

# Climate Change, Sustainability and Health Workshops for Medical Professionals

## Evaluation Report



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## Table of Contents

Acknowledgements.....	2
Executive Summary .....	3
Background.....	5
Literature Review .....	7
The Australian workshops .....	11
Results .....	14
Discussion and Recommendations.....	17
References.....	19
Appendices.....	20

## Acknowledgements

These workshops are based on a model initially developed for a public health trainee audience by the National Health Service Sustainable Development Unit ([www.sdu.nhs.uk](http://www.sdu.nhs.uk)) with financial support from the Department of Health of England (DH) Public Health Leadership and Workforce stream [File reference: B060].

This version was adapted for an Australian public health audience by the Royal Australasian College of Physicians with financial support from the Australian Department of Health and Ageing through the Public Health Education and Research Program.

The office of the Australasian Faculty of Public Health Medicine assisted with the delivery of these workshops.

## Executive Summary

### Background

There are multiple benefits – health, financial, reputational and environmental – for health professionals and health services to take a lead on sustainability. In the UK, the National Health Service (NHS) Sustainable Development Unit (SDU) ([www.sdu.nhs.uk](http://www.sdu.nhs.uk)) successfully piloted an educational intervention on sustainable healthcare with UK Faculty of Public Health registrars in 2010. The intervention was a 4-hour, *train the trainer* session covering climate change, sustainability, health and the NHS. This project sought to answer the question: *Can this educational intervention be successfully adapted and implemented for an Australian Faculty of Public Health Medicine audience?*

### Method

As a first step, a brief literature review was conducted (building on a more substantial one undertaken by the SDU) to update our existing knowledge on the education and training of health professionals in relation to climate change, sustainability and health. As anticipated, there were few papers of direct relevance and the vast majority were debate and discussion papers rather than original research.

Based on the SDU model, the materials were then either directly adopted unchanged, adapted or newly developed for the Australian audience. A pilot face-to-face workshop using fellows and trainees with an interest in climate change and health and drawn from across the Royal Australasian College of Physicians (RACP) allowed feedback on both the materials and the delivery before three further workshops were held. All the workshops took place in June 2011 and were conducted at the RACP Education Centre at Phillip Street, Sydney. For the final workshop, in addition to the face-to-face audience, a remote audience was linked using videoconference to seven sites around Australia.

Across the four workshops there was a total of 43 participants. The majority were Australasian Faculty of Public Health Medicine (AFPHM) Fellows and Trainees (as these were the target audience) but there were also general practitioners and other medical specialists. The workshops had three objectives: *awareness*, *advocacy* and *action* (which act as surrogate measures of knowledge, attitudes and practices). Each workshop was evaluated.

## Results

Comparison of baseline and post-intervention questionnaire scores demonstrated a mean change in participants' self-reported levels of *awareness* over the three workshops of 11.1, in *advocacy* of 9.1 and in the combined score, 20.3. This indicates that, on average, participants moved up one whole 'point' on the modified Likert scale, on every question, as a result of the workshop. For example, in response to the (advocacy) statement, 'I could explain the basic science of climate change', the participant may have moved from 'disagree' to 'agree'. Further, 97% rated the workshop as either 'extremely useful' or 'useful' (with an even split between the two). The final objective *actions*, are assessed three months after the workshops and so cannot be reported here. Overall participants indicated that as a result of participating in the workshop that they were more confident in their knowledge of and ability to advocate about sustainability within the health system.

82% of participants rated this issue as 'extremely important' for health professionals (with the remaining 18% rating it as 'important') and there was very strong support for the RACP/AFPMM to take a lead advocacy role on this issue.

## Discussion

This 'proof of concept' project has demonstrated: a demand for these workshops; that the 'train the trainer' model can be successful in Australia and; that both face-to-face and videoconferencing formats are effective for delivery. We recommend that these workshops are delivered to all AFPMM Fellows and Trainees, and then modified (as required) and offered to other medical specialties. Participation by videoconference should be offered to those outside the town or city in which it is delivered, in particular to enable equity of access to practitioners in rural and remote locations.

As the NHS SDU provided free access to the model on the condition that it remained free access, and the adaption was funded through PHERP, we recommend that the materials should be made available to other public health groups, in consultation with the SDU.

## Background

There are multiple benefits – health, financial, reputational and environmental – for health professionals and health services to take a lead on sustainability. In the UK, the National Health Service (NHS) Sustainable Development Unit (SDU) ([www.sdu.nhs.uk](http://www.sdu.nhs.uk)) was established in April 2008 with the task of assisting the NHS to become an exemplar low-carbon, sustainable organisation. As far as we are aware, it is the first unit of its kind in the world, and has quickly established itself as a leader in the field of sustainable healthcare.

### The NHS SDU Climate Change, Sustainability and Health Awareness & Advocacy Project

In 2010, as part of its organisational development strategy, the SDU (with financial support from the Department of Health, England) developed and piloted an educational intervention on sustainable healthcare. The intervention was a 4-hour, *train the trainer* session on climate change, sustainability, health and the NHS. It was delivered to more than 200 UK Faculty of Public Health registrars, in 15 separate sessions, between February and April, 2010.

Outcomes were evaluated in three areas: *awareness*, *advocacy* and *actions*, which acted as surrogate measures of knowledge, attitudes and practices (KAP). Comparison of baseline and post-intervention questionnaire scores showed statistically significant improvements (based on a 4-point modified Likert scale) in both awareness (mean increase 12 points) and advocacy (mean increase 9 points) scores. Framework analysis of the qualitative data relating to the ‘action’ objective revealed useful learning points.

### Background to the Australian Project

Dr Kate Charlesworth, an AFPHM Trainee currently based in the UK, was employed at the NHS SDU as a Public Health Researcher in 2010. She was the lead on this project and facilitated the 15 workshops.

As a result of collaboration between Dr David Pencheon, (Director, NHS Sustainable Development Unit), Dr Lynne Madden (Chair, AFPHM Faculty Education Committee), Professor Anthony Capon (then Lead Fellow Climate Change & Health and Professor, National Centre for Epidemiology & Population Health, The Australian National University; Convenor, Climate Change Adaptation Research Network for Human Health) and Dr Charlesworth, a proposal was developed to bring this training to Australia, in particular as a training and continuing professional development initiative for the Faculty. The funding received through the Public Health Education and Research Program

(PHERP) within the Australian Department of Health and Ageing has enabled the project to be delivered with the support of the RACP where Ms Susanne Engelhard, Associate Director Public Health Training and Development, has provided guidance and support.

## Literature Review

### Introduction

As a first step, a review of the existing evidence on this subject was required. When the NHS SDU first performed a literature review on this subject in late 2009 to inform the original development of the model, there was a dearth of evidence on this subject. Given that sustainable healthcare – and the teaching of it - is a nascent field, this was not surprising. At that time, given the limited evidence base on the subject, the review was widened to include teaching and behaviour change approaches in general.

It was not expected that in the intervening 18 months, there would have been many new studies published. Therefore this review is brief and specific, and was undertaken in order to update our existing knowledge on this subject. The key terms used were the: *education and training of health professionals* in relation to *climate change, sustainability and health*.

### Search strategy:

The literature search was performed using PubMed and also by means of personal communication with colleagues and contacts in the field (chiefly through the *Sustainable Healthcare Education* network).

### *Sustainable Healthcare Education (SHE)*

SHE (<http://greenerhealthcare.org/sustainable-healthcare-education>) is a group of clinicians and academics who have developed open-source teaching materials for use in undergraduate and postgraduate education. The materials are being piloted and evaluated in nine UK medical schools during the 2010/2011 academic year. They employ a variety of pedagogical formats, including student-selected modules, introductory stand-alone lectures, problem-based learning exercises and activities in clinical modules. The undergraduate learning outcomes are mapped to the General Medical Council's guidelines for medical graduates.

### *PubMed:*

**PubMed** is a service of the U.S. National Library of Medicine that includes more than 20 million citations for biomedical literature from MEDLINE, life science journals, and online books.

The search was conducted using the following key terms: 'climate change medical education' (66 results), 'environmental sustainability medical education' (35 results), 'climate change health education' (236 results; limited to those published in the last 3 years, and English language papers:

77 results), 'climate change health professional development' (35 results); and 'climate change health training' (311 results; limited to those published in the last 3 years, English language papers only: 106 results).

The results were scanned by title; and for those of relevance, the abstract and/or full text were read. Two papers with titles of interest were excluded: one was in Danish and one had neither abstract nor electronic full text access.

### Findings

As anticipated, there were few papers of direct relevance to our specific subject. However, there were some papers with interesting observations and insights, which are discussed below. The vast majority were debate and discussion papers rather than original research.

Of note, a number of the relevant papers were by Australian authors. These tended to focus upon the education of medical students (as opposed to postgraduate training or continuing professional development). Also, in most cases, the bulk of the discussion was about *adaptation*, with less time spent considering the 'teaching' of *mitigation* strategies.

Several papers called for the introduction of climate change into medical school curricula and the postgraduate education of general practitioners and other specialists (1,2), and one into nurse education (3). They argued that future health professionals will require knowledge relevant to climate change adaptation (helping communities to adapt to climatic conditions and managing climate sensitive disease) and also adaptive problem-solving *skills*: the flexibility and ability to respond to diverse regional conditions and complex health problems. There was mention of contributing to climate change mitigation efforts (1,2).

Some authors proposed particular competencies (including the concept of 'eco-medical literacy') and suggested teaching and assessment approaches that should be adopted (2). The need to integrate these new competencies into existing models was recognised: 'the necessary competencies could be taught by building on existing models, best practice and innovative traditions in medicine. Even in crowded curricula, climate change offers an opportunity to reinforce and extend understandings of how interactions between people and place affect health' (2; abstract). One author advocated a PBL (problem based learning) or case studies (case based learning) approach (4).

Others had a more balanced approach - including calls for advocacy and specific mitigation strategies, for example:

**Mitigation – champion environmentally sustainable health care**

Green hospitals/green clinics (e.g. renewable energy, energy/water efficiency, green purchasing policies)

Make it easier to walk or cycle to medical facilities (e.g. secure bike parking, on site shower facilities)

**Advocate for sustainable government policies**

Lobby local governments to improve public transport (reduces air pollution and greenhouse gas emissions)

Participate in advocacy groups (e.g. Doctors for the Environment Australia)

Inform policy makers about the health impacts and costs of climate change

Articulate a public health perspective on climate change in the mainstream media

(4; Table 1: *Potential roles of future medical workforce in context of climate change adaptation*).

Similarly, another called for awareness raising and advocacy actions, citing doctor's influence as trusted and respected members of the community, and health professionals' well established networks of communication (5).

One paper drew attention to rural and remote health: "Particular emphasis is made on preparation for practice in rural and remote regions likely to be greatly affected by climate change (2).

***Emergency Medicine***

Several papers outlined the particular relevance to emergency medicine and disaster planning. For example:

'Emergency care is also likely to be reshaped by the pressures of climate change....Methods for implementing disaster plans, as well as retrospective analysis and development, may need to change rapidly in the light of learning about climate change. This will change what doctors need to know and do. Recent events such as Hurricane Katrina in the USA and the Victorian bushfires in Australia have challenged public health understandings of appropriate responses to extreme weather events.' (2; p3-4).

Similarly Hess et al noted 'Climate change thus presents multiple clinical and public health challenges to [Emergency Medicine], but also creates numerous opportunities for research, education, and leadership on an emerging health issue of global scope' (6; abstract).

### *General practice*

There were several papers from the United Kingdom focusing on general practice training. These identified general practitioners (GPs) as playing an important role in sustainability: 'Ninety per cent of all [National Health Service] contacts take place in general practice. Those GPs who adopt sustainable development policies, raise the general awareness of the effects of climate change on health, and act as advocates for wider societal sustainability can have a powerful influence on creating low-carbon communities' (7).

One paper identified a 'skills gap' in general practice postgraduate training. The reasons for this gap were cited as: 'lack of modelled best practice, combined with GP trainers' uncertainty about content expertise' (8; p36). The suggested priorities for training were: developing skills for clinical sustainability, advocacy, leadership and management, and knowledge about the health effects of climate change (7). They proposed practical activities for GP registrars in three areas: patient care, practice management and leadership/commissioning (8) and in the form of a checklist (10:10 Greener General Practice Checklist) (7).

One paper recognised sustainability as a positive message, particularly for general practice: 'the impacts of sustainable thinking on medicine are surprisingly upbeat.... These 'virtuous cycles' suggest that what is good for the earth is also good for humans' (9).

### *Original research*

There was one original research paper of interest: a cross-sectional study which investigated the 'preparedness' (as a measure of awareness; assessed by questionnaire) of medical interns in India. They found that, whilst the majority were aware of the causes and health impacts of climate change, the main source of their knowledge were extra or co-curricular activities, that is, not medical school (10).

SHE Deans' Survey: The SHE group conducted a survey of the Deans of 31 UK medical schools in June 2010 (with follow-up in November 2010). The highest response rate was from English medical schools (19/23; 83%). Of those, ten (43% of responses) English medical schools provide some kind of teaching on climate change and/ or environmental sustainability and its relationship to health; fifteen (65%) report that someone in the School that has shown an interest in introducing the topic; and four include questions relating to climate change or sustainability in end-of-year or final exams. The primary barriers to including teaching on climate change/sustainability into the curriculum were: limited time in an already busy curriculum; a lack of local expertise; concerns about the relevance (to medicine), the scientific basis for global warming, and the politicised nature of the topic (11).

## The Australian workshops

### Workshop materials

The main learning resource is a slide bank of 110 PowerPoint slides. This was developed to reflect the broad scope of interests that an audience might raise and wish to explore. Thus, as a slide *bank* it provides the facilitator and participants with a significant degree of flexibility allowing the interests and requirements of the audience to be accommodated (it is recommended that only a selection of the slides are used in each workshop). In accordance with effective PowerPoint practice, there are graphic/s and minimal wording (the key points only) on each slide.. All slides are numbered, and the bank is arranged by sub-headings and internal hyperlinks and so is user-friendly and easy to navigate. A sample of the slides is shown in Appendix 1.

The notes section beneath each slide contains explanations about the slides, presenting tips, references and further reading. There are external hyperlinks to relevant newspaper articles and short videos. There is also an extensive reference and resources list (Slides 101-103); and a glossary (slides 106-110).

The other resources include: an electronic flyer (Appendix 2), a suggested pre-reading and activities list, a registration sheet, a baseline questionnaire and a post-intervention questionnaire (Appendix 3). All these resources were based on the SDU model and were either directly adopted unchanged, adapted or newly developed for the Australian audience prior to piloting.

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### The workshop

The workshop takes approximately one day to deliver (all four workshops described here ran from 9am -3:30pm) and is delivered in a *train the trainer* format. That is, it is expected that participants (given the slide bank and some preparation time) will be able to deliver a similar session, and so cascade the learning process.

There are core and supplementary slides. The core sections include: the introduction, key definitions, climate change, health and inequity, 'What's happening in the UK?', Australian case studies, change management and taking action. There are a number of supplementary slides which are provided as topics for discussion.

### *Modelling 'green' meetings*

As far as possible, the workshops were run in a sustainable manner and sought to model better practice. For example, the pre-event travel information focused on pedestrian, cycle and public transport routes, tap water was provided with jugs and glasses (rather than using bottled water), and handouts and paper use were minimised. For one workshop, video-conference facilities were used to enable participation without travel to the workshop location.

### *Piloting the workshop*

A pilot workshop was conducted on Friday 17<sup>th</sup> June at the RACP Education Centre at Phillip St, Sydney with 10 invited participants, 9 of whom were members of the RACP Climate Change Working Group. Drawing upon the expertise and experience of the participants the pilot allowed a number of modifications to the workshop to be made in response to both their feedback and also from observations made by the management group (Dr Madden, Prof Capon and Ms Englehard). A number of sections worked very well including: a self-rating exercise used at the start and end of the workshop, and the use of Australian case studies through an invited guest speaker who provided local examples of sustainability initiatives (for the pilot, Dr Stephen Conaty). As a result of piloting, the amendments were made to the content including: compressing the 'informative' sections of the workshop, with consequently more time spent on the action-planning activities; restructuring the use of videos and the supplementary slides and; including information on procurement from the slide bank.

### *Delivering the workshops*

Three workshops were offered, on Tuesday 21<sup>st</sup> June, Wednesday 22<sup>nd</sup> June and Thursday 23<sup>rd</sup> June. All were conducted at the RACP Office at Phillip St, Sydney. (Participation by videoconference was offered on Thursday 23<sup>rd</sup> to participants outside of Sydney, and is discussed below.) There were 6, 9, and 18 participants at each workshop respectively; a total of 43 participants including the pilot. The majority of participants were Faculty Fellows and Trainees, but there were also general practitioners and other medical specialists present. Of the 18 participants at the final workshop, 8 were in Sydney and were part of the 'live' audience, and 10 were 'remote' and joined by videoconference.

### *Guest speakers*

Given the positive response to including a local guest speaker as part of the pilot, a different guest speaker was invited to each of the workshops. Their brief was to speak for 15 minutes about their experiences in developing and implementing a sustainability initiative in a health workplace in Australia, then to lead a discussion and answer questions from the audience. Professor Chris Rissel (Professor of Public Health, The University of Sydney) spoke at the first workshop about

active transport and cycling advocacy in Sydney. At the second and third workshops, Dr Vanessa Farr and Dr Mark Newell (both AFPHM Public Health Registrars) spoke about the Sustainability Plan developed by the (former) Sydney South West Area Health Service (SSWAHS) in New South Wales. All the guest speakers were very well received and generated discussion about local sustainability initiatives, and in particular, the barriers encountered and key lessons learnt.

#### *Video-conferencing the workshop*

Offering the workshop through videoconferencing allowed:

- 1) equity of access to trainees and fellows not based in Sydney, in particular those in rural and remote areas;
- 2) a trial of the delivery of a full day workshop using this technology (as opposed to the shorter lecture format for which it is commonly used); and
- 3) modelling the use of a technology which will be integral to delivering sustainable healthcare.

At the final workshop, there were 10 videoconference participants linking in from 7 different sites around Australia (Adelaide, Brisbane, Cairns, Darwin, Melbourne, Perth and Toowoomba).

Modifications were made to enable the full participation of remote participants. The facilitator endeavoured to involve them equally in the workshop, for example by adapting the workshop exercises (as an example they were asked to provide their self-rating scores verbally, while face to face participants physically positioned themselves on a ranking line), directing specific questions to them and encouraging their participation in the discussion. In addition the baseline and post-intervention questionnaires were emailed to participants the day before, and an extra question was included, asking about their experience of the workshop through videoconference technology.

Our impression was that the videoconferencing was very successful and this was confirmed in the evaluation comments: "Workshop was very well managed. Videoconference worked well. The sound of some videos could be improved"; and, "Thanks for including a VC option to provide access to participants who were unable to fly to Sydney for the event."

## Results

### Evaluation of the workshop objectives

There were three objectives for the workshop:

- **Awareness:** of the key facts regarding climate change, sustainability and health,
- **Advocacy:** the willingness and ability to raise the issue with colleagues and superiors, and/or run a similar session themselves and,
- **Action:** participants pledged actions for next 5, 30 and 100 days following the intervention.

Levels of *awareness* and *advocacy* were assessed by comparison of baseline and post-intervention, self-rated questionnaire scores (using a 4-point modified Likert scale). There were ten questions regarding the participants' levels of awareness and ten regarding their confidence in advocacy (20 questions in total), and participants completed the questionnaire before and immediately after the session. The questionnaires are shown in Appendix 3 and Appendix 4.

Descriptive statistics are shown in Table 1.

	Pilot	Workshop 1	Workshop 2	Workshop 3	All	All (excluding pilot)
No. of completed matched questionnaires	9	6	7	10	32	23
Mean change in awareness score	7.1	11.3	9.0	12.5	10.0	11.1
Mean change in advocacy score	4.9	7.8	9.5	10.7	8.0	9.1
Mean change in overall score	12.1	19.1	18.5	23.2	18.0	20.3

**Table 1:** Mean change in awareness, advocacy and overall (awareness and advocacy combined) scores across the pilot and three workshops.

There were 32 completed, matched questionnaires: a response rate of 74%. Several people arrived late or left the workshop early and so did not complete both questionnaires; and some videoconference participants did not return their questionnaires.

The mean changes in scores are all positive, demonstrating improvement in participants' self reported levels. Given that there were ten awareness questions, with four possible Likert-scale responses, the mean change of 10.0 indicates that, on average, participants moved up one whole 'point' on the awareness scale on every question, as a result of the workshop. For example, in

response to the question 'I could explain the basic science of climate change' the participant may have moved from 'disagree' to 'agree'. When the scores from the pilot are excluded, (this group have an established interest in advocacy for the effects of climate change on health), the improvement is even greater (11.1). As shown in Table 1, the mean changes in self-rated advocacy scores are of a similar magnitude. The mean changes from the three workshops are all higher than those in the pilot; and the general trend across the workshops (which are chronologically ordered in Table 1) is one of greater mean changes, that is, participants in the last workshop improved more than in the earlier ones. Interestingly, these results are very similar to those documented in the UK in 2010.

The action objective cannot be evaluated until three months after the workshop.

### Analysis of questionnaire responses

There were also a number of open ended questions included in the questionnaires. The results of the qualitative analysis of the responses are described below.

#### *Is sustainability an issue?*

In the baseline questionnaire, we sought to gather preliminary information about the extent to which sustainability is an issue in medical workplaces in Australia. In answer to the question, '*Is there any current discussion about climate change/sustainability at your workplace?*' 47% of participants responded *Yes* and 50% responded *No* (one participant answered *N/A*). Of those who answered in the affirmative, the discussion most frequently concerned 'greening' the workplace (e.g. reducing electricity, cycling or walking to work, recycling, and responsibilities on purchasing); and in one workplace, with health promotion (cycling/ healthy built environments).

Some participants had been involved in specific projects: a sustainability plan for a health service, a climate change committee; and for several it was their main role, for example one participant was in a research team and one had a position in climate change adaptation (strengthening surveillance and emergency management). With regard to public health training in NSW, the following observation was made: "a couple of positions [for trainees] have been created but there is no broad discussion of the issue."

#### *Evaluation of the workshop*

Analysis of the post-intervention questionnaires indicated that the parts of the workshop that were most frequently rated as being 'most useful' were: the discussion about climate change, health and inequity and the co-benefits; and the resources and references. Other participants mentioned the

case studies, the discussion about how to frame the issue (e.g. talking about 'sustainability' rather than 'climate change'), learning about what the NHS is doing, and the train the trainer format.

The part of the workshop that participants most frequently considered as being 'most enjoyable' was the interactive format of the workshop and the group discussions. Several respondents also mentioned the videos and the case studies.

There were relatively few responses to the questions about the 'least useful' and 'least enjoyable' parts of the session. However, writing the postcards (the action planning activity) and the discussion of the pledged actions was mentioned by four participants

The question, '*What is the **one single thing** that we could have done differently today that would have helped you to be a more informed and effective advocate?*' generated a range of responses. Participants suggested: more focus on Australian case studies, more real life practical examples of change and the inclusion of a practical component, for example a role play or some practice at explaining the key concepts. Several suggested that having more time or further training would be useful. Others requested more emphasis on how to respond to climate change sceptics, 'more strategies for countering apathy and opposition'; and one suggested including examples of where climate change is [currently] having a negative impact on particular communities (in both the developing and developed world).

Finally, in response to the question, 'In your opinion, how useful was this workshop for health professionals?' 97% were positive (with an even split between the two highest options of 'useful' and 'extremely useful').

We also sought participants' views on the issue of sustainability and health more broadly. In response to the question, '*How important do you think this issue is for health professionals?*', 82% rated it as 'extremely important', with the remaining 18% rating it as 'important'. We asked participants an open-ended question about what *role* they would like the RACP/AFPHM to take on this issue. Almost every participant (93%) answered this question and a clear majority stated that the College and Faculty should be taking a professional lead and adopt a public advocacy role on this issue. This is evidenced by 85% of responses including at least one of the following terms in their answer: "lead", "leader", "leadership", "advocacy" or "public position" and for one participant, "support action". For example: "a leadership role for the rest of the profession", a "more united proactive leadership role" and a, "public advocacy role". Finally, 22% called for further education and training for health professionals on this issue.

## Discussion and Recommendations

Although these workshops were proven to be successful in the UK, Australia is a different context and lacks some of the legal and regulatory imperatives that are drivers for sustainability policy and action in the NHS. Further, whilst the UK and Australian health systems are widely regarded as being quite similar, there are differences. Therefore, it was important to update and adapt the materials, and then deliver these four workshops in Australia, as a 'proof of concept'.

The delivery and evaluation of these workshops has demonstrated that:

- This issue is regarded as being extremely important for health professionals in Australia
- There is demand for this form of training/ professional development
- The workshops are a feasible model for Australia
- The workshops can be successfully delivered by videoconference. This has very positive implications for the potential involvement of a broad audience, in particular those practitioners in rural and remote locations.

Following from these findings, we make a series of recommendations for the future of this project:

1. Conduct an evaluation of the *action* objective. This would consist of phone interviews (30 minutes) with a sample of participants around 20<sup>th</sup> September 2011 (three months after the workshops).
2. If necessary, further modify the workshop materials in view of this evaluation.
3. Systematically deliver the workshop to all remaining AFPHM Trainees and Fellows. Discuss with the AFPHM Education Committee that the workshop be highly recommended for the Faculty trainees.
4. Deliver the workshop to other public health groups, for example other public health training programs.
5. Make the workshop available to a broader range of RACP Trainees.
6. Approach other medical colleges to offer the materials for their fellows and trainees. It has been suggested that the Royal Australian College of General Practitioners, Australian and New Zealand College of Anaesthetists, Australasian College for Emergency Medicine, Royal Australasian College of Medical Administrators, Australasian College of Health Service Management might be approached initially. It is likely that the workshop would have to be modified for each specialty.
7. Offer delivery through videoconference to ensure equity of access to rural and remote trainees and fellows.

8. Ensure that the workshops themselves model sustainable practice, in line with these guidelines: <http://sustainablehealthcare.org.uk/green-event-how-to.pdf>
9. Evaluate each group of workshops, summarise the findings and submit paper/s for publication in peer-reviewed journals.

## References

1. Bell E, Horton G, Blashki G, Seidel BM. Climate change: could it help develop 'adaptive expertise'? *Adv Health Sci Educ Theory Pract* 2010; Aug 28. [Epub ahead of print].
2. Bell EJ. Climate change: what competencies and which medical education and training approaches? *BMC Med Educ.* 2010; Apr 30;10:31.
3. Goodman B, The need for a 'sustainability curriculum' in nurse education. *Nurse Educ Today.* 2011 Jan 11. [Epub ahead of print].
4. Green EI, Blashki G, Berry HL, Harley D, Horton G, Hall G. Preparing Australian medical students for climate change. *Australian Family Physician.* 2009; Vol 38, (9) 726-729.
5. Sarfaty M, Abouzaid S. The physician's response to climate change. *Fam Med.* 2009 May;41(5):358-63.
6. Hess JJ, Heilpern KL, Davis TE, Frumkin H. Climate change and emergency medicine: impact and opportunities. *Acad Emerg Med.* 2009 Aug; 16(8):782-94
7. Gillam S & Barna S. Sustainable general practice: another challenge for trainers. *Education for Primary Care.* 2011; 22(1): 7-10.
8. Gillam S & Barna S. Teaching Tips for Sustainability in general practice. *Education for Primary Care.* 2011; 22 (1):36-37.
9. Thompson T & Ballard T. Sustainable medicine: good for the environment, good for people. [Editorial] *British Journal of General Practice.* 2011.61(582): 3-4
10. Jai Pal Majra and Das Acharya. Protecting Health from Climate Change: Preparedness of Medical Interns. *Indian J Community Med.* 2009 October; 34(4): 317–320.
11. Dean's Survey. Sustainable Healthcare Education (SHE) Newsletter, Spring 2011

**Appendices**

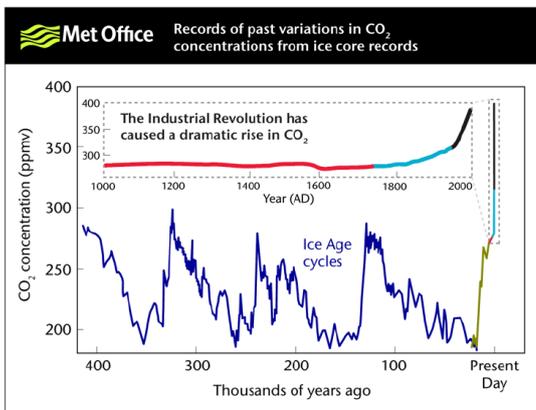
Appendix 1- Sample of the slides

## Appendix 1: Sample of the slides



## Sustainable development

Meeting our needs today without compromising the ability of others to meet their needs - today or tomorrow...



...there are MUCH greater health risks through:



"The health sector is one of the most trusted and respected sections of society, and it is also one of the largest employers and consumers of energy. This presents both a responsibility and an opportunity...."



## Royal Children's Hospital, Melbourne



## Actions speak louder than words



## 10 Practical Actions for Doctors

1. Inform ourselves about the basic science of climate change, the health benefits of taking action, and the urgency of doing so.
2. Advise our patients.
3. Use less energy ourselves...
4. Drive the car less; fly less; walk or cycle more; use public transport.... teleconference, videoconference ... attend fewer international conferences
5. Influence food menus wherever we go....



Appendix 2 – Electronic flyer

# Climate change, Sustainability and Health

## Train the trainer Workshop

### Programme:

*(to be modified according to participants' knowledge and objectives)*

9:30am	Coffee, registration and pre-session evaluation forms
10am (Sharp!)	Introduction and objectives Climate change, health and inequity, health co-benefits
11:30am	Coffee Why Australia, Why Health, Why Me?
1pm	Lunch
2pm	The NHS Sustainable Development Unit Australian Case studies Change management and taking action
4pm	Further questions, evaluation forms and close



The Royal Australasian  
College of Physicians

**NHS**  
**Sustainable  
Development Unit**

Appendix 3 – Baseline Questionnaire



## Climate Change, Sustainability & Health

### BASELINE Questionnaire

Name: \_\_\_\_\_

Position & Organisation: \_\_\_\_\_

Date: \_\_\_\_\_

*For each statement, there are four (4) options relating to your LEVEL OF AWARENESS about the statement. For each, please mark ONE (1) option only.*

	Not at all aware.	I have heard something like this before.	I know this and understand why – but not well enough to explain to an audience of health professionals.	Strongly aware - I know this well enough to explain to an audience of health professionals.
1. Carbon dioxide (CO <sub>2</sub> ) is not the strongest greenhouse gas.				
2. The most serious health effects of climate change are NOT primarily the diseases such as skin cancer, food poisoning, and malaria.				
3. Climate change exacerbates health inequalities both globally and in Australia.				
4. The carbon footprint of the National Health Service (NHS) makes up about a quarter of public sector emissions in England.				
5. To adequately reduce carbon pollution, the Australian health service must undergo radical, transformational change.				
6. Adaptation and mitigation are both necessary to deal with climate change.				
7. 'Contraction and convergence' addresses multiple global challenges.				
8. The health co-benefits of carbon reduction occur on three levels: individual, organisational, and global.				
9. Climate change is a specific challenge; whereas sustainable development is a set of solutions.				
10. Transforming the Australian health service into a low-carbon, sustainable sector is less about climate change and more about organisational change.				



# Climate Change, Sustainability & Health

For each statement, there are four (4) options relating to your **LEVEL OF AGREEMENT** with the statement. For each, please mark **ONE (1)** option only.  
**NOTE: For all of the following questions, please assume that you are provided with appropriate teaching materials, and have sufficient preparation time. Your audience would be a group of health professionals.**

	Strongly disagree	Disagree	Agree	Strongly agree
11. I could explain the basic science of climate change.				
12. I could explain the health effects of climate change.				
13. I could explain why climate change, carbon reduction and sustainable development are issues of social justice.				
14. I could describe the main components of the National Health Service (NHS) in England’s carbon footprint.				
15. I could explain how becoming an exemplar, low carbon service is a challenge, but also an opportunity, for the Australian health sector.				
16. I could explain why public health professionals have a duty to explain the connection between climate change, health, carbon reduction and sustainable development.				
17. I could explain the concept of ‘contraction and convergence’.				
18. I could explain and give examples of the health co-benefits of carbon reduction.				
19. I could explain why promoting sustainability is largely about managing change: in people, in organisations and in society.				
20. I would be confident to run a half-day training session on climate change, sustainability, and health.				

1. What is your current main source of information about climate change/sustainability? \_\_\_\_\_

2. Is there any current discussion about climate change/sustainability at your workplace? Yes/No

If you answered **Yes**, please describe who raises the issue, and what form the discussion takes: \_\_\_\_\_

Appendix 4 – Post-Workshop Questionnaire



## Climate Change, Sustainability & Health

### POST-WORKSHOP Questionnaire

Name: \_\_\_\_\_

Position & Organisation: \_\_\_\_\_

Video-conference site: \_\_\_\_\_

*For each statement, there are four (4) options relating to your LEVEL OF AWARENESS about the statement. For each, please mark ONE (1) option only.*

	Not at all aware.	I have heard something like this before.	I know this and understand why – but not well enough to explain to an audience of health professionals.	Strongly aware - I know this well enough to explain to an audience of health professionals.
1. Adaptation and mitigation are both necessary to deal with climate change.				
2. The health co-benefits of carbon reduction occur on three levels: individual, organisational, and global.				
3. The most serious health effects of climate change are NOT primarily the diseases such as skin cancer, food poisoning, and malaria.				
4. 'Contraction and convergence' addresses multiple global challenges.				
5. The carbon footprint of the National Health Service (NHS) makes up about a quarter of public sector emissions in England.				
6. Transforming the Australian health service into a low-carbon, sustainable sector is less about climate change and more about organisational change.				
7. Carbon dioxide (CO <sub>2</sub> ) is not the strongest greenhouse gas.				
8. Climate change exacerbates health inequalities both globally and in Australia.				
9. To adequately reduce carbon pollution, the Australian health service must undergo radical, transformational change.				
10. Climate change is a specific challenge; whereas sustainable development is a set of solutions.				



## Climate Change, Sustainability & Health

For each statement, there are four (4) options relating to your **LEVEL OF AGREEMENT** with the statement. For each, please mark **ONE (1)** option only.

**NOTE: For all of the following questions, please assume that you are provided with appropriate teaching materials, and have sufficient preparation time. Your audience would be a group of health professionals.**

	Strongly disagree	Disagree	Agree	Strongly agree
11. I could explain the concept of ‘contraction and convergence’.				
12. I could explain why promoting sustainability is largely about managing change: in people, in organisations and in society.				
13. I could explain why public health professionals have a duty to explain the connection between climate change, health, carbon reduction and sustainable development.				
14. I could explain the basic science of climate change.				
15. I could explain why climate change, carbon reduction and sustainable development are issues of social justice.				
16. I could explain and give examples of the health co-benefits of carbon reduction.				
17. I would be confident to run a half-day training session on climate change, sustainability, and health.				
18. I could describe the main components of the National Health Service (NHS) in England’s carbon footprint.				
19. I could explain how becoming an exemplar, low carbon service is a challenge, but also an opportunity, for the Australian health sector.				
20. I could explain the health effects of climate change.				

1. How **important** do you think this issue is for health professionals?      Not at all important      Somewhat important      Important      Extremely important

2. In your opinion, how **useful** was this workshop for health professionals?      Not at all useful      Somewhat useful      Useful      Extremely useful

3. Which parts of today’s session did you find:

- a) Most useful? \_\_\_\_\_
- b) Most enjoyable? \_\_\_\_\_
- c) Least useful? \_\_\_\_\_
- d) Least enjoyable? \_\_\_\_\_

4. What is the **one single thing** that we could have done differently today that would have helped you to be a more informed and effective advocate?

\_\_\_\_\_

5. What **role** would you like the RACP/AFPHM to take on this issue? \_\_\_\_\_

6. Do you have any comments about the use of **video-conferencing** today? \_\_\_\_\_