



Menopause

keeping cool under heat

Lifelong health report



Executive summary

The steep increase in life expectancy is one of the greatest triumphs in recent history, thanks to advances in medical sciences and healthcare. Current trends indicate that by 2051, one in four people in the UK will be older than 65.

We all know that our bodies change as we grow older. Some age-related changes include degenerating eyesight and hearing, issues with bones and joints and digestive and metabolic changes. It makes sense that by better understanding these changes and the impact they have on people's lives we will be better informed to develop 'tools' to help individuals adapt and live fuller and healthier lives for longer.

'Tools' can be interpreted in the broadest sense to mean anything from community support, education, fitness, medication and nutrition, to technology products and services.

At Cambridge Consultants we have decades of experience working in medical and consumer markets and we're keen to see how we can bring our skills to this space. This year we've teamed up with the National Innovation Centre for Aging (NICA) and Open Lab at Newcastle University's School of Computing Science to explore this further.

Together we wanted to focus on an area of age-related change, and so we chose to focus on the menopause.

In this report we share some of the insights gained from a series of workshops that shed light on women's experiences of the menopause, and the huge impact that hot flushes and night sweats can have on women's physical, psychological and social wellbeing.

We have identified a real need for a new range of (non-drug based) consumer products and services that can help women better manage their symptoms and we've begun exploring some possible options in this report.

¹ https://link.springer.com/chapter/10.1007/978-3-642-40477-1_37 or Robertson, T., Durick, J., Brereton, M., Vaisutis, K., Vetere, F., Nansen, B., & Howard, S. (2013, September). Emerging technologies and the contextual and contingent experiences of ageing well. In IFIP Conference on Human-Computer Interaction (pp. 582-589). Springer, Berlin, Heidelberg.



'Menopause – a Cinderella subject'

Menopause is the period in a woman's life when her ovaries slow down and then stop the production of the hormone oestrogen. This leads to menstruation stopping and the loss of fertility. This change usually starts between the ages of 45 and 55 and has a major effect on a woman's body – in many cases causing a wide range of associated physical and psychological symptoms.

Although part of the natural ageing process affecting every woman at some stage of her life, menopause is still seen by many as merely 'another women's issue'. It's one of those 'Cinderella subjects' that's rarely discussed, often dismissed and trivialised and generally pushed into the background.

A small but growing constituency has begun to speak out, to change this attitude, arguing that its time that menopause and its associated symptoms were talked about more openly. This is not only to help women themselves to understand and share what they are going through, but also to spread the word, because the effects of menopause have wider implications for the population as a whole.

For instance, in January 2018, BBC Woman's Hour launched a special multimedia report on the complex ways in which

experiencing the menopause can change relationships in our lives.

At some point all women will go through the menopause. Some will sail through with few symptoms but the vast majority will experience at least some discomfort or problems.

In the UK, women over 45 make up a considerable proportion of the working population and of course make a significant contribution to the economy.

Menopause lasts for several years and so if organisations want to retain and look after their often more experienced women employees they need to be prepared to invest in understanding how menopause affects women and what they can do to help.

A first step for many companies would be to create a culture where women don't feel that the subject is taboo and where they don't have to try and cover up their symptoms.

A small number of organisations are already making steps in the right direction, by offering women more flexible working arrangements and in some cases offering extended leave.



For many women, however, something as simple as providing desk fans, or moving women to a desk that is near a window, would really help.

Menopause can also have a significant impact socially, affecting family life and relationships. In some cases, symptoms such as hot flushes and night sweats cause women to cut back their social lives considerably and contribute to partners deciding to sleep separately.

Half the world's population will go through menopause at some stage and yet there is still a lack of knowledge and advice on how best to manage the symptoms – even within the medical community.

Perhaps because menopause is a life affecting but not life threatening condition, many GPs consider it a low clinical priority. It's also often the case that GPs have received minimal training on the subject. The feedback from our research indicates that it was not unusual for a woman to be directed by their GPs towards website information or given a factsheet and left to manage her own symptoms.

Currently 'Menopause UK'² estimates that there are around 13 million women in the UK who have experienced or are experiencing the menopause – that's approximately a third of all the women in the UK and there are more every day. Whilst not everyone will seek specialist professional help, what's available is woefully inadequate. Information on Menopause UK's website indicates that there are around 60 specialist menopause clinics in the whole of the UK.

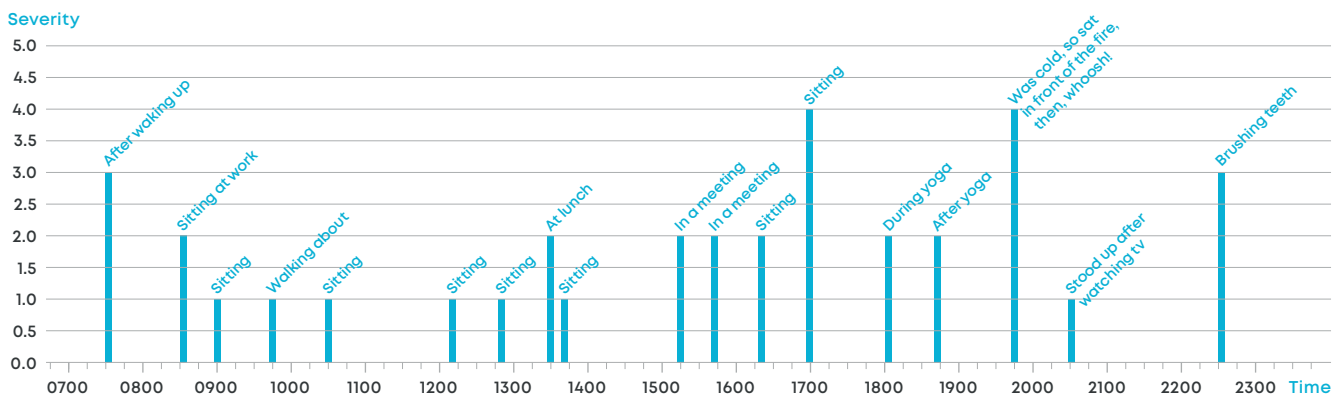
This lack of good support and advice leads women to do their own online research. Whilst there are a number of websites and forums that provide excellent general advice on menopause, there are many more that provide contradictory and in some instances medically incorrect information. Sorting the good from the bad can prove challenging.

Some of the most commonly experienced symptoms of menopause are related to the change in the body's ability to regulate temperature (vasomotor symptoms) – otherwise referred to as 'hot flushes' (or 'hot flashes' in the US).

Hot flushes can be present throughout menopause or come and go periodically. Research carried out in the US³ suggests that up to 80% of menopausal women will experience hot flushes, these last on average for seven years and may go on for 11 years or more. For some women, their bodies never return to normal and these symptoms continue for the rest of their lives.

Hot flushes take place both during the day and throughout the night – the aptly named 'night sweats'. From the research we have carried out it is not unusual for women to be woken 10 or more times every night, feeling extremely hot and sweating profusely. The sleep disruption this causes, accumulated over months and years, not only affects women's immediate physical and mental health but could have significant long-term implications.

1 in 3 women in the UK have experienced or are experiencing the menopause"



² <https://menopauseuk.org/>

³ Duration of menopausal vasomotor symptoms over the menopausal transition Nancy E ovis et al (April 2015)

Living with hot flashes

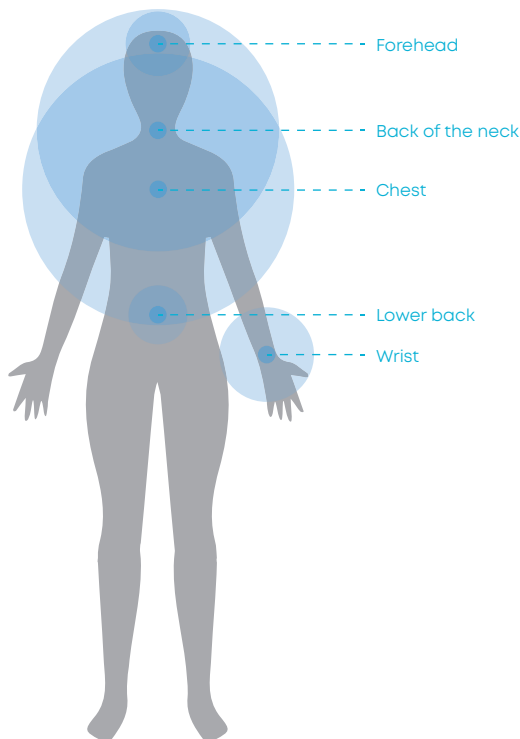
In March this year, [Cambridge Consultants](#), [NICA](#) and [Open Lab](#) jointly held three workshops on menopause, one in Cambridge and two in Newcastle. Volunteers were drawn from Cambridge Consultants employees, Newcastle University employees and members of the public (recruited via [VOICE](#)).

The purpose of the workshops was to:

- Understand the variety of experiences women go through when they have hot flashes and night sweats
- Understand how women are currently trying to manage these symptoms
- Establish the opportunities for technology to help improve the outcomes.

As part of the participant selection process we sent out preliminary questionnaires. This enabled us to identify 28 women who were currently experiencing hot flashes and night sweats and for whom the problem was very real. The age that the women had started menopause ranged from mid-30s to mid-50s, some of those attending the workshops had only recently started the menopause others had been living with it for many years. Except for one participant, everyone was in full time employment.

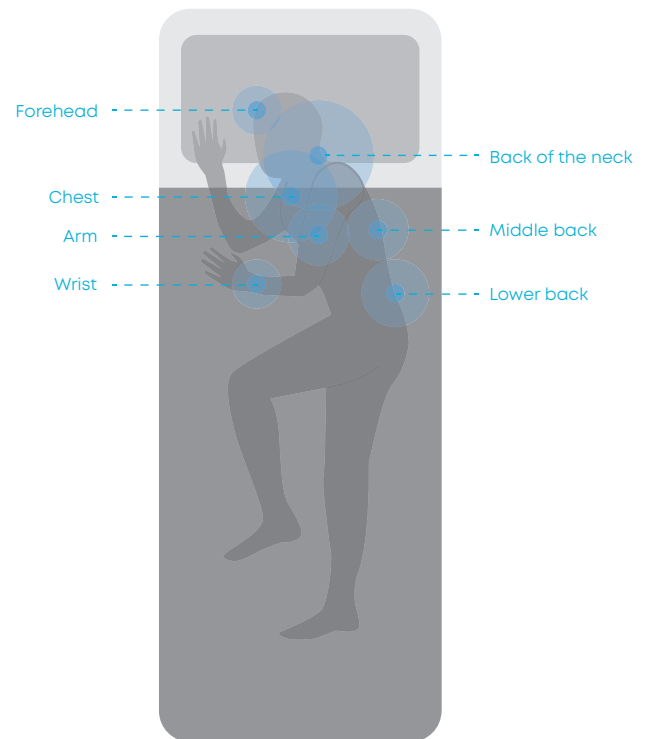
Before they attended the workshop we asked each woman to fill out a personal diary, recording their hot flashes and night sweats over a period of a week.



The questionnaires, diaries and workshops highlighted that there were multiple common experiences that women shared during the menopause. This was the same for hot flashes and night sweats. Some of the more significant findings are listed below:

Lack of Understanding

- A very high proportion of women reported arriving at menopause with little knowledge about it and having not discussed any of the symptoms with anyone, not even close family.
- None of the women at the workshop had been prepared for the major impact that menopause could have on their lives.
- Participants still felt there was a strong taboo about talking about menopause, particularly in the workplace.
- Society generally associates menopause with old age. For women that hit menopause in their late 30s or early 40s, there was a real worry that menopause had been wrongly diagnosed and that they instead had a serious illness.
- The general expectation was that menopausal symptoms would last between one and two years.
- There was genuine shock that they were likely to last for considerably longer than this, on average around seven years, and that for some they would still be ongoing into their 70s and 80s.



The unpredictability of hot flushes

- Comparing the preliminary questionnaires with the personal diaries showed that women often considerably underestimated the number of hot flushes they were getting in an average day.
- Hot flushes were reported as appearing very suddenly. Few women, felt that they had any sort of advanced warning that one was about to hit.
- Most women agreed that a hot flush felt like “an uncontrollable rush of heat” that rose up through the body to the chest, face and neck.
- Accompanying the hot flush was often a feeling of helplessness that it “just had to be left to run its course”, which on average took two to three minutes (interestingly, one lady had devised a system of coping based around counting to 180, at which point she would know that for her the hot flush would be over).
- The variability between how many hot flushes that different individuals experienced was enormous. Women reported anywhere between two to fifty hot flushes per day.
- The number of hot flushes also varied for an individual from day to day, week to week and month to month.
- Some women regularly had a hot flush after certain activities, for example: on waking in the morning, after having a shower, after exercise, after eating hot food or having a hot drink.
- Stressful situations (e.g., giving talks or presentations) were also identified as a common trigger for a hot flush.
- Other symptoms, such as headaches, palpitations, profuse sweating and blushing often accompanied the hot flush. Blurred vision and hearing issues were also reported.
- In addition to hot flushes, several women also reported experiencing cold chills (also vasomotor disruption – but in the other direction).

Sleep disruption

- As with the hot flushes, comparing the preliminary questionnaires with the personal diaries showed that women often considerably underestimated the number of night sweats they were getting per night.
- There were many similarities with hot flushes: the numbers of night sweats per night varied considerably between our participants (between two and twenty; number of occurrences also varied for an individual from day to day, week to week, and month to month).
- Night sweats had a huge impact on an individual’s sleep quality, and this in turn impacted how they functioned in their waking hours. One woman said, “I can’t remember the last time I had a full night’s sleep. I could sleep on a washing line at one time”.
- With the exception of one participant who had only recently started menopause, everyone had experienced both hot flushes and night sweats. Everyone that had experienced both considered that night sweats had the biggest impact on their quality of life.
- Women believed that night sweats caused them to wake up, i.e., they didn’t wake first and then have a night sweat.
- Generally, women were woken with a sensation that the whole body was extremely hot (similar to a fever) and getting hotter. Temperature didn’t rise up through the body to the chest and head as with a hot flush. Maximum discomfort was often felt to be in the trunk of the body or the back. It was suggested that this may be due to the night sweats being more advanced by the time they had woken someone up.
- Women reported that the average length of a night sweat was the same or longer than hot flushes.
- There were considerable individual differences in the amount of sweating. Some women woke up soaked with sweat, others hardly sweated at all, although they felt intense heat.

What to do about it?

Our work identified a vast array of approaches that women use in an effort to manage symptoms.

Many women admitted that they were desperate for some relief and would try almost anything. Often, they were not convinced that what they were doing was working but dared not stop in case doing so made matters worse. There was also frustration that many of the options are prophylactic, requiring constant administration, which is not reflective of the variable nature and frequency of hot flushes.

Drug based options

Hormone Replacement Therapy (HRT)

HRT is considered by many to be the most effective method of relief for hot flushes and night sweats.

There are two main types of HRT: oestrogen only and combined HRT, which comprises both oestrogen and progestogen.

Oestrogen-only HRT is usually recommended for women that have had a total hysterectomy (removal of the womb). For those women that haven't, a second hormone is also prescribed (progestogen) to counteract the effects of oestrogen and protect the womb lining.

When discussing HRT, women at our workshops fell into a number of categories:

- Those that had taken HRT and thought doing so was a 'no-brainer' if it meant that they could live a fuller life, free from menopausal symptoms.
- Those that had been taking HRT but had been advised to come off it for health reasons after they reached a certain age. One woman stopped HRT after having taken it for around 20 years and found that her menopausal symptoms returned. She had wanted to go back onto it but had been told she was now too old and the risks associated with taking the drug long-term were too high.
- Women who would have liked to take HRT but were unable to do so, either because it couldn't be prescribed alongside their existing medication or because they were already in a high-risk medical category based on their family medical history.
- Others that had taken HRT but, having changed prescription several times, had finally given up because they hadn't found the right combination that worked for them.
- Those women who did not want to take medication (by far the largest group at our workshops).

Some of this group had been influenced by the publicity from reports such as the Women's Health Initiative (WHI) study in 2002⁴ and the UK based Million Women study⁵, published in 2003, that linked long term use of HRT with increased risk of cancer. It should be noted that researchers subsequently modified these conclusions and recommendations to indicate that prescribing HRT to perimenopausal, menopausal or recently post-menopausal women is far different from prescribing it to women 10 years into the menopause. However, the original concerns still remained in people's minds.

Some women had also seen currently available guidance from the NHS Choices website⁶ which states that, "some types of HRT can also cause a small increase in your risk of certain serious problems, such as **blood clots** and **breast cancer**. The benefits of HRT are generally felt to outweigh the risks. But speak to your GP if you have any concerns about taking HRT".

Similarly, Cancer Research UK's website⁷ states that, "the evidence that HRT can cause some types of cancer (**breast**, **womb** and **ovarian**) is strong".

In our workshops, it was clear that evidence such as this had put sufficient doubt in many women's minds that they did not want to pursue the HRT route.

Alternative drugs

There were a number of other (non-oestrogen) drugs (e.g., antidepressants, anticonvulsants) that workshop participants had been offered or had heard about. Women reported that in some cases these drugs had reduced hot flushes; however, they also had unacceptable side effects and so few women had remained on them.

Current non-prescribed treatments available

Most women, even those that had taken HRT, had tried a very wide range of approaches to try to combat hot flushes and night sweats. A common sentiment was "I don't like taking regular medication and have concerns about side effects".

These fell into one of the following categories:

- Approaches that provide relief at the time the hot flush happens.
- Longer term approaches that may help in reducing the number of occurrences and or the severity of the symptoms.

⁶ <https://www.nhs.uk/conditions/hormone-replacement-therapy-hrt/>
⁷ <http://www.cancerresearchuk.org/about-cancer/causes-of-cancer/hormones-and-cancer/hrt-and-cancer>

Instant relief

There were a range of basic strategies used to manage hot flushes when they occurred. These seldom reduced the duration of the symptom, but had the advantages of reducing the discomfort felt and, importantly, also helped the individual to feel they were actively doing something to help themselves.

- Layering of clothes.
- Directing cool air over the face and body.

One woman stated *“I grab anything I can to fan myself, placemats, folders, books, paper - anything close to hand. I don't care if it makes me look like a mad woman. It helps!”*

- Applying “cool” directly to the skin either with water, ice, menthol or electronic cooling devices.

Examples of products available include cooling sprays (e.g. Physicool), levomethol cooling sticks, also electronic cooling devices based on the Peltier effect, such as the Menopod and the Embr wave.

Other devices, based on different technologies, are being worked on by companies – Cambridge Consultants included – looking to developing considerably smaller, more discrete products that can be used at any time and without the need for charging.

Although providing some level of relief, many of the above were considered to have drawbacks: some were very conspicuous and therefore impractical in some situations, while others required the user to switch focus away from the task in hand for a considerable period.

“I grab anything I can to fan myself, placemats, folders, books, paper – anything close to hand. I don't care if it makes me look like a mad woman. It helps!”



Longer term strategies

The following group of measures did not provide instant relief but were being taken because individuals believed that they lessened the occurrences and severity of hot flushes. Most women also used one or more of the instant relief measures.

- Controlling room temperature

- Exercise:

Exercise has long been recognised as improving mood, reducing stress and anxiety and helping to improve sleep quality. Some women felt that regular exercise helped them to cope better with the daily interruptions caused by hot flushes. (Note however that this wasn't the case for all women: some reported feeling that hot flushes hampered their exercise, by raising their bodily temperatures even further).

- Magnets:

Brands such as 'LadyCare' – a magnetic button had been used by a number of women.

One lady said "I swear by the magnet – £35. No brainer. It had an instant effect, and I've only have very mild symptoms since using it."

Although a more common sentiment was that they were "expensive", "faddy", and that participants "would like to see scientific evidence".

Magnetic bracelets had also been tried by one participant but with no success.

- Herbal remedies:

A considerable number of women had taken herbal remedies such as Sage, Black Cohosh, Evening Primrose and essential oils. Although many women were not comfortable taking HRT, they were accepting of taking a daily range of 'natural herbal remedies (also chemicals)' as they believed that they have fewer side effects than prescription drugs. The vast majority of participants, including those taking the herbal remedies, said they were uncertain whether this approach was really helping. Some participants taking herbal remedies were reluctant to stop for fear that symptoms would get worse, despite not being certain they were having a positive effect in the first place.

- Diet:

Many people believed that alcohol and spicy food triggered hot flushes. Others had cut their intake of caffeine and had switched to drinking herbal teas. Several women had swapped dairy for soya products. There was however a high proportion of women who indicated that they'd "not tried [anything] as haven't read about anything that'll help. Enjoy eating and drinking so wouldn't want to make myself miserable".

The perceived advantage of the above strategies was that they were usually less conspicuous. Many women felt that they may be helping. However, there was also a lot of scepticism and talk of placebo effect. Women were uncertain whether they were just naturally going through a cycle of lower symptom activity. There were unanswered questions on how long women had to adopt the measure for before it worked, and whether there was a residual effect when it was stopped. This led to the interesting situation that although women knew they had no proof that the measures worked, they feared stopping them in case things got worse.

Night strategies:

There were a limited number of additional strategies that were adopted to help relieve night sweats:

- Throwing off the bedcovers.

- Cooling gel pillows and mattresses:

These pillows have been designed to dissipate heat quickly, as well as to promote airflow. There are a number of brands available. A small number of women had tried these and stated that they felt cool at the start of the night, which helped them to get off to sleep, but as the night progressed they felt their effect was less and they had little effect curtailing night sweats once they had started. Some brands were reported to be uncomfortable to sleep on.

- Cooling Mattresses (e.g. TheraPur®) are also available that incorporate gel. Again, they aim to maximise airflow and breathability, ensuring that body heat is well regulated.

- Custom ideas:

A number of participants had tried to come up with their own ideas for cooling arrangements. One lady had adapted a pet cooling jacket.

Impact on life

The workshops highlighted the huge impact that hot flushes and night sweats can have on women, physically, psychologically and socially. One woman really summed this up, saying that *“I am irritated by the disruption this is causing to my life... I am tired and it has had a massive impact on my quality of life.”*

Many women, particularly in the first few weeks and months of the symptoms, felt hot flushes were embarrassing. After a while, however – although embarrassment persisted in some social and work situations – the over-riding feeling was one of frustration at the unpredictability of the symptoms and the lack of effective solutions to help relieve them.



In the workplace

Often women are working in air-conditioned offices alongside colleagues; male and/or younger people, who have little understanding of what menopausal women are experiencing.

According to research carried out by Nuffield Health⁸, women do not get enough support at work and that *“... in particular women thought that coping with the menopause at work affected how their colleagues and managers perceived their competence.”* The research highlighted that the majority of women are unwilling to discuss menopause-related health problems with their line manager, or to ask for the support or adjustments that they may need to help them cope.

Some organisations have been more forward-thinking and inclusive, including the University of Leicester⁹ that has a Menopause Policy and Guidelines and Nottinghamshire Police¹⁰, who earlier this year were the first police force in England to put in place a Menopause Policy.

A proportion of this group has been out of the workforce or working part-time for a lengthy period of time, to look after their families. As recent returners, it seems doubly unfair that the menopause occurs at about the same time that they are in the process of re-building their careers and workplace confidence.

Our workshops highlighted several common issues that women experience at work, but the overriding message was a need for greater understanding by organisations and colleagues of the issues associated with menopause, and in particular, hot flushes:

- One woman mentioned that after saying she was going through a hot flush to work colleagues, a younger woman had said *“I don't think that it's appropriate to mention that here.”*
- There was recognition of the disruption that each hot flush episode has on the work being carried out, and the effort required trying to maintain a professional approach throughout. *“When a hot flush hits, your mind is immediately distracted and loses focus – how long is it going to last, how hot is it going to get, how am I going to cope?”*
- Finding ways to quickly relieve hot flush symptoms without (or by minimising) the impact on the people around them.
- The physical embarrassment of becoming sweaty, flushed and hot. Some women said that they carried a spare set of clothes with them at all times, just in case they got so hot and sweaty that they had to shower and change.

⁸ <https://www.nuffieldhealth.com/article/one-in-four-with-menopause-symptoms-concerned-about-ability-to-cope-with-life>

⁹ Leicester University <https://www2.le.ac.uk/offices/hr/docs/policies/menopause-policy-guidance/view>

¹⁰ Nottingham Police <https://www.nottinghamshire.police.uk/document/menopause-managers-guide-pg50>

Home Life

Coping with hot flushes at home was felt to be far easier than at work. Women had better control of their environment and could turn the heating down or open windows.

However, this didn't suit all family members. One participant mentioned that hot flushes had impacted how long she could spend in over-heated houses and that this now limited the time she could spend with her elderly relatives.

A number of women mentioned that sometimes, after having a shower in the morning, they would be getting dressed when a hot flush would arrive and they would have to have another shower. The unpredictability and inconvenience of this was very stressful particularly if it was a weekday and they were then late for work.

A practical consequence of both hot flushes and night sweats was the considerable increase in the amount of washing that was required.

Many women slept all year round with the windows open; others had fans running to keep the bedroom cool.

Some women regularly woke soaked in sweat and had to take a shower and change the sheets in the middle of the night.

Others had changed their routines in order to go to bed a lot earlier to maximise the chances of getting the right amount of sleep. This often meant sacrificing evening social events, in favour of functioning well the next day.

A number of participants said that the sleep disruptions were serious enough that they had made the decision to sleep separately from their partners so that they both didn't have to suffer from disturbed sleep. This could potentially have a negative impact on these relationships.

Perhaps unsurprisingly, night sweats were the issue that impacted home life the most.

Public places and transport

Travelling on public transport was highlighted as presenting some real challenges. In these situations, individuals said that they had no control over the ambient temperature and were often confined to a very small space, in close proximity to others, where they were often unable to even take off layers of clothing in order to control their own temperature.

Some social events were felt to be potentially too difficult to cope with, and women avoided them or went to great lengths to ensure that they would be able to cope in the event of a hot flush. One woman stated that she avoided going to the theatre or cinema if she couldn't guarantee she had an aisle seat, which would allow her the option of walking out for a while, or have sufficient space to remove layers of clothing.



How can technology help?

We wanted to establish if there was any commonality in the way that women experienced hot flushes and night sweats, in order to use these insights to inform a future technology development that could be of real use to women.

Prior to the workshops we had begun to investigate some ideas for a drug-free consumer device that could potentially provide instant cooling on-demand, to counter hot flushes. We wanted to think through possible technical approaches, as well as having a 'prop' to stimulate conversation in the workshops in order to help us understand what was really required and would be used by women.

The basis for our initial ideas was a durable device that would have 'cooling' consumables loaded into it. This approach potentially has a number of advantages: the device could be carried around and used anywhere without the need for charging; because it wouldn't require batteries or need to dissipate large amounts of heat it could be small, so it could be used and carried around discretely; costs of both the device and consumables could be kept low and if required it could be used repeatedly in quick succession. An early stage prototype design that demonstrated basic functionality was shared with the workshop participants.

The level of engagement and feedback we received exceeded our expectations:

All of the workshop participants said that if a device such as this was available to buy they would use it for hot flushes.

One woman commented that after trying out the prototype: *"My skin stayed cool after the device was removed. It made me concentrate on something other than the flush. It gave intense cold relief like an ice cube..."*



We had been focusing our initial thinking on a small, discrete wrist-worn device. Interestingly the feedback we got was that what was really required for hot flushes was a product that could be applied to a number of locations on the body, mainly the chest, face and neck, and that having a device fixed to the wrist was too restrictive.

One woman reported: *"Just used it (during a hot flush) and it was fab. Initially it didn't work on the back of my neck (which was still sweating), but was great when I used it on my forehead and cheeks. Want one!"*

Although there were a number of situations where women wanted to use a product discretely, there were also others where participants were not so concerned about using a larger, more visible product. The main requirement was that it could provide lots of cooling 'shots' on demand and at any time, including a series of shots in close succession if required.

We had some initial concerns about whether women would be willing to regularly buy replacement consumables for such a device. Consensus amongst the women was that if they felt the device was really working, they would be willing to accept these ongoing costs. One woman reminded us that a number of women were already investing a considerable amount each month on herbal remedies that they had no proof were working. There was however a clear message that if consumables were required they would need to offer sustainable ways of disposing or re-using them, due to participants' environmental concerns and practices.

Going into the workshops, we had assumed that night sweats would require a completely different product. Women confirmed that if a product could be developed that could automate the activation of cold during the night, thereby minimising sleep disturbance, that this would be the ultimately preferred product. However, in the meantime, they were happy to have a variant of the manually activated 'hot flush' unit on their bedside table.

The feedback we gained from the workshops highlighted that there are a number of real opportunities for new products:

- **A discrete device for hot flushes:**

The device would be aimed at providing discrete cooling relief for some social and work situations. To be discrete, it would need to be small enough to be hidden within the palm of the hand. On manually activating the device it would provide instant cooling that could be applied to any area of the skin, such as the face, neck or chest, to provide relief. This cooling effect would need to be intense enough to provide instant relief, as well as providing prolonged cooling even after the device has been removed from the skin. The device would need to provide a sufficient quantity of cold shots (suggested: six to eight) for women to get through the specific 'tricky' situation.

▪ **A desk based unit with a large number of cool shots:**

A larger device, still manually activated, that is functionally similar to the discrete device but contains considerably more cooling shots, sufficient to get a woman through a day or more of hot flushes. This product could be placed on the desk at work and would be for women that were less concerned about other people knowing what they were going through – for instance, some women described working in environments where they were open about their hot flushes with coworkers, who in turn were happy to make accommodations (i.e., open windows, desk fans) for their comfort.

▪ **A manually activated unit for night sweats:**

A product specifically designed to help combat night sweats, that could sit on the bedside table and be activated by a woman when she woke up. Our workshops identified that women would apply relief for night sweats in different areas of the body to daytime hot flushes, e.g., they were less likely to want to cool the face and neck and more likely to want to cover larger areas of the skin, such as the base of the back. This device would therefore need to be subtly different from the desk based unit, in that it would need a larger cooling surface area.

▪ **An automated product for night sweats:**

A product that comprises both sensors of some kind and a means of generating cooling sensations; the sensors would be able to sense that there was a high likelihood that a night sweat was about to occur (or had started) and instruct the cooling mechanism to trigger. This would offer a product that could potentially 'nip' a night sweat before it occurred, or limit its severity and/or duration. This could potentially be a wearable device.

In addition to the commercial opportunities that the above product family would offer companies, we also see opportunities to set up a service model, whereby women buy not only the product and consumables but are also

provided with support and advice on hot flushes and night sweats, possibly expanding into other avenues of coping with the menopause, i.e., through peer and social support and the provision of trusted information.

The way forward

Many women who are going through the menopause need help to enable them to cope with hot flushes and night sweats.

This help is needed in the form of a greater willingness in society and the workplace to talk about and take their symptoms seriously; in the form of better advice from trained medical professionals; and help from businesses in developing new products that can really relieve symptoms.

Cambridge Consultants, NICA and Open Lab have carried out this study and it has provided real insights into the types of new (non-drug based) products that could make a real difference. The responses of the survey group indicate a strong potential demand for new products.

From our work, it is beyond dispute that symptoms of menopause, long side-lined as unimportant 'women's issues', are taking a toll on the lives of most women as we age. Our workshops indicate a strong appetite for discussion around these issues in the future.

Menopause is just one of the issues we have to tackle as we age: there are of course many more. Establishing a deeper understanding of the ageing process and listening to what would really help improve individual's lives is an essential part of any development process, and maximises the chances of launching a product or service that will not only be valued and used by the consumer but will also be a commercial success.

We view this as the beginning of a conversation, with partners and clients. We're keen to continue our exploration of much-needed products and services for menopause, and for other age related changes.



National Innovation Centre for Ageing

Set up in 2014, the National Innovation Centre for Ageing is a world-leading organisation, created with a £40 million investment from UK Government and Newcastle University. Our vision is to create a world in which we all live better, for longer by leading on innovations that improve all aspects of life for our ageing societies. The National Innovation Centre for Ageing will work collaboratively and provide a dynamic environment within which multiple stakeholders can come together to share knowledge, ideas, experience and innovation. By bringing together world-leading scientists with industry, health and care providers and the public, the National Innovation Centre for Ageing will help codesign, develop, test and bring to market products and services, which enhance and improve quality of life as we age.

VOICE

Valuing Our Intellectual Capital and Experience, VOICE, is a group of citizens who have an interest in ageing and contribute experience, ideas, insights and vision to research and innovation. Members support a range of activities within universities to improve the focus, quality, relevance and impact of research. By working with businesses and external organisations, they help to stimulate and shape social and technological innovation. Through involvement in VOICE, members enjoy lifelong learning and become research active citizens as well as making a positive difference to the lives of older people across the globe.

Open Lab

Open Lab is a human-computer interaction, social and ubiquitous computing research group in the School of Computing at Newcastle University. The academics, post-doctoral researchers and PhD students who make up the group come from a wide range of academic disciplines, including computer science, electrical engineering, fine arts, psychology, sociology, education, clinical sciences and design. We have a particular expertise in the configuration and conduct of cross-disciplinary research and application of digital technologies to real-world problems ranging from health and social care, to the creative industries, education, and local democracy. At the heart of all our research, though, is a commitment to the experience-centred and participatory design of digital technologies that enhance rather than diminish our experience of the world.

About Cambridge Consultants

Cambridge Consultants is a world-class supplier of innovative product development engineering and technology consulting. We work with companies globally to help them manage the business impact of the changing technology landscape.

With a team of around 800 staff in Cambridge (UK), Boston, San Francisco and Seattle (USA), Singapore and Tokyo, we have all the in-house skills needed to help you – from creating innovative concepts right the way through to taking your product into manufacturing. Most of our projects deliver prototype hardware or software and trials production batches. Equally, our technology consultants can help you to maximise your product portfolio and technology roadmap.

We're not content just to create 'me-too' products that make incremental change; we specialise in helping companies achieve the seemingly impossible. We work with some of the world's largest blue-chip companies as well as with some of the smallest, innovative start-ups that want to change the status quo fast.

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