Key Messages

- Over the five year period between 2005/06 and 2009/10, average winter temperatures dropped from 3.9 to 1.7°C and the number of emergency hospital admissions in winter (December to February) across the North West increased by just over 18,000. This represents an increase of 9.7%, similar to the rest of England.
- In winter 2009/10, there were 36,000 more emergency hospital admissions in the North West than would have been expected if winter emergency admissions were the same as the average for England.
- The estimated cost to the NHS for every 1,000 excess emergency admissions in the North West could be as high as £2.4 million, based on the approximate average cost of an emergency admission in the region.\(^1\) This would suggest the cost of excess emergency admissions to hospitals alone could be just over £86 million.
- There are big differences in levels of excess winter emergency admissions seen in primary care trust areas across the North West; ranging from 59.3% higher than expected in Liverpool to about the same as, or below, expected levels in Trafford and North Lancashire (3.4% and -3.6% respectively). However, data should be interpreted alongside other intelligence such as levels of deprivation, disease prevalence and the provision of health services.
- Diseases of the respiratory and circulatory systems accounted for 22.2% of all winter emergency hospital admissions in the North West during 2009/10, 45,570 emergency admissions in total.
- In 2009/10, of all excess winter emergency admissions for a respiratory condition in the North West, 43.5% were among children aged under 5 years while a further 23.7% were for those aged 65 years and over (amounting to 1,982 and 1,080 excess emergency admissions respectively).
- People living in the most deprived areas are more than twice as likely to be admitted as an emergency for a respiratory condition than those living in the least deprived. In winter 2009/10, the very youngest (children aged under 5 years) in the North West and the very oldest (people aged 85 years and over) living in the most deprived 20% of areas nationally were at greatest risk of being admitted to hospital as an emergency due to a respiratory condition.
- Cold homes and low outdoor temperatures are associated with increased hospital admissions and deaths in winter. Areas in Manchester, Liverpool, Blackburn, Burnley, Wirral and Knowsley have been ranked among the ten worst in England for estimated levels of fuel poverty. As many as 36% of dwellings in the North West are deemed to be below the decent homes standard; a decent home is one which is ‘wind and weather tight, warm and has modern facilities.’\(^1\)
- Working with local authorities and partners to address fuel poverty and improve affordable warmth is a key public health intervention for local NHS organisations. Other interventions to tackle the rising numbers of winter emergency hospital admissions, particularly for respiratory conditions, include flu vaccination and self-management programmes. Local cold weather plans should also consider measures to prevent the dramatic increase in emergency hospital admissions for falls involving snow and ice seen last winter.

\(^1\) According to data used in the NHS North West Finance Demand and Activity Model.
1. INTRODUCTION

Research shows that a greater number of people in the United Kingdom (UK) die, or are admitted to hospital, during the winter than any other time of year.\(^1,2\) This is true even when compared to other areas in Europe with harsher winters.\(^3\) Recent analyses by the North West Public Health Observatory (NWPHO) found there were around 3,000 extra deaths each year in winter across the North West compared with the average number of deaths in the rest of the year (from 2005-2008).\(^1,1\) The Department of Health (DH) estimate that for every one extra winter death there are approximately eight extra hospital admissions.\(^4\) During winter the NHS faces significant extra pressure, particularly from emergency admissions\(^1\) and the latest data for the North West show that the number of people admitted to hospital as an emergency in winter is rising.\(^5\) Further analysis also reveals that the number of emergency hospital admissions throughout the year generally is increasing, especially in parts of the North West and North East of England.\(^6\) Diseases of the respiratory and circulatory systems are shown to contribute most to ill health in winter\(^7\) and previous analyses by NWPHO have found increasing emergency hospital admissions in winter due to falls on ice and snow across the North West.\(^5\) For example, the number of emergency hospital admissions for falls involving ice and snow increased dramatically last winter compared to the previous three winters, from 149 in the winter of 2006/07 rising to 3,170 admissions during the winter of 2009/10, an increase of over twentyfold. There is considerable potential to reduce the burden of winter on health services through increased public health intervention such as encouraging greater self-care, improved uptake of the flu vaccine, providing more affordable warmth and improving insulation and energy efficiency in our homes.\(^3,8\)

This Winter Forecast for NHS Emergency Care synthesis report brings together policy, evidence and intelligence to show the scale of, and trends in, excess emergency hospital admissions across the North West in winter, both overall and for specific conditions, such as respiratory and circulatory diseases. Seasonality in deaths across local authorities in the North West is already being explored by Government Office North West (GONW)\(^9\) and will be referred to here. The report also examines the costs to the NHS of excess emergency hospital admissions in winter in the North West compared to England. Examples of best practice in tackling some of the factors contributing to ill health during the winter months are also presented.

This report will help commissioners of health and social care services across the North West to address some of the issues raised by the National Support Team for Health Inequalities during their visits to Spearhead local authorities and primary care trusts (PCTs) in 2009. The information presented in the report will allow local areas to benchmark themselves against each other in terms of excess winter hospital admissions and will support cross-agency work between PCTs, GP consortia, local authorities and other organisations. Data are presented at both sub-regional and local authority level (to highlight where interventions might best be targeted) and for PCTs (to demonstrate the potential cost savings to the NHS if excess levels of winter emergency hospital admissions were reduced).
2. POLICY

Box 1: Policies and strategies


**Keep Warm Keep Well** (2003) is the DH’s annual campaign to protect people from winter-related illness and death by targeting particular groups who are financially disadvantaged (including older or disabled people and their carers, and families with young children on low incomes). The Warm Front Scheme is a government funded initiative which helps people in fuel poverty by providing insulation and heating improvements (up to the value of £3,500): [www.direct.gov.uk/en/HomeAndCommunity/InYourHome/KeepingSafeAtHome/DG_10027755](http://www.direct.gov.uk/en/HomeAndCommunity/InYourHome/KeepingSafeAtHome/DG_10027755) and [www.dh.gov.uk/en/SocialCare/Deliveringadultssocialcare/Olderpeople/DH_4076849](http://www.dh.gov.uk/en/SocialCare/Deliveringadultssocialcare/Olderpeople/DH_4076849)

The **UK Fuel Poverty Strategy** (2001) aimed to eradicate fuel poverty and was launched following the **Warm Homes and Energy Conservation Act** (2000) which planned to end fuel poverty in all English households by 2016. Annual reports detailing progress in implementing the strategy are available: [www.nea.org.uk/warm-homes-and-energy-conservation-act](http://www.nea.org.uk/warm-homes-and-energy-conservation-act)

The **National Strategy for Chronic Obstructive Pulmonary Disease (COPD) including asthma** (2005) aimed to improve the care of individuals with COPD and to reduce the number of people with the disease: [www.nhs.uk/NHSEngland/NSF/Pages/ChronicObstructivePulmonaryDisease.aspx](http://www.nhs.uk/NHSEngland/NSF/Pages/ChronicObstructivePulmonaryDisease.aspx)

Also of relevance is the **UK Flu Campaign**: [www.dh.gov.uk/en/Publichealth/Flu/Flugeneralinformation/DH_4087158](http://www.dh.gov.uk/en/Publichealth/Flu/Flugeneralinformation/DH_4087158)

There is currently no single sub national strategy or policy in relation to reducing the impact of winter on population health. In terms of fuel poverty, however, there is the North West **Low Carbon Housing and Fuel Poverty Activity Plan 2010-2012** and local strategies are being developed in Cumbria and in Lancashire.

3. EVIDENCE

3.1 Interventions for reducing hospital admissions during winter

As part of their visits to Spearhead local authorities and PCTs in 2009, the Health Inequalities National Support Team (HINST) made a number of recommendations aimed at reducing the risk of seasonal excess deaths in vulnerable older people, with particular emphasis upon respiratory and circulatory diseases, as well as reducing the increasing risk from injuries and falls in winter. A subsequent report from the HINST highlighted nine practical and effective interventions that are likely to improve vulnerable people’s resilience during spells of cold or hot weather.11

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 or more 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. a buddy scheme, where there are no close friends or family to watch for danger signs and provide someone to call).

Local areas are advised to systematically develop a list of vulnerable individuals and to work to ensure that all of these people are offered the above key interventions and are supported to take best advantage of them.
Research evidence shows there are a number of interventions that can help reduce hospital admissions for specific health problems that might increase during winter, such as Chronic Obstructive Pulmonary Disease (COPD). Such interventions include self-management and education programmes to improve knowledge and understanding of the condition among sufferers or pulmonary rehabilitation programmes (which can combine physical exercise, smoking cessation or improved psychosocial support).  

### Box 2: Useful websites and sources of information

| The **Greater Manchester Fuel Poverty Initiative (GMFPI)** managed by the UK Public Health Association (UKPHA), shows how PCTs and social care professionals can work together with local authorities and other partners to improve health outcomes among vulnerable groups by tackling poor housing: [www.warmerhealthyhomes.org.uk/index.php?option=com_content&view=article&id=151&Itemid=90](http://www.warmerhealthyhomes.org.uk/index.php?option=com_content&view=article&id=151&Itemid=90) |
| **National Energy Action (NEA)** works in partnership with central and local government, fuel utilities, housing providers, health services and consumer organisations to help eradicate fuel poverty by campaigning for greater investment in energy efficiency to help the most vulnerable groups or individuals: [www.nea.org.uk](http://www.nea.org.uk) |
| **Healthy Outlook® COPD forecast alert service**, supported by the NHS, this service recognises that COPD can be made worse in the winter by cold weather and any increase in the presence of viruses that cause coughs and colds. The service monitors environmental conditions and can warn people when their health is likely to be affected, giving them the opportunity to take action to stay well (those who opt-in receive a recorded voice call by telephone when poor environmental conditions are forecast): [www.metoffice.gov.uk/health/public/healthy-outlook.html](http://www.metoffice.gov.uk/health/public/healthy-outlook.html) |

### 3.2 Fuel poverty - definition and characteristics

Cold homes and low outdoor temperatures are associated with increased hospital admissions and deaths in winter. A household that has to spend more than 10% of its household income on fuel to keep their home at a satisfactory temperature, usually 21 degrees Celsius (°C) for the main living area and 18°C for other occupied rooms, is said to be in fuel poverty. The key at risk groups are households on a low income, single people of working age, those in rural areas, children, older people and individuals in deprived areas. The Centre for Sustainable Energy has estimated levels of fuel poverty (based upon 2003 survey data and the 2001 Census) and found that areas in Manchester, Liverpool, Blackburn, Burnley, Wirral and Knowsley were ranked among the ten worst in England. A total of 36% of dwellings in the North West are deemed to be below the decent homes standard.  

### Box 3: North West fuel poverty case studies

**Cumbria’s Affordable Warmth Project** aims to form partnerships with agencies, access funding for insulation measures and produce a fuel poverty strategy/action plan. It also aims to liaise with energy companies, insulation companies, energy agencies, advice centres, the Fuel Poverty Task Group and anyone else who can help reduce the number of families living in fuel poverty, who need to reduce their energy costs and improve their property’s energy efficiency. The project also aims to help reduce health inequalities among those living in poor quality and energy inefficient housing.
Box 3 (continued)

**Lancashire’s Be A Rossendale Saver (BeARS) scheme** was launched in 2009 with the aim of upgrading all residents’ loft insulation to industry standard (270 mm). A surveyor visited targeted properties and, after completing a free home energy survey, all residents received advice about how to improve the energy efficiency of their home and whether they were eligible to receive free loft insulation under the scheme. Just under £100,000 has been spent on the scheme, and 160 tonnes of carbon have been saved in the process. Collectively the scheme has saved residents over £30,000 per year on their energy bills.

**Liverpool Healthy Homes Programme**, launched in April 2009, is an exemplar partnership between Liverpool City Council and Liverpool PCT, which aims to improve the wellbeing and health of residents in the city. Focussed on private tenants, trained advocates knock on doors and make direct referrals to a diverse network of partners. To date, the programme has completed 7,214 single assessment process (SAP) surveys to collect information on the property’s condition and residents’ health and well-being needs, has organised 1,655 Environmental Health Officer visits, made 10,261 referrals to different agencies and led to over £1.9 million investment in property improvement. In 2010, the programme also reached the finals of the Chief Medical Officer’s Public Health Awards.

**Greater Manchester’s Affordable Warmth Access Referral Mechanism (AWARM) scheme**, led and managed by the UKPHA, acts as a one stop shop for fuel poverty services for vulnerable people. Working with both local authorities and PCTs locally, the service trains frontline staff to recognise the signs of fuel poverty and refer people for energy saving grants, debt or benefits advice, a fire safety check or home repairs. In Tameside, GP IT systems have been adapted to flag up people at risk of fuel poverty for automatic referral to AWARM. Identified as an example of good practice in the recent *Fair Society Healthy Lives* report, AWARM has received over 4,000 referrals throughout Greater Manchester to date.

### 4. INTELLIGENCE

#### 4.1 Methods for measuring the impact of winter on health

The Excess Winter Mortality (EWM) index is a nationally recognised method for measuring the level of excess deaths in winter. This compares the number of deaths in winter (December to March) with the average number in non-winter (the preceding August to November and the following April to July). This indicator features in both the 2009 and 2010 community health profiles, which are produced annually for every local authority in England. Using this same method, NWPHO found that there were around 3,000 more deaths each winter in the North West (from 2005-08) compared to the rest of the year. Many PCTs also carry out their own analysis of the impact of winter on the health of the local population, often using the EWM index to measure both levels of emergency hospital admissions and deaths. A further method is the seasonal indirectly standardised emergency admission rate (ISR): the number of emergency admissions in an area at a particular time of the year that might be expected if the rate of emergency admissions in that area was the same as that found across England as a whole. This can be expressed as a ratio or as an absolute number of admissions.

However, the EWM index is limited in a number of ways.

- It is relatively unstable at low levels of geography due to small numbers, especially in the case of winter deaths.
- It is not sensitive enough to detect winter excess in years where there could be high levels of mortality in summer or the non-winter period.
- It detects only winter excess and not general seasonal patterns.
- It does not take into account any differences in a population, such as by age, or any growth in population over time.
- It restricts the value and timeliness of any analyses (e.g. if measuring emergency admissions in a particular winter, it is necessary to wait for the release of data from the four months after the winter period under study).

Given such limitations, recent analyses of winter deaths in the North West compared local mortality by month, age and sex (standardised to national mortality in the same month). This showed an excess of deaths in the winter across a number of local authorities in the region (including Blackburn with Darwen, Blackpool, West Lancashire and Ribble Valley) but an excess of deaths in summer in a number of other areas (such as Pendle, Fylde and Hyndburn). This may be due to ineffective informal and statutory support services during holiday periods, especially in more rural areas. However, confidence intervals can be large due to small numbers and further work is needed to understand the data.

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This synthesis report uses two methods to investigate the impact of winter upon emergency hospital admissions in the North West. Indirectly standardised ratios (adjusted for differences in the age structure of the population) are used to compare the number of emergency admissions across the North West in winter with the number that might be expected if the region had emergency admissions equivalent to England during that same winter. Data were examined by five-year age bands and summed to give a regional total. The ratio of actual (observed) to expected emergency admissions in the North West was then calculated. A ratio above 100 shows greater emergency admissions than expected; a ratio below 100 indicates fewer emergency admissions than expected. As standardised ratios only show the difference in emergency hospital admissions compared with England, some crude rates are also included to show whether the number of emergency admissions has changed over time given any change in population.

Population data used to calculate ratios and rates were sourced from Office for National Statistics (ONS) mid-year population estimates. These were matched with the relevant fiscal year of Hospital Episode Statistics (HES) data. The most recent HES data used in the analyses (2009/10) is provisional (see the technical note at the end for further details).

This report examines emergency hospital admissions data from the last five winters (2005/06-2009/10) for each of the 39 local authorities in the North West. Data was examined separately for each of the 24 PCTs in the region to estimate the costs to the NHS of excess emergency admissions in winter compared to nationally. The winter period was defined as per the Met Office definition: the months of December to February each year.

### 4.2 Emergency hospital admissions in winter

#### 4.2.1 Trends and scale

Between 2005/06 and 2009/10, the number of winter emergency hospital admissions in the North West rose by around 18,000 (from 187,121 to 205,244 emergency admissions; an increase of 9.7%). This is similar to the increase seen across England as whole.

Over this same period, there were around 20% more emergency admissions across the North West each winter than expected compared with England. This is equivalent to at least 30,000 more emergency admissions each winter (Figure 1). The number of excess admissions was highest in 2007/08 (26.5% higher than expected or 41,237 extra emergency admissions).  

**Figure 1: Number of expected and excess emergency hospital admissions in winter. North West, 2005/06-2009/10 (all ages).**

Source: NWPHO from HES (emergency admissions data) and ONS (mid-year population estimates).

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v For display purposes, the England value is set to 0 on relevant graphs.

vi HES 2005/06 (mid-2005 population), 2006/07 (mid-2006), 2007/08 (mid-2007), 2008/09 and 2009/10 (both used mid-2008 as this is currently the most recent available to NWPHO at Lower Super Output Area (LSOA) level for division by quinary age band).

vii Based on hospital admission episode. For further details see the technical note at the end of this paper.
Over the last five years the crude rate of emergency hospital admissions across the North West has increased at particular points during the year, with winter peaks most likely to occur in the month of December. There were also considerable numbers of emergency admissions in October each year (Figure 2). Broadly speaking, monthly patterns of emergency admissions mirror changes in the mean temperature, with lower temperatures being associated with an increase in the emergency admission rate. In general, Cheshire and Merseyside had the highest winter emergency admission rates of any North West sub region, while Cumbria and Lancashire consistently had the lowest.

**Figure 2: Crude rate of emergency hospital admissions each month, by temperature. North West sub regions, 2005/06-2009/10 (all ages).**

Over the last two years, there were considerable differences in the emergency admission ratio during the winter across local authorities in the North West (Figure 3). Knowsley, Halton, Liverpool and Salford local authorities had greater than expected numbers of emergency admissions in winter compared to England in both 2008/09 and 2009/10, while Eden, Ribble Valley and South Lakeland had consistently lower than expected levels. However, while these data are useful for analysing how emergency admissions in an area compare with the England average in one particular year, it is not appropriate to use them to rank different local authorities or PCTs in terms of the scale of excess winter admissions or to track change over time. The difference between areas should be interpreted alongside other contextual factors, including the existing prevalence of disease or the level of deprivation in an area, as well as the quality of primary care.
4.2.2 Costs to the NHS of excess emergency hospital admissions

In the winter of 2009/10, there were just under 36,000 more emergency hospital admissions than expected across PCTs in the North West compared with England (Figure 4). The emergency admission ratio in PCTs such as Trafford and North Lancashire was similar to England, while in Liverpool and Knowsley PCTs the rate of emergency admissions was higher than expected (59.3% and 56.4% respectively). These data suggest that the NHS could make considerable savings (based on the average cost of an emergency admission) if the total numbers of emergency admissions in winter across the North West were reduced to expected levels (Table 1).

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* Average costs of an emergency admission in each PCT were obtained from the North West Strategic Health Authority, Health Economics Team, based on their North West Finance Demand and Activity (FDA) tariff data model.
Figure 4: Ratio (age-standardised) of observed to expected emergency hospital admissions in winter compared to England. North West primary care trusts, 2009/10 (all ages).

Table 1: Number of excess emergency hospital admissions in winter compared to England and average costs. North West primary care trusts, 2009/10 (all ages).

<table>
<thead>
<tr>
<th>Primary care trust</th>
<th>Number of excess emergency hospital admissions*</th>
<th>Total cost of (in £’s) excess emergency hospital admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashton, Leigh and Wigan</td>
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<tr>
<td>Blackburn with Darwen</td>
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<td>Central and Eastern Cheshire</td>
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<td>Central Lancashire</td>
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<tr>
<td>North West</td>
<td>35,917**</td>
<td>£86,077,440***</td>
</tr>
</tbody>
</table>

Source: NWPHO from HES (emergency admissions), ONS (mid-year population estimates) and NHS North West Finance Demand and Activity Model (emergency admission costs).

NB: Negative values in column one show no excess of emergency admissions in 2009/10 compared to England.

* Rounded to the nearest whole number

** This figure is lower than in Figure 1 as it is calculated using emergency admissions for PCT geography.

*** Total cost in each PCT is rounded for display and therefore will not match the North West total exactly.
4.2.3 Primary diagnoses - respiratory and circulatory conditions*

Diseases of the respiratory and circulatory systems contribute significantly to emergency hospital admissions during the winter. Between 2005/06 and 2009/10, there were approximately 28,000 emergency hospital admissions for respiratory conditions each winter across the North West and around 17,000 emergency admissions for circulatory diseases (Figure 5). Over this period, there were around twenty per cent more emergency admissions each winter than expected for respiratory conditions compared with England and around ten per cent more for circulatory conditions. Greater than expected levels of emergency admissions for respiratory conditions were particularly evident during the winters of 2006/07 and 2007/08.

**Figure 5: Number of expected and excess emergency hospital admissions in winter, by primary diagnosis. North West, 2005/06-2009/10 (all ages).**

Between 2005/06 and 2009/10, emergency hospital admissions for respiratory conditions across the North West varied markedly throughout the year (consistently peaking in December) while circulatory conditions demonstrated far less seasonality (Figure 6).

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*(International Classification of Disease (ICD) 10 codes: Respiratory (J00-J99) and Circulatory (I00-I99).)*
Figure 6: Crude rate of emergency hospital admissions each month, by temperature. North West, 2005/06-2009/10 (all ages).

Source: NWPHO from HES (emergency admissions), ONS (mid-year population estimates) and Met Office (temperature data).

In 2009/10, of the 4,556 excess winter emergency admissions for a respiratory condition in the North West, 43.5% were among children aged under 5 years (amounting to 1,982 excess emergency admissions); a further 23.7% were for those aged 65 years and over (1,080 excess emergency admissions).

During the two most recent winters, the ratio of observed to expected emergency hospital admissions in each local authority in the North West was, on the whole, higher for respiratory than for circulatory conditions. However, confidence intervals were large, especially for circulatory conditions. Ratios of emergency admissions for respiratory conditions were highest in Barrow-in-Furness, Liverpool and Knowsley and lowest in Fylde and Eden. It is important to interpret these ratios in the context of other local data, such as the prevalence of respiratory or circulatory conditions within a population.

Across the North West, one-fifth of all emergency admissions in winter 2009/10 were for a primary diagnoses of a respiratory or circulatory disease. Around one-fifth of emergency hospital admissions for a respiratory condition that winter were for pneumonia (organism unspecified). A further one-fifth were for other chronic obstructive pulmonary disease, while acute bronchiolitis, acute upper respiratory infections (of multiple and unspecified sites) and asthma each accounted for around one-tenth of all such emergency admissions.

4.2.4 Factors associated with emergency hospital admissions in winter

This section looks at the extent to which the emergency admission rate in each PCT is associated with other factors, such as the effective management of patients in primary care, the mean weekly temperature and the scale of deprivation in an area.

Patients whose condition is managed effectively in primary care may have a lower risk of being admitted to hospital in an emergency. In terms of COPD, this includes ensuring that patients have been vaccinated against flu and are having their lung function tested on a regular basis. Analysis of Quality and Outcomes Framework (QoF) data for 2009/10 shows that areas with higher than expected emergency admission rates tend to have lower rates of flu immunisation and a lower proportion of COPD patients who had their lung function tested within the previous 15 months (Figure 7). The link with emergency hospital admission rates is slightly stronger for flu immunisation than for lung function testing.
Figure 7: Association between emergency hospital admissions (respiratory) in winter, by COPD data. North West primary care trusts, 2009/10.

Source: NWPHO from HES (emergency admissions), Quality Outcomes Framework (PCT level tables - QMAS database - 2009/10 data as at end of July 2010) and ONS (mid-year population estimates).

NB: The closer the R² (squared) value is to 1.0, the greater the ability of that model to predict a trend.

Analysis of data from the Met Office shows that there is no statistically significant or linear association between mean weekly temperatures during winter and emergency hospital admissions for respiratory or circulatory conditions in the North West. There were some general observations in the data; for example each winter, emergency admissions for a respiratory condition tended to peak early in winter (Figure 8). Nonetheless, there is a variety of evidence that cold temperatures lead to greater admissions in winter although the effect of temperature is not necessarily immediate, for example, there can be up to a 12 day lag between drops in temperature and admissions to hospital.\cite{4,17} GP consultations for respiratory conditions among the elderly can increase by as much as 15 per cent for every 1°C fall in outdoor temperature below 5°C and the immune system can be less efficient in cold weather.\cite{18}
There is a strong relationship between deprivation and the crude rate (per 100,000 population) of emergency hospital admissions for respiratory conditions in winter 2009/10 across the North West. Patients living in the most deprived 20% (quintile\(^a\)) of areas nationally are more than twice as likely to be admitted as an emergency for a respiratory condition than those living in the least deprived quintile (rates of 266.4 and 562.4 per 100,000 respectively; Figure 9). If the data for the most deprived quintile are broken down by age, the very youngest (children aged under 5 years) and the very oldest (those aged 85 years and over) are most at risk of being admitted to hospital as an emergency for a respiratory condition (rates of 2,379.2 and 2,468.8 per 100,000 respectively). Such children are most likely to be admitted for acute bronchiolitis or acute upper respiratory infections (of multiple and unspecified sites), while for those aged 85 years and over it is pneumonia (organism unspecified) followed by other chronic obstructive pulmonary disease.

\(^a\) LSDAs are arranged into one of five groups depending on their multiple deprivation score.
Summary

This report brings together data on the impact of increasingly cold winters on emergency hospital admissions across the North West. The financial impact of rising numbers of emergency winter admissions on the NHS is considerable and there is the potential for significant cost savings to be made if numbers of excess winter emergency admissions were reduced. There are a number of interventions that are likely to be effective in reducing winter admissions particularly for respiratory and circulatory conditions which account for one-fifth of all emergency winter admissions and disproportionately affect vulnerable people, and especially those living in deprived areas (particularly in the case of respiratory conditions). PCTs and their successor commissioning bodies, GP Consoritiums, in partnership with local authorities and the proposed new Health and Wellbeing Boards, should consider the cost benefits of a range of public health interventions to reduce winter emergency hospital admissions and improve the health and wellbeing of local communities, such as affordable warmth and improvement of home insulation and energy efficiency, flu vaccination and self-management programmes. The focus of these interventions should not only be older people, but also the very young.

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Technical note:

HES data

This 2009/10 HES data used in the report is provisional and may be incomplete or contain errors for which no adjustments have yet been made. Counts generated from provisional data are likely to be lower than those generated for the same period in the final dataset. This shortfall will be most pronounced in the final month of the latest period. It is also probable that clinical data are not complete, which may affect the last two months of any given period. There may also be a variety of errors due to coding inconsistencies that have not yet been investigated and corrected.

If you are unsure about this then please contact: hes.questions@ic.nhs.uk

Episodes

All data are for admission episodes and relate to finished consultant episodes (FCE): a continuous period of admitted patient care under one consultant within one healthcare provider. Figures do not represent the number of different patients. The admission method codes used to filter emergencies are from 21 to 28. Therefore individuals could be counted more than once in the analyses.

Analyses

For standardised ratios or crude rates of emergency hospital admissions in winter across the North West (all persons) all episodes are included regardless of whether their lower level of geography (i.e. LA or sub region) is missing as these records are still considered valid admissions. However, for age standardised ratios analyses, only those admissions with an age band are included and records where these variables are unrecorded or not known are omitted. Therefore, totals for sub regions or LAs and the North West may not always match exactly. Analyses by PCT in the North West include a greater total population than for LAs due to the inclusion of Glossop as part of the North West (Tameside and Glossop PCT). The total for England remains unchanged.

REFERENCES

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