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West Sussex Joint Strategic Needs Assessment Briefing

EXCESS WINTER MORTALITY IN ADUR

Drafted by

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SUMMARY

This briefing has been drafted to:

- provide a detailed understanding of the excess winter death indicator, as published by Public Health England in annual health profiles; and provide additional data relating to Adur.
- outline the national evidence and research into excess winter mortality and identify specific recommendations for action at a local level.

DATA RELATING TO ADUR

In the three year period August 2010 to July 2013 there were 217 "excess" winter deaths[1] in Adur. The excess winter death (EWD) index of 34.3 was significantly higher than the England rate of 17.4, and was the highest EWD index in the country.

- In terms of a single year, the number of excess winter deaths that occurred between August 2011 to July 2012 was particularly high (105 deaths). It should be noted that year-on-year data at a local authority level are volatile, using three years of pooled data, an upward trend is evident in Adur.

- Approximately 70% of excess winter deaths are of people aged 75 years or over.

- Local analysis of the period August 2011 to July 2013, found that the majority of deaths related to diseases of the circulatory system or respiratory system. Causes identified in Adur are broadly in line with national figures. These are the causes of death but the underlying issues are complex, national data have been reviewed to provide an understanding of specific risk factors and groups.

NATIONAL EVIDENCE AND RESEARCH

There are a range of risk factors for higher mortality in winter:-

- ***Population risk factors,*** these include older age, people with long term health conditions and young infants.
- ***Housing and economic risk factors*****,** these include fuel poor homes, homes with mould.
- ***Behavioural risk factors*****,** for example people who may be less able to adapt their behaviour to respond low, or high, temperatures.

- Although the measure focusses on death, for every excess winter death there are an estimated eight avoidable hospital admissions, and for every hospital admission an estimated nineteen GP consultations[1].

- The burden of excess winter deaths on the NHS nationally is estimated to be in the order of £850m annually. This does not include social care costs or costs associated with absence from school, work and other social and the community as whole.

[1] PHE (2014) Cold Weather Plan for England

- Although the outcome of interest, in measurable terms, is EWD, it is important to understand the extent of this problem in broader terms. We know that excess winter deaths are mostly, but not all, avoidable. We also know that interventions from a health perspective can only have limited impact and that a multi-agency approach is required to ensure that household income, decent homes and social infrastructure are robust, increasing resilience and enabling people to live well all year round.

- Prevention needs to focus on keeping people well, increasing their resilience and reducing the risk factors associated with EWD.

RECOMMENDATIONS FROM NATIONAL REPORTS AND GUIDANCE

Health and wellbeing boards, and local partnerships, may wish to self-assess their current status against the recommendations made by the National Institute for Health and Care Excellence (NICE) and Public Health England, following the publication of the Cold Weather Plan for England.

Given the complexity of the subject and the range of factors impacting EWD, there are many recommendations for action, covering issues ranging from social care, housing, work on fuel poverty and management of long term conditions.

The following include recommendations at a national and local level:-

1) NICE Guidance NG6 Excess winter deaths and illnesses associated with cold homes (2015)
2) The Cold Weather Plan for England (PHE 2014).
3) Warm Homes Healthy People Fund Evaluation (PHE 2013)
4) The Health Impacts of Cold Homes and Fuel Poverty (Friends of the Earth Commissioned by Marmot Review Team in 2011).

Recommendations relating to 1) and 2) are outlined below:-

NICE guidance includes twelve key recommendations:-

1. Local areas should develop a strategy.
2. Ensure there is a single-point-of-contact health and housing referral service for people living in cold homes.
3. Provide tailored solutions via the single- point-of-contact health and housing referral service for people living in cold homes.
4. Identify people at risk of ill health from living in a cold home.
5. Make every contact count by assessing the heating needs of people who use primary health and home care services.
6. Non-health and social care workers who visit people at home should assess their heating needs.
7. Discharge vulnerable people from health or social care settings to a warm home.
8. Train health and social care practitioners to help people whose homes may be too cold
9. Train housing professionals and faith and voluntary sector workers to help people whose homes may be too cold for their health and wellbeing.
10. Train heating engineers, meter installers and those providing building insulation to help vulnerable people at home.
11. Raise awareness among practitioners and the public about how to keep warm at home.
12. Ensure buildings meet ventilation and other building and trading standards.

Following the publication of the National Cold Weather Plan, Public Health England issued five recommendations for local authority action:-

1. All local organisations should consider the Cold Weather Plan and satisfy themselves that the suggested actions and Cold Weather Alerts are understood across the system, and that local plans are adapted as appropriate to the local context.
2. NHS and local authority commissioners should satisfy themselves that the distribution of Cold Weather Alerts will reach those that need to take action, especially in light of recent structural changes.
3. NHS and local authority commissioners should satisfy themselves that providers and stakeholders will take appropriate action according to the Cold Weather Alert level in place and their professional judgements.
4. Opportunities should be taken for closer partnership working with the voluntary and community sector to help reduce vulnerability and to support the planning and response to cold weather.
5. Long-term planning and commissioning to reduce cold-related harm is considered core business by health and wellbeing boards and should be included in joint strategic needs assessments and joint health and wellbeing strategies.

HOW "EXCESS" WINTER MORTALITY IS CALCULATED

Excess winter deaths (EWD) are calculated by comparing the average number of deaths occurring in winter months (December to March) with the average number occurring in eight non-winter months.

In absolute terms this is:-

- *Winter deaths – average non-winter deaths = EWD*

Excess winter mortality may also be represented as an index:-

- *EWD Index = (excess winter deaths /average non-winter deaths) x 100*

An example calculation is shown below.

Deaths in each month											
Non winter months				Winter Months				Non winter months			
Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	Jun	July
4	3	10	7	10	6	18	10	5	12	10	5

In this example there are a total of 44 deaths in the winter months, compared with 56 deaths in the non-winter months. If the number of deaths was even across the winter and non-winter months, then 28 deaths might be expected in the winter months, so the number of EWD in this example is 16 (44 minus 28).

In terms of the EWD Index the calculation is shown below:-

A (Deaths in 4 winter months)	= 44
B (Deaths in 8 non-winter months)	= 56
EWD	= (A – (B/2))/(B/2)*100
EWD	= (44 - (56/2))/(56/2))*100
EWD Index	= 57.1

This can be translated as winter deaths being 57% higher than the non-winter period.

EXCESS WINTER MORTALITY IN ADUR - SINGLE YEAR DATA

Over the last 8 years the number of excess winter deaths in any one year, in Adur, (Table 1) ranged from 5 in 2007/8 to 105 in 2011/12.

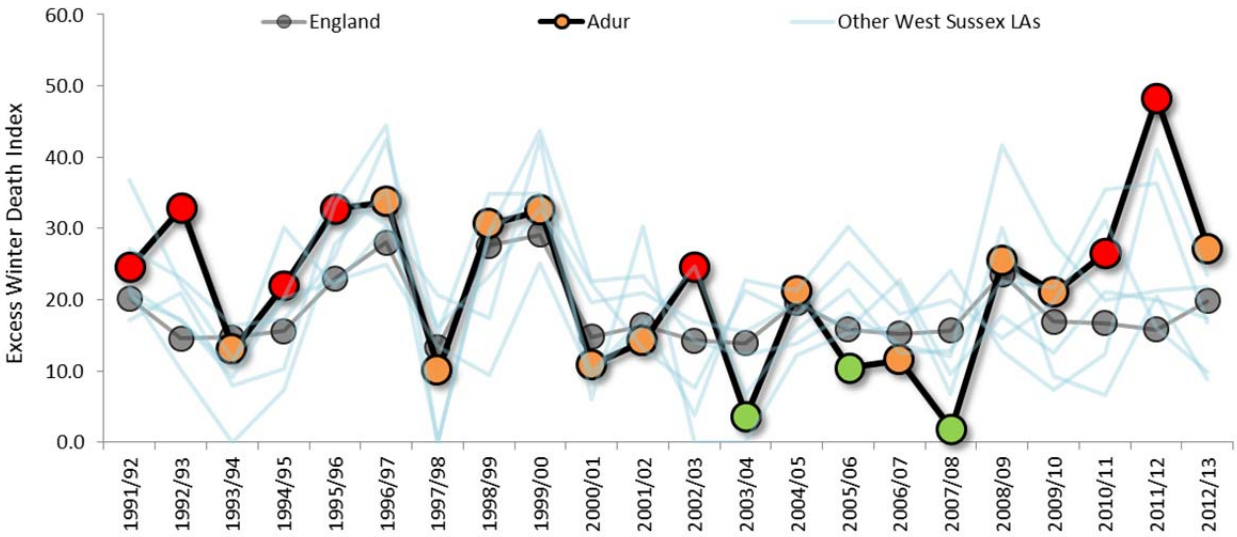
Table 1 Overall numbers of Excess Winter Deaths 2006 to 2013

Time Period	Excess Winter Deaths (Numbers rounded)		
	Adur	West Sussex	England
Aug 2006 - Jul 2007	28	486	22,811
Aug 2007 - Jul 2008	5	342	23,648
Aug 2008 - Jul 2009	56	645	34,402
Aug 2009 - Jul 2010	46	457	24,523
Aug 2010 - Jul 2011	54	570	24,439
Aug 2011 - Jul 2012	105	388	23,324
Aug 2012 - Jul 2013	59	473	29,756

Source: Public Health England. Data extracted from the ONS

A longer term view of the yearly EWD rate in Adur (Figure 1) shows the particularly high rate of excess winter deaths in 2011/12, it also highlights the considerable volatility of the EWD at a local authority level.

Figure 1 Excess winter deaths 1991/92 to 2012/13, Adur and England



Source: ONS, WSCC PHRU Analysis

- = Adur significantly higher than England
- = not significantly different
- = significantly lower than England

POOLED YEARS (3 YEARS) DATA AND THE LONGER TERM TREND

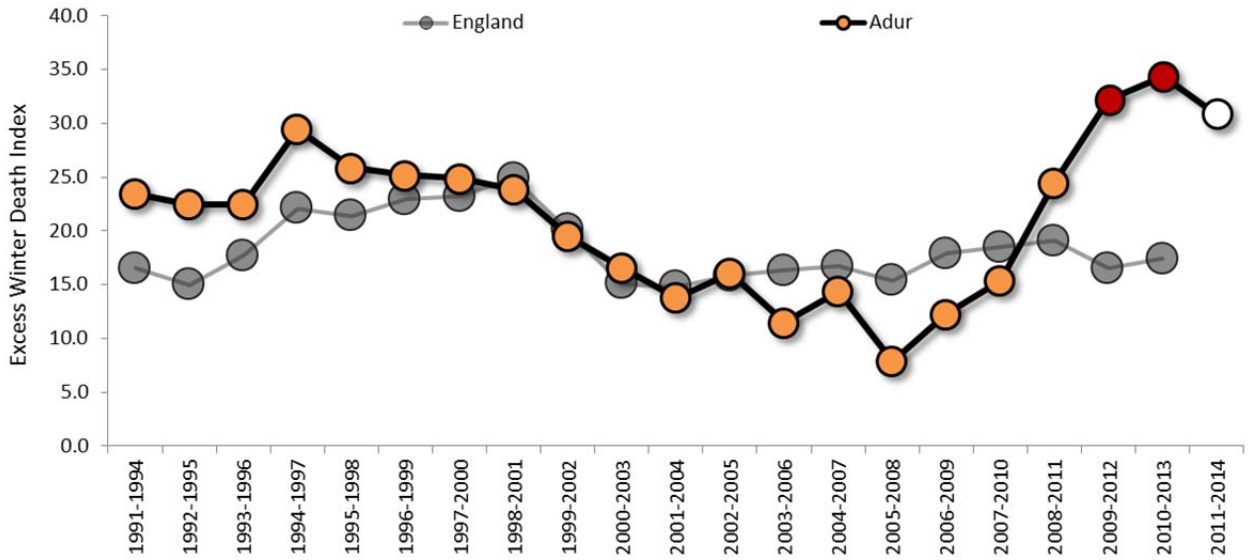
Given the volatility in any single year, pooling data across a number of years enables a more statistically robust analysis. Trend analysis of the period 1991/94 to 2011/14 (Figure 2) indicates a statistically significant change in trend, from a downward trend between 1991/4 to 2005/8, then an significant upward trend from 2005/8 onwards.

Table 2 Overall Numbers of Excess Winter Deaths – Adur, West Sussex and England

Time Period	Excess Winter Deaths (Numbers rounded)		
	Adur	West Sussex	England
Aug 2006 - Jul 2009	89	1,469	79,784
Aug 2007 - Jul 2010	105	1,434	81,647
Aug 2008 - Jul 2011	155	1,659	82,395
Aug 2009 - Jul 2012	204	1,710	71,387
Aug 2010 - Jul 2013	217	1,734	76,636

Source: Public Health England. Data extracted from the ONS

Figure 2 Excess Winter Deaths 3 Years Pooled Years Data 1991/1994 to 2011/2014, Adur and England



Source: WMPHO, 2011/14 estimate locally calculated

= Adur significantly higher than England

= not significantly different

= No national comparator for 2011-2014

Local Estimate for Pooled Period August 2012 to July 2014

Locally, WSCC Public Health has access to information contained in the Primary Care Mortality Database (PCMD). The Primary Care Mortality Database provides mortality data which details the date of the registration of death alongside identifiers including postcode, age and cause of death. Using information from the PCMD we can calculate excess winter mortality, although note that using this source yields some minor differences to the PHE published figures. Local estimates for the period 2012 to 2014 (Table 3) indicates that the EWD index will remain above 30 in Adur; the rate is expected to fall in Horsham. We do not have access to England data to enable national comparison.

Table 3 Estimated EWD rate 201, West Sussex Local Authorities

	EWD Index Figure		
	For period Aug 2011 to July 2013		Aug 2012 – Jul 2014
	PHE Figure (in 2015 Health Profiles)	Locally calculated	Locally calculated
Adur	34.3	34.0	30.8
Arun	19.5	19.3	14.3
Chichester	19.0	19.0	13.2
Crawley	26.3	26.6	26.8
Horsham	29.3	28.6	17.0
Mid Sussex	11.5	11.6	15.6
Worthing	21.4	21.2	20.3
West Sussex	21.6	21.4	18.0

Source: WSCC Public Health Research Unit

Cause of death and Age of Death

Note: Data for West Sussex local authorities are shown on Table 4 and Table 5, this information should be treated with some caution given small numbers of deaths, especially when deaths are further sub divided by cause or age. A summary of the findings at a national level are provided later in this briefing.

Analysis of the PCMD (Table 4) shows that the greatest number of excess winter deaths in Adur are attributable to diseases of the circulatory or respiratory system. This is in line with national picture. Deaths relating to mental or behavioural disorders, which would include dementia, were also higher in Adur between 2010 and 2013.

In terms of age, the majority of deaths relate to people aged 75 years or over (Table 5), but note that in the under 75 age groups there were excess winter deaths between 2010 and 2013, although in 2013/14 the EWD ratio was below 1, meaning that there were proportionately more deaths in the non-winter months.

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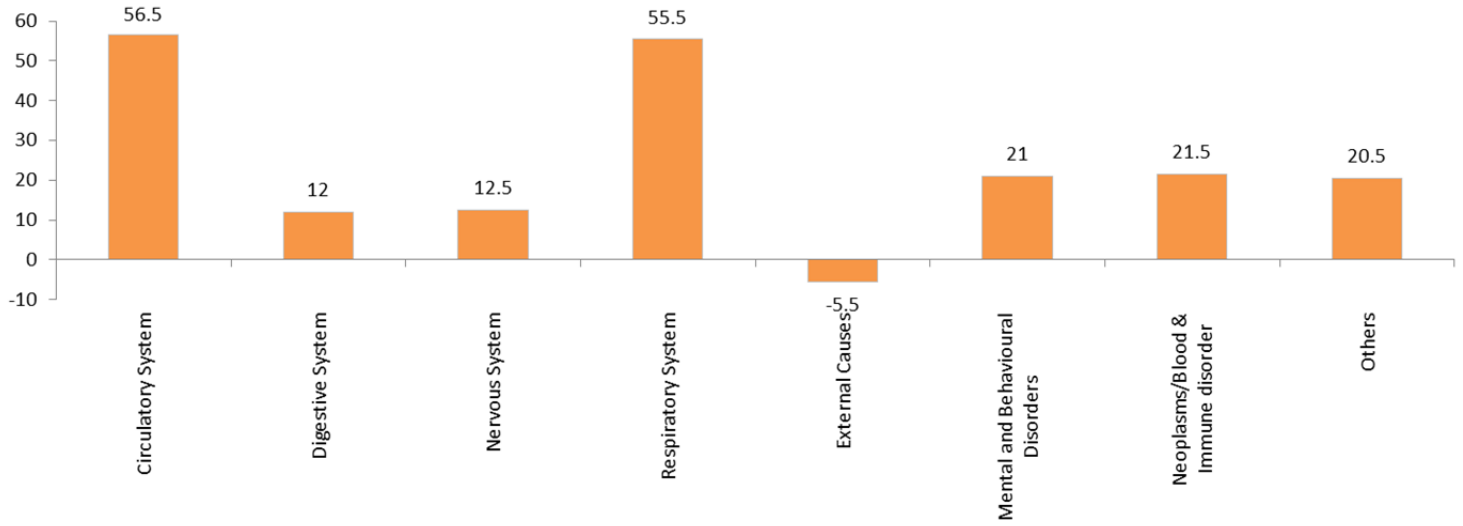
Table 4 Cause of death by ICD Groups – Non-winter (nW) and Winter deaths (W) 2010/11 to 2013/14 – West Sussex Local Authorities

		Deaths non winter months (nW) and deaths in winter months (W)								Ratio of Winter to Non Winter Deaths			
		Aug 10 to July 11		Aug 11 to July 12		Aug 12 to July 13		Aug 13 to July 14		Aug 10 to July 11	Aug 11 to July 12	Aug 12 to July 13	Aug 13 to July 14
LA	**ICD Chpt Grp (Cause of Death)**	nW	W	nW	W	nW	W	nW	W				
Adur	Diseases of the Circulatory System	113	81	133	96	123	79	131	75	1.4	1.4	1.3	1.1
	Diseases of the Digestive System	20	12	16	9	15	15	17	12	1.2	1.1	2.0	1.4
	Diseases of the Nervous System	17	16	22	22	14	10	23	10	1.9	2.0	1.4	0.9
	Diseases of the Respiratory System	39	26	42	48	55	45	44	33	1.3	2.3	1.6	1.5
	External Causes of Morbidity & Mortality	12	15	14	9	19	5	12	3	2.5	1.3	0.5	0.5
	Mental and Behavioural Disorders	18	18	19	19	19	19	30	17	2.0	2.0	2.0	1.1
	Neoplasms/Blood & Immune disorder	140	60	138	83	133	72	128	66	0.9	1.2	1.1	1.0
	Others	39	24	40	23	39	24	32	29	1.2	1.2	1.2	1.8
Arun	Diseases of the Circulatory System	409	220	390	205	363	195	354	186	1.1	1.1	1.1	1.1
	Diseases of the Digestive System	49	41	65	39	65	37	50	25	1.7	1.2	1.1	1.0
	Diseases of the Nervous System	33	23	64	35	55	29	49	32	1.4	1.1	1.1	1.3
	Diseases of the Respiratory System	167	133	151	122	166	138	150	103	1.6	1.6	1.7	1.4
	External Causes of Morbidity & Mortality	30	21	30	24	43	23	30	18	1.4	1.6	1.1	1.2
	Mental and Behavioural Disorders	81	56	96	75	87	58	107	53	1.4	1.6	1.3	1.0
	Neoplasms/Blood & Immune disorder	371	185	363	212	380	211	379	185	1.0	1.2	1.1	1.0
	Others	103	72	129	59	125	63	122	52	1.4	0.9	1.0	0.9
Chichester	Diseases of the Circulatory System	259	163	227	147	235	122	240	122	1.3	1.3	1.0	1.0
	Diseases of the Digestive System	33	18	38	16	34	21	37	20	1.1	0.8	1.2	1.1
	Diseases of the Nervous System	23	16	37	18	41	22	27	33	1.4	1.0	1.1	2.4
	Diseases of the Respiratory System	111	81	99	70	101	83	101	70	1.5	1.4	1.6	1.4
	External Causes of Morbidity & Mortality	23	15	22	14	34	10	11	16	1.3	1.3	0.6	2.9
	Mental and Behavioural Disorders	46	32	53	36	78	35	71	50	1.4	1.4	0.9	1.4
	Neoplasms/Blood & Immune disorder	231	143	249	115	246	142	260	115	1.2	0.9	1.2	0.9
	Others	72	58	92	58	102	44	85	47	1.6	1.3	0.9	1.1

		Deaths non winter months (nW) and deaths in winter months (W)								Ratio of Winter to Non Winter Deaths			
		Aug 10 to July 11		Aug 11 to July 12		Aug 12 to July 13		Aug 13 to July 14		Aug 10 to July 11	Aug 11 to July 12	Aug 12 to July 13	Aug 13 to July 14
LA	**ICD Chpt Grp (Cause of Death)**	nW	W	nW	W	nW	W	nW	W				
Crawley	Diseases of the Circulatory System	121	86	137	82	146	80	113	82	1.4	1.2	1.1	1.5
	Diseases of the Digestive System	25	12	21	10	24	13	26	12	1.0	1.0	1.1	0.9
	Diseases of the Nervous System	13	7	20	19	20	11	13	8	1.1	1.9	1.1	1.2
	Diseases of the Respiratory System	68	43	67	67	58	55	68	39	1.3	2.0	1.9	1.1
	External Causes of Morbidity & Mortality	21	4	10	10	13	13	16	9	0.4	2.0	2.0	1.1
	Mental and Behavioural Disorders	14	12	27	22	28	23	37	22	1.7	1.6	1.6	1.2
	Neoplasms/Blood & Immune disorder	168	80	131	79	146	78	151	63	1.0	1.2	1.1	0.8
	Others	38	21	40	36	36	18	24	19	1.1	1.8	1.0	1.6
Horsham	Diseases of the Circulatory System	227	126	184	144	219	126	211	97	1.1	1.6	1.2	0.9
	Diseases of the Digestive System	30	20	28	21	35	16	31	16	1.3	1.5	0.9	1.0
	Diseases of the Nervous System	22	16	32	23	39	31	46	21	1.5	1.4	1.6	0.9
	Diseases of the Respiratory System	72	68	86	81	93	68	77	50	1.9	1.9	1.5	1.3
	External Causes of Morbidity & Mortality	23	21	31	14	29	14	18	16	1.8	0.9	1.0	1.8
	Mental and Behavioural Disorders	37	34	47	56	67	26	65	36	1.8	2.4	0.8	1.1
	Neoplasms/Blood & Immune disorder	200	122	214	96	228	124	258	120	1.2	0.9	1.1	0.9
	Others	64	47	69	45	82	49	69	31	1.5	1.3	1.2	0.9
Mid Sussex	Diseases of the Circulatory System	293	142	245	132	245	120	239	129	1.0	1.1	1.0	1.1
	Diseases of the Digestive System	45	22	30	28	34	23	30	19	1.0	1.9	1.4	1.3
	Diseases of the Nervous System	30	22	26	18	47	14	44	18	1.5	1.4	0.6	0.8
	Diseases of the Respiratory System	92	67	99	75	99	64	79	78	1.5	1.5	1.3	2.0
	External Causes of Morbidity & Mortality	20	14	25	7	30	22	17	15	1.4	0.6	1.5	1.8
	Mental and Behavioural Disorders	41	34	61	36	59	50	65	47	1.7	1.2	1.7	1.4
	Neoplasms/Blood & Immune disorder	230	106	233	132	244	122	235	112	0.9	1.1	1.0	1.0
	Others	80	33	56	38	73	39	74	43	0.8	1.4	1.1	1.2

		Deaths non winter months (nW) and deaths in winter months (W)								Ratio of Winter to Non Winter Deaths			
		Aug 10 to July 11		Aug 11 to July 12		Aug 12 to July 13		Aug 13 to July 14		Aug 10 to July 11	Aug 11 to July 12	Aug 12 to July 13	Aug 13 to July 14
LA	**ICD Chpt Grp (Cause of Death)**	nW	W	nW	W	nW	W	nW	W				
Worthing	Diseases of the Circulatory System	249	144	209	143	239	145	226	131	1.2	1.4	1.2	1.2
	Diseases of the Digestive System	34	28	41	14	47	9	31	21	1.6	0.7	0.4	1.4
	Diseases of the Nervous System	26	16	28	22	37	22	43	19	1.2	1.6	1.2	0.9
	Diseases of the Respiratory System	102	74	84	64	91	82	81	53	1.5	1.5	1.8	1.3
	External Causes of Morbidity & Mortality	21	17	26	13	21	21	19	20	1.6	1.0	2.0	2.1
	Mental and Behavioural Disorders	71	43	88	62	98	60	97	57	1.2	1.4	1.2	1.2
	Neoplasms/Blood & Immune disorder	213	116	229	120	224	111	218	112	1.1	1.0	1.0	1.0
	Others	80	40	96	53	71	51	75	50	1.0	1.1	1.4	1.3

Figure 3 Number of Excess Winter Deaths by Cause, Pooled Years Data 2011 to 2014 - Adur



Over a 3 year period circulatory and respiratory diseases accounted for the majority of excess winter deaths in Adur. For deaths caused by external causes (this includes accidents) there were fewer deaths in the winter period than the non-winter months.

Table 5 EWD Ratios – People Aged Under and Over 75 Years – West Sussex Local Authorities 2010 to 2014

		Aug 10 to July 11		Aug 11 to July 12		Aug 12 to July 13		Aug 13 to July 14		Aug 10 to July 11	Aug 11 to July 12	Aug 12 to July 13	Aug 13 to July 14
	Age_Band	nW	W	nW	W	nW	W	nW	W				
Adur	75+	279	179	327	226	306	197	297	190	1.3	1.4	1.3	1.3
	Under 75	119	73	97	83	111	72	120	55	1.2	1.7	1.3	0.9
Arun	75+	944	572	960	579	957	582	948	489	1.2	1.2	1.2	1.0
	Under 75	299	179	328	192	327	172	293	165	1.2	1.2	1.1	1.1
Chichester	75+	599	388	614	358	646	370	629	367	1.3	1.2	1.1	1.2
	Under 75	199	138	203	116	225	109	203	106	1.4	1.1	1.0	1.0
Crawley	75+	312	177	297	237	317	207	299	161	1.1	1.6	1.3	1.1
	Under 75	156	88	156	88	154	84	149	93	1.1	1.1	1.1	1.2
Horsham	75+	471	337	521	359	582	331	570	284	1.4	1.4	1.1	1.0
	Under 75	204	117	170	121	210	123	205	103	1.1	1.4	1.2	1.0
Mid Sussex	75+	626	355	580	367	628	357	587	359	1.1	1.3	1.1	1.2
	Under 75	205	85	195	99	203	97	196	102	0.8	1.0	1.0	1.0
Worthing	75+	585	370	591	385	630	370	580	352	1.3	1.3	1.2	1.2
	Under 75	211	108	210	106	198	131	210	111	1.0	1.0	1.3	1.1

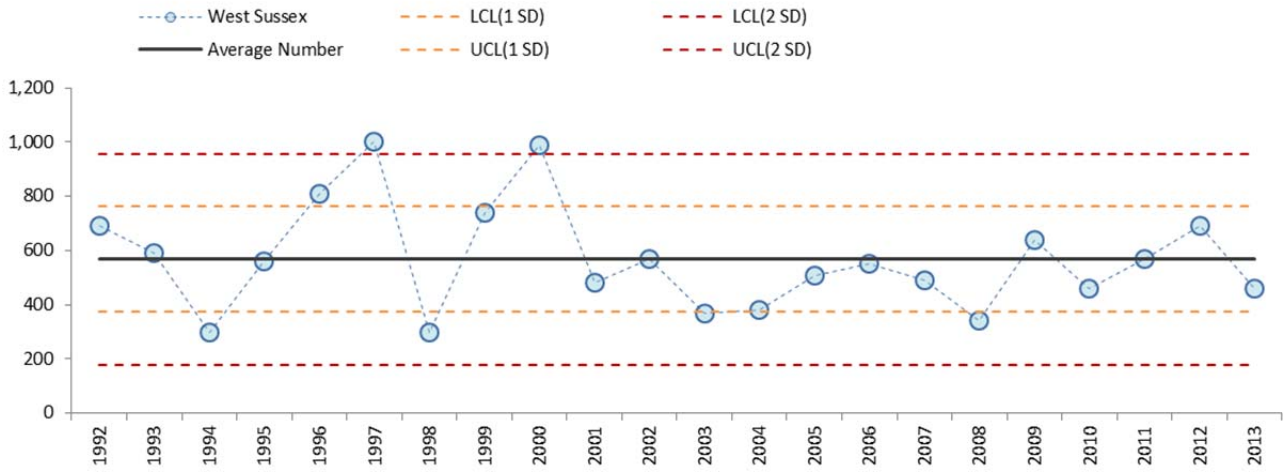
Source: WSCC Public Health Research Unit

PROCESS CONTROL CHART RELATING - EXCESS WINTER DEATHS IN WEST SUSSEX

The graph shows the number of excess winter deaths (blue dots) each year from 1992 to 2013 , the period mean number (black line), and lines denoting 1and 2 standard deviations from the mean (the orange and red lines).

In West Sussex for the period 1992 to 2013 there were, on average, 568 more deaths per year in the three winter months compared to the non-winter period. High numbers of excess winter deaths were evident in 1997 and 2000, where the number of deaths were beyond two standard deviations from the mean (Figure 4).

Figure 4 West Sussex – Excess Winter Deaths 1992 to 2013



Source: PCMD data analysis by Public Health Research Unit

SUMMARY OF NATIONAL RESEARCH AND EVIDENCE

Analysis of local data has some limitations, smaller numbers, especially when sub dividing deaths into specific causes, means identifying risk groups or direct/indirect causes is difficult. The section uses evidence at a national level.

Summary of direct and indirect causes of EWD – Using National Data[2]

Direct causes:

- Respiratory diseases (including influenza) caused the largest number of excess winter deaths in 2012/13, accounting for 37% of all EWDs.

- Circulatory diseases, such as heart attack and stroke, caused the second highest number of EWDs between 2010/11 and 2012/13, contributing to 26% of the total number of excess winter deaths in 2012/13.

- The winter increase in mortality from dementia and Alzheimer's disease in 2012/13 was more than double that seen for circulatory diseases, with 37.1% more people dying in the winter than in the non-winter months.

- Injury and poisoning deaths include accidental falls (and hypothermia) can be affected by wintry conditions, for example, icy pavements. There was a significant decrease in EWM for deaths from injury and poisoning, with 9.7% more winter deaths than non-winter deaths in 2012/13, down from 15.6% in 2010/11. However, external causes usually only account for a small proportion of all excess winter deaths (2% of the total EWM for winter 2012/13).

Indirect effects include increased incidences of:

- Mental illness
- Carbon monoxide poisoning

Patterns of illness:

A human being will respond in a number of ways to exposure to low temperatures[3]. We know that hypothermia can kill directly, however, counter intuitively, this accounts for the least number of deaths in winter.

Research[4] has identified a sequence to cold weather deaths, which amply demonstrates the 'lag' observed in EWDs. The sequence describes that , on a very cold day where temperatures drop to a level that cause pathological changes, heart attacks occur almost immediately reaching a peak at two days. Deaths from stroke peak at five days and at 12 days, respiratory deaths peak. Forty days after the onset of that cold first cold day, deaths return to normal.

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[2] ONS (2014) Excess Winter Mortality in England and Wales, 2013/14 (Provisional) and 2012/13 (Final)

[3] PHE Wookey et al (2013) Minimum home temperature thresholds for health in winter – A systematic literature review

[4] Donaldson, G.C. and Keatinge, W.R., 1997: Early increases in ischaemic heart disease mortality dissociated from and later changes associated with respiratory mortality after cold weather in south east England. In: J Epidemiol Community Health. Dec 1997. 51(6): 643-648.

NATIONAL EVIDENCE AND RESEARCH

RISK FACTORS

Excess winter deaths and illnesses are a complex interplay of factors. Health risks can be caused, or exacerbated, by cold and a number of factors can increase these risks.

Population factors

- **Older age:** Those over 75 years are especially at risk, especially those who are socially isolated. In addition, older people are more likely to have pre-existing, chronic illnesses. They are more likely to have to spend more time in their home and are therefore more vulnerable to fuel poverty given their increased heating needs. Older people may be less able to perceive low temperatures and to adapt their behaviour to keep warm in low indoor temperatures. Although it is important to understand that people of all ages are affected by low indoor temperatures.

- **Chronic and severe illness:** risk groups include people with cardiovascular conditions, asthma, COPD, mental health disorders, diabetes and arthritis.

- **Infants and children under five years:** This group have impaired thermoregulatory capacity and a high level of dependency and so less able to adapt to low indoor temperatures.

- **Homeless people/street sleepers:** This group are especially vulnerable to outdoor temperatures as well as more likely to have multiple other vulnerabilities which increase the risk of the health effects of cold, such as social isolation, smoking, substance dependencies, mental illness and chronic and respiratory diseases.

Housing and economic factors

- **Fuel poor homes:** Homes that are fuel poor are less likely to be warm and dry. There are three main drivers of fuel poverty: energy prices, poor home energy efficiency and a low income. Fuel poverty is strongly associated with cold homes and cold homes have a strong effect on health. There are a number of factors that predispose a household to fuel poverty, including but not limited to; household composition; tenure type and age of property; and connection to mains gas.

  Although we know that EWD and illnesses also occur in warm homes, there is evidence that the risk of illness and death is higher in those homes that are cold. The Marmot Review "The health impact of fuel poverty and cold homes" estimates that EWD in the coldest quarter of housing are some three times higher than those in the warmest quarter.

- **Living in energy inefficient housing.** Despite significant improvements in building regulations and drives to improve home energy efficiency of older housing stock there are still a large number of homes that are classed as non-decent, with poor insulation and heating. As previously stated, older people are at increased risk of illness and death in cold weather and

evidence shows that over 26% of homes occupied by people over 60 years, fail to meet the decent homes standard[5].

- **Living in houses with mould.** This increases the risk of worsening respiratory disease during cold weather.

Behavioural factors

- **Winter behaviours.** England compares less favourably with our much colder, northern European neighbours with Germany and Finland observing a lower level of excess mortality in winter compared to England (11 and 10% respectively vs 19%). There may be a number of reasons to explain this, such as a variation in patterns of behaviour, both individually and institutionally. It may be that people in England, where winters tend to be milder, are less able to adapt their behaviours to severe winter weather.

- **Specific individuals with an inability to adapt behaviour to stay warm.** There are number of reasons an individual may not be able to adapt their behaviour to respond to low temperatures. Factors such as age, mental disorders, dementia, learning disabilities and frailty, all impact on a person's ability to adapt.

- **Poor take up of some welfare benefits**, this may be particularly high in relation to older people.

- **Not accepting help.** There are a number of complex reasons as to why people do not take-up interventions offered. An evaluation by Public Health England of the Warm Homes Healthy People Fund highlights some of the issues with and attitudes to providing 'free' interventions'. In addition, not taking up offers of vaccination for seasonal influenza in those who are most vulnerable, and therefore entitled to free vaccination, may be an issue.

RECOMMENDATIONS

There are a number of national documents which provide a framework for action to prevent excess winter deaths and illnesses, and to tackle fuel poverty.

The Cold Weather Plan for England (2014)

The *Cold Weather Plan for England* is a framework intended to protect the population from harm to health from cold weather. It aims to prevent the major avoidable effects on health during periods of cold weather in England by alerting people to the negative health effects of cold weather, and enabling them to prepare and respond appropriately.

It recommends a series of steps to reduce the risk 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.

[5] DCLG (2012) English Housing Survey Households 2010-11

A recent evaluation of the Cold Weather Plan by the London School of Hygiene and Tropical Medicine showed that taking action only when the temperature drops to 2°C and below is largely ineffective and only prevents some 3% of preventable EWDs. The evaluation indicates that the negative health effects of cold temperatures start at relatively moderate temperatures of around 5-8°C. Although the risk of death increases as temperatures fall, days at these moderate temperatures are more frequent. This means that the greatest numbers of excess deaths actually occur at these moderate temperatures. Therefore action to prevent excess winter morbidity and mortality should be carried out throughout the winter period, and not be focused only on the very cold days.

Therefore, the Cold Weather Plan emphasises pro-active, year round approaches to prevention, with additional emphasis on co-operative, multi-agency approach.

There are a number of specific and measurable actions for local authorities at a number of levels; including strategic, commissioning, provider and front line actions.

***NICE Public Heath Guidance* (2015)**

As with the Cold Weather Plan there are a number of specific and measurable actions for local authorities at different levels; including strategic, commissioning, provider and front line actions. The NICE guideline is for commissioners, managers and health, social care and voluntary sector practitioners who deal with vulnerable people who may have health problems caused, or exacerbated, by living in a cold home. It is also of interest to clinicians and others involved with at-risk groups, housing and energy suppliers.

This guideline makes recommendations on how to reduce the risk of death and ill health associated with living in a cold home. The aim is to help:

- Reduce preventable excess winter death rates.
- Improve health and wellbeing among vulnerable groups.
- Reduce pressure on health and social care services.
- Reduce 'fuel poverty' and the risk of fuel debt or being disconnected from gas and electricity supplies
- Improve the energy efficiency of homes.

The guidance notes that improving the temperature in homes, by improving energy efficiency, may also help reduce unnecessary fuel consumption.

There is reasonable strong evidence for positive health effects of interventions related to heating and energy efficiency upgrades in housing; there are potential benefits for reducing symptoms of respiratory and other chronic diseases, improvements in mental health, reduced contact with health services and absences from school or work. The balance of costs and benefits varies widely between studies, and the best justification for supporting these types of interventions are if the health, social, environmental and economic objectives are considered together.

Warm Homes Healthy People (WHHP) Fund Evaluation – 2012-13

This document makes a series of recommendations following the lessons learned by local authorities in delivering interventions to support the aims of the Cold Weather Plan following a £20m fund from the Department of Health.

The recommendations in the report can be summarised as follows:

- Warm Homes Healthy People programmes should be a commissioning priority for both local authorities and CCGs as part of their core business
- Long-term planning and alert and readiness should be considered as part of delivering sustainable schemes with the emphasis on prevention. This requires commitment of resources to allow year round preparedness in line with the Cold Weather Plan "Alert Level 0"
- Including issues such as fuel poverty and excess winter mortality and morbidity into JSNAs will help inform commissioning. With outcome frameworks for health and social care providers and public health emphasising the need to reduce hospital admissions, reduce premature mortality and improve quality of life (among other indicators), these schemes should continue, to meet the challenge of health and social care inequalities.
- The benefits of projects funded by the WHHP fund should be framed in terms of their effect on measurable outcomes, such as reduced hospital admissions and reduced premature mortality from cardiovascular disease during cold weather.
- If further central funding is to be provided, more notice should be given to allow local authorities to plan effectively and deliver certain aspects of the programmes prior to the onset of cold weather.
- Consideration should be given to sustainable sources of funding, enabling local authorities and their partners to take a year round, long-term approach as recommended by "Alert Level 0" planning provision in the Cold Weather Plan for England.
- Messages should be simplified for maximal inclusivity and relevance. Keeping messages simple and universal may increase uptake of schemes in those populations who do not identify themselves as being vulnerable to the effects of cold weather.
- Partnerships should develop an explicit approach to data sharing to enable maximum impact on the community. Innovative ways of addressing data sharing issues between organisations that know about vulnerable people are needed. For example, GPs could provide letters to vulnerable patients in order to allow them to refer themselves to the scheme.

Relevant Links

PHE – Health Profiles 2015
Local action on health inequalities: evidence papers (PHE 2014)
Evidence review 7: fuel poverty and cold home-related health problems
Cold Weather Plan for England documents
Warm Homes Healthy People Fund Evaluation 2012-13
Minimum home temperature thresholds for health – a systematic review (PHE)
Marmot review – The Health impacts of Cold Homes and Fuel Poverty