

Excess winter deaths, fuel poverty and flu

Introduction

In common with the rest of England and other countries across Europe, more people die in the winter in Bedford Borough than in the summer.

Excess winter deaths, also called excess winter mortality, is a statistical measure which attempts to quantify how big the effect of the winter months is in a given population. It can be expressed as the number of extra people who have died, or as an index comparing winter deaths to the number that occur at other times of the year.

These are crude measures. People die unnecessarily all year round, and it is possible for the apparent number of excess winter deaths to go down simply because the number of deaths at other times of the year has gone up. Moreover, the figures take no account of the age structure of the population, which makes comparison with other areas or the national average impossible. Even comparing the picture in Bedford Borough over time is difficult, because the age structure of the population may change substantially year to year, for example with an influx of population due to a new housing development being built.

The indicative number for Bedford Borough in the year from August 2014 to July 2015 was 155 extra deaths during the winter, which was an increase of 35.6% compared to the average throughout the rest of the year. This is the most recent data available on 05 March 2016. The value of measuring excess winter deaths is not so much in the figures themselves, but in the principles underlying them.

It is well known that death rates are higher in the winter months, and these deaths are largely due to predictable causes:

- Long-term conditions: cold temperatures pose a particular risk to people living with long-term cardiovascular and respiratory conditions, because these diseases reduce the body's ability to make the natural physiological responses required to keep warm and well in the cold.
- Thrombosis: cold temperatures increase blood pressure and the blood's tendency to clot, which is exacerbated by physical inactivity and causes heart attacks and strokes
- Influenza and other viral infections: incidence of seasonal flu, respiratory syncytial virus and norovirus all peak in the winter months.
- Injuries: People of all ages are affected by increases in falls and road traffic accidents in winter weather.

Certain groups are most at risk:

- Older people, especially those living alone
- People with long term illnesses
- People with disabilities
- Households with low income, living in poor housing, or in rural areas
- Younger people who live alone
- People who are homeless.

A measure of excess winter deaths shows only the tip of the iceberg in terms of the total health burden associated with cold weather in the winter months. As well as the non-fatal impacts of the diseases listed above, cold temperatures and particularly living in a cold home also give rise to:

- Anxiety and depression, in young people as well as in adults
- Slower physical growth and cognitive development in children
- More childhood infections with resulting absence from school
- Poor mobility and worsening arthritis in older people, increasing the risk of falls

with important consequences for healthcare and the wider system:

- Time off work
- More consultations in primary care
- More emergency admissions to hospital
- Increased need for social care and rehabilitation services following major, non-fatal illnesses

The most important point to note is that the risk factors for illness and death in the winter are eminently preventable, using simple measures such as protective behaviours (adequate clothing, eating well, staying active), home insulation and adequate heating, flu vaccination and alertness on the part of people and their caregivers to the increased risk of becoming unwell and the need to seek medical help early.

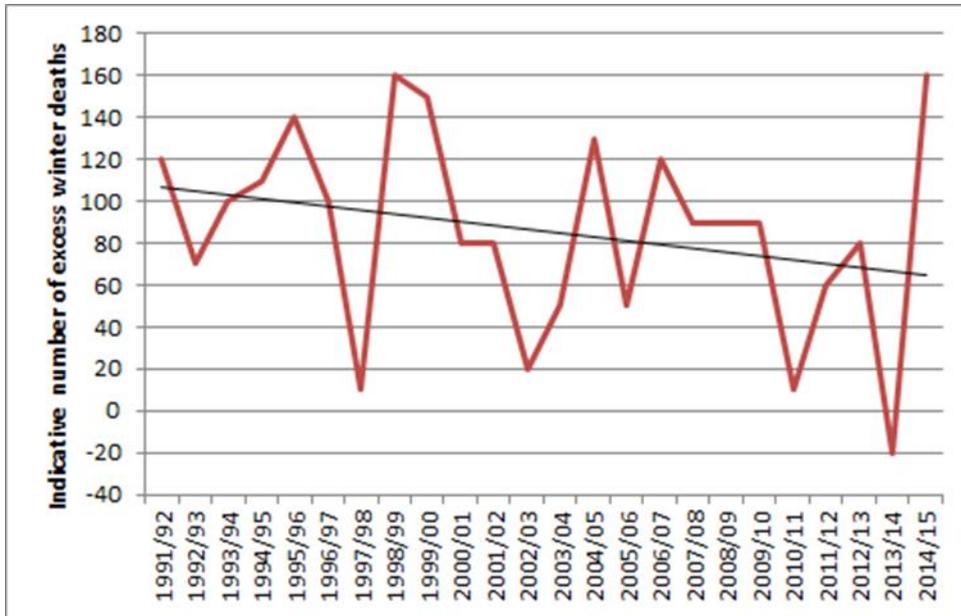
What do we know?

Facts, Figures, Trends

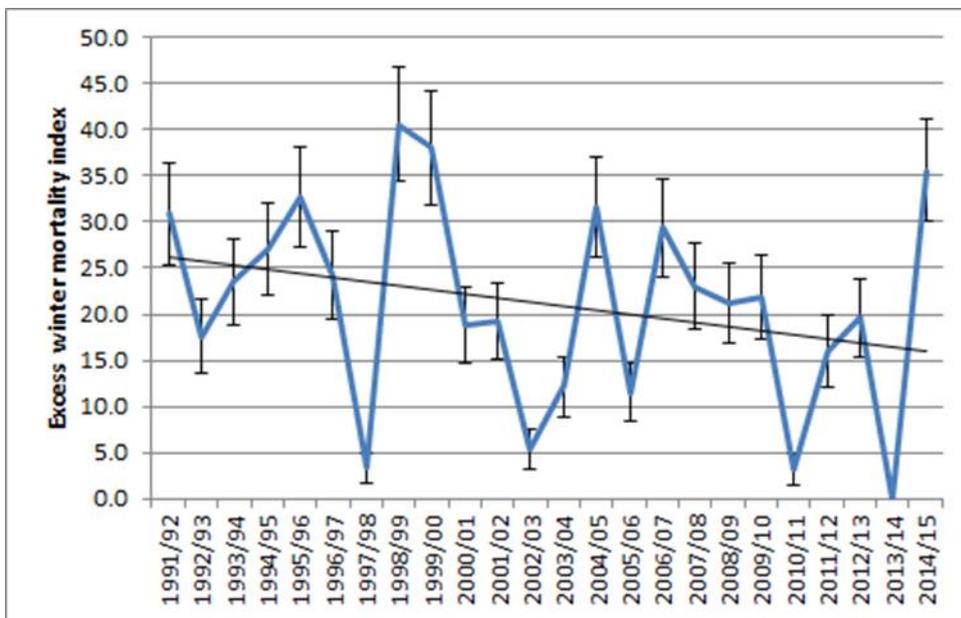
Over the last twenty years, the number of excess winter deaths in Bedford Borough has varied between -20 and 160 excess deaths each year (figure 3.1a), which corresponds to between 0% and 41% more than the average over the rest of the year (figure 3.1b). The Office of National Statistics (ONS), which publishes the figures, acknowledges that because the numbers involved are relatively small (statistically speaking), they are subject to random fluctuation and there is no consistent pattern across local authorities in different areas. The average is currently around 82 extra deaths each winter (around 21% more than the rest of the year) with a clear trend for decrease over time.

Figure 3.1: Pattern of excess winter deaths in Bedford Borough 1991 – 2015

3.1a



3.1b



*Error bars indicate 95% confidence intervals
Linear trend is shown in black*

More useful than looking at the total figures is looking at the breakdown by age group and the causative conditions.

The vast majority of excess winter deaths in Bedford Borough occur in people aged 65 or older (table 3.1). Those aged 85 and over are particularly disproportionately affected. Given that the over 65 population of Bedford Borough is expected to increase by 22% between 2012 and 2021, and the over-85 population by 41%, it is reasonable to expect that the number of excess winter deaths will also increase substantially if action is not taken to address the root causes.

Table 3.1: Excess winter deaths in Bedford Borough by age group, 2006-2015

Age group	Total number of excess winter deaths	Excess winter mortality index
Aged under 65	86.5	12.1%
Aged 65-84	400	22.5%
Aged 85 or over	449.5	27.5%
All ages	936	23.4%

Source: MedeAnalytics 2016

Approximately a 33% of excess winter deaths between 2006 and 2015 were caused by circulatory diseases and another 10% by respiratory diseases (table 3.2). The excess winter mortality indices clearly show that while circulatory deaths are certainly more common in winter than at other times of year, it is respiratory illnesses in which the seasonal peak is most pronounced. Over 50% more people die of respiratory infections or from decompensation of their existing lung disease in the winter months.

Table 3.2: Excess winter deaths in Bedford Borough by underlying cause of death, 2006-2015

Underlying cause of death	Number of excess winter deaths	Excess winter mortality index
All circulatory deaths	290	25.4%
- Coronary heart disease	125.5	23.4%
- Stroke	93.5	32.5%
All respiratory deaths	229.5	46.2%
- Influenza and pneumonia	97	53.6%
- Chronic obstructive pulmonary disease	64	43.1%

Source: MedeAnalytics 2016

It is also useful to consider where the people live who are most affected. Figure 3.2 shows the geographical distribution of excess winter mortality and figure 3.3 provides deprivation maps for comparison. It is difficult to characterise a pattern by urban/rural split or by deprivation gradient. Excess winter death is clearly multifactorial.



Figure 3.2: Excess winter mortality index, all ages and all causes, by electoral ward, 2006–2015

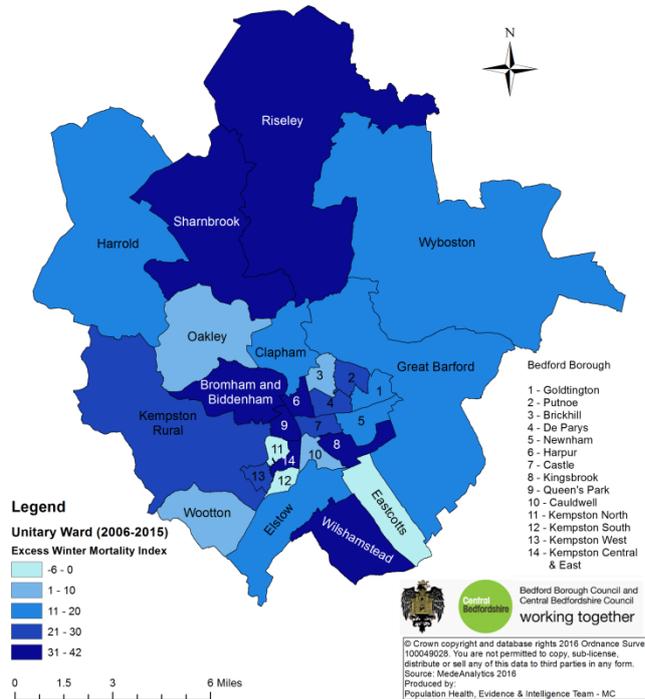


Figure 3.3a: Pattern of deprivation across Bedford Borough – whole population

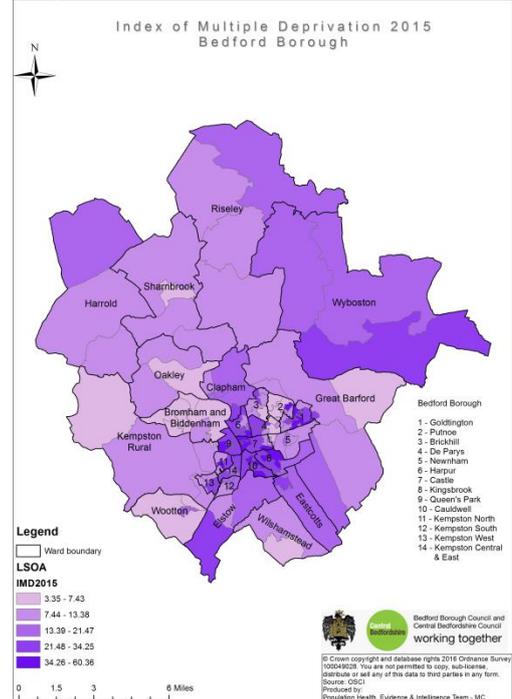


Figure 3.3b Pattern of deprivation affecting children

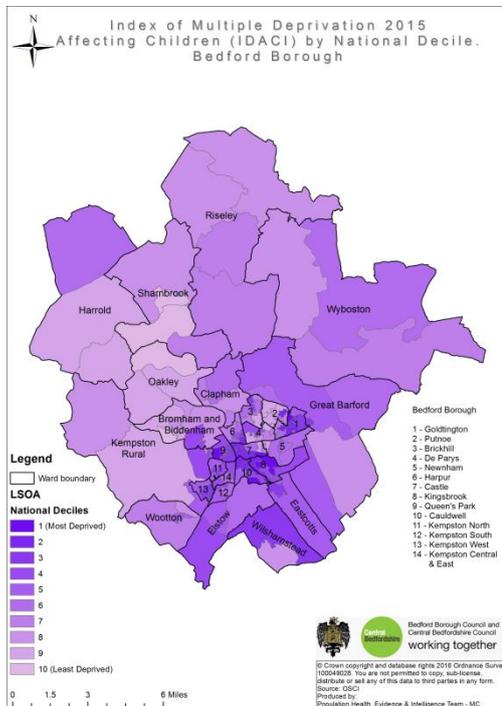
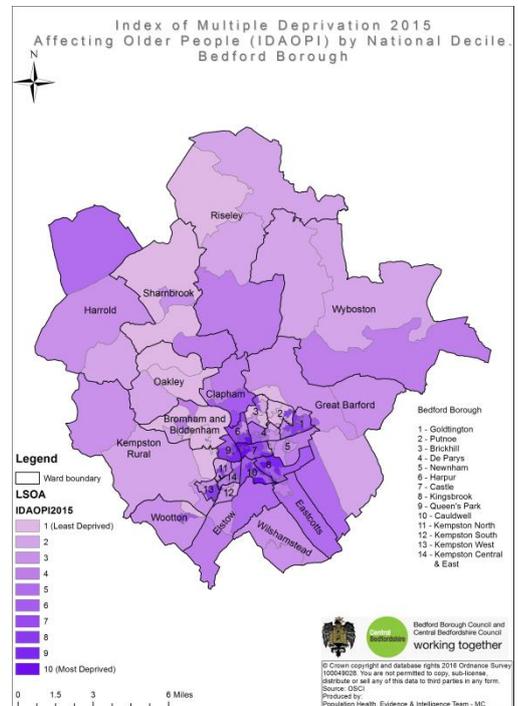


Figure 3.3c Pattern of deprivation affecting older people



4. The role of fuel poverty

Please also refer to the JSNA chapter on Housing for information on housing stock and conditions.

Public Health England investigates the national pattern of excess winter deaths week-to-week over the winter monthsⁱ. Their analysis demonstrates that weekly peaks in excess deaths coincide with cold snaps and high circulating levels of respiratory viruses, i.e. influenza and respiratory syncytial virus.

The effects of cold temperatures are not felt exclusively by people living in cold homes, but most of the people in the vulnerable groups (over 65s, those living with long-term conditions or disabilities) will spend the majority of their time at home. The landmark Marmot review “Fair Society Healthy Lives”ⁱⁱ and the 2013 King’s Fund report into health inequalitiesⁱⁱⁱ both identify warm homes as crucial to reducing the risk of death from cold temperatures, and specifically to reducing the social inequality in risk of death from the cold.

Fuel poverty describes the circumstance of a household having such high heating bills in proportion to its income, in order to keep the indoor temperature at a health-protecting level, that the household is living in poverty as a result. Statistically it is defined as a household which:

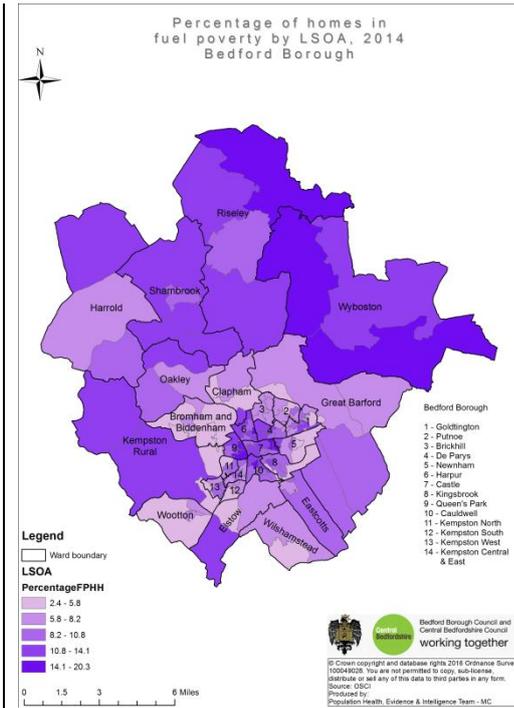
- has required fuel costs that are above average (the national median level)
- were they to spend that amount they would be left with a residual income below the official poverty line

Households can find themselves in fuel poverty because of a low income, poor energy efficiency, high unit energy costs or a combination of the three. Households at particularly high risk are those living in private rented accommodation and those who are unemployed.

It is important to note that, like the excess winter deaths measure, fuel poverty is estimated rather than counted accurately. Statistics are published annually and are calculated using a complex model, which is based on survey findings about the size and age structure of households, the type and tenure of their dwellings, average energy prices and self-reported income^{iv}.

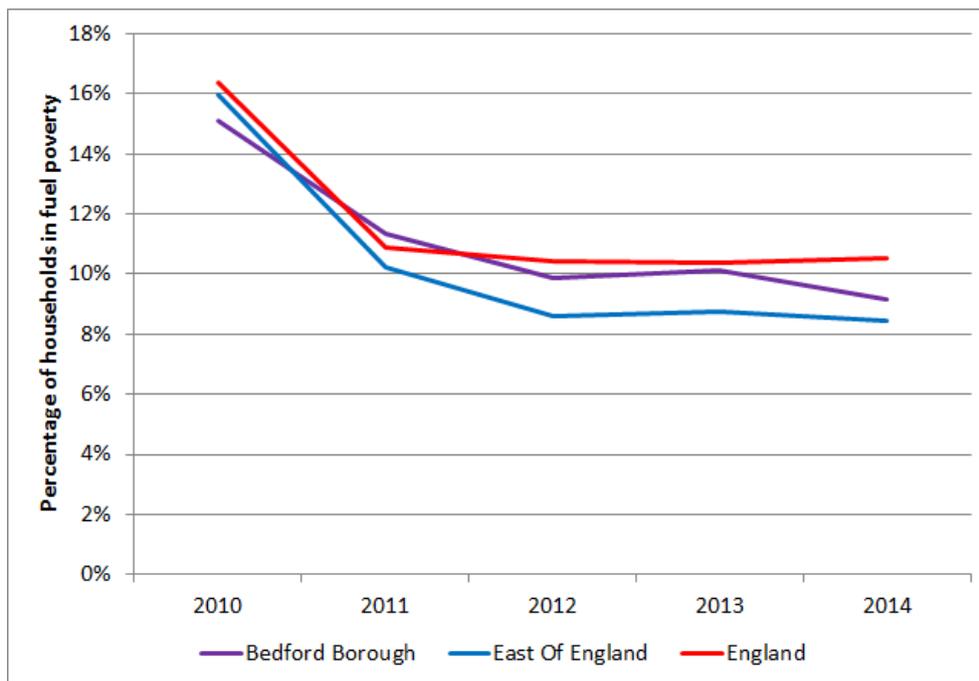
The most recent statistics available at neighbourhood level are from 2014. Overall, 6,006 households or 9.2% of all households in Bedford Borough were estimated to be in fuel poverty. The proportion varies substantially between areas, from over one in five households in Bedford town centre to less than one in twenty in the lightest coloured areas. There are “coldspots” in the urban neighbourhoods with high levels of deprivation and in rural areas where the population is quite sparsely spread.

Figure 4.1: Prevalence of fuel poverty in Bedford Borough by lower super output area, 2014



Bedford Borough previously had a higher prevalence of fuel poverty than the regional average, but in 2012 dipped below the national average (figure 4.2). The decrease follows the national trend and is primarily due to increasing income rather than improvements to housing stock or home energy efficiency^v.

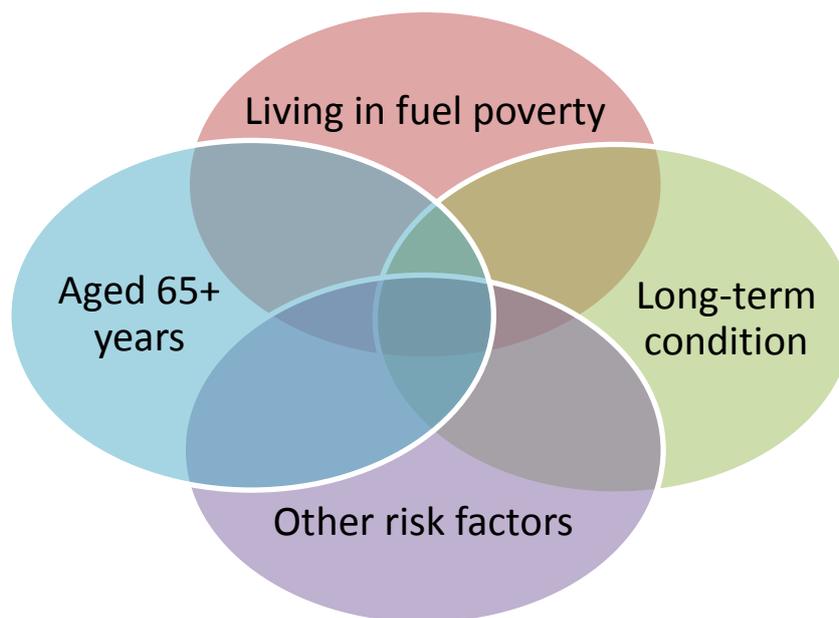
Figure 4.2: Percentage of households in fuel poverty in Bedford Borough, 2010-14 with regional and national comparators



Source: Department of Energy & Climate Change fuel poverty statistics

Although fuel poverty is a recognised risk factor for excess winter deaths, comparing the map in figure 4.1 with the distribution of excess winter deaths in figure 3.2 shows that there is a similarity between the two patterns but fuel poverty is not the whole story. Fuel poverty and other risk factors do not necessarily co-exist (figure 4.3) – the key to preventing excess winter deaths will be to solve fuel poverty first in those households where the risk is greatest.

Figure 4.3: Conceptualisation of risk factors contributing to prevalence of excess winter deaths



The magnitude of risk increases with the number of ovals an individual falls into. Other risk factors include being in one of the vulnerable groups (see Introduction) and behavioural factors such as wearing inappropriate clothing^{vi} and keeping windows open in the home^{vii}.

5. The role of flu

The analysis by Public Health England takes account of the fact that circulating rates of respiratory viruses tend to coincide with periods of cold temperature, and that influenza in and of itself makes a major contribution to the incidence of excess winter deaths.

At best, flu causes a severe fever illness which lasts for several days and necessitates time off work or school. At worst, it can cause hospitalisation and death through the illness itself, by exacerbating other long-standing conditions or through developing into pneumonia.

6. The effect of population change

Excess winter deaths affect older people disproportionately, and the number of people in the older age groups is expected to increase dramatically over the next 10 years (table 6.1). It is reasonable to expect that the number of excess deaths will increase accordingly.

Table 6.1: Projected population aged 65 and older, Bedford Borough, 2015 and 2025

Age group	2015	2025	Percentage increase
65-84 years	24,400	29,600	21%
85 or older	4,100	5,950	45%

Source: Bedford Borough Council population estimates and forecasts

http://www.bedford.gov.uk/council_and_democracy/statistics_and_census/population_estimates.aspx

7. The effect on health and wellbeing

The measuring of excess winter deaths and the focus on mortality that it naturally creates underestimates the total health impact of cold temperatures and the seasonal pattern of respiratory infections^{viii}. Many people whose health worsens in winter will feel the personal effects, need healthcare, take time off work and/or require the care of someone else who needs to take time off work to provide it, but none of this is measured by counting excess winter deaths. For example, the impact on the 457 people across Bedford Borough who were hospitalised in 2015/16 with flu but did not die of it (see “The role of flu” above).

Current activity and services

Please see “National and local strategies” below for the recommended elements of an integrated strategic approach.

Please also refer to the JSNA chapter on Housing for the full range of property services and housing support services currently offered.

Several voluntary organisations are delivering important services.

[Age UK Bedfordshire](#) secured funding from British Gas for a Warm Homes project project to lift people from fuel poverty across Bedfordshire and Luton. The project aims to directly support 1,000 people by end of December 2016. 321 older people in Bedford Borough were visited by Age UK, and 229 have been provided with energy saving equipment. 47 clients have been assisted with claiming benefits, resulting in £176,161.65 claimed., and £5,110.64 was saved in clients’energy bills when they were assisted with switching.

Bedford [Citizen's Advice Bureau](#) (CAB) provides face-to-face, telephone or web-based advice on a broad range of issues including income maximisation, debt management, and housing problems. Unaffordable energy bills are a frequent reason for clients to seek support. Anecdotally, enquiries are common amongst single men in their 40s and 50s, and particularly from households who pay for their power through pre-payment meters. The CAB can support clients to switch to cheaper energy tariffs but there are practical barriers to overcome such as the best tariffs only being available to those who are able to pay by monthly direct debit.

[Bedfordshire Rural Communities Charity](#) (BRCC) employs Village Agents in the rural villages to provide information and signpost clients to services for housing and social support, pensions and benefits, health and safety in the home. The service is free and can

be by home visit or over the phone. BRCC also coordinates 'Good Neighbour' care schemes to offer help with household tasks and provide social contact. Both schemes are targeted at people over the age of 50 but a large proportion of clients are considerably older, including in the 90+ category.

In primary care, the Quality and Outcomes Framework (QOF) incentivises many aspects of good clinical care which would contribute to reducing the susceptibility of people with long-term conditions to cold temperatures or seasonal viruses such as flu. On the whole, care for patients in the Bedford Locality is in line with BCCG and national averages. According to QOF in 2014/15 over 90% of patients with diagnosed COPD, and just under 79% of asthma patients received an annual review. However, this does mean that there are over 2,000 patients recorded as having asthma with an annual review who are more vulnerable to the effects of cold weather and flu.

Vaccination against seasonal flu is available each year, free on the NHS, for several eligible groups of people (those who are at highest risk of severe illness and death if they were to contract flu):

- Everyone aged 65 or over
- People of any age with certain long-term conditions, including heart disease, lung disease and diabetes
- Pregnant women
- Children aged 2, 3, 4, 5 and 6 years old (not already in an "at risk" group)
- People who receive carers' allowance and anyone who is the main carer for an older or disabled person.

The target for vaccine coverage set by the Department of Health in 2015/16 to those under 65 at risk. Table 6.1 shows the overall vaccination coverage in the 2015/16 season.

Table 6.1: Eligible populations for flu vaccination and vaccine coverage, Bedford Borough, 2015/16

Eligible group	Eligible population	Number vaccinated	Percentage coverage	Number not vaccinated
Aged 65 years or older	28,632	20,884	72.9%	7,748
Under 65 years old but at risk, due to a long-term condition	22,541	9,739	43.4%	12,712
Pregnant women	2,599	1,226	47.2%	1,373
Children aged 2, 3, 4, 5, and 6 years not already in the at-risk group*	2,199 aged 2 2,324 aged 3 2,303 aged 4 2,364 aged 5	916 aged 2 1,002 aged 3 788 aged 4 1,111 aged 5	42.7%	6,613

	2,349 aged 6	1,109 aged 6		
Carers (formal and informal)	1131	506	44.7%	625
Total	65,221	36,775	56.4%	28,446

* 5 & 6 year olds were newly eligible in the 2015/16 season

More comprehensive data on flu vaccination coverage can be found in the JSNA chapter on Health Protection.

Vaccination against pneumococcal pneumonia is also offered to people at increased risk; this helps protect against flu turning into pneumonia. Eligible groups include adults and children with long-term conditions and all those aged 65 years or older. Coverage is only monitored for over-65s, for whom the vaccine should be given once only and does not require repeat doses. There were over 27,800 Bedford Borough residents in that age group in 2014/15, of whom 19,688 have been vaccinated (70.7%).

National & Local Strategies (Current best practices)

The multi-agency Cold Weather Plan for England 2016 strongly recommends that long-term planning and commissioning to reduce cold-related harm is considered core business by health and wellbeing boards and is included in JSNAs and joint health and wellbeing strategies. It advocates a year-round approach and emphasises the importance of cold homes as a mediator of winter illness and deaths. Strategic planning for acute events, i.e. emergency preparedness, resilience and response is the responsibility of the local health resilience partnership.

The level 0 actions in the Cold Weather Plan, give advice on how to reduce the impact of cold homes on health: from Public Health England ([here](#) and [here](#)), the [UK Health Forum](#) and the [King's Fund](#). The National Institute for Health and Clinical Excellence (NICE) published a guideline in 2015 on reducing excess winter deaths and illnesses due to cold homes, based on an exhaustive evidence review of both the peer-reviewed and grey literature. It recommends:

1. Health and wellbeing boards should consider the effects of cold homes in their JSNA and develop a strategy to address them
2. The strategy should include providing a local referral service which directs people who are at risk towards multidisciplinary help to reduce their risk factors for winter illness or death
3. All professionals who see people who may be at risk should be trained and alert to ask about how warm their homes are, to record their answers and to refer accordingly
4. New technology should be exploited to reduce the risks from cold homes (such as temperature alert systems)
5. When home energy efficiency improvements are made, technicians should ensure that vulnerable people know how to use their new equipment
6. Local authorities should use their enforcement powers to require improvements to private rented accommodation which is putting vulnerable tenants at risk.

This principle of a multidisciplinary service to protect people from being cold in their homes

is strongly supported and has been implemented in many areas already. Examples are the [affordable warmth access referral mechanism](#) in Greater Manchester and the [seasonal health interventions network](#) in Islington. The evidence review on which the King's Fund guidance was based estimated that every £1 spent securing warm homes saves the NHS alone £34.19 over 10 years^{ix}.

The interventions that a multidisciplinary service should encompass where well described in a "How to" guide for reducing the risk of seasonal excess deaths in vulnerable older people compiled by the Department of Health's Health Inequalities National Support Team in 2010^x:

1. Assessment for affordable warmth interventions, including energy efficiency, household income and fuel cost.
2. Regular review of benefits entitlement and uptake.
3. Annual flu and pneumococcal vaccination.
4. Provision of an annual medication review (every six months if taking four+ medicines).
5. Provision of an annual medicines utilisation review (MUR) and follow-up support for adherence to therapy.
6. Implementation of a personal brief health interventions plan that includes advice and support to stop smoking, sensible drinking, healthy eating, adequate hydration and daily active living.
7. Assessment and support programme to prevent falls.
8. Assessment for appropriate assistive technologies, e.g. alarm pendants to call for help.
9. Help to develop a personal crisis contingency plan (e.g. including a buddy scheme, where no close friends or family, to watch for danger signs and provide someone to call).

Addressing the health impacts of cold homes in partnership has the rare quality of meeting the triple bottom line of improvements to health, reductions in carbon emissions and financial savings, while also by definition helping to reduce health inequalities.

What is this telling us?

What are the key inequalities?

Excess winter mortality is a weak indicator for a complex problem. The profound effect of cold temperatures on health is well described and is a source of health inequalities in and of itself. Older people and those living with long-term conditions are most at risk, particularly those with cardiovascular disease and lung disease. Living in a cold home is a major risk factor; people who live on low incomes or are vulnerable for other reasons are less likely to be able to heat their homes to an adequate level. The geographical distribution of fuel poverty shows a clear link with urban poverty and rural isolation. Local experience in the voluntary sector confirms these patterns.

What are the unmet needs/ service gaps?

Dozens of people are dying each year and many more are suffering non-fatal illnesses from eminently preventable causes.

Over 6000 households in Bedford Borough are living in fuel poverty; this circumstance exacerbates the risk from cold weather for any vulnerable people living within the home. National guidance strongly supports a more integrated approach in which every person in

need receives all the help they require, delivered in a systematic way. Targeting the people who are at greatest risk would secure the most cost-effective use of the available resources – indeed, the evidence suggests that such an approach generates considerable savings for the system in the medium to long term. Joint commissioning would be essential, however, for two reasons:

- much of the work currently being done is led by the voluntary and community sector
- it is clear from the evidence that savings may not accrue to the organisations who provide the preventative interventions.

Over 28,000 people who were eligible for flu vaccination last winter did not take up the offer and approximately 8,000 people over the age of 65 have not been vaccinated against pneumococcal pneumonia. The eligible groups are, by definition, at risk of severe respiratory illness if they contract flu or pneumonia and are therefore at increased risk of death in the winter months.

Recommendations for consideration by organisations i.e BCCG, General Practices, Local Authority, Public Health and other providers e.g. SEPT, Bedford hospital

Please also refer to the JSNA chapter on Housing for recommendations in addition to those made below.

1. All organisations, led by the Health and Wellbeing Board, should:
 - understand the synergy between their work programmes to address excess winter deaths, both directly and through the wider determinants of health
 - appreciate that preparation for the winter months is a year-round exercise and that early planning will increase the success of time-limited interventions such as flu vaccination
 - recognise that many vulnerable people already exist on several client lists.
2. The Health and Wellbeing Board, through its Joint Commissioning Officers Group, should review the recommendations of the Cold Weather Plan, the NICE guideline and the DH Health Inequalities National Support Team guidance and consider the business case for an integrated service to help people at risk of winter illness and death who are living in cold homes.
3. Frontline workers in general practices and Bedford Borough Council should apply the principle of Making Every Contact Count to the issues of fuel poverty and flu vaccination with all their vulnerable clients. Moreover, people receiving their flu vaccination should be prompted to consider whether they qualify for the help with fuel poverty and signposted appropriately, and vice versa.
4. NHS England Hertfordshire and South Midlands area team and the locality teams and general practices of Bedfordshire Clinical Commissioning Group should work with Public Health to implement best practice recommendations to increase coverage of the flu vaccination in the 2016/17 season.
5. Bedfordshire CCG and Bedford Borough Council should work with secondary care providers to encourage referrals into fuel poverty services, for example through A&E, Care of the Elderly wards and the Discharge Planning teams.

6. Public health officers support partners to evaluate the impact of these activities on proxy indicators of excess winter mortality.

This section links to the following sections in the JSNA:

Housing
Climate change
Respiratory Disease
Health Protection
Falls and Osteoporosis

References

- ⁱ Public Health England (2013). Excess winter mortality in England and Wales: 2014/15 <http://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/excesswintermortalityinenglandandwales/201415provisionaland201314final>
Accessed 24/10/2016
- ⁱⁱ The Marmot Review Team (2010). Fair Society Healthy Lives. Strategic review of health inequalities post-2010. <http://www.instituteofhealthequity.org/projects/fair-society-healthy-lives-the-marmot-review> Accessed 24/10/2016
- ⁱⁱⁱ David Buck and Sarah Gregory (2013). Improving the public's health. A resource for local authorities. <http://www.kingsfund.org.uk/publications/improving-publics-health>
Accessed 24/10/2016
- ^{iv} Department for Business, Energy and Industrial Strategy (2016) The fuel poverty statistics methodology handbook 2016 <https://www.gov.uk/government/publications/fuel-poverty-statistics-methodology-handbook> Accessed 24/10/2016
- ^v Department for Business, Energy and Industrial Strategy Annual fuel poverty statistics report, 2016 . <https://www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2016> Accessed 24/10/2016
- ^{vi} Keatinge, W.R., Donaldson, G.C., Bucher, K., Jendritsky, G. & al, e. 1997, "Cold exposure and winter mortality from ischaemic heart disease, cerebrovascular disease, respiratory disease, and all causes in warm and cold regions of Europe", The Lancet, vol. 349, no. 9062, pp. 1341-6.
- ^{vii} Gascoigne, C., Morgan, K., Gross, H. & Goodwin, J. 2010, "Reducing the health risks of severe winter weather among older people in the United Kingdom: an evidence-based intervention", Ageing and Society, vol. 30, no. 2, pp. 275-297.
- ^{viii} Public Health England (2016). The Cold Weather Plan for England: Protecting health and reducing harm from cold weather

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/561105/Cold_weather_plan_2016.pdf Accessed 24/10/2016

^{ix} Housing LIN (2011). Housing, prevention and early intervention at work: a summary of the evidence base.

http://www.housinglin.org.uk/library/Resources/Housing/Support_materials/Viewpoints/Viewpoint_21_Prevention_and_Early_intervention.pdf

Accessed 24/10/2016

^x Department of Health (2010). How to reduce the risk of seasonal excess deaths systematically in vulnerable older people to impact at population level.

<https://lpbcc.files.wordpress.com/2012/02/ref-11-seasonal-access-deaths.pdf>

Accessed 24/10/16