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## **WELLINE Final Workshop: Summary**

**'The Indoor Environment and Chronic Disorders across the Life Course'**

***Cranfield University, 9-10 February 2010***



**Welline is a network project funded by the Lifelong Health and Wellbeing (LLHW) Cross-Council Programme.**

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## Authors

|                            |   |  |
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# Final **WELLINE** Workshop: 'The Indoor Environment and Chronic Disorders across the Life Course'

**Cranfield University, 9-10 February 2010**

## **WORKSHOP SUMMARY**

### Background

The principal objectives of WELLINE are to identify factors in the indoor environment that influence the health and wellbeing of people throughout their lives, to identify interventions and other actions that can be recommended to improve health and well-being, and to highlight areas of uncertainty that require further research.

There have been two previous workshops, looking in detail at respiratory and cardiovascular illnesses and musculoskeletal and neurological disease - with a focus on what makes these conditions better or worse and what initiates them - in relation to the domestic indoor environment. The workshops included talks about the conditions from both medical practitioners and sufferers, to give delegates an insight into their causes, worsening factors and impacts on the individual.

The method used at the workshops to identify linkages between the indoor environment and health effects was based on an approach known as DPSEEA - Drivers, Pressures, State, Exposure, Effects and Actions. These elements were used to develop chains of relationships that allow identification of specific actions to improve outcomes or reduce adverse effects. A session at this workshop explained the modified DSPEEA method in more detail.

Delegates attending the workshops were from a range of organizations and backgrounds, both expert and 'lay'. We have sought a free-flowing exchange of thoughts and ideas, focusing on what causes these diseases and what indoor factors might influence their impact throughout the life course. We wished to establish particularly how the indoor environment might be modified to improve health and well-being, and to identify key outstanding research needs. Delegates were encouraged to contribute freely and interact with the other delegates, to enable us to develop a broad picture of the indoor factors that influence health in an aging population and to identify the key research questions and priorities for health professionals and policy makers. In addition to formulating one or more key research questions, an anticipated outcome from the WELLINE project is the production of a statement of best practice. The longer-term objective is to improve the health of individuals throughout their lives.

The specific objective of this third and final WELLINE workshop was to share the findings from Workshops 1 and 2 with a broader audience and gain consensus on the principal conclusions and research recommendations. The programme for the meeting is shown at Annex 1.

### Workshop presentations\*

The meeting began with an overview of the WELLINE project by the Principal Investigator, Professor Jon Ayres. He explained that caring for an increasingly aged population carries with it an intense resource requirement and that it is therefore important to try to keep individuals *out* of care. Health and well-being throughout the life-course can be improved by eliminating, ameliorating or mitigating those factors that have *adverse* impacts and enhancing those that have *positive* influences on health. The *home environment* is

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\* All the presentations are available in full on the WELLINE website: [www.welline.org.uk](http://www.welline.org.uk)

particularly relevant in this context because it is where people spend an increasingly large proportion of time as they age. The environment may affect health in a number of ways throughout the life-course, including: impacts on disease causation; incremental worsening of symptoms; and/or more sudden exacerbation of symptoms. Professor Ayres reiterated the principal objectives of WELLINE, namely to explore the interactions between health/ageing/well-being and factors in the (non-occupational) indoor environment, and to define key areas for research and intervention. He explained that the two workshops to date had focused principally on the worsening and exacerbation of symptoms, with the first workshop focusing on cardiovascular and respiratory disease, and the second on musculo-skeletal and neurological disease. He explained that the outputs from workshops 1 & 2 would be used to produce reports for the funders and a summary paper for a peer reviewed journal. The principal aim of this the third and final workshop was to pull together the ideas from the first two workshops to define a key package of work for submission to the next LLHW call for research.

The presentation by Ms Diane Whitehouse provided a quick 'tour de table' on the subject of *eGovernment* and *eHealth* as it relates to healthcare across the life-course, including: the European Commission and what it does; converging policy, deployment, market orientation and research; privacy and policy directions; and a brief overview of eGovernment and the life events approach. The talk included an overview of relevant EC funded projects and research opportunities under the FP7 agenda. Particular reference was made to the 'Ambient Assisted Living Programme', which aims to enhance the quality of life of older people. A point was made about the definition of 'home' and how this differs from 'housing', with the term 'home' invoking psychological meaning, not just the material aspects of a dwelling.

Dr Marcella Ucci presented a comprehensive overview on 'The Built Environment and Lifelong Health: Current and Future Perspectives'. The talk provided a thorough background to the topic, explaining both current approaches and trends and future challenges – including the impacts of climate change – with the focus (as appropriate for WELLINE) mainly on residential environments, the indoor built environment, and the UK and/or Countries with a westernised life-style. Identified issues included: the lack of (and approaches to) evidence; joined up thinking (including consideration of the outdoor built environment); the 'Great British house refurbishment' – challenge or opportunity?; engaging built environment professionals; obtaining the right balance between universal design and over-design; technological 'fixes' - not necessarily the 'silver bullet'; and costs and equality.

Professor Ayres (on behalf of George Morris and Sheila Beck of NHS Health Scotland) then provided a summary of the modified DPSEEA method, as utilised for the first two workshops. Full details of the methodology are given in Annex 2 of this report.

Finally, to aid discussion, Professor Paul Harrison presented an overview of findings from the first two workshops, providing background information on the specific diseases addressed – chronic lung disease, heart disease, musculoskeletal disease (notably osteo- and rheumatoid arthritis) and neurological disease (notably stroke, but including mental health and well-being) – but focusing primarily on the identified actions and 'knowledge gaps'. He stressed that the identified knowledge gaps were somewhat subjective, based as they necessarily were on the knowledge and expertise of the delegates present at each workshop, and suggested that these were perhaps better regarded as provisional research questions. The full list of these 'knowledge gaps', as presented to the delegates, is shown in Annex 3.

### Discussion session

The discussion session, led by Professor Ayres, focused first on the type of research proposal that would be likely to be attractive and successful.

It was agreed that the research idea must be new and must involve and be informed by 'users'. The research needs to address life-course issues and be expert based. It must actively involve the public, and its outcomes must be of value to the public. It is important that the research conducted is multidisciplinary and cross

cutting – for example, in the context of thermal comfort, diet, dehydration and temperature change would all need to be addressed.

A key area for research is behaviour modification - specifically how to persuade the public to adopt low risk behaviours. What can we identify in terms of health behaviour modification to achieve health promotion; for example, to mitigate the adverse impacts of heat and cold as people age? What specifically needs to be investigated with respect to behaviours that mitigate the impacts of heat and cold on an ageing population?

It would be advantageous to link the research to climate change, and important not to consider only the aged in the proposal; although we are interested in disease in the elderly, the research should not be limited to this; rather it should address the whole life course, including behaviours that cause or contribute to poor health throughout life. It is advisable to consider life expectancies and know when key factors act during the life course, before pathologies become established. It may be possible to reduce critical events and their impacts, or reduce the rapid advancement of disease towards the end of life.

It was suggested that the Housing Health and Safety Rating System (HHSRS) could be improved and that there is the need for a better method of ranking health risks, especially those that impact elderly people.

Many research recommendations from the previous workshops related to the domestic home environment, leading to the obvious question a householder might ask: 'How would I know if my house optimises my health and well-being?' There should be recommendable active interventions that have been demonstrated to work – i.e. with evidence that the solutions imposed do actually improve health. Houses should be built based on best practice; there should be a cohort of buildings whose occupants are followed over time, leading to a scientific definition of a 'healthy home'. There needs to be clarity over what the important parameters are – incorporating energy efficiency but not totally bound by this if there are resultant compromises to health.

There is a need to define the indoor environment that is to be achieved and measured, while accepting that those most at risk are in particular situations by both chance and choice. There is the need to examine how people live in their homes. For example, to address the question of why people die in winter, it would be necessary to investigate in considerable detail both physical/physiological effects (e.g. sharp changes in blood viscosity with cold) and personal behaviours (e.g. moving from a very warm living room to a cold bedroom). Inter-disciplinarity in such a study would be extremely important and necessary. A successful (cohort) study of this type would require variation in both housing type and inhabitants' characteristics (e.g. age, health and behaviours).

It is at present difficult to define minimum standards for 'healthy housing': what are people's expectations and perceived needs? People may react adversely to imposed changes that are intended to improve their wellbeing – this is where the concept of 'home' differentiates from the definition of 'housing'.

There appears to be the need for a general 'home questionnaire' to probe inhabitants' evaluation of their home with regard to function, health and wellbeing. Also, how do people perceive ageing - and how do they interact with their homes? It is certainly necessary to test the hypothesis that the home environment has a significant impact on elderly people with chronic health conditions. This would require analysis of behaviour and ascertainment of medical effects. Because each room in a house has a different function it is likely to be used, heated and furnished differently – so understanding recurrent behaviour is paramount.

In addition to studying the domestic home environment it would be informative to investigate the build design of care homes and determine 'model' characteristics.

There is a need to evaluate the significance of the impact of the indoor environment on health compared, for example, to the effects of diet and exercise. What specifically is the contribution of (poor) indoor air quality to chronic disorders, and is there a difference in time spent in the home between the chronically ill and older well people?

It was suggested that a study of ‘the ecology of the elderly’ should be undertaken; this led to a consideration of what the elderly lack – e.g. exercise, intellectual stimulation, proper diet? Social isolation can be a very important deleterious factor. It was considered that those most at risk are probably not getting the support; the health sector has no means of analysing and acting on need, so that only those seeking assistance receive the support they need. There is a lack of commonality regarding who is at risk. It was questioned whether the health sector is actively engaged in housing design.

A discussion on housing and new technology led to the question of whether incoming particles should be filtered out and whether this would make a difference in terms of health or quality of life. Also what would be the impacts/benefits of ‘smart metering’ – could this be extended to health ‘assessment’, and does monitoring make an impact on behaviour which would be of interest to built environment/health researchers?

The point was made that the research proposal should not focus on methodology *per se* but on the question(s) to be addressed and the best methods to address those questions – i.e. hypothesis-led not ‘technology’-led.

A number of questions were raised that could be worthy of study:

- ‘If I improve energy efficiency (in a sustainable way), will this have an impact on my health and quality of life?;
- Are there early life exposures that impact on health in later life (e.g. ETS, allergens?);
- What is it about ‘social deprivation’ that specifically impacts on health – is it something that happens *in utero* or is there retardation of health in the peri-natal period, for example?

It will be necessary to show that quality of life is [can be] improved, which means determining the drivers for quality of life. It was suggested that mechanistic research is required before intervention studies can be undertaken. Research could focus on neighbourhoods or individual houses, or probe to a deeper level.

#### *Chairman’s summing-up and final remarks*

In the previous workshops, to help focus on occupant-environment interactions, we looked at examples of ill health that might be exacerbated by the built environment. It is now perhaps necessary to take in a broader picture of health, well-being and the built environment, inevitably incorporating behavioural aspects and interactions between behaviour, quality of life and exposures. We need, for example, to know if/how behaviour is modified by disease.

An ecological study was proposed of the apparently well and unwell in old age, so long as this had a practical outcome. A controlled environment can stabilise conditions such as COPD, but we need to know how people live with these diseases in the home. It would perhaps be feasible to modify the home environment specifically for people with COPD, for example using information on how people live in their home as a baseline. However, it would not be appropriate to only look at physiological variables – a multidisciplinary approach would be needed. Currently, the extent to which people expose themselves to risk is unknown, and there is no quantifiable model for this.

In formulating a research proposal we need to assess the likely impact of the research – especially on subsequent policy development. An important area to include in the proposal is ‘future-proofing’ the domestic housing stock for health in light of future climate change challenges, with special regard to chronic health conditions and their relation to the built environment. However, it is important not to assume that ageing is driving behaviours. In light of the current ‘low carbon footprint’ agenda, it is important to encourage people to think about health-related changes to housing and not just energy-related adaptations; refurbishment of a dwelling solely for energy-efficiency could be very deleterious to health.

A community trial of the use of shutters on the ground floor and thermal control was suggested. It was acknowledged that here are currently energy and financial drivers, but whether there are health drivers was

questioned. The concept of sustainable refurbishment incorporating health and well-being parameters should be promoted. But the question was posed: how can individuals' behaviour be changed, and to what extent are people interested in health?

An important question to address is 'what is an *ideal home*?' from a health viewpoint. This could perhaps be determined by mapping housing types against health data, although adjusting for social deprivation and closely related 'confounding' factors would be problematic. Such mapping exercises have been done, for example by the HPA using maps as an indicator tool kit for CEHAPE (Children's Environment and Health Action Plan for Europe).

It was suggested that the research proposal should focus on temperature – e.g. is there an association between cold temperatures in the home and presence or exacerbation of chronic disease? Others thought that the home is perhaps not the best place to start because of problems associated with changing people's behaviour in their home. Certainly it was agreed that it would be necessary to think carefully about the methodology in order to obtain meaningful answers.

A number of different approaches were proposed whereby the house is seen as a 'therapeutic tool' or as a 'prosthetic tool'. It was suggested that inhabitants should be asked what changes they would like made to their home to improve their quality of life. It would be helpful to identify what housing factors or elements have a harmful effect on health that could possibly be changed, and how adaptations to housing might improve chronic health conditions. It was questioned, however, whether it is presently possible to identify/define 'at-risk' groups.

It was agreed that social isolation and loneliness can have a very important negative impact on health – e.g. the impact of long widowhood.

There was consensus on the view that temperature has a massive impact on the elderly and that excess winter deaths are avoidable. Temperature, climate change and the elderly thus constitute a very important topic of research.

It was also agreed that the research will need to address behaviour/attitudes and involve 'users'. Older people are generally happy to be involved in research, as long as they are informed of the final outcome of the study. It was thought helpful if the project proposal were to have outcomes comparable to activities in other countries.

#### Other outcomes - delegate responses

In order to ascertain delegates' experience of the workshop, participants (see annex 4) were invited to complete a questionnaire (see annex 5). In addition to standard questions about the meeting venue, organisation, and quality/ relevance of the presentations, the form included questions about the relevance of the meeting and its outcomes to the work interests of the individual delegate. Overall, 13 participants returned a fully completed questionnaire. To avoid bias, the 7 Welline members who had contributed to the workshop development (contents, etc) did not fill in the questionnaire.

The overall rating of the meeting by delegates who completed a questionnaire was either very good (4/5; 8 delegates) or excellent (5/5; 5 delegates).

Encouragingly, 12 delegates responded positively (with a score of 3 or more out of 5) to the question: 'In the coming months how likely are you to develop ideas/concepts you have heard discussed at the workshop in your area of work?'

Eleven delegates responded 'yes' to the question 'Have you established new working relationships with members of the WELLINE network?' (2 said 'no').

Nine delegates responded 'yes' to the question 'Has participation in the network allowed you to establish or build capacity in the area of lifelong health? (3 said 'no').

Delegates were also asked to respond to the question 'What three primary outcomes you would hope to see as a result of WELLINE?'. The following responses were amongst those recorded:

"Behavioural mapping research"

"Consideration of IAQ vs. external AQ in socially and economically deprived areas linked with behavioural habits of elderly people"

"More understanding of the impacts of built environment and health"

"Better understanding of gaps in knowledge"

"Networking"

"A 'Smart' method of studying the behaviour of people within their houses"

"Guidance on designing 'A healthy home'"

"Push towards sustainable houses"

"Some 'action' research; things change as a result"

"Real effort on multi-disciplinary... research"

"Multi level design"

"Evaluations of housing interventions - neighbourhood level"

"Finding out what is 'good' about localities in which there are long life expectancies - e.g. Royal Borough of Kensington and Chelsea"

"Wealth and Poverty comparisons. If the wealthy live longer what are they choosing in terms of locality and lifestyle, quality food, homes controlled at desired temperatures, etc?"

"Further development of this area - older adults and home environment - by UKIEG"

"Information about the cost effectiveness of (environmental) interventions as opposed to medical/care costs"

"Best ways to influence behavioural change and acceptance of need for appropriate measures - source of knowledge and its acceptability. Do people have a secondary gain (attention and sympathy, etc.) from illness therefore making interventions more or less successful?"

"Recommendations for behavioural/environmental changes prior to developing chronic disorders (preventative)"

In addition, a written response was received after the meeting that provided more detailed feedback, especially on the "ecology of the aged" research suggestion. In this note it was suggested that a study that identified a group of susceptible elderly people and found out about how they live - their diet, exercise pattern, fluid intake, how they heat their homes, etc. - would produce interesting data, and also that there is a need to know more about the physiology of the elderly. All the comments and suggestions received will be considered during development of the research proposal.

### Developing the research proposal

On the day following the workshop, several members of the WELLINE team\* met again to consider the principal outcomes from the workshop and discuss the outline of the research proposal, including consideration of the important question of public and stakeholder (user) involvement. The structure and content of the final client report and the preparation of papers for publication were also discussed, as well as methods for disseminating the results of the WELLINE project.

### Conclusions

This workshop was the last of three in the WELLINE project aimed at exploring how the indoor environment influences the health and wellbeing of people throughout their lives, identifying interventions and other actions that can be recommended to improve health and well-being and highlighting areas of uncertainty that require further research. A total of 66 delegates attended the workshops (46 different individuals), with a core group of 6 WELLINE project team members attending all three.

The modified DPSEEA model was used to explore linkages between domestic indoor factors and the development and exacerbation of ill-health throughout the life-course. A range of 'knowledge gaps' was identified.

Several possible strategies for developing further research to address the identified knowledge gaps were discussed. The WELLINE grant holders and core participants will use the outcomes of the workshops to develop a multidisciplinary grant proposal as part of the forthcoming Lifelong Health and Wellbeing research call.

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\* Jon Ayres, Marcella Ucci, Isabella Myers, James Goodwin, Paul Harrison, Derrick Crump and Sean Semple, plus Rosie Day and Paul Higgs.

## ANNEX 1: WORKSHOP PROGRAMME

| <b>9<sup>th</sup> Feb 2010, Cranfield University</b><br><b>Indoor Environment and Chronic Disorders across the Life Course</b><br><b><i>WELLINE Workshop 3 and UKIEG Annual Meeting</i></b> |   |  |
|---|---|--|
| 10.0-10.30  | Registration  |  |
| <b>Part 1: Introduction and Background</b>  |   |  |
| 10.30-10.40   | Introduction to WELLINE   | <i>Prof Jon Ayres</i><br>University of Birmingham        |
| 10.40-11.10   | A life events approach: some examples from the fields of European eGovernment and eHealth | <i>Diane Whitehouse</i><br>The Castlegate Consultancy    |
| 11.10-11.40   | Built Environment and Lifelong Health: Current and Future Perspectives                    | <i>Dr Marcella Ucci</i><br>University College London     |
| 11.40-12.00   | Coffee Break  |  |
| 12.00-12.10<br><i>George Morris</i>   | The DPSEEA model  | <i>Prof Jon Ayres</i><br>University of Birmingham        |
| 12.10-12.30   | Summary of Workshops 1 and 2  | <i>Prof Paul Harrison</i><br>PTCH Consultancy            |
| 12.30-13.00   | Discussion: key research questions, priorities and themes                                 | <i>Led by Prof Jon Ayres</i><br>University of Birmingham |
| 13.00-14.15   | Lunch, Poster Viewing and UKIEG AGM*  |  |
| <b>Part 2: Discussion</b>   |   |  |
| 14.15-15.15   | Discussion in break out groups  |  |
| 15.15-15.30   | Coffee break  |  |
| 15.30-16.30   | Feed back from groups and summary discussion  |  |

*WELLINE is a network project funded by Lifelong Health and Wellbeing Cross-Council Programme. Funding Partners: Biotechnology and Biological Sciences Research Council, Engineering and Physical Sciences Research Council, Economic and Social Research Council, Medical Research Council, Chief Scientist Office of the Scottish Government Health Directorates, National Institute for Health Research /Department of Health, Health and Social Care Research & Development of the Public Health Agency (Northern Ireland), and Wales Office of Research and Development for Health and Social Care, Welsh Assembly Government.*

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\* Note: The UKIEG AGM did not in fact take place

## ANNEX 2: THE MODIFIED DPSEEA MODEL

In Scotland, the Good Places, Better Health<sup>1</sup> policy recognised the need to make better connections between health and the physical environments in which people live, work, are educated, and take their leisure. The first phase of this new approach is to frame problems, gather intelligence and analyse relationships. In order to do this, a model has been identified and modified<sup>2</sup>, which allows structured cross-sectoral discussion and reporting of the issues and current actions or those which could be considered in the future.

The model, (DPSEEA – which is an acronym of the elements within the model (described below)) was first conceived for work by the World Health Organisation<sup>3,4</sup> to develop indicators for a European environment and health initiative. DPSEEA provides a simple structure to consider the ways in which specific elements in the environment impact on health; the ways in which these environments are generated; and actions which can be taken to address the results chain which ends with health outcome(s). In addition the modified model (modified DPSEEA) considers the issues which determine whether people are exposed to particular environmental factors and whether these exposures subsequently lead to health effects (the contexts). The model has proved a useful tool in engaging people from a wide range of backgrounds in common discussion of the issues and in providing structured feedback on those discussions.

The modified DPSEEA has been provided as a diagram below (Figure 1), which gives the details of how the acronym is formed (the first letter of each element is underlined, starting at the top of the diagram).

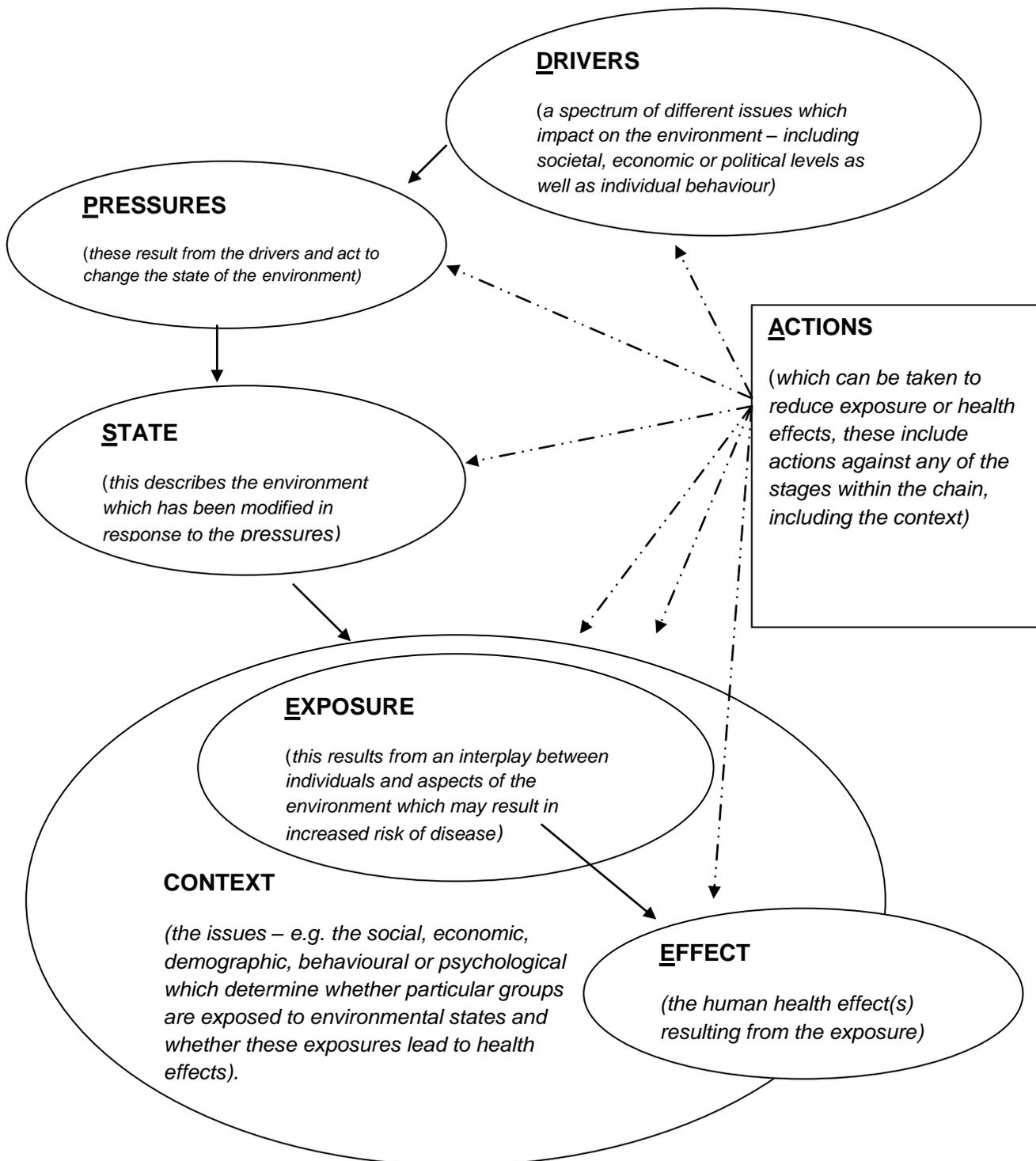
The model can be read from any starting point. Starting from health effect, it considers the environmental exposures that may influence such an effect, and the contexts which determine exposure and the risk of an observable health effect. From there it considers the environmental states which lead to such exposures, the man made pressures on environments leading to such states and the social, political, economic, commercial, fiscal and other human activities which lead to these pressures. All points on the chain are then considered for possible action.

There is often no one single environmental factor which leads uniquely to a single health effect, and the model is often branched, with multiple chains leading to a number of different health impacts. Thus an action which has been envisaged to impact on one health state may result in impacts on a number of other health states or issues (some of which may be positive and others negative). DPSEEA modelling will establish the former, and the latter will be explored by other programmes within the Good Places, Better Health implementation.

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**Figure 1** The modified DPSEEA model



## **ANNEX 3: SUMMARY OF IDENTIFIED KNOWLEDGE GAPS (FROM WELLINE WORKSHOPS 1 AND 2)**

### **Chronic respiratory and cardiovascular disease**

- Whether the National House Condition Survey contains or enables links with relevant health data
- Informational need relating to compatible space resolution within buildings
- Need for a definition of the ideal living environment for people with COPD/CVD – i.e. a statement of best practice
- Lack of knowledge of the nature and impact of modifications made after dwellings are built
- Whether physiological responses are primarily to changes in body temperature or air temperatures *per se*
- Profiles of thermal exposure
- Impact of cold homes on behaviour (e.g. going out)
- Effects of climate change on older people
- How temperature affects individuals with specific diseases
- Health impacts (effects and mechanisms) of VOCs
- Health impacts of air movement (rather than air exchange rate)
- Personal exposures within a building
- Health impacts of high CO<sub>2</sub> levels
- Ventilation levels (rather than air tightness) in individual houses
- Age related behaviours such as opening of windows
- The different ventilation rules/guidance in England, Scotland and Wales
- House condition reports (in Scotland) prepared on the sale of a house
- The impact of quality of life and Vitamin D deficiency on the progression of chronic disease and general mobility
- Systematic review of evidence required on impacts of building design, layout and ergonomics
- Systematic review of evidence required on impacts of external and internal communications
- Individual noise exposure levels and subjective noise thresholds

### **Musculo-skeletal and neurological conditions**

- Evaluation of the effectiveness of heating allowances
- Evaluation of the impact of the ergonomic siting of heating controls or multiple/mobile controls
- Assessment of how cold impacts on occupant behaviour
- Investigation of how cold specifically affects the pathology of stroke and myocardial infarction
- Investigation of the relationship between cold temperatures and falls
- Investigation of how age-related changes in thermal behaviour affect stroke and myocardial infarction
- Investigation of how age-related changes in use/knowledge of heating systems affect stroke and myocardial infarction
- Investigation of interactions between the effects of cold and exposure to ETS/particulate matter
- Investigation of endothelial activation by heat
- Investigation of the interaction between heat, cardiovascular/stroke pathology and behaviour
- Investigation of interactions between heat and underlying morbidity levels
- Identification of possible unintended consequences and negative impacts on other occupants of installing equipment intended to improve the home environment

## ANNEX 4: PARTICIPANT LIST

|                  |   |
|------------------|---|
| Andrew Atkinson  | Senior Lecturer in the Faculty of Engineering Science and the Built Environment, London South Bank University |
| Jon Ayres        | Professor of Environmental and Respiratory Medicine, University of Birmingham                                 |
| Angela Barnes    | Northern Committee Manager, Help the Aged & Age Concern   |
| Simon Church     | Partnership Development Officer, eaga plc   |
| Joanne Coast     | Professor, Health Economics, University of Birmingham   |
| Derrick Crump    | Director, IEH, University of Cranfield  |
| Rosie Day        | Lecturer in Environment and Society, University of Birmingham   |
| Andy Dengal      | Associate Director, Environmental Evaluation, BRE   |
| Pam Eakin        | Professor of Occupational Therapy, Faculty of Health and Social Care, London South Bank University            |
| Darrell Gale     | Health Protection Agency  |
| Amy Galea        | Health Protection Agency  |
| Jonathan Graves  | Health Protection Division, Department of Health  |
| James Goodwin    | Head of Research, Help the Aged & Age Concern   |
| Tim Harman       | Southern Committee Manager, Help the Aged & Age Concern   |
| Paul Harrison    | Director, PTCH Consultancy Ltd  |
| Paul Higgs       | Sociologist, UCL  |
| Bob Maynard      | Head of Air Pollution Unit, Health Protection Agency  |
| Kevin Morgan     | Psychologist and Gerontologist, Loughborough  |
| Isabella Myers   | Scientific Writer, Health Protection Agency   |
| Louise Twinam    | Development Manager, npower   |
| Marie Robson     | Health Protection Agency  |
| Sean Semple      | Senior Lecturer, Environmental & Occupational Medicine, University of Aberdeen                                |
| Mamoona Tahir    | Consultant in Communicable Disease Control, West Midlands   |
| Lousie Twinam    | Development Manager, npower   |
| Marcella Ucci    | Lecturer in Facility and Environment Management, University College London                                    |
| Diane Whitehouse | The Castlegate Consultancy  |

**ANNEX 5: FEEDBACK FORM**



**9<sup>th</sup> Feb 2010, Cranfield University  
Indoor Environment and Chronic Disorders across the Life Course  
Welline Workshop 3 and UKIEG Annual Meeting**

**Evaluation**

Please circle a score for each presentation / session / question on a scale of 1-5 (1= lowest, 5 = highest):

| <b>Programme</b>   | <b>Low</b> |   |   | <b>High</b> |   |
|--|------------|---|---|-------------|---|
| A life events approach: some examples from the fields of European eGovernment and eHealth: <i>Diane Whitehouse</i> | 1          | 2 | 3 | 4           | 5 |
| Built Environment and Lifelong Health: Current and Future Perspectives: <i>Marcella Ucci</i>                       | 1          | 2 | 3 | 4           | 5 |
| The DPSEEA model: <i>Jon Ayres</i>   | 1          | 2 | 3 | 4           | 5 |
| Summary of Workshops 1 and 2: <i>Paul Harrison</i>   | 1          | 2 | 3 | 4           | 5 |
| Discussion: Key research questions, priorities and themes  | 1          | 2 | 3 | 4           | 5 |
| Discussion in breakout groups / Feedback from groups   | 1          | 2 | 3 | 4           | 5 |

| <b>Meeting</b>                | 1 | 2 | 3 | 4 | 5 |
|-------------------------------|---|---|---|---|---|
| Topics covered                | 1 | 2 | 3 | 4 | 5 |
| Quality of presentations      | 1 | 2 | 3 | 4 | 5 |
| Time given for discussion     | 1 | 2 | 3 | 4 | 5 |
| Venue facilities and catering | 1 | 2 | 3 | 4 | 5 |
| Overall rating of the meeting | 1 | 2 | 3 | 4 | 5 |

| <b>Impact</b>  | 1   | 2 | 3 | 4  | 5 |
|--|-----|---|---|----|---|
| In the coming months how likely are you to develop ideas / concepts you have heard discussed at the workshop in your area of work? | 1   | 2 | 3 | 4  | 5 |
| Have you established new working relationships with members of the WELLINE network?  | yes |   |   | no |   |
| Has participation in the network allowed you to establish or build capacity in the area of lifelong health?                        | yes |   |   | no |   |
| Can you tell us what three primary outcomes you would hope to see as a result of WELLINE?  |     |   |   |    |   |
| 1.   |     |   |   |    |   |
| 2.   |     |   |   |    |   |
| 3.   |     |   |   |    |   |

**Any other comments please write on reverse of form – thank you**

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