

## **The Impact of Cold Temperatures on Health**

A World Health Organisation (WHO) Report in 1985 established that there is a link between poor health and low indoor temperatures.

Some existing conditions can be affected badly by cold and others can be brought on as a result of prolonged exposure to the cold.

Respiratory disorders can be worsened by prolonged exposure to low indoor temperatures. People living in cold homes have an increased tendency to suffer colds, flu, bronchitis and pneumonia.

At temperatures below 12°C blood tends to thicken, leading to an increase in blood pressure and increased risk of heart attack and stroke as the heart works harder to pump blood round the body.

Hypothermia is caused by longer-term exposure to the cold (though longer-term may only be a matter of a couple of hours). The chronically sick, disabled and those with lower mobility levels are particularly at risk from hypothermia.

In addition, cold conditions in a home can contribute to condensation dampness and mould growth. These have a detrimental effect on some allergies. Mould spores and dust mites in the air can cause allergic reactions, which in turn can cause problems for people with respiratory illnesses such as asthma.

In Britain, a cold spell during an otherwise mild winter can see the following depending on its duration:

- after two days a sudden rise in heart attacks, by up to a third;
- after five days there is a big rise in the number of strokes;
- twelve days into a cold spell there is a rise in respiratory illnesses.

## **Increased Winter Mortality**

In most north European countries more people die in the four months from December to March than during the rest of the year.

There were 4,330 excess deaths in Scotland during the winter of 2020/21.

Coronavirus (COVID-19) was the underlying cause of nearly two-thirds (2,850) of the 4,330 'additional' deaths in winter 2020/21

The full report can be found here:

<https://www.nrscotland.gov.uk/files//statistics/winter-mortality/2021/winter-mortality-20-21-pub.pdf>

There were 24,427 deaths registered in Scotland in the four months of winter 2022/23 (December 2022 to March 2023). This is 11 per cent higher than the previous winter and is the highest number in over thirty years. Winter 1989/90 had 25,497 deaths. • The seasonal increase in mortality of 4,137 for winter 2022/23 is considerably higher than the previous winter but lower than the recent winters of 2017/18 (4,813) and 2020/21 (4,329). Excess winter deaths in 2022/23 averaged 2800 in Scotland. (Winter Mortality Report Published Oct 2023).

The causes of death with the largest seasonal increases in winter 2022/23 were dementia and Alzheimer's disease (640 additional deaths), coronary (ischaemic) heart disease (490 additional deaths), chronic lower respiratory disease (400 additional deaths), influenza (340 additional deaths), coronavirus (COVID-19) (310 additional deaths) and, other circulatory system diseases and (270 additional deaths). Very few deaths are directly due to cold weather (e.g. hypothermia); in each full calendar year since 2019 there have been fewer than ten deaths from 'exposure to extreme natural cold'.

Winter cold kills 300 people per day (in the UK) on average, most of them elderly.

Contributing factors include low income, inefficient heating systems, external temperature fluctuations, and excessive dampness and mould growth associated with poor housing stock.

In Scotland we have long and damp winters which are worse for health.

Factors affecting excess winter mortality are varied and complex, but there is a strong relationship between thermal standards in housing and excess winter deaths.

The UK has much higher winter deaths rates than other countries with more severe winter climates, implying that it is not outdoor exposure to cold that is the key determinant.

It is generally accepted that the majority of excess winter deaths could be prevented if everyone could be kept warm in their homes during the winter months.

### **Asthma and damp homes**

Children are more likely to stay asthmatic if they live in a damp home, according to new research.

A German study, published in the journal Thorax, has found that dampness - long associated with wheezing and coughing - is also a risk factor for asthma, partly because it helps the growth of the house dust mites which irritate asthmatics' airways.

Night-time wheezing and shortness of breath was strongly linked to dampness in the home.

- the UK has one of the highest rates of asthma symptoms in the world
- around 5.4 million people are currently receiving treatment for asthma in the UK – 1 in 11 people <https://www.asthma.org.uk/support-us/campaigns/data-visualisations/#Prevalence>
- the NHS spends £1 billion per year treating asthma
- on average, 3 people per day die from asthma. As many as 90% of asthma deaths are preventable

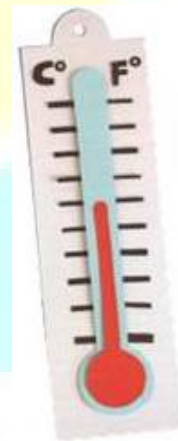


## Getting the Temperature Right

Low indoor temperatures are connected with a number of health issues and most people in the UK spend more than 90% of time indoors. The link between fuel poverty and health has often been examined. Professor Christine Liddell, of the University of Ulster, reported in 2008 that every £1 spent on improving energy efficiency saved the NHS 42 pence.

Decreasing indoor temperature below the comfort zone progressively influences the respiratory, cardiovascular and thermoregulatory systems and consequently the maintenance of good health.

- 18-24°C** The comfort zone, no risk to sedentary, healthy people
- ↓ **16°C** Increasing risk of respiratory disorders
- ↓ **12°C** Cardiovascular strain, increased blood pressure and viscosity
- ↓ **9°C** Failing thermoregulation and risk of hypothermia, after two hours exposure as the deep core body temperature falls.



The start of discomfort is likely to indicate the commencement of health risks, so that the temperatures required for comfort and for maintaining health are broadly the same.

**For comfort and health, the temperature of the main occupied room should average 21°C. For other areas such as bedrooms, bathrooms and halls 18°C is recommended.**

Those who might need higher temperatures are the elderly; people with a long-term illness and those who are disabled. Restricted mobility inevitably results in more time spent in the home and the reduced level of activity means that a higher temperature is needed to achieve comfort.

An important point to note is that many very old people find it harder to detect temperature changes than other age groups. In some cases, temperatures of **15-16°C may not be experienced as 'cold'** by an old person but may nevertheless be injurious to health.

Ensuring the home is adequately heated is very important. Inadequate heating can contribute to other problems in housing which affect health, namely dampness and condensation: see Factsheet 7.c



## **Condensation and Dampness**

Warm air holds more moisture than cold air. Condensation occurs when warm, moist air comes into contact with a cold surface, such as a single glazed window or an uninsulated external wall. When the moist air comes into contact with the cold surface it turns back into water droplets – condensation.

Everyday activities contribute to the amount of moisture in the air around our homes:

- **bathing** can result in 0.5 to 1 litre of additional moisture
- **cooking by gas** over 24 hours can result in 2 to 4 litres of additional moisture
- **using a bottled gas heater** can result in 4 litres of additional moisture
- **drying clothes** can result in 3 to 7.5 litres of additional moisture
- **2 people sleeping for 8 hours** can result in 0.5 litre of additional moisture

**Condensation in the home is caused by:**

- **inadequate heating**
- **inadequate insulation**
- **inadequate ventilation**
- **producing excessive moisture**

Human beings produce water vapour - this cannot be avoided. However, condensation dampness is different to other forms of dampness because the inhabitants may be able to exercise some control over the amount of condensation in the home. Condensation dampness can occur in houses that are insufficiently heated, poorly insulated, or not properly ventilated. Installing loft insulation, cavity wall insulation and draughtproofing measures will reduce and minimise condensation in the home, as will effective use of heating. However, it is equally important to ensure that houses are properly ventilated.

Helpful tips on avoiding/minimising condensation dampness include:

- keep lids on pans when cooking
- dry clothes outside when possible. When drying clothes indoors, ventilate the room and keep the door closed
- avoid using flue-less bottled gas heaters
- ventilate all the time. Increase ventilation in the kitchen and bathroom when in use
- maintain a background heat all day in colder weather

If condensation builds up regularly, surfaces are likely to remain damp. When this happens, mould can develop on walls and ceilings, also on carpets and soft furnishings.

**Dealing with Mould:**

Excess mould should be removed with a damp cloth or a vacuum cleaner. The cloth should be thrown away and the vacuum cleaner emptied, to prevent mould spores spreading. Wipe down or spray affected areas using a fungicidal wash or diluted bleach. When redecorating after treatment, a fungicidal, mould-resistant paint should be used (this should not then be painted over with an ordinary paint). If wallpapering, a paste that contains a fungicide should be used.

See also **Chapter 3** for details on the different physical measures which can be installed to prevent and reduce condensation and dampness.

