local conditions. Recognition of high risk groups was
seen to be important, particularly identifying clients whose decision-making or judgement was impaired.

However, another SP commented that the adverse impact on clients doesn’t really discriminate in terms of extreme heat or cold, because they both adversely impact people who are homeless. However, in terms of emergency responses, Adelaide was geared towards the heat rather than the cold and those living in the cold and wet with little opportunity to dry out and warm up do become vulnerable to disease. One SP commented on the lack of resources made available to meet the client’s needs in the cold and stated:

*I think it’s dramatic when it’s hot weather. but from a client group sleeping out and doing it tough I think there are more issues in terms of extreme cold.* SP10

It may well be that heat-waves affect the whole community, because after a few days of excessive heat all houses bank the heat and become quite uncomfortable. Even those who are not homeless experience this discomfort, whereas in the cold and wet weather most sheltered people can turn up the heat in their homes and they can layer up their clothes, and dry out their wet footwear so there is it less generalised discomfort in the population at large.

**Effects of extreme cold or storms on the health of the homeless**

Eight SPs noted that homeless clients’ health needs are complex and extensive. This adversely impacted on their ability to cope with extreme cold and wet. SPs had noted their clients had an increased susceptibility to respiratory infections and pneumonia. SPs had a high level of awareness of the risk to their most vulnerable clients and assessed the clients’ ability to self-care. These examples demonstrate:

*… have they got access to ways to keep themselves warm, e.g. we’ll go get them a blanket and that sort of thing.* SP7

*some people may have mental health needs and they may need additional support because their judgement is impaired due to their health condition.* SP 4
One SP claimed hypothermia had a high mortality rate and significant morbidity associated with it, while four SPs reported that deaths due to cold-related factors were not a rare occurrence in Adelaide. The comments below illustrate this:

Hypothermia is a common occurrence in people who are living in the elements long-term, so that’s the group you need to watch closely re their health. SP2

In the cold some psychiatric medication creates a drop in body temperature, so if they’re caught out in the rain and lay down somewhere and go to sleep, they’re at a much higher risk of dying. Yep we’ve had 3 deaths in the last 2 years which I think were in those circumstances … SP6

Four SPs commented on high rates of pneumonia, which is thought to be related to, or exacerbated by cold wet weather. Other health issues identified by SPs relating to extreme cold/wet include:

- exacerbation of asthma;

- increase in respiratory illnesses;

- the low immunisation uptake for the flu vaccine in 2011 increased the susceptibility of this high risk client-group to influenza;

- increase in drinking in the cold weather to keep internally warm;

- weather tends to exacerbate sadness and depression;

- increase in skin infections;

- increase in foot problems, such as open and infected sores.

A large number of foot problems occur as this SP says:

Homeless people are reliant on their feet to get here, there and everywhere. They don’t have adequate shoes, socks, or foot care/hygiene so, there are many and issues with podiatry. Many
problems are worse in the cold due to circulation issues and constant wetness, but they are also bad during hot weather. SP7

The SPs note that the struggle to locate accommodation increases in winter. They note that some clients are difficult to contact during extreme cold as they 'couch surf' or move into suburbs where there may be warmer, more sheltered options to sleep. Increased non-compliance with medication is seen at this time as clients are more reluctant to move out and about in the extreme wet/cold as this SP noted:

Sometimes there’s an increase in non-compliance from my regular clients on medication that I distribute, because they just don’t want to come out. SP6

The centre-based facilities provide warm environments and some provide hot showers and clothes driers. Two SPs stated they would keep their doors open for a longer period of time and, another said that they had stayed open to provide unplanned temporary relief from the elements even when they were full, but they bore the additional cost of this service from their very tight budgets.

The SPs increased their nutritional emphasis in winter with a number of SPs providing a winter menu complete with warm drinks for clients who are rough sleeping.

SPs noted the wet exacerbates the effect of cold, and the capacity of clients to keep their clothing and footwear dry is an ongoing issue. They aim to provide adequate clothing and blankets and driers to help dry clothes and they have additional supplies of socks, jumpers, coats and footwear which they view as important prevention activities that are easy to provide.

SPs don’t have an ongoing supply of shoes and things like that, so people have cheap sneakers that will be rotting once they get wet so their feet are always wet and wounds and sores appear and cannot heal. It is a perfect breeding ground for infection. SP7
Some clients with reduced cognitive ability, or mental health issues actually need reminding to change their wet clothing and the centres don’t always have sufficient facilities to provide fresh dry clothing, bedding and footwear.

**Issues experienced with service provision**

The SPs consistently commented that demand for accommodation exceeds their capacity to meet it and highlighted the need for an increased supply of adequate housing. As one SP stated:

> I’m not sure that we need more policies in place to address issues of heat or cold in terms of hypothermia or heat stress and medical assistance; rather, the issue is providing access to more safe, affordable well-located accommodation. SP8

SPs commented that when their service was full they had no capacity to manage more clients and they experienced difficulty referring clients to other services because although they worked collaboratively, the services to whom they would be referring the client would most probably also be working at their full capacity.

Problems were encountered when clients were discharged from hospital with no way of accessing urgent housing when that person was still unwell. This SP indicated that their clients were often being discharged from public hospitals back to the streets and homelessness, adding there was inability for health professionals to have any ‘sway’ with the housing sector to support a social worker's application for urgent housing. Another SP said the discharge letter might indicate that a client did not wait for the discharge letter, or be vague about this, but the clients will tell the SP:

> I waited and waited, and in the end I just left. SP6

The condition of transitional housing was a concern, with a number of SP comments relating to lack of safety and the inadequate heating and cooling in some accommodation.

Lack of resources impacts on capacity to deliver services. For example, the opening hours of day centres could not be extended during extreme weather
conditions. Reduced resources stopped them from supplying basics such as sun-block and bottled water to meet the demand during heat wave. Clients on foot do not have the capacity to carry large volumes of water, so access points need to be considered. Four SPs identified funding for, and availability of transport to be an issue. Transport and the location of services was identified as an important consideration, as centre-based service providers relied on the clients' capacity to present to them during times of extreme weather, because they did not have outreach services.

The decreased capacity of many of the clients to self-care was an important consideration that affected the effectiveness of service delivery. One SP raised concerns about the clients' inability to call for assistance in extreme weather conditions. Mobile outreach services did play an important role in effective service provision, but one SP felt these services were being reduced while another SP commented that they were crucially important and need to be expanded.

The SPs acknowledged that not all clients want to be housed, and some experienced greater social connection and community when they were on the streets, and for this group, that the connection was more important than shelter from the weather. Some clients did not feel safe accessing centre-based services so SPs said there was a need to provide adequate shelter and facilities for this client group.

**Summary**

The complexity of service provision is illustrated by the diverse range of services provided to the homeless population by a large number of organisations. Not surprisingly, providing respite or shelter from the elements was seen to be the necessary focus of SPs during extreme weather.

SPs have developed policies relating to heat, and implemented strategies to minimise its adverse health effects, but there was less recognition of the impact of extreme cold or storms on the health of the homeless.
I. Phase 4 & 5 gap analysis and recommendations

Findings from the phase 1 data of interviews with people who are homeless were compared with the data from phase 3 participants, service providers to people who are homeless in the City of Adelaide, with the findings being examined to identify service issues and gaps in service delivery during extreme weather conditions. The gap analysis formed the basis for recommendations regarding the types of activities and resources homeless services could provide in response to the identified needs of homeless people at times of extreme weather conditions. A summary of key gaps and points for consideration are discussed below.

Provision of comprehensive and integrated services

Both service providers and people who are homeless agree that there needs to be better integration between and across services/government departments. The gaps in integration are more evident during times of inclement weather. The support of people who are homeless crosses over the jurisdiction of various government departments—such as housing, families, health and local governments, and extends across the services from many not-for-profits and charities. Consequently, clients have to share their story in numerous places, which they find stressful. This can serve as a deterrent to obtaining assistance. Some progress has been made under revisions from the Social Inclusion Board (Social Inclusion Board 2003a); however, much remains to be done. Participants felt that processes used to integrate service responses during times of extreme weather may provide a model for a more comprehensive approach in other areas of service delivery.

Points for consideration

- One key organisation should take responsibility for coordinating service efforts regarding health during extreme weather.
Improved services and access to resources

*Day Centres*

The SA Government’s heat-wave plan states that people who are homeless can obtain: bottled water, basic amenities, storage facilities, sunscreen and hats. Participants who are homeless said there was no problem obtaining water, amenities and storage in summer, but they were only able to access sunscreen and hats *occasionally* in summer.

Two key protective factors identified in the published research indicate socialisation with others, in recreational, non-exertional activity, and air-conditioned environments are both highly protective factors against heat-related illness (Health Canada 2011 p37). Other protective factors include having showers/baths/swims, and having friends who can or do check on the person in the event of extreme weather. Such information underscores the importance of keeping air-conditioned centres open during extreme weather and offering social/recreational activity as an important preventative strategy.

The SES webpage says:-

> ‘agencies across the inner Adelaide CBD extend their services during extreme hot weather …’

Many services claimed to extend their opening hours during extreme weather. The feedback from the homeless participants indicated that extended operating hours was not a common experience during these times. On investigation some SPs were not able to open much longer, and their response was limited at short notice due to staffing and resource issues. The inability to get additional staff to ensure safe operation was the complicating factor. Additionally, there was often a drop in volunteers when the weather was extreme, so services struggled to meet the additional burden of extending their opening hours. If weather was extreme there was a concomitant influx of clients, which required a corresponding influx of staff at short notice. Day services were willing to stay open but they could not always achieve that aim due to these resourcing issues. The State Emergency Service (SES) plan seems to depend more upon the good will of tightly-
resourced community services rather than a coordinated and funded government activity to meet a documented public health risk.

**Points for consideration**

- Lobbying for additional resources to be made available from government on an ‘as needs’ basis when the heat-plan is enacted. This will enable SPs to recruit suitable additional staff to service the client influx during extreme weather.

- Development of proactive staffing plans by Day Centres in the Adelaide CBD in late January/early February, which is the most common time for heat wave.

- Explore strategic opportunities to combine services and staffing resources at times of extreme weather to keep at least one service open longer for homeless people to access.

**Outreach services**

Assertive outreach services are appreciated by people who are rough sleeping, and such services are considered to be the best way to reach this population during extreme weather. Services that come to the usual client sleeping spots ensure these people do not have to travel far to obtain water and necessary heat relief support.

**Point for consideration**

During extreme weather events, outreach services could provide extended hours of care after the day centres close i.e. afternoons and evenings.

- Resourcing would need to be made available for forward planning for such services in times of increased service delivery pressures.

**Health services**

During times of extreme weather many homeless people with multiple co-morbid illnesses need to access mainstream health services. This highlights a problem for them because many of the people interviewed did not want to use mainstream public hospitals unless they absolutely had to. The participants said they felt as if they were judged by their appearance and then ignored,
discounted, or left to wait excessively long times so they felt compelled to leave without being seen. If services are to improve health outcomes for the homeless population during extreme heat there needs to be consideration given to improving these impediments to service access.

The Board (2003b) report ‘Reducing homelessness in South Australia: Everyone’s responsibility’ made a recommendation that the Department of Human Services consider developing systems that identify all homeless people on admission to hospital, provide rapid assessment to identify those who are chronically homeless, and then supply assertive interventions to ensure they are discharged to safe and appropriate accommodation with the necessary community-based supports. They suggested a brokerage fund to provide short term, bridging support to assist the transition from hospital to appropriate accommodation for the chronically homeless. The findings in this study suggest the homeless population is not being defined by hospitals, and many people who are homeless are still being discharged back to homelessness which is adversely impacting their health. This is particularly problematic during periods of extreme weather.

**Point for consideration**

- Many people who are homeless have cognitive, physical or intellectual disabilities. These people need additional monitoring and support from outreach services as they are the most likely to be adversely affected by extreme weather. Those with physical disabilities and mental health issues should be more carefully monitored for medication effects and decreased thermoregulation from medication use especially during heatwaves.

**The homeless participants identified issues with discharge from hospital**

There are a number of difficulties for homeless people who are discharged from hospital on days when the weather is extreme because they have no suitable accommodation to protect them from either the very hot or cold weather. To be discharged without accommodation further impacts on their ability to remain well, and increases the likelihood of their representation back to the accident and emergency service.
Points for consideration

- Need for discharge planning from hospitals that takes into account the weather and the effect it will have on the homeless person’s ability to remain well at times of extreme heat and cold.

- Consideration should be given to expanding nurse-led clinics. These clinics are supported by visiting GPs. These clinics assist in the medication compliance of many people with mental health needs. They provide places where people can get minor wounds dressed and other minor health issues/injuries assessed and attended to.

Information provision to reduce impact of extreme weather

Participants who were homeless indicated that the information that was provided on the SES website was wrong, especially that relating to contacting accommodation services to gain housing—when it was well known that there was such a shortage. One participant said that the website reflected “… an ideal situation, rather than the reality of my experience”.

Point for consideration

- Government and SP websites need to reflect realistic and accessible service delivery options.

Illness Prevention programs

Illness prevention programs such as ‘winter wellness programs’ could be targeted at this population via inner city health services focusing on the homeless population. Such a program could include immunisation campaigns to increase the uptake of flu vaccination and other health promotions pertinent to staying well in the cold and wet weather. Proactive information sheets can be provided to homeless people on how to reduce the impact of cold weather on health.

Point for consideration

- Trial the delivery of winter / summer wellness programs delivered via existing health services and targeted specifically at the homeless population.
Need for community based clinics for foot health

This study has confirmed that people who are homeless have a large number of problems with their feet. These issues are made worse during wet weather when they struggle to keep their feet dry. Service providers have noted this gap in services, saying there is a great need for a foot clinic that can help clients to prevent foot problems. The clinic could be staffed by supervised university health care students in nursing, podiatry, occupational therapy and/or physiotherapy. Clients could receive free services and students could obtain valuable clinical work-experience.

**Point for consideration**

- Continue providing places to wash and dry shoes, socks and clothes during wet weather at day centres.

Need for affordable, accessible transport

SPs requested an on-call transport service that can move people between places when they are ill, or need to attend appointments, especially when the weather is extremely hot. These can be used to transport people who are unwell to warm, dry, or cool locations during extreme weather. People who are homeless also said transport to get to the closest Centrelink office at Norwood was a problem in hot/wet weather.

**Point for consideration**

- An on-call transport service that supports SPs to assist homeless people to move between places when they are ill or need to attend appointments if the weather is extreme.

Need to create surge capacity within accommodation

Services want to find ways to increase their capacity to create room in emergency accommodation during surges in occupancy demand during extreme heat/cold/wet weather.

There is no resource available to provide emergency shelter during extreme weather. Those living on the street suggested a temporary sleeping shelter be erected in the parklands during extreme heat and in extreme we, that could include stretchers that were off the ground.
SPs foresaw problems with such an arrangement because people need to be safe and feel safe in such an open space, and the structure itself would need protection from vandalism. Consequently, this may not be a viable or cost-effective solution, but the notion still requires consideration.

**Points for consideration**

- Cheap locker hire, to store bedding during winter weather. This may pose problems re storage of alcohol and drugs, but the point requires further consideration.
- Development of additional emergency temporary accommodation options to take in more clients during surges in extreme weather.

**Population-needs-based approaches to service planning and delivery**

**Need for more research data**

This study revealed the need for more hard data about the actual health conditions that people who are homeless are presenting with at the various health services in the Adelaide inner city. There are two problems in collecting such data, and they relate to identification of people who are experiencing homelessness and then categorising that finding into one of the three types of homelessness identified by ABS. A more accurate picture of the impact of extreme heat and cold would be achieved, so that appropriate service costing can be made. Suggestions for data collection include:

- Prospective presentation studies from actual Accident and Emergency presentations to major metropolitan hospitals. Need for accurate data sets re hospital and health service usage data about the homeless population. The same study could be carried out across heat-wave conditions and extreme cold/wet weather. In this way the lag effect of health issues can be measured over several years. Such information will help services to plan for demand increases, so more preventative measures can be employed once conditions are recognised.
- Presentation and service-use data from RDNS nurses located in homeless services. The baseline data to be collected should include:
  1. **Demographic** – date, gender, age, category of homelessness i.e. housing arrangement
2. **Health data** – presenting problem (use diagnostic categories), treatment provided, co-morbid health issues (use diagnostic categories), discharge plan.

**Need for comprehensive health-worker education**

There is strong evidence about the negative relationship between specific drugs/medications and adverse effects upon the body’s thermo-regulatory mechanism which places the user at increased risk of heat-related illness. Some known medications that increase health risk include anti-adrenergic and beta blockers, anti-cholinergic, antidepressants, antihistamines, anti-Parkinson’s agents, antipsychotics, sympathomimetic, and diuretics (Health Canada 2011). Consequently, people who have cardiovascular, neurological, pulmonary, renal, or metabolic diseases/conditions, mental illnesses or behavioural disorders are at increased risk of heat-related illness. Given the high incidence in the homeless population of co-morbid conditions, especially serious mental illness, it is important for health-workers to understand the types of medication that place the user at increased risk of heat-related illness.

The body changes occur based on effects on the hypothalamus, heat perception, altered cardiac output and/or peripheral vasodilation, changes in sweat rate and alterations to renal function, electrolyte balance and hydration (Health Canada 2011 p40). Consequently, health professionals need to take the client’s lifestyle and risk of exposure to extreme weather into account when prescribing certain medications. Quantifying this risk is challenging as there are multiple contributing factors in most heat-related illness. These can include poly-pharmacy, physiological variance, pathophysiological predisposition, and level of acclimatisation, the level of environmental exposure—which includes the actual temperature, conditions and duration of that exposure (Health Canada 2011 p41).

**Point for consideration**

There is a need to continue to develop education packages and communication strategies to inform health workers and the community re extreme weather. Good examples are available from Health Canada (2011) and Department of Health: National Health Service (2007). For example, there is a need that community-based health workers and health services to the homeless have a sound knowledge of the medications that can provoke heat-related illness. These include:
- medications that cause dehydration and electrolyte imbalance, like diuretics, drugs that cause diarrhoea and vomiting, e.g. antibiotics, Colchicine, and Codeine;

- medications that affect renal function e.g. NSAIDs, sulphonamides, Indivri, Cyclosporin;

- medications where the levels are affected by dehydration e.g. Lithium, Digoxin, anti-epileptics, biguanides, and statins;

- medications affecting thermoregulation by central action e.g. neuroleptics, serotoninergic agonists;

- medications affecting thermoregulation by interfering with sweating e.g. anti-cholinergic – Atropine, Hyoscine, tricyclics, H1 (first generation) antihistamines, certain antiParkinsonian drugs, certain antispasmodics, neuroleptics, Disopyramide, and anti-migraine agents;

- medications affecting thermoregulation by modifying the basal metabolic rate, like Thyroxine;

- medications affecting cardiac output e.g. beta blockers, diuretics; plus those affecting circulation e.g. vasoconstrictors, antihypertensive and anti-anginals which reduce arterial pressure and that exacerbate the effects of heat.

- medication that alters one’s state of mental alertness.

(This advice comes from Department of Health - National Health Service 2007 p9).

**Need for inter-service collaboration**

This study highlighted the need to develop a coordinated cold weather plan for Mediterranean climates such as Adelaide. Such a plan needs to define who is responsible for what, and who is taking responsibility for coordinating the various needed responses.
Documenting and sharing lessons learnt after the fact for others to learn and develop proactive protocols and plans to assist this vulnerable population during weather extremes.

**Points for consideration**

- Need to develop inter-service collaborative networks to implement extreme weather protocols. Evaluate, review and refine the protocols with all relevant services each time it is used.

- Need to develop support materials and coordinated education programs to ensure all the relevant workers in the key services provider groups are fully aware of the collaborative arrangements across services during extreme weather events.
References


http://www.nationalhomeless.org/publications/winter_weather/report.html


Appendix 1. Participant information sheet

Hello, we want to find out about your health care needs during very hot and very cold and wet weather. We need you to:

- volunteer to have a personal and confidential chat, or
- attend a small group discussion with other people who are homeless at the Hutt Street Centre.

The discussions will be run by an experienced nurse on our research team.

You can stop and leave at any time.

If you do not want to join in, it will not affect any care that you get from the RDNS nurse or the Hutt Street Centre.

How long will it take?

We will chat for about 30 minutes. We may want to chat to you again a second time at a later date.

Where and when will it occur?

We will have the discussion at the Hutt Street Centre at a time that suits you.

What are the questions about?

Your health, and your health care needs during very hot, very cold or wet weather.

What do you need to know about me?

We don’t want to know your name or personal information, but we do want to know your age, gender, health issues, and your thoughts about the discussion topic. Your information will be anonymous to protect your identity.

You can see the transcript of the discussion that you participated in if you want to. Let the researcher know if you want to see it.

What is the research about and how will it help me?

This study will help government and service providers to understand how extreme weather affects your health. It will help us know what are the most useful services, and where, when and how to provide them to you, so we can prevent you getting sick from bad weather. We will know how to support people who are homeless to prepare for, and cope with extreme hot/cold/wet weather.

For helping us get this information we will provide you with a $20.00 food voucher at the end of our discussions.

What if I get upset?

The questions are not private, but if you feel upset the researcher interviewing you will make sure you can speak to your counsellor or the RDNS nurse at the Hutt Street Centre.

Who do I contact to be part of this research?

Please speak to the RDNS Nurse Jan

Who are the researchers?

Anne van Loon from RDNS will be the person chatting with you. The research team members are Prof. Paul Arbon and Dr Lynette Cusack from Flinders University, and Dr Debbie Kralik and Dr Anne van Loon from the Royal District Nursing Service of South Australia.

If you have any concerns about what we are doing, please ring Professor Arbon on 82013558 and he will be happy to talk to you.
The Flinders University Social and Behavioural Research Ethics Committee (if you want to talk to an independent person) about making a complaint, or raising concerns about the conduct of the project, or the University research policy, or your rights as a participant. Contact the Research Ethics Committee’s Executive Officer by phoning 8201 3116.
Appendix 2. Consent form for participation in research

Health care needs of Adelaide inner-city homeless people during extreme weather.
I.................................................................................................................................
being over the age of 18 years hereby consent to participate as requested in the Letter of
Introduction/Participant Information Sheet for the research project looking at the health care needs of
people who are homeless during extreme weather, and are located in the Adelaide inner-city. The details of
procedures and any risks have been explained to my satisfaction.

1. I agree to audio recording of my information and participation.
2. I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.
3. I understand that:
   □ I may not directly benefit from taking part in this research.
   □ I am free to withdraw from the project at any time and am free to decline to answer particular questions.
   □ While the information gained in this study will be published as explained, I will not be identified, and
     individual information will remain confidential.
   □ I may ask that the recording be stopped at any time, and that I may withdraw at any time from the session
     or the research without disadvantage.
4. I agree/do not agree to the tape/transcript being made available to other researchers who are not members
   of this research team, but who are judged by the research team to be doing related research, on condition
   that my identity is not revealed.

Participant’s signature………………………………….Date……………………

I certify that I have explained the study to the volunteer and consider that she/he understands what is
involved and freely consents to participation.

Researcher’s Name: Anne van Loon

Researcher’s signature…………………….. Date……………………
Appendix 3. Copy of interview questions (Participants who are homeless)

Demographics

Age/ Gender

Questions

1. Please tell me about the health issues or medical conditions you are living with?
2. How does very hot weather make you feel?
3. How does very hot weather affect your health issues or medical conditions?
4. Do you spend time at emergency services during this time? If so what are the main reasons for this?
5. What types of services or support would help you to manage your health during these weather conditions?
6. How does very cold or stormy weather make you feel?
7. How does very cold or stormy weather affect your health issues or medical conditions?
8. Do you spend time at emergency services during this time? If so what are the main reasons for this?
9. What types of services or support would help you to manage your health during these weather conditions?
10. Is there anything else you think we can do to help you cope better during extreme weather conditions?
Appendix 4. Letter of Introduction to Service providers

(Managers) LETTER OF INTRODUCTION

Dear

My name is Paul Arbon and I am a Professor in Population Health at Flinders University School of Nursing and Midwifery. I am leading a research team with the Royal District Nursing Service SA, that will be looking at the health care needs of people who are homeless, in the inner-city area of Adelaide, during extreme weather events. This research is important because it will assist homeless services to understand what the health care needs are of people who are homeless during extreme weather events. These events include extreme heat during summer, and extreme cold, near freezing temperatures, and/or storms.

We want to collect information from service providers via a face-to-face or telephone interview. The interview is to find out about the planned and informal activities and responses that government and non-government organisations provide during these times of extreme weather. It is anticipated that the interview will take 30 minutes of your time. We may need to contact you for a second interview at a later date if necessary.

This information will help us to undertake a gap analysis to identify how government and non-government organisations can best support people who are homeless to prepare and cope with extreme weather conditions, in order to avoid health related complications.

Please be assured that any information provided will be treated in the strictest confidence and none of the participating health services will be individually identifiable in the resulting report or other publications. You are free to discontinue participation at any time.

Should you or another representative of your organisation be interested in participating please find an Information Sheet attached with the researchers’ contact details.

The research team consists of Prof Paul Arbon and Dr Lynette Cusack from the School of Nursing and Midwifery, Faculty of Health Sciences, Flinders University, Adelaide, South Australia; Adjunct Professor Debbie Kralik and Dr Anne Van Loon from the Royal District Nursing Service of South Australia.

If you have any enquiries please direct them to me using the following contacts: ph 82013558 (office), 82013760 (fax), or email paul.arbon@flinders.edu.au.

Professor Paul Arbon  AM

School of Nursing and Midwifery
Faculty of Health Sciences
Flinders University

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 5068).

For more information regarding ethical approval of the project or any ethical concerns the Executive Officer of the Flinders University Social and Behavioural Research Ethics Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au.
Appendix 5. Copy of interview questions (Participants who are service providers)

Within the inner-city of Adelaide:

Describe the type of services your organisation usually provides to people who are homeless.

1. What type of planned services have you been able to provide to people who are homeless during heatwaves or very hot weather?
   a. Are these services provided by anyone else?
   b. How are these additional services resourced? (eg staff, products, funding, places)
   c. Why are you providing these services?
   d. What sorts of additional health needs are present in clients using your service during very hot weather?
   e. Where and by whom are these health needs being met?
   f. How are the health needs being met? What is being provided?

2. What type of planned services have you been able to provide to people who are homeless during very cold weather or storms?
   g. Are these services provided by anyone else?
   h. How are these additional services resourced? (eg staff, products, funding, places)
   i. Why are you providing these services?
   j. What sorts of additional health needs are present in clients using your service during very hot weather?
   k. Where and by whom are these health needs being met?
   l. How are the health needs being met? What is being provided?
   m. Are there any gaps in services to this population during times of extreme weather about which you are concerned? If so, what are they and who should provide the service considering access by clients, efficiency of service delivery, resourcing of services etc.