

REDUCING HARM TO OLDER PERSONS IN VICTORIA FROM EXTREME HOT WEATHER



**Final report to the Department of Human
Services, Victoria.**

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Authorship

This overview report was prepared by Joseph E Ibrahim and Judith McInnes based on all the work completed from each component of the project.

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Project Team and Reference Group

Project Team

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List of abbreviations, definitions and terms

DHS	Department of Human Services
GP	General Practitioner
GPV	General Practice Victoria
HACC	Home and Community Service
RACF	Residential Aged Care Facilities
RDNS	Royal District Nursing Service

Elderly: is used to refer to people who are aged 65 years or over.

Extreme hot weather: an episode of 'extreme hot weather' is referred to as a 'heatwave'.

Heat-related illness and Heat-related death: refers to a spectrum of disorders caused by exposure to excessive environmental heat, including sunburn and fatigue, heat rash, heat cramps, heat syncope, heat exhaustion, and heat stroke. The most serious of these are heat exhaustion and heat stroke, which can lead to death.

Heat-associated illness and Heat-associated death: Not all deaths and illnesses occurring in association with heatwaves are recognised as part of the spectrum of heat-related spectrum of disorders, but rather are due to an exacerbation of pre-existing illness. Therefore, the terms 'heat-associated illness' and 'heat-associated death' are used to refer to the full spectrum of the health burden attributable to heatwaves.

Introduction

Episodes of extreme hot weather, also known as heatwaves, are an environmental hazard. Evidence that heatwaves pose a significant threat to public health has been provided by observations of large short-term increases in mortality and morbidity occurring in association with heatwaves in temperate regions of the Northern hemisphere^(1, 2). For instance, it is estimated that in 2003, up to 70,000 additional deaths occurred over the summer months in Western Europe as a consequence of severe heatwaves⁽³⁾, with those particularly affected being the elderly.

In Australia, the health burden of heatwaves has been less extensively documented. However, it is estimated that more than 4,000 deaths have occurred over the past 200 years as a consequence of heatwaves, twice the number caused by cyclones or floods over the same period of time⁽⁴⁾.

Those most likely to die in heatwaves are the elderly⁽⁵⁾, particularly those who are socially isolated^(6, 7), suffering from chronic illness⁽⁸⁻¹⁰⁾, and having limited ability to care for themselves^(6, 9, 10). Deaths occurring during heatwaves are commonly due to exacerbation of pre-existing illnesses⁽¹¹⁻¹³⁾, and often occur rapidly before medical assistance can be sought⁽¹⁴⁾.

Climatologists have concluded that, as a consequence of global warming, heatwaves are likely to occur more frequently in the future, and to be more intense and longer lasting^(15, 16).

In Melbourne, the number of days each year over 35°C is predicted to rise from a current average of 9 days to up to 26 days by 2070⁽¹⁷⁾. Other factors that will increase the number of people at risk of harm include the ageing population, and increased urbanisation since cities create urban heat islands with their heat-absorbing materials and lack of vegetation, highlighting the significance of heatwaves as a public health concern in the future⁽¹⁸⁾.

In response to past experience, or as a proactive response to a perceived threat, a number of cities and regions in the world have developed heatwave harm minimisation strategies including heatwave response plans that provide details of actions to be taken by agencies and individuals when heatwaves are forecast.⁽¹⁹⁾

Many such plans utilise the services of existing health organisations to provide interventions that minimise the impact of heatwaves on vulnerable groups.

There is evidence that these heatwave response initiatives have been effective in reducing the impact of heatwaves on exposed populations ⁽²⁰⁻²²⁾.

In Australia, only Queensland has an operational heatwave plan.

Project Brief

As part of the Victorian Climate Change Adaption Program, the Environmental Health Unit of the Department of Human Services (DHS) commissioned a study by Monash University Department of Epidemiology and Preventive.

The DHS Brief for Project Objectives is:

“To undertake a survey of health professionals and carers of the elderly, to determine their level of knowledge regarding the risks to the elderly from extreme weather events, and their ideas about useful adaptation strategies to minimise health impacts in this group.”

To address the objective this study examines the current knowledge of the health effects of heatwaves, the national and international experience of successful heatwave risk reduction strategies, and the awareness and practice of Victorian health professionals and carers regarding heatwaves and the elderly. This information informs the development of a Heatwave Response Plan for Victoria.

The study used three different approaches to surveying health professionals and carers of the elderly. These included a survey using semi-structured interviews with key stakeholder organizations, a quantitative survey using a closed ended questionnaire and a qualitative survey using open-ended questions of health professionals and carers.

Report outline

This is the final report for the *'Reducing harm to older persons from extreme hot weather project'* prepared by the Department of Epidemiology and Preventive Medicine, Monash University, for the Environmental Health Unit of the Department of Human Services (DHS) Victoria.

The aim of this final report is to integrate the information gathered from the different components of the project and highlight findings potentially relevant to minimisation of harm to elderly clients due to extreme hot weather in Victoria. Included in the Appendices of this report are a 'List of Resources' and a summary of our findings along with a listing of interventions 'A Public Health Approach and Ideas to Reduce Harm to Older People in Victoria from Heatwaves'.

Alongside this report are four attachments consisting of extensive and comprehensive self-contained reports: Attachment 1 is a review of the scientific literature. The next three attachments report the outcomes of different surveys; Attachment 2 is the stakeholder consultation survey, Attachment 3 is the Quantitative analysis and Attachment 4 Qualitative analysis of the questionnaire of health professionals and carers.

To inform the development of the surveys a detailed literature review was completed. It also provided an overview of current national and international practice to identify current knowledge of the relationship between extreme hot weather and health, vulnerable groups and risk factors for heat associated illness, and of harm minimisation strategies.

The Stakeholder consultation identified current practices, ideas about useful adaptation strategies to minimise health impacts in the elderly and the organisational capacity of Victorian health profession and carer organisations.

The Quantitative analysis of the questionnaire survey using close-ended questions investigated the awareness, knowledge, practices and knowledge gaps of health professionals and carers regarding the minimisation of harm to elderly clients due to extreme hot weather.

The Qualitative analysis of the questionnaire survey using open-ended questions investigated the health professionals and carers ideas about useful adaptation strategies to minimise health impacts in the elderly.

Research Aims

In order to inform the development of effective strategies for the public health response and harm minimisation relevant for use in Victoria, Australia this project sought:

1. To review the local and international experience, knowledge and practices regarding the health effects of heatwaves, and heatwave risk reduction strategies
2. To investigate the current practices of selected Victorian health profession and carer organisations with regard to the minimisation of harm to elderly clients during extreme hot weather, and to gauge their capacity to implement risk reduction strategies in the future
3. To describe the awareness, knowledge and practices of six different stakeholder groups about the adverse health effects of extreme hot weather on their elderly clients.
4. To describe ideas about adaptation strategies to minimise health impacts in the elderly from health professionals, carers and

Project Method

The study used multiple methods to address the research aims and assisted by a reference project group. To assist the readers understanding the information is presented in the following order: an overview of the issues through a review of the published literature, the stakeholder consultation and the questionnaire survey of health professionals and carers.

Literature review

An extensive search and detailed review of the published literature was made, utilising a broad search strategy, to identify the material required to address the key questions of the project brief.

Information was sought from peer-reviewed journals (1985-2008), Government and International agency reports and publications (2000-2008), conference proceedings, and relevant text-books,

through searches of library databases, bibliographies of retrieved articles, contents of relevant peer-reviewed journals, and search of internet web sites.

Key words used for the search: included: heatwaves, heat waves, heat-related mortality, heat, temperature, ambient temperature, weather, mortality, morbidity, elderly, aged, frail aged, emergency, emergency response plan, heatwave response plan, time-series analysis, excess deaths, heatstroke, public health, climate change, global warming.

Additional information was sought directly from Government Department, Universities and other professional organisations in Australia and internationally, by email and telephone.

Survey: Stakeholder Interviews

A qualitative study using semi-structured interviews of employees of five stakeholder groups who have a key role in supporting the health of Victorians aged 65 years or over. Participating groups included General Practice (including General Practitioners, Practice Nurses, and General Practice Victoria (GPV)), Royal District Nursing Service (RDNS), Bapcare, Home and Community Service (HACC)-funded Local Government Organisations, and DoCare. Henceforth, this component of the project will be referred to as the “Stakeholder Consultation”.

Thirteen people representing senior and middle levels of management were interviewed at their workplace or by telephone from September 2007 to February 2008. Data collected during interviews was checked and verified by participants prior to the thematic analysis.

Survey: Quantitative and Qualitative Questionnaire

A cross-sectional study of the staff of six health profession and care provider groups in Victoria, Australia was conducted using an anonymous, structured survey in electronic and hard-copy format, from June 2008 to September in 2008.

The survey instrument consisted of 32 questions in eight sections designed to collect information about demographic and professional characteristics, awareness and knowledge of extreme hot weather, knowledge of thermoregulation, heat-related illness, risk factors for illness and death

during hot weather and the use of fans, and information about current practices and interventions to reduce heat-related illness.

Descriptive statistics were used to summarise information gathered from 327 responses. These included nurses employed at the Royal District Nursing Service, care managers employed by Baptistcare, practice nurses working in General Practice Clinics, Nurse Unit Managers employed by the Public Sector Residential Aged Care Facilities (28%), Home Care providers and delivered meals volunteers employed at eight of the 79 Local Governments (34%) and General Practitioners (3.4%).

Reference Group

The reference group meet the project team on three occasions. Their expertise informed the project plan, methods and the interpretation of the findings.

Ethics approval

Approval for the project to proceed was received from the Monash University Standing Committee on Ethics in Research involving Humans.

Project Findings

Nature and extent of harm

Definition of a heatwave

A general definition of a heatwave is “a prolonged period of excessive heat”. The term heatwave is difficult to define because of the desire to capture the response of the population to extreme hot weather and the meteorological characteristics. The variation between and within populations, characteristics, geographic location, capacity and opportunities for acclimatisation and heatwave characteristics leads to multiple definitions of the term ‘heatwave’.

There is not a single standard national or international definition. Common features of the definitions include describing an event threshold and duration observed to be associated with increased morbidity and mortality of the population.

Thresholds are values of meteorological conditions that reflect the vulnerability of the population under study, and may refer to a specific temperature or a derived heat indexes.

A threshold maximum temperature above which mortality is observed to increase in eastern Australian cities is approximately 28-30°C.

In Melbourne, thresholds of daily average temperature greater than 30°C, and daily minimum temperature greater than 24°C, have been found to be associated with increased mortality rates for those aged 64 years or older. An average temperature of 30°C has been shown to result in a 4-10% increase in admissions for myocardial infarction to Melbourne hospitals.

A temperature threshold for a heat wave has already been established and published for Melbourne based on the previous results. Also additional work is commissioned and currently underway to develop temperature thresholds for regional areas through Victoria.

Somewhat surprisingly the survey respondents nominated a ‘hot day’ to have a mean maximum daytime temperature of 32°C, and a ‘hot night’ to have a mean minimum overnight temperature of 22°C. This is remarkably similar to the established temperature thresholds for Melbourne.

Heatwaves cause death

Specific heatwave events in the Northern hemisphere have been associated with marked short-term increases in mortality, with reported excess mortality ranging from 4% to 142%. It is estimated that in 2003, up to 70,000 additional deaths occurred over the summer months in Western Europe as a consequence of severe heatwaves. A disproportionately large fraction of excess deaths occurred in hospitals and nursing homes during the 2003 heatwave in Europe, where air-conditioning was uncommon in these facilities.

While the health burden of heatwaves has been less extensively documented for Australia than for the Northern hemisphere, it has been estimated that more than 4,000 deaths have occurred over the past 200 years as a consequence of heatwaves.

Many deaths occurring during heatwaves are not clinically apparent as being due to heat, so it is likely that the number of heat-related deaths is underestimated.

However, few studies have investigated the effects of extreme hot weather on population morbidity.

Overall a large proportion of the survey respondents demonstrated that they were aware that an episode of extreme hot weather is likely to be harmful for older people in Victoria. More than 90% of all respondents agreed that a heatwave *'is likely to cause older people who are already ill to become sicker'* and that a heatwave is *'likely to be associated with an increased number of older people dying'*.

Cause of death

Deaths occurring during heatwaves are not always due to hyperthermia but are often due to an exacerbation of underlying cardiovascular, respiratory or other disease. Only a small proportion of these deaths appear to be due to the forward advancement of deaths expected to occur in the near future.

Deaths occur early in a heatwave

The death toll from a heatwave occurs early in the event, with many people succumbing quickly, often before they are able to reach medical help, or be noticed by others.

Therefore effective strategies for prevention of harm from heatwave incorporate the need for pre-emptive and very early action in response to the onset of the event.

Known risk factors for harm

Factors that influence the risk of illness and death during heatwaves include characteristics of the heatwave event itself, as well as characteristics of the exposed individuals, and the environment in which they live.

Heatwave factors

Heatwaves having the greatest impact on health are those occurring early in the summer season, particularly in cities and locations where populations have had little experience of sustained periods of hot weather; several consecutive days of extreme temperatures, with high night-time temperatures are the most lethal.

Overall more than 90% of survey respondents correctly nominated the heatwaves characteristics that increasing the risk of illness or death.

Human factors

There are physiological and behavioural responses that help to keep body temperature normal in hot weather. The physiological responses include sweating and increased blood flow to the skin.

Age-related changes can diminish the effectiveness of thermoregulatory responses, as well as thirst and renal mechanisms for regulation of body fluid balance.

The behavioural responses include reducing activity, seeking cool environments, wearing loose, light clothing, and using cooling devices. Vulnerability to extreme hot weather is increased in individuals with compromised physiological responses to excessive heat, those who have reduced ability to modify their behaviour in order to care for themselves or reduce their exposure to hot weather

conditions, and those who have limited access to resources such as air-conditioners, shelter, transportation, cool spaces, and drinking water.

The survey identified a potential gap in knowledge in thermoregulation, sweating and heat related illness. Overall 62% of respondents had a very sound knowledge of thermoregulation. However, knowledge about sweating was poor with only 9% of respondents correctly answering all four items.

Co-morbid disease factors

Pre-existing illnesses most strongly associated with an increased risk of death during heatwaves are cardiovascular disease, psychiatric illness, cognitive impairment and other neurological disorders, respiratory disease, cancer, diabetes and obesity.

These illnesses, and medications used in their treatment, may increase vulnerability through compromising thermoregulation, mobility, awareness of a hot environment, and the ability to adopt protective behaviours.

Only 23% of respondents provided correct responses to all six statements in the question about heat related illness. A significant gap in knowledge is that only half of respondents are aware that '*pre-existing illness is a main cause of deaths of the elderly during heatwaves*'.

Environment factors: Protective & Harmful

Characteristics of environments in which people live that have been found to increase the risk of death associated with heatwaves include living in geographical locations with variable weather patterns, living in cities, and living in housing that lacks insulation, and has bedrooms located directly under the roof.

Having a working air-conditioner, visiting cooler environments, and participating in social activities have been identified as factors most strongly protective against death during heatwaves. Fans are not considered effective when temperature and humidity are high, and may be harmful if used in enclosed, hot environments.

Only 5% of survey respondents correctly answered all four items of the question about the use of fans. Significant gaps in knowledge are that less than half of respondents identified '*fans do not cool the air*' (38%) and '*fans are less effective on a very humid day*' (40%).

High risk population: older persons

The people most likely to die or be admitted to hospital during extreme hot weather are the elderly (aged 65 years or older).

Those who die are more likely to live alone, to be socially isolated, economically disadvantaged, those dependant on others for care particularly if confined to bed and to have co-existing debilitating diseases, reflecting a complex interaction of physiological, social, behavioural and pathological factors that combine to increase the vulnerability this population group to heat associated morbidity and mortality.

It is this combination of factors that increase the risk of death for older persons. There is a reduced capacity to maintain a normal body temperature and adequate hydration during extremely hot weather because of the effects of ageing, chronic illness and disability, prescribed medication, and social factors.

Chronic illnesses known to be associated with an increased risk of death during heatwaves are more prevalent in the elderly. Also a large proportion of elderly people live alone and social isolation is a risk factor for death during heatwaves.

Survey respondents demonstrated a high level of knowledge of the risk factors for illness and death during hot weather was. Knowledge about protective factors was better than for harmful factors.

Reducing harm

More heatwaves are expected

Climate scientists have concluded that global warming is undoubtedly occurring. It is predicted that extremes of temperature and heat waves will become more frequent, more intense and longer lasting in the future. This is predicted to result in an increase in heat-associated deaths in Australian cities. Therefore strategies for our current and future needs are required.

General: Public Health Strategies

An effective and comprehensive approach for harm minimisation requires consideration of a public health model and relevant strategies.

Mitigation or primary prevention requires action to reduce the frequency and severity of extreme hot weather as well as the impact of hot weather on the population.

Preparedness or secondary prevention requires action to ensure an effective response to protect the population leading up to a period of extreme hot weather.

Response or tertiary prevention requires action to minimise the impact on the population when extreme hot weather is occurring.

The strategies to consider across all three actions include developing healthy public policy; creating supportive environments; strengthening community action; developing personal skills and re-orient health services.

Healthy public policy

Development of healthy public policy requires addressing the factors driving global warming and climate change; urban planning and building regulations; improving the health of the population at risk; improving access to resources that decrease risk of heat associated death and facilitating the development of heatwave response plans.

For example, long term harm minimisation strategies identified include improved building design, the reduction of urban heat islands, reduction of green house gas production, and improved fitness of the population. Strategies that have been reported for reducing the urban heat island effect include applying light reflecting roof paint, improving house insulation, planting trees, using light coloured building materials, installing roof-top gardens, and creating ventilation corridors.

The majority of these issues are beyond the scope of this particular project. However it is worth noting that policies and programs that address the issues of building design, urban planning, social isolation, poor housing conditions and economic deprivation of the elderly also contribute to minimising harm during heatwaves. Examples of these programs include the Red Cross 'TeleCross

Program', and the Housing NSW Care Call program instituted by the New South Wales Department of Housing.

The stakeholder consultation identified that while none of the participating groups currently have formalised proactive or reactive strategies in place to minimise harm to their elderly during heatwaves. As expected, very few survey respondents indicated their workplace currently has a documented emergency response plan. The most positive response was from Local Government and Residential Aged Care Facilities.

All stakeholders groups currently perform a range of activities that contribute to achieving this objective, as part of their usual duty of care.

Recommendation 1: DHS consider incorporating strategies to reduce harm from heat associated deaths into other related policy and program areas, such as urban planning, health and community services.

The strategies that specifically address minimising harm from heatwaves include policies and programs for implementing comprehensive heatwave response plans that use meteorological forecasts to initiate public health interventions and public education to promote modification of individual behaviour.

Create supportive environments

Creating a supportive environment includes ensuring support systems for vulnerable groups (e.g., socially isolated), the availability of local resources (e.g., free drinking water, accessible sheltered areas, parks), the availability of a meteorological service capable of making accurate forecasts with sufficient lead time to allow the institution of preventive measures.

The stakeholder consultation expressed the need for extra resources and training if their agency had to respond regularly to heatwave emergencies. Most interviewees expressed the need to develop specific heat health strategies, and to be part of a coordinated response with other agencies.

Develop personal skills: public education

A number of Government Health Departments and health agencies provide health education programs and written guidelines for personal strategies to minimise harm from heatwaves.

Heat health education programs are directed at a wide audience including the general public, for vulnerable groups, and for health care providers, carers and volunteers.

Guidelines for personal strategies to assist members of the public minimise the health effects of extreme heat for themselves and those around them are made available on web-sites, in leaflet form or in media releases.

However, it is unlikely that passive dissemination of prevention guidelines will be effective if unaccompanied by active outreach to vulnerable groups, since these groups may be unable to access or act upon this type of information.

During a heatwave respondents most frequently agreed they would be able to 'provide advice to those seen on that day', and least frequently agreed they would be able to 'provide treatment to those who are ill because of the heat'.

Interestingly 91% of survey respondents agreed that they have sufficient knowledge and skills of heat associated illness to provide 'general education of clients about prevention of heat associated illness'. Fewer agreed that they have sufficient knowledge and skills to provide 'advice to carers about managing groups of clients' (78%), or that they have sufficient knowledge and skills to provide 'a specific assessment of risk of heat associated illness for individual clients' (74%).

Re-orientate health and community services

The contribution of health and community services to minimization of harm is potentially limited by the availability of staff. All stakeholders are available within business hours with limited access after-hours, on weekends, and public holidays.

RDNS is the most easily contactable by the public, with rostered staff being available 24 hours a day, 7 days a week. Baptistcare also have a 24h call centre available to assist clients. An important point

raised by Local government services is the risk of harm to elderly volunteers during hot weather and the need to have contingency plans in place.

When asked how their organisations would be able to assist in reducing harm to older people in heatwaves respondents most reported by 'providing information to individuals', 'providing information to groups', and 'distributing pamphlets'.

The survey responses suggest a passive, opportunistic, reactive intervention rather than planned, systematic and proactive approaches are the norm. Also very few respondents reported that their workplace currently has a documented emergency response plan. This is potentially a significant public health gap that will need to be addressed.

Strengthen community action

Communities are strengthened by providing information and support to utilise existing resources to enhance self-help, social support, and public participation. For example implementation of an active 'buddy' scheme to check on isolated neighbours.

Specific: Heatwave Response Plan

A heatwave response plan details the actions that government and non-government agencies take in the event of a heatwave being forecast to reduce heat-associated death and illness.

A number of cities have developed Heatwave Response Plans that include two components a warning system and public health intervention.

Heatwave warning system

Heatwave warning systems have been developed for cities using meteorological data to predict the likelihood of predetermined thresholds of heat-stress indicators being exceeded. These thresholds are based on an understanding of the relationship between weather and human health for the population and locality in question.

A state wide heatwave warning system for each major geographic region in Victoria using meteorological data is currently being developed.

Recommendation 2: That the Department of Human Service be the principal coordinating agency and take responsibility for the implementation of a system for identification, forecasting and alerting each geographic region in Victoria of a dangerous heatwave event.

Heatwave response plan: public health interventions

Public health interventions utilised by Heatwave Response Plans around the world have a number of common elements, incorporating an understanding of the sudden onset of heat-related illness, the risk factors for death during heatwaves and of the characteristics of vulnerable groups in populations.

Only two Australian States have any type of operational Heatwave Response Plan: that in Queensland which covers the area of South East Queensland including Brisbane, and a pilot program operating for the Central Coast Region of NSW.

Development of Heatwave Response Plans for each local government area in Victoria is currently underway. The need for specific regional planning is important to ensure the plans are locally relevant and take into account differences in geography, meteorological conditions, the at risk population and nature of existing community services and other infra-structure.

The essential components of heatwave response plan are well recognised and should include:

- (1) Preparations before the heatwave
- (2) Assessment of the risk posed by the heatwave to the exposed population
- (3) A consistent, standardised warning system that is activated and deactivated according weather conditions.
- (4) Use of communication systems and public education programs.
- (5) Public health interventions that target high-risk groups
- (6) Ongoing evaluation of plan effectiveness and revision of the plan.

Preparations before the heatwave

All stakeholder groups expressed the opinion that their organisations have a role to play in the implementation of a heatwave response plan. These roles included co-ordination, identification and contact with high-risk elderly, education of staff and clients, assessment, referral, transportation, treatment and liaison with hospitals, and are based on the utilisation of existing expertise and infrastructure.

All interviewees expressed the view that their organisations would need extra resources and training if required to respond more frequently to a heatwave crisis or if more proactive measures were required prior to summer.

There is broad agreement of the need to develop specific heatwave strategies, and to be part of a wider coordinated response with other agencies.

Recommendation 3: The development of Heatwave Response Plans by local government requires close collaboration and partnerships with the key stakeholders involved in the care of older persons.

Recommendation 4: DHS consider co-ordinating, facilitating and resourcing the development of Heatwave Response Plans for each of the major key stakeholders involved in the care of older persons (this includes RDNS, GPV, RACF).

There is general agreement that heat wave awareness programs before summer for public and for health professionals would be beneficial. This could be linked into the existing practices of the stakeholders.

Overall 59% of survey respondents nominated a '*public health announcement through the media (e.g. TV, radio, newspaper)*' as the most effective way of contacting them with a heat alert.

Assessment of the risk posed by the heatwave to the exposed population

The details are beyond the scope of the project. However, it is worth commenting this is a particularly complex task because of the lack of standardised definitions and variability in risk. We have adopted the general principle that any person over the age of 65 years who requires any of the health or community services provided by the key stakeholders is at increased risk.

A consistent, standardised warning system that is activated and deactivated according to weather conditions.

The details are beyond the scope of the project and the principle is addressed within the development of a heat wave alert and response plan.

Use of communication systems and public education programs.

Communication

The stakeholder consultation demonstrated robust internal organisational communication systems with capacity to reach their staff rapidly. RDNS has an extensive internal communications system, with each staff member carrying a laptop computer and portable internet connection to allow communication via an intranet. GPV uses emails, faxes and newsletters to communicate with General Practitioners, but has limited ability to check that intended recipients have received information. Baptcare and HACC funded Local Government services use mobile phones and face-to-face contact to communicate. Communication with DoCare volunteers is predominantly by telephone and email.

However, external communication is much more varied. In the case of a heatwave emergency representatives of GPV, RDNS and DoCare expected their organisations to be directly contacted by the Department of Human Services whilst Baptcare currently depends on media broadcasts and emergency services web-sites and many Local Government agencies are informed by a Municipal Emergency Resources Officer.

Recommendation 5: That the Department of Human Services develops a strategy with Local Government that alerts health and community agencies and the general public when a heat wave is predicted.

Public education

The stakeholder consultation indicated an information website was useful for professional staff, but of questionable usefulness to their clients since some may be unable to access this.

All organisations were happy to distribute prepared leaflets, but saw a need for these to be in large print and multi-lingual. It was commented that verbal reinforcement of written messages is important.

Recommendation 6: Development of clear, simple consistent general information to educate the public and health professionals is required regarding heat, heat associated harm, harm minimisation and public health strategies being implemented.

Recommendation 7: Development of an approach to address the current gaps in knowledge (e.g., addressing the gaps in knowledge about risk factors for heat stress, around the use of fans) is required.

The survey demonstrated some differences between groups that are likely related to the education, training, roles of the person providing care and the role and resources of their organisation. For example the need for education about risk factors (e.g., medication), vulnerable groups, early signs of heat related illness need to be tailored to the specific role of the professional and to the phase (i.e., pre-summer, summer, during a heatwave).

Recommendation 8: Development of specific education tools appropriate to the roles of the person providing care and for the phase in the public health approach is required.

Public health interventions that target high-risk groups

Health interventions

A wide range of interventions (Box 1) to minimise the impact of heatwaves on the population have been reported internationally.

Box 1 Health interventions for harm minimisation from heatwaves

Provision of information to individuals and groups, about heatwave warnings and avoidance of heat associated illness, through the media, internet, leaflets, emails, telephone calls, direct contact.

A telephone service for the public providing general information, advice and referral to other services.

Designated air-conditioned buildings are used as cooling shelters for the general public.

Provision of transportation to cooling centres.

Cooling centres, i.e., extension of the hours of operation of places where people can seek relief from the heat such as air-conditioned community centres and swimming pools.

Ensuring extra emergency services and hospital staff are available.

Suspension of utility shut-offs due to non-payment during heatwave alert period.

Outreach activities, including home visits to registered at-risk individuals, checking of isolated neighbours using 'buddy' systems, and actively seeking out homeless individuals.

Provision of sources of free drinking water.

Health interventions in current practice throughout Victoria

More than 90% of survey respondents reported that they do something different on excessively hot days to prevent and manage heat-associated illness. The most common is *'provide verbal advice to clients ordinarily seen on that day'*. The least often practiced interventions are *'visiting clients more frequently'*, and *'transporting clients to a cooler place'*.

More than 86% of respondents reported making specific recommendations about managing the heat or heat associated illness last summer. The most common recommendations were *'drink more fluids'* and *'stay indoors'*. The least common recommendation was to *'check on frail neighbours, family or friends'*.

The stakeholder consultation identified significant gaps in capacity and infrastructure throughout Victoria. Specifically: a lack of state-wide outreach programs targeting the homeless; difficulty in contacting General Practitioners after-hours and during holiday periods; a lack of provision of free, publicly accessible drinking water; and lack of air-conditioning in public housing.

Recommendation 9: The Department of Human Services and Local Government systematically review and identify which if any of the common *'health interventions for harm minimisation from*

heatwaves' is locally applicable when developing their heat wave response plans. For example locations may vary in provision of sufficient public access to drinking water, or availability and access to acute health care services after hours when heat stress may be maximal.

None of the participating stakeholder groups currently have formalised proactive or reactive heatwave strategies in place to minimise harm to elderly clients during heatwaves. However, all stakeholder groups currently perform a number of activities that contribute to harm reduction.

RDNS, Bapcare, and HACC-funded Local Government services assess clients' living conditions, advocate for the installation of air-conditioners, provide information and advice, monitor clients, refer clients to other support services if needed, and also incorporate heat health messages in their staff training programs. The Delivered Meals Service and volunteers with DoCare monitor clients and provide regular social contact. General Practitioners are a first port of call for the management of heat-related illness, and may provide prevention advice during appointments.

All organisations discussed a willingness to advocate on behalf of clients to prevent the disconnection of essential services in cases of financial hardship.

RDNS has strategies specifically targeted at the homeless population and the Delivered Meals Service and DoCare provide a form of 'buddy system'.

Recommendation 10: The heat wave response plans being developed by DHS and local government should incorporate strategies to ensure optimal co-ordination between all services by clearly identifying and delineating their roles and areas of potential overlap in each stage of the plan (i.e., mitigation, preparedness and response to heat wave).

Health interventions opportunities to build on current practice

Representatives of all the stakeholder groups expressed the view that their organisation would have an extended role to play in a heatwave response plan, through utilisation of existing organisational structures and staff expertise.

RDNS, with its extensive communication system, nursing expertise and association with hospitals, is in a good position to contribute to a heatwave response with nursing care of the elderly attending cooling centres, conduct outreach programs for the homeless, facilitate speedy hospital admissions, and free up hospital beds for those who are heat-affected.

Baptcare, GPV and HACC-funded Local Government services also saw themselves as having the potential to play a coordinating role.

The Delivered Meals Service, with its wide reach into the community and system of drivers is well placed to deliver bottled water and information packs to the elderly, and possibly participate with transportation to cooling centres.

Both RDNS and Wesley Mission have well organised existing telephone call centres that could possibly be utilised for providing advice and assistance during heatwaves.

GPV could provide educational programs for General Practitioners and Practice Nurses prior to summer. Practice Nurses were seen to have a potential role assessing and providing advice to elderly clients during home visits and elderly health assessments.

Identifying high-risk groups

More than 90% of survey respondents agreed that they would be able to assist with preventive measures to reduce harm from heat associated illnesses. The preventive measure most are able to assist with was *'identify clients at risk of heat associated illness'* and the measure they are least able to assist with was *'contact clients at risk of heat associated illness'*.

The consultation with the stakeholders suggests a range of existing methods available for the identification of high-risk clients. For example RDNS, HACC-funded Local Government services and most General Practice Clinics hold client data on computerised databases. It may be possible to 'flag' clients considered at risk of illness using these databases to identify people at risk of heat associated harm and develop strategies to contact them before and during a heatwave.

Another opportunity to identify high-risk clients prior to a heatwave is possible with RDNS, Bapcare, HACC-funded Local Government services and Do Care who all assess clients and their home environment at initial contact.

At present a major limitation is the absence of a standardised, simple, brief, reliable and valid screening tool that can be used by a range of health and personal care workers to identify those person at high risk.

Recommendation 11: DHS consider testing the existing databases held by the key stakeholder groups (i.e., RDNS, Bapcare, General Practice Clinics) to determine if there is an actual capacity to identify populations that are at high risk of heat associated harm.

Recommendation 12: DHS consider developing a standardised, simple, brief, reliable and valid screening tool to identify populations at high risk of heat associated harm that can be used by a range of health and personal care workers in Victoria.

Recommendation 13: DHS consider undertaking a study to determine the feasibility of screening all persons aged over 65 years, across Victoria, for their risk of heat associated harm at their first contact (or registration) when accessing designated health and community services (e.g., RDNS, HACC etc).

Recommendation 14: DHS and local government consider developing specific mechanisms (i.e. a register of person who are at high risk of heat associated harm) for contacting at-risk groups during a heat-wave (e.g., telephone contact service or links to existing personal alert systems).

Ongoing evaluation of plan effectiveness and revision of the plan.

There has been limited formal evaluation of the effectiveness of heatwave response plans or of individual intervention measures. Four studies of successive heatwaves in the same location have

reported a reduced health impact of heatwaves subsequent to the institution of public health preparedness and response programs.

Surveys of public awareness and response to heatwave warnings have found that while most respondents were aware when heat warnings were issued, less than half modified their behavior as recommended.

Reports of health agencies have provided some insight into the effectiveness of individual intervention measures, including peak access times for telephone help-lines, access to participating agencies, distribution of air-conditioners, utilization of cooling shelters, drop-in centres for homeless individuals, use of shopping centres as cool spaces, and closing of schools when temperatures reach threshold levels.

Recommendation 15: DHS and local government should ensure that the heatwave plans being introduced in Victoria undergo a standardised evaluation that examines whether each regional plan meets the needs of the community, the effectiveness of interventions are assessed and revised at regular intervals. Information from these evaluations should be shared between regions throughout Victoria.

Conclusions

The key finding of this project is there is a broad level of understanding of the dangers of heatwaves, the potential for heat related illness or death and of the protective factors.

However, there is little being done in practice to actively plan, identify and intervene to protect the at risk groups. Most stakeholders provide reactive, advice directed to the individual who presents for care at the time of a heatwave. This leaves the vulnerable older persons in Victoria at risk of significant preventable harm in the event of a heatwave.

To our knowledge, this study provides the first empirical evidence about the level of knowledge and awareness of six different stakeholder groups who work with aged person 65 years and older in Victoria, Australia and internationally. A limitation of this survey is the potential for response bias.

This leads to an overestimate of the actual level of knowledge, interventions in practice and willingness to participate in future interventions. The other limitation is generalising and transferring the findings of the published research is predominant from the Northern hemisphere to Australia.

There are obvious geographic, meteorological, social, community and health system differences.

What is beyond doubt is that stakeholder organisations and individuals have expressed a willingness and readiness to contribute to a co-ordinated strategy that reduces the potential for and actual harm from heat waves in Victoria.

Progress towards minimisation of harm to the elderly in the event of extreme hot weather requires harnessing the interest of the key stakeholders and investment of resources to support the next step, developing a heat wave response plan for Victoria that meets the needs of each geographic area.

Appendices

Appendix 1: List of Resources

Appendix 2: A Public Health Approach and Ideas to Reduce Harm to Older People in Victoria from Heatwaves

Appendix 1: List of Resources

Overview

Kovats, S.R., & Hajat, S., Heat stress and public health: A critical review. *Annual Review of Public Health*, 2008. 29: p. 41-55

Guidelines for personal strategies

Centre for Diseases Control and Prevention. *Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety*. 2006;

Available from: http://www.bt.cdc.gov/disasters/extremeheat/heat_guide.asp.

Centers for Disease Control and Prevention. *Tips for Preventing Heat-Related Illness*, 2006;

Available from: <http://www.bt.cdc.gov/disasters/extremeheat/heattips.asp>.

National Health Service *A Guide to Looking After Yourself and Others During Hot Weather*, 2007;

Available from:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsandPolicyAndGuidance/DH_4135302?IdcService=GET_FILE&dID=15305&Rendition=Web

Toronto Public Health. *Summer Safety Tips to Beat the Heat* 2008; Available from:

<http://www.toronto.ca/health/heatalerts/index.htm>.

Heatwave response plans

Toronto Public Health. *Hot Weather Response Plan Update, November 20, 2007*;

Available at: <http://www.toronto.ca/legdocs/mmis/2007/hl/bgrd/backgroundfile-8918.pdf>.

United States Environmental Protection Agency. *Excessive Heat Events Guidebook*. 2006;

Available at: <http://www.epa.gov/heatisland/about/heatresponseprograms.html>.

Koppe, C., Kovats, R.S., Jendritzky, G., Menne, B., ed. *Heat-waves: risks and responses*.

Health and Global Environmental Change No.2. 2004, World Health Organisation: Copenhagen.

Available at: <http://www.euro.who.int/document/globalchange>

Heatwave response planning and evaluation

Kovats, R.S., Ebi, K.L., *Heatwaves and public health in Europe*. *European Journal of Public Health*, 2006. 16(6): p. 592-599.

Appendix 2: A Public Health Approach and Ideas to Reduce Harm to Older People in Victoria from Heatwaves

The following model of a public health approach to the minimisation of harm to older Victorians from heatwaves incorporates findings from the literature review and research components of this project. The model is based on the five strategies for action described in the Ottawa Charter for Health Promotion ⁽²³⁾: develop health public policy, create supportive environments, strengthen community action, develop personal skills, and reorient health services. A number of interventions are suggested at the end of each section of the chart. A number of these are outside the scope of this particular project, for example those concerning the development of policy to address climate change, but are included for completeness.

	Goal: To minimise harm to the elderly due to exposure to excessively hot weather.		
	Health outcomes: Reduction in avoidable mortality and morbidity amongst elderly population during heatwaves.		
Public Health Strategies	Primary prevention	Secondary prevention	Tertiary prevention
	Mitigation: reduce severity of the impact of extreme hot weather	Preparedness: activities to ensure effective responses to the impact of extreme hot weather.	Response: Actions taken immediately before, during and after an episode of extreme hot weather has occurred.

1. Develop healthy public policy

1. Develop healthy public policy	<p>ADDRESS CLIMATE CHANGE Policy to address drivers of climate change:</p> <ul style="list-style-type: none"> • Green-house gas emission controls • Carbon trading schemes • Decrease dependence on cars as means of transport • Research and development of 'cleaner' sources of energy • Reduce forest degradation/promote replanting schemes. <p>REDUCE ENVIRONMENTAL RISKS</p>		
<p>Include a consideration of the health effects of heatwaves in all policy decisions, in all sectors, and at all levels</p>			

	<p>Urban planning/building regulation policy</p> <ul style="list-style-type: none"> • Building regulations • Urban planning to reduce urban heat islands <p>REDUCE INDIVIDUAL RISKS</p> <p>Address, manage, prevent:</p> <ul style="list-style-type: none"> • Chronic disease, obesity, cancer. • Homelessness • Social isolation • Socioeconomic deprivation • Psychiatric illness <p>IMPROVE ACCESS TO RESOURCES</p> <ul style="list-style-type: none"> • Housing and shelter • Health and carer services • Communication systems • Transportation <p>FACILITATE DEVELOPMENT OF HEATWAVES RESPONSE PLAN</p>		<p>REDUCE ENVIRONMENTAL RISKS</p> <ul style="list-style-type: none"> • Suspension of utility shut-offs due to non-payment during heatwave alert period.
<p>RELEVANT STUDY FINDINGS:</p> <ul style="list-style-type: none"> • The Stakeholder consultation has shown that none of the participating stakeholder groups currently have formalised strategies in place to minimise harm to elderly clients during heatwaves. These organisations have the capacity to contribute to the public health responses to heatwaves, through utilisation of existing organisational structures and staff expertise, however extra resources and training will be required if responses to heatwaves are required more frequently. There is a need for these organisations to develop specific heatwave strategies, and be part of a wider coordinated response with other agencies. • Only 18% of Survey respondents reported that their workplace currently has a specific and documented emergency response plan for managing clients during a heatwave. • Characteristics of individuals found to be most strongly associated with an increased susceptibility to poor health outcomes during heatwaves are: being aged 			

65 years or older, socially isolated, dependant on others for care particularly if confined to bed, poor, homeless, and having a pre-existing illness.

- Characteristics of environments in which people live that have been found to increase the risk of death associated with heatwaves include living in cities, living in housing that lacks insulation, and has bedrooms located directly under the roof.
- Having a working air-conditioner, visiting cooler environments, and participating in social activities have been identified as factors most strongly protective against death during heatwaves.
- Toronto Public Health is proposing the adoption of a Maximum Indoor Temperature Threshold of 32°C to provide a threshold to aid assessment of indoor environments of vulnerable people, and initiation of evacuation procedures. This particularly related to boarding houses and nursing homes in Toronto.
- Office of Housing in Victoria doesn't routinely provide air-conditioning in public housing for the elderly, or other groups.
- Survey revealed that not all Aged Care Facilities have air-conditioning in residents' rooms

POSSIBLE INTERVENTIONS : Policy →

1. Facilitate the development of a coordinated heatwave response plan for Victoria. Identify a principal coordinating agency and other participating organisations. Collaboration with key stakeholders, including participants and those affected by heatwaves, at plan development and review stages. Agreement should be reached regarding roles and responsibilities, geographic boundaries of response, thresholds for action, types of interventions, target groups, and communication protocol. Participating organisations should be provided with adequate resources, capacity and knowledge.
2. Consider the adoption of a Maximum Indoor Temperature Threshold for public housing and Residential Aged Care Facilities. If good design is not adequate to allow maintenance of indoor temperatures below threshold, then air-conditioning should be provided.
3. Institute legislation to prevent utility companies from disconnecting any services due to non-payment during a declared heat alert.
4. Urban planning to incorporate measures to reduce the urban heat island effect, including using light coloured building materials, creation of ventilation corridors, use of vegetation including roof-top gardens.

2. Create supportive environments

<p>2. Create supportive environments</p> <p>Recognition of the link between a person's health and their social and physical environment</p>	<p>SUPPORT FOR VULNERABLE GROUPS:</p> <ul style="list-style-type: none"> • Elderly • Socially isolated • Those who are ill • Socioeconomic disadvantaged • Homeless • Those with disabilities <p>AVAILABILITY OF RESOURCES</p> <ul style="list-style-type: none"> • Free drinking water • Shade, and accessible sheltered areas • Parks • Transportation • Health care services • Communication systems 	<p>TARGET HIGH-RISK GROUPS</p> <p>Be aware of where vulnerable groups reside and gather.</p> <p>Create registers of contact details of high-risk individuals if possible using existing client databases.</p> <p>ESTABLISH TELEPHONE HELP LINE</p> <p>Establish a telephone service that can provide information, advice and a referral service: a 'Heatline'.</p> <p>Publicise phone number.</p> <p>Available all summer, not just heatwave days.</p> <p>PROVIDE COOL SPACES</p> <p>Designate air-conditioned buildings to be used as cool shelters for the general public. Publicise their location.</p>	<p>TARGET HIGH-RISK GROUPS:</p> <ul style="list-style-type: none"> • Outreach activities to socially isolated people, homeless. • telephone call service to check health status • Buddy system to check on isolated neighbours • Increase home visits • Monitor clients <p>OPERATE TELEPHONE HELP-LINE</p> <p>Have 24-hour telephone service available during all hot weather.</p>
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	<p>METEOROLOGICAL SERVICES</p> <p>Ensuring the availability of a meteorological service capable of making accurate forecasts with sufficient lead time to allow the institution of preventive measures.</p>	<p>Ensure adequate, free transportation to cool centers.</p> <p>Extension of the hours of operation of places where people can seek relief from the heat such as air-conditioned community centers, elderly citizens' centres, homeless drop-in centres and swimming pools.</p> <p>DRINKING WATER</p> <p>Ensure sources of free drinking water are operational and safe.</p> <p>HOT WEATHER WARNING SYSTEM</p> <p>Publicise what the Hot Weather Warning System is, and what it means</p> <p>Identification and forecasting of impending heatwave event.</p>	<p>PROVIDE COOL SPACES</p> <p>Availability of access to cool shelters</p> <ul style="list-style-type: none"> • Free transport to cool shelters if required. • If using this, provide drinking water, health care support, food. <p>DRINKING WATER</p> <p>Provision of sources of free drinking water</p>
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	<p>HOT WEATHER WARNING SYSTEM</p> <p>Development of a hot weather warning system based on an understanding of the relationship between weather and health for the population of interest.</p> <p>Consideration of sensitivity and specificity of warning system to ensure public cooperation.</p>	<p>Activation of heatwave warning.</p> <ul style="list-style-type: none"> Warning made using clear, unambiguous language, and accompanied by advice for avoiding heat associated illness. 	<p>HOT WEATHER WARNING SYSTEM</p> <p>Identification and forecasting of impending heatwave event.</p> <p>Activation of heat alert</p> <ul style="list-style-type: none"> Accompanied by advice for avoiding heat associated illness
<p>RELEVANT STUDY FINDINGS:</p> <ul style="list-style-type: none"> A recurrent theme in the Stakeholder Consultation and Survey studies is that elderly people are reluctant to use air-conditioning even if they have it because of the associated costs. It has been suggested that elderly people need financial support to purchase and run air-conditioners, and also to install external awnings. The Stakeholder consultation identified a lack of public access to free, safe drinking, particularly for the homeless. Of all stakeholder groups participating in the Stakeholder Consultation, only RDNS was found to have a program specifically targeting individuals who are homeless or at risk of homelessness. This is a significant gap in capacity since homelessness is known to be a risk factor for death during heatwaves, with many factors contributing to this increased vulnerability including lack of access to shade, drinking water and air-conditioned shelter, limited access to sources of 			

information, as well as frequently associated psychiatric and chronic illnesses

- Survey revealed that not all Aged Care Facilities have air-conditioning in residents' rooms. Also, little mention was made of measuring the temperature of the resident's rooms.
- Programs that address the issue of social isolation such as the Red Cross 'TeleCross Program', and the Housing NSW Care Call program, address an important risk factor for death during heatwaves, without being specifically focused on this issue. Preliminary discussions are currently underway to extend the role of Telecross to provide precaution warnings in extreme weather conditions, such as heat waves, dust storms and fires, and seasonal health alerts including reminders to have flu vaccinations. Consideration is also being given to broadening the service to include reminders to take medications.
- In Rome, at-risk individuals are encouraged to register with tele-assistance scheme that operates during heat alerts. People can receive advice, food and medicine deliveries, check-in calls and emergency assistance.
- A 24-hour helpline in Milwaukee, USA was found to receive a peak number of calls in the evening, perhaps reflecting the health impact associated with elevated night-time temperatures.
- Both RDNS and Wesley Mission have well organised existing telephone call centers that could possibly be utilised for providing advice and assistance during heatwaves. Wesley mission has previously operated 'DroughtLine'.
- In Philadelphia, USA, a telephone helpline is operated by the Philadelphia Corporation for the Ageing, using an existing service called 'Senior Line', but renamed Heatline during the summer months.
- RDNS and HACC-funded Local Government services hold client data on computerised data bases that can be used to 'flag' clients considered at risk of illness. Most General Practice Clinics in Victoria now have computerised patient medical records; while it is not done now, it would be feasible to use these clinic databases to identify people at risk in the heat and contact them before or during the event.
- The possible use of designated 'cooling shelters' has been criticised by survey respondents and participants in the Stakeholder consultation as not always workable. It has been argued that people could become confused if moved, still require care at a different location, and that moving a person would disrupt their continuity of care from health and carer personnel. The experience in Toronto is that cooling shelters were not well utilised by at-risk people, despite publicity of their location and provision of transportation.

POSSIBLE INTERVENTIONS: Supportive environments

1. Provide more drinking fountains, designed with low maintenance, ease of use, and hygiene in mind. These should be in parks, and areas known to be frequented by homeless individuals, and should be maintained regularly.
2. Increase funding to agencies that support the homeless, particularly for facilities that provide shelter from the heat and outreach activities.

3. Provide financial assistance with cost of electricity for people aged over 65 years during heatwaves.
4. Provide funding to Telecross to provide a daily telephone call during the summer months to elderly public housing tenants, and other elderly who satisfy certain criteria such as living alone, having a chronic illness or disability. As well as checking a person's wellbeing and providing social contact, information, advice, and prevention messages, could be given and referrals initiated if necessary. Alternatively, existing services in Victoria could be commissioned to perform this role, such as the Personal Alarm Service. People may register to be contacted by this service.
5. Establish a help-line telephone service for people to ring if they are concerned about their health or the health of others during a heatwave. This should operate for 24-hours a day during the summer period, and earlier if needed. Perhaps existing telephone services could be utilised, such as Lifeline, RDNS call-centre. The service could provide advice, and refer people to other services if necessary.
6. Ensure air-conditioning in Residential Aged Care Facilities where needed. Provide a number of wall thermometers for each Facility.
7. Extend hours of opening of public spaces that are cool, e.g. Shopping centres, town halls, and publicise the location of these.
8. Provide free transportation to cool spaces for those who need it. Perhaps the Red Cross could be utilised here.
9. Health providers to investigate the development of a database of clients considered to be at high risk of developing heat associated illness. Need more research to investigate a system for gauging risk. Could use a scoring system.

3. Strengthen community action

<p>3. Strengthen community action</p> <p>Information, funding, resources to utilise existing human and material resources in the community to enhance self-help, social support, and to strengthen public participation.</p>	<p>PROVIDE INFORMATION, FUNDING, RESOURCES.</p> <ul style="list-style-type: none"> • Volunteer Delivered Meals services • Promote schemes to check on neighbours and friends during hot weather, • Neighbourhood Watch programs 	<p>Media message to reinforce the usefulness of checking on elderly neighbours and friends during a heatwave.</p>	<p>Activate neighbourhood watch schemes to check on isolated neighbours</p> <p>Encourage people to check on elderly neighbours and friends.</p>
<p>RELEVANT STUDY FINDINGS</p> <ul style="list-style-type: none"> • In Philadelphia, USA, an existing network of volunteer ‘Block captains’, who are elected by residents to help coordinate neighbourhood improvement programs, is utilized as a means of identifying and checking on isolated, high-risk individuals during a heatwave. • In Chicago, USA, organisations including church groups, Postal Services, and utility companies are asked to be on alert for elderly people showing signs of distress in hot weather. • In Victoria, many Delivered Meals Services operate almost entirely through the use of volunteers. The Delivered Meals Service, with its wide reach into the community and system of drivers is well placed to deliver bottled water and information packs to the elderly, and possibly participate with transportation to cooling centres. Also, these volunteers get to know their clients very well, and are a valuable resource for identifying, contacting, and monitoring at-risk 			

individuals.

- A strategy described by a Royal District Nurse to monitor the fluid intake of elderly clients is to place water in plastic jug with a measuring scale.
- Many Delivered Meals volunteers are themselves elderly, and are therefore at risk of heat-associated illness.

POSSIBLE INTERVENTIONS : Strengthen community action

1. Promote the idea of checking elderly or isolated neighbours or friends during heatwaves. This message could be given in media messages such as weather reports, and with other heat health information.
2. Utilise the services of an existing community network to reinforce the idea of checking on neighbours during hot weather, for example Neighbourhood Watch. This should be accompanied by information sessions for the public to explain risk factors, vulnerable groups, and signs of heat stress.
3. Utilise Delivered Meals volunteers to monitor clients for heat stress, deliver information pamphlets, or perhaps a 'Hot Weather Kit'. The kit could include a fridge magnet with simple advice, pamphlets, information about telephone assistance, emergency services, cool public places and means of transport, a bottle of water, a clear plastic cup or jug with a measuring scale.
4. Provide information to Delivered Meals Volunteers to help them more confidently be able to detect if a client requires assistance. More work required to develop simple screening tool for use in this situation.
5. Develop protocol to prevent illness of elderly volunteers on hot days.

4. Develop personal skills

<p>4. Develop personal skills</p> <p>Helping others to learn the skills to enhance their own or other people's health and wellbeing.</p>	<p>PROVIDE INFORMATION</p> <p>Provide information and education in schools, workplace, home, community setting for individuals and groups, to develop skills needed to make healthy choices that help to reduce the impact of heatwaves on health:</p> <ul style="list-style-type: none"> • reduce use of fossil fuels • reduce risk of chronic disease, obesity, cancer. • Improve personal fitness • Increase awareness and knowledge of the health impact of heatwaves • Personal strategies to minimise health effects of extreme heat. 	<p>PROVIDE INFORMATION</p> <p>Provision of information to individuals and groups, regarding heatwave warnings and avoidance of heat associated illness, through the media, internet, leaflets, emails, telephone calls, direct contact.</p> <p>Provide information about designated cooling shelters for the public, details about any extra transport services, public spaces where public can seek relief from heat, sources of drinking water.</p>	<p>PROVIDE INFORMATION</p> <p>Provide information to enable people to keep hydrated and cool during the heatwave:</p> <ul style="list-style-type: none"> • Personal strategies • Location of cooling shelters • Emergency telephone numbers • Help-line
<p>RELEVANT STUDY FINDINGS</p> <ul style="list-style-type: none"> • A majority of survey respondents (health professionals and carers) nominated 'a public health announcement through the media' as the most effective way of contacting them during a heat alert. One person explained that receiving information from more than one source was important. <p>Findings from the Stakeholder consultation:</p>			

- There is a need to find out where older people in Victoria most reliably and often source information from.
- Many elderly people don't read pamphlets they are given.
- There is a need for multilingual, large print written information.
- Written information is most effective if reinforced verbally.
- Many elderly people don't have access to, or cannot use a computer.
- A large print magnet would be useful.
- It is regarded as unlikely that passive dissemination of prevention guidelines will be effective if unaccompanied by active outreach to vulnerable groups, since these groups may be unable to access or act upon this type of information.
- A number of Health Departments and health agencies publish guidelines for personal strategies to reduce heat associated illness on web-sites, in leaflet form or in media releases, and can be available all year round or only when a heat-related health threat is declared imminent. Generally, information provided includes personal behaviour strategies regarding fluid intake, appropriate clothing, seeking cool shelter, reducing activity, and use of air conditioners and fans, symptoms of heat-related illness, details of high risk groups, and advice regarding when and how to seek further information, and recommendations to check neighbours.
- Some organisations provide publications covering specific topics such as heat stress and the elderly, use of fans, pets and the heat, car safety in the heat.
- In a number of countries, heat health education programs are provided for the general public using seminars, displays, posters, at the beginning of summer.

POSSIBLE INTERVENTIONS : Develop personal skills

1. Provide information regarding prevention and management of harmful effects of heatwaves in a form that is accessible to those it is directed towards. This should be in large print, multilingual, simple. For example, fridge magnets with a simple message (Stay out of the sun, Keep your self cool, Drink more water, Check on friends and neighbours, If you are worried or feel ill ring HeatLine..... number). Could also include contact numbers for emergency services, details of a cooler public area nearby and how to get there. (See figure 1)
2. Develop displays of information, and conduct informal seminars regarding the minimisation of harm during heatwaves, for use where the elderly are likely to be, for example libraries, elderly citizens' centres.
3. Ensure all written information regarding strategies to reduce harm during heatwaves is available in a variety of languages relevant to the target group, and in large print.

5. Reorient health services

<p>5. Reorient health services</p> <p>Health services to become engaged in primary prevention and health promotion</p>	<p>INCREASE AWARENESS, KNOWLEDGE</p> <ul style="list-style-type: none"> Professional education and training <p>HEALTH PROMOTION, OUTREACH, EDUCATION</p> <ul style="list-style-type: none"> Health services to provide outreach services, heat health information and advice to individuals and groups. 	<p>INCREASE AWARENESS, KNOWLEDGE</p> <p>Pre-summer training courses for health personnel and carers</p> <ul style="list-style-type: none"> Information about risk factors, vulnerable groups, prevention, signs of heat related illness protocol for management of a client who is ill maintenance of own safety <p>HEALTH PROMOTION</p> <ul style="list-style-type: none"> provide preventive advice 	<p>EMERGENCY RESPONSE</p> <ul style="list-style-type: none"> Emergency services teams on stand by
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	<p>RESEARCH</p> <ul style="list-style-type: none"> • Research to increase knowledge about heat associated illness, risk factors, vulnerable groups, and effectiveness of interventions. 		<ul style="list-style-type: none"> • Outreach teams for isolated individuals, homeless. • Ensure extra emergency services and hospital staff are available. <p>RESEARCH</p> <p>Collect surveillance data regarding weather, morbidity (hospital, ambulance use), mortality (medical examiner reports), electricity and water supply and demand, and response efforts, to allow evaluation and review of the heatwave plan.</p>
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RELEVANT STUDY FINDINGS

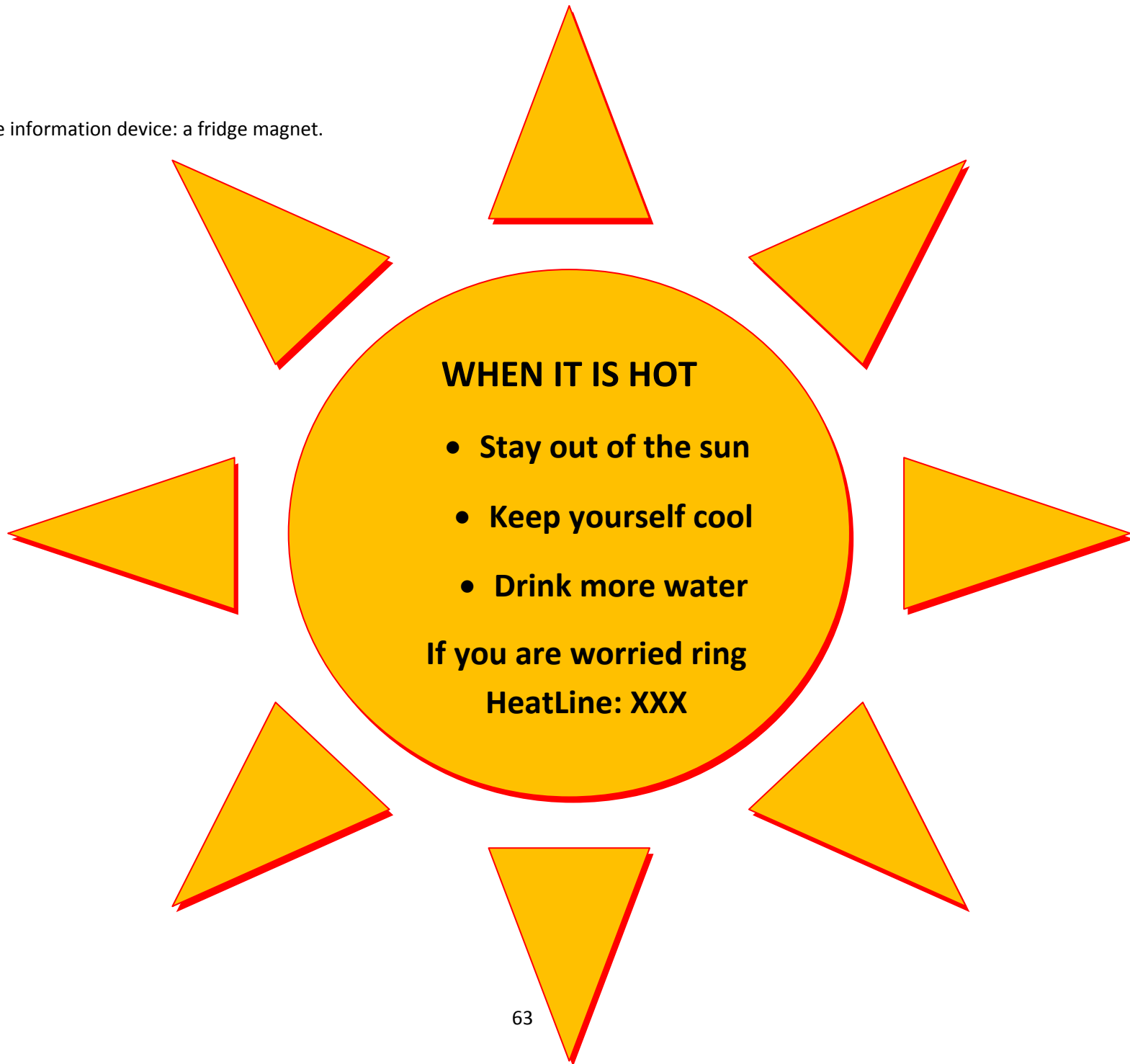
- A large proportion of respondents to the survey demonstrated that they were aware that an episode of extreme hot weather is likely to be harmful for older people in Victoria. Qualitative analysis of extended responses to the survey showed a high level of awareness that those with cognitive disorders were at risk, but there was little or no indication of awareness of other vulnerable groups. One Practice Nurse commented that she would like to learn more about the effects of medications regarding thermoregulation.
- The availability of General Practitioners after-hours, on weekends, and public holidays is limited for the general public, and for GPV.
- The Survey of Health professionals and Carers showed a high level of knowledge regarding the characteristics of heatwaves that are most dangerous, though the danger associated with very hot days early in summer was least understood. Substantial gaps in knowledge were found regarding the role of sweating, the significance of pre-existing illness as a risk factor, and the use of fans.
- Responses to Survey questions regarding the implementation of interventions to minimise and manage heat related illness suggest passive, opportunistic,

reactive interventions, rather than planned, systematic and proactive approaches are the norm.

POSSIBLE Interventions: Reorient health services ▶

1. Ensure professional education and train courses for the health professions include information regarding the harmful health consequences of heatwaves, particularly regarding the human response to heat, risk and protective factors for heat associated illness, vulnerable groups, signs and symptoms of heat stress, management of heat stress. Education and training should be appropriate to the professional group.
2. Improve the availability of General Practitioners afterhours and during summer holiday periods, for the public and professional organisations. More research required to investigate systems for achieving this.

Figure 1: A simple information device: a fridge magnet.



List of Attachments

Attachment 1: Comprehensive review of the scientific literature including an Executive Summary.

Attachment 2: Stakeholder consultation including an Executive Summary

Attachment 3: Survey Quantitative Analysis, including an Executive Summary and tabulations of respondents grouped according to stakeholder, geographic regions and metropolitan-rural location.

Attachment 4: Survey Qualitative Analysis

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