



UK Health
Security
Agency

Cold weather health risks and COVID-19

Actions to prevent harm

UKHSA: Extreme Events and Health Protection

Cold weather health risks and COVID-19

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- **Amendment History**

Version	Date	Amendments made
01.01	13 October 2021	First version

Background

- COVID-19 is likely to amplify the risks of cold weather
- For specific information on cold-related health risks, refer to the current [Cold Weather Plan for England](#) and associated resources. The plan recommends a series of steps to reduce the risks to health from cold weather for:
 - the NHS, local authorities, social care, and other public agencies
 - professionals working with people at risk
 - individuals, local communities and voluntary groups
- The ‘Cold Weather Plan for England’ is underpinned by the Met Office’s [Cold Weather Alert service](#) which runs annually from 1 November to 31 March
- Register for email updates from the [Cold Weather Alert Service](#) now

Outline

- Health impacts of cold weather
- Cold weather health risks and COVID-19
- Preventing cold-related harm
- Cold weather risks and COVID-19: recommendations
 - Key recommendations for all
 - Commissioners of health and social care (all settings) and local authority Directors of Public Health
 - Providers – health and social care staff in all settings (primary and community care, hospitals and care homes)
 - Community and voluntary sector and individuals
 - National Level: NHS England, UKHSA, DHSC, Met Office
- Resources
- References

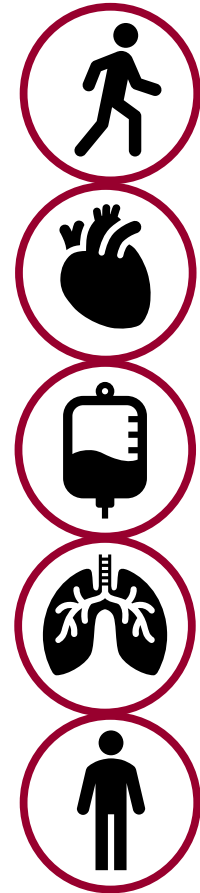
Health impacts of cold weather

How does cold weather impact health?

The human body responds in several different ways to exposure to cold weather, even at temperatures which might be considered relatively mild.

Exposure to cold temperatures has a range of physiological effects including:

- increased blood pressure
- increased risk of clotting
- suppression of the immune system
- diminished capacity of the lungs to fight off infection
- increased airway constriction and mucus production in the lungs



How does cold weather impact health – morbidity and mortality?

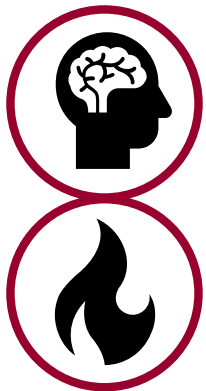
Although exposure to extreme cold can kill directly through hypothermia, this is not the main cause of cold related illness and death.

The health impacts of cold weather can have direct and indirect effects.



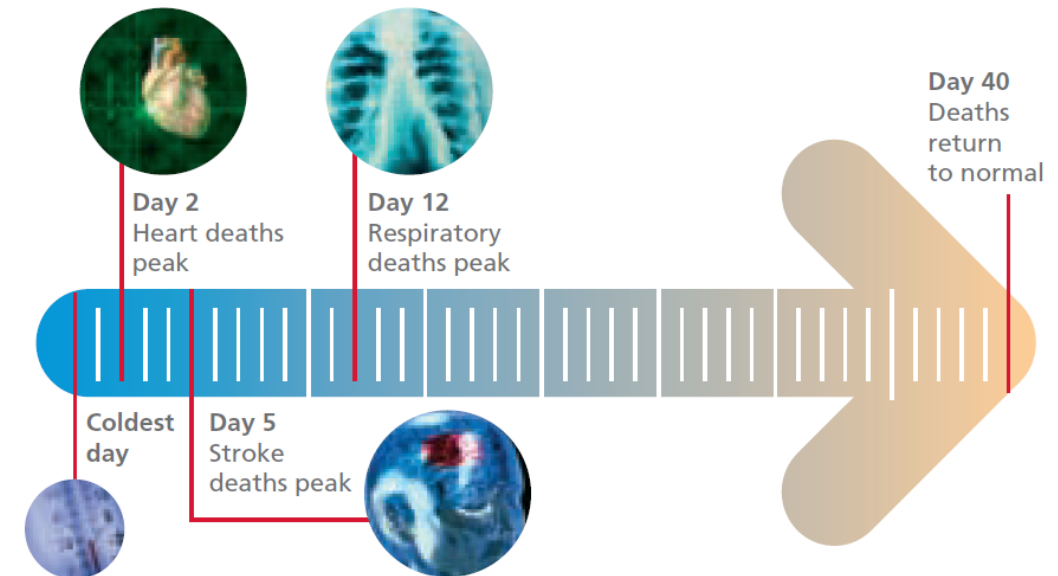
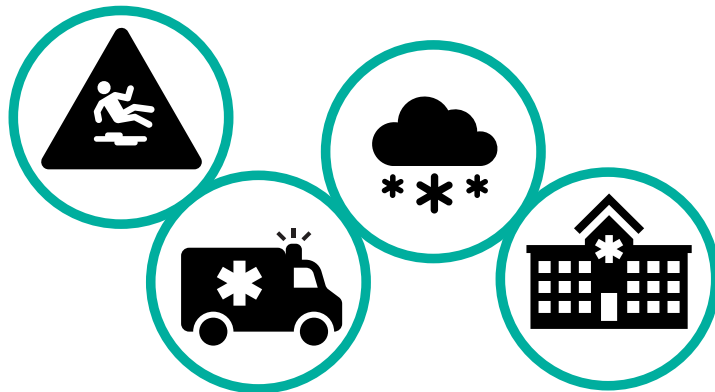
Direct Health Effects
Heart attack
Stroke
Respiratory disease
Influenza
Falls and injuries
Hypothermia
COVID-19

Indirect Health Effects
Mental health effects from depression
Reduced educational and employment attainment
Risk of carbon monoxide poisoning
COVID-19



What happens during cold weather?

Deaths caused by cardiovascular conditions peak first followed by stroke and then respiratory

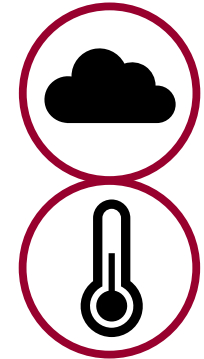


Snow and ice also cause:

- disruption to service provision
- reduction in access to essential services
- increase in the risk of falls and injuries

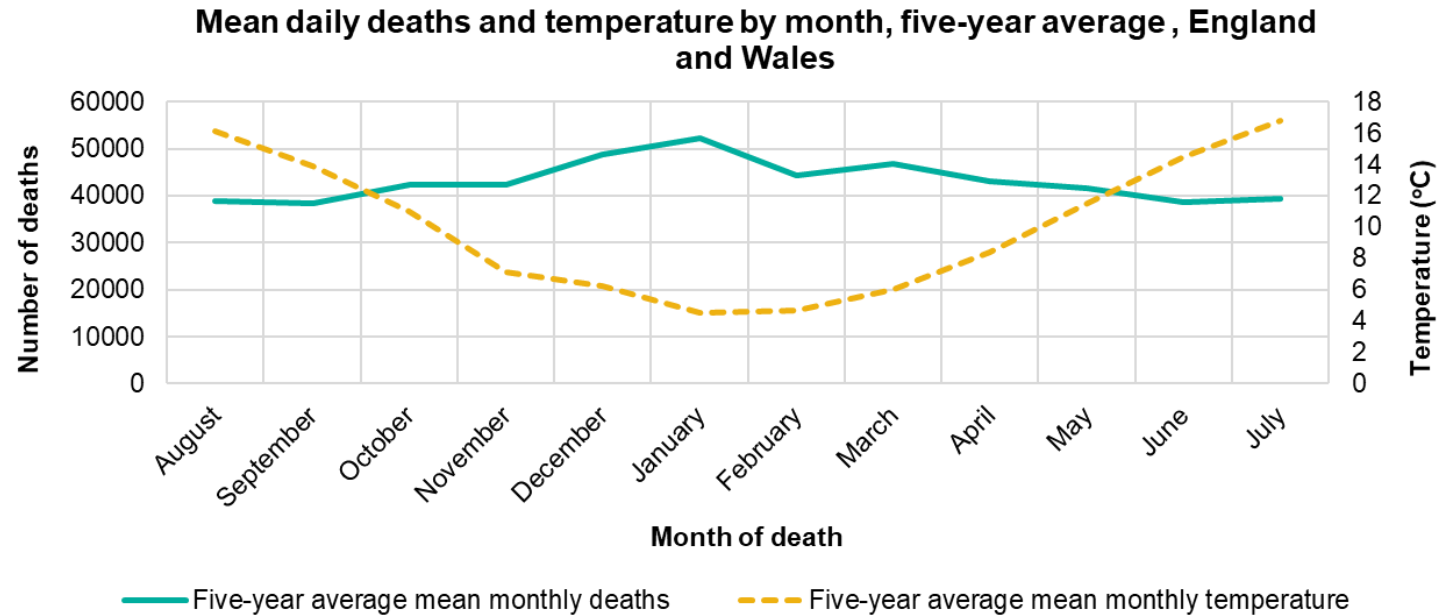
Which temperatures have an impact?

- The health impacts of cold weather can be seen even at temperatures which might be considered relatively mild (4°C to 8°C)
- Although the risk of death increases as temperatures fall, the higher frequency of days at moderate temperatures in an average winter means the greatest health burden in absolute numbers of deaths, occurs at more moderate temperatures



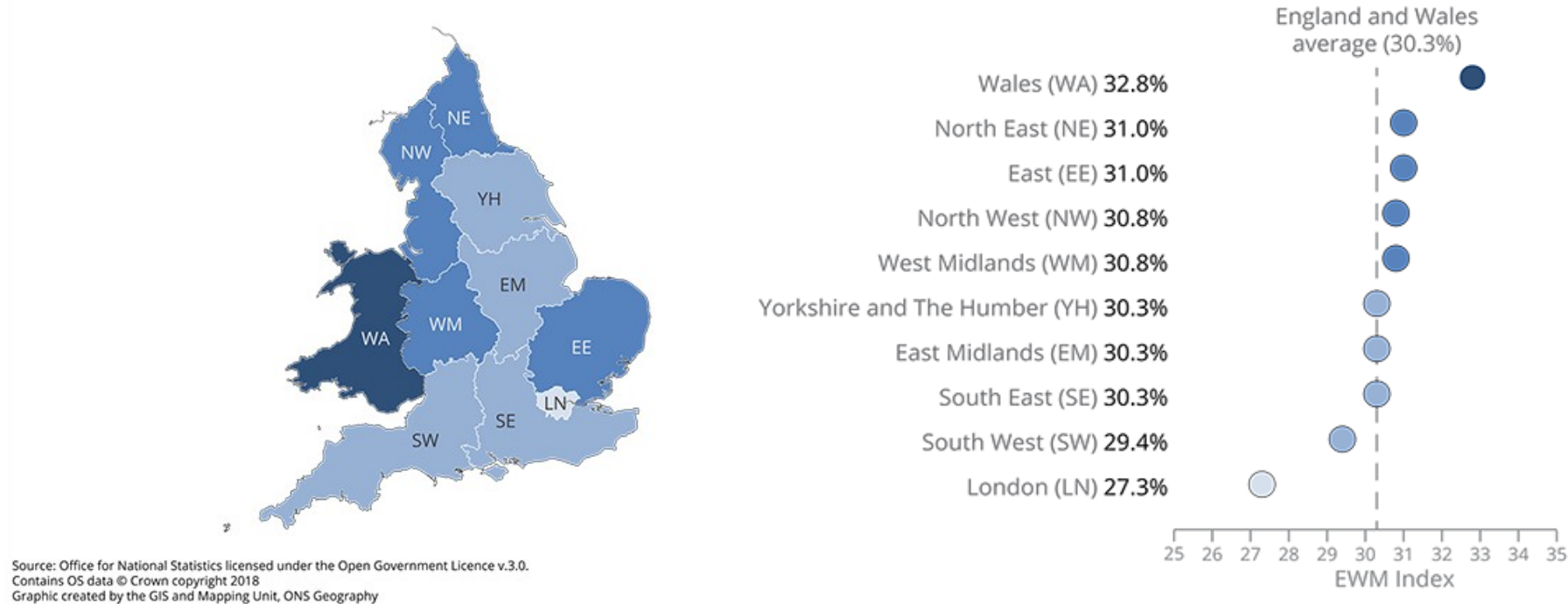
Temperature	Health Impacts
18°C	minimal risks to health for a sedentary person wearing suitable clothing
Under 18°C	may increase blood pressure and risk of cardiovascular disease
Under 16°C	may diminish resistance to respiratory diseases
4 to 8°C	increased risk of death observed at population level
At or below 5°C	high risk of hypothermia

Deaths over the year



- More people die in the winter than in the summer
- Excess Winter Deaths (EWDs) = winter deaths – average non-winter deaths
- 80% aged 75+ (but not only the very old are affected by cold)
- Large variation in EWD numbers year on year

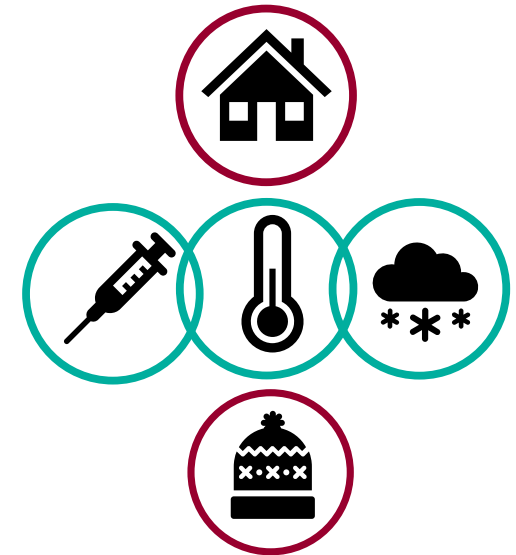
Where do these impacts occur?



- The Excess Winter Mortality (EWM) index is calculated as excess winter deaths (EWD) divided by the average non-winter deaths, expressed as a percentage
- The North East, North West, West Midlands, and East of England experienced a higher EWM index than the rest of England

Who is affected?

- EWDs are seen throughout England – all regions are affected
- Whilst the burden of EWDs is primarily seen in older age groups, EWDs are seen in all age groups
- EWDs represent an important health inequality – people who experience greater socioeconomic deprivation are more likely to be affected
- There are a number of factors which contribute to EWDs:
 - Seasonal factors – weather, flu
 - Individual vulnerability to health effects of cold
 - Attitudes to cold and associated behaviours
 - Household income
 - Cost of Fuel
 - Energy efficiency of the home
 - Housing and economic factors
 - Economic impacts of COVID-19, the need to isolate, shield at/or work from home may compound existing behavioural or fuel poverty risk factors



Cold weather health risks and COVID-19

Cold and COVID-19: key messages

COVID-19 is likely to amplify the risks of cold weather.

Fear of COVID-19 should not prevent action to tackle the risks from cold temperatures and winter weather.

It is critical that actions to prevent health harms from cold temperatures and winter weather continue – including identifying and supporting those at risk – with necessary adaptations in line with coronavirus guidance to keep everyone safe.

Cold and COVID-19: potential interactions

Shared risk factors among population sub-groups affected by both cold temperatures and COVID-19.

Clinical impacts arising from the concurrence of cold weather and COVID-19.

Increased exposure to cold temperatures due to change in patterns of energy use at home, fuel poverty and reduced access to warm public spaces.

Social and community networks, access to resources.

System-level risks related to concurrency of impacts, change in patterns of health and social care use, access and delivery and health seeking behaviour.

Cold and COVID-19: shared risk factors (1)

Risk factors linked with worse outcomes from COVID-19, that are also risks for cold-related harms, are:

- Age (65+ for cold, 70+ for COVID-19)
- Underlying health conditions – chronic respiratory and heart disease
- Diabetes
- Pregnancy

Factors that impact on ability to adapt to cold, such as severe mental illness, cognitive impairment, drug and alcohol dependencies and disability, may also impact on ability to reduce exposure to COVID-19 – for example, through reduced ability to maintain good respiratory and hand hygiene.

Cold and COVID-19: shared risk factors (2)

Other groups with increased risk across the 2 hazards include:

- people who are housebound or otherwise have low mobility – they have reduced ability to self-care, greater dependence on care, suffer from social isolation
- people living in deprived circumstances
- people living in houses with mould – mould arises in poorly ventilated settings and poor ventilation is likely to be a risk factor for transmission of COVID-19 within the home
- people living in households experiencing fuel poverty – fuel poverty is linked to income and socio-economic deprivation, which is recognised as a risk factor for both cold and COVID-19
- people who are homeless or sleeping rough
- other marginalised or socially isolated individuals or groups – these may face barriers to accessing care because of, for example, language barriers or concerns about eligibility

Cold and COVID-19: clinical impacts (1)

We still have much to learn about how COVID-19 infection affects the body, however possible mechanisms of interaction are described below:

Clinical outcomes may be more severe where exposure to cold and COVID-19 co-occurs for a given individual – for example, through increased stress on the cardiovascular system and respiratory systems.

Immunosuppression and increased rates of respiratory infections – winter is linked to increases in respiratory infections, likely related to factors such as increase in transmission, susceptibility to infection in cold weather.

Complications or long-term impacts of COVID-19 over the months prior to a significant cold weather event may increase the numbers with vulnerability to low temperatures.

Cold and COVID-19: clinical impacts (2)

Interaction with other seasonal infections

The impact of protective or harmful interactions between COVID-19 and other infections (for example, common cold coronaviruses, rhinovirus, respiratory syncytial virus (RSV), influenza and bacterial pathogens) is not yet known.

There is emerging evidence of poorer outcomes in those who are co-infected with COVID-19 and flu.

There may be overlap in symptoms and potential for mis-diagnosis or late diagnosis in community settings.

Cold and COVID-19: increased exposure (1)

Potential increase in exposure to cold may arise as a result of:

Fuel poverty and cold homes

- Increased numbers of people spending more time at home than usual, with increased demand for energy and costs of heating
- Economic drivers this winter may see an increase in the number of households and a difference in the types of households that experience fuel poverty and cold homes, not all of whom will be aware of funds or resources available to help with keeping warm

Reduced access to public warm spaces

Necessary controls to limit spread of COVID-19 may limit access to warm public spaces, such as libraries

Discharge of vulnerable patients from hospital to a cold home

This is a specific risk that has been recognised by NICE

Cold and COVID-19: increased exposure (2)

Transmission of viruses is dominated by indoor pathways. People spend significantly more time indoors during the winter.

Risk of transmission indoors is likely to be increased by housing factors:

- Poor ventilation in winter months increases the density of virus particles accumulating in a room. Barriers to ventilation include fuel poverty and other contextual factors such as noise, pollution and security concerns
- Overcrowding

Socio-economic factors: poor housing and deprivation are often shared risk factors for poor health that may also interact to increase the risk of transmission

Cold and COVID-19: increased exposure (3)

Homelessness and rough sleeping

There may be reduced access to shelters and other public warm spaces due to COVID-19 measures, which increases risk of exposure to cold.

Homeless people, including the hidden homeless, may be at increased risk of exposure to COVID-19 due to overcrowding, and barriers to practising regular hand and respiratory hygiene, as well as facing a high burden of pre-existing health problems.

The extent of interacting risks from cold and COVID-19 faced by this vulnerable group will be influenced by decisions such as the safe provision of shelters, alternative accommodation and the activation of Severe Weather Emergency Plans.

Cold and COVID-19: social and community networks, access to resources

Social isolation is a risk factor for cold and is likely to be increased by COVID-19.

New groups of people and households may be drawn into fuel poverty and unaware of funds and resources available to help with keeping warm.

Digital exclusion may also be more relevant as a driver of inequitable access during COVID-19, as people are less able to access resources in person.

Reduced opportunities to identify cold, damp and mould due to remote interactions (consultations with health and social care staff, key workers, friends and family) unless specifically asked about.

Cold and COVID-19: system level risks (1)

Surveillance – established baselines may be unreliable and difficult to interpret this winter season due to changes in behaviour, impact on interpretation of signals, and overlap of symptoms (syndromic surveillance) caused by the COVID-19 pandemic

High demand and unmet need – additional demand from COVID-19 and cold weather and other seasonal impacts (winter pressures)

Other factors: Discharge of patients to care settings slower, staff absence

Change in patterns of health service use and reorganisation of health and social care systems to address COVID-19 has impacted the ability of the NHS to deal with non-COVID-19 work

Cold and COVID-19: system level risks (2)

Health seeking behaviours

- Perceptions of risk from COVID-19 negatively impacted on attitudes to accessing care during lockdown, including anxiety about being at risk from COVID-19
- Confidence was found to be lower among people from BAME backgrounds and people living with a disability
- There was a significant reduction in presentations to emergency care for both minor and urgent conditions from March to May. This may impact on cold-related health harms such as heart attacks and strokes

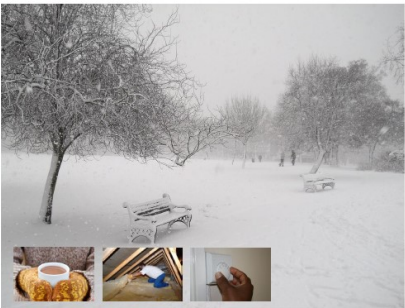
Preventing cold-related harm

Preventing cold-related harm – Resources

NICE guidelines (NG6) for reducing the risk of death and ill health associated with living in cold homes aim to improve the health and wellbeing of people vulnerable to the cold.



The Cold Weather Plan for England
Protecting health and reducing harm
from cold weather



Local
Government
Association

Met Office

The Cold Weather Plan (CWP) recommends a series of steps to reduce the risks to health from cold weather for:

- the NHS, local authorities, social care, and other public agencies, professionals working with people at risk, individuals, local communities and voluntary groups

[CWP action cards](#)

[Sign up for alerts](#)

Near real-time data is also produced throughout the year to support planning and prevention of EWDs.

What does this mean for the NHS (1)?

NICE guidelines provide specific recommendations for the NHS. These cannot happen in isolation and require action by, and collaboration with, local authority and other stakeholders.



Health and Wellbeing Boards, Clinical Commissioning Groups, and wider NHS:

- Develop a strategy to address the health consequences of cold homes
- Provide a single-point-of contact health and housing referral service for people living in cold homes to provide tailored solutions
- Raise awareness among practitioners and the public about how to keep warm at home
- Train health and social care practitioners to help people whose homes may be too cold

What does this mean for the NHS (2)?

Primary healthcare practitioners:

- Identify people at risk of ill health from living and working in a cold home*
- Make every contact count by assessing the heating needs of people who use primary health and home care services



Secondary healthcare practitioners:

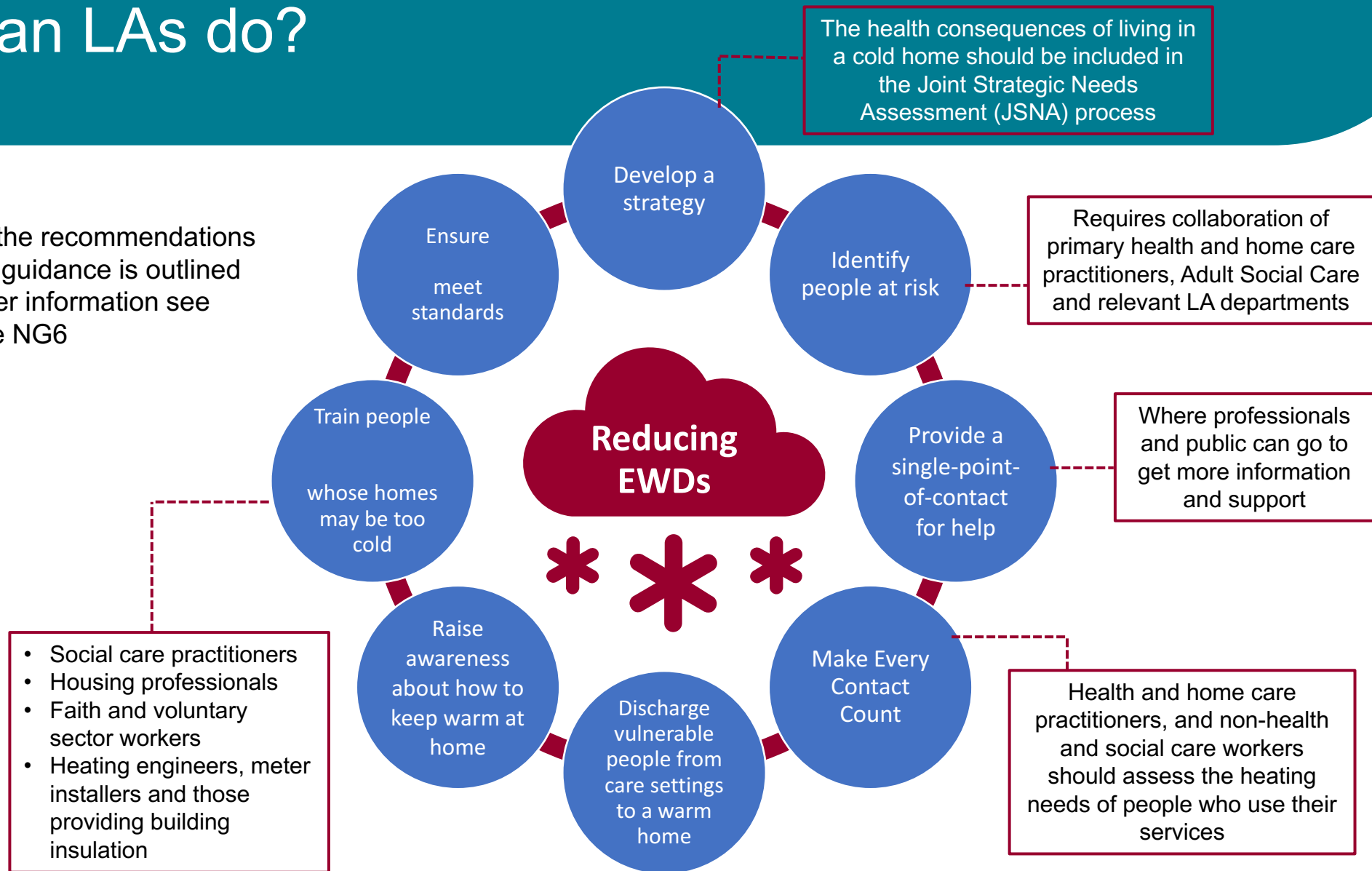
- Identify people at risk of ill health from living in a cold home*
- Discharge vulnerable people from health or social care settings to a warm home



*advice on how to identify people at risk is provided in the NICE guidelines

What can LAs do?

A summary of the recommendations from the NICE guidance is outlined here. For further information see NICE guidance NG6



Cold weather risks and COVID-19: recommendations

COVID-19: cold weather preparedness and response

The guidance and good practice recommendations in the [Cold Weather Plan for England](#) should continue to be followed with some additional considerations to mitigate and manage the concurrent COVID-19 risks

The following slides detail specific considerations for:

- Commissioners of health and social care (all settings) and local authority Directors of Public Health
- Providers – health and social care staff in all settings (community, hospitals and care homes)
- Community and voluntary sector and individuals
- National level: NHS England, UKHSA, DHSC, Met Office

All actions should also consider [current COVID-19-specific guidance](#) and be carried out in line with local regulations.

Key recommendations for all

1. All local authorities, NHS commissioners and their partner organisations, including health and social care providers, should consider the 'Cold Weather Plan for England' and satisfy themselves that the suggested actions and the cold weather alert service are understood across their locality, and potential additional need has been considered in surge capacity plans. [Register for the Cold Weather Alert Service](#)
2. People at risk from cold weather may also be vulnerable to COVID-19 infection and vice versa. This can be due to concurrence of both clinical and environmental or socio-economic factors. Identify those at greatest risk this winter, taking into account intersecting risks. Ask about living in a cold home, and support vulnerable individuals to access existing resources to keep warm
3. Cold weather actions and decisions should continue, while following national guidance on COVID-19 and related policies (for example, social distancing, vaccination and self-isolation advice)

Commissioners of health and social care (all settings) and local authority Directors of Public Health (1)

In addition to actions set on the CWP for England:

- ensure there is a single point of contact to provide tailored advice for people living in cold homes.
- train social care, housing and other professionals who may make home visits to identify those most at risk, taking into account the intersection of cold and COVID-19, and integrate these risk assessments to target information and support to vulnerable households.
- engage the community and voluntary sector to identify and support those most at risk, especially those who are socially isolated
- work across STPs/ ICSs to utilise existing structures such as primary care networks; social prescribing networks; community pharmacists; local authority social care and crisis support teams to identify and support vulnerable individuals to access resources to keep warm
- consider potential measures which could be implemented to reduce the cold-related risks faced by individuals who are clinically extremely vulnerable or self-isolating

Commissioners of health and social care (all settings) and local authority Directors of Public Health (2)

Increase the resilience of partners to the concurrent risks of cold and COVID-19:

- work with partner agencies, providers and businesses to raise awareness about the concurrent risk of cold weather and COVID-19
- support local health and social care organisations in protecting vulnerable residents and ensuring staff welfare (e.g. mutual aid, PPE supply, mental health)
- Local Health Resilience Partnerships may wish to satisfy themselves that there is adequate review across local health and social care systems of usual plans for surge capacity in cold weather in light of possible COVID-19 related staff absence and to ensure staff welfare
- Local Resilience Fora should consider the impact of cold weather on the existing operational response to COVID-19 and vice versa
- ensure care homes and hospitals are aware of the cold weather plan and are preparing for cold weather as a concurrent risk with COVID-19
- ensure other institutional establishments (for example, prisons, schools) are aware of cold weather guidance
- ensure adequate provision of emergency shelters for homeless people and other vulnerable groups and ensure capacity to scale up provision

Providers – health and social care staff in all settings (primary and community care, hospitals and care homes) (1)

In addition to actions set out on the CWP for England:

- Review who may be at high risk – identify those at greatest risk this winter, taking into account intersecting risks. Ask about living in a cold home.
- Provision of care and support during winter will be particularly important in the context of additional risks and vulnerabilities related to COVID-19 (such as protecting BAME staff) and cold weather. There may be additional need over above ‘usual’ winter pressures on this sector. Review your usual plans for surge capacity in cold weather in light of possible additional need and COVID-19 related staff absence.
- Encourage staff to sign up to cold weather alerts, communicate alerts to staff, ensure staff know what to do when the weather gets cold, and get their flu vaccinations.

Providers – health and social care staff in all settings (primary and community care, hospitals and care homes) (2)

- More people receiving personal care, particularly in domiciliary settings, may be at higher risk than usual from cold due to potential for concurrent COVID-19 related ill-health and COVID-19 restrictions
- Ensure a minimum temperature of 18C is kept and patients are comfortably warm whilst following COVID-19 guidance on ventilation
- Ensure safe discharge (for example, patients are not discharged to cold homes) including regular post-discharge support (which may need to be increased) and use of multi-disciplinary approaches such as hospital-at-home and reablement services

Community and voluntary sector and individuals

In addition to actions set on the CWP for England:

- have plans in place to be able to check on others safely in advance of the cold weather (for example, over the phone)
- develop clear messaging to the public to encourage them to begin winter preparedness, for example, checking eligibility for assistance with heating costs, checking heating appliances, and checking on vulnerable neighbours and relatives
- encourage those who may find it more difficult to cope in cold weather to request help through volunteer networks, for example, the [Royal Voluntary Service website](#)
- advise those at risk that they should continue to seek medical help if they are feeling unwell and that plans are in place to deliver services safely despite COVID-19

National Level: NHS England, UKHSA, DHSC, Met Office (1)

In addition to actions set on the CWP for England:

- ahead of cold weather, NHS England should consider the impact of cold weather on workforce capacity and wellbeing
- NHS England should satisfy themselves that alerts are cascaded widely and promptly, including to patient-facing and clinical staff
- UKHSA Regions should be aware of the Cold Weather Plan and note the new Keep Warm, Keep Well resource, and provide support to Directors of Public Health and other local stakeholders as appropriate

National Level: NHS England, UKHSA, DHSC, Met Office (2)

UKHSA surveillance systems to provide early warning of the potential health impacts of cold weather will continue throughout winter 2020 to 2021.

However, the wider impact of the COVID-19 pandemic on the surveillance systems routinely used to monitor the health impact of cold weather adds complexity to the surveillance outputs making their interpretation difficult.

UKHSA and the Met Office will be hypervigilant within the cold weather alerting system to ensure the earliest possible issuing of cold weather alerts and the maximum possible warning time.

Resources

[Cold Weather Plan for England](#)

[Cold Weather Plan for England: Action Cards](#)

[Keep Warm, Keep Well leaflet](#)

[E-learning on helping people living in cold homes](#)

[Simply energy advice website](#)

[Specific advice and guidance on coronavirus \(COVID-19\)](#)

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Slide 3

- [Cold Weather Plan for England: protecting health and reducing harm from cold weather](#)

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- [Cold Weather Plan for England: protecting health and reducing harm from cold weather](#)

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- [UK Health Security Agency Training slide sets Excess Winter Deaths in the winter 2019 to 2020](#) 2021

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- NHS. [Who is at high risk from coronavirus \(clinically extremely vulnerable\)](#)
- [Cold Weather Plan for England: protecting health and reducing harm from cold weather](#)

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- NICE Guidance (NG6). [Excess winter deaths and illness and the health risks associated with cold homes](#)

About the UK Health Security Agency

The UK Health Security Agency is an executive agency, sponsored by the [Department of Health and Social Care](#)

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