

Lung Cancer Health Equity Audit: Contents

	Page
Executive Summary	2
Background & context	3
- Wirral demographic information	3
- Lung cancer	4
- Lung cancer in Wirral	4
Risk factors for lung cancer	4
Incidence	6
- Incidence by Wirral ward	6
- Incidence by gender	6
- Incidence by Wirral locality	7
- Trends in incidence	8
Mortality & Survival	9
- Mortality by region	9
- Mortality by Wirral ward	9
- Mortality by gender	10
- Mortality by Wirral locality	11
- Mortality by deprivation	11
- Premature mortality	12
- Survival trends	12
Treatment	13
- Waiting times	14
- Surgery	14
- Radiotherapy	15
Mesothelioma	16
Appendix	17

Executive Summary

- The major, known risk factors for lung cancer are smoking, environmental/ workplace carcinogens (e.g. asbestos, radon gas) and diet.
- In 2006-08, there were, on average, 283 new cases of lung cancer diagnosed annually in Wirral. According to the North West Cancer Intelligence service, 57 of these deaths (annually) could be categorised as 'excess'
- Incidence of lung cancer (SRRs) in Wirral in 2004-06 was 119 (nearly 20% higher than England). Rates were slightly higher amongst women (122 versus 116 in men)
- Incidence by ward was associated strongly with deprivation, with the wards of Birkenhead, Bidston and Egerton having the highest SRRs
- Trend data indicates incidence of lung cancer is decreasing in Wirral over time (in line with England and the NW)
- Trend data shows that in 2006, lung cancer mortality amongst females overtook that of males in the NW. The same happened in Wirral in 2007. In both Wirral and the North-West, lung cancer mortality in females appears to be rising, whilst amongst men, it is falling. This trend also appears to be the case in England overall (male mortality declining, female mortality increasing)
- In 2006-08, Birkenhead, Bidston, and Egerton had the highest mortality (SMRs) from lung cancer in Wirral
- Mortality was higher in females than males in 2006-08 (SMRs of 135 and 130 respectively). Overall SMR for Wirral in this period was 132 (32% higher rate than England)
- Deprivation is associated with mortality from lung cancer. The most deprived decile of the Wirral population was also the most over-represented for mortality from lung cancer in 2006-08
- Years of Life Lost (YLL) is a measure of premature mortality. YLL due to lung cancer for males, females and all persons as a rate per 100,000 (for 3 pooled years) is higher in Wirral than both England and the North-West (not significantly so). This suggests that people in Wirral die from lung cancer at an earlier age than is the case in England and the North-West
- One year survival is lower in Wirral than England and the NW (non significant). For 5 year survival, Wirral is higher than England & NW (again, non significant). The overall trend is upward for both 1 and 5 year survival, with progress slower for 5 year survival.
- During 2009-10, Wirral met all but one of the lung cancer treatment targets (the two month urgent referral to treatment target was missed, performance was 82.1% against the target of 85%)
- The percentage of patients undergoing surgery in Wirral within 6 months of diagnosis in 2006-08 exceeded the NW average (12.0% compared to 9.7% in the NW) and is one of the highest in the Merseyside & Cheshire Network region
- Following a peak in the late 1980s and early 1990s, rates of mesothelioma in Wirral have been falling in both men and women. Current incidence is 36% below the England average for women (SRR = 64, significant) and 39% above the England average for men (SRR = 139, non significant).

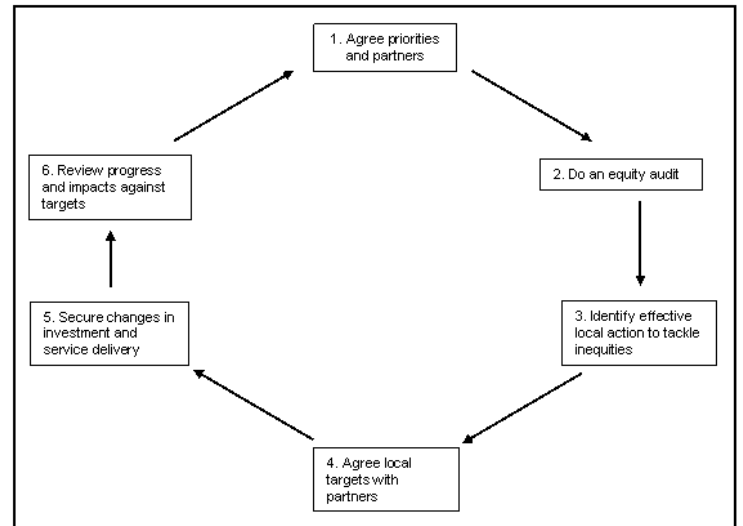
This report is available to download from the NHS Wirral JSNA site at:

<http://info.wirral.nhs.uk/intelligencehub/healthequityaudits/>

Background & context

Health Equity Audit (HEA) has been identified as a key tool for embedding evidence on health inequalities into mainstream NHS activity such as planning, commissioning and service delivery. It is now a mandatory responsibility of Primary Care Trusts (PCTs) and was included as part of the National Planning Guidance for 2005-8 as well as the 2004 Healthcare Commission performance ratings for PCTs. Health equity audit aims to identify how fairly services or other resources are distributed in relation to the health needs of different groups and areas, and the priority actions required to provide services relative to need. The overall aim of HEA is to distribute resources relative to need. It is a cyclical process, as illustrated in points 1 to 6 in Figure 1.

Figure 1: The Health Equity Audit Cycle



Source: DoH 2003

Wirral: demographic information

Map 1: Deprivation in Wirral by IMD (2007)

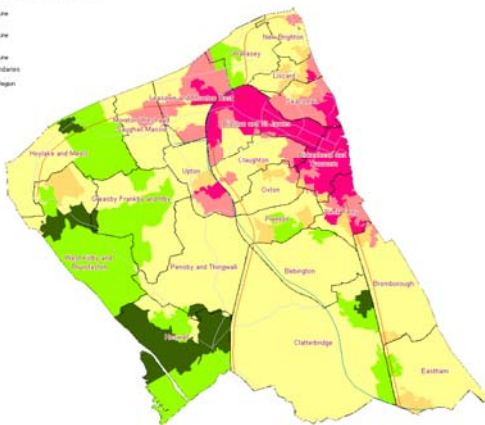
Wirral IMD Rank

Index of Multiple Deprivation 2007

National IMD Rank
(Compared with England's LSOAs)

- 3% Most Deprived
- 10% Most Deprived
- 20% Most Deprived
- All Other LSOAs
- 20% Least Deprived
- 10% Least Deprived

Railway
M1
A Road
Water Boundaries
Region



Data Source: DCLG (Department for Communities & Local Government), 2007
OS License No: 100019918
NHS Wirral

- Wirral is a borough of contrast, both in its physical characteristics and demographics. Rural areas and urban and industrialised areas sit side by side in a compact peninsula of 60 square miles. There is around 30 miles of coastline, some of which was home to shipbuilding (e.g Cammell Lairds). Until recent years, a large number of local people were employed in the industry (and related industries)
- There is a lower proportion of younger adults in their twenties and thirties and a higher proportion of older people in Wirral compared to England and Wales
- The 65+ age group is expected to increase at a faster rate than any other age group over the next two decades. Between 2006 and 2031 it is estimated that this population group will have increased by 45% in Wirral
- The Index of Multiple Deprivation (IMD) 2007, ranked Wirral as the 60th most deprived of the 354 districts in the country (in the bottom 20% of areas nationally). The map (left) highlights the areas with the highest levels of deprivation
- ONS estimates indicate that 5% of the Wirral population are from black and minority ethnic groups (BME)

Lung Cancer

Lung cancer is the second most commonly diagnosed cancer (after breast cancer) in the UK with around 40,000 people diagnosed each year [1]. Symptoms include shortness of breath, weight loss, dyspnoea (breathlessness), haemoptysis (coughing up blood), chest pain and bone pain [1].

Smoking causes between 80-90% of cases of lung cancer. A small proportion of cases are caused by heavy exposure to industrial carcinogens and air pollutants, including diesel exhaust fumes, asbestos, non-ferrous metals, silica, polycyclic aromatic hydrocarbons and nitrogen oxides [1]. Radon is a naturally occurring gas that increases risk of lung cancer, especially among smokers. Radon is estimated to be responsible for about 3% of all lung cancer deaths in England [3].

The main types of lung cancer are small cell lung carcinoma (SCLC) and non-small cell lung carcinoma (NSCLC). Treatment varies dependant on type; NSCLC is sometimes treated with surgery, while SCLC usually responds better to chemotherapy and radiation.

Lung cancer may be seen on chest radiograph and computed tomography (CT scan). Diagnosis is confirmed by biopsy (usually by bronchoscopy or CT-guided biopsy). Treatment and prognosis depend upon the histological type of cancer, the stage (degree of spread), and patient's overall health. Possible treatments include surgery, chemotherapy, and radiotherapy. Survival rates (although obviously dependent on the stage and treatment as with other cancers) are poorer than many other cancers.

Inequalities exist in both incidence and mortality. For example, in the 1990s, 17 per 100,000 professional men died of lung cancer, compared to 82 per 100,000 for unskilled workers [2].

Lung Cancer in Wirral

In 2006-08, there were, on average, 283 new cases of lung cancer diagnosed annually in Wirral. According to the North West Cancer Intelligence service, during the same period, there were 57 deaths (annually) attributable to lung cancer which could be categorised as 'excess' [4]. In other words, if Wirral had the same mortality rate from lung cancer as England, this would translate as 57 deaths *less* per year from lung cancer in the borough.

[1] Cancer Research UK, CancerStats. Lung Cancer and Smoking: Key Facts. Available at: http://info.cancerresearchuk.org/prod_consump/groups/cr_common/@nre/@sta/documents/generalcontent/crukmiq_1000ast-2972.pdf

[2] NHS Cancer Plan (2000). DoH. http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4014513.pdf

[3] NHS Choices Website: <http://www.nhs.uk/Conditions/Cancer-of-the-lung/Pages/Causes.aspx>

[4] North West Cancer Intelligence Service. Cancer in the North-West: Inequalities by PCT and socio-economic status (2010). http://www.nwcis.nhs.uk/documents/publications/inequalities_oct2010.pdf

Risk Factors

The major, currently identified risk factors specific to lung cancer are smoking, exposure to environmental and workplace carcinogens and to a lesser extent, diet.

Smoking

The unequivocal causal association of cigarette smoking with lung cancer is one of the most thoroughly documented causal relationships in biomedical research [1]. Trends in lung cancer closely reflect patterns of smoking, with occurrence lagging behind smoking rates by about 20 years. Although some people who have never smoked do develop lung cancer, it is still the case that **smoking causes between 80% and 90% of lung cancer**. Length of time spent as a smoker is

also important, but as soon as smokers quit, the risk is reduced. Environmental tobacco smoke is now widely recognised as key to the development of lung cancer in non-smokers and carries around a 20% increase in risk of developing lung cancer.

National data and local surveys indicate that around **27% (or 83,000 people) of the Wirral population smokes**, rising to around 34% in the more deprived areas [1].

Environmental/workplace carcinogens

The major environmental and workplace risk factors associated with lung cancer are radon gas, air pollution and occupational factors (e.g exposure to carcinogenic chemicals).

Radon is a naturally occurring radioactive gas which multiplies the risk of lung cancer for both smokers and non-smokers (but its effect is much greater for smokers as their risk of lung cancer is already much higher). **It is estimated radon causes around 3% of lung cancers** (but around 9% in European countries)[3]. As of 2010, no homes in Wirral were above the HPA action level for radon [5].

Estimates indicate that perhaps **1% to 2% of lung cancer cases are related to air pollution** [2].

Estimates from case-control studies of the proportion of lung cancer that is contributed to by **occupational exposure range between 9% and 15%** [1]. This involves exposure to chemicals such as arsenic, diesel exhaust, polycyclic hydrocarbons, insecticides etc... Asbestos and cigarette smoking are both independent causes of lung cancer, but in combination they act synergistically to increase the risk of lung cancer [2]. Asbestos also increases the risk of mesothelioma, a cancer of the membranes which cover the lungs. There is a specific section of this report dealing with mesothelioma.

It is difficult to estimate how many of the Wirral population may have been exposed to one or more of the environmental/workplace carcinogens which make lung cancer more likely. It is known however, that lower income groups are more likely to be exposed in the work environment than more affluent groups.

Diet

The evidence for fruit and vegetable consumption is inconsistent but hints at the possibility of a protective association for the development of lung cancer [2]. Evidence could not be found which quantified the effect of poor diet on the risk of developing lung cancer. A recent local lifestyle survey indicated that 27% of the Wirral population met the current recommendations on consumption of fruit and vegetables, compared to 26% nationally [4].

Other risk factors

An increased risk of lung cancer has been reported in people with lowered immunity (e.g people with HIV and AIDS, those taking immuno-suppressants following transplant). Previous treatment for cancer also increases lung cancer risk. Risk ratios are higher in smokers and with radiotherapy (compared to chemotherapy) [3]. It is difficult to quantify how many of the Wirral population may have one or more of the risk factors listed above.

[1] http://info.wirral.nhs.uk/document_uploads/Local-Surveys/WPCTSmokingPrev2010_cbae0.pdf

[2] Alberg, A.J. and J.M. Samet, Epidemiology of lung cancer. Chest 2003. 123(1 Suppl): p. 21S-49S

[3] Lung Cancer Risk Factors. Cancer Research UK: <http://info.cancerresearchuk.org/cancerstats/types/lung/riskfactors/>

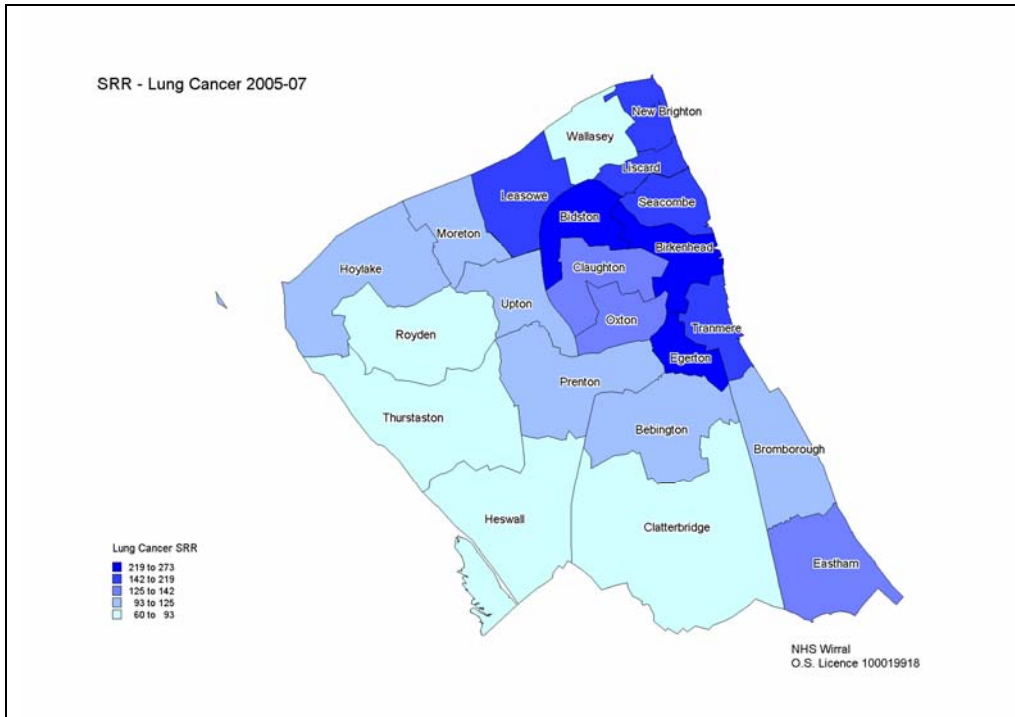
[4] JSNA for Wirral 2009-10 (Lifestyle section of Chapter 3: Health & Wellbeing):
<http://info.wirral.nhs.uk/ourjsna/wirral2009-10/healthandwellbeing/lifestyle.html>

[5] Indicative Atlas of Radon in England and Wales (2007) Health Protection Agency:
http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1204186227787

Incidence

Incidence by Wirral Ward

Map 2: Lung Cancer incidence (Standardised Registration Ratios - SRRs) all persons, 2005-07



Map 2 identifies the wards in Wirral with high SRRs for lung cancer. Birkenhead, Bidston and Egerton have the highest SRRs at 273, 262 and 241 respectively (England average 100). These wards therefore had 173%, 162% and 141% respectively higher incidence than you would expect of lung cancer in 2005-07. See appendix for funnel plot showing this information statistically.

Source: Cancer Registry, 2010

Incidence by Wirral Ward and Sex

Table 1 shows the SRR for lung cancer by sex. For both males and females respectively, incidence is 16% and 22% higher than the England average (100).

Table 1: Lung cancer incidence in Wirral (SRR) by sex, 2004-06

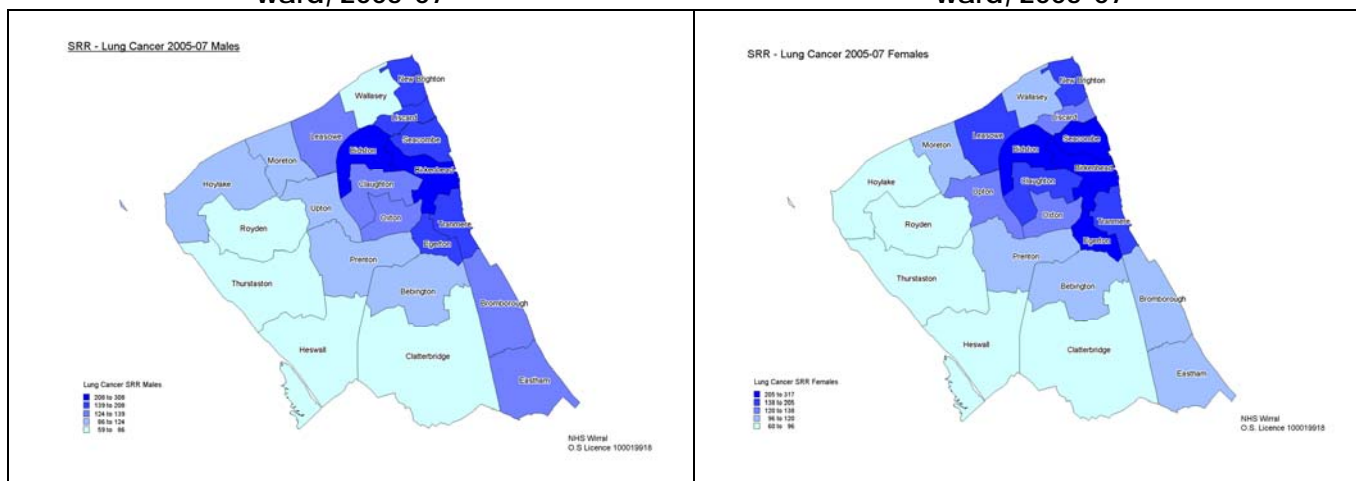
Sex	Number	SRR	Upper Confidence Interval	Lower Confidence Interval
Male	433	116	108	128
Female	346	122	110	136
All	779	119	111	127

Source: NCHOD, 2010

The maps below identify the wards with high SRRs for males (Map 3) and females (Map 4). Amongst males, Birkenhead and Bidston have the highest SRR at 240 and 308 respectively (England average 100). This incidence is 140% and 208% higher than you would expect, compared to England. Map 4 shows the same information for females, and identifies that Birkenhead, Bidston and Seacombe have the highest SRR at 317, 205 and 233 respectively (England average 100). This means that incidence in these wards was more than double and in the case of Birkenhead, triple what would be expected.

Map 3: Lung cancer incidence in males by ward, 2005-07

Map 4 Lung cancer incidence in females by ward, 2005-07

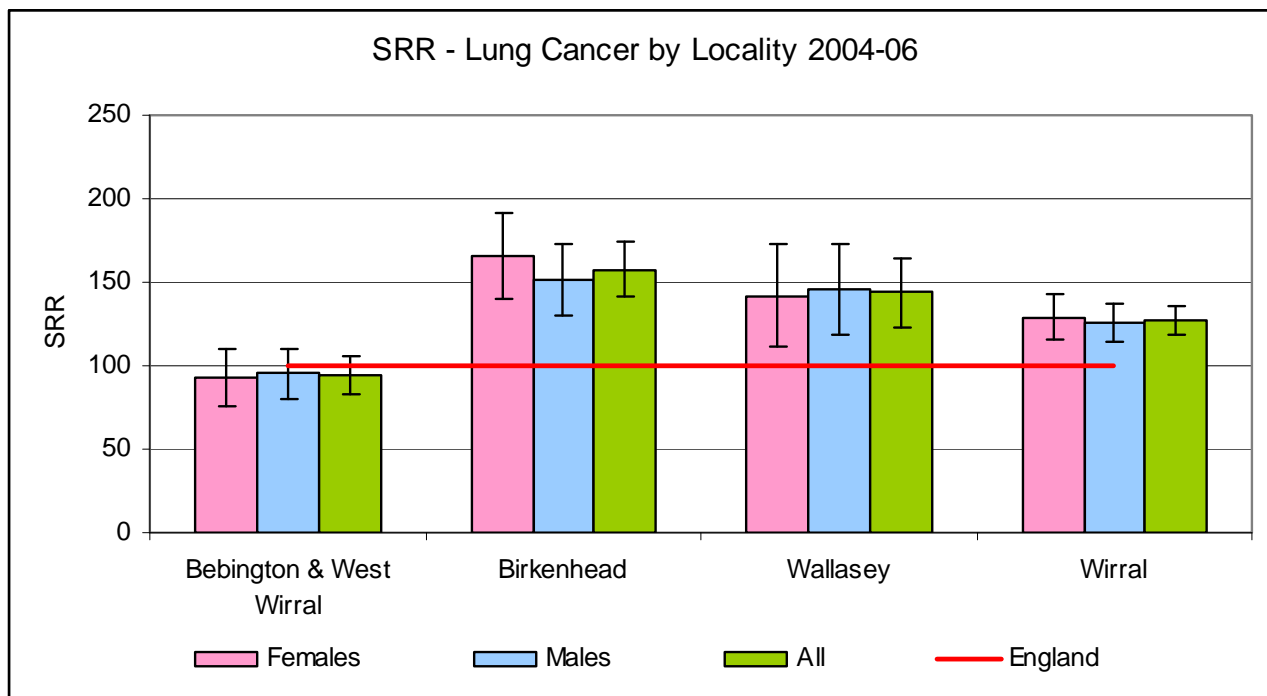


Source: Cancer Registry, 2010
 *See Appendices x for data on all persons

Incidence by Wirral Locality

Figure 2 shows incidence of lung cancer by locality and sex. The chart shows that both Birkenhead and Wallasey localities have higher incidence of lung cancer than Bebington & West Wirral locality and the England average.

Figure 2: Lung cancer incidence by locality & sex, 2004-06



Source: Cancer Registry, 2010

Trend in incidence: Wirral compared to England & North West

Figure 3: Trend in incidence of lung cancer, Wirral, North-West and England (SRRs), all persons 1993-2006

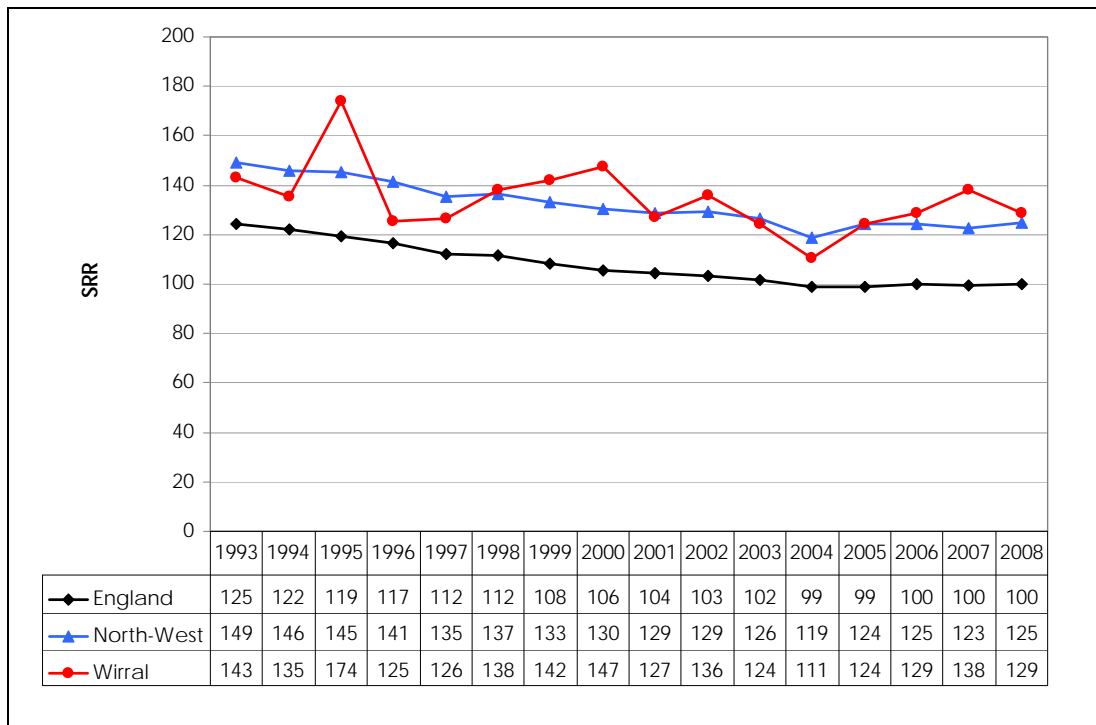
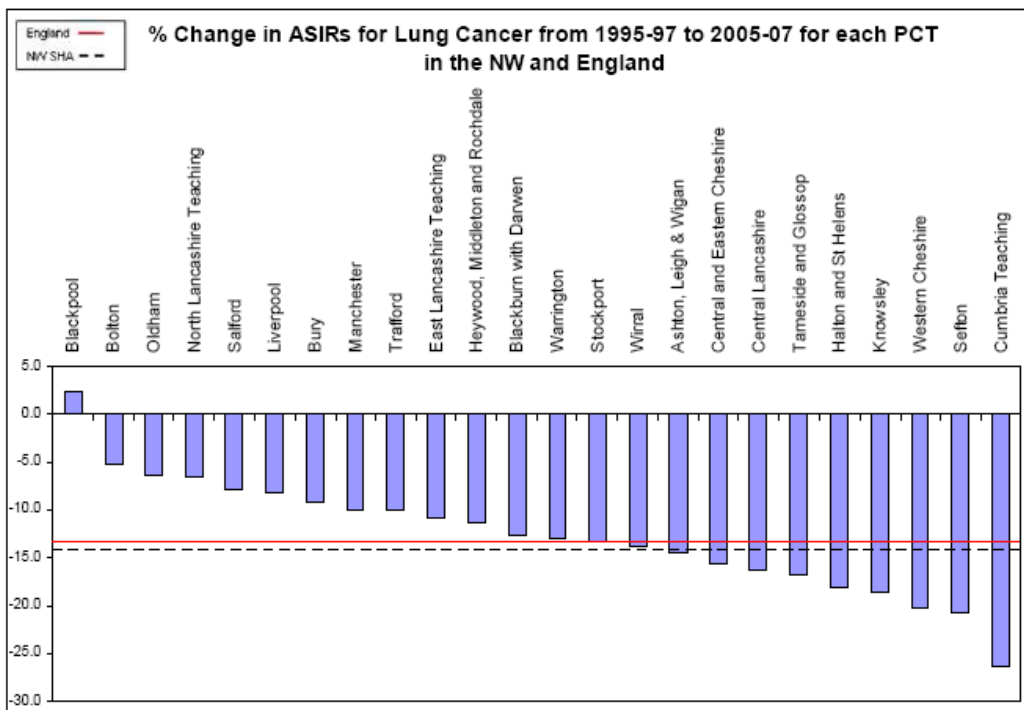


Figure 3 highlights the trend in lung cancer incidence for the period 1993 to 2006 for England, North West and Wirral. The data identifies that the North West and Wirral have a higher SRR than England. Wirral however fluctuates above and below the North West SRR, but overall, the trend is a downward one.

Source: NCHOD, 2010

Figure 4: Trend in incidence of lung cancer: Wirral & all NW PCT's, 1995-97 to 2005-07



As Figure 4 shows, compared to 1995-97, Wirral has shown a decrease in incidence of lung cancer (standardised for age) comparable with that of England and the North-West overall. The decrease is less than our 'near neighbour' Sefton, but considerably more than areas such as Liverpool. Only Blackpool has seen an increase over the time period, all other areas have decreased.

Mortality & Survival

Mortality by region

Figure 5: Trend in lung cancer mortality (Standardised Mortality Ratios) by gender, England, North-West and Wirral, 1993-2008

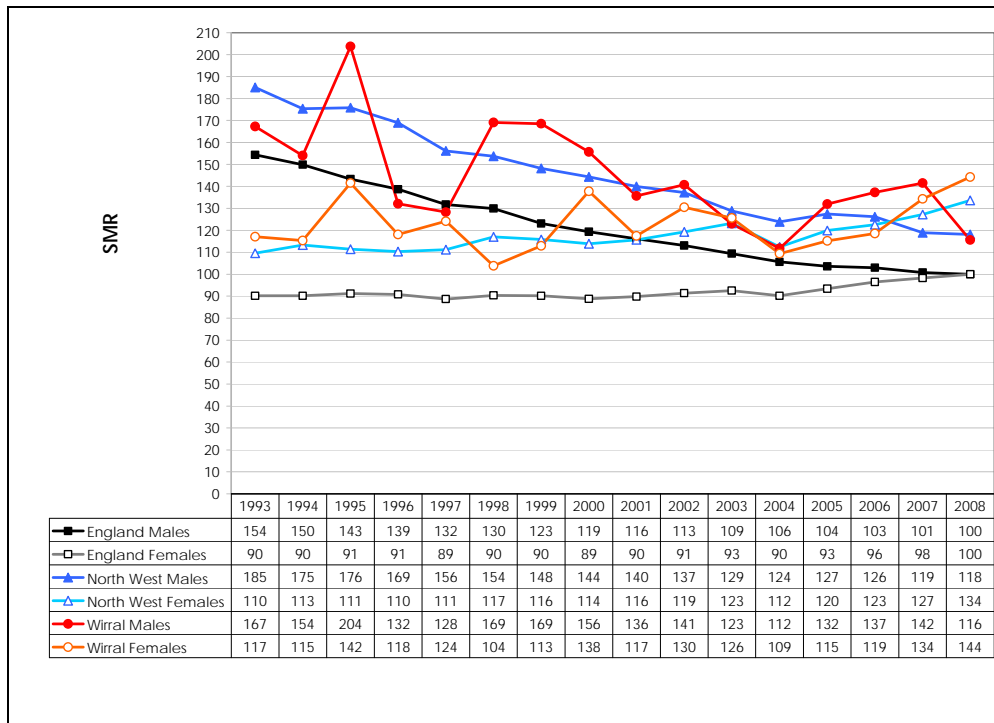
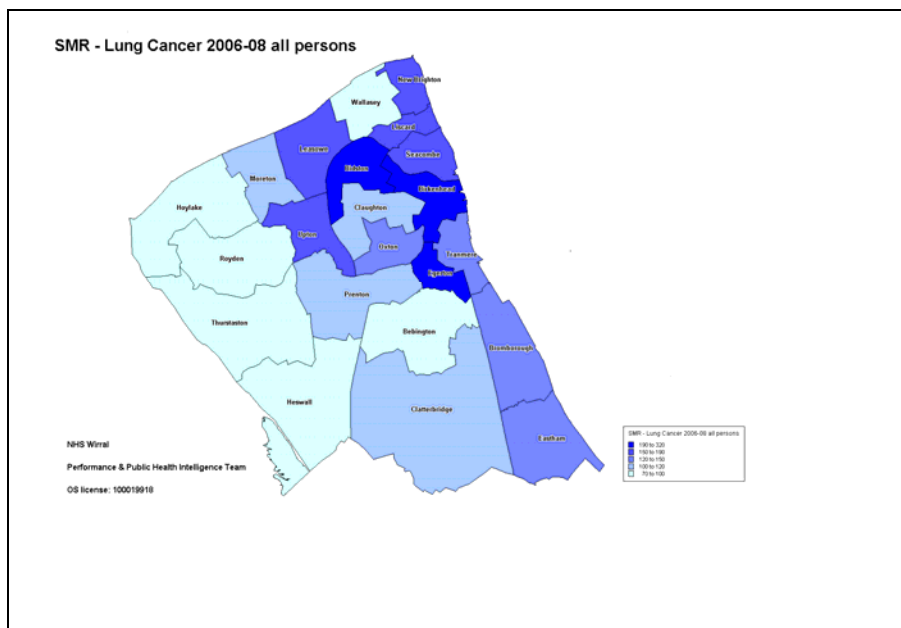


Figure 5 highlights trends in lung cancer mortality for the period 1993 to 2006 for England, North West and Wirral. The data shows that Wirral is following the pattern of the North-West, where lung cancer mortality amongst females overtook that of males in 2006. In Wirral, this happened in 2007. In both Wirral and the North-West, lung cancer mortality in females appears to be rising, whilst amongst men, it is falling. This trend also appears to be the case in England overall (mortality in men declining, mortality in women increasing).

Source: NCHOD, 2010

Mortality by ward

Map 5: SMRs for Lung Cancer, all persons, 2006-08



Map 5 shows SMRs by ward in Wirral in 2006-08. Birkenhead, Bidston, and Egerton have the highest SMRs from lung cancer in Wirral (251, 312 and 214 respectively). In other words, deaths from lung cancer are three times higher in Bidston (Wirral's worst performing ward for lung cancer deaths compared to England).

Source: PHMF, 2010

Mortality by sex

Table 2 shows SMRs for lung cancer by sex in 2006-08. Females were 31.4% above the England average. Males had 26.4% higher mortality from lung cancer than England .

Table 2: Lung cancer mortality in Wirral by gender, 2006-08

	Number	SMR	Upper Confidence Interval	Lower Confidence Interval
Male	415	130	118	143
Female	346	135	121	150
All	761	132	123	142

Source: NCHOD, 2010

Males

Figure 6: SMRs for lung cancer by Wirral ward, males, 2006-08 (3 years pooled)

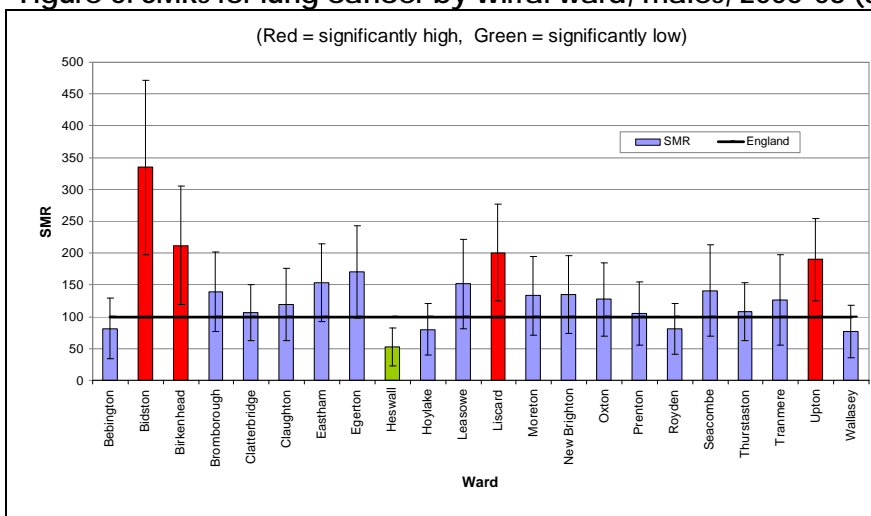


Figure 6 shows Wirral wards with high SMRs for males (Bidston, Birkenhead, Liscard and Upton). All had statistically significant high SMRs (335, 212, 201 and 190 respectively). This means there was 235%, 112%, 101% and 90% respectively more mortality than you would expect from lung cancer amongst males in these wards.

Source: PHMF, 2010

Females

Figure 7: SMRs for lung cancer by Wirral ward, females, 2006-08 (3 years pooled)

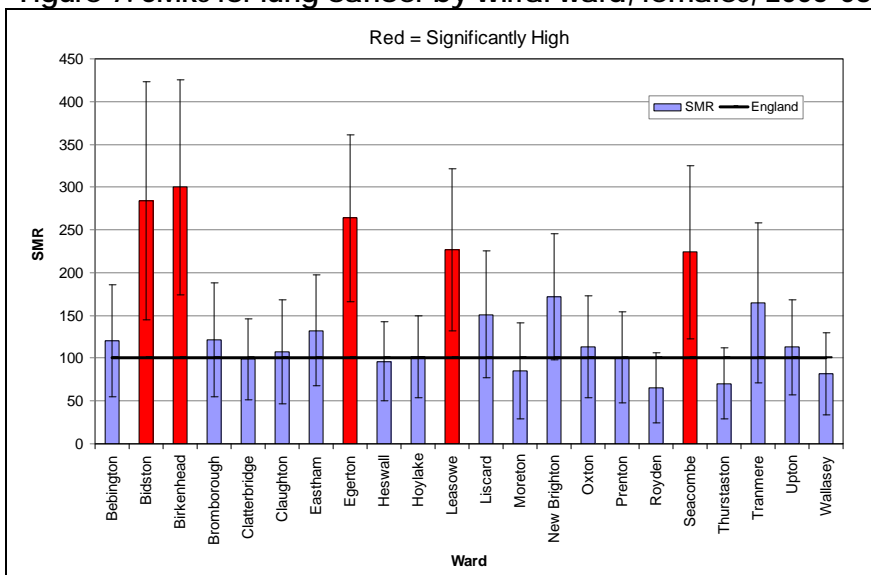


Figure 7 shows the Wirral wards with high SMRs for females (Birkenhead, Bidston, Egerton, Leasowe and Seacombe). All had statistically significant high SMRs (301, 284, 264, 227 and 224 respectively). This means there was 201%, 184%, 164%, 127% and 124% more mortality than you would expect from lung cancer in females in these wards.

Source: PHMF, 2010

Mortality by Wirral Locality

Figure 8: SMRs for lung cancer by locality & sex, 2006-08

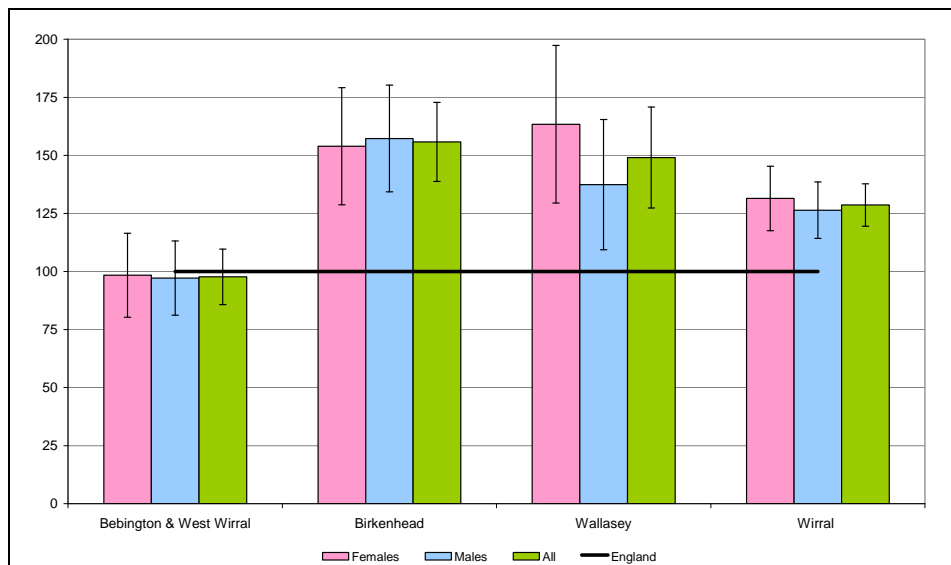


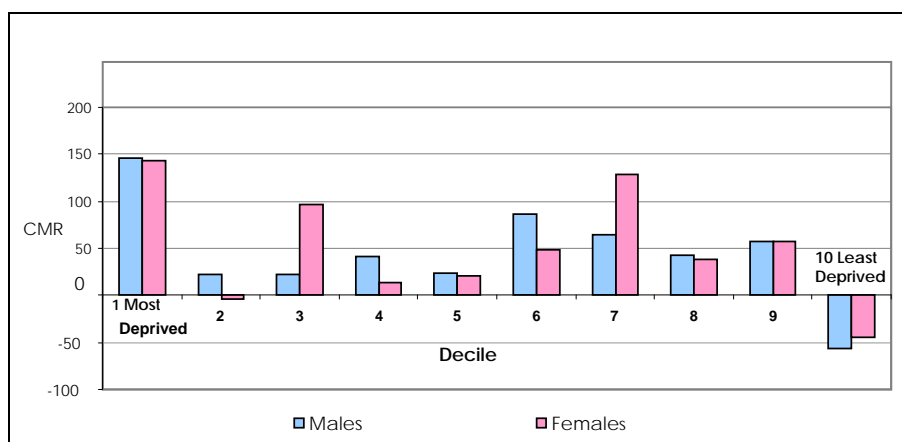
Figure 8 shows lung cancer mortality by locality and gender. Both Birkenhead and Wallasey have higher SMRs for lung cancer than Bebington & West Wirral. This indicates that more people died of lung cancer than would be expected in both Birkenhead and Wallasey locality (of both sexes).

Source: PHMF, 2010

Mortality by deprivation (using Comparative Mortality Ratio, CMR)

The comparative mortality ratio (CMR) is a ratio which describes the relationship between the age-standardised mortality rate for a disease in a specific area and the mortality rate for England overall. Those areas with a CMR of less than zero have a mortality rate which is less than the England average. A CMR above zero shows an area has a higher rate of disease than the rest of England. Figure 9 shows lung cancer mortality split by deprivation decile (1 being the most deprived decile in Wirral, 10 being the least deprived decile in Wirral). Figure 9 highlights that the most deprived decile in Wirral is also the most over-represented for mortality from lung cancer.

Figure 9: CMR for Lung Cancer in Wirral, by gender, 2006-08 (3 years pooled)



In Decile 1, the CMR for males and females is 146 and 143 respectively compared to -57 and -44 in Decile 10. There have therefore been 146% and 143% more deaths from lung cancer in Decile 1 than expected, compared to Decile 10 which had 57% and 44% less deaths occurring than expected.

Source: PHMF, 2010

Premature Mortality (using Years of Life Lost)

Years of Life Lost (YLL) is a measure of premature mortality. Its primary purpose is to compare the relative importance of different causes of premature death within a particular population. It can therefore be used by health planners to define priorities for the prevention of premature deaths. It can also be used to compare premature mortality in different populations for particular causes of death. The concept of YLL involves estimating the length of time a person would have lived had they not died. It represents an attempt to better quantify the burden, or impact, on society from particular causes of mortality.

Figure 10: Years of life lost from lung cancer (Directly Standardised Rate/100,000) 2006-08

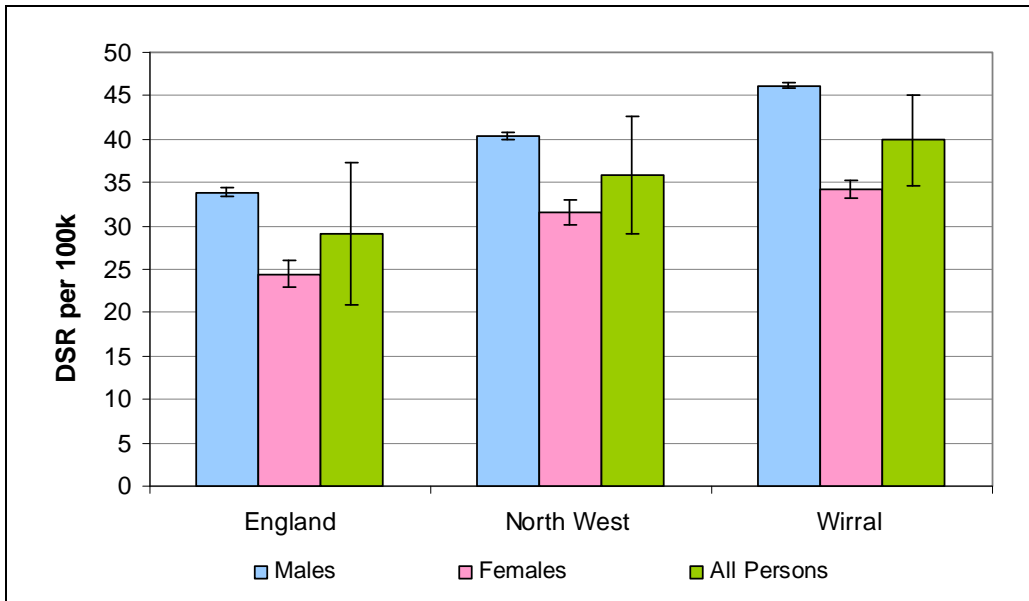


Figure 10 shows YLL due to lung cancer for males, females and all persons as a rate per 100,000 (for 3 pooled years). Wirral has a higher rate than both England and the North-West (not significantly so). This suggests that people in Wirral die from lung cancer at an earlier age than is the case in England and the North-West.

Source: NCHOD, 2010

Survival

In general, the earlier a cancer is diagnosed, the greater the rate of survival. Evidence suggests that late diagnosis of cancer is a major factor in the UK's poor survival rates (compared with some countries in Europe). One of the priorities of the Cancer Reform Strategy is earlier diagnosis of more cancers. This is one of three indicators to help PCTs and/or local cancer networks compare their performance on early diagnosis of cancer in their local areas. The most suitable indicator to demonstrate early presentation is the stage of cancer at diagnosis, but this information is not universally available. Low one year survival rates are therefore used as a proxy indicator for late presentation and should be investigated by PCTs. Two areas for action for PCTs are to:

- Raise public awareness of the signs and symptoms of early cancer, encouraging people to seek help earlier
- Work with primary care professionals to ensure that patients presenting with possible cancer symptoms are investigated appropriately and referred without delay

Figure 11: Trend in survival (percentages) from lung cancer, 1985-2007, Wirral and England

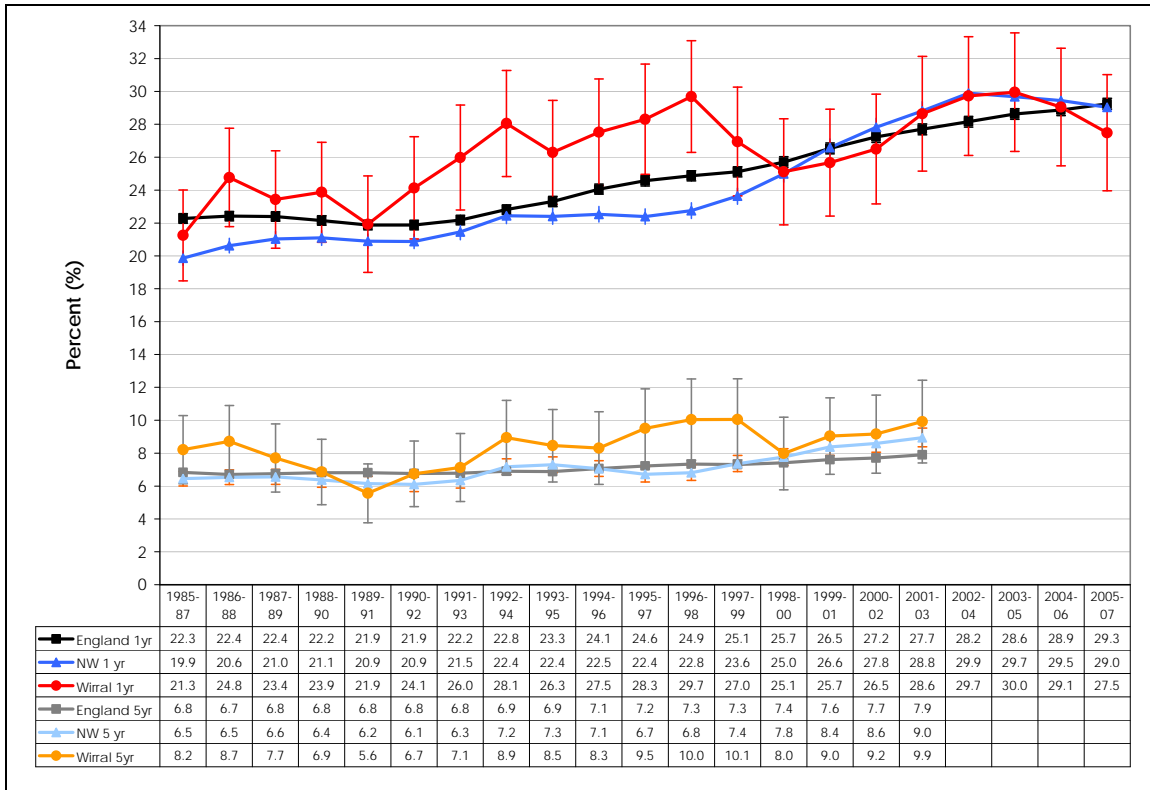


Figure 11 shows 1 year survival is lower in Wirral than England and the NW (non significant). For 5 year survival, Wirral is higher than England & NW (again, non significant). The overall trend is upward for both 1 and 5 year survival, with progress slower for 5 year survival.

Source: NWCIS, 2010

Treatment

The Cancer Plan states that the government believes the ultimate goal should be to "offer patients a maximum one month wait from an urgent referral for suspected cancer to the beginning of treatment. Where patients wait longer, this should be because of the needs of the diagnostic process or their personal choice, not because of in-built delays in the system of care." Below are the definitions for the targets which on how well lung cancer services perform.

Lung Cancer: 2 week wait

Rationale

The NHS Cancer Plan (2000) set the goal that by 2008, no patient should wait longer than one month from an urgent referral for suspected cancer to the beginning of treatment (except for good clinical reason). A series of milestones and targets were set out between 2000 and 2005 including "a maximum two week wait from an urgent GP referral for suspected cancer to date first seen for suspected cancers by end of 2000". The Cancer Reform Strategy (2007) set new, more ambitious standard for the NHS. Specifically, all referrals for breast symptoms, regardless of whether cancer is suspected, would be subject to a maximum two week wait. Trusts were required to ensure they met the new standard during 2008/09. The Care Quality Commission also retained its requirement for trusts to maintain the existing commitment on urgent referral to first outpatient appointment on which PCTs are assessed as commissioners.

Numerator

The number of patients first seen by a specialist when urgently referred by their GP or dentist with suspected cancer within two weeks

Denominator

The total number of patients first seen by a specialist when urgently referred by their GP or dentist with suspected cancer

Lung Cancer: one month diagnosis to treatment

Rationale

The NHS Cancer Plan (2000) set out that no patient should wait longer than one month (31 days) from diagnosis to the beginning of treatment, except for good clinical reasons.

The publication of the Cancer Reform Strategy (2007) widened this to cover all cancer treatments, including second or third treatments and treatment for recurrence of cancer. Trusts were required to ensure they met the new standard during 2008/09.

Numerator

The number of patients receiving their first definitive treatment within one month (31 days) of a decision to treat (as a proxy for diagnosis) for cancer

Denominator

The total number of patients receiving their first definitive treatment for cancer

Lung Cancer: two month urgent referral to treatment

Rationale

The NHS Cancer Plan (2000) set the goal that no patient should wait longer than two months (62 days) from a GP urgent referral for suspected cancer to the beginning of treatment (except for good clinical reason). The Cancer Reform Strategy (2007), set new, more ambitious standards, specifically, the standard was widened to cover both referrals from the national screening programmes and from consultants (where they request that the patient is managed on the two month pathway). Trusts were required to ensure they met the new standard during 2008/09.

Numerator

The number of patients receiving their first definitive treatment for cancer within two months (62 days) of GP or dentist urgent referral for suspected cancer

Denominator

The total number of patients receiving their first definitive treatment for cancer following an urgent GP or dentist referral for suspected cancer

Table 3 shows waiting times for lung cancer in 2009/10 (percentages). Wirral did not meet the two month urgent referral to treatment target, however all other targets were met.

Table 3: Services – Lung cancer waiting time 2009/10

Target	% Performance	Target
Lung cancer: Two week wait	98.0%	93%
Lung cancer: One month diagnosis to treatment waiting times	98.9%	96%
Lung cancer: One month diagnosis to treatment waiting times - Surgery	97.8%	94%
Lung cancer: Two month urgent referral to treatment waiting times	82.1%	85%
Lung cancer: Two month urgent referral to treatment waiting times via a consultant (consultant upgrade)	78.8%	TBC

Source: Open Exeter, 2010

Surgery

The percentage of patients who underwent surgery within 6 months of diagnosis in Wirral, other North-West PCTs and the North-West during 2006-08 is shown in Figure 12.

Figure 12: Percentage of patients undergoing surgery within 6 months of diagnosis in Wirral and other MCCN PCTs in 2006-08

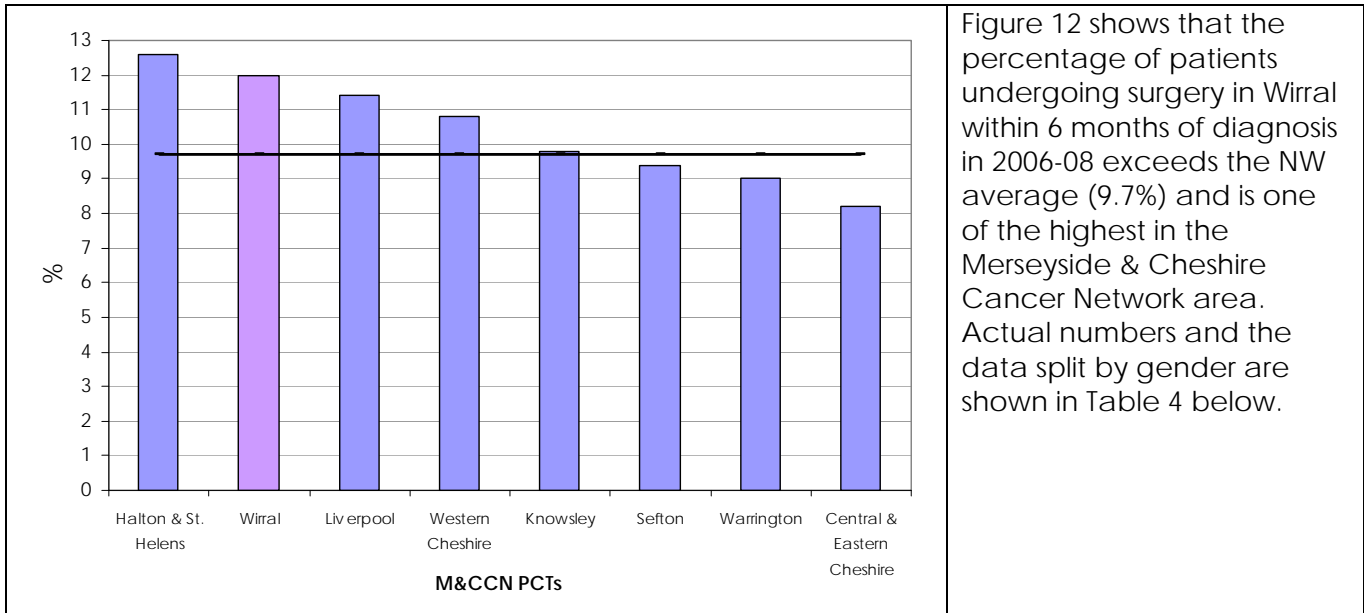


Figure 12 shows that the percentage of patients undergoing surgery in Wirral within 6 months of diagnosis in 2006-08 exceeds the NW average (9.7%) and is one of the highest in the Merseyside & Cheshire Cancer Network area. Actual numbers and the data split by gender are shown in Table 4 below.

Source: NWCIS, 2010

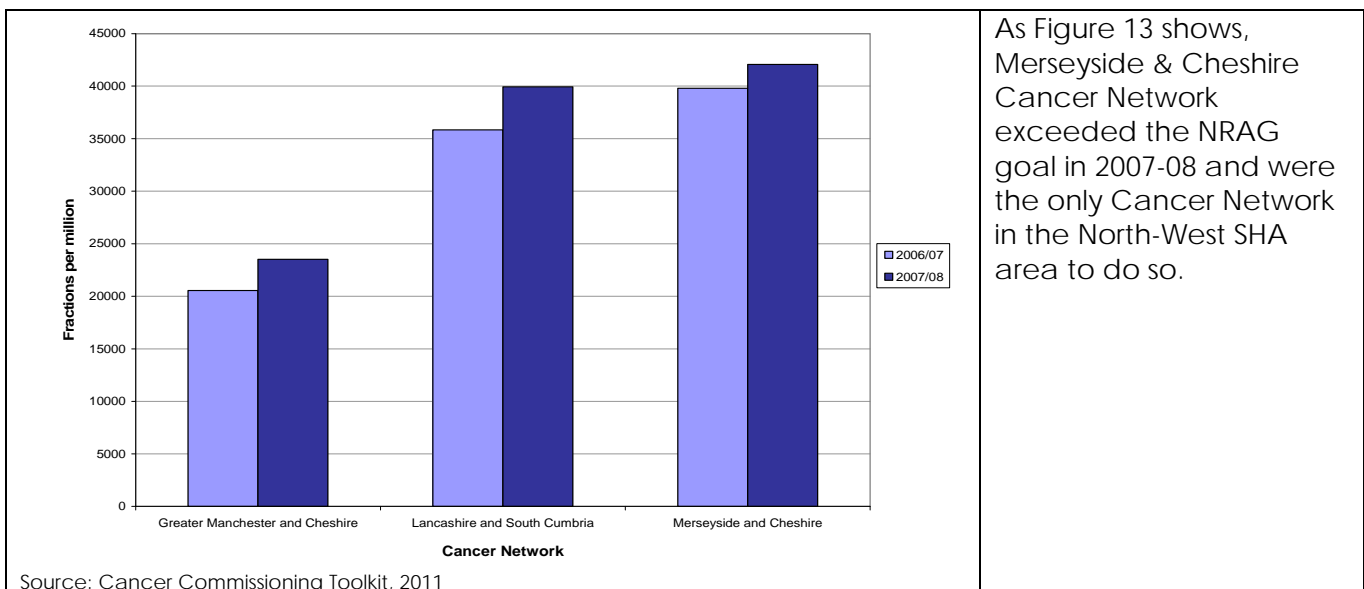
Table 4: Number and percentage of patients diagnosed in 2006-08 who underwent surgery within 6 months of diagnosis by gender, NHS Wirral

Males		Females		All	
No.	%	No.	%	No.	%
60	13.1%	42	10.8%	102	12.0%

Radiotherapy

The NRAG (National Radiotherapy Advisory Group) report in 2007 recommended that by 2010-11, areas should be achieving an interim goal of 40,000 fractions per million population for radiotherapy services. Figure 13 below shows the fraction per million figures for 2006-07 and 2007-08 for the three North-West Cancer Networks.

Figure 13: Patients undergoing radiotherapy in 2006-07 and 2007-08 by Cancer Network



As Figure 13 shows, Merseyside & Cheshire Cancer Network exceeded the NRAG goal in 2007-08 and were the only Cancer Network in the North-West SHA area to do so.

Source: Cancer Commissioning Toolkit, 2011

Mesothelioma

Mesothelioma is cancer of the membranes covering the lungs (pleura) and lower digestive tract (peritoneum). The majority of mesothelioma cases are rapidly fatal following diagnosis, so mesothelioma incidence give a clear indication of mortality [2].

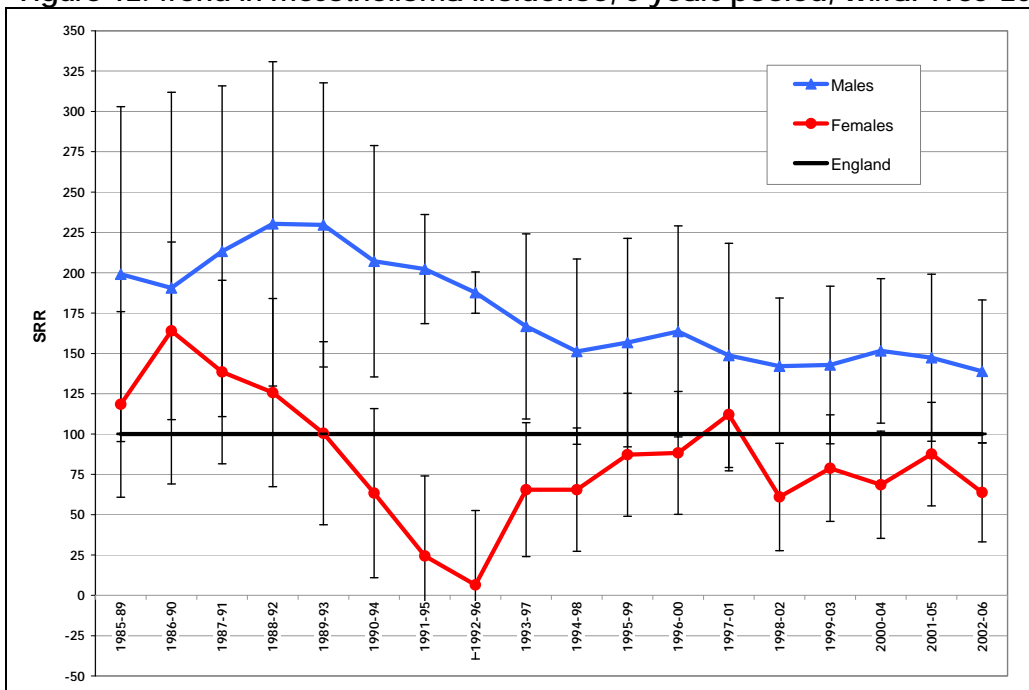
Nine out of ten cases of mesothelioma are caused by exposure to asbestos, typically in occupational settings. On average, mesothelioma develops around 30-40 years after exposure [1]. This means deaths occurring now reflect working conditions in the past, rather than current working practices. Nationally, the HSE expect deaths from the disease to peak in 2015-16 at 2,249 (90% CI, 1929 to 2156) in the UK. Groups most likely to have been exposed to asbestos at work include: carpenters, joiners and construction workers, plumbers and heating/ventilation engineers, electricians and electrical fitters and shipbuilders.

These are jobs mainly occupied by men, hence nationally, mesothelioma is five times more common in men than in women [1]. Until recent years, shipbuilding was a major industry in Wirral. It might be expected therefore, that Wirral will bear a significant burden of mesothelioma compared to other areas of the UK. Table 5 and Figure 12 show trends in actual number of cases and rates for the disease in Wirral.

Table 5: Number of mesothelioma cases per annum in Wirral, 1985-2006

Wirral Cases per Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		8	9	10	10	14	10	17	15	12	9
Wirral Cases per Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	16	17	10	16	19	18	15	14	23	22	13

Figure 12: Trend in mesothelioma incidence, 5 years pooled, Wirral 1985-2006



As Figure 12 show, since a peak in the late 1980s and early 1990s, rates in Wirral have been falling in both men and women. Current incidence is 36% below the England average for women (SRR = 64, significant) and 39% above the England average for men (SRR = 139, non significant).

[1] Risk Factors and causes of mesothelioma. Downloaded from: <http://www.macmillan.org.uk/Cancerinformation/Cancertypes/Mesothelioma/Aboutmesothelioma/Causes.aspx>

[2] HSE Statistics. Downloaded from: <http://www.hse.gov.uk/statistics/causdis/mesothelioma/>

Appendix

Appendix 1: Calculation Methods

Prevalence

The proportion of a population who have a disease at a point in time is the **prevalence of disease**. It is often expressed as a percentage. The 'point in time' can be a single examination (point prevalence), but is often a longer time scale in order to give a better estimate of the numbers with the disease (period prevalence).

$$\text{Prevalence} = (\text{cases}/\text{population}) \times 100$$

Indirect Standardisation

Standardised Mortality Ratio (SMR)

Indirect standardisation compares actual numbers of deaths to expected numbers, adjusting for age and sex. This produces a ratio which is commonly called a standardised mortality ratio, or an **SMR**. The expected number of deaths is taken from the number of deaths in a larger reference population. For example, if the analysis is looking at death rates in wards, the reference population could be England or Wales.

The SMR of the reference population is always 100, a value of lower than 100 means that **fewer deaths than expected** occurred in the local population after adjusting for differences in age and sex; more than 100 means that there have been **more deaths than expected**.

$$\text{SMR} = (\text{observed}/\text{expected}) \times 100$$

Standardised Registration Ratio (SRR)

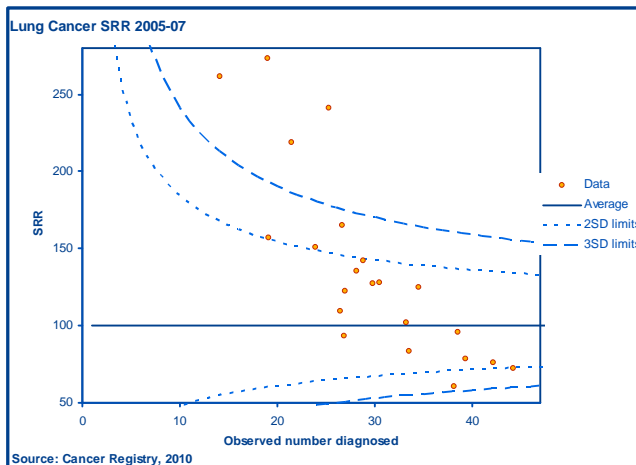
Indirect standardisation compares actual numbers of incidence to expected numbers, adjusting for age and sex. This produces a ratio which is commonly called a standardised registration ratio, or an **SRR**. The expected number is taken from the incidence in a larger reference population. For example, if the analysis is looking at incidence rates in wards, the reference population could be England or Wales.

The SRR of the reference population is always 100, a value of lower than 100 means that **fewer numbers than expected** occurred in the local population after adjusting for differences in age and sex; more than 100 means that there have been **more than expected**.

$$\text{SRR} = (\text{observed}/\text{expected}) * 100$$

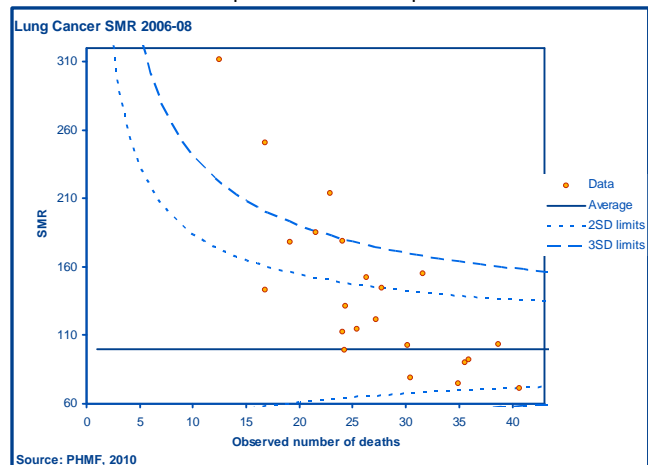
Appendices 2 & 3: Incidence & Mortality Funnel Plots (Wirral ward)

The **incidence** funnel plot below identifies those wards in Wirral which have a statistically higher SRR than you would expect, there are four and they are Bidston, Birkenhead, Egerton and Seacombe.



Source: Cancer Registry, 2010

The **mortality** funnel plot below identifies the wards in Wirral which have a statistically higher SMR than you would expect. The wards are Bidston, Birkenhead and Egerton, confirming the information in Map 5 of main report.



Source: PHMF, 2010